Document Title

Tier 2 Summary of the Metabolism and Residues Data for Spirotetramat (BYI 08330)

Data Requirements

Directive 91/414/EEC
Regulatory Directive 2003-01/Canada/PMRA
OPPTS guidelines/US/EPA

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Section 4, Point 6
Document M

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Bayer CropScience

OWNERSHIP STATEMENT

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Executive Summary of Metabolism of BYI08330 in the Rat

Following an oral administration of [azospirodecenyl-3-^{14}C] BYI08330 to male and female rats at a 3 mg/kg bw dose rate the gastrointestinal absorption accounted for >90 % of the dose. Excretion was very fast and nearly completed after 24 h. The predominant route of excretion was by urine. No radioactivity was detected in the expired air proving the stability of the labelling position in the molecule. Quantitative whole body autoradiography revealed a fast absorption and distribution of the test compound with peak values observed already 1 h after administration. Among the quantitatively analysed organs, tissues, and fluids, the highest equivalent concentrations were observed in the liver, kidney and blood. Moderate peak concentrations were found in the lung and myocardium, brown fat, skin, the glands and the reproduction organs. Lower concentrations were reached in all other organs and tissues. The lowest peak concentrations were found in the spinal cord, the brain, and the eye. From peak values, radioactivity concentrations declined by several orders of magnitude below the limit of detection for all organs and tissues within 48 hours in male rats and within 24 hours in female rats.

In the ADME study, four groups of 4 male or female rats were administered by oral gavage with a single dose of [azaspirodecenyl-3-14C]BYI08330 at a target dose level of 2 and 100 mg/kg body weight. Two groups of 4 male or female rats were pre-treated for 14 days with 2 mg/kg non-radiolabelled BYI08330 followed by a single radiolabelled dose of 2 mg/kg. The animals of all groups were sacrificed 2 days after dosing. BYI08330 was very rapidly absorbed from the gastrointestinal tract of male and female rats in all test groups. The absorption commenced immediately after dosing. The absorption rate in the single low dose test was 95 % for male rats and 96 % for female rats. These values refer to the total recovered radioactivity and were calculated from the values of radioactivity in the urine and the body without the gastrointestinal tract. No significant differences in the absorption rate were seen between the single low dose, repeated low dose and single high dose tests.

The maximum of plasma concentration was reached for all dose groups within 0.09 to 2.03 hours after administration (values calculated by pharmacokinetic modelling). From the maximum, the radioactivity concentrations in plasma declined steadily by several orders of magnitude within 48 hours for all dose groups.

Concentrations of radioactivity detected in tissues and organs at the time of sacrifice 48 hours postdose were very low and below the limit of detection for some organs/tissues.

In general, excretion of BYI08330 residues was very rapid with urine as the predominant excretion route. 48 hours after administration, <0.2 % of the dose were detected in the body and the gastro-intestinal tract. The excretion behaviour was similar for all dose groups.

BYI08330 was completely metabolized by the rat and no parent compound was detected in the excreta. Identification rates of metabolites were high (87 – 95 % of the dose administered) and only very minor metabolites (<0.7 % of the dose) could not be identified. The main metabolic reaction was cleavage of the ester group which resulted in the formation of the primary and most predominant metabolite BYI08330-

enol (53 – 87 % of the dose administered). All other identified metabolites could be derived from the enol intermediate. The second prominent metabolic transformation was oxidative demethylation of the 8-methoxy group to BYI08330-desmethyl-enol (5 – 37 % of the dose administered). Oxidation of the azaspiro moiety to BYI08330-ketohydroxy and BYI08330-desmethyl-ketohydroxy were detected as minor pathways. Other very minor metabolic transformations were conjugation of the enol with glucuronic acid to BYI08330-enol-GA and oxidation of the a[redacted]tic methyl group of the enol metabolite to BYI08330-enol-alcohol.
A sex related difference was observed in metabolism with male rats showing much higher rates of demethylation to BYI08330-desmethyl-enol compared to females rats.

Results of the autoradiography and the ADME study were used for a PBPK simulation (physiology based pharmacokinetic modelling). It could be shown that the experimentally determined ADME behaviour of BYI08330 in male rats can be well described by PBPK simulations assuming that the compound enters the systemic circulation as the metabolite BYI08330-enol that is than further metabolized to the BYI08330-desmethyl-enol. The observed plasma concentrations, their non-linearity in dose, organ concentrations and the metabolization and excretion could be described with very good agreement by simulations based on a common parameterization of the PBPK model. The modelling results indicated the presence of active transport processes for the uptake of BYI08330 metabolites into liver and kidney and active tubular secretion of BYI08330 related radioactivity into urine. With a high probability, a certain saturation of the renal transport processes is responsible for the change in shape of plasma concentration curves observed to occur at 100 mg/kg, although the available experimental data did not allow to decide which of both processes, uptake or secretion, is the more relevant one.

In an organ metabolism study, three groups of 4 male rats were administered by oral gavage with a single dose of [azaspirodecenyl-3-14C] BYI08330 at a target dose level of 2 mg/kg body weight and three other groups at a dose level of 1000 mg/kg body weight. One group of animals from each dose level was sacrificed at 1 h, 8 h, and 24 h after dosage, respectively.
The total radioactivity that included parent compound and metabolites was determined in the excreted urine and faeces samples over the testing time as well as in plasma, liver, kidney, and testis at sacrifice. Investigations on metabolites were performed with urine and plasma samples, and with extracts from liver, kidney, and testis.
The results of the low dose tests matched well with those from the low dose tests in the ADME study. For all time points, the residues in liver and kidney were distinctively higher than in plasma. This finding may indicate that metabolites are transferred by active transport mechanisms from plasma to the excretory organs. The residues in testis, carcass and skin were distinctively lower than in plasma. In plasma and organs, the same metabolites were found as in the excreta but with different proportions. BYI08330-enol was the most prominent compound in all samples. BYI08330-desmethyl-enol was found at higher percentages in urine than in plasma and organs. This is probably caused by the more rapid excretion of this more polar metabolite compared to BYI08330-enol. The highest percentages of BYI08330-desmethyl-enol

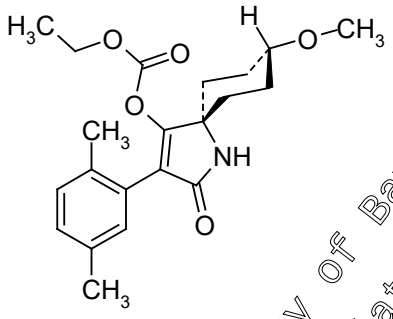
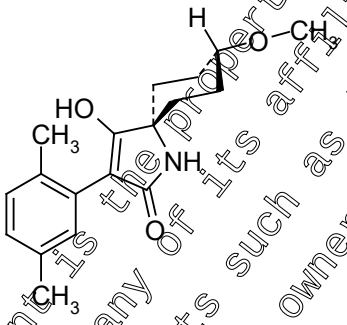
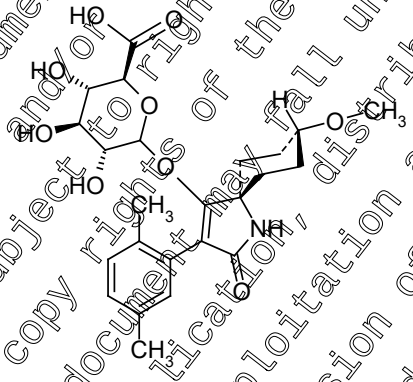
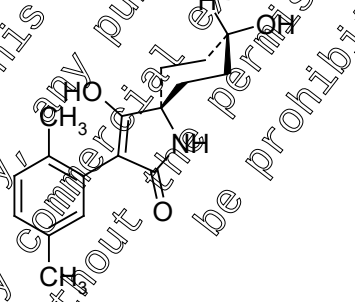
in the body were detected in liver, where the compound is formed by metabolic transformation of BYI08330-enol. The percentages in plasma, kidney and testis were comparable and significantly lower than in liver.
In high dose tests, the depletion of residues was distinctively slower and the residues in plasma were slightly higher than in liver and kidney. This may be caused by the saturation of the active transport mechanisms resulting in a more uniform distribution of the compound in the body. The residues declined hardly from 1 h to 8 h after dosage and slightly more until 24 h. The residues in testis, carcass and skin were lower than in plasma. The metabolism was similar to the metabolism in low dose tests, with the exception that BYI08330-desmethyl-enol was found at higher proportions in high dose tests.
In all tests, the first and most important metabolic reaction was the cleavage of the ester bond of the side chain yielding the BYI08330-enol. The demethylation of the cyclohexyl-O-methyl group to the respective alcohol (BYI08330-desmethyl-enol) was a further important metabolic reaction as well as the hydroxylation in the azaspiro ring of BYI08330-enol resulting in BYI08330-ketohydroxy, which was mainly detected in liver and kidney. Other metabolic reactions like conjugation of the BYI08330-enol with glucuronic acid, oxidation of one of the methyl groups of the phenyl ring forming the BYI08330-enol-alcohol, and demethylation of BYI08330-ketohydroxy to BYI08330-desmethyl-ketohydroxy were of minor importance. The metabolites detected in plasma and organs were identical with those identified in the excreta of the ADME study.

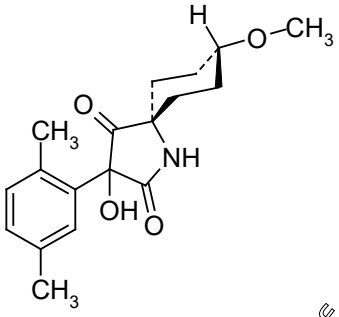
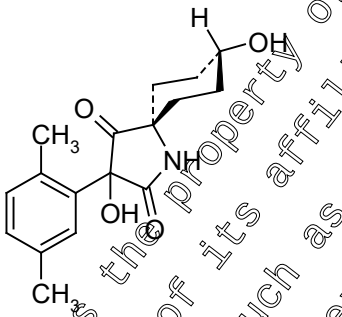
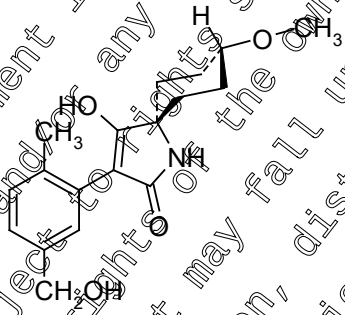
A second refined PBPK modelling using the results of the ADME and the organ metabolism study predicted a distinct, disproportionate increase of the body burden by BYI08330-enol and BYI08330-desmethyl-enol after repeated administration of very high doses of BYI08330 (dose level > 300 mg/kg bw). Overall, the PBPK simulations demonstrated that repeated daily doses of 300 mg BYI08330/kg bw and higher will lead to non-linear elimination kinetics, resulting in a high body burden in multiple-dose toxicological studies.

A comparative in vitro metabolism study with liver cells from male rats, male mice and male humans revealed differences in the proportions of metabolites formed by the different species.
In the liver cells from all species, BYI08330 was completely metabolized and no parent compound was detected at the end of the incubation. BYI08330-enol was the first and most prominent metabolite accounting for 66 – 92 % of total metabolites.
In the rat, the BYI08330-enol was further metabolised by oxidation reactions to BYI08330-desmethyl-enol (oxidative demethylation), BYI08330-enol-alcohol (oxidation of a [redacted]tic methyl group) and BYI08330-ketohydroxy (oxidation of the azaspirodecenyl moiety). Oxidation products accounted for ca. 14 %. Conjugation was not detected as an in vitro metabolic transformation.
In the mouse, oxidative degradation of BYI08330-enol was detected as a minor “in vitro” metabolic reaction only (4 % of oxidation products). Conjugation with glucuronic acid to BYI08330-enol-GA was very prominent with the conjugate accounting for ca. 30 %.

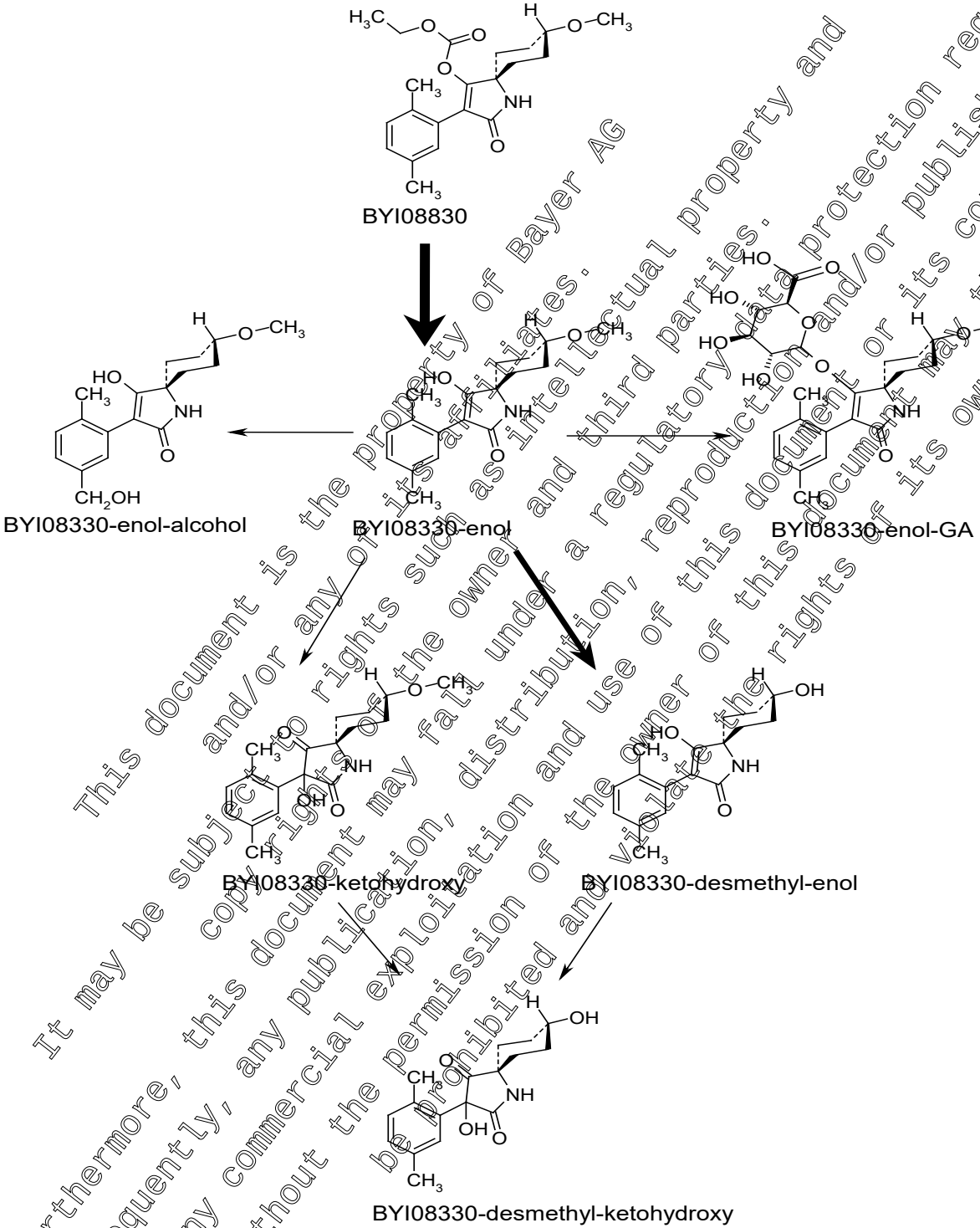
Human liver cells exhibited an “in vitro” metabolism more similar to the one in mouse than in the rat. Conjugation to BYI08330-enol-GA (6 %) was more prominent than oxidative transformation which was detected in a minor extent (1 %), only.

In the following table, a list of metabolites detected in rat metabolism is shown.

Abbreviation	Chemical Structure	IUPAC Name
active substance: BYI08330		**3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate**
BYI08330-enol		**3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one**
BYI08330-enol-GA		**glucuronic acid conjugate of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one**
BYI08330-desmethyl-enol		**3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one**

Abbreviation	Chemical Structure	IUPAC Name
BYI08330-ketohydroxy		3-(2,5-dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione
BYI08330-desmethyl-ketohydroxy		3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione
BYI08330-enol-alcohol		4-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one

The following figure shows the metabolic pathway of BYI08330 in the rat



IIA 6.1 Stability of residues

IIA 6.1.1 Stability of residues during storage of samples

Report:	**KIIA 6.1.1/01, [redacted], [redacted], 2006**
Title:	**Storage stability of BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in/on tomato (fruit), tomato (paste), potato (tuber), lettuce (head), climbing French bean (bean with pod) and almond (nutmeat) for 24 months. The results of the following storage intervals are reported: 18 months for tomato (fruit), potato (tuber), lettuce (head), climbing French bean (bean with pod), and almond (nutmeat). 12 month for tomato (paste)**
Report No & Document No	**MR-167/04** **M-275244-01-2**
Guidelines:	**EPA Ref.: OPPTS 860.1380, Storage Stability** **RMRA Ref.: DACO 7.3, Storage Stability** **EU Directive 91/414/EEC amended by Commission Directive 7032/VI/95 rev.5 (1997), Appendix H Storage Stability of Residue Samples**
GLP	**yes**

Executive Summary

The storage stability of BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside was investigated in tomato (fruit and paste), potato (tuber), lettuce (head), climbing French bean (bean with pod) and, almond (nutmeat). Samples were individually spiked with 0.2 mg/kg of each analyte and stored at ≤ -18°C for nominal periods of one, two, six, and twelve months for tomato paste and in addition at the nominal interval of 18 months for all other matrices. In the storage stability studies with BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, samples were analysed for the spiked analytes, only. In the storage stability study with BYI08330, BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside were anaysed. In the storage stability study with BYI08330-enol the same compounds were analysed, with the exception of BYI08330. Analysis was performed using LC-MS/MS-method 00857 (see IIA 4.3.1). Residues of the spiked analyted are given as % recovered. In the storage stability study with BYI08330 residues of metabolites are given as BYI08330 equivalents and in the study with BYI08330-enol as BYI08330-enol-equivalents.

Under the conditions of the study the total residue of BYI08330 decreased during deep frozen storage for 18 months (tomato paste 12 month) to values between 76 and 97 (72 and 113) % for all analytes and in all matrices tested. The first numbers given are the values for recoveries corrected with concurrent recoveries, the numbers in parenthesis are the values for recoveries normalised to day 0. As more than 70% of the total residue of BYI08330 was recovered, the total residue of BYI08330 is considered stable for at least 18 (12) months.

Under the conditions of the study BYI08330-ketohydroxy, BYI08330 monohydroxy and BYI08330-enol-glucoside BYI08330 decreased to values between 77 and 97 (78 and 113) % and were therefore stable during deep freezer storage for at least 18 (12) months.

Residues of the parent compound, BYI08330, were stable in tomato fruit and tomato paste: 81 (79) % and 88 (75) %, resp., were recovered after 18 months storage at ≤-18°C. In the other matrices residues of BYI08330 decreased during 18 (12) months deep freezer storage to 25 (24) % in potato tuber, to 41 (44) % in lettuce, 29 (29) % in beans and to14 (14) % in nuts. The decrease of BYI08330 residues resulted in a corresponding increase of BYI08330-enol.

Residues of BYI08330-enol decreased during 18 (12) month of deep freezer storage to 84 (78) % in tomato fruit, to 78 (71)% in almond nutmeat, to 71 (68)% in tomato paste to 62 (63)% in beans with pod, to 59 (62)% in lettuce and to 62 (63)% in potato tuber. Hence, residues of BYI08330-enol were stable (recoveries >70%) in tomato fruit and paste and in almond nutmeat during at least 18 (12) months storage at ≤-18°C. In lettuce and beans residues of BYI08330-enol were stable (recoveries >70%) during deep freezer storage for 1 to 2 months and in potatoes during 12 months. In these matrices BYI08330-ketohydroxy was formed (23% in beans, 27% in lettuce and 13 % in potato tuber).

I. MATERIALS AND METHODS

A. Materials

1. Test materials:

BYI08330

Description: white powder
Lot/Batch: M26802
Purity: 99.2% w/w
CAS no.: 203313-25-1
Development code: AE 1302943
Spiking level: 0.2 mg/kg

BYI08330-cis-enol

Description: white powder

Lot/Batch: NLL6383-16-18
Purity: 99.4% w/w
CAS no.: no
Development code: AE 1302944
Spiking level: 0.2 mg/kg

BYI08330-cis-ketohydroxy
Description: light beige powder
Lot/Batch: BCHR1025-1
Purity: 92% w/w
Development code: AE 1422479
Spiking level: 0.2 mg/kg

BYI08330-cis-monohydroxy
Description: white powder
Lot/Batch: M26802
Purity: 96.9% w/w
Development code: AE 1796847
Spiking level: 0.2 mg/kg

BYI08330-enol-glucoside
Description: beige crystalline powder
Lot/Batch: 2004BRP049-0022
Purity: 83% w/w
Development code: AE 1935398
Spiking level: 0.2 mg/kg

2. Test commodities
Tomato fruits, potato tubers, climbing French beans, head lettuce, almonds without shells, and tomato paste were obtained as commercially available from the supermarket [redacted], Germany.

B. STUDY DESIGN

The study was conducted from November 2004 through May 2006 for tomato (fruit), potato (tuber), lettuce (head), climbing French bean (bean with pod) and almond (nutmeat) and from April 2005 through April 2006 for tomato (paste) by the Bayer CropScience laboratories, [redacted].

1. Test procedure

Aliquots of tomato (fruit), potato (tuber), lettuce (head), climbing French bean (bean with pod) and almond (nutmeat) raw agricultural commodity (RAC) were fortified between 2004-11-11 and 2004-11-17 separately with BYI 08330, BYI08330-enol and BYI08330-ketohydroxy at spiking levels of 0.20 mg/kg (each analyte) and with a mixture of BYI08330-mono-hydroxy and BYI08330-enol-glucoside (each 0.20 mg/kg). Aliquots of tomato (paste) were fortified on 2005-04-13 separately with BYI 08330, BYI08330-enol and BYI08330-ketohydroxy at spiking levels of 0.20 mg/kg (each analyte) and with a mixture of BYI08330-mono-hydroxy and BYI08330-enol-Glc (each 0.20 mg/kg).

Stock solutions were prepared from reference standards of each analyte separately in acetonitrile (BYI 08330, BYI08330-ketohydroxy, BYI08330-monohydroxy) or acetonitrile/ water (BYI08330-enol, BYI08330-enol-glucoside). Fortification standards were prepared by further diluting these standards in acetonitrile/water (for BYI08330-mono-hydroxy and BYI08330-enol-glucoside a mixed fortification standard was prepared). Individual 10 g samples of all matrices were prepared and fortified separately with 0.20 mg/kg of each one of the following compounds, BYI 08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside. All fortified samples were stored at (≤ -18°C) during the course of the study.

2. Description of the analytical procedure

Five fortified samples of each matrix were analyzed immediately after fortification (Day 0). Three fortified samples of each matrix were analyzed at nominal intervals of one, two, three, six, and twelve months for tomato paste and in addition at a nominal interval of eighteen months for the other matrices. Samples spiked with BYI08330 were analyzed for all analytes, samples spiked with BYI08330-enol were analyzed for all analytes, with the exception of BYI 08330. Analyses of samples spiked with other compounds were limited to the corresponding analytes.

Recovery and stability data for BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside were obtained using method 00857 (see IIA Point 4.3.1). The residues were quantitated separately by LC/MS-MS using stable-labeled internal standards. Residues were given for all analytes separately. For samples spiked with BYI 08330, the total residue of BYI 08330 was calculated as the sum of all analytes measured in each matrix (calculated and expressed as BYI 08330 equivalents). For samples spiked with BYI08330-enol, the total residue of BYI 08330 was calculated as the sum of all analytes measured in each matrix (calculated and expressed as BYI08330-enol equivalents). The Limit of Quantitation (LOQ) for each analyte was 0.01 mg/kg (corresponding to recovery of 5%) according to method 00857, the Limit of Detection (LOD) was estimated to be about 0.0025 mg/kg (corresponding to recovery of about 1%). Recoveries between LOD and LOQ were considered for calculation of the total residue, whereas recoveries below <LOD were not considered.

II. RESULTS AND DISCUSSION

The results of the storage stability of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in the different matrices are summarised in Tables 6.1.1-1 to 6.1.1-16.

The total residues of BYI 08330 in all matrices spiked with BYI 08330 and BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in all matrices separately spiked with the corresponding analytes were stable (< 30% decomposition) during frozen storage for at least twelve months (tomato paste) and eighteen months (tomato (fruit), potato (tuber), lettuce (head), climbing French bean (bean with pod) and almond (nutmeat)) prior to analysis.

Residues of BYI08330-ketohyroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside decreased during deep freezer stoage for 18 (12) months to values above 70 % and hence are considered stable.

Residues of the parent compound, BYI08330, were stable in tomato fruit and tomato paste. Under the conditions of the study resides of BYI08330 decined to values of 91 (87) % in tomato fruit and 83 (75) % in tomato paste. In these matrices low amounts of BYI08330-enol were formed (9-13%). In other matrices residues of BYI08330 decreased during 18 (12) months deep freezer storage to 23 (24) % in potato tuber, to 41 (44) % in lettuce, 29 (29) % in beans and to14 (14) % in nuts. The decrease of BYI08330 residues resulted in an increase of BYI08330-enol of 52 % of the total residue in potato, 54% in lettuce, 60% in beans and 80% in nuts.
Residues of BYI08330-enol were stable during 18 (12) month of deep freezer storage in tomato fruit (84 (78) %), almond nutmeat (78 (71)%) and tomato paste (71 (68)%). Residues of BYI08330-enol decreased to 62 (63)% in beans with pod, to 59 (62)% in lettuce and to 62 (63)% in potato tuber. In these samples resides of BYI08330-ketohydroxy were found at 17-24 % or the total residue in beans, 16-27% in lettuce and 9-14 % in potato tuber.

Table 6.1.1-1: Storage stability of residues of BYI08330 and BYI08330-enol in tomato fruit during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330			BYI08330-enol		
		BYI 08330	BYI08330-enol calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.	BYI-08330-enol	BYI08330-keto-hydroxy calc. as BYI08330-enol equ.	Total Residue BYI 08330 calc. as BYI08330-enol equ.
Mean Value:	0	95%			96%		
Normalized to Day 0:		100%		100%	100%		100%
Corrected with conc. recov.:		95%		95%	90%		90%
Mean Value:	32	100%	2%		104%	5%	
Normalized to Day 0:		105%		107%	108%		113%
Corrected with conc. recov.:		119%	2%	121%	130%	5%	135%
Mean Value:	62	84%	2%		76%	4%	
Normalized to Day 0:		89%		90%	79%		83%
Corrected with conc. recov.:		87%	2%	89%	81%	4%	85%
Mean Value:	91	90%	3%		72%	4%	
Normalized to Day 0:		95%		97%	75%		79%
Corrected with conc. recov.:		105%	3%	108%	83%	5%	88%
Mean Value:	180	83%	4%		80%	4%	
Normalized to Day 0:		88%		91%	83%		87%
Corrected with conc. recov.:		100%	4%	104%	89%	4%	93%
Mean Value:	370	82%	6%		78%	5%	
Normalized to Day 0:		87%		93%	81%		86%
Corrected with conc. recov.:		90%	7%	97%	85%	5%	90%
Mean Value:	543	83%	11%		75%	4%	
Normalized to Day 0:		87%		99%	78%		82%
Corrected with conc. recov.:		91%	13%	104%	84%	4%	88%

In samples fortified with BYI08330 residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside were <LOD. In samples fortified with BYI08330-enol residues of BYI08330-monohydroxy and BYI08330-enol-glucoside were <LOD.

Table 6.1.1-2: Storage stability of residues of BYI08330 ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in tomato fruit during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-monohydroxy	BYI08330-enol-glucoside
Mean Value:	0	95%	90%	107%
Normalized to Day 0:		100%	100%	100%
Mean Value corrected with conc. recoveries:		97%	91%	112%
Mean Value:	32	95%	76%	90%
Normalized to Day 0:		100%	84%	84%
Mean Value corrected with conc. recoveries:		109%	93%	109%
Mean Value:	62	81%	78%	87%
Normalized to Day 0:		85%	87%	81%
Mean Value corrected with conc. recoveries:		86%	77%	91%
Mean Value:	91	76%	83%	95%
Normalized to Day 0:		80%	93%	88%
Mean Value corrected with conc. recoveries:		86%	97%	115%
Mean Value:	180	95%	88%	94%
Normalized to Day 0:		101%	98%	88%
Mean Value corrected with conc. recoveries:		97%	98%	101%
Mean Value:	370	88%	77%	85%
Normalized to Day 0:		92%	86%	80%
Mean Value corrected with conc. recoveries:		99%	83%	91%
Mean Value:	543	74%	78%	86%
Normalized to Day 0:		78%	87%	81%
Mean Value corrected with conc. recoveries:		77%	87%	96%

Table 6.1.1-3: Storage stability data of BYI 08330 and BYI08330-enol in/on potato (tuber) during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330			BYI08330-enol		
		BYI08330	BYI08330 -enol calc. as BYI 08330 equ.	Total Residue BYI08330 calc. as BYI08330 equ.	BYI08330 -enol	BYI08330 - ketohydroxy calc. as BYI-08330-enol equ.	Total Residue BYI08330 calc. as BYI08330 -enol equ.
Mean Value:	0	89%		88%	88%		
Normalized to Day 0:		100%		100%	100%		100%
Corrected with conc. recoveries:		112%		112%	102%		102%
Mean Value:	31	73%	25%		94%	10%	
Normalized to Day 0:		82%		108%	107%		117%
Corrected with conc. recoveries:		75%	27%	102%	101%	9%	111%
Mean Value:	62	61%	23%		71%	9%	
Normalized to Day 0:		68%		91%	81%		91%
Corrected with conc. recoveries:		72%	28%	100%	88%	11%	99%
Mean Value:	90	46%	28%		60%	8%	
Normalized to Day 0:		52%		81%	68%		76%
Corrected with conc. recoveries:		63%	39%	102%	81%	10%	91%
Mean Value:	180	52%	46%		69%	9%	
Normalized to Day 0:		59%		105%	78%		87%
Corrected with conc. recoveries:		64%	49%	113%	73%	9%	83%
Mean Value:	369	40%	51%		73%	12%	
Normalized to Day 0:		45%		97%	83%		95%
Corrected with conc. recoveries:		40%	56%	96%	80%	14%	93%
Mean Value:	543	21%	47%		55%	12%	
Normalized to Day 0:		24%		72%	63%		76%
Corrected with conc. recoveries:		23%	52%	76%	62%	13%	76%

In the storage stability study with BYI08330 residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside were <LOD. In the study with BYI08330-enol residues of BYI08330-monohydroxy and BYI08330-enol-glucoside were <LOD

Table 6.1.1-4: Storage stability data of BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in/on potato (tuber). Values are given in % recovered

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-Glc
Mean Value:	0	90%	83%	86%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. recoveries:		106%	101%	115%
Mean Value:	31	79%	79%	94%
Normalized to Day 0:		88%	95%	109%
Corrected with conc. recoveries:		77%	83%	94%
Mean Value:	62	93%	79%	84%
Normalized to Day 0:		104%	95%	97%
Corrected with conc. recoveries:		109%	89%	111%
Mean Value:	90	89%	81%	93%
Normalized to Day 0:		99%	97%	108%
Corrected with conc. recoveries:		116%	105%	120%
Mean Value:	180	91%	82%	94%
Normalized to Day 0:		101%	99%	109%
Corrected with conc. recoveries:		93%	84%	98%
Mean Value:	369	90%	90%	94%
Normalized to Day 0:		101%	109%	109%
Corrected with conc. recoveries:		102%	94%	106%
Mean Value:	543	82%	78%	85%
Normalized to Day 0:		91%	94%	98%
Corrected with conc. recoveries:		91%	85%	96%

Table 6.1.1-5: Storage stability of residues of BYI08330 in lettuce during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI 08330	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	90%				
Normalized to Day 0:		100%				100%
Corrected with conc. recoveries		99%				99%
Mean Value:	29	87%	9%	< LOD	< LOD	
Normalized to Day 0:		97%				106%
Corrected with conc. recoveries		86%	10%			96%
Mean Value:	62	83%	14%	2%	< LOD	
Normalized to Day 0:		92%				108%
Corrected with conc. recoveries:		92%	15%	3%		110%
Mean Value:	90	73%	17%	2%	< LOD	
Normalized to Day 0:		81%				101%
Mean Value corrected with conc. recoveries:		71%	16%	2%		90%
Mean Value:	177	66%	26%	2%	< LOD	
Normalized to Day 0:		74%				101%
Corrected with conc. recoveries:		76%	28%	2%		105%
Mean Value:	366	48%	44%	3%	< LOD	
Normalized to Day 0:		54%				101%
Corrected with conc. recoveries:		53%	50%	4%		106%
Mean Value:	541	40%	51%	3%	1%	
Normalized to Day 0:		44%				99%
Corrected with conc. recoveries:		41%	54%	3%	1%	99%

Table 6.1.1-6: Storage stability of residues of BYI08330-enol in lettuce during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-enol	BYI08330-keto-hydroxy calc. as BYI-08330-enol equ.	BYI08330-mono-hydroxy calc. as BYI-08330-enol equ.	BYI08330-enol-Glc calc. as BYI-08330-enol equ.	Total Residue BYI08330 calc. as BYI08330-enol equ.
Mean Value:	0	86%				
Normalized to Day 0:		100%				100%
Corrected with conc. recoveries:		90%				90%
Mean Value:	29	80%	17%	< LOD	1%	
Normalized to Day 0:		94%				111%
Corrected with conc. recoveries:		85%	16%		1%	102%
Mean Value:	62	60%	18%	< LOD	< LOD	
Normalized to Day 0:		70%				88%
Corrected with conc. recoveries:		67%	20%			87%
Mean Value:	90	59%	27%	< LOD	< LOD	
Normalized to Day 0:		69%				95%
Corrected with conc. recoveries:		58%	27%			85%
Mean Value:	177	51%	24%	< LOD	< LOD	
Normalized to Day 0:		59%				84%
Corrected with conc. recoveries:		54%	27%			81%
Mean Value:	366	53%	22%	< LOD	< LOD	
Normalized to Day 0:		62%				84%
Corrected with conc. recoveries:		60%	25%			85%
Mean Value:	541	55%	26%	1%	< LOD	
Normalized to Day 0:		65%				91%
Corrected with conc. recoveries:		59%	27%	1%		86%

Table 6.1.1-7: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-enol and BYI08330-enol-glucoside in lettuce during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-Glc
Mean Value:	0	90%	84%	102%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. recoveries:		99%	91%	107%
Mean Value:	29	85%	84%	102%
Normalized to Day 0:		95%	99%	100%
Corrected with conc. recoveries:		81%	88%	104%
Mean Value:	62	89%	85%	99%
Normalized to Day 0:		99%	100%	97%
Corrected with conc. recoveries:		98%	94%	114%
Mean Value:	90	93%	90%	106%
Normalized to Day 0:		103%	107%	104%
Corrected with conc. recoveries:		93%	91%	100%
Mean Value:	177	94%	81%	88%
Normalized to Day 0:		105%	96%	86%
Corrected with conc. recoveries:		104%	86%	94%
Mean Value:	366	92%	75%	85%
Normalized to Day 0:		102%	89%	83%
Corrected with conc. recoveries:		105%	79%	94%
Mean Value:	541	91%	85%	92%
Normalized to Day 0:		102%	101%	90%
Corrected with conc. recoveries:		96%	81%	93%

Table 6.1.1-8: Storage stability of residues of BYI08330 in climbing French beans (bean with pod) during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI 08330	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	90%					
Normalized to Day 0:		100%					100%
Corrected with conc. recoveries:		110%					110%
Mean Value:	28	71%	17%				
Normalized to Day 0:		79%					96%
Corrected with conc. recoveries:		76%	20%				95%
Mean Value:	60	59%	26%	1%	< LOD	< LOD	
Normalized to Day 0:		66%					93%
Corrected with conc. recoveries:		74%	34%	1%			108%
Mean Value:	91	59%	28%	2%	< LOD	< LOD	
Normalized to Day 0:		66%					96%
Corrected with conc. recoveries:		61%	32%	2%			95%
Mean Value:	177	48%	44%	2%	< LOD	1%	
Normalized to Day 0:		54%					101%
Corrected with conc. recoveries:		58%	47%	3%		1%	108%
Mean Value:	367	40%	59%	6%	< LOD	< LOD	
Normalized to Day 0:		45%					110%
Corrected with conc. recoveries:		46%	70%	6%			122%
Mean Value:	542	25%	50%	5%	1%	< LOD	
Normalized to Day 0:		28%					85%
Corrected with conc. recoveries:		29%	60%	5%	1%		96%

Table 6.1.1-9: Storage stability of residues of BYI08330-enol in climbing French beans (bean with pod) during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI- 08330-enol equ.	BYI-08330-mono-hydroxy calc. as BYI- 08330-enol equ.	BYI-08330-enol-Glc calc. as BYI- 08330-enol equ.	Total Residue BYI 08330 calc. as BYI08330-enol equ.
Mean Value:	0	88%				
Normalized to Day 0:		100%				100%
Corrected with conc. recoveries:		95%				95%
Mean Value:	28	75%	17%	< LOD	1%	
Normalized to Day 0:		86%				104%
Corrected with conc. recoveries:		89%	17%		1%	107%
Mean Value:	60	54%	20%	< LOD	< LOD	
Normalized to Day 0:		62%				82%
Corrected with conc. recoveries:		70%	24%			94%
Mean Value:	91	54%	18%	< LOD	< LOD	
Normalized to Day 0:		61%				80%
Corrected with conc. recoveries:		60%	20%			79%
Mean Value:	177	50%	22%	< LOD	1%	
Normalized to Day 0:		57%				80%
Corrected with conc. recoveries:		54%	24%		1%	79%
Mean Value:	367	52%	22%	< LOD	< LOD	
Normalized to Day 0:		59%				81%
Corrected with conc. recoveries:		60%	24%			84%
Mean Value:	542	52%	20%	1%	< LOD	
Normalized to Day 0:		59%				80%
Corrected with conc. recoveries:		62%	23%	1%		85%

Table 6.1.1-10: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in climbing French beans (bean with pod) during deep-freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-gluxcoside
Mean Value:	0	84%	82%	87%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. recoveries:		112%	94%	100%
Mean Value:	28	89%	81%	98%
Normalized to Day 0:		107%	99%	114%
Corrected with conc. recoveries:		88%	92%	110%
Mean Value:	60	88%	92%	107%
Normalized to Day 0:		105%	113%	124%
Corrected with conc. recoveries:		103%	105%	129%
Mean Value:	91	88%	87%	105%
Normalized to Day 0:		105%	107%	122%
Corrected with conc. recoveries:		94%	90%	111%
Mean Value:	177	95%	78%	86%
Normalized to Day 0:		113%	96%	99%
Corrected with conc. recoveries:		105%	85%	83%
Mean Value:	367	92%	74%	83%
Normalized to Day 0:		109%	90%	96%
Corrected with conc. recoveries:		97%	89%	100%
Mean Value:	542	82%	92%	81%
Normalized to Day 0:		98%	113%	94%
Corrected with conc. recoveries:		94%	97%	95%

Table 6.1.1-11: Storage stability of residues of BYI08330 in almond (nutmeat) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI 08330	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	89%					
Normalized to Day 0:		100%					100%
Corrected with conc. recoveries:		86%					86%
Mean Value:	26	54%	55%				
Normalized to Day 0:		61%					116%
Corrected with conc. recoveries:		53%	58%				111%
Mean Value:	61	46%	55%	< LOD	< LOD	< LOD	
Normalized to Day 0:		52%					108%
Corrected with conc. recoveries:		46%	56%				102%
Mean Value:	90	36%	59%	< LOD	< LOD	< LOD	
Normalized to Day 0:		41%					100%
Corrected with conc. recoveries:		38%	58%				96%
Mean Value:	177	22%	72%	< LOD	< LOD	< LOD	
Normalized to Day 0:		24%					96%
Corrected with conc. recoveries:		24%	77%				101%
Mean Value:	367	15%	73%	< LOD	< LOD	< LOD	
Normalized to Day 0:		17%					90%
Corrected with conc. recoveries:		18%	77%				95%
Mean Value:	541	12%	76%	< LOD	1%	< LOD	
Normalized to Day 0:		14%					92%
Corrected with conc. recoveries:		14%	80%		1%		96%

Table 6.1.1-12: Storage stability of residues of BYI08330-enol in almond (nutmeat) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI- 08330-enol equ.	BYI-08330-mono-hydroxy calc. as BYI- 08330-enol equ.	BYI-08330-enol-Glc calc. as BYI-08330-enol equ.	Total Residue BYI 08330 calc. as BYI08330-enol equ.
Mean Value:	0	103%				
Normalized to Day 0:		100%				100%
Corrected with conc. recoveries:		99%				99%
Mean Value:	26	90%	7%	< LOD	< LOD	
Normalized to Day 0:		87%				94%
Corrected with conc. recoveries:		95%	6%			102%
Mean Value:	61	81%	8%	< LOD	< LOD	
Normalized to Day 0:		78%				86%
Corrected with conc. recoveries:		82%	8%			89%
Mean Value:	90	82%	8%	< LOD	< LOD	
Normalized to Day 0:		79%				87%
Corrected with conc. recoveries:		81%	8%			89%
Mean Value:	177	74%	8%	< LOD	< LOD	
Normalized to Day 0:		72%				80%
Corrected with conc. recoveries:		80%	8%			88%
Mean Value:	362	70%	1%	< LOD	< LOD	
Normalized to Day 0:		68%				68%
Corrected with conc. recoveries:		74%	1%			75%
Mean Value:	541	74%	8%	1%	< LOD	
Normalized to Day 0:		71%				80%
Corrected with conc. recoveries:		78%	8%	1%		87%

Table 6.1.1-13: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in almond (nutmeat) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-monohydroxy	BYI08330-enol-glucoside
Mean Value:	0	82%	87%	93%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. recoveries:		83%	87%	98%
Mean Value:	26	94%	85%	103%
Normalized to Day 0:		114%	98%	112%
Corrected with conc. recoveries:		86%	88%	101%
Mean Value:	61	93%	91%	108%
Normalized to Day 0:		113%	104%	118%
Corrected with conc. recoveries:		89%	87%	112%
Mean Value:	90	91%	88%	104%
Normalized to Day 0:		110%	101%	113%
Corrected with conc. recoveries:		92%	88%	103%
Mean Value:	179	97%	86%	95%
Normalized to Day 0:		117%	99%	103%
Corrected with conc. recoveries:		98%	88%	98%
Mean Value:	367	88%	79%	80%
Normalized to Day 0:		106%	91%	88%
Corrected with conc. recoveries:		93%	86%	87%
Mean Value:	541	84%	85%	79%
Normalized to Day 0:		102%	97%	86%
Corrected with conc. recoveries:		88%	85%	88%

Table 6.1.1-14: Storage stability of residues of BYI08330 in tomato (paste) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI 08330	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	104%					
Normalized to Day 0:		100%					100%
Corrected with conc. recoveries:		105%					105%
Mean Value:	30	98%	2%				
Normalized to Day 0:		94%					96%
Corrected with conc. recoveries:		114%	2%				116%
Mean Value:	61	97%	4%	< LOD	< LOD	< LOD	
Normalized to Day 0:		93%					96%
Corrected with conc. recoveries:		100%	3%				104%
Mean Value:	92	95%	4%	0%	0%	0%	
Normalized to Day 0:		91%					95%
Corrected with conc. recoveries:		99%	4%				103%
Mean Value:	187	78%	5%	< LOD	< LOD	< LOD	
Normalized to Day 0:		75%					79%
Corrected with conc. recoveries:		79%	5%				84%
Mean Value:	373	79%	9%	< LOD	< LOD	< LOD	
Normalized to Day 0:		75%					84%
Corrected with conc. recoveries:		83%	9%				92%

Table 6.1.1-15: Storage stability of residues of BYI08330-enol in tomato (paste) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI-08330-enol equ.	BYI-08330-mono-hydroxy calc. as BYI-08330-enol equ.	BYI-08330-enol-Glc calc. as BYI-08330-enol equ.	Total Residue BYI 08330 calc. as BYI08330-enol equ.
Mean Value:	0	100%				
Normalized to Day 0:		100%				100%
Corrected with conc. recoveries:		133%				133%
Mean Value:	30	71%	2%	< LOD	< LOD	
Normalized to Day 0:		71%				73%
Corrected with conc. recoveries:		82%	2%			84%
Mean Value:	61	78%	2%	< LOD	< LOD	
Normalized to Day 0:		78%				80%
Corrected with conc. recoveries:		77%	2%			79%
Mean Value:	93	81%	4%	< LOD	< LOD	
Normalized to Day 0:		81%				85%
Corrected with conc. recoveries:		93%	5%			98%
Mean Value:	187	66%	2%	< LOD	< LOD	
Normalized to Day 0:		66%				68%
Corrected with conc. recoveries:		68%	2%			70%
Mean Value:	373	68%	2%	< LOD	< LOD	
Normalized to Day 0:		68%				70%
Corrected with conc. recoveries:		71%	2%			73%

Table 6.1.1-16: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in tomato (paste) during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-glucoside
Mean Value:	0	98%	101%	106%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. recoveries:		99%	99%	105%
Mean Value:	30	89%	84%	77%
Normalized to Day 0:		91%	83%	73%
Corrected with conc. recoveries:		96%	89%	90%
Mean Value:	61	90%	101%	97%
Normalized to Day 0:		91%	100%	91%
Corrected with conc. recoveries:		90%	95%	94%
Mean Value:	93	94%	98%	90%
Normalized to Day 0:		96%	97%	85%
Corrected with conc. recoveries:		95%	98%	94%
Mean Value:	187	83%	87%	91%
Normalized to Day 0:		84%	86%	86%
Corrected with conc. recoveries:		92%	91%	98%
Mean Value:	373	84%	87%	92%
Normalized to Day 0:		85%	86%	87%
Corrected with conc. recoveries:		89%	93%	105%

Report:	**KIIA 3.1/02, [redacted] 2006**
Title:	**Storage stability of BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in/on orange (juice) and prunes (fruit) for 5 months**
Report No & Document No	**MR-06/076** **M-276529-01-2**
Guidelines:	**EPA Ref.: OPPTS 860.1380, Storage Stability** **RMRA Ref.: DACO 7.3, Storage Stability** **EU Directive 91/414/EEC amended by Commission Directive 7032/VI/95 rev.5 (1997), Appendix H Storage Stability of Residue Samples**
GLP	**yes**

Executive summary

In freezer storage stability studies, samples of orange juice and prunes were spiked with BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside at the level of 0.2 mg/kg and stored at ≤ -18°C. Analysis of the analytes was performed using LC-MS/MS-method 00857 (see IIA 4.3.1). In the studies with BYI08330 and BYI08330-enol, in addition to the spiked analytes additional compounds, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, were analysed.

After 5 months deep freezer storage residues of BYI 08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in orange juice and prunes ranged between 83 and 106% (corrected with concurrent recoveries) or between 76 and 108% (normalised to day 0). Residues of BYI08330 and its metabolites were stable during storage at ≤ -18°C for at least five months.

I. MATERIALS AND METHODS

A. Materials

1. Test materials:

BYI08330

- Description: white powder
- Lot/Batch: M26802
- Purity: 99.2% w/w
- CAS no.: 203313-25-1
- Development code: AE 1302943
- Spiking level: 0.2 mg/kg

BYI08330-cis-enol

Description: white powder
Lot/Batch: NLL6383-16-18
Purity: 99.4% w/w
CAS no.: no
Development code: AE 1302944
Spiking level: 0.2 mg/kg

BYI08330-cis-ketohydroxy
Description: light beige powder
Lot/Batch: BCHR1025-1
Purity: 92% w/w
Development code: AE 1422479
Spiking level: 0.2 mg/kg

BYI08330-cis-monohydroxy
Description: white powder
Lot/Batch: M26802
Purity: 96.9% w/w
Development code: AE 1796847
Spiking level: 0.2 mg/kg

BYI08330-enol-glucoside
Description: beige crystalline powder
Lot/Batch: 2004BRP049-0022
Purity: 83% w/w
Development code: AE 1935398
Spiking level: 0.2 mg/kg

2. Test commodities

Orange juice and prunes paste were obtained as commercially available from the supermarket [redacted], Germany.

B. STUDY DESIGN

The studies were conducted from March 2006 through August 2006 by the Bayer CropScience laboratories, [redacted].

1. Test procedure

Stock solutions were prepared from reference standards of each analyte separately in acetonitrile (BYI 08330, BYI08330-ketohydroxy, BYI08330-mono-hydroxy) or acetonitrile / water (40:60 + 0.22 mL/L of formic acid, pH 3; BYI08330-enol-glucoside) or methanol (BYI08330-enol). Fortification standards were prepared by further diluting these standards in acetonitrile / water (20:80 or 15:85 + 0.22 mL/L of formic acid, pH 3). For BYI08330-mono-hydroxy and BYI08330-enol-Glc, a mixed fortification standard was prepared. Individual 10 g samples of both matrices were prepared. Samples from both matrices were fortified separately at 0.20 mg/kg with BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside (expressed as individual compounds). All fortified samples were stored in a deep-freezer at -18 °C or below during the course of the study.

2. Description of the analytical procedure

Five fortified samples of each matrix were analyzed immediately after fortification (Day 0). Three fortified samples of each matrix were analyzed at nominal intervals of 30, 90, and 145 days. Samples spiked with BYI 08330 were analyzed for all analytes; samples spiked with BYI08330-enol were analyzed for all analytes, with the exception of BYI 08330. Analyses of samples spiked with other compounds were limited to the corresponding analytes.

Recovery and stability data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-Glc were obtained using method 00857. The residues were quantitated separately by LC/MS-MS using stable-labeled internal standards. Residues were given for all analytes separately. For samples spiked with BYI 08330, the total residues of BYI 08330 were calculated as the sum of all analytes measured in each matrix (calculated and expressed as BYI 08330 equivalents). For samples spiked with BYI08330-enol, the total residues of BYI 08330 were calculated as the sum of all analytes measured in each matrix (calculated and expressed as BYI08330-enol equivalents).

II. RESULTS AND DISCUSSION

The results of the deep freezer storage stability studies in orange juice and prunes are summarised in Table 6.1.1-17 to 6.1.1-22.

During deep freezer storage for 5 months residues of BYI 08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside in orange juice and prunes ranged between 83 and 106% (corrected with concurrent recoveries) or between 76 and 108% (normalised to day 0). Hence, residues of BYI 08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and

BYI08330-enol-glucoside in orange juice and prunes were stable (< 30% decomposition) during frozen storage for at least five months.

Table 6.1.1-17: Storage stability of residues of BYI08330 in orange juice during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI 083 30	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	97%	1%	0%	0%	1%	-
Normalized to Day 0:		100%	-	-	-	-	101%
Corrected with conc. rec0veries:		98%	1%	0%	0%	1%	99%
Mean Value:	30	72%	2%	0%	0%	0%	-
Normalized to Day 0:		74%	-	-	-	-	76%
Corrected with conc. rec0veries:		87%	2%	0%	0%	0%	89%
Mean Value:	92	87%	3%	0%	0%	0%	-
Normalized to Day 0:		90%	-	-	-	-	93%
Corrected with conc. rec0veries:		89%	2%	0%	0%	0%	91%
Mean Value:	144	92%	4%	0%	0%	0%	-
Normalized to Day 0:		95%	-	-	-	-	98%
Corrected with conc. rec0veries:		102%	4%	0%	0%	0%	106%

Table 6.1.1-18: Storage stability of residues of BYI08330-enol in orange juice during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI08330-enol equ.	BYI-08330-mono-hydroxy calc. as BYI08330-enol equ.	BYI-08330-enol-Glc calc. as BYI08330-enol equ.	Total Residue BYI08330 calc. as BYI08330-enol equ.
Mean Value:	0	90%	0%	0%	1%	-
Normalized to Day 0:		100%	-	-	-	101%
Corrected with conc. rec0veries:		91%	0%	0%	1%	92%
Mean Value:	30	91%	0%	0%	0%	
Normalized to Day 0:		101%	-	-	-	101%
Corrected with conc. rec0veries:		107%	0%	0%	0%	107%
Mean Value:	92	114%	0%	0%	0%	-
Normalized to Day 0:		127%	-	-	-	127%
Corrected with conc. rec0veries:		108%	0%	0%	0%	108%
Mean Value:	144	95%	0%	0%	0%	-
Normalized to Day 0:		105%	-	-	-	105%
Corrected with conc. rec0veries:		99%	0%	0%	0%	99%

Table 6.1.1-19: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in orange juice during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-glucoside
Mean Value:	0	88%	92%	88%
Normalized to Day 0:		100%	100%	100%
Corrected with conc. rec0veries:		96%	102%	88%
Mean Value:	30	91%	75%	71%
Normalized to Day 0:		104%	82%	80%
Corrected with conc. rec0veries:		112%	96%	92%
Mean Value:	92	115%	101%	103%
Normalized to Day 0:		132%	111%	116%
Corrected with conc. rec0veries:		109%	101%	102%
Mean Value:	144	91%	92%	90%
Normalized to Day 0:		104%	100%	102%
Corrected with conc. rec0veries:		85%	100%	103%

Table 6.1.1-20: Storage stability of residues of BYI08330 in prunes during deep freezer storage. Values are given in % recovered.

	Storage stability (days)	BYI 083 30	BYI-08330-enol calc. as BYI 08330 equ.	BYI-08330-keto-hydroxy calc. as BYI 08330 equ.	BYI-08330-mono-hydroxy calc. as BYI 08330 equ.	BYI-08330-enol-Glc calc. as BYI 08330 equ.	Total Residue BYI 08330 calc. as BYI 08330 equ.
Mean Value:	0	95%	0%	0%	0%	1%	-
Normalized to Day 0:		100%	-	-	-	-	101%
Corrected with conc. rec0veries:		97%	1%	0%	0%	1%	98%
Mean Value:	30	68%	1%	0%	0%	0%	-
Normalized to Day 0:		71%	-	-	-	-	73%
Corrected with conc. rec0veries:		74%	1%	0%	0%	0%	75%
Mean Value:	92	84%	2%	0%	0%	0%	-
Normalized to Day 0:		88%	-	-	-	-	90%
Corrected with conc. rec0veries:		83%	3%	0%	0%	0%	85%
Mean Value:	147	80%	2%	0%	0%	0%	-
Normalized to Day 0:		84%	-	-	-	-	87%
Corrected with conc. rec0veries:		85%	3%	0%	0%	0%	88%

Table 6.1.1-21: Storage stability of residues of BYI08330-enol in prunes during deep freezer storage. Values are given in % recovered.

	Storage period (days)	BYI-08330-enol	BYI-08330-keto-hydroxy calc. as BYI-08330-enol equ.	BYI-08330-mono-hydroxy calc. as BYI-08330-enol equ.	BYI-08330-enol-Glc calc. as BYI-08330-enol equ.	Total Residue BYI08330 calc. as BYI08330-enol equ.
Mean Value:	0	105%	1%	0%	1%	-
Normalized to Day 0:		100%	-	-	-	102%
Mean Value correct. with Recoveries:		108%	1%	0%	1%	110%
Mean Value:	30	93%	0%	0%	0%	-
Normalized to Day 0:		88%	-	-	-	89%
Mean Value correct. with Recoveries:		101%	0%	0%	0%	101%
Mean Value:	92	108%	0%	0%	0%	-
Normalized to Day 0:		102%	-	-	-	102%
Mean Value correct. with Recoveries:		110%	0%	0%	0%	110%
Mean Value:	144	103%	0%	0%	0%	-
Normalized to Day 0:		103%	-	-	-	103%
Mean Value correct. with Recoveries:		106%	0%	0%	0%	106%

Table 6.1.1-22: Storage stability of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside in prunes during deep freezer storage. Values are given in % recovered.

Analytes:	Storage period (days)	BYI08330-ketohydroxy	BYI08330-mono-hydroxy	BYI08330-enol-glucoside
Mean Value:	0	91%	91%	85%
Normalized to Day 0:		100%	100%	100%
Mean Value corrected with Recoveries:		107%	105%	92%
Mean Value:	30	77%	85%	85%
Normalized to Day 0:		85%	94%	100%
Mean Value corrected with Recoveries:		84%	91%	101%
Mean Value:	92	93%	84%	59%
Normalized to Day 0:		102%	92%	70%
Mean Value corrected with Recoveries:		109%	89%	79%
Mean Value:	144	89%	85%	65%
Normalized to Day 0:		108%	94%	76%
Mean Value corrected with Recoveries:		89%	87%	83%

Report:	**KIIA 6.1.1/03, [redacted] 2006**
Title:	**Storage Stability of BYI 08330 Residues in Plant Matrices of Rotational Crops**
Report No &	**MEF-06/155**
Document No	**M-271258-01-2**
Guidelines:	**EPA Ref.: OPPTS 860.1380, Storage Stability** **PMRA Ref.: DACO 7.3, Storage Stability** **EU Directive 91/414/EEC amended by Commission Directive 7032/VI/95 rev.5 (1997), Appendix H Storage Stability of Residue Samples**
GLP	**Yes**

Executive Summary

In an April 7, 2005 meeting with the US EPA, Bayer proposed to analyze field rotational crop samples for the residues of BYI08330, BYI08330-ketohydroxy, and all BYI08330 residues that can be converted by acid hydrolysis to BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, and BYI08330-ketohydroxy-alcohol. These BYI08330 residues collectively form the total toxic residue (TTR), alternatively described as the residues of concern or relevant residues in rotational crops.

The purpose of this study was to address the freezer storage stability of the BYI08330 rotational crop TTRs in wheat hay, straw, and grain; Swiss chard; and turnip leaves and roots.

In the confined rotational crop study with [azaspirodecenyl-3-^{14}C]BYI08330 (see Annex IIA, Point IIA 6.6.2/01), extracts of wheat hay, straw, and grain; Swiss chard; and turnip leaf and root samples were hydrolyzed and analyzed by radio-HPLC after 6 to 13 months of freezer storage. In this current freezer storage stability study, these matrices were again extracted after 31 to 33 months of freezer storage, and the resulting extracts were hydrolyzed and analyzed by radio-HPLC.

The recoveries for the BYI08330 rotational crop TTRs in wheat, Swiss chard and turnip leaves after 31 to 33 months of freezer storage ranged from 77% to 111%. Percent decomposition of the TTRs ranged from 0% to 24%. Therefore, the residues of BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, and their glucosides and BYI08330-ketohydroxy (measured as BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, and BYI08330-ketohydroxy after hydrolysis) were found to be stable (<30% decomposition) in wheat hay, straw, and grain; Swiss chard, and turnip leaves and roots after 31 to 33 months of freezer storage.

I. MATERIALS AND METHODS

A. MATERIALS.

Wheat hay, straw, and grain, Swiss chard, and turnip leaves and roots from the confined rotational crop study with [azaspirodecenyl-3-14C]BYI08330 (Bayer CropScience study M1301259-1; see Annex IIA, Point IIA 6.6.2/01) were used for this current freezer storage stability study. The samples were kept frozen at temperatures ≤ -18 °C from harvest until analysis. Initial analysis of the hydrolyzed extracts of the mentioned matrices were performed by radio-HPLC 6 to 13 months after harvest in the confined rotational crop study (Table 6.1.1-24). In this current freezer storage stability study, these matrices were again extracted after 31 to 33 months of freezer storage, and the resulting extracts were hydrolyzed and analyzed by radio-HPLC.

B. STUDY DESIGN

The study was conducted during the period from January 23, 2006 to May 17, 2006 by Bayer Cropscience AG located in [redacted], Germany. The experimental phase of the study began on February 1, 2006 and concluded on February 20, 2006.

1. Test procedure

Extraction of Wheat Hay, Swiss Chard, Turnip Leaves, and Turnip Roots:

An aliquot of the wheat hay, Swiss chard, turnip leaves, or turnip root sample was extracted two times using a mixture of acetonitrile/water (ACN/H2O; 80/20; v/v) and once with ACN. The suspension was filtered by suction after each extraction step. The extracts were combined, and aliquots of the combined extract were measured for radioactivity using a liquid scintillation counter (LSC). The extracted solids were air-dried, and aliquots were combusted and measured for radioactivity by LSC.

Extraction of Wheat Straw and Grain:

An aliquot of the homogenized straw or grain sample was mixed with water, and the sample was allowed to soak for approximately 1 hour. An equal volume of ACN was added, and the sample was blended using a Polytron homogenizer. The extraction was repeated two additional times with ACN/H2O (80/20, v/v) and once with ACN. The suspension was filtered by suction after each extraction step. The extracts were combined, and aliquots of the combined extract were measured for radioactivity using a liquid scintillation counter (LSC). The extracted solids were air-dried and aliquots were combusted and measured for radioactivity by LSC.

Hydrolysis of Samples with 1N HCl:

The combined acetonitrile/water and ACN extracts was concentrated to an aqueous remainder, small amounts of Dobanol were added, and the sample was adjusted to a defined volume with water. Aqueous HCl solution was added to an aliquot of this concentrated sample, and the sample was heated at reflux for 1 hour.

Sample Analysis

Aliquots of the acid hydrolyzates were analyzed by high performance liquid chromatography (HPLC). The analytes were detected and quantitated with a radiodetector.

II. RESULTS AND DISCUSSIONS

Storage stability experiments which were conducted during the confined rotational crop study confirmed the stability of non-hydrolyzed BYI08330 residues in the RACs after 11 months to 15 months of freezer storage (Bayer CropScience study M1301259-1; see Annex IIA, Point IIA 6.6.2/01). Initial profiles of hydrolyzed samples were determined between 6 and 13 months after harvest. In this current freezer storage stability study, all stored RACs (except wheat forage) were re-extracted and the extracts were hydrolyzed and analyzed after 31 to 33 months of freezer storage (Table 6.1.1-23).

The recoveries of the TTRs (ppm or mg/kg and percent) are presented in Tables 6.1.1-24 through 6.1.1-29 and the percent recoveries and decomposition of the TTRs are summarized in Table 6.1.1-30. Recoveries of the TTRs after storage ranged between 77% and 111% for the different RACs. The percent decomposition was 3% in wheat hay, 24% in wheat straw, 21% in wheat grain, 8% in Swiss chard, 0% in turnip leaves, and 23% in turnip roots.

The results from this study showed that the BYI08330-derived regulatory residues of concern (BYI08330 residues that can be converted to, and measured as BYI08330-ketohydroxy-alcohol, BYI08330-ketohydroxy, BYI08330-desmethyl-ketohydroxy and BYI08330-desmethyl-di-hydroxy after hydrolysis) or TTRs were stable (<30% decomposition) during freezer storage for at least 31 months (924 days) in wheat hay, in wheat straw, in wheat grain, in Swiss chard, in turnip leaves, and in turnip roots.

Table 6.1.1-23 Dates of Analysis and Freezer Storage Intervals.

Matrix (RAC)	Harvest Date	Dates and Intervals for Initial (CRC) Analysis[a]		Dates and Intervals for Final Analysis	
		Analysis Dates	Storage Interval (Months)	Analysis Date	Longest Interval of Demonstrated Storage Stability [Months]
Wheat Hay	2003-06-23	2004-01-20	7	2006-02-09	32
Wheat Straw	2003-07-30	2004-01-16	6	2006-02-08	31
wheat Grain	2003-07-30	2004-08-17	13	2006-02-15	31
Swiss Chard	2003-06-04	2004-01-19	8	2006-02-07	33
Turnip Leaves	2003-06-24	2004-01-20	7	2006-02-07	32
Turnip Roots	2003-06-24	2004-02-16	10	2006-02-03	32

[a]First extraction, hydrolysis, and analysis of samples were performed in the confined rotational crop study with [azaspirodecenyl-3-^{14}C] BYI08330 (see Annex IIA, Point IIA 6.6.2/01).

Table 6.1.1-24 Recoveries of the relevant residue (TTR) from wheat hay after 32 months (962 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	92.1	0.330	100.0	93.6	0.360
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	14.3	13.2	0.047	15.0	14.1	0.054
BYI08330-ketohydroxy-alcohol	15.1	13.9	0.050	17.4	16.3	0.062
BYI08330-desmethyl-ketohydroxy	34.6	31.9	0.114	28.8	27.0	0.104
BYI08330-ketohydroxy	7.2	6.7	0.024	6.6	6.1	0.024
TTR (relevant residue)	**71.3**	**65.6**	**0.235**	**67.8**	**63.4**	**0.244**
% of TTR recovered						**96.6%**
% of TTR recovered (norm.)						**105.2%**

mg/kg = mg/kg parent equivalents

[a]Data were obtained from confined rotational crop study with [azaspirodecenyl-3-^{14}C]BYI08330 (see Annex IIA, Point IIA 6.6.2/01).

Table 6.1.1-25 Recoveries of the relevant residue (TTR) from wheat straw after 31 months (924 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	92.3	0.749	100.0	93.7	0.987
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	27.8	25.7	0.208	27.3	25.5	0.269
BYI08330-ketohydroxy-alcohol	14.8	13.7	0.111	14.3	13.4	0.142
BYI08330-desmethyl-ketohydroxy	32.4	29.9	0.242	32.4	30.4	0.320
BYI08330-ketohydroxy	5.4	5.0	0.040	5.7	5.3	0.056
TTR (relevant residue)	**80.4**	74.2	**0.602**	**79.7**	74.7	**0.787**
% of TTR recovered						**76.5%**
% of TTR recovered (norm.)						**100.8%**

Table 6.1.1-26 Recoveries of the relevant residue (TTR) from wheat grain after 31 months (929 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	92.3	0.749	100.0	50.1	0.013
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	14.7	6.9	0.002	17.7	8.9	0.002
BYI08330-ketohydroxy-alcohol	6.3	2.9	0.001	7.9	4.0	0.001
BYI08330-desmethyl-ketohydroxy	5.6	2.6	0.001	6.9	3.5	0.001
BYI08330-ketohydroxy	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
TTR (relevant residue)	**26.6**	12.4	**0.003**	**32.6**	16.3	**0.004**
% of TTR recovered						**78.9%**
% of TTR recovered (norm.)						**81.7%**

mg/kg = mg/ kg parent equivalents

[a]Data were obtained from confined rotational crop study with [azaspirodecenyl-3-^{14}C] BYI08330 (see Annex IIA, Point IIA 6.6.2/01).

Table 6.1.1-27 Recoveries of the relevant residue (TTR) from Swiss chard after 32 months (974 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	93.2	0.065	100.0	91.3	0.071
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	7.0	6.6	0.005	8.4	7.7	0.006
BYI08330-ketohydroxy-alcohol	5.4	5.1	0.004	6.4	5.8	0.005
BYI08330-desmethyl-ketohydroxy	25.4	23.7	0.016	22.7	20.7	0.016
BYI08330-ketohydroxy	22.1	20.6	0.014	21.9	20.0	0.016
TTR (relevant residue)	**60.0**	**55.9**	**0.039**	**59.5**	**54.3**	**0.042**
% of TTR recovered						**92.0%**
% of TTR recovered (norm.)						**100.8%**

Table 6.1.1-28 Recoveries of the relevant residue (TTR) from turnip leaves after 32 months (953 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	97.4	0.138	100.0	97.1	0.120
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	4.6	4.4	0.006	4.4	4.2	0.005
BYI08330-ketohydroxy-alcohol	22.4	21.8	0.031	23.9	23.2	0.029
BYI08330-desmethyl-ketohydroxy	4.6	4.5	0.006	4.7	4.5	0.006
BYI08330-ketohydroxy	1.8	1.8	0.003	1.7	1.7	0.002
TTR (relevant residue)	**33.5**	32.6	**0.046**	**34.6**	33.6	**0.041**
% of TTR recovered						**111.3%**
% of TTR recovered (norm.)						**96.6%**

mg/kg = mg/ kg parent equivalents

[a]Data were obtained from confined rotational crop study with [azaspirodecenyl-3-^{14}C] BYI08330 (see Annex IIA, Point IIA 6.6.2/01).

Table 6.1.1-29 Recoveries of the relevant residue (TTR) from turnip roots after 32 months (953 days) of freezer storage.

	Storage stability study			CRC study[a]		
	% of inj. RA	% of TRR	mg/kg	% of inj. RA	% of TRR	mg/kg
RA in hydrolysed extracts (= extracted radioactivity)	100.0	84.3	0.016	100.0	77.9	0.017
compounds representing the TTR						
BYI08330-desmethyl-di-hydroxy	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
BYI08330-ketohydroxy-alcohol	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
BYI08330-desmethyl-ketohydroxy	8.1	6.8	0.001	7.3	5.7	<0.001
BYI08330-ketohydroxy	21.3	17.9	0.003	28.9	22.5	0.005
TTR (relevant residue)	**29.3**	**24.7**	**0.005**	**36.2**	**28.2**	**0.006**
% of TTR recovered						**77.4%**
% of TTR recovered (norm.)						**81.0%**

mg/kg = mg/kg a.i. equivalents

[a]Data were obtained from confined rotational crop study with [azaspirodecenyl-3-^{14}C] BYI08330 (see Annex IIA, Point IIA 6.6.2/01).

Table 6.1.1-30 Summary of freezer storage stability data for the total toxic residues of BYI08330 in confined rotational crop matrices

Matrix (RAC)	Storage period		% Recovery	% Decomposition
	days	months		
Wheat Hay	962	32	96.6	3.4
Wheat Straw	924	31	76.5	23.5
wheat Grain	929	31	78.9	21.1
Swiss Chard	974	33	92.0	8.0
Turnip Leaves	953	32	111.3	0[a]
Turnip Roots	953	32	77.4	22.6

[a]Percent decomposition due to recovery values above 100% were reported as zero.

CONCLUSIONS FROM THE STORAGE STABILITY STUDIES

The maximum storage periods for samples of target crops from European residue trials at deep frozen state are given in Table 6.1.1-31. All samples from field trails were analyzed within the storage period of the freezer storage stability study of 18 month. The total residue of BYI08330 was shown to be stable in deep frozen state for at least 18 months.
The storage period of samples from US residue trials is given in the respective chapters in IIA 6.3.1.2. For some samples the storage period tested in the storage stability studies is exceeded. The storage stability reports are interim reports. The storage stability study is continued until the storage period of 24 months is reached. The final report will be submitted when available.

Rotational crop residues were shown to be stable for at least 31 months. All samples from limited field rotational crops were analysed within this storage period.

Table 6.1.1-31 Maximum storage period for samples from European residue trials and their processed commodities

Crop	Maximum storage period (days)	Crop	Maximum storage period (days)
Citrus	296	Cucumber	412
Lettuce	78	Melon	455
Pome fruit	278	Flowering brassica	283
Apricot/peach	267	Brussels sprouts	193
Plum	207	Head cabbage	269
Cherry	365	Leafy brassica	232
Grape	249	Kohlrabi	463
Strawberry	302	Bean	453
Onion	470	Potato	246
Tomato	427	Hop cone	366
Pepper	205		

IIA 6.1.2 Stability of residues in samples extracts

The storage stability of residues of BYI08330 in extracts was tested during development of the analytical methods. Since the validity of the methods depends on factors, such as reproducibility and the possibility for interruption during the work up process, it has to be concluded that the stability during possible storage of samples in extracts is always guarantied. Additionally, when conductiong residue analysis on regular samples, the whole analytical procedure is routinely monitored by performing concurrent recoveries with each sample set.

With respect to BYI08330 and its metabolites, the stability of the compounds was determined for representative extracts at the lOQ and the 10-fold LOQ (IIA 4.3). BYI08330 and its metabolites were shown to be stable in extracts stored at 4°C ± 3°C for at least 2 weeks.

IIA 6.2 Metabolism, distribution and expression of residues.

IIA 6.2.1 Plants

IIA 6.2.1.1 Metabolism, distribution and expression of residues in apples

Report:	**IIA 6.2.1/01, [redacted] and [redacted]. 2005 (MEF-028/04)**
Title:	**Metabolism of [Azaspirodecenyl-3-^{14}C] BYI08330 in Apple after Spray Application**
Report No & Document No	**MEF-028/04 Date: January 25, 2005** **MO-05-002993, M-244824-01-2**
Guidelines	**US EPA Residue Chemistry Test Guideline OPPTS 860.1300: Nature of the Residue – Plants, Livestock** **PMRA Ref.: DACO 6.3 – Plant Study** **Japanese MAFF, 12 Nousan 8147** **EU Council Directive 91/414/EEC amended by the Commission directive 96/68/EC.**
GLP	**Fully GLP compliant - laboratory certified by German "Ministerium für Umwelt, Raumordnung und Landwirtschaft des Landes Nordrhein-Westfalen".**
Testing Laboratory and Dates	**Bayer CropScience AG, Metabolism and Environmental Fate, D-[redacted], GER, conducted the study during the period of May 23, 2003 to January 25, 2005** **Experimental phase: June 4, 2003 to July 5, 2004**

Executive Summary

The metabolism of BYI08330 was investigated in apple (fruits and leaves) following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 as an oil dispersion (OD 100) formulation at a target rate of 576 g a.s./ha/application with 20 days between applications. The actual total application rate was 1100 g a.s./ha. Mature apple fruit and leaves were collected at 63 days following the final application.

The total radioactive residues (TRRs, expressed as parent equivalents) levels amounted to 0.61 ppm in apple fruit and 36.63 ppm in apple leaves.

The unchanged BYI08330 was the predominant residue in apple fruits (51.3% of the TRR) and leaves (72.0% of the TRR). Hydrolysis of BYI08330 followed by reduction of the double bond of the pyrroline moiety led to the formation of the two major metabolites, BYI08330-enol (leaves) and BYI08330-mono-hydroxy (fruits) which represented 11.6% to 15.6% of the TRRs in the fruits and leaves. Demethylation of

BYI08330-enol followed by hydroxylation and conjugation gave BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy and its glucoside as minor metabolic products. The remaining minor metabolites were BYI08330-enol-glucoside from conjugation of BYI08330-enol, BYI08330-ketohydroxy and BYI08330-di-hydroxy from oxidation/hydrolysis of BYI08330-enol, and BYI08330-ketohydroxy-formiate-glucoside from oxidation of the *O*-methyl moiety of BYI08330-ketohydroxy and conjugation with glucose

A total of 94.6% to 98.0% of the TRRs in the fruits and leaves were extractable, 91.9% to 94.6% of the TRRs in the apple fruit and leaves were identified and additional 6.0% of the residues in the fruits were characterized by partition and chromatographic behaviors.

Qualitatively, the residues found in the apple fruits and leaves were similar to the residues found in the metabolism studies performed in lettuce and potatoes with minor differences.

I. MATERIALS AND METHODS

A. MATERIALS

1. Test Material:

BYI08330:	[Azaspirodecenyl-3-^{14}C] BYI08330
Purity:	radiochemical purity > 99%
Specific Activity:	3.71 MBq/mg (100.2 µCi/mg)
CAS #:	203313-25-1

2. Soil: A [redacted] (Germany) loamy sand was used.

Table 6.2.1.1-1 Soil Physicochemical Properties

Soil Series	Soil Type	pH	OM %	Sand %	Silt %	Clay %	Moisture holding capacity (at 1/3 bar)	CEC meg / 100g
[redacted] 3	Loamy Sand	6.5	ca 2.4	57.35	32.95	9.70	n.a.[a]	10

[a] n.a. = data not available

B. STUDY DESIGN

The study was conducted during the period from May 23, 2003 to January 25, 2005 by Bayer CropScience AG located in [redacted], Germany. The experimental phase of the study began on June 9, 2003 and concluded on July 5, 2004.

1. Experimental conditions

The metabolism of [azaspirodecenyl-3-^{14}C] BYI08330 was investigated in apples (variety: Elstar) cultivated in a planting container with a surface area of approximately 0.9 m^2. The apples trees were maintained in a vegetation area that allowed plant growth under natural sunlight and temperatures.

Two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion (100 OD) were applied to two apple trees at a target rate of 576 g a.s./ha/application with 20 days between the two applications. The actual total application rate was 1100 g a.s./ha (approximately 2.5X the recommended field use rates). The first application occurred on June 6, 2003 at BBCH growth stage 69 (after fruit setting) and the second application occurred 20 days later at BBCH growth stage 71 (fruit fall after flowering).

2. Sampling

Mature apple fruits and leaves were collected 63 days after the final treatment.

II. RESULTS AND DISCUSSION

A. TOTAL RADIOACTIVE RESIDUES (TRRs)

Following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to apple trees at a total application rate of 1100 g as/ha with 20 days between applications, the total radioactive residues (TRRs) found in apple fruits and leaves collected at 63 days after the final application were 0.61 ppm and 36.63 ppm, respectively (Table 6.2.1.1-2).

Table 6.2.1.1-2 Total radioactive residues (TRRs) in apple fruits and leaves following two foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to apple trees at a total application rate of 1100 g a.s./ha.

	TRRs (ppm) in treated apple fruits and leaves	
	Apple Fruit	Apple Leaves
Combined Extracts	0.60	34.65
Extracted Solids	0.01	1.97
Total	0.61	36.63

B. EXTRACTION, CHARACTERIZATION, AND IDENTIFIACTION OF RESIDUES.

The extractability of ^{14}C residue in apple fruits and leaves is shown in Table 6.2.1.1-3.

Table 6.2.1.1-3 Extraction efficiency for residues of [azaspirodecenyl-3-^{14}C] BYI08330 in apple fruits and leaves.

Extractability of radioactive residues in apple fruits and leaves				
	Apple Fruit		Apple Leaves	
	% TRR	ppm	% TRR	ppm
Dichloromethane (Surface Wash)	48.5	0.30	n.a.[a]	n.a.[a]
ACN/Water extract	49.5	0.31	94.6	34.65
Extracted Solids	2.1	0.01	5.4	1.97
Total	100	0.61	100	36.63

[a]n.a = not applicable

1. Extraction and characterization of residues in apple fruit.

Whole apple fruits were washed with dichloromethane, and the surface wash was analyzed by liquid scintillation counting (LSC). The extract was concentrated and analyzed by high performance liquid chromatography (HPLC).

The solvent-washed apple fruits were homogenized, and an aliquot of the homogenized sample was extracted three times with ACN/water (4:1, v/v). The extracts were radioassayed by liquid scintillation counting (LSC), combined, concentrated to an aqueous remainder, and analyzed by HPLC.

The surface wash yielded 48.5% (0.030 ppm) of the residues in/on the apple fruits. Extraction of the solvent-washed apple fruits with ACN/water (4:1, v/v) solubilized 49.5% of the TRR (0.31 ppm) in the fruit (Table 6.2.1.1-3). Fractionation of the combined ACN/water between dichloromethane and water resulted in 32.2% (0.20 ppm) of the TRR in the dichloromethane phase and 17.3% (0.11 ppm) of the TRR in the aqueous phase. The extracted solids contained only 2.1% (0.01 ppm) of the TRR in apple fruits.

2. Extraction and characterization of residues in apple leaves.

An aliquot of the homogenized leave sample was extracted three times with ACN/water (4:1, v/v). The extracts were radioassayed, combined, and concentrated to the aqueous remainder. The aqueous remainder was partitioned against dichloromethane, and the organic and aqueous phases were radioassayed by LSC, concentrated, and analyzed by HPLC.

Extraction of the apple leaves with ACN/water yielded 94.6% of the TRR in the extracts with only 5.4% of the TRR in the remaining in the extracted solids (Table 6.2.1.1-3). Partition of the combined ACN/water extracts resulted in 88.2% (32.32 ppm) of the TRR in the dichloromethane phase and 6.4% (2.33 ppm) of the TRR in the aqueous phase.

3. Storage stability of residues

The HPLC chromatograms which were used for the identification and quantitation of residues in apple fruits and leaves were recorded within 14 days after harvest. No additional extraction and analysis was performed beyond 14 days after harvest. In accordance with the regulatory guidelines, storage stability data should not be required for samples analyzed within 4 to 6 months of collection.

4. Identity of residues in/on apple fruits

Extraction of the apple fruits and analysis of the extracts by HPLC showed two major components and ten minor components representing 1.2% to 51.3% of the TRR in the apple fruits (Tables 6.2.1.1-4 and 6.2.1.1-5).

The surface wash of apple fruits contained only the unchanged BYI08330 (48.5%, 0.30 ppm of the TRR) which was identified by co-chromatography with an authentic reference compound using HPLC and (thin-layer chromatography) TLC. ACN/water extract of the surface washed-apple fruits afforded an additional 2.8% of the TRR (0.02 ppm) as BYI08330.

A second major metabolite representing 15.6% (0.10 ppm) of the TRR in apple fruits was isolated from the dichloromethane phase and was identified as BYI08330-mono-hydroxy by ^{1}H-NMR spectroscopy, FT-MS, HPLC-MS/MS, and co-chromatography with an authentic reference standard.

Minor metabolites found in apple fruits were BYI08330-ketohydroxy (7.7%, 0.05 ppm of the TRR); BYI08330-enol-glucoside (5.1%, 0.03 ppm); BYI08330-di-hydroxy (4.4%, 0.03 ppm of the TRR); BYI08330-desmethyl-ketohydroxy (3.8%; of the TRR, 0.02 ppm); BYI08330-enol (2.1%, 0.01 ppm of the TRR); and isomers of BYI08330-desmethyl-ketohydroxy-glucoside (1.9% of the TRR in fruit, 0.01 ppm). These minor metabolites were identified by HPLC-MS/MS and/or co-chromatography with authentic reference compounds.

Four minor metabolites, each representing ≤2.2% of the TRR (≤0.01 mg /kg), were characterized by their retention times in reversed phase HPLC and susceptibility to hydrolytic cleavage.

A total of 91.9% of the TRR in apple fruits was identified, an additional 6.0% of the TRR was characterized, and the remaining 2.1% of the TRR was unextractable.

5. Identity of residues in/on apple leaves.

Extraction of the apple leaves and analysis of the extracts by HPLC showed two major and three minor components representing 3.0% to 72.0% of the TRR in the apple leaves (Tables 6.2.1.1-4 and 6.2.1.1-5).

As was found in apple fruit, the parent compound BYI08330 (72.0% of the TRR, 26.37 ppm) was the predominant residue in apple leaves and was identified by co-chromatography with an authentic reference standard using HPLC and TLC.

BYI08330-enol, 11.6% of the TRR (4.26 ppm) and BYI08330-ketohydroxy, 3.0% of the TRR (1.09 ppm) in apple leaves were also identified by co-chromatography with the respective authentic reference standards using HPLC and TLC.

Two isomers of BYI08330-desmethyl-ketohydroxy-glucoside and BYI08330-ketohydroxy-formiate-glucoside, collectively representing 8.0% of the TRR (2.92 ppm) in apple leaves, were identified by ^{1}H-NMR and/or mass spectrometry.

A total of 94.6% of the TRR in apple leaves was identified and 5.4% of the TRR was unextractable.

6. Development of analytical procedures

Analytical procedures developed in the course of the study were used as the basis for the development of the method for the determination of BYI08330 residues in apple matrices. The analytical method has been confirmed by a radiovalidation study which has been conducted to verify that aged BYI08330 residues can be adequately extracted from plant matrices.

7. Proposed degradation pathway

The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in apples is shown in Figure 6.2.1.1-1. Following the initial hydrolysis of the ethyl carbonate group of BYI08330 to form BYI08330-enol, the following metabolic processes were observed:

Oxidation of the pyrroline moiety forming BYI08330-ketohydroxy and reduction to form BYI08330-di-hydroxy.
Reduction of the double bond in the pyrroline moiety of BYI08330-enol to give BYI08330-mono-hydroxy followed by hydroxylation to BYI08330-di-hydroxy.
Demethylation of the methoxy group and oxidation of the pyrroline moiety leading to the formation of BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy.
Oxidation of the methoxy group to BYI08330-ketohydroxy-formiate (isolated as the glucoside conjugate).
Conjugation of BYI08330-enol, BYI08330-desmethyl-ketohydroxy, and BYI08330-ketohydroxy-formate with glucose.

III. CONCLUSIONS

Following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion to apple trees at a target application rate of 576 g. a.s./ha/application, the TRRs found in apple fruits and leaves collected at 63 days after the final application were 0.61 ppm and 36.63 ppm, respectively. Extractability of residues ranged from 94.6% to 98.0% of the TRRs in the fruits and leaves; 91.9% to 94.6% of the TRRs were identified, and 2.1% to 5.4% of the TRRs were unextractable. Additional 6.0% of the residues in the fruits were characterized by partition and chromatographic behaviours.

The unchanged BYI08330 was the predominant residue in apple fruits (51.3% of the TRR) and leaves (72.0% of the TRR). Hydrolysis of BYI08330 followed by reduction of the double bond of the pyrroline moiety led to the formation of the two major metabolites, BYI08330-enol (leaves) and BYI08330-mono-hydroxy (fruits) which represented 11.6% to 15.6% of the TRRs in the fruits and leaves. Demethylation of BYI08330-enol followed by oxidation and conjugation gave BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy and its glucoside as minor metabolic products. The remaining minor metabolites were BYI08330-enol-glucoside from conjugation of BYI08330-enol, BYI08330-ketohydroxy and BYI08330-di-hydroxy from oxidation of BYI08330-enol, and BYI08330-ketohydroxy-formiate-glucoside from oxidation of the *O*-methyl moiety of BYI08330-ketohydroxy and conjugation with glucose.

Qualitatively, the residues found in the apple fruits and leaves were similar to the residues found in the metabolism studies performed in lettuce and potatoes with minor differences. Based on the metabolic profiles of BYI08330 in apples, cotton, lettuce, and potato, BYI08330, BYI08330-enol and its glucoside, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy are the significant BYI08330 residues for data collection and dietary risk assessment. The metabolic profile of BYI08330 in apples validates the selection of the BYI08330 crop residues for the analytical method and risk assessment.

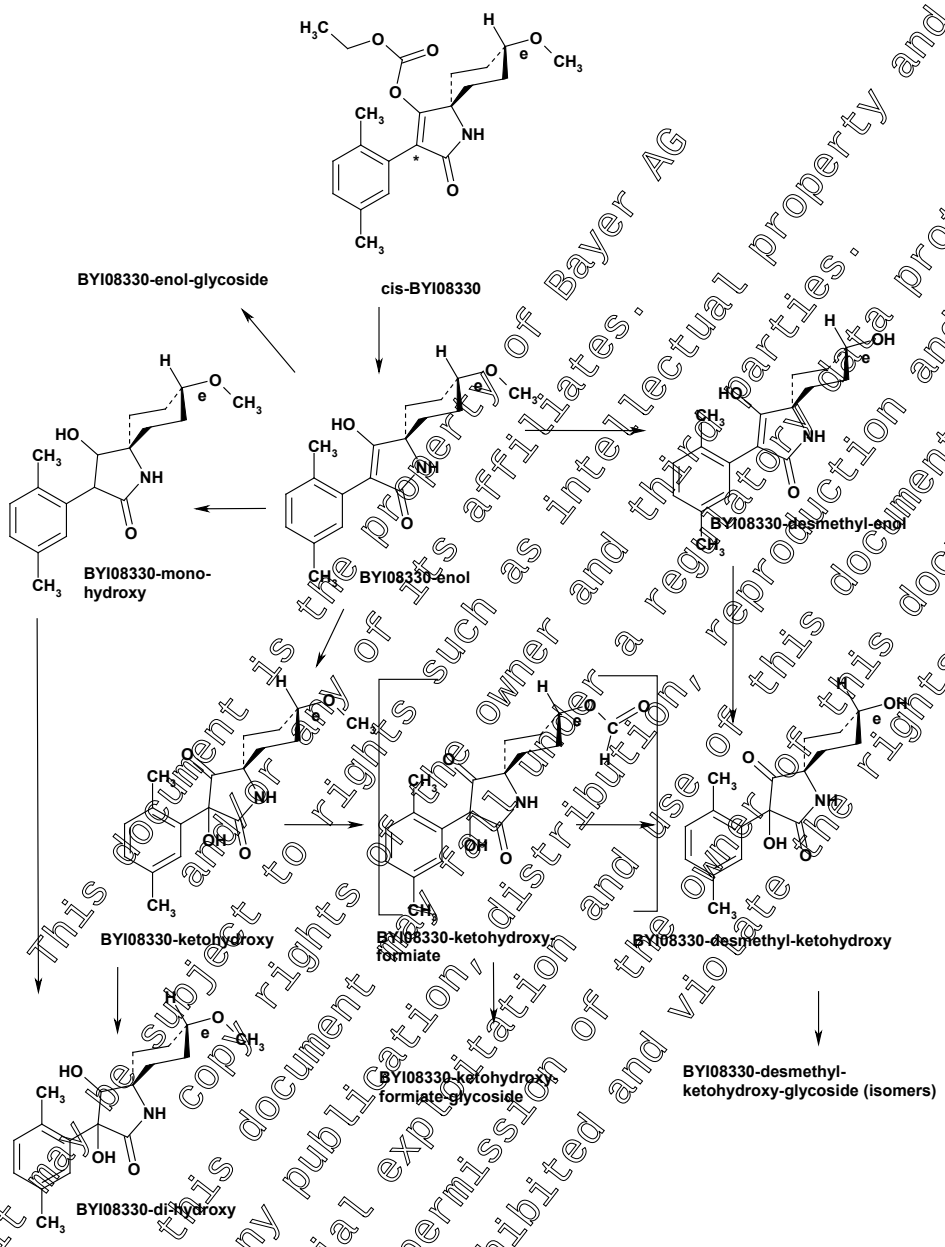
Table 6.2.1.1-4 Distribution of residues in apple fruit and leaves following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 100 OD.

	Apple Fruits		Apple Leaves	
	(TRR = 0.61 ppm)		(TRR = 36.63 ppm)	
Fraction/Component	%TRR	ppm	%TRR	ppm
organosoluble (surface wash**)**	**48.5**	**0.30**	**n.a.**	**n.a.**
parent compound BYI08330	48.5	0.30	n.d.	n.d.
soluble (ACN/water phase)	**49.5**	**0.31**	**94.6**	**34.65**
parent compound BYI08330	2.8	0.02	72.0	26.37
BYI08330-ketohydroxy	7.7	0.05	3.0	1.09
BYI08330-enol	2.1	0.01	11.6	4.26
BYI08330-mono-hydroxy	15.6	0.10	n.d.	n.d.
BYI08330-desmethyl-ketohydroxy	3.8	0.02	n.d.	n.d.
BYI08330-di-hydroxy	4.4	0.03	n.d.	n.d.
BYI08330-desmethyl-ketohydroxy-glycoside (isomers), in leaves also + BYI08330-ketohydroxy-formate-glycoside	1.9	0.01	8.0	2.92
BYI08330-enol-glycoside	5.1	0.03	n.d.	n.d.
Unidentified compound Reg A1	1.4	0.01	n.d.	n.d.
Unidentified compound Reg A3	2.2	0.01	n.d.	n.d.
Unidentified compound Reg A4	1.2	0.01	n.d.	n.d.
Unidentified compound Reg A5	1.2	0.01	n.d.	n.d.
Total extractable (Surface wash + ACN/water extract)	98.0	0.60	94.6	34.65
Total identified	91.9	0.57	94.6	34.65
Total characterized (HPLC retention time)	6.0	0.04	n.d.	n.d.
Total bound residues (PES, solids 1)	**2.1**	**0.01**	**5.4**	**1.97**
% Accountability Total (ppm)/TRR (ppm) * 100	**100.0**	**0.61**	**100.0**	**36.63**

Table 6.2.1.1-5 Summary of characterization and identification of radioactive residues in apple fruit and leaves following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 100 OD.

Component	Apple Fruits		Apple Leaves	
	% TRR	ppm	% TRR	ppm
BYI08330	51.3	0.32	72.0	26.37
BYI08330-ketohydroxy	7.7	0.05	3.0	1.09
BYI08330-enol	2.1	0.01	11.6	4.26
BYI08330-mono-hydroxy	15.6	0.10	n.d.	n.d.
BYI08330-desmethyl-ketohydroxy	3.8	0.02	n.d.	n.d.
BYI08330-di-hydroxy	4.4	0.03	n.d.	n.d.
BYI08330-desmethyl-ketohydroxy-glycoside (isomers) + BYI08330-ketohydroxy-formate-glycoside	1.9	0.01	8.0	2.92
BYI08330-enol-glycoside	5.1	0.03	n.d.	n.d.
Total identified	91.9	0.57	94.6	34.65
Total characterized	6.0	0.04	n.d.	n.d.
Total extractable	98.0	0.60	94.6	34.65
Total bound (PES, solids 1)	2.1	0.01	5.4	1.97
Accountability	100.0	0.61	100.0	36.63

Figure 6.2.1.1-1 Proposed metabolic pathways of [azaspirodecenyl-3-^{14}C] BYI08330 in apples.



IIA 6.2.1.2 Metabolism, distribution and expression of residues in cotton.

Report:	**IIA 6.2.1/02, [redacted] 2006. (MEF-236/04)**
Title:	**Metabolism of [Azaspirodecenyl-3-^{14}C] BYI08330 in Cotton after Spray Application**
Report No & Document No	**MEF-236/04** **Date: March 03, 2006** **M-269105-01-2** **US EPA Residue Chemistry Test Guideline OPPTS 860.1300: Nature of the Residue – Plants, Livestock** **PMRA Ref.: DACO 6.3 – Plant Study** **Japanese MAFF, 12 Nousan 8147** **EU Council Directive 91/414/EEC amended by the Commission directive 96/68/EC.**
GLP	**Fully GLP compliant - laboratory certified by German "Ministerium für Umwelt, Raumordnung und Landwirtschaft des Landes Nordrhein-Westfalen".**
Testing Laboratory and Dates	**Bayer CropScience AG, Metabolism and Environmental Fate, D-[redacted], GER, conducted the study during the period of April 17, 2003 and March 3, 2006** **Experimental phase: May 14, 2003 to September 7, 2005**

Executive Summary

The metabolism of BYI08330 was investigated in cotton (gin trash, lint, and undelinted seeds) following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as a suspension concentrate (240 SC) at target application rates of 96 g a.s./ha and 216 g a.s./ha for the first and second applications, respectively, with 134 days between applications. The actual total application rate was 264 g a.s./ha. One immature/intermediate cotton plant sample was harvested at 19 days after the first application. Gin trash, lint, and undelinted seeds were collected at 39 days following the final application.

Total radioactive residue (TRR, expressed as parent equivalents) levels amounted to 2.381 ppm in the immature/intermediate sample, 1.614 ppm in gin trash, 1.078 ppm in lint, and 0.119 ppm in undelinted seed.

One major residue, BYI08330 (46.95% of the TRR, 1.117 ppm) and 13 minor metabolites ranging from 0.18% to 9.76% of the TRR (0.004 ppm to 0.232 ppm) were found in the immature or intermediate cotton plant.

The major residues found in the cotton gin trash were BYI08330-ketohydroxy (29.7% of the TRR, 0.478 ppm); BYI08330 (19.8% of the TRR; 0.319 ppm); and BYI08330-enol (12.1% of the TRR, 0.196 ppm).

The major residues found in the cotton lint were BYI08330 (32.3% of the TRR; 0.348 ppm); BYI08330-mandelic acid amide (11.9% of the TRR, 0.128 ppm); and BYI08330-ketohydroxy (10.5% of the TRR, 0.113 ppm). The major residue found in the cotton undelinted seeds was BYI08330-enol (39.8% of the TRR, 0.047 ppm). Ten metabolites representing 0.6% to 4.4% of the TRRs (0.003 to 0.064 ppm) were also identified in the gin trash, lint, and undelinted seeds.

As was found in apples, lettuce, and potato, the first (and major) metabolic step for BYI08330 in cotton involved the hydrolysis of the ethyl carbonate group of BYI08330 to form BYI08330-enol. Oxidation of the pyrroline moiety of BYI08330-enol led to the formation of BYI08330-ketohydroxy. Cleavage of the pyrroline ring of BYI08330-ketohydroxy followed by decarboxylation and hydrolysis yielded BYI08330-MA-amide, BYI08330-olefin, BYI08330-mandelic acid amide, and BYI08330-mandelic acid. Demethylation of the cyclohexyl methoxy group of BYI08330-enol and BYI08330-ketohydroxy and conjugation led to the formation of BYI08330-desmethyl-ketohydroxy and its glucoside and BYI08330-desmethyl-enol-glucoside. Other minor metabolic reactions involved ring closure of BYI08330-MA-amide to form a morpholine ring and conjugation of BYI08330-enol with glucose.

I. MATERIALS AND METHODS

A. MATERIALS

1. **Test Material:** BYI08330 [Azaspirodecenyl-3-^{14}C] BYI08330
   Purity: radiochemical purity = 98%
   Specific Activity: 3.67 MBq/mg (99.1 µCi/mg)
   CAS #: 1203313-25-1

B. STUDY DESIGN

The study was conducted during the period between April 17, 2003 and March 3, 2006 by Bayer CropScience AG located in [redacted], Germany. The experimental phase of the study began on May 14, 2003 and concluded on November 7, 2005.

1. Experimental conditions

The metabolism of [azaspirodecenyl-3-^{14}C] BYI08330 was investigated in cotton (variety: [redacted] 315) cultivated in planting pots with a volume of 25 L and a surface area of approximately 0.08 m^2. The cotton plants were grown under artificial light in a greenhouse.

Two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as a suspension concentrate (240 SC) were applied to cotton plants at at target application rates of 96 g a.s./ha and 216 g a.s./ha for the first and second applications with 134 days between applications. The actual total application rate was 264 g a.s./ha. The total rate applied represented 0.85X the recommended maximum seasonal field use rate. The first application occurred on May 14, 2003 at BBCH growth stage 15 (5th true leaf unfolded) and the second application occurred 134 days later at BBCH growth stage 85 (about 50% of the bolls open).

In a separate experiment, one application of [azaspirodecenyl-3-^{14}C] BYI08330 100 OD was made to two cotton plants at a rate of 220 g a.s./ha.

2. Sampling

One immature cotton plant was harvested at 19 days (BBCH growth stage 25; five vegetative side shoots visible) after the first application. Gin trash, lint, and undelinted seed samples were collected from the remaining six cotton plants at 39 days (BBCH growth stages 96 to 99; about 60% of leaves discoloured or fallen to harvested product) after the final treatment.

II. RESULTS AND DISCUSSION

A. TOTAL RADIOACTIVE RESIDUES (TRRs)

The total radioactive residues in the immature cotton plants, gin trash, lint, and undelinted seed samples were determined by summing the residues in the extracts and the extracted solids. Following two foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to cotton plants at a total application rate of 264g a.s./ha, the total radioactive residues (TRRs) found in immature cotton plants collected at 19 days after the first application was 2.381 ppm. The TRRs found in gin trash, lint, and undelinted cotton seeds samples collected at 39 days after the final application were 1.614 ppm, 1.078 ppm, and 0.119 ppm, respectively (Table 6.2.1.2-1).

Table 6.2.1.2-1 Total radioactive residues (TRRs) in cotton samples following foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to cotton plants at a total application rate of 264 g a.s./ha.

	TRRS (PPM) IN COTTON MATRICES		
Commodity	**Extracts**	**Extracted Solids**	**Total**
Immature Plant (Intermediate Sample)	2.002	0.379	2.381
Gin Trash	1.430	0.184	1.614
Lint	0.997	0.080	1.078
Undelinted Seed	0.096	0.023	0.119

B. EXTRACTION AND CHARACTERIZATION OF RESIDUES

The extractability of ^{14}C residue in cotton immature plants, gin trash, undelinted seeds, and lint is shown in Table 6.2.1.2-2.

Table 6.2.1.2-2 Extraction efficiency for residues of [azaspirodecenyl-3-^{14}C] BYI08330 in immature cotton, gin trash, lint, and undelinted seeds.

EXTRACTABILITY OF RADIOACTIVE RESIDUES IN IMMATURE COTTON, GIN TRASH, UNDELINTED SEEDS, AND LINT						
	Extracts		**Extracted Solids**		**Total**	
Commodity	**% TRR**	**Ppm**	**% TRR**	**Ppm**	**% TRR**	**Ppm**
Immature Plants(Intermediate Sample)	84.1	2.002	15.9	0.379	100	2.381
Gin Trash	88.6	1.430	11.4	0.184	100	1.614
Lint	92.5	0.997	7.5	0.080	100	1.078
Undelinted Seed	90.1	0.107	9.9	0.012	100	0.119

1. Extraction and characterization of residues in immature cotton plants.

An aliquot of the homogenized immature plant sample was extracted three times with acetonitrile/water (4/1, v/v), the extracts were combined, and aliquots of the combined extract and the extracted solids were measured for radioactivity by LSC. The combined ACN/water extract was concentrated to an aqueous remainder, and the aqueous sample was partitioned against dichloromethane yielding an organic and an aqueous phase. The two phases were measured for radioactivity by LSC, concentrated, and analyzed by HPLC.

Extraction of immature cotton plants with ACN/water (4:1, v/v) solubilized 84.1% (2.002 ppm) of the TRR in the sample (Table 6.2.1.2-2). Fractionation of the combined ACN/water between dichloromethane and water resulted in 57.8% (1.376 ppm) of the TRR in the dichloromethane phase and 26.3% (0.626 ppm) of the TRR in the aqueous phase (Table 6.2.1.2-3). The extracted solids contained only 15.9% (0.379 ppm) of the TRR in the immature plant.

2. Extraction and characterization of residues in gin trash.

The gin trash samples were extracted and analyzed by LSC and HPLC as described above for immature cotton plants.

Extraction of the cotton gin trash with ACN/water yielded 88.6% (1.430 ppm) of the TRR in the extracts with 11.4% of the TRR (0.184 ppm) remaining in the extracted solids (Table 6.2.1.2-2). Partition of the combined ACN/water extracts resulted in 69.2% (1.117 ppm) of the TRR in the dichloromethane phase and 19.4% (0.313 ppm) of the TRR in the aqueous phase (Table 6.2.1.2-4).

3. Extraction and characterization of residues in cotton lint.

An aliquot of the cotton lint sample was extracted two times with ACN/water (4:1, v/v) and once with ACN. The extracts were combined, and aliquots of the combined extracts and the extracted solids were measured for radioactivity by LSC. The combined ACN/water extracts was concentrated to an aqueous remainder, and the aqueous remainder was partitioned against dichloromethane. The organic and aqueous phases were radioassayed by LSC, concentrated, and analyzed by HPLC.

Extraction of cotton lint with ACN/water and ACN yielded 92.5% (0.997 ppm) of the TRR in the extracts with 7.5% of the TRR (0.080 ppm) remaining in the extracted solids (Table 6.2.1.2-2). Partition of the combined ACN/water and ACN extracts resulted in 75.7% (0.816 ppm) of the TRR in the dichloromethane phase and 16.8% (0.181 ppm) of the TRR in the aqueous phase (Table 6.2.1.2-4).

4. Extraction and characterization of residues in undelinted seeds.

An aliquot of the undelinted seed sample was extracted three times with ACN/water (4:1, v/v). The extracts were combined, and aliquots of the combined extract and the extracted solids were measured for radioactivity by LSC. The combined ACN/water extracts was concentrated to an aqueous remainder, and the aqueous remainder was partitioned against dichloromethane. The organic and aqueous phases were radioassayed by LSC, concentrated, and analyzed by HPLC.

Since >60% of the radioactivity remained unextracted, the ACN/water-extracted solids were refluxed with 2*N* HCl for 3 hours followed by a 3-hour reflux with 20% aqueous solution of KOH. The aqueous extracts from the HCl and KOH refluxes were individually partitioned against dichloromethane, and the organic and aqueous phases were quantitated by LSC. The organic phase from the HCl reflux was concentrated and analyzed by HPLC. The organic phase from the KOH reflux was subjected to solid phase extraction clean-up, concentrated, and analyzed by HPLC.

Extraction of the undelinted seeds with ACN/water yielded 36.1% (0.043 ppm) of the TRR in the undelinted seeds (Table 6.2.1.2-2). Partitioning the combined ACN/water extracts against dichloromethane resulted in 15.9% (0.019 ppm) of the TRR in the dichloromethane phase and 20.2% (0.024 ppm) of the TRR in the aqueous phase (Table 6.2.1.2-4).

HCl (2*N*) reflux of the ACN/water-extracted solids gave an additional 15.2% (0.018 ppm) of the TRR in the seeds. Partitioning the HCl extract against dichloromethane resulted in 12.7% (0.015 ppm) of the TRR in the dichloromethane phase and 2.5% (0.003 ppm) of the TRR in the aqueous phase.

KOH (20% aqueous) reflux of the HCl-extracted solids afforded 39.0% (0.046 ppm) of the TRR in the seeds. Partition of the KOH extract resulted in 25.1% (0.030 ppm) in organic phases and 4.0% (0.005 ppm) in an aqueous phase. Only 9.6% (0.011 ppm) of the TRR remained unextracted.

5. Storage stability of residues

Extraction and chromatographic profiling of residues in immature cotton plants, gin trash, and lint were peformed within 64 days after harvest. For undelinted seeds, an initial extraction and analysis occurred within 44 days (1.5 months) after harvest. However, to identify and/or characterize the bound undelinted seed residues, a second extraction of the seed sample was performed within at 126 days (4 months) after harvest and chromatographic profiling of the second extract occurred one month later. HPLC chromatograms of the second seed extract were similar to the chromatograms from the first extract.

No additional extraction and analysis were performed beyond 5 months after harvest. In accordance with the regulatory guidelines, storage stability data should not be required for samples analyzed within 4 to 6 months of collection.

6. Identity of residues in/on immature/intermediate cotton plant

HPLC analysis of the organosoluble (DCM) phase of the immature cotton plant extract showed one major and 10 minor components representing <1% to 46.9% (0.004 to 1.117 ppm) of the TRR in the cotton plant (Tables 6.2.1.2-3 and 6.2.1.2-5). The chromatographic profile of the aqueous phase showed 14 minor components ranging from <1% to 6.3% (0.006 to 0.150 ppm) of the residues in the immature plant (Tables 6.2.1.2-3 and 6.2.1.2-5).

The major residue, BYI08330 (46.9% of the TRR, 1.117 ppm) was identified by mass spectral analysis and HPLC co-chromatography with an authentic reference compound.

Minor metabolites found in immature plants were BYI08330-desmethyl-ketohydroxy and its isomeric glucosides (0.2% to 9.8% of the TRR, 0.004 ppm to 0.232 ppm); BYI08330-ketohydroxy (5.4% of the TRR, 0.129 ppm); BYI08330-enol and its glucoside (2.0% to 4.7% of the TRR, 0.047 ppm to 0.111 ppm); BYI08330-desmethyl-enol-glucoside (3.8% of the TRR, 0.091 ppm); BYI08330-morpholinedion (0.6% of the TRR, 0.014 ppm); BYI08330-MA-amide (0.6% of the TRR, 0.014 ppm), isomers of BYI08330-olefin (sum: 1.0% of the TRR, 0.023 ppm); and BYI08330-mandelic acid amide (0.4% of the TRR, 0.009 ppm).

The glucoside conjugates were identified by enzyme and acid hydrolysis followed by HPLC co-chromatography of the aglycones with reference standards and/or analysis by HPLC-MS/MS. The remaining minor metabolites were identified by HPLC-MS/MS and/or co-chromatography with the authentic reference compounds.

Two minor unknown metabolites representing 0.2% to 0.6% of the TRR (0.005 to 0.014 ppm) and 10 minor unknown components representing 0.3% to 2.0% of the TRR (0.006 to 0.048 ppm) were found in the HPLC chromatograms of the dichloromethane and aqueous phases, respectively. These metabolites were characterized by their partition into organic and aqueous solvents and retention times in reversed phase HPLC.

A total of 75.3% of the TRR in immature plants collected at 19 days after the first application was identified, an additional 8.8% of the TRR was characterized, and 15.9% of the TRR was unextractable.

7. Identity of residues in/on gin trash.

HPLC analysis of the organosoluble (DCM) phase of the cotton gin trash extract showed three major and 15 minor components representing <1% to 29.3% (0.001 to 0.473 ppm) of the TRR in gin trash (Tables 6.2.1.2-4 and 6.2.1.2-6). The chromatographic profile of the aqueous phase showed 23 minor components ranging from <1% to 4.0% (0.003 to 0.064 ppm) of the residues.

Identification of residues from gin trash was accomplished by comparison of chromatograms of gin trash extracts with chromatograms of extracts from lint and immature cotton plant followed by co-chromatography (HPLC and TLC) with reference standards. Conjugated metabolites were subjected to acid hydrolysis (2*N* HCl, 100°C, 3 hr), and the resulting aglycones were identified by co-chromatography with respective reference standards.

The major residues found in gin trash were BYI08330-ketohydroxy (29.7% of the TRR, 0.478 ppm); BYI08330 (19.8% of the TRR, 0.319 ppm); and BYI08330-enol (12.09% of the TRR, 0.196 ppm).

Minor metabolites found in gin trash were BYI08330-enol-glucoside (4.0% of the TRR, 0.064ppm); BYI08330-desmethyl-ketohydroxy and its isomeric glucosides (0.6% to 3.7% of the TRR, 0.009 ppm to 0.061 ppm); isomers of BYI08330-olefin (sum 3.8% of the TRR, 0.061 ppm); BYI08330-desmethyl-enol-glucoside (1.8%; of the TRR, 0.028 ppm); BYI08330-mandelic acid amide (1.7% of the TRR, 0.027 ppm); BYI08330-MA-amide (1.5% of the TRR, 0.025 ppm); and BYI08330-morpholinedion (0.6% of the TRR, 0.010 ppm).

Nine unidentified residues representing 0.1% to 1.6% of the TRR (0.001 to 0.026 ppm) and 13 minor components representing 0.2% to 1.0% of the TRR (0.003 to 0.016 ppm) were found in the HPLC chromatograms of the dichloromethane and aqueous phases, respectively. These metabolites were characterized by their partition into organic and aqueous solvents and retention times in reversed phase HPLC.

A total of 79.2% of the TRR in cotton gin trash was identified, an additional 9.4% of the TRR was characterized, and 11.4% of the TRR was unextractable.

8. Identity of residues in/on cotton lint.

HPLC analysis of the DCM phase of the cotton lint extract showed three major and 14 minor components ranging from <1% to 28.4% (0.003 to 0.306 ppm) of the TRR in the lint sample (Tables 6.2.1.2-4 and 6.2.1.2-6). The chromatographic profile of the aqueous phase showed 22 minor components ranging from <1% to 3.9% (0.001 to 0.042 ppm) of the TRR in lint.

Initial assignments of identities of residues were made by comparing the hplc chromatograms of cotton lint extracts with chromatograms of extracts from the immature cotton plant.

The major residues found in lint were BYI08330 (32.3% of the TRR, 0.348 ppm), BYI08330-mandelic acid amide (11.9% of the TRR, 0.128 ppm), and BYI08330-ketohydroxy (10.5% of the TRR, 0.113 ppm). These major residues were identified by mass spectral analysis.

The minor metabolites found in cotton lint were BYI08330-enol (9.5% of the TRR, 0.101 ppm); isomers of BYI08330-olefin (sum: 8.4% of the TRR, 0.091 ppm); BYI08330-MA-amide (4.1% of the TRR, 0.044 ppm); BYI08330-mandelic acid (0.9% of the TRR, 0.010 ppm); and BYI08330-desmethyl-ketohydroxy-glucoside (0.1% of the TRR, 0.001 ppm).

The BYI08330-olefin isomers were identified by HPLC-MS and HPLC-NMR analysis. The remaining minor residues were identified by HPLC co-chromatography.

Ten unidentified minor metabolites ranging from 0.3% to 2.7% of the TRR (0.003 to 0.029 ppm) and 16 minor components ranging from 0.1% to 0.7% of the TRR (0.001 to 0.008 ppm) were found in the HPLC chromatograms of the dichloromethane and aqueous phases, respectively. These metabolites were characterized by their partition into organic and aqueous solvents and retention times in reversed phase HPLC.

A total of 77.7% of the TRR in cotton lint was identified and an additional 14.8% of the TRR was characterized. Unextractable residues accounted for 7.5% of the TRR in lint.

9. Identity of residues in/on undelinted cotton seeds.

HPLC analysis of the DCM and aqueous phases of the ACN/water extract from undelinted seed showed 12 minor components ranging from <1% to 9.4% (<0.001 to 0.011 ppm) of the TRR in the cotton seeds (Tables 6.2.1.2-4 and 6.2.1.2-6). Analysis of the HCl-reflux extract showed one component (12.7% of the TRR, 0.015 ppm). Reflux of the 2*N* HCl-extracted solids with 20% KOH released three components ranging from <1% to 21.9% of the TRR (<0.001 to 0.026 ppm) in the undelinted seeds.

Initial assignment of identities of residues was made by comparing the hplc chromatograms of undelinted seed extracts with chromatograms of extracts from the immature cotton plant and gin trash. Identification of residues from undelinted seed was accomplished by co-chromatography (HPLC and/or TLC) with authentic reference standards.

The major residue found in undelinted seed was BYI08330-enol (sum: 39.8% of the TRR, 0.047 ppm). Minor metabolites found in the seeds were BYI08330-ketohydroxy (9.0% of the TRR, 0.011 ppm); glucosides of BYI08330-desmethyl-enol and BYI08330-enol (each representing 3.5% of the TRR, 0.004 ppm); BYI08330-mandelic acid amide (1.3% of the TRR, 0.002 ppm); and BYI08330 (0.4% of the TRR, <0.001 ppm).

Eight unidentified minor metabolites ranging from <0.1% to 9.4% of the TRR (<0.001 to 0.011 ppm) were found in the HPLC chromatograms of the dichloromethane and aqueous phases, and HCl and KOH reflux extracts. These metabolites were characterized by their extraction (organic solvent, and acid and base reflux), partition (organic and aqueous solvents) and chromatographic behaviors.

A total of 57.5% of the TRR in undelinted seeds was identified and an additional 32.9% of the TRR was characterized. Unextractable residues accounted for 9.6% (0.011 ppm) of the TRR in undelinted seeds.

10. Development of analytical procedures

Analytical procedures developed in the course of the study were used as the basis for the development of the method for the determination of BYI08330 residues in target crop matrices. In addition, a radiovalidation study has been conducted to verify that aged BYI08330 residues can be adequately extracted from plant matrices using the analytical method.

11. Proposed degradation pathway

The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in apples is shown in Figure 6.2.1.2-1. Following the initial hydrolysis of the ethyl carbonate group of BYI08330 to BYI08330-enol, the following metabolic processes were observed:

- Oxidation of the pyrroline moiety of BYI08330-enol to form BYI08330-ketohydroxy followed by ring cleavage to form BYI08330-MA-amide.
- Cleavage (decarboxylation followed by hydrolysis) of BYI08330-MA-amide to form BYI08330-olefin, BYI08330-mandelic acid, amide and BYI08330-mandelic acid.
- Demethylation of the cyclohexyl methoxy group of BYI08330-enol and BYI08330-ketohydroxy.
- Ring closure of BYI08330-MA-amide to form a morpholine ring.
- Conjugation of BYI08330-enol, BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy with glucose.

III. CONCLUSIONS

Following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as a suspension concentrate (240 SC) to cotton plants at a total application rate of 264 g. a.s./ha, the TRRs found in immature cotton plants collected at 19 days after the first application and in gin trash, lint, and undelinted seeds harvested at 39 days after the final application were 2.381 ppm, 1.614 ppm, 1.078 ppm, and 0.119 ppm, respectively. Extractability of residues ranged from 84.1% to 92.5% of the TRRs in the cotton samples; identified and characterized residues represented 57.5% to 79.2% and 6.6% to 32.9% of the TRRs, respectively; and 7.5% to 15.9% of the TRRs were unextractable.

Unchanged BYI08330 was the predominant residue in immature cotton plant and lint and a major residue in gin trash (19.8% to 46.9%% of the TRRs), but was a minor component in undelinted seed. Initial hydrolysis of BYI08330 followed by oxidation of the pyrroline moiety led to the formation of the two major metabolites, BYI08330-enol (9.5% to 39.8% of the TRRs) and BYI08330-ketohydroxy (9.0% to 29.7% of the TRRs) in gin trash, lint, and undelinted seeds. Demethylation of BYI08330-enol followed by hydroxylation and/or conjugation gave BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy and their glucosides as minor metabolic products.

Cleavage of the pyrrolidine ring of BYI08330-ketohydroxy followed by decarboxylation and further cleavage reactions led to the formation of BYI08330-MA-amide, BYI08330-olefin, BYI08330-mandelic acid amide, and BYI08330-mandelic acid (0.9% to 11.9% of the TRRs) in gin trash, lint, and undelinted seeds. Ring closure of the initial cleavage product formed BYI08330-hydroxymorpholinedione (0.6% of the TRR, 0.010 ppm) in gin trash.

Although the metabolism of BYI08330 was more complex in cotton than was found in apples, lettuce, and potatoes, only one cotton-specific metabolite, BYI08330-mandelic acid amide exceeded 10% of the residues in a cotton matrix. The remaining cotton-specific residues (BYI08330-MA-amide, isomers of BYI08330-olefin, BYI08330-mandelic acid, and BYI08330-hydroxymorpholinedione) were found at 0.6% to 8.4% of the TRRs (0.010 to 0.091 ppm) in the cotton matrices. Therefore, the additional metabolites found in cotton were not significant enough to change the BYI08330 residues of concern in target crops. The metabolic profile of BYI08330 in cotton validates the selection of BYI08330, BYI08330-enol and its glucoside, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy as the BYI08330 target crop residues for data collection and dietary risk assessment.

Table 6.2.1.2-3 Distribution of residues in immature cotton plant following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 240 SC to cotton plants.

	TRR = 2.381 ppm	
Fraction/Component	**%TRR**	**ppm**
Organosoluble (DCM phase)	**57.8**	**1.376**
BYI08330-mandelic acid amide	0.36	0.009
BYI08330-hydroxymorpholinedion	0.58	0.014
BYI08330-desmethyl-ketohydroxy	0.18	0.004
BYI08330-MA-amide	0.61	0.014
BYI08330-enol	1.98	0.047
BYI08330-ketohydroxy	5.40	0.129
BYI08330-olefin (I1)	0.54	0.013
BYI08330-olefin (I2)	0.43	0.010
BYI08330 (a.s.)	46.94	1.117
Two Unidentified Residues	0.20 – 0.57	0.005 – 0.014
Aqueous Soluble	**26.3**	**0.626**
BYI08330-enol-Glc	4.65	0.111
BYI08330-desmethyl-enol-Glc	3.82	0.091
BYI08330-desmethyl-ketohydroxy-Glc (I1)	3.45	0.082
BYI08330-desmethyl-ketohydroxy-Glc (I2)	6.31	0.150
10 Unidentified Residues	0.25 – 2.00	0.006 - 0.048
Total Identified	**75.3**	**1.791**
Total Characterized	8.8	0.210
Total Extractable	**84.1**	**2.002**
Total Bound Residues	15.9	0.379
Total	**100.0**	**2.381**

Table 6.2.1.2-4 **Distribution of residues in cotton gin trash, lint, and undelinted seeds following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 240 SC to cotton plants.**

	Gin Trash		Lint		Undelinted Seeds	
	TRR = **1.614** ppm		TRR = **1.078** ppm		TRR = **0.119** ppm	
Fraction/Component	%TRR	ppm	%TRR	ppm	%TRR	ppm
Organosoluble (DCM Phase)	**69.2**	**1.117**	**75.7**	**0.816**	**15.9**	**0.019**
BYI08330-mandelic acid amide	1.03	0.017	11.21	0.121	1.30	0.002
BYI08330-	0.64	0.010	-	-	-	-
BYI08330-desmethyl-ketohydroxy	0.24	0.004	-	-	-	-
BYI08330-MA-amide	0.94	0.015	1.39	0.015	-	-
BYI08330-enol	10.07	0.163	5.80	0.062	2.93	0.003
BYI08330-ketohydroxy	29.32	0.473	10.45	0.113	9.04	0.011
BYI08330-olefin (I1)	1.76	0.028	4.35	0.047	-	-
BYI08330-olefin (I2)	2.04	0.033	4.08	0.044	-	-
BYI08330 (a.s.)	19.35	0.312	28.41	0.306	0.42	<0.001
unidentified 22.8 (lint)	-	-	0.26	0.003	-	-
unidentified 45.4 (gin trash)	0.09	0.001	-	-	-	-
unidentified 46.4 (seeds)	-	-	-	-	0.64	0.001
unidentified 47.8 (lint)	-	-	0.33	0.004	-	-
unidentified 49.1 (gin trash)	0.11	0.002	-	-	-	-
unidentified 50.6 (gin trash)	0.25	0.004	0.54	0.006	-	-
unidentified 51.5 (lint)	-	-	0.48	0.005	-	-
unidentified 54.5 (seeds)	-	-	-	-	1.27	0.002
unidentified 58.1 (gin trash)	0.40	0.006	0.43	0.005	-	-
unidentified 58.9 (lint)	-	-	0.39	0.004	-	-
unidentified 68.3 (seeds)	-	-	-	-	0.03	<0.001
unidentified 65.8 (gin trash)	1.61	0.026	-	-	-	-
unidentified 66.4 (lint)	-	-	2.71	0.029	-	-
unidentified 68.6 (gin trash)	0.25	0.004	1.39	0.015	-	-
unidentified 70.3 (gin trash)	0.21	0.003	-	-	-	-
unidentified 72.4 (gin trash)	0.48	0.008	2.03	0.022	-	-
unidentified 74.2 (gin trash)	0.41	0.007	1.45	0.016	-	-

Table 6.2.1.2-4 (contd).

	Gin Trash		Lint		Undelinted Seeds	
	TRR = **1.614** ppm		TRR = **1.078** ppm		TRR = **0.119** ppm	
Fraction/Component	%TRR	ppm	%TRR	ppm	%TRR	ppm
Aqueous Soluble	**19.4**	**0.313**	**16.8**	**0.181**	**20.2**	**0.024**
BYI08330-enol-Glc	3.98	0.064	0.16	0.002	3.45	0.004
BYI08330-mandelic acid			0.89	0.010		
BYI08330-mandelic acid amide	0.62	0.010	0.66	0.007		
BYI08330-desmethyl-enol-Glc	1.75	0.028			3.46	0.004
BYI08330-desmethyl-ketohydroxy- (I1)	1.42	0.023				
BYI08330-desmethyl-ketohydroxy-Glc (I2)	2.32	0.038				
BYI08330-MA-amide	0.60	0.010	2.72	0.029		
BYI08330-desmethyl-ketohydroxy	0.32	0.005				
BYI08330-enol	2.02	0.033	3.66	0.039	2.28	0.003
BYI08330-ketohydroxy	0.33	0.005				
BYI08330 (a.s.)	0.43	0.007	3.92	0.042		
unidentified 5.1 (lint)			0.33	0.004		
unidentified 16.3 (gin trash)	0.16	0.003	0.28	0.003		
unidentified 17.2 (gin trash)	0.29	0.005	0.48	0.005		
unidentified 18.0 (gin trash)	0.97	0.016	0.41	0.004	9.44	0.011
unidentified 19.3 (gin trash)			0.17	0.002		
unidentified 20.9 (gin trash)	0.85	0.014	0.19	0.002		
unidentified 24.0 (gin trash)	0.30	0.005	0.09	0.001		
unidentified 29.8 (gin trash)	0.24	0.004				
unidentified 30.3 (lint)			0.56	0.006		
unidentified 31.7 (gin trash)	0.53	0.009				
unidentified 32.9 (lint)			0.19	0.002		
unidentified 34.0 (lint)			0.52	0.006		
unidentified 38.5 (gin trash)	0.55	0.009				
unidentified 39.8 (lint)			0.14	0.001		
unidentified 41.8 (lint)			0.73	0.008		
unidentified 42.5 (gin trash)	0.31	0.005				
unidentified 45.1 (gin trash)	0.33	0.005				
unidentified 46.0 (gin trash)	0.29	0.005	0.22	0.002		

Table 6.2.1.2-4 (contd).

	Gin Trash		Lint		Undelinted Seeds	
	TRR = **1.614** ppm		TRR = **1.078** ppm		TRR = **0.119** ppm	
Fraction/Component	%TRR	ppm	%TRR	ppm	%TRR	ppm
unidentified 48.1 (gin trash)	0.63	0.010	0.21	0.002		
unidentified 50.4 (lint)			0.14	0.002		
unidentified 55.0 (gin trash)	0.16	0.003				
unidentified 56.9 (seeds)					1.60	0.002
unidentified 78.1 (lint)			0.19	0.002		
Exhaustive Extraction						
HCl Extract					**15.2**	**0.018**
-enol					12.69	0.015
Unidentified Aqueous Phase 2					2.54	0.003
KOH Extract					**39.0**	**0.046**
-enol					21.91	0.026
unidentified 44.8 (seeds)					0.32	<LOQ
unidentified 55.1 (seeds)					0.31	<LOQ
unidentified solid remainder 4					9.89	0.012
unidentified MeOH phase					2.40	0.003
unidentified aqueous phase 3					4.01	0.005
unidentified DCM/MeOH eluate					0.17	<LOQ
Total Identified (conv. extraction)	**79.2**	**1.278**	**77.7**	**0.837**	**22.9**	**0.027**
Total Identified (exh. extraction)	**-**	**-**	**-**	**-**	**34.6**	**0.041**
Total Identified	**79.2**	**1.278**	**77.7**	**0.837**	**57.5**	**0.068**
Total Characterized[a]	9.4	0.152	14.8	0.160	13.9	0.017
Not Analysed	-	-	-	-	9.1	0.011
Solid Remainder 4 (precipitate)					9.9	0.012
Total Extractable	**88.6**	**1.430**	**92.5**	**0.997**	**90.4**	**0.096**
Total Bound Residues	11.4	0.184	7.5	0.080	9.6	0.011
Total	**100.0**	**1.614**	**100.0**	**1.078**	**100.0**	**0.119**

[a] For undelinted seeds, the % of extract not analyzed and solid remainder (precipitate) will also be considered as characterized on the basis of their extraction, partition, and chromatographic (spe) behaviours.

Table 6.2.1.2-5 Summary of characterization and identification of radioactive residues in immature cotton plant following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 240 SC to cotton plants.

	Immature/Intermediate Plant	
	TRR = 2.381 ppm	
Component	%TRR	ppm
BYI08330-enol-Glc	4.65	0.111
BYI08330-mandelic acid amide	0.36	0.009
BYI08330-desmethyl-enol-Glc	3.82	0.091
BYI08330-desmethyl-ketohydroxy-Glc (I1)	3.45	0.082
BYI08330-desmethyl-ketohydroxy-Glc (I2)	6.31	0.150
BYI08330-hydroxymorpholinedion	0.61	0.014
BYI08330-desmethyl-ketohydroxy	0.18	0.004
BYI08330-MA-amide	0.58	0.014
BYI08330-enol	1.98	0.047
BYI08330-ketohydroxy	5.40	0.129
BYI 08330-olefin (I1)	0.54	0.013
BYI 08330-olefin (I2)	0.43	0.010
BYI 08330 (a.s.)	46.94	1.117
Total Identified	**75.3**	**1.791**
Total Characterized	8.8	0.210
Total Extractable	**84.1**	**2.002**
Total Bound	15.9	0.379
Total	**100.0**	**2.381**

I1 = isomer 1
I2 = isomer 2

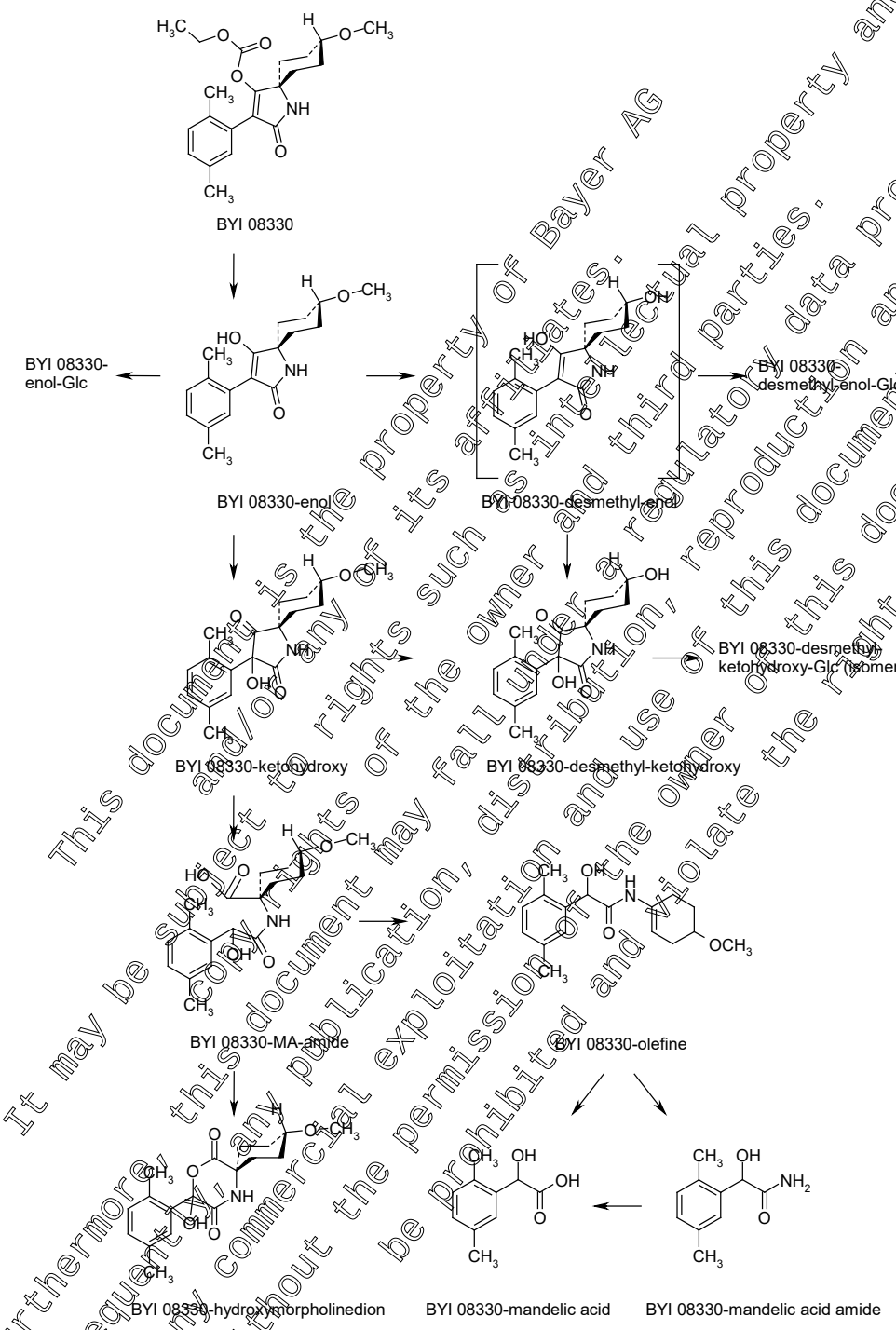
Table 6.2.1.2-6 Summary of characterization and identification of radioactive residues in cotton gin trash, lint, and undelinted seeds following foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 240 SC to cotton plants.

	Gin Trash		Lint		Undelinted Seeds	
	TRR = **1.614** ppm		TRR = **1.078** ppm		TRR = **0.119** ppm	
Component	% TRR	ppm	% TRR	ppm	% TRR	ppm
BYI08330-mandelic acid	-	-	0.89	0.010	-	-
BYI08330-hydroxymorpholinedion	0.64	0.010	-	-	-	-
BYI08330-desmethyl-ketohydroxy	0.56	0.009	-	-	-	-
BYI08330-MA-amide	1.54	0.025	4.12	0.044	-	-
BYI08330-enol	12.09	0.196	9.46	0.101	**39.81**[a]	**0.047**[a]
BYI08330-ketohydroxy	**29.65**	**0.478**	10.45	0.113	9.04	0.011
BYI08330-olefin (I1)	1.76	0.028	4.08	0.044	-	-
BYI08330-olefin (I2)	2.04	0.033	4.35	0.047	-	-
BYI08330-enol-Glc	3.98	0.064	0.16	0.002	3.45	0.004
BYI08330-mandelic acid amide	1.65	0.027	11.87	0.128	1.30	0.002
BYI08330-desmethyl-enol-Glc	1.74	0.028	-	-	3.46	0.004
BYI08330-desmethyl-ketohydroxy-Glc (I2)	2.32	0.038	-	-	-	-
BYI08330-desmethyl-ketohydroxy-Glc (I1)	1.42	0.023	0.14	0.001	-	-
BYI08330 (a.s.)	19.78	0.319	**32.32**	**0.348**	0.42	<0.001
Total Identified	**79.2**	**1.278**	**77.7**	**0.837**	**57.5**	**0.068**
Total Characterized	9.4	0.152	14.8	0.160	13.9	0.017
Not Analysed[b]	-	-	-	-	9.1	0.011
Total Extractable	**88.6**	**1.430**	**92.5**	**0.997**	**90.4**	**0.096**
Total Bound	11.4	0.184	7.5	0.080	9.6	0.011
Total	**100.0**	**1.614**	**100.0**	**1.078**	**100.0**	**0.119**

[a] sum of enol detected after conventional and exhaustive extraction

[b] divides into 4 different phases obtained during partitioning and clean-up, none of the phase. exceeded 0.005 ppm; the compounds in the phases are characterized by their partitioning behaviour and/or their retention behaviour on an RP18 column.

Figure 6.2.1.2-1 The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in cotton.



IIA 6.2.1.3 Metabolism, distribution, and expression of residues in lettuce.

Report:	**IIA 6.2.1/03, [redacted] and [redacted], 2004 (MEF-049/04)**
Title:	**Metabolism of [Azaspirodecenyl-3-^{14}C] BYI08330 in Lettuce**
Report No & Document No	**MEF-049/04 Date: November 30, 2004** **MO-05-000994, M-242667-01-2** **US EPA Residue Chemistry Test Guideline OPPTS 860.1300: Nature of the Residue – Plants, Livestock** **PMRA Ref.: DACO 6.3 – Plant Study** **Japanese MAFF, 12 Nousan 8147** **EU Council Directive 91/414/EEC amended by the Commission directive 96/68/EC.**
GLP	**Fully GLP compliant - laboratory certified by German "Ministerium für Umwelt, Raumordnung und Landwirtschaft des Landes Nordrhein-Westfalen".**
Testing Laboratory and Dates	**Bayer CropScience AG, Metabolism and Environmental Fate, D-[redacted], GER, conducted the study during the period of June 17, 2003 and November 30, 2004.** **Experimental phase: July 1, 2003 to July 5, 2004**

Executive Summary

The metabolism of BYI08330 was investigated in lettuce following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion (100 OD) formulation at a target application rate of 72 g a.s./ha/application with 14 days between applications. The actual total application rate was 167 g a.s./ha. Head lettuce samples were collected at 7 days following the final application.

The total radioactive residue (TRR, expressed as parent equivalents) levels was 3.13 ppm in lettuce. The major residues found in the head lettuce were BYI08330 (55.9% of the TRR; 1.75 ppm), BYI08330-enol (17.8% of the TRR, 0.56 ppm), and BYI08330-enol-glucoside (11.4% of the TRR, 0.36 ppm). BYI08330-ketohydroxy (6.2% of the TRR, 0.20 ppm) was identified as a minor metabolite. Fifteen unidentified minor metabolites representing 0.1% to 1.9% of the TRR (~0.01 to 0.06 ppm) were also found in lettuce.

The major steps in the metabolism of BYI08330 in lettuce involved an initial hydrolysis of BYI08330 and conjugation of the resulting enol to form BYI08330-enol-glucoside. Oxidation of BYI08330-enol led to the formation of BYI08330-ketohydroxy as a minor metabolite.

The metabolic profile for BYI08330 in lettuce was not as extensive when compared to the profiles found in apple, cotton, and potato. However, all the metabolites found in lettuce (BYI08330-enol and its glucoside

and BYI08330-ketohydroxy) were also found in the other target crops and are included in the BYI08330 crop residue analytical method for data collection and dietary risk assessment.

I. MATERIALS AND METHODS

A. MATERIALS

1. **Test Material:** BYI08330 [Azaspirodecenyl-3-^{14}C] BYI08330
   Purity: radiochemical purity = 99%
   Specific Activity: 3.67 MBq/mg (99.1 µCi/mg)
   CAS #: 203313-25-1

2. **Soil:** A [redacted] (Germany) loamy sandy was used.

Table 6.2.1.3-1 Soil Physicochemical Properties

Soil Series	Soil Type	pH	% OM	CEC meq / 100g
[redacted] 3	Sandy Loam	6.4	Ca. 2.3	5.9

B. STUDY DESIGN

The study was conducted during the period between June 17, 2003 and November 30, 2004 by Bayer CropScience AG located in [redacted], Germany. The experimental phase of the study began on July 1, 2003 and concluded on July 5, 2004.

1. Experimental conditions

The metabolism of [azaspirodecenyl-3-^{14}C] BYI08330 was investigated in head lettuce (variety: Alexandrina, 15 heads) cultivated under artificial light in a planting container with a surface area of approximately 1 m^2.

Two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion (100 OD) were applied to the lettuce plants at a target application rate of 72 g a.s./ha/application with 14 days between applications. The actual total application rate was 167 g a.s./ha. The total rate applied represented 0.9X to 1.1X the recommended maximum seasonal field use rates. The first application occurred on October 7, 2003 at BBCH crop growth stage 41 (heads begin to form) and the second application occurred 14 days later at BBCH crop growth stage 44-45 (about 50% of the expected head size reached).

2. Sampling

Head lettuce samples were harvested at 7 days after the final treatment.

II. RESULTS AND DISCUSSION

A. TOTAL RADIOACTIVE RESIDUE (TRR)

The total radioactive residue (TRR) in lettuce was determined by summing the residues in the extracts and the extracted solids. Following two foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to lettuce plants at a total application rate of 167 g a.s./ha, the TRR found in head lettuce sample collected at 7 days after the final application was 3.13 ppm (Table 6.2.1.3-2).

Table 6.2.1.3-2 Total radioactive residues (TRRs) in head lettuce sample following two foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 at a total application rate of 167 g a.s./ha.

	TRRS (PPM) IN HEAD LETTUCE		
		Extracted	
Commodity	**Extracts**	**Solids**	**Total**
Lettuce Head	3.09	0.04	3.13

B. EXTRACTION AND CHARACTERIZATION OF RESIDUES

The extractability of ^{14}C residue in lettuce is shown in Table 6.2.1.3-3.

Table 6.2.1.3-3 Extraction efficiency for residues of [azaspirodecenyl-3-^{14}C] BYI08330 in lettuce.

	EXTRACTABILITY OF RADIOACTIVE RESIDUES IN LETTUCE	
Fraction	**% TRR**	**Ppm**
ACN/Water (Room Temperature Extraction)	95.9	3.00
ACN/Water (Microwave Extraction)	2.8	0.09
Extracted Solids	1.3	0.04
	100	3.13

1. Extraction and characterization of residues in lettuce.

An aliquot of the homogenized lettuce sample was extracted three times with acetonitrile/water (4/1, v/v). The extracts were combined, and aliquots of the combined extracts and the extracted solids were measured for radioactivity by LSC. The combined ACN/water extract was concentrated to the aqueous

remainder, and the aqueous sample was partitioned against dichloromethane yielding an organic and an aqueous phase. The two phases were measured for radioactivity by LSC, concentrated, and analyzed by HPLC.

The room temperature-extracted solids were extracted with ACN/water (1:1) for 3 minutes at 120°C in a microwave extractor, and the extract and microwave-extracted solids were analyzed for radioactivity by LSC. The microwave extract was concentrated and analyzed by HPLC.

Extraction of lettuce head with ACN/water (4:1, v/v) solubilized 95.9% (3.00 ppm) of the TRR in the sample (Table 6.2.1.3-3). Further extraction of the room temperature-extracted solids with microwave extractor yielded an additional 2.8% of the TRR (0.09 ppm) in lettuce. The extracted solids contained only 1.3% (0.04 ppm) of the TRR in lettuce. Fractionation of the combined ACN/water between dichloromethane and water resulted in 76.9% (2.41 ppm) of the TRR in the dichloromethane phase and 19.0% (0.59 ppm) of the TRR in the aqueous phase (Table 6.2.1.3-4).

2. Storage stability of residues

Extraction, chromatographic profiling, and quantitation of residues in lettuce were performed within 3 days after harvest. All additional analysis necessary to identify residues in all matrices was performed within 6 months after harvest. In accordance with the regulatory guidelines, storage stability data should not be required for samples analyzed within 4 to 6 months of collection.

3. Identity of residues in/on head lettuce.

HPLC analysis of the organosoluble (DCM) phase of the lettuce extract showed three components representing 5.7% to 55.9% (0.18 to 1.75 ppm) of the TRR in lettuce (Tables 6.2.1.3-4 and 6.2.1.3-5). The chromatographic profile of the aqueous phase showed one major and 15 minor components ranging from <1% to 11.4% (<0.01 to 0.36 ppm) of the residues in lettuce. HPLC analysis of the microwave extract showed four minor components representing <1% to 2.3% (<0.01 to 0.07 ppm) of the TRR in lettuce

Three major residues found in lettuce were unchanged BYI08330 (55.9% of the TRR, 1.75 ppm), BYI08330-enol (sum: 17.8% of the TRR, 0.56 ppm), and BYI08330-enol-glucoside (11.4% of the TRR, 0.36 ppm). BYI08330 and BYI08330-enol were identified by co-chromatography (HPLC and TLC) with authentic reference compounds. BYI08330-enol-glucoside was identified by mass spectral analysis, ^{1}H-NMR, and hydrolysis to the aglycone. BYI08330- ketohydroxy was identified as a minor metabolite (sum: 6.2% of the TRR, 0.20 ppm) in lettuce by co-chromatography (HPLC and TLC).

Fifteen minor unknown metabolites representing 0.1% to 1.9% of the TRR (<0.01 to 0.06 ppm) in lettuce were found in the HPLC chromatograms of the aqueous phase and microwave extracts. These metabolites were characterized by their extraction, partition (aqueous phase), and chromatographic (retention times) behaviors.

A total of 91.4% of the TRR in head lettuce collected at 7 days after the final application was identified. An additional 7.3% of the TRR was characterized and only 1.3% of the TRR remained unextractable.

4. Development of analytical procedures

Analytical procedures developed in the course of the study were used as the basis for the development of the method for the determination of BYI08330 residues in apple matrices. In addition, a radiovalidation study has been conducted to verify that aged BYI08330 residues can be adequately extracted from plant matrices using the analytical method.

Table 6.2.1.3-4 Distribution of residues in head lettuce following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 OD to lettuce plants.

	Head Lettuce (TRR = 3.13 ppm)	
Fraction/Component	%TRR	ppm
organosoluble (dichloromethane phase**)**	**76.9**	**2.41**
parent compound BYI08330	55.9	1.75
BYI08330-ketohydroxy	5.7	0.18
BYI08330-enol	15.2	0.48
aqueous soluble (aqueous phase**)**	**19.0**	**0.59**
BYI08330-ketohydroxy	0.2	<0.01
BYI08330-enol	0.3	0.01
BYI08330-enol-glucoside	11.4	0.36
13 Unidentified Components	0.2 to 1.9	<0.01 to 0.06
microwave (MW) extract	**2.8**	**0.09**
BYI08330-ketohydroxy	0.3	<0.01
BYI08330-enol	2.3	0.07
Unidentified compound LeMw1	0.1	<0.01
Unidentified compound LeMw2	0.1	<0.01
Total extractable (Aqueous + organic + MW)	98.7	3.09
Total identified	91.4	2.87
Total characterized (HPLC retention time)	7.3	0.22
Total bound residues (PES, solids 2 after MW)	**1.3**	**0.04**
Accountability	**100.0**	**3.13**

Table 6.2.1.3-5 Summary of characterization and identification of radioactive residues in head lettuce following two foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 OD to lettuce plants.

Component	Head Lettuce	
	% TRR	ppm
BYI08330	55.9	1.75
BYI08330-ketohydroxy	6.2	0.20
BYI08330-enol	17.8	0.56
BYI08330-enol-glucoside	11.4	0.36
Total Identified	91.4	2.87
Total Characterized	7.3	0.22
Total Extractable	98.7	3.09
Total Bound in Extracted Solids (after microwave extraction)	1.3	0.04
Accountability	100.0	3.13

7. Proposed degradation pathway

The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in lettuce is shown in Figure 6.2.1.3-1. Metabolism of BYI08330 following the foliar applications of [azaspirodecenyl-3-^{14}C] BYI08330 100 OD to lettuce was not extensive.

Following the initial hydrolysis of the ethyl carbonate group of BYI08330 to BYI08330-enol, the following metabolic processes were observed:
Conjugation to BYI08330-enol-glucoside.
Oxidation of the pyrroline moiety forming BYI08330-ketohydroxy.

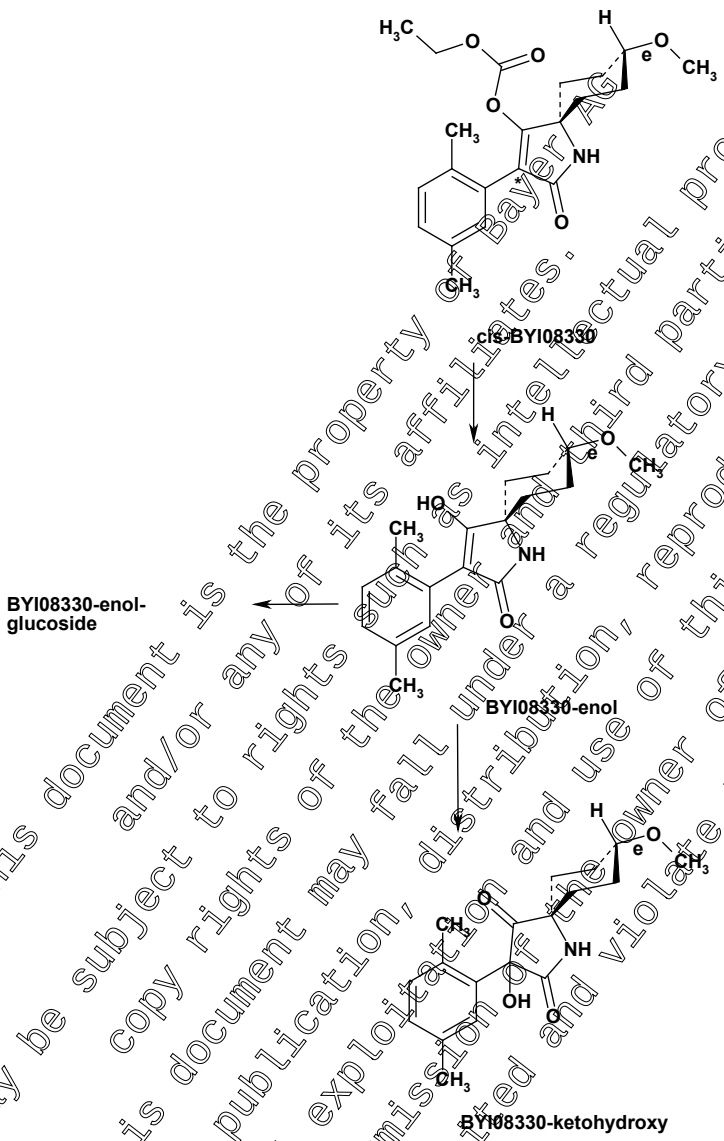
III. CONCLUSIONS

Following two spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an OD 100 (oil dispersion) to head lettuce plants at a target application rate of 72 g. a.s./ha/application, the TRR found in head lettuce collected at 7 days after the final application was 3.13 ppm. A total of 98.7% of the TRR was extractable, 91.4% of the TRR was identified, 7.3% of the residues were characterized (by extraction, partition, and chromatographic behaviors), and 1.3% of the TRR was unextractable.

Unchanged BYI08330 was the predominant residue (55.9% of the TRR). Initial hydrolysis of BYI08330 followed by conjugation led to the formation of the two major metabolites, BYI08330-enol and its glucoside which represented 11.4% to 17.8% of the TRR in lettuce. Oxidation of BYI08330-enol gave BYI08330-ketohydroxy as a minor metabolite (6.2% of the TRR) in lettuce.

The metabolic profile for BYI08330 in lettuce was not as extensive when compared to the profiles found in apple, cotton, and potato. However, all the metabolites found in lettuce (BYI08330-enol and its glucoside and BYI08330-ketohydroxy) were also found in the other target crops. Furthermore, all the residues found in lettuce are also included in the BYI08330 crop residue analytical method for data collection and dietary risk assessment.

Figure 6.2.1.3-1. The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in lettuce.



IIA 6.2.1.4 Metabolism, distribution, and expression of residues in potato.

Report:	**IIA 6.2.1/04, [redacted] 2005 (MEF-05/230)**
Title:	**Metabolism of [Azaspirodecenyl-3-^{14}C] BYI08330 in Potatoes**
Report No & Document No	**MEF-05/230** **Date: December 5, 2005** **M-267707-01-2**
	US EPA Residue Chemistry Test Guideline OPPTS 860.1300: Nature of the Residue – Plants, Livestock **PMRA Ref.: DACO 6.3 – Plant Study** **Japanese MAFF, 12 Nousan 8147** **EU Council Directive 91/414/EEC amended by the Commission directive 96/68/EC.**
GLP	**Fully GLP compliant - laboratory certified by German "Ministerium für Umwelt, Raumordnung und Landwirtschaft des Landes Nordrhein-Westfalen".**
Testing Laboratory and Dates	**Bayer CropScience AG, Metabolism and Environmental Fate, D-[redacted], GER, conducted the study during the period of June 25, 2004 and December 5, 2005.** **Experimental phase: June 29, 2004 to June 15, 2005**

Executive Summary

The metabolism of BYI08330 was investigated in potatoes following three spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion (100 OD) to potato plants at a target application rate of 96 g ai/ha/application with 21 days between applications. The actual total application rate was 308 g ai/ha (1.1X to 1.8X the recommended total use rates). Potato leaves and tubers were collected at 14 days following the final application.

The total radioactive residue (TRR, expressed as parent equivalents) levels was 11.057 ppm in the potato leaves and 0.255 ppm in the tubers. The major residues found in potato leaves were BYI08330 (49.4% of the TRR; 5.455 ppm) and BYI08330-ketohydroxy (24.8% of the TRR, 2.745 ppm). The major residue found in the potato tubers was BYI08330-enol (65.8% of the TRR, 0.168 ppm). Minor metabolites representing 0.2% to 6.7% of the TRR (0.01 ppm to 0.018 ppm) in the potato leaves and tubers were BYI08330-desmethyl-enol and its glucoside, BYI08330-enol-glucoside, BYI08330-enol-alcohol, BYI08330-dihydroxy, and BYI08330-ketohydroxy-alcohol and its glucoside.

The metabolic profile for BYI08330 in potatoes was qualitatively similar to the profiles found in apple, cotton, and lettuce with some minor differences. The first step in the metabolism of BYI08330 involved hydrolysis of the ethyl carbonate group of BYI08330 to BYI08330-enol. BYI08330-enol further metabolized via oxidative processes leading to the formation of BYI08330-ketohydroxy, BYI08330-di-

hydroxy, BYI08330-enol-alcohol, and BYI08330-ketohydroxy-alcohol. Oxidative demethylation of BYI 08330-enol formed BYI 08330-desmethyl-enol. BYI08330-enol, BYI 08330-desmethyl-enol, and BYI08330-ketohydroxy-alcohol were conjugated with glucose.

I. MATERIALS AND METHODS

A. MATERIALS

1. **Test Material:** BYI08330 [Azaspirodecenyl-3-^{14}C] BYI08330
   Purity: radiochemical purity = 99%
   Specific Activity: 3.67 MBq/mg (99.2 µCi/mg, 2.202 × 108 dpm/mg)
   CAS #: 203313-25-1

2. **Soil:** A [redacted] (Germany) loamy sandy was used.

Table 6.2.1.4-1 Soil Physicochemical Properties

Soil Series	Soil Type	pH	%OM	CEC meq/100g
[redacted] 3	Sandy Loam	6.4	2.34	5.9

B. STUDY DESIGN

The study was conducted during the period between June 25th, 2004 and December 5th, 2005 by Bayer CropScience AG located in [redacted], Germany. The experimental phase of the study began on June 29th, 2004 and concluded on June 15th, 2005.

1. Experimental conditions

The metabolism of [azaspirodecenyl-3-^{14}C] BYI08330 was investigated in potato plants (variety: Grata) which were cultivated in a planting container with a surface area of approximately 1 m^2 in the vegation area under natural light and temperature conditions.

Three spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion (100 OD) were applied to the potato plants at a target application rate of 96 g ai/ha/application with 21 days between applications. The actual total application rate was 308 g ai/ha (1.1X to 1.8X the recommended total use rates). The test substance applications were made at BBCH crop growth stages 75 (50% of the berries in the first fructification have reached full size or have been shed), 85 (berries in the first fructification ochre-coloured or brownish), and 93 (most of the leaves yellowish).

2. Sampling

Potato leaves and tubers plants were harvested at 14 days after the final treatment.

II. RESULTS AND DISCUSSION

A. TOTAL RADIOACTIVE RESIDUE (TRR)

The total radioactive residues (TRRs) in potato leaves and tubers were determined by summing the residues in the extracts and the extracted solids. Following three foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 to potato plants at a total application rate of 308 g a.s./ha, the TRRs found in potato leaves and tubers collected at 14 days after the final application were 11.057 ppm and 0.255 ppm, respectively (Table 6.2.1.4-2).

Table 6.2.1.4-2 Total radioactive residues (TRRs) in potato leaves and tubers following foliar spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 100 OD at a total application rate of 308 g a.s./ha.

	TRRS (PPM) IN POTATO MATRICES		
Commodity	Extracts	Extracted Solids	Total
Leaves	10.616	0.442	11.057
Tubers	0.241	0.014	0.255

B. EXTRACTION AND CHARACTERIZATION OF RESIDUES

The extractability of ^{14}C residues in potato leaves and tubers is shown in Table 6.2.1.4-3.

Table 6.2.1.4-3 Extraction efficiency for residues of [azaspirodecenyl-3-^{14}C] BYI08330 in potato leaves and tubers.

EXTRACTABILITY OF RADIOACTIVE RESIDUES IN POTATO LEAVES AND TUBERS				
	Leaves		Tubers	
Fraction	% TRR	ppm	% TRR	ppm
ACN/Water + ACN Extract	96.0	10.616	80.2	0.205
Diastase Enzyme Extract	n.a.[a]	n.a.[a]	14.3	0.036
Extracted Solids	4.0	0.442	5.5	0.014
Total	100	11.057	100	0.255

[a]n.a. = not applicable

1. Extraction and characterization of residues in potato leaves.

An aliquot of the homogenized sample was extracted three times with acetonitrile/water (4/1, v/v) and once with ACN. The extracts were combined, and aliquots of the combined extracts and the extracted solids were analyzed for radioactivity by LSC. The combined ACN/water and ACN extracts was concentrated to the aqueous remainder, and the aqueous sample was partitioned against dichloromethane yielding an organic and an aqueous phase. The organic and aqueous phases were measured for radioactivity by LSC, concentrated, and analyzed by HPLC.

Extraction of potato leaves with ACN/water (4:1, v/v) and ACN solubilized 96% (10.616 ppm) of the TRR in the sample (Table 6.2.1.4-3). The extracted solids contained only 4% (0.442 ppm) of the TRR in the leaves. Fractionation of the combined extracts between dichloromethane and water resulted in 80.1% (8.852 ppm) of the TRR in the dichloromethane phase and 16.0% (1.764) of the TRR in the aqueous phase (Table 6.2.1.4-4).

2. Extraction and characterization of residues in potato tubers

An aliquot of the homogenized potato tuber sample was extracted three times with ACN /water (4/1, v/v) and once with ACN. The extracts were combined, and aliquots of the combined extracts and the extracted solids were assayed for radioactivity by LSC. The combined ACN/water extract was concentrated to the aqueous remainder, and the aqueous sample was partitioned against dichloromethane yielding an organic and an aqueous phase. The organic and aqueous phases were measured for radioactivity by LSC, concentrated, and analyzed by HPLC.

The solvent-extracted solids were further treated (twice) with diastase solution. The supernatants were combined and analyzed by LSC and HPLC.

Extraction of potato tubers with ACN/water (4:1, v/v) and ACN solubilized 80.2% (0.205 ppm) of the TRR in the sample (Table 6.2.1.4-3). Further treatment of the solvent-extracted solids with diastase extracted an additional 14.3% (0.036 ppm) of the TRR. The diastase-extracted solids contained only 5.5% (0.014 ppm) of the TRR in the tubers. Fractionation of the combined ACN/water (4:1, v/v) and ACN extracts between dichloromethane and water resulted in 63.5% (0.162 ppm) of the TRR in the dichloromethane phase and 16.7% (0.043) of the TRR in the aqueous phase (Table 6.2.1.4-4)..

5. Storage stability of residues

All samples including extracts and extracted solids) were stored at ≤ 20°C during the duration of the study. Extraction of all samples with ACN/water and ACN and chromatographic profiling of residues in the extracts were performed within 7 days after harvest. For potato tubers, exhaustive extraction of the ACN/water and ACN-extracted solids with diastase occurred at 7 months after harvest. However, this later extraction involved 19.8% of the TRR (0.050 ppm) in the potato tubers. Analysis of the combined ACN/water and ACN extracts which contained the majority of the residues (80.2% of the TRR, 0.205 ppm) in the tubers was accomplished within 7 days after harvest.

Furthermore, the major residue in the diastase extract (which was obtained at 7 months after harvest) was BYI08330-enol (Table 6.2.1.4-4), the first metabolite formed in the metabolic process for BYI08330 and a relevant residue which is measured by the analytical residue method for crops. Therefore, the later analysis of the ACN/water and ACN-extracted solids with diastase did not adversely impact the elucidation of the nature of the BYI08330 residue in potatoes and the relevant BYI08330 residues for risk assessment and enforcement did not change.

6. Identity of residues in/on potato leaves.

HPLC analysis of the organosoluble (DCM) phase of the potato leaves extract showed two major and nine minor components representing <1% to 45.6% (0.017 to 5.040 ppm) of the TRR in the leaves (Tables 6.2.1.4-4 and 6.2.1.4-5). The chromatographic profile of the aqueous phase showed 26 minor components ranging from <1% to 3.8% (0.010 to 0.415 ppm) of the residues in leaves.

The major residues found in the potato leaves were BYI08330 (49.4% of the TRR, 5.455 ppm) and BYI08330-ketohydroxy (24.8% of the TRR, 2.745 ppm). The minor residues found in the leaves were BYI08330-enol and its glucoside (3.6% to 7.8% of the TRR, 0.395 to 0.870 ppm), BYI08330-desmethyl-enol and its glucoside (0.5% to 1.1% of the TRR, 0.055 to 0.119 ppm), and BYI08330-enol-alcohol (0.2% of the TRR, 0.020 ppm). These components were identified by co-chromatography using HPTLC, TLC, and/or HPLC with authentic reference standards.

Twenty-six minor unknown metabolites representing 0.1% to 0.8% of the TRR (0.010 to 0.092 ppm) were found in the HPLC chromatograms of the DCM and aqueous phases. These metabolites were characterized by their partition into an aqueous phase and reversed phase HPLC retention times.

A total of 87.4% of the TRR in potato leaves collected at 14 days after the final application was identified. An additional 8.7% of the TRR was characterized and 4.0% of the TRR was unextractable.

7. Identity of residues in/on potato tubers.

HPLC analysis of the organosoluble (DCM) phase of the potato tubers extract showed one major and five minor components representing <1% to 54.9% (0.001 to 0.140 ppm) of the TRR in the tubers (Tables 6.2.1.4-4 and 6.2.1.4-5). The chromatographic profile of the aqueous phase of the ACN/water and ACN extracts showed 34 minor components ranging from <1% to 4.5% (<0.001 to 0.012 ppm) of the residues. Analysis of the diastase extract showed one major and three minor components ranging from <1% to 10.3% of the TRR (0.002 to 0.026 ppm) in the tubers.

The major residue found in the potato tubers was BYI08330-enol (65.8% of the TRR, 0.168 ppm). The minor residues were BYI08330-ketohydroxy (6.8% of the TRR, 0.018 ppm), BYI08330-desmethyl-enol and its glucoside (1.5% to 6.7% of the TRR, 0.004 to 0.018 ppm), BYI08330-enol-glucoside (2.5% of the TRR, 0.006 ppm), BYI08330-enol-alcohol (0.8% of the TRR, 0.002 ppm), and BYI08330-ketohydroxy-alcohol and its glucoside (sum: 1.0% of the TRR, 0.002 ppm). These components were identified by co-chromatography using HPTLC, TLC and/or HPLC with authentic reference standards.

Twenty-nine minor unknown metabolites ranging from 0.1% to 2.3% of the TRR (<0.001 to 0.006 ppm) were found in the HPLC chromatograms of the DCM and aqueous phases and diastase extract. These metabolites were characterized by their extraction/partition, and chromatographic (reversed phase HPLC retention times) behaviours.

A total of 85.1% of the TRR in potato tubers collected at 14 days after the final application was identified. An additional 9.4% of the TRR was characterized and 5.5% of the TRR remained unextractable.

8. Development of analytical procedures

Analytical procedures developed in the course of the study were used as the basis for the development of the method for the determination of BYI08330 residues in potato matrices. In addition, a radiovalidation study has been conducted to verify that aged BYI08330 residues can be adequately extracted from plant matrices using the analytical method.

9. Proposed degradation pathway

The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in potatoes is shown in Figure 6.2.1.4-1.

Following the initial hydrolysis of the ethyl carbonate group of BYI08330 to BYI08330-enol, the following metabolic processes were observed:

Oxidation of BYI08330-enol to BYI08330-ketohydroxy, BYI08330-di-hydroxy, BYI08330-enol-alcohol, and BYI08330-ketohydroxy-alcohol.
Demethylation of BYI 08330-enol to BYI 08330-desmethyl-enol.
Conjugation of BYI08330-enol, BYI 08330-desmethyl-enol, and BYI08330-ketohydroxy-alcohol with glucose.

III. CONCLUSIONS

Following three spray applications of [azaspirodecenyl-3-^{14}C] BYI08330 formulated as an oil dispersion to potato plants at a target application rate of 96 g. a.s./ha/application, the TRRs found in potato leaves and tubers collected at 14 days after the final application were 11.057 ppm and 0.255 ppm, respectively. Extractability of residues ranged from 94.5% to 96.0% of the TRRs in the leaves and tubers, 85.1% to 87.4% of the TRRs were identified, 8.7% to 9.4% of the TRRs were characterized by extraction, partition, and chromatographic behaviour, and 4.0% to 5.5% of the TRRs were unextractable.

Unchanged parent compound was the predominant residue in potato leaves (49.4% of the TRR) but was negligible or absent from the tubers. The initial hydrolysis product, BYI08330-enol was the predominant residue in tubers (65.8% of the TRR in tubers), but was a minor component in leaves. Oxidation the pyrroline moiety and one of the aromatic methyl groups followed by conjugation led to the formation of BYI08330-ketohydroxy, a major metabolite in potato leaves (24.8% of the TRR in leaves), and BYI08330-enol-alcohol, BYI08330-ketohydroxy-alcohol, and BYI08330-ketohydroxy-alcohol-glucoside as minor components of the leaves and tubers. Demethylation of BYI08330-enol followed by conjugation gave BYI08330-desmethyl-enol and its glucoside as minor metabolic products.

Qualitatively, the residues found in the potato leaves and tubers were similar to the residues found in the metabolism studies performed in apples and lettuce with minor differences. Based on the metabolic profiles of BYI08330 in apples, cotton, lettuce, and potato, BYI08330, BYI08330-enol and its glucoside, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy in target crops for data collection and dietary risk assessment. The metabolic profile of BYI08330 in potatoes validates the selection of these BYI08330 crop residues for the analytical method and risk assessment.
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Table 6.2.1.4-4 Distribution of residues in/on potato leaves and tubers following three foliar applications of [Azaspirodecenyl-3-^{14}C] BYI08330 100 OD.

	Potato Tuber (TRR = 0.255 ppm)		Potato Leaves (TRR = 11.057 ppm)	
Fraction/Metabolite	% of TRR	ppm	% of TRR	ppm
Organosoluble (dichloromethane phase)	**63.5**	**0.162**	**80.1**	**8.852**
BYI 08330	n.d.	n.d.	45.6	5.040
BYI 08330-enol	54.9	0.140	7.1	0.788
BYI 08330-ketohydroxy	5.9	0.015	24.6	2.719
BYI 08330-desmethyl-enol	1.1	0.003	0.5	0.050
3 unknown metabolites in tuber (each <1% TRR)	1.6	0.004	--	--
7 unknown metabolites in leaves (each <1% TRR)	--	--	2.3	0.255
Aqueous soluble (water phase)	**16.7**	**0.043**	**16.0**	**1.764**
BYI 08330	n.d.	n.d.	3.8	0.415
BYI 08330-desmethyl-enol	4.5	0.012	0.6	0.069
BYI 08330-ketohydroxy-alcohol	0.5	0.001	n.d.	n.d.
BYI 08330-enol-glucoside	2.5	0.006	3.6	0.395
BYI 08330-desmethyl-enol-glycoside	1.5	0.004	0.5	0.055
BYI 08330-ketohydroxy-alcohol-glycoside	0.5	0.001	n.d.	n.d.
BYI 08330-enol	0.6	0.002	0.7	0.082
BYI 08330-enol-alcohol	0.6	0.002	0.2	0.020
BYI 08330-ketohydroxy	0.3	0.001	0.2	0.026
BYI 08330-dihydroxy	0.2	0.001	n.d.	n.d.
25 unknown metabolites in tuber (each <1% TRR)	5.5	0.014	--	--
19 unknown metabolites in leaves (each <1% TRR)	--	--	6.4	0.702
Diastase extract	**14.3**	**0.036**	--	**--**
BYI 08330-enol	10.3	0.026	--	**--**
BYI 08330-desmethyl-enol	1.1	0.003	--	**--**
BYI 08330-ketohydroxy	0.6	0.002	--	**--**
1 unknown region (in the void volume)	2.3	0.006	--	**--**

Table 6.2.1.4-4 (contd).

	Potato Tuber (TRR = 0.255 ppm)		Potato Leaves (TRR = 11.057 ppm)	
Fraction/Metabolite	% of TRR	ppm	% of TRR	ppm
Total extractable	**94.5**	**0.241**	**96.0**	**10.616**
Total identified (solvent extract)	**73.1**	**0.186**	**87.4**	**9.659**
Total identified (diastase extract)	**12.0**	**0.031**	**--**	**--**
Total characterized (solvent extract)[a]	**7.1**	**0.018**	**8.7**	**0.957**
Total characterized (diastase extract)[a]	**2.3**	**0.006**	**--**	**--**
Total bound residues (PES)	**5.5**	**0.014**	**4.0**	**0.442**
% Accountability Total (ppm)/TRR (ppm) * 100 %	**100.0**	**0.255**	**100.0**	**11.057**

[a] Unidentified metabolites were characterized by extraction, phase partitioning and chromatographic behaviour.

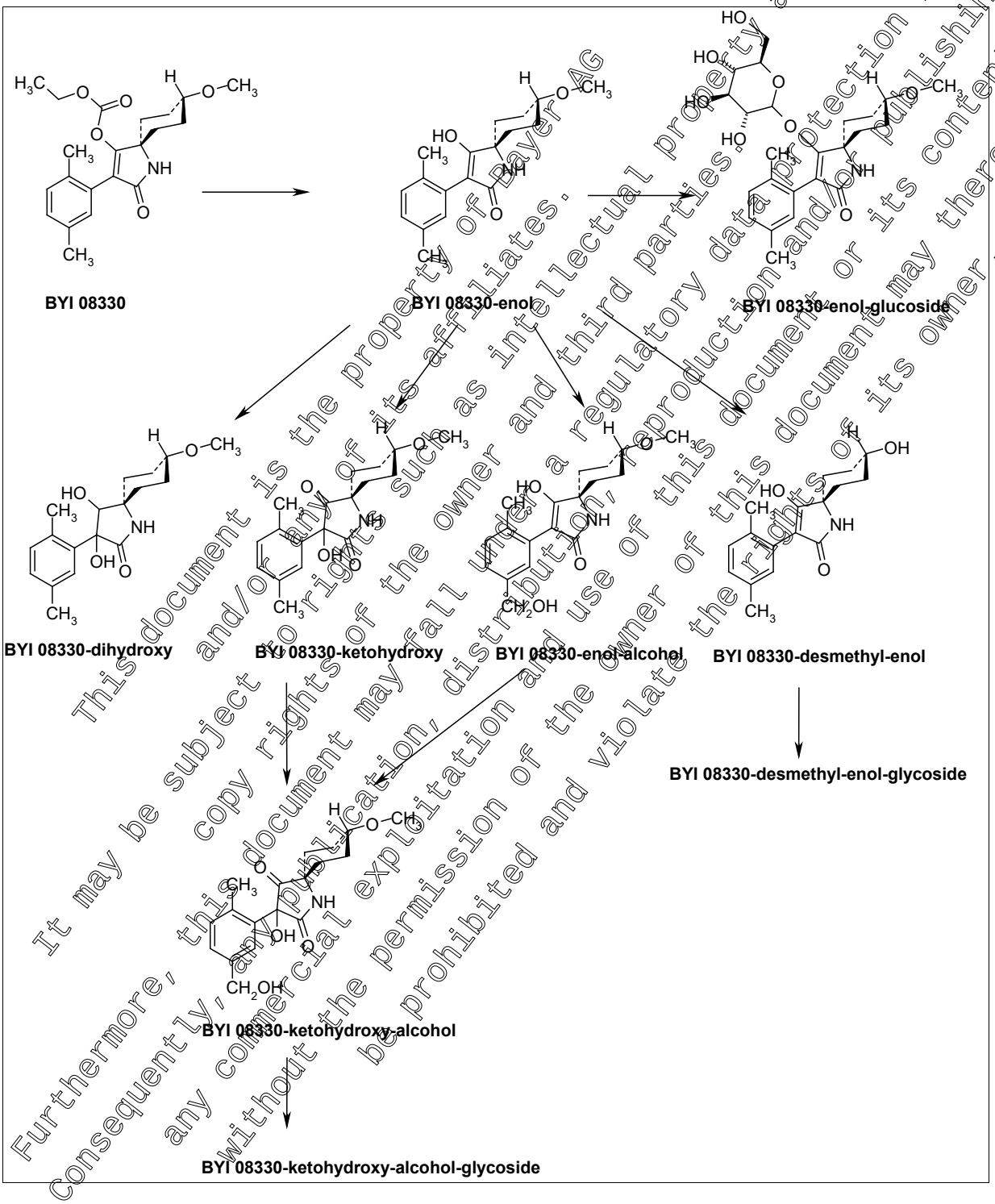
Table 6.2.1.4-5 Summary of characterization and identification of radioactive residues potato leaves and tubers following three foliar applications of [azaspirodecenyl-3-^{14}C] BYI08330 at a total application rate of 308 g ai/ha.

	Potato Tuber (TRR = 0.255 ppm)		Potato Leaves (TRR = 11.057 ppm)	
Component	% of TRR	ppm	% of TRR	ppm
BYI 08330	n.d.	n.d.	49.4	5.455
BYI 08330-enol	65.8	0.168	7.8	0.870
BYI 08330-enol-glucoside	2.5	0.006	3.6	0.395
BYI 08330-desmethyl-enol	6.7	0.018	1.1	0.119
BYI 08330-desmethyl-enol-glycoside	1.5	0.004	0.5	0.055
BYI 08330-enol-alcohol	0.6	0.002	0.2	0.020
BYI 08330-ketohydroxy	6.8	0.018	24.8	2.745
BYI 08330-ketohydroxy-alcohol	0.5	0.001	n.d.	n.d.
BYI 08330-ketohydroxy-alcohol-glycoside	0.5	0.001	n.d.	n.d.
BYI 08330-dihydroxy	0.2	0.001	n.d.	n.d.
Total identified	**85.1**	**0.217**	**87.4**	**9.659**
Total characterized[a]	**9.4**	**0.024**	**8.7**	**0.957**

Total extractable (organic phase + aqueous phase + diastase extract)	**94.5**	**0.241**	**96.0**	**10.616**
Total bound residues (PES)	**5.5**	**0.014**	**4.0**	**0.442**

[a] Unidentified metabolites were characterized by extraction, phase partitioning and chromatographic behaviour.

Figure 6.2.1.4-1. The proposed metabolic pathway for [azaspirodecenyl-3-^{14}C] BYI08330 in potato.



IIA 6.2.1.5 Metabolism in plant suspension cell cultures

Report:	**IIA 6.2.1/05, [redacted] 2004 (MEF-262/03)**
Title:	**Degradation of [azaspirodecenyl-3-^{14}C]BYI08330 by plant suspension cell cultures**
Report No & Document No	**MEF-262/03** **Date: January 21, 2004** **M-106579-01-1**
Guidelines	**Supplemental study** **No guidelines available for this study type**
GLP	**Fully GLP compliant - laboratory certified by German "Ministerium für Umwelt, Raumordnung und Landwirtschaft des Landes Nordrhein-Westfalen".**
Testing Laboratory and Dates	**Bayer CropScience AG, Metabolism and Environmental Fate, D-[redacted], GER, conducted the study during the period of March 19, 2003 to January 21, 2004** **Experimental phase: March 28, 2003 to September 1, 2003**

Executive summary

The metabolism of the insecticide BYI08330 was investigated in heterotrophic plant cell suspension cultures originating from apple fruit following incubation with [azaspirodecenyl-3-^{14}C]BYI08330. The cells were applied at day three, at the beginning of the exponential growth phase.

After an incubation period of seven days the cells were separated from the nutrient medium by filtration. The cells were extracted in acetonitrile/water (4/1, v/v) leaving the cell extract and solids. Nutrient medium and cell extract were partitioned with ethyl acetate. The recovery of the applied radioactivity in the cell culture amounted to 101.9% (16.37 mg a.i. equiv.), which was set to 100% for calculations. Approximately 44% of the recovered radioactivity was found in the cells (7.16 mg a.i. equiv.) and ca. 56% (9.21 mg a.i. equiv.) in the nutrient medium. The major part of the radioactivity present in the extracts of cells and nutrient medium partitioned into the organic phase (ethyl acetate). The formation of bound residues observed was minimal (<1% of the recovered radioactivity, 0.06 mg a.i. equiv).

BYI08330 was rapidly degraded by the apple cells and up to 14 different metabolites were isolated from the organic and aqueous phases of the nutrient media and cell extracts, respectively. 13 of these were identified by spectroscopic methods.

Major reactions involved in the degradation of the parent compound were hydrolysis of the side chain ester bond resulting in the BYI08330-enol. A second hydroxylation detected in the azaspiro moiety of the BYI08330-enol gave the BYI08330-ketohydroxy.

Demethylation of BYI08330-enol resulted in the corresponding BYI08330-desmethyl-enol (named BYI08330-4-hydroxy-enol in the study report) and further hydroxylation correspondingly in the BYI08330-desmethyl-ketohydroxy metabolite (named BYI0830-hydroxy-keto-hydroxy in the study report). All metabolites were further conjugated to give mono and bis-glycosides.

Most of the isolated and identified metabolites served as radioactive reference compounds for co-chromatographic identifications in other metabolism studies.

IIA 6.2.1.6 Metabolism, distribution and expression of residues in other plant species

Metabolism studies on four dissimilar crops (apples, cotton, lettuce, and potato) have been conducted with [azaspirodecenyl-3-^{14}C] BYI08330 and the metabolic profiles have been found to be similar with minor differences. Based on the current proposed uses, additional plant metabolism studies should not be required for BYI08330.

IIA 6.2.1.7 Comparison of plant and animal metabolic pathways

The proposed metabolic pathways for BYI08330 in target crops (apple, cotton, lettuce, and potato), livestock (dairy goat and laying hen), and rat are presented in Figure 6.2.1.7-1. The residues identified in the target crops are also summarized in Table 6.2.1.7-1. BYI08330 was completely metabolized in animals, but significant levels of the parent compound were found in plant matrices (representing a maximum of 72%, 79%, 56%, and 49% of the TRRs in apple, cotton, lettuce, and potato, respectively). In spite of the complete metabolism of BYI08330 in animals, the metabolic profile found in animals was not as complex as the profile found in target crops. The rapid excretion of the enol and its glucuronide conjugate could partly account for the lack of complexity in the metabolism of BYI08330 in animals.

The predominant metabolic pathway for BYI08330 in both plants and animals was the initial metabolic pathway leading to the formation of BYI08330-enol and its conjugates (glucoside in plants and glucuronide in animals). Successive oxidations of the enol leading to the formation of BYI08330-ketohydroxy and BYI08330-enol-alcohol and demethylation of BYI08330-enol and BYI08330-ketohydroxy to form BYI08330-desmethyl-enol and BYI08330-desmethyl-ketohydroxy were also common to plants and animals. Reduction of BYI08330-enol to the mono-hydroxy metabolite was found in livestock and plants.

BYI08330-MA-amide, BYI08330-olefin, BYI08330-mandelic acid, BYI08330-mandelic acid amide, and BYI08330-hydroxymorpholinedione were only found in cotton matrices (commodities not used for direct human consumption) and were not found in rats and livestock. However, only BYI08330-mandelic acid amide exceeded 10% of the residues in cotton lint which is neither used for human consumption nor for animal feedstuff.
The remaining cotton-specific residues in the relevant cotton RAC's gin trash (gin byproducts) and undelinted seeds were found at 0.6% to 4.0% of the TRRs and were not significant enough to change the BYI08330 residues of concern in target crops.

BYI08330-di-hydroxy, BYI08330-ketohydroxy-alcohol and its glucoside, BYI08330-desmethyl-ketohydroxy-glucoside, and the glucoside of BYI08330-ketohydroxy-formiate were found only as minor metabolites in plants.

Table 6.2.1.7-1 Metabolites identified in the apple, cotton, lettuce, and potato plant metabolism studies with [azaspirodecenyl-3-^{14}C] BYI08330.

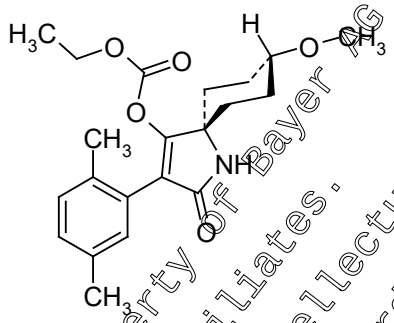
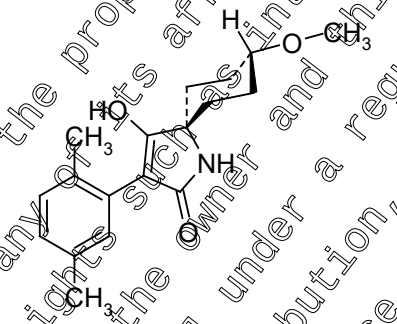
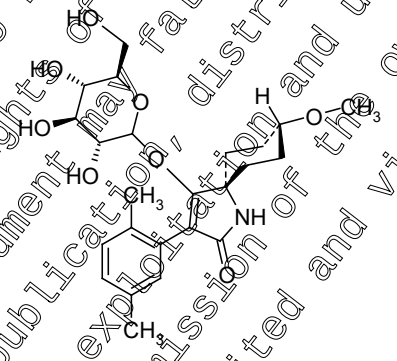
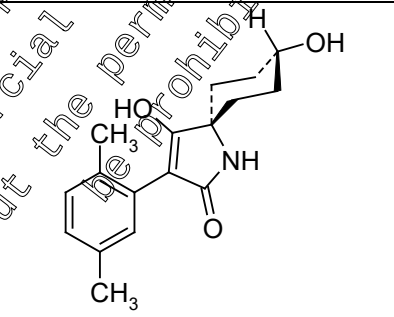
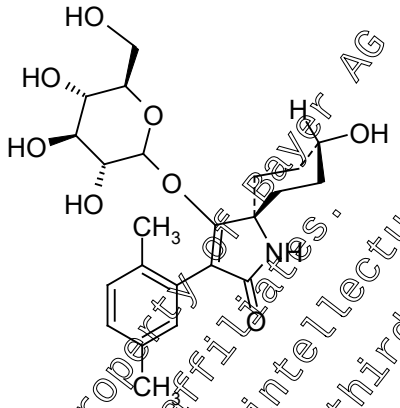
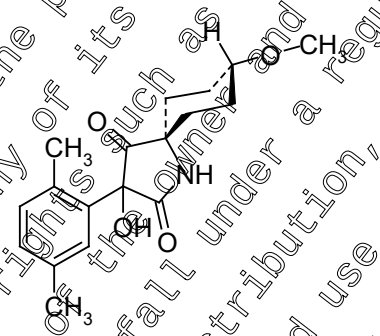
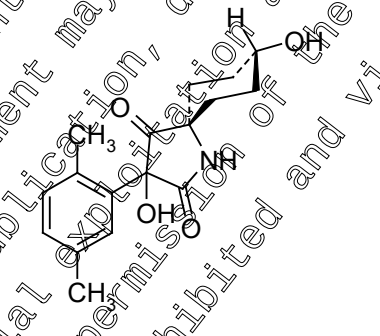
Report name/ Chemist Code/Peak ID	Chemical Structure	Chemical Name (IUPAC)
Active ingredient BYI 08330 [^{14}C]BYI 08330 - SA061210 - SA065212 - SA0601S1 non radiolabelled reference compound - FHN12952		3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate
BYI 08330-enol [^{14}C]BYI 08330-enol - SA06525 - KM56072S non radiolabelled reference compound - FHN13777 (M26547) - FHN8141 - A1302944		3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one
BYI 08330-enol-Glc [^{14}C]BYI 08330-enol-Glc - SA06154		glucoside of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one
BYI 08330-desmethyl-enol non-radiolabelled reference compound - FHN 9659 (cis:trans = ca. 9:1)		cis-3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one

Table 6.2.1.7-1 (continued).

Report n ame/ Chemist Code/Peak ID	Chemical Structure	Chemical Name (IUPAC)
BYI 08330-desmethyl-enol-Glc		glucoside of 3-(2,5-dimethylphenyl)-4,8-dihydroxy-1-azaspiro[4.5]dec-3-en-2-one
BYI 08330-ketohydroxy [^{14}C]BYI 08330-ketohydroxy - SA06127 - SA065217 - KM56073S - HO35012 non radiolabelled reference compound - FHN14066		3-(2,5-dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione
BYI 08330-desmethyl-ketohydroxy [^{14}C]BYI 08330-desmethyl-ketohydroxy - SA06123 - KM56091S (= KM56091) BYI 08330-desmethyl-ketohydroxy - FHN15271		3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5] decane-2,4-dione

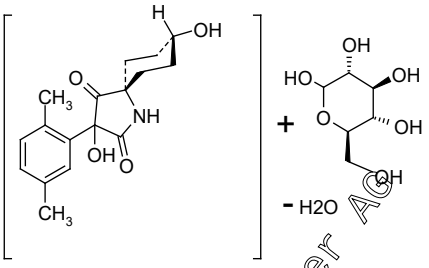
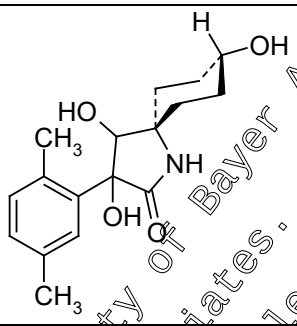
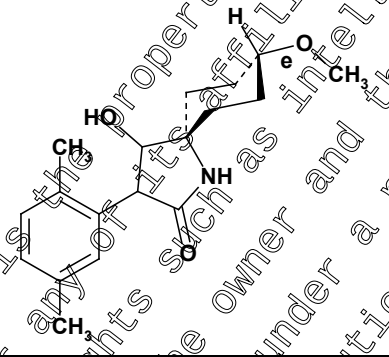
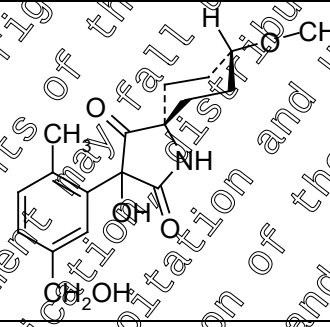
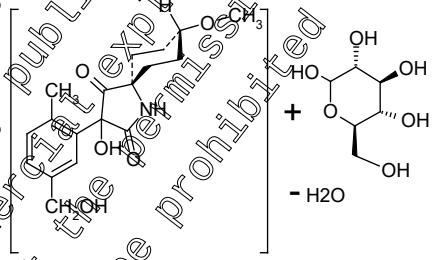
BYI08330-desmethyl-ketohydroxy-glycoside(s) sample code of ^{14}C-metabolite isolated from cell culture (Report No. MEF-263/03) - KM56154s		glycoside isomers: cis-3-(2,5-dimethylphenyl)-8-hydroxy-2,4-dioxo-1-azaspiro[4.5]dec-3-yl hexopyranoside cis-3-(2,5-dimethylphenyl)-3-hydroxy-2,4-dioxo-1-azaspiro[4.5]dec-8-yl hexopyranoside

Table 6.2.1.7-1 (continued).

Report name/ Chemist Code/Peak ID	Chemical Structure	Chemical Name (IUPAC)
BYI 08330-dihydroxy non-radiolabelled reference compound - FHN 15104		cis-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5] decan-2-one
BYI08330-mono-hydroxy non-radiolabelled reference compound - FHN15436 (batch FHN15436-4-3) - lab. sample ID: PO5301Db		cis-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]decan-2-one
BYI 08330-ketohydroxy-alcohol non-radiolabelled reference compound - FHN15262		cis-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro [4.5]decane-2,4-dione
BYI08330-ketohydroxy-alcohol-Glc		Glucoside of (5s,8s)-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]decane-2,4-dione

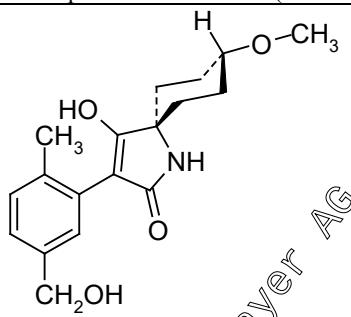
BYI 08330-enol-alcohol non-radiolabelled reference compound - FHN 15251		cis-4-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one

Table 6.2.1.7-1 (continued).

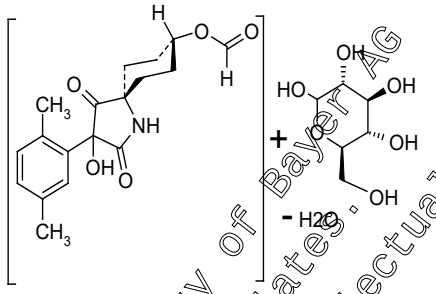
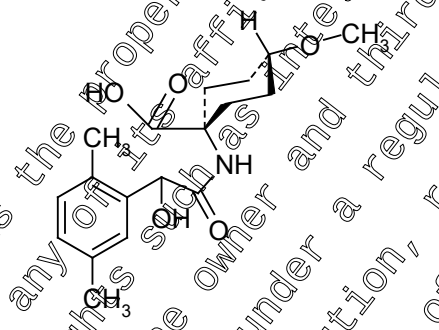
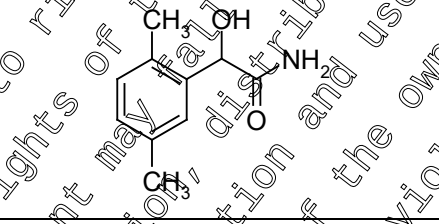
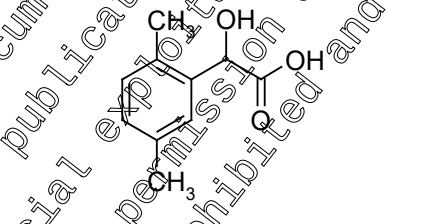
Report name/ Chemist Code/Peak ID	Chemical Structure	Chemical Name (IUPAC)
BYI08330-ketohydroxy-formiate-glycoside		cis-3-(2,5-dimethylphenyl)-3-(hexopyranosyloxy)-2,4-dioxo-1-azaspiro [4.5]dec-8-yl formate
BYI 08330-MA-amide [^{14}C] BYI 08330-MA-amide - SA06124 non radiolabelled reference compound - FHN14065		1-{[(2,5-dimethylphenyl)(hydroxy)acetyl]amino}-4-methoxycyclohexane-carboxylic acid
BYI 08330-mandelic acid amide [^{14}C]BYI 08330-mandelic acid amide - SA06521 - SA065221		2-(2,5-dimethylphenyl)-2-hydroxyacetamide
BYI 08330-mandelic acid [^{14}C]BYI 08330-mandelic acid - SA06522 non radiolabelled reference compound - HMT5297		(2,5-dimethylphenyl)(hydroxy) acetic acid

Table 6.2.1.7-1 (continued).

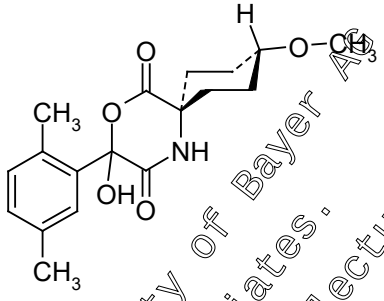
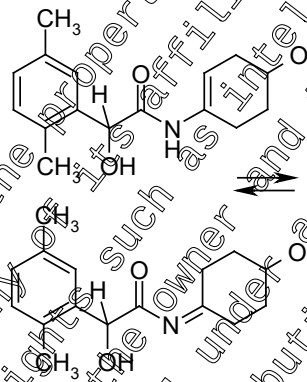
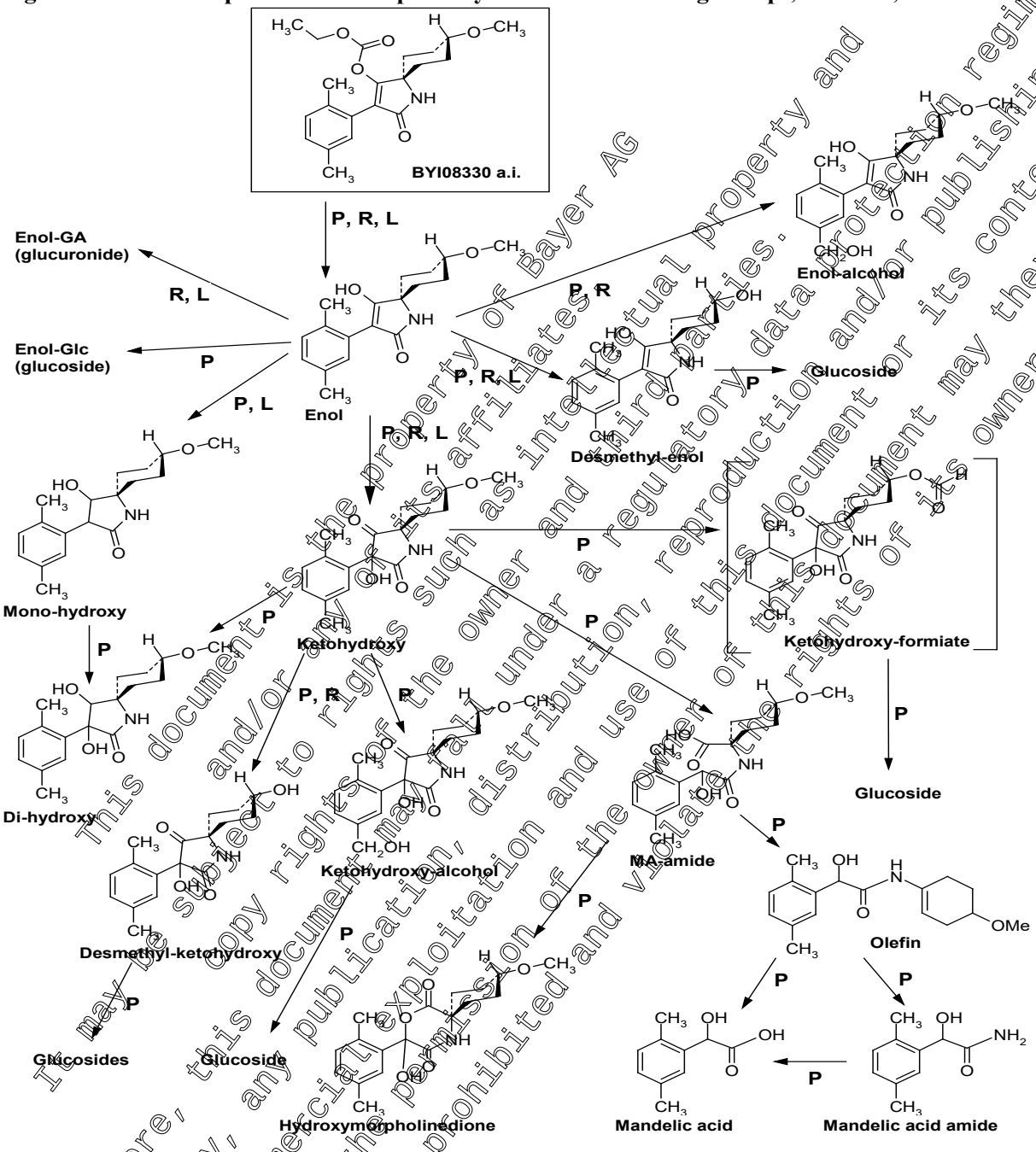
Report name/ Chemist Code/Peak ID	Chemical Structure	Chemical Name (IUPAC)
BYI 08330-hydroxymorpholinedion [^{14}C]BYI 08330-hydroxymorpholinedion - SA06122		3-(2,5-dimethylphenyl)-3-hydroxy-9-methoxy-4-oxa-1-azaspiro[5.5]undecane-2,5-dione
BYI 08330-olefin [^{14}C] BYI 08330-olefin - SA065219 - SA065220		2-(2,5-dimethylphenyl)-2-hydroxy-N-(4-methoxycyclohex-1-en-1-yl)acetamide or 2-(2,5-dimethylphenyl)-2-hydroxy-N-(4-methoxycyclohexylidene)acetamide

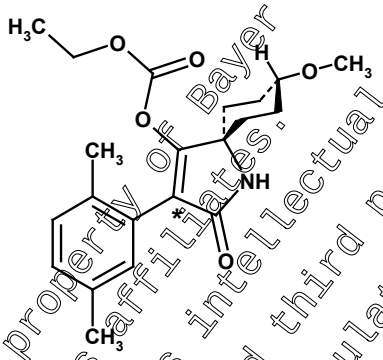
Figure 6.2.1.7-1 Proposed metabolic pathway for BYI08330 in target crops, livestock, and rat.



P = Plants (Apple, Cotton, Lettuce, and Potato as Target Crops)
L = Livestock (Lactating Goat and Laying Hen)
R = Rat

IIA 6.2.2 Poultry

A study on the metabolism of BYI08330 in laying hens was conducted with the radiolabeled test item [azaspirodecenyl-3-^{14}C]BYI08330 (Report No.MEF-05/273) as shown by the following structural formula (* denotes the label position):



[azaspirodecenyl-3-^{14}C]BYI08330

Report:	**KIIA 6.2.2/01, Authors: [redacted], 2006**
Title:	**Metabolism of [azaspirodecenyl-3-^{14}C]BYI08330 in the Laying Hen**
Report No & Document No	**MEF-05/273 Date: 2006-01-31** **M-268574-01-2**
Guidelines:	**US-EPA, Residue Chemistry OPPTS 860.1300;** **Health [redacted] PMRA, DACO 6.2;** **EU, Council Directive 91/414/EEC amended by Directive 96/68/EC, 7030/VI/95/rev.3 Appendix F**
GLP	**Yes, according to Japan MAFF GLP standard 11 Nousan 6283;** **US-EPA – FIFRA GLP (40CFR Part 160);** **Principles of GLP, German Chemical Law, current version of Annex 1**
Testing Facility and Dates	**Bayer CropScience AG, Research and Development - Development, Metabolism, Environmental Fate, [redacted], Germany** **Experimental work: 2004-02-26 – 2004-06-23**

Executive Summary

The nature of residues in eggs and foodstuff originating from poultry was investigated with 6 laying hens following 14 oral administrations of [azaspirodecenyl-3-^{14}C]BYI08330 at a daily dose rate of 1.01 mg/kg bw/day (12.86 ppm in the diet) given by gavage.

The intestinal absorption was estimated to be high as derived from the behaviour of the test compound in rat and goat and from the high residues in kidneys of laying hens.

Extremely low amounts of radioactivity were transferred into eggs (0.045 % of the total administered dose) and retained in edible organs and tissues of the body (0.023 % of the total administered dose) at the time of sacrifice 24 h after the last dose. The residues in eggs reached a plateau level after day 7 of the treatment. The total (radioactive) residues in edible materials were very low in the range of 0.003 – 0.017 mg equ./kg. Nevertheless, the residues could be extracted with high rates (68.6 – 95.5%) and the identification rates were in the range of 65.1 – 90.8 % for eggs, muscle, and liver. In fat, the identification rate amounted 18.4 %; further 56.5% of the TRR were characterized as a conjugate.

In eggs, muscle, and liver, the metabolite BYI08330-enol revealed to be the predominant component of the residues accounting for 50 – 84 % of the total (radioactive) residues in the corresponding samples. BYI08330-enol-GA was detected as a minor metabolite in liver, eggs and muscle amounting to 15 % of the TRR, at maximum (liver). In fat, BYI08330-enol accounted for only 18.4% of the TRR. A major component of the residue (56.5% of the TRR) was characterised as a conjugate by alkaline hydrolysis.

The biodegradation of BYI08330 in the laying hen can be characterised as cleavage of the ester group to the BYI08330-enol followed by conjugation of the enol hydroxy group with glucuronic acid to BYI08330-enol-GA. Oxidation of the azaspirodecenyl moiety to BYI08330-ketohydroxy and demethylation of the methoxy group to BYI08330-desmethyl-enol were exclusively found in the excreta. The metabolic pathway of [azaspirodecenyl-3-^{14}C] BYI08330 in the laying hen is proposed in Figure 6.2.2-1.

I. Material and Methods

A. Material

1. Test Material

IUPAC Name	**cis-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate**
Code name	**BYI08330**
Common name	**Spirotetramat (proposed ISO)**
Empirical formula	**C_{21} H_{27} N O_5**
Molar mass	**373.45 g/mol**
Labelling	**azaspirodecenyl-3-^{14}C**
Specific radioactivity	**3.67 MBq/mg = 2.2 x 10^{11} dpm/g = 2.2 x 10^{8} dpm/mg = 99.1 µCi/mg = 37.01 GBq/mo**
Radiochemical purity	**> 99 % by radio-HPLC and > 98 % by radio-TLC**
Dose level	**14 oral doses of 1.01 mg/kg bw/day by gavage**
Vehicle	**0.5 % aqueous tragacanth suspension**

2. Test Animals

Species	**laying hen (*Gallus gallus domesticus*)**
Strain	**"White Leghorn"**
Breeding facility	**[redacted], Germany**
Sex and numbers involved	**6 hens out of 15 animals in total selected by maximum egg production**
Age	**ca. 23 weeks**
Body weight	**1.71 kg at first administration, 1.74 kg at sacrifice**
Acclimatization	**13 days**
Identification	**cage labelling and wing tags**
Housing	**individually in stainless steel metabolism cages for laying hens allowing almost quantitative collection of eggs and excreta (supplier: [redacted], Germany room temperature 24 ± 0.9°C, relative humidity 36 ± 2.5%. 18 h light / 6 h dark cycle, air change 10 – 15 times per hour**
Feed and water	**The hens were fed with "[redacted]", type LS 211, a pulverised chicken feed, supplied by [redacted], Germany (ca. 200 g/day). The feed was supplemented by eggshells and lacustrine limestone from oysters for better egg production. The feed consumption was recorded by weighing during the experiment (mean consumption 135 g/day/hen), tap water, ad libitum**

B. Study Design

Dosing

For the 14 administrations, 5 dosing suspensions were prepared for each 3 daily doses the day before the first respective dosing. The radiolabeled test item proved to be stable until the last dose of the respective suspension.
The oral administration was carried out with knob cannula attached to a glass syringe. Directly after dosage, the act of swallowing was sustained by a gentle massage of the throat in direction of the crop. The laying hens received a mean dose of 1.74 mg (3.83 x 10^8 dpm) per animal and day at a mean body weight of 1.71 kg, corresponding to an actual dose of 1.01 mg a.s./kg bw. The radioactivity values of the actually administered amounts served as reference for the calculation of total radioactivity in the biological samples.
The administration volume was 1.0 mL/kg body weight.
The dose level was tolerated without any observable toxicological sign.

Sampling of eggs and excreta

During the test, the cages were inspected for egg production once daily (in the morning before administration) and the number of eggs was recorded for all hens. After sampling, the eggshells were discarded, and the white and yolk were weighed and afterwards thoroughly mixed. An aliquot sample of each egg mix was taken for the determination of the total radioactivity in triplicate by LSC. The residual amount of the egg-mix from all animals was stored at ca. – 18 °C in a freezer until start of the metabolite analysis.
The faecal-urine excreta were collected individually from the collecting tins as quantitatively as possible at room temperature in intervals of 24 hours until sacrifice. Following freeze-drying and homogenisation, the total weight of the samples was recorded. From one aliquot each, the radioactivity was determined by combustion / LSC. The remaining sample amount was stored at room temperature for metabolite analysis.

Sacrifice and sampling of organs and tissues

The treated hens were weighed and sacrificed ca. 24 hours after the last (14^{th}) dosage. The animals were anaesthetised using carbon dioxide gas, sacrificed by decapitation and exsanguinated. The organs and tissues were prepared immediately after sacrifice. Liver without the bile bladder, kidneys, leg and breast muscle, skin without subcutaneous fat, subcutaneous fat, eggs from the ovary and oviduct, as well as the gall bladder were sampled immediately after sacrifice and their fresh weights were recorded.

Sample preparation

The organs or tissue samples were then transferred into ice-cooled vessels. Liver, kidneys, muscle samples, and subcutaneous fat as well as eggs dissected from the ovary and oviduct were thoroughly homogenised in half-frozen state using a carefully cleaned mincing machine. An aliquot of each resulting tissue pulp was weighed, freeze-dried, weighed again, homogenised and determined triply for radioactivity by combustion following LSC.
Aliquots of subcutaneous fat and skin without fat were weighed and solubilised with tissue solubiliser BTS-450® and measured for radioactivity by LSC.

All samples were divided into equal portions and stored at ca. -18°C in a freezer until start of metabolite analysis.

To provide representative samples of eggs and organ/tissues corresponding samples of all individual animals were pooled before extraction. An egg pools was prepared, representing the collecting periods 2 - 14 days after the first administration. All egg samples from the respective collecting period were used for pooling. An aliquot of each muscle sample (leg and breast) of each hen was used for muscle pooling. An aliquot of the fat sample from each animal was used for preparation of the fat pool. An aliquot of the liver sample of each hen was used for liver pooling. All combined samples were thoroughly homogenised and afterwards divided in adequate portions.

The excreta sample of hen no 817 collecting period day 7 were used for excreta analysis.

The total radioactive residues (TRR) of each pool were determined by combustion/LSC (solid samples) or direct LSC (e.g. combined eggs and extracts). In a standardised manner, the samples of edibles/tissues and excreta were extracted 4 times with acetonitrile/water 70 : 30 (v/v). The extracts of each sample with radioactivity levels >LOQ were combined and degreased by SPE on a reversed phase cartridge preconditioned with acetonitrile/water 70 : 30 (v/v). Flow-through fraction and rinse solution (acetonitrile/water 70 : 30 (v/v)) of each sample were combined and concentrated prior to HPLC analysis for metabolic profiling.

Radioactivity measurement

Solid samples (e.g. lyophylisates) were combusted prior to radioactivity determination and the formed $^{14}CO_2$ absorbed in an alkaline trapping solvent. The determination of radioactivity of liquid samples was conducted on sub-samples (1 - 3 replicates) by liquid scintillation counting (LSC), with up to 20 min counting time until reaching a 2-σ error of 0.7 %. Quenching effects were automatically corrected using an external standard and quenching library. The instrument background of approximately 10 - 32 dpm was subtracted automatically. For all samples, the limit of detection (LOD) was established at approximately 10 dpm measured per aliquot after instrument background correction. The limit of quantification (LOQ) was established as 2 times of the background radioactivity (dpm) of each instrument/method.

Metabolite analysis

The prepared extracts were subjected to HPLC using a reversed phase column (C18) and the eluting solvents water/formic acid = 99 : 1 (v/v) and acetonitrile/water/formic acid = 97 : 2 : 1 (v/v/v) in the gradient mode. Detection was performed by a UV (254 nm) and a radioisotope detector with a glass scintillator. In order to check the completeness of the elution for the HPLC profile, representative samples of egg, muscle and liver extract were injected, re-collected, and radioassayed by LSC. The recoveries were between 99.1 and 100.5% of the injected radioactivity. Radiolabelled and non-labelled reference compounds were used for co-chromatography for identification of metabolites.

As a second chromatographic method TLC was employed on silica gel plates and radioluminography for detection of radioactive spots. The two following TLC solvent systems were used:

System 1	(normal phase)	
	Solvent:	ethyl acetate/propanol-2/water (65/23/12 v/v/v), with chamber saturation
System 2	(normal phase)	
	Solvent:	dichloromethane/methanol/ammonia solution 25% (90/10/1 v/v/v), without chamber saturation

TLC co-chromatography was used for confirmation of metabolites in isolated HPLC fractions. The sample extracts were fractionated with the HPLC profiling method and the peaks collected were concentrated to the aqueous remainder afterwards. Aliquots of these samples and of solutions of the reference items were applied individually and overlapped with each other on the TLC-plates. The plates were developed and dried afterwards. Co-chromatographic correspondence was assessed either by visual inspection of the plate under UV light and its associated radioluminogram or by analysis of the radioluminogram only, in cases where radioactive reference items were used.

II. Results and Discussion

A. Absorption, Distribution and Excretion of the Radioactivity

An almost quantitative recovery from organs and tissues, eggs, and combined faecal-urine excreta (90.12 % of the administered cumulative dose of [azaspirodecenyl-3-^{14}C]BYI08330) was achieved. The majority of the radioactivity (90.05 % of the total administered dose) was detected in the excreta until sacrifice. Excretion started immediately after the first administration. The time course of the excretion was characterised by a relatively constant rate starting at day 2 until test end. This constant excretion rate was a hint for an equilibrium between absorption, distribution and excretion.

The absorption rate could not be estimated directly, because the excreta of birds represent a mixture of the urinary and faecal excretion. However, compared to the high amount of renal excretion of ≥ 80% of the administered doses in the rat (Report No. MEF-048/04) and goat (Report No. MEF-05/293) metabolism studies as well the highest TRR-values that were detected in the kidneys, it is reasonable to believe that the renal excretion was the preferred way of elimination also in laying hen and therefore each oral dose was more or less completely absorbed. Very low proportions of 0.023 % of the total administered dose were detected in organs and tissues dissected from the body and 0.045 % in the eggs.

Low equivalent concentrations from 0.0005 to 0.0173 mg/kg were measured in the egg samples. The TRR reached a level of 0.0125 mg/kg already 2 days after the first administration and a small increase was measured up to 0.014 mg/kg until day 6. All values from day 7 to day 14 were in the range of 0.016 mg/kg. All these data showed that a residue plateau level in eggs has been reached very fast.

The equivalent concentrations (mg a.s. equivalent/kg of tissue fresh weight) in the organs and tissues at sacrifice were observed in the following decreasing order: kidney (0.0388 mg equ./kg) > eggs from ovary/oviduct (0.0194 mg equ./kg) > liver (0.0174 mg equ./kg) > skin without fat (0.0092 mg equ./kg) >

subcutaneous fat (0.0038 mg equ./kg) > leg muscle (0.0034 mg equ./kg) > breast muscle (0.0030 mg equ./kg).

B Residues and Metabolites in Eggs, Muscle, Fat, Liver as well as in Excreta

The composition of residues in eggs and edible tissues of laying hens following 14 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a dose rate of 1.01 mg/kg bw (12.86 ppm in the diet) was elucidated by extraction and chromatographic identification using two different methods (HPLC, TLC) for co-chromatography with authentic reference compounds.

From eggs and the excreta more than 95 % of the total radioactive residues (TRR) were extracted. The extraction rates for muscle, fat, and liver were in the range of 68 – 76 % but the residues in solids were extremely low with 0.001, 0.001, and 0.005 mg equ./kg, respectively.

No parent compound could be detected in the extracts of eggs, edible tissues, and excreta. In the eggs as well as in muscle and liver, the metabolite BYI08330-enol was by far the major residue component accounting for 50.0 – 83.9 % of the TRR. BYI08330-enol-GA was detected as a minor metabolite amounting up to 15.1 % of the TRR (liver). In the extract of fat, the metabolite BYI08330-enol (18.1% of the TRR) could be identified, only. The unknown metabolite accounting for the majority of the TRR (56.5 %, 0.002 mg equ./kg) was characterised as a conjugate of unknown polar compounds by alkaline hydrolysis and tentatively assigned as a fatty acid conjugate due to its elution behaviour in chromatography.

The distribution of residues in eggs, muscle, fat and liver is shown in Table 6.2.2-1.

In excreta, the metabolite BYI08330-enol was detected as the major compound (72.4 % of the TRR). BYI08330-enol-GA, BYI08330-desmethyl-enol, and BYI08330-ketohydroxy were identified as minor components with ca. 4 – 5% of the TRR, each.

The distribution of residues in excreta is shown in Table 6.2.2-2.

C Storage Stability of Residues

Extraction and quantitative HPLC analysis of eggs, muscle, fat, and liver were performed within 7 weeks after sacrifice of the hens. All experimental work was completed in less than 3 months after sacrifice. Investigations on storage stability of radioactive residues in edible samples were therefore not required.

III. Conclusion

The intestinal absorption of [azaspirodecenyl-3-^{14}C] BYI08330 by laying hens following 14 daily oral doses at a dose rate of 1.01 mg/kg bw was estimated to be high as derived from the behaviour of the test compound in rat and goat and from the fact that the highest residues were observed in kidneys (TRR 0.039 mg equ/kg). Extremely low amounts of radioactivity were transferred into eggs (0.045 % of the total administered dose) and retained in edible organs and tissues of the body (0.023 % of the total administered dose) at the time of sacrifice 24 h after the last dose.

The total (radioactive) residues in edible materials were very low in the range of 0.003 – 0.017 mg equ./kg. Nevertheless, the residues could be extracted with high rates (68.6 – 95.5%) and the identification rates were in the range of 65.1 – 90.8 % for eggs, muscle, and liver.

The biodegradation of [azaspirodecenyl-3-^{14}C] BYI08330 in the laying hen can be characterised as follows:

- Cleavage of the ester group in the molecule to form BYI08330-enol.
- Conjugation of BYI08330-enol with glucuronic acid to BYI08330-enol-GA.
- Oxidation of the azaspirodecenyl moiety to BYI08330-ketohydroxy and demethylation of the methoxy group to BYI08330-desmethyl-enol were exclusively found in the excreta.
- No parent compound could be detected in edible tissues/organs and excreta.
- The major residue component of BYI08330 residues in egg, muscle, and liver from laying hens is the BYI08330-enol accounting for 50.0 – 83.9 % of the total (radioactive) residues. BYI08330-enol-GA was detected as minor metabolite in these sample materials amounting to 15.1 % of the TRR, at maximum (liver). In fat, BYI08330-enol accounted for only 18.4% of the TRR with an unknown metabolite as the major component of the residue (56.5% of the TRR). This unknown compound was characterised as a conjugate by alkaline hydrolysis.

Based on these results a metabolic pathway of the metabolism of [azaspirodecenyl-3-^{14}C] BYI08330 in the laying hen is proposed in Figure 6.2.2-1.

Table 6.2.2-1: Distribution of residues in eggs, muscle, fat and liver of laying hens following oral administration of 14 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a dose rate of 1.01 mg/kg bw (12.86 ppm in the diet)

		Eggs *		Muscle		Fat		Liver	
TRR [mg equ/kg]		**0.015**		**0.003**		**0.004**		**0.017**	
Peak ID	Report name BYI08330-	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]
Reg 1	-enol-GA	6.9	0.001	4.2	< 0.001	---	---	15.1	0.003
Reg 2	unknown	4.7	0.001	6.9	< 0.001	---	---	3.6	0.001
Reg 3	-enol	83.9	0.013	64.4	0.002	18.4	0.001	50.0	0.009
Reg 4	unknown **	---	---	---	---	56.5	0.002	---	---
Total identified		**90.8**	**0.014**	**68.6**	**0.002**	**18.4**	**0.001**	**65.1**	**0.011**
Total characterised		4.7	0.001	6.9	< 0.001	56.5	0.002	3.6	0.001
Total extractable		**95.5**	**0.014**	**75.6**	**0.002**	**74.9**	**0.003**	**68.6**	**0.012**
Unextractable (PES)		4.5	0.001	24.4	0.001	25.1	0.001	30.0	0.005
Not analysed / loss		---	---	---	---	---	---	1.3	0.000
Accountability		**100.0**	**0.015**	**100.0**	**0.003**	**100.0**	**0.004**	**100.0**	**0.017**

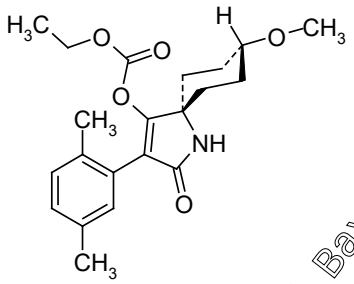
* pool from day 2 to day 14
** presumably fatty acid conjugate of BYI08330-enol or related metabolite
--- = not detected

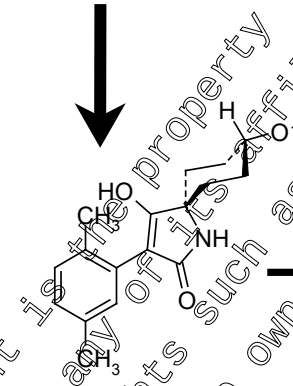
Table 6.2.2-2: Distribution of residues in excreta of laying hens following oral administration of 14 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a dose rate of 1.01 mg/kg bw (12.86 ppm in the diet)

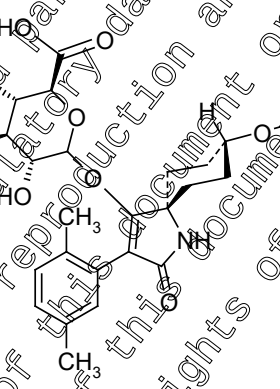
Residue component	(% of TRR) in excreta day 7 animal 815
BYI08330-enol-GA	4.6
Unknown	3.4
Unknown	3.2
Unknown	4.6
Unknown	0.8
BYI08330-desmethyl-enol	3.7
Unknown	1.8
BYI08330-enol	72.4
BYI08330-ketohydroxy	4.2
Sum identified	84.9
Sum characterised	13.6
Balance for extract	98.5
Solids	1.5
not analysed/loss	0.0
Total balance	100.0

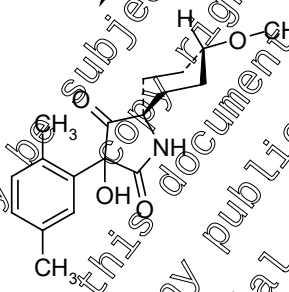
Recalculated with data from appendix 10 (page 117 for % of TRR in solids and page 119 for % of TRR of metabolites) of report MEF-05/273.

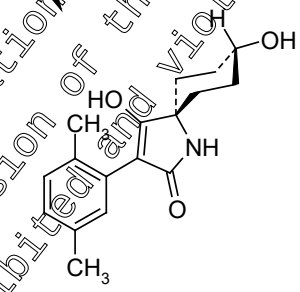
Figure 6.2.2-1: Proposed metabolic pathway of [azaspirodecenyl-3-^{14}C] BYI08330 in the laying hen





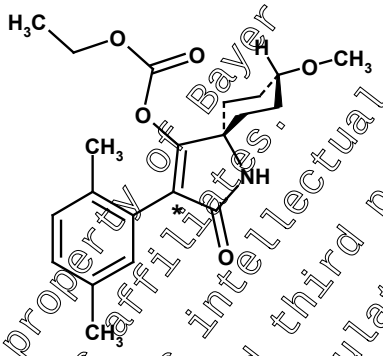






IIA 6.2.3 Lactating ruminants (goat or cow)

A study on the metabolism of BYI08330 in a lactating goat was conducted with the radiolabeled test item [azaspirodecenyl-3-^{14}C]BYI08330 ([redacted] et [redacted], 2006) as shown by the following structural formula (* denotes the label position):



[azaspirodecenyl-3-^{14}C]BYI08330

Report:	**KIIA 6.2.3/01, Authors: [redacted], [redacted] (2006)**
Title:	**[azaspirodecenyl-3-^{14}C]BYI08330: Absorption, distribution, excretion, and metabolism in the lactating goat**
Report No & Document No	**MEF-05/293 Date: 2006-03-16** **M_269256-01-02**
Guidelines:	**US-EPA, Residue Chemistry OPPTS 860.1300;** **Health [redacted] PMRA, DACO 6.2;** **EU Council Directive 91/414/EEC amended by Directive 96/68/EC, 7030/VI/95/rev.3 Appendix E**
GLP	**Yes, according to Japan MAFF GLP standard 11 Nousan 6283;** **US EPA – FIFRA GLP (40CFR Part 160);** **Principles of GLP, German Chemical Law, current version of Annex 1**
Testing Facility and Dates	**Bayer CropScience AG, Development, Metabolism / Environmental Fate, [redacted], Germany** **Experimental work: 2003-09-30 – 2005-04-28**

Executive Summary

The nature of residues in milk and foodstuffs originating from ruminants was investigated with a lactating goat following 4 daily oral administrations of [azaspirodecenyl-3-^{14}C]] BYI08330 at a mean dose rate of 2.22 mg/kg bw/day (73.03 ppm in the diet) given by gavage.

In milk and edible tissues (muscle, fat, liver, kidney), the metabolite BYI08330-enol proved to be the predominant component of the residues accounting for 33.7 – 78.4 % of the total (radioactive) residues in the corresponding samples. BYI08330-enol-GA was also detected as a major metabolite in milk (23.9 % of TRR), fat (19.4 % of TRR), liver (37.4 % of TRR), and kidney (14.2 % of TRR) and was therefore included in the analytical method. Three other metabolites (BYI08330-ketohydroxy, BYI08330-desmethyl-enol, and BYI08330-mono-hydroxy) were found at low levels in the foodstuffs originating from ruminants (< 10 % of TRR). No parent compound could be detected in milk, edible tissues and excreta.

The intestinal absorption of the radiolabeled test compound after multiple dosing was estimated to at least 78.5 % of the cumulative dose as derived from the amount of radioactivity detected in milk (0.014 % of the total administered dose), edible organs and tissues of the body at sacrifice 96 h after the first dose (0.061 % of the total administered dose) and in urine (78.4 % of the total administered dose).

The blood plasma level within the first 24 h after the first dose reached a peak level of 0.39 mg equ./L 1 h after oral administration followed by a fast decrease. Plasma levels went up after each dosage and fell down again within 24 h. This behaviour indicates a fast absorption process from the gastro-intestinal tract and fast distribution into organs and tissues. Related to the administered dose level the plasma peak level only amounted to 18 % of equidistribution (2.22 mg equ./kg bw.).

The highest residue levels at sacrifice (96 h after the first dose) were observed in kidney (0.1835 mg equ./kg) and liver (0.0496 mg equ./kg). Significantly lower residues were detected in the different types of muscle: round muscle (0.0113 mg equ./kg), flank muscle (0.0085 mg equ./kg), and loin muscle (0.0083 mg equ./kg) and fat: subcutaneous fat (0.0078 mg equ./kg), omental fat (0.0030 mg equ./kg), and perirenal fat (0.0026 mg equ./kg).

Residues in milk samples were in the range of 0.0038 – 0.0261 mg equ./kg and reached a plateau level within the observation period of 96 hours.

The biodegradation of [azaspirodecenyl-3-^{14}C] BYI08330 in ruminants can be characterised as cleavage of the ester group to the primary metabolite BYI08330-enol followed by conjugation of the enol hydroxy group with glucuronic acid to BYI08330-enol-GA. Oxidation of the azaspirodecenyl moiety to BYI08330-ketohydroxy and demethylation of the methoxy group to BYI08330-desmethyl-enol were minor metabolic reactions as well as reduction of the azaspirodecenyl moiety to BYI08330-mono-hydroxy.

The metabolic pathway of the metabolism of [azaspirodecenyl-3-^{14}C]BYI08330 in the lactating goat is proposed in Figure 6.2.3-1.

I. Material and Methods

A. Material

1. Test Material

IUPAC Name	**cis-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate**
Code name	**BYI08330**
Common name	**Spirotetramat (proposed ISO)**
Empirical formula	**C_{21} H_{27} N O_5**
Molar mass	**373.45 g/mol**
Labelling	**azaspirodecenyl-3-^{14}C**
Specific radioactivity used for administration	**1.835 MBq/mg (1.1 x 10^8 dpm/mg = 49.59 µCi/mg = 18.52 Ci/mol)**
Radiochemical purity	**> 98 %**
Dose level	**4 oral doses by gavage (mean measured dose: 2.22 mg/kg bw./day)**
Vehicle	**0.5 % aqueous tragacanth suspension**

2. Test Animals

Species	**lactating goat (*Capra hircus*)**
Strain	**"Weiße Deutsche Edelziege"**
Breeding facility	[redacted]
Sex and numbers involved	**1 female animal**
Age	**ca. 33 months**
Body weight	**45.0 kg at first administration, 46.2 kg at sacrifice**
Acclimatization	**13 days**
Identification	**skin marking**
Housing	**During acclimation period:** **raised stall with a metal grid as base and straw and hay as bedding.** **During the test period:** **electro-polished stainless steel metabolism cage for farm animals (goat, sheep, and pig), supplied by [redacted], Germany. The cage was equipped with a variable-restraining device.** **rooms temperature 20 ± 0.8°C, relative humidity 57 ± 8.5%** **12 h light / 12 h dark cycle, air change 10 – 15 times per hour.**
Feed and water	**2000 g/day of ruminant feed, additional hay and apples were offered *ad libitum*.**

	During the test period, the mean feed consumption was 1.366 kg/day. **tap water, a*d libitum***

B. Study Design

Dosing

The radiolabeled test substance was administered to the goat by oral intubation in 0.5% aqueous tragacanth suspension, one dose per day at a mean dose level of 2.22 mg/kg body weight. The goat received the 4 oral doses on 4 consecutive days in time intervals of 24 hours.

For each of the four consecutive administrations, 108.1 mg of the test compound with a specific radioactivity of 1.835 MBq/mg were suspended in 54.05 mL of the aqueous tragacanth with help of ultrasonication. The content and stability of the radiolabeled test compound was analysed by LSC and radio-HPLC.

The oral administration was performed by intubation using a 50 mL disposable perfusion syringe attached to a Teflon®-perfusion tube (outer diameter: 0.3 cm, inner diameter: 0.2 cm, length: 50 cm,). This tube was passed through a second thicker, flexible plastic stomach tube (inner diameter: 0.8 cm, length: 50 cm; outside lubricated with corn oil) that had been inserted into the rumen at first. A volume of 45 mL (1.0 mL/kg body weight) suspension was administered to the goat by intubation through the perfusion tube, directly followed by a volume of 50 mL of a 0.5 % aqueous tragacanth suspension that was administered through the same Teflon® tube in order to rinse the remainder of the dose into the rumen. At last, this tube was removed from the rumen and rinsed with acetonitrile in order to determine the amount that was not administered. The dose level was tolerated without any observable toxicological sign.

Based upon the experimentally determined daily feed consumption during the test of 3.04 % of the body weight, this dose level corresponds to the exaggerated concentration of 73.03 mg/kg (ppm) in the feed commodity.

Sampling of milk, urine, faeces and blood during the in-life phase

The goat was milked in the morning immediately prior to each administration, about 8 hours later in the afternoon, and directly before sacrifice (time schedule: 8, 24, 32, 48, 56, 72, 80, 96 hours after the first administration). The milk weights were recorded.

The urine fractions were collected as quantitatively as possible under dry ice cooling in intervals of 24 hours after the first, second, and third administration and at 24 hours after the fourth administration (at sacrifice). The collection vessel was changed and the collection funnel was rinsed with deionised water into the urine vessel after each collection. The total volumes were recorded. An aliquot of each milk and urine fraction was taken and processed for LSC. The remaining samples were stored at about –18 °C for metabolite analysis.

The faeces fractions were collected as quantitatively as possible at room temperature in intervals of 24 h after the first, second, and third administration, i.e. immediately before the next dosage, and at 24 h after the fourth administration (at sacrifice). The collecting grid was cleaned prior to each administration. Each

faeces fraction was freeze-dried and homogenised. The total dry weight was recorded and an aliquot subjected to combustion/LSC. The remainder was stored at room temperature for the metabolite analysis.
Micro-samples of blood were taken from the ear veins of the goat at 0.25, 0.5, 1, 2, 3, 4, 6, 8, 24, 32, 48, 56, 72, 80, and 96 h after the first administration. The blood was collected in heparinized capillaries. In order to obtain the plasma fraction, the capillaries were centrifuged using a hematocrit. The plasma samples (weight range: ca. 28 – 42 mg) were weighed and prepared for LSC.

Sacrifice and dissection of organs and tissues

The goat was weighed and sacrificed 96 hours following the first dosage. The animal was anaesthetised by an intravenous dose of about 40 mg/kg Pentobarbital-Na, sacrificed with ca. 10 mL of the sacrificing agent "T 61®", and exsanguinated by cannulating the jugular veins.
Following sacrifice, the following organs and tissues were sampled: liver without gall bladder, kidneys, three different types of muscle (round, flank, loin), and three different types of fat (perirenal, omental, subcutaneous), and the gall bladder.

Sample preparation

The organs or tissue samples were weighed and transferred into ice-cooled vessels. Liver, kidneys, muscle, and fat samples were 4 to 5 times thoroughly homogenised in half-frozen state using a carefully cleaned mincing machine. A sample of the resulting tissue pulp was weighed, freeze-dried, weighed again, homogenised and three sub-samples were prepared for tissue combustion/LSC for determination of the total radioactive residues (TRR) of the corresponding sample. Because of a high mean variation of the combustion values of the perirenal and omental fat, the total radioactivity in these tissues was determined by LSC after solubilisation of the samples with the tissue solubilizer BTS-450®. The remaining samples of each organ or tissue were stored at about –18 °C for metabolite analysis.
The gall bladder was dissected carefully from the liver and stored also at about –18 °C for the (optional) metabolite analysis of the bile fluid.
Aliquots of morning and evening milk from day 2 as well as from day 4 were each combined for metabolite analysis.
Extraction and clean up of milk, edible tissues, and faeces were performed according to a similar scheme with identical steps in the first part of the procedure. All samples were extracted 3 – 4 times with acetonitrile/water mixtures. The extracts of each sample with radioactivity levels >LOQ were combined and degreased by SPE on a reversed phase cartridge preconditioned with acetonitrile/water 70 : 30 (v/v). Flow-through fraction and rinse solution (acetonitrile/water 70 : 30 (v/v)) of each sample were combined and concentrated to the aqueous remainder for further processing and clean up.
The aqueous samples from the milk pools (day 2 and day 4) were then partitioned with ethyl acetate on a Chem Elut® column filled with diatomaceous earth. The solvent was evaporated from the organic eluate of the column and the residues were dissolved in water for HPLC analysis of metabolites in the organic phase.
After partition, the aqueous phase was washed from the Chem Elut® column with methanol. This sample was concentrated to the aqueous remainder and applied to an RP18 SPE cartridge preconditioned with

water. The cartridge was washed with water and the residues were eluted with acetonitrile. After concentration, the sample was dissolved in water for HPLC analysis of metabolites in the water phase.
An aliquot of each muscle sample (round, flank, and loin muscle) was used for muscle pooling. An aliquot of each fat sample (subcutaneous, perirenal, and omental fat) was used for fat pooling. An aliquot of the liver and kidneys and of the daily faeces samples were directly used for further processing without pooling.
The organs, tissue pools and faeces samples were extracted with acetonitrile/water mixtures. Relevant extracts were combined and purified by solid phase extraction through an RP18 cartridge as described for milk.. Extracts from fat, kidney and faeces were concentrated for HPLC analysis. Extracts from liver and muscle were further purified by partition with ethyl acetate on a Chem Elut® cartridge. The organic phase and the aqueous phase washed from the cartridge were further processed before analysis. For liver, the organic phase was concentrated, dissolved in acetonitrile/water 70 : 30 (v/v)and purified by SPE on a reversed phase cartridge preconditioned with acetonitrile/water 70 : 30 (v/v). Flow-through fraction and rinse solution (acetonitrile/water 70 : 30 (v/v)) were combined and concentrated to the aqueous remainder for HPLC analysis. The organic phase was concentrated and dissolved in water for HPLC analysis.
For muscle, the organic phase was concentrated and dissolved in water for HPLC analysis, whereas the aqueous phase was discarded due to the low portion of residue.
Urine samples were analysed directly without further preparation procedures.

Radioactivity measurement

Solid samples were combusted prior to radioactivity determination and the formed $^{14}CO_2$ absorbed in an alkaline trapping solvent. The determination of radioactivity in liquid samples was conducted on sub-samples (1 - 3 replicates) by liquid scintillation counting (LSC), with up to 20 min counting time until reaching a 2-σ error of 0.7 %. Quenching effects were automatically corrected using an external standard and quenching library. The instrument background of approximately 10 - 32 dpm was subtracted automatically. For all samples, the limit of detection (LOD) was established at approximately 10 dpm measured per aliquot after instrument background correction. The limit of quantification (LOQ) was established as 2 times of the background radioactivity (dpm) of each instrument/method.

Metabolite analysis

The prepared extracts and samples of urine were subjected to HPLC using a reversed phase column (C18) and the eluting solvents water/formic acid = 99 : 1 (v/v) and acetonitrile/water/formic acid = 97 : 2 : 1 (v/v/v) in the gradient mode. Detection was performed by a UV (254 nm) and a radioisotope detector with a glass scintillator. In order to check the completeness of the elution for the HPLC profile, representative samples of milk, muscle, liver, and kidney extract were injected, re-collected, and radioassayed by LSC. The recoveries were between 98 and 102 % of the injected radioactivity. The LOQs for all matrices were ≤ 0.001 mg equ./kg. Radiolabelled and non-labelled reference compounds were used for co-chromatography for identification of metabolites.
As a second chromatographic method TLC was employed on silica gel plates and radioluminography for detection of radioactive spots. The two following TLC solvent systems were used:

System 1	(normal phase)
Solvent:	ethyl acetate/propanol-2/water (65/23/12 v/v/v), with chamber saturation
System 2	(normal phase)
Solvent:	dichloromethane/methanol/ammonia solution 25% (90/10/1 v/v/v), without chamber saturation

TLC co-chromatography was used for confirmation of metabolites in isolated HPLC fractions. The sample extracts were fractionated with the HPLC profiling method and the peaks collected were concentrated to the aqueous remainder afterwards. Aliquots of these samples and of solutions of the reference items were applied individually and overlapped with each other on the TLC-plates. The plates were developed and dried afterwards. Co-chromatographic correspondence was assessed either by visual inspection of the plate under UV light and its associated radioluminogram or by analysis of the radioluminogram only, in cases where radioactive reference items were used.
Metabolite BYI08330-enol-GA was isolated from goat urine by micro preparative HPLC and purified by partition, SPE on C18 material, column chromatography on XAD and further HPLC purification.. The structure was elucidated by LC/MS/MS, high resolution LC/MS/MS, ^{1}H-NMR and 2D-^{1}H-NMR. The isolated metabolite was used as reference compound for co-chromatographic identification in extracts of milk and edible tissues.

II. Results and Discussion

A. Absorption, Distribution and Excretion of the Radioactivity

Until sacrifice, 96 h after the first of 4 daily oral administrations at a mean dose rate of 2.22 mg/kg bw, the excretion amounted to about 90 % of the radioactivity totally administered; a portion of 78.4 % was excreted with the urine and 11.5 % with the faeces. A very low portion was secreted with the milk accounting for 0.014 % of the total administered dose.
At sacrifice, the compound-related residues in the edible organs and tissues amounted to about 0.061 % of the totally administered dose. The fraction absorbed from the gastrointestinal tract was estimated to be about 78 % of the total dose by summing up the portion in milk, urine and edible organs/tissues.
The plasma level during the first day indicated that absorption was a fast process starting immediately after administration. The plasma concentration increased quickly up to 0.39 mg equ./L 1 h after the first dose, and decreased slowly in the subsequent time interval 1 – 8 h indicating an ongoing absorption and a fast distribution process into the organs and tissues. In the time range 8 – 24 h, the plasma level decreased by a factor of ca. 17 compared to the maximum concentration. Plasma levels went up after each dosage and fell down again by a similar factor within 24 h. Related to the administered dose level of 2.22 mg/kg bw the peak level of 0.39 mg equ./L was low, corresponding to only 18 % of the theoretical equidistribution concentration (ca. 2.22 mg/L).

The highest residue levels at sacrifice (96 h after the first dose) were observed in kidney (0.1835 mg equ./kg) and liver (0.0496 mg equ./kg). Significantly lower residues were detected in the different types of muscle: round muscle(0.0113 mg equ./kg), flank muscle (0.0085 mg equ./kg), and loin muscle (0.0083 mg equ./kg) and fat: subcutaneous fat (0.0078 mg equ./kg), omental fat (0.0030 mg equ./kg), and perirenal fat (0.0026 mg equ./kg).

B. Residues and Metabolites in Milk, Muscle, Fat, Liver and Kidney as well as in Urine, and Faeces

The composition of residues in milk and edible tissues of a lactating goat following 4 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a mean dose rate of 2.22 mg/kg bw (73.03 ppm in the diet) was analysed by extraction and chromatographic identification using two different methods and co-chromatographed reference compounds. 90 -100 % of the total radioactive residues (TRR) could be extracted from milk, muscle, liver and kidney. 79% of the TRR could be extracted from the composite fat sample containing the lowest residues of all organs/tissues (0.003 mg equ./kg). Despite the low residue levels identification rates were high in the range of 79 – 99 % of the TRR.

In milk and edible tissues (muscle, fat, liver, kidney), the metabolite BYI08330-enol proved to be the predominant component of the residues accounting for 33.7 – 78.4 % of the total (radioactive) residues in the corresponding samples. BYI08330-enol-GA was also detected as a major metabolite in milk (23.9 % of TRR), fat (19.4 % of TRR), liver (37.4 % of TRR) and kidney (14.2 % of TRR) and was therefore included in the analytical method. Three other metabolites (BYI08330-ketohydroxy, BYI08330-desmethyl-enol, and BYI08330-mono-hydroxy) were found at low levels in the foodstuffs originating from ruminants (< 10 % of TRR). No parent compound could be detected in milk and edible tissues.

The distribution of the residues in milk, edible organs and tissues is shown in Table 6.2.3-1.

In the urine and faeces, BYI08330 was the only major metabolite accounting in total for 76.6 % of the total dose administered. BYI08330-enol-GA (mainly in urine), BYI08330-desmethyl-enol (mainly in urine), and BYI08330-ketohydroxy (mainly in faeces) were detected as minor metabolites.

The distribution of the residues in urine and faeces is shown in Table 6.2.3-2.

C Storage Stability of Residues

Extraction and first quantitative HPLC analysis of milk, muscle, fat, liver, and kidney were performed within ca. 3.5 months after sacrifice of the goat. Therefore, no storage stability investigations were required. However, storage stability investigations were performed with liver, because the liver extract obtained 1.5 months after sacrifice showed some degradation of metabolites. The BYI08330-enol peak was mainly affected and this was only found in liver extract. Therefore, a second liver extract was prepared about 5.5 months after sacrifice and used for the quantification of metabolites. The metabolic profiles of both liver extracts were very similar and showed no significant changes of the peak pattern proving the stability of residues during storage of the liver sample before extraction.

Additionally, the storage stability of the metabolites in extracts was investigated with extracts from milk, muscle, and kidney which were reanalysed about 5 months after sacrifice and showed no significant change in the quantitative pattern of metabolites.

III. Conclusion

The gastrointestinal absorption of [azaspirodecenyl-3-^{14}C] BYI08330 by a lactating goat following 4 daily oral doses at a dose rate of 2.22 mg/kg bw was estimated as a fast process reaching approximately 78 % of the cumulative dose, as derived from the amount of radioactivity detected in, urine (78.4 % of the total administered dose) and in milk and edible organs and tissues of the body at sacrifice 96 h after the first dose (24 h after the fourth dose).
Extremely low amounts of radioactivity were transferred into milk (0.014 % of the total administered dose) and retained in edible organs and tissues of the body (0.061 % of the total administered dose) at the time of sacrifice 24 h after the last dose.
The total (radioactive) residues in edible materials were low in the range of 0.003 – 0.184 mg equ./kg. Nevertheless, the residues could be extracted with high rates (79.3 – 100.0 %) and the identification rates were in the range of 79.3 – 99.1 % for milk and edible organs/tissues.

The biodegradation of [azaspirodecenyl-3-^{14}C] BYI08330 in the lactating goat can be characterised as follows:

- Cleavage of the ester group in the molecule to form BYI08330-enol.
- Conjugation of BYI08330-enol with glucuronic acid to BYI08330-enol-GA.
- Oxidation of the azaspirodecenyl moiety to BYI08330-ketohydroxy
- Oxidative demethylation of the methoxy group to BYI08330-desmethyl-enol
- Reduction of the azaspirodecenyl moiety to BYI08330-monohydroxy was observed as a minor metabolic reaction in milk and liver only
- No parent compound could be detected in edible tissues/organs and excreta..
- The major residue component of BYI08330 residues in milk, muscle, fat, liver, and kidney from the lactating goat is the BYI08330-enol accounting for 33.7 – 78.4 % of the total (radioactive) residues. BYI08330-enol-GA was detected as a second major metabolite in these sample materials except muscle accounting for 14.2 % (kidney) to 37.4 % (liver) of the TRR. All other metabolites were found at levels < 8% of the TRR.

Based on these results a metabolic pathway of the metabolism of [azaspirodecenyl-^{3}-14C] BYI08330 in the lactating goat is proposed in Figure 6.2.3-1.

Table 6.2.3-1: Distribution of residues in milk, muscle, fat, liver and kidney of a lactating goat following oral administration of 4 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a mean dose rate of 2.22 mg/kg bw (73.03 ppm in the diet)

		Milk [a]		Muscle		Fat		Liver		Kidney	
	TRR [mg equ/kg]	**0.008**		**0.011**		**0.003**		**0.050**		**0.184**	
	Report name BYI08330	% of TRR	equiv conc. [mg/kg]	% of TRR	equiv conc. [mg/kg]	% of TRR	equiv conc. [mg/kg]	% of TRR	equiv conc. [mg/kg]	% of TRR	equiv conc. [mg/kg]
*1	unknown	---	---	---	---	---	---	1.2	0.001	---	---
2	unknown	---	---	---	---	---	---	5.9	0.003	0.9	0.002
3	-enol-GA	23.9	0.002	---	---	19.4	0.001	37.4	0.019	14.2	0.026
4	unknown	---	---	---	---	---	---	1.0	<0.001	---	---
5	unknown	0.9	<0.001	---	---	---	---	---	---	---	---
6	unknown	3.6	<0.001	---	---	---	---	---	---	---	---
7	unknown	3.0	<0.001	---	---	---	---	---	---	---	---
8	unknown	2.0	<0.001	---	---	---	---	0.8	<0.001	---	---
9	unknown	5.4	<0.001	---	---	---	---	---	---	---	---
10	-desmethyl-enol	7.9	0.002	7.4	0.001	---	---	6.6	0.003	4.4	0.008
11	-mono-hydroxy	2.3	<0.001	---	---	---	---	4.1	0.002	---	---
12	-enol	48.8	0.004	72.4	0.008	59.9	0.002	33.7	0.017	78.4	0.144
13	-ketohydroxy	2.3	<0.001	9.7	0.001	---	---	2.7	0.001	2.1	0.004
14	unknown	---	---	---	---	---	---	1.3	0.001	---	---
15	unknown	---	---	---	---	---	---	0.5	<0.001	---	---
Total identified		**85.1**	**0.007**	**89.6**	**0.010**	**79.3**	**0.002**	**84.3**	**0.042**	**99.1**	**0.182**
Total characterised		14.9	0.001	---	---	---	---	10.7	0.005	0.9	0.002
Total extractable		**100.0**	**0.008**	**89.6**	**0.010**	**79.3**	**0.002**	**95.0**	**0.047**	**100.0**	**0.184**
Unextractable (PES)		---	---	---	---	20.7	0.001	4.7	0.002	---	---
Not analysed / loss		---	---	10.4	0.001	---	---	0.3	<0.001	---	---
Accountability		**100.0**	**0.008**	**100.0**	**0.011**	**100.0**	**0.003**	**100.0**	**0.050**	**100.0**	**0.184**

[a] = milk pool from day 4
--- = not detected
* Peak number in HPLC chromatograms ("Reg …")

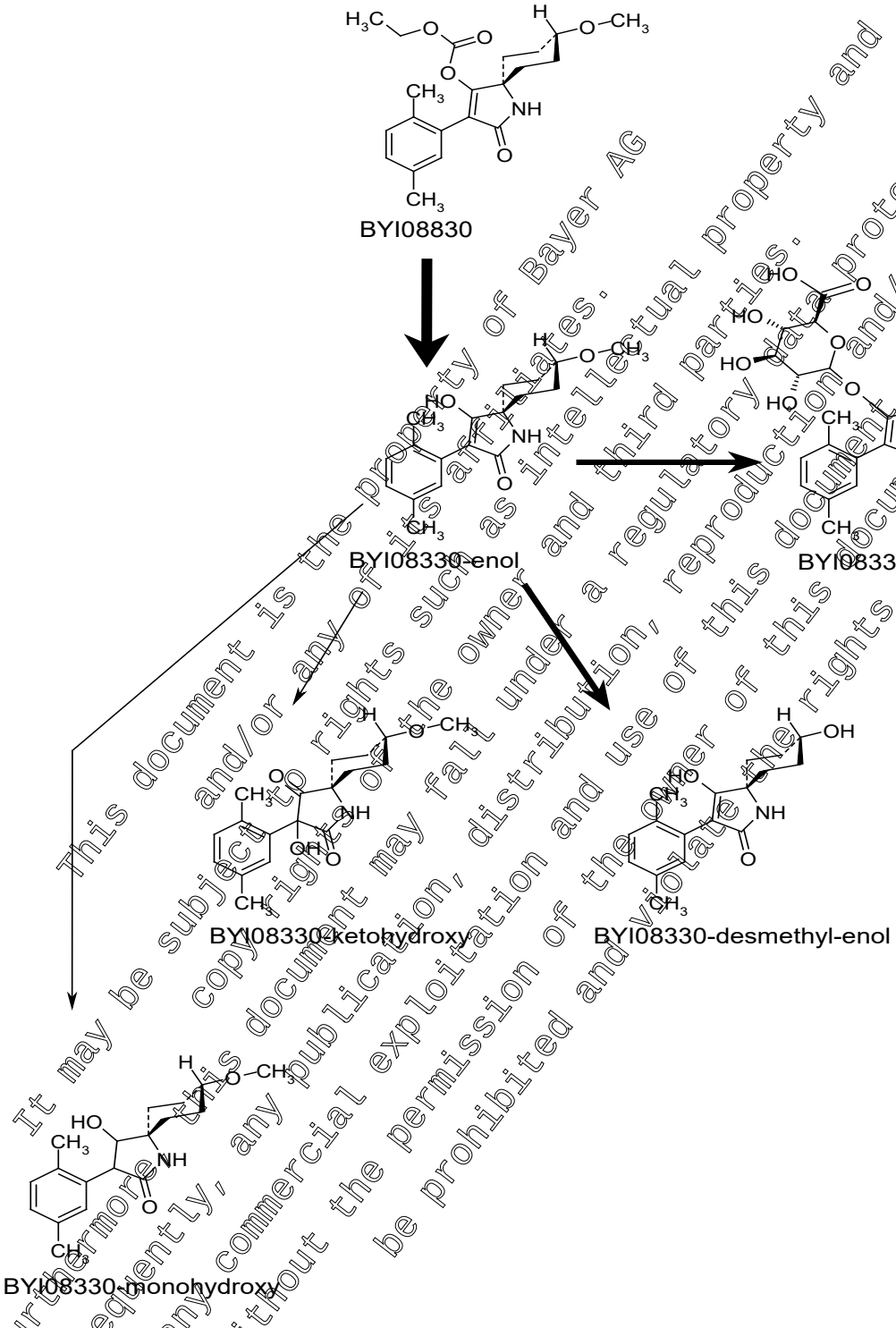
Table 6.2.3-2: Distribution of residues in urine and faeces of a lactating goat following oral administration of 4 daily doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a mean dose rate of 2.22 mg/kg bw (73.03 ppm in the diet)

		Urine pool 0-96h		faeces*		Total excreta
Excreted in % of admin. dose:			78.4		11.6	90.0
Analysed by HPLC (% of dose admin.):			78.4		10.8	89.2
Not analysed / loss (% of dose admin.):					0.8	0.8
Region number	Report name BYI08330	% TRR in urine	% of dose admin.	% TRR in extr. faeces	% of dose admin.	% of dose admin.
Reg 2		0.2	0.1	---	---	0.1
Reg 3	-enol-GA	6.4	5.0	0.7	0.1	5.1
Reg 4		0.3	0.2	---	---	0.2
Reg 5		0.2	0.2	---	---	0.2
Reg 8		1.7	1.4	2.6	0.3	1.7
Reg 9		---	---	1.6	0.2	0.2
Reg 10	-desmethyl-enol	3.3	2.6	4.8	0.5	3.1
Reg 12	-enol	87.6	68.7	73.5	7.9	76.6
Reg 13	-ketohydroxy-	0.3	0.2	16.8	1.8	2.0
Total identified:						**86.8**
Total characterised:						2.3
Total						89.2

--- not detected

* faeces sample from day 4 was extracted and analysed and taken as representative for the faecal excretion

Figure 6.2.3-1: Proposed metabolic pathway of [azaspirodecenyl-3-^{14}C] BYI08330 in the lactating goat



IIA 6.2.4 Pigs

The metabolic pathway of BYI08330 in rat, ruminants (goat), and poultry (laying hen) is similar with cleavage of the ester moiety to BYI08330-enol and further glucuronidation of the enol. Minor metabolic reactions are oxidation of the azaspirodecenyl moiety to BYI08330-ketohydroxy and demethylation of the methoxy group to BYI08330-desmethyl-enol. The only non common metabolite was BYI08330-mono-hydroxy formed by reduction of the azaspirodecenyl moiety which was found as a minor compound only in the goat (2.3% of TRR in milk and 4.1% of TRR in liver) at an extremely low absolute level of <0.001 – 0.002 mg equ./kg.

Therefore, it can be expected that the metabolism in other farm animals does not differ and a study in pigs will be not required in agreement with the Consolidated Text of the Council Directive 91/414/EEC published by the Office for Official Publications of the European Communities by 15-July-1991 and amended by the Commission Directive 96/68/EC of 21-October-1996.

According to EPA guideline OPPTS 860.1300 nonruminant (swine) metabolism studies may be required if the rat metabolism is significantly different than goat or chicken metabolism. This is clearly not the case for BYI08330 and therefore a study in pigs is not required.

IIA 6.2.5 Nature of residue in fish[1]

This item is not a request of the EU Council Directive 91/414/EEC.

BYI08330 is not intended to be applied to fish and fish feed.

According to EPA Pesticide Assessment Guideline §165-4, a fish bioaccumulation study including investigation of metabolism will not normally required if a compound has a relatively low potential for accumulation in fish as indicated by an octanol/water partition coefficient less than approximately 1000. BYI08330 has an octanol/water partition coefficient of 316 – 324 in the range of pH 4 -9 (Report No. PA 03/036) which is clearly less than 1000. Furthermore, all results of ADME and livestock studies indicate that BYI08330 related residues are excreted very quickly and not retained or accumulated in the body of animals in the low to medium dose range. Therefore, a fish metabolism study is not required for BYI08330.

IIA 6.2.6 Chemical identity[2]

The chemical identity of all reference compounds is given in the respective study reports.

1 No EC data requirement (the OECD point concerned is not covered by or part of an EC point according to Council Directive 91/414/EEC. Hence, data/documents do not need to be submitted.

2 No EC data requirement (the OECD point concerned is not covered by or part of an EC point according to Council Directive 91/414/EEC. Hence, data/documents do not need to be submitted.

IIA 6.3 Residue trials (supervised field trials)

IIA 6.3.1 European residue trials

Results from supervised residue trials in lettuce and citrus are reported (Points IIA 6.3.1.1 and IIA 6.3.1.2) representing the designated essential uses of this Annex II dossier.
In addition residue data from uses of BYI08330 in pome fruit, stone fruit, grapes, strawberries, onions, fruiting vegetables, brassica vegetables and hops are reported (Points IIA 6.3.1.3 to IIA 6.3.1.19 and IIA 6.3.1.21) to support the setting of temporary MRLs (=MRLs) for residues of BYI08330 in these crops. In potatoes (IIA 6.3.1.20) no use of BYI08330 is envisaged; residue data are reported as supportive information. The critical European use pattern for each crop is given at the beginning of the respective chapter (IIA 6.3.1.1 to 6.3.1.21)

BYI08330 is applied as a spray solution to the different crops. Different formulations of BYI08330 were used: In 2004, residue trials were conducted with the OD 100 formulation of BYI08330. Due to a minor change of the final formulation from OD 100 to OD 150, residue trials in 2005 were conducted with the OD 150 formulation of BYI08330. The composition of both formulations is similar, but the amount of the active substance is 100 g as/L in the OD 100 formulation and 150 g as/L in the OD 150 formulation. Applied at identical use rates for the active substance both formulations are considered to be comparable with respect to residues.

Results from additional residue trials in lettuce, pome fruit and pepper are reported, which were conducted using the SC 240 formulation of BYI08330 with the addition of 0.2 % RME (rape methyl ester) to the spray solution. Moreover 4 residue trials, 2 trials in grapes and 2 trials in pepper, were conducted with the SC 048 formulation of BYI08330. The results of these trials are reported to give a complete picture of the BYI08330 residue behaviour.

Analysis of residue samples was conducted according to method 00875 (see Chapter IIA 4.3). The single analytes (BYI08330 and its metabolites enol, ketohydroxy, monohydroxy and enol-glucoside) are determined by HPLC-MS/MS. The results are expressed as parent equivalents. The total residue of BYI08330 is calculated by summing up the values determined for the individual analytes expressed as parent equivalent. Individual residues of below the LOD (limit of detection) are set to 0 mg/kg. Individual residues of between the LOD and the LOQ (limit of quantification) are set to the LOQ. Expressed as parent equivalents the LOQ is 0.01 mg/kg for BYI08330, 0.012 mg/kg for BYI08330-enol, -ketohydroxy and –monohydroxy and 0.08 mg/kg for BYI08330-enol-glucoside. For hop cones the respective LOQs are by a factor of 10 higher. The LOQ for the calculated total residue of BYI08330 is quoted at 0.055 mg/kg (hops 0.55 mg/kg).

For each trial residues at the envisage PHI of the critical European GAP were evaluated. If, however, the total residue of BYI08330 at later intervals exceeded the total residue at the PHI, the higher values were evaluated to cover the worst case residue. The residue data of each trial used for the evaluation are marked in bold in the respective tables which summarise the residue results.

IIA 6.3.1.1 Citrus

BYI08330 is to be registered for control of scales, aphids, mealy bugs and mites in citrus. European residue data in oranges and mandarins are reported to support the use of BYI08330 in citrus in southern Europe. The critical European GAP is summarized in Table 6.3.1.1-1

Table 6.3.1.1-1: Critical European GAP for the spray application of BYI08330 in citrus

Location	Use rate (g as/ha x m CH)*	Water volume (L/ha x m CH)*	No of appl.	Spray interval (days)	PHI (days)
Southern Europe	**96**	**1000**	**2**	**21**	**14**

*use rate adapted to the canopy height (CH)

Report:	**KIIA 6.3.1.1/01, [redacted], 2005**
Title:	**Determination of residues of BYI08330 in/on orange after spraying of BYI08330 (100 OD) in the field in Italy, Portugal and Spain**
Report No &	**RA-2032/04, including trials no. R 2004 0139/6, R 2004 0141/8, R 2004 0239/2, R 2004 0240/6**
Document No	**M-263546-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.1/02, [redacted] 2005**
Title:	**Determination of residues of BYI08330 in/on mandarin after spraying of BYI08330 (100 OD) in the field in Italy, Portugal and Spain**
Report No &	**RA-2033/04, including trials no. R 2004 0142/6, R 2004 0143/6, R 2004 0237/6, R 2004 0238/4**
Document No	**M-264450-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.1/03, [redacted] 2006**
Title:	**Determination of residues of BYI08330 in/on orange after spraying of BYI08330 (150 OD) in the field in Portugal, Italy and Spain**
Report No &	**RA-2003/05, including trials no. R 2005 0046/7, R 2005 0047/5, R 2005 0048/3, R 2005 0049/1**
Document No	**M-269908-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.1/04, [redacted]; [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on mandarin after spraying of BYI08330 (150 OD) in the field in Portugal, Spain and Italy**
Report No &	**RA-2002/05, including trials no. R 2005 0041/6, R 2005 0042/4, R 2005 0043/2, R 2005 0044/0, R 2005 0045/9**
Document No	**M-270179-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test System:

Altogether 8 trials in oranges and 9 trials in mandarins were conducted according to the critical European GAP. The field data are summarised in Tables 6.3.1.1-4 and -5. Oranges and mandarins were collected directly before the second application and 0-28 days after 2 spray applications of BYI08330. Residues in whole fruit, and in peel and pulp are summarised in Tables 6.3.1.1-6 and 6.3.1.1-7. Residues obtained in samples collected at the envisaged pre-harvest interval of 14 days are marked with bold letters.

Residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, BYI08330-enol-glucoside in orange and mandarin fruit, peel and pulp were analysed according to method 00857 (see IIA Point 4.3). Mean recoveries at fortification levels between 0.01 and 0.1 mg/kg analyte were within the acceptable range of 70-110 %, RSD $\leq$20% (see Table 6.3.1.1-2 and 3).

Findings:

At the envisaged PHI of 14 days the total residue of BYI08330 ranged between <0.055 and 0.22 mg/kg in orange fruit and between 0.089 and 0.32 mg/kg in mandarin fruit. Considering the whole citrus group the total residue ranged from **<0.055 to 0.32 mg/kg (STMR 0.13 mg/kg)**.

In pulp, representing the edible part of citrus, the total residue was below the LOQ of 0.055 mg/kg in 13 of 17 trials and reached values of up to 0.13 mg/kg in citrus pulp from the remaining 4 trials. In citrus peel the total residue of BYI08330 was between 0.07 and 0.97 mg/kg.

BYI08330 and its enol metabolite were main metabolites in orange and mandarin fruit, pulp and peel. BYI08330-ketohydroxy and the BYI08330-enol-glucoside were minor metabolites. BYI08330-monohydroxy was not found.

Table 6.3.1.1-2: Recovery results for BYI08330 and its metabolites in fruit (covering pulp) and peel of oranges

Study Trial Nos.	Crop	Portion analysed	Analyte	Fortification level (mg/kg)			Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2032/04 all trials GLP yes 2004	Orange	fruit	BYI08330	15	0.01	1.0	67	114	88	13.0
			BYI08330 - enol	15	0.01	1.0	62	99	86	9.9
			BYI08330 - ketohydroxy	15	0.01	1.0	64	92	85	9.1
			BYI08330 enol-glucoside	15	0.01	1.0	65	99	86	9.9
			BYI08330 mono-hydroxy	15	0.01	1.0	60	94	85	10.3
		peel	BYI08330	16	0.01	1.0	61	106	83	12.5
			BYI08330 - enol	16	0.01	1.0	62	98	82	11.9
			BYI08330 - ketohydroxy	16	0.01	1.0	62	105	82	12.1
			BYI08330 enol-glucoside	16	0.01	1.0	70	103	83	11.0
			BYI08330 mono-hydroxy	16	0.01	1.0	64	98	83	12.1
RA-2003/05 all trials GLP yes 2005	Orange	fruit	BYI08330	10	0.01	1.0	96	115	103	6.3
			BYI08330 - enol	10	0.01	1.0	85	99	92	6.1
			BYI08330 - ketohydroxy	10	0.01	1.0	83	98	90	5.3
			BYI08330 enol-glucoside	10	0.01	1.0	81	95	90	5.7
			BYI08330 mono-hydroxy	10	0.01	1.0	85	95	90	3.7
		peel	BYI08330	10	0.01	1.0	94	111	104	4.5
			BYI08330 - enol	10	0.01	1.0	88	104	94	5.3
			BYI08330 - ketohydroxy	10	0.01	1.0	86	97	91	4.2
			BYI08330 enol-glucoside	10	0.01	1.0	85	100	91	4.5
			BYI08330 mono-hydroxy	10	0.01	1.0	89	95	92	2.7

RSD = relative standard deviation

Table 6.3.1.1-3: Recovery results for BYI08330 and its metabolites in fruit (covering pulp) and peel of mandarins

Study Trial Nos.	Crop	Portion analysed	Analyte		Fortification level (mg/kg)*		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2033/04 all trials GLP yes 2004	Mandarin	fruit	BYI08330	12	0.01	1.0	82	103	93	7.4
			BYI08330 - enol	12	0.01	1.0	81	102	92	8.0
			BYI08330 - ketohydroxy	12	0.01	1.0	78	102	93	7.1
			BYI08330 enol-glucoside	12	0.01	1.0	76	99	90	8.0
			BYI08330 mono-hydroxy	12	0.01	1.0	80	111	94	8.6
		peel	BYI08330	12	0.01	1.0	71	100	87	10.1
			BYI08330 - enol	12	0.01	1.0	67	97	87	10.4
			BYI08330 - ketohydroxy	12	0.01	1.0	72	99	89	9.3
			BYI08330 enol-glucoside	12	0.01	1.0	72	103	87	10.6
			BYI08330 mono-hydroxy	12	0.01	1.0	73	104	90	10.4
RA-2002/05 all trials GLP yes 2005	Mandarin	fruit	BYI08330	12	0.01	1.0	90	108	98	5.0
			BYI08330 - enol	12	0.01	1.0	85	96	91	4.3
			BYI08330 - ketohydroxy	12	0.01	1.0	89	103	96	4.9
			BYI08330 enol-glucoside	12	0.01	1.0	86	99	91	5.4
			BYI08330 mono-hydroxy	12	0.01	1.0	82	100	93	6.0
		peel	BYI08330	12	0.01	1.0	78	116	96	11.1
			BYI08330 - enol	12	0.01	1.0	78	100	92	7.4
			BYI08330 - ketohydroxy	12	0.01	1.0	78	97	93	5.6
			BYI08330 enol-glucoside	12	0.01	1.0	79	99	89	6.0
			BYI08330 mono-hydroxy	12	0.01	1.0	80	101	92	6.2

RSD = relative standard deviation; *the fortification level is related to the analyte, not given as BYI08330 equivalents; n = number of tests.

Table 6.3.1.1-4: Use pattern of residue trials conducted with two spray applications of BYI08330 OD 100 and OD 150 to orange trees in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						PHI (days)
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	
RA-2032/04 R 2004 0139 6 0139-04 Italy I-[redacted] (Sicilia) 2004	Orange	OD 100	2	21	0.096	0.2112	0.00960	1000	14
RA-2032/04 R 2004 0141 8 0141-04 Italy I-[redacted] (Sicilia) 2004	Orange	OD 100	2	21	0.096	0.2300	0.00958	1000	14
RA-2032/04 R 2004 0239 2 0239-04 Portugal P-[redacted] 2004	Orange	OD 100	2	21	0.096	0.2880	0.00960	1000	14
RA-2032/04 R 2004 0240 6 0240-04 Spain E-[redacted] 2004	Orange	OD 100	2	21	0.096	0.2880	0.00960	1000	14

a.s. = Active Substance; CH = canopy height

Table 6.3.1.1-4 continued:

Country Trial No. Country Year	Crop	Form.	Application						PHI (days)
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	
RA-2003/05 R 2005 0046 7 0046-05 Portugal P-[redacted] 2005	Orange	OD 150	2	21	0.64	0.2880	0.00960	1000	14
RA-2003/05 R 2005 0047 5 0047-05 Italy I-[redacted] (Sicilia) 2005	Orange	OD 150	2	20	0.64	0.2880	0.00960	1000	14
RA-2003/05 R 2005 0048 3 0048-05 Spain E-[redacted] 2005	Orange	OD 150	2	21	0.64	0.2880	0.00960	1000	14
RA-2003/05 R 2005 0049 1 0049-05 Italy I-[redacted] (Sicilia) 2005	Orange	OD 150	2	2	0.64	0.2592	0.00960	1000	14

a.s. = Active Substance; CH = canopy height

Table 6.3.1.1-5: Use pattern of residue trials conducted with two spray applications of BYI08330 OD 100 and OD 150 to mandarin trees in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2033/04 R 2004 0142 6 0142-04 Italy I-[redacted] (Sicilia) 2004	Mandarin	OD 100	2	21	0.096	0.2110	0.0096	1000	14
RA-2033/04 R 2004 0143 4 0143-04 Portugal P-[redacted] 2004	Mandarin	OD 100	2	21	0.096	0.2880	0.0096	1000	14
RA-2033/04 R 2004 0237 6 0237-04 Spain E-[redacted] 2004	Mandarin	OD 100	2	21	0.096	0.2400	0.0096	1000	14
RA-2033/04 R 2004 0238 4 0238-04 Spain E-[redacted] 2004	Mandarin	OD 100	2	21	0.096	0.2400	0.0096	1000	14

a.s. = Active Substance; CH = canopy height

Table 6.3.1.1-5 continued:

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI days
RA-2002/05 R 2005 0041 6 0041-05 Portugal P-[redacted] 2005	Mandarin	OD 150	2	21	0.064	0.288	0.0096	1000	14
RA-2002/05 R 2005 0042 4 0042-05 Spain E-[redacted] 2005	Mandarin	OD 150	2	21	0.064	0.240	0.0096	1000	14
RA-2002/05 R 2005 0043 2 0043-05 Italy I-[redacted] (Sicilia) 2005	Mandarin	OD 150	2	21	0.064	0.192	0.0096	1000	14
RA-2002/05 R 2005 0044 0 0044-05 Spain E-[redacted] 2005	Mandarin	OD 150	2	21	0.064	0.240	0.0096	1000	14
RA-2002/05 R 2005 0045 9 0045-05 Italy I-[redacted] (Sicilia) 2005	Mandarin	OD 150	2	21	0.064	0.2304	0.0096	1000	14

a.s. = Active Substance; CH = canopy height

Table 6.3.1-6: Results from supervised residue trials conducted with 2 spray applications of BYI08330 OD 100 to orange trees in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy	Orange	0*	0.01	0.012	0.012	<0.012	<0.008	<0.055
RA-2032/04	fruit	0	0.12	0.012	0.012	<0.012	<0.008	0.14
R 2004 0139 6		7	0.05	0.012	0.012	<0.012	<0.008	<0.055
		14	0.02	0.012	0.012	<0.012	<0.008	**<0.055**
		21	0.02	0.015	0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**14**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.05	0.058	0.030	<0.012	0.008	**0.14**
		21	0.03	0.037	0.036	<0.012	0.008	0.10
		28	0.01	0.027	0.024	<0.012	0.008	0.071
Italy	Orange	0*	<0.01	0.012	0.012	<0.012	<0.008	<0.055
RA-2032/04	fruit	0	0.11	0.02	0.012	<0.012	<0.008	0.14
R 2004 0141 8		**14**	0.02	0.017	0.012	<0.012	<0.008	**<0.055**
		21	0.02	0.014	0.012	<0.012	<0.008	<0.055
		28	0.01	0.012	0.012	<0.012	<0.008	<0.055
	pulp	**21**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		28	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**21**	0.02	0.039	0.02	<0.012	0.008	**0.10**
		28	0.01	0.025	0.012	<0.012	0.008	0.055
Portugal	Orange	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2032/04	fruit	0	0.13	0.023	<0.012	<0.012	<0.008	0.15
R 2004 0239 2		7	0.13	0.044	0.014	<0.012	<0.008	0.19
		14	0.04	0.041	0.013	<0.012	0.008	**0.099**
		21	0.02	0.031	0.013	<0.012	0.008	0.074
		27	0.01	0.033	0.013	<0.012	0.008	0.068
	pulp	**14**	<0.01	0.015	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		27	<0.01	0.015	<0.012	<0.012	<0.008	<0.055

	peel	**14**	0.04	0.11	0.032	<0.012	0.008	**0.19**
		21	0.02	0.049	0.026	<0.012	0.008	0.098
		27	0.01	0.030	0.012	<0.012	0.008	0.060
Spain	Orange	0*	0.07	0.052	0.012	<0.012	0.011	0.14
RA-2032/04	fruit	0	0.14	0.062	0.012	<0.012	0.012	0.23
R 2004 0240 6		**15**	0.10	0.090	0.015	<0.012	0.016	**0.22**
		21	0.08	0.078	0.012	<0.012	0.016	0.2
		28	0.05	0.064	<0.012	<0.012	0.017	0.14
	pulp	**21**	<0.01	0.063	<0.012	<0.012	0.008	**0.071**
		28	<0.01	0.056	<0.012	<0.012	0.008	0.064
	peel	**21**	0.14	0.28	0.035	<0.012	0.054	**0.51**
		28	0.14	0.20	0.033	<0.012	0.052	0.42

DALT = Days after last Treatment, * = before the last treatment

Table 6.3.1.1-6 continued

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Portugal	Orange	0	0.10	0.020	0.012	<0.012	<0.008	0.13
RA-2003/05	fruit	**14**	0.01	0.015	0.012	<0.012	<0.008	**<0.055**
R 2005 0046 7		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	0.02	0.012	0.012	<0.012	0.008	<0.055
	pulp	**14**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.02	0.031	0.016	<0.012	0.008	**0.070**
		21	0.01	0.032	0.015	<0.012	0.008	0.068
		28	0.01	0.029	0.012	<0.012	0.008	0.062
Italy	Orange	0	0.20	0.013	0.012	<0.012	<0.008	0.22
RA-2003/05	fruit	**14**	0.01	0.012	<0.012	<0.012	<0.008	**<0.055**
R 2005 0047 5		21	0.02	0.013	0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**14**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.03	0.044	0.016	<0.012	0.008	0.098
		21	0.03	0.044	0.017	<0.012	0.008	**0.12**
		28	0.02	0.030	0.012	<0.012	0.008	0.067
Spain	Orange	0*	0.02	0.036	0.012	<0.012	0.008	0.073
RA-2003/05	fruit	0	0.10	0.047	0.012	<0.012	0.008	0.17
R 2005 0048 3		7	0.06	0.049	0.024	<0.012	0.008	0.14
		14	0.05	0.039	0.013	<0.012	0.008	**0.11**
		21	0.02	0.038	0.013	<0.012	0.008	0.077
		28	0.01	0.032	0.012	<0.012	0.008	0.062
	pulp	**14**	<0.01	0.034	<0.012	<0.012	0.008	**<0.055**
		21	<0.01	0.025	<0.012	<0.012	0.008	<0.055
		28	<0.01	0.022	<0.012	<0.012	0.008	<0.055
	peel	**14**	0.21	0.20	0.069	<0.012	0.023	**0.50**
		21	0.04	0.098	0.044	<0.012	0.016	0.20
		28	0.01	0.072	0.027	<0.012	0.014	0.13
Italy	Orange	0*	0.04	0.012	0.013	<0.012	<0.008	0.065
RA-2003/05	fruit	0	0.11	0.012	0.012	<0.012	<0.008	0.13
R 2005 0049 1		7	0.04	0.014	0.012	<0.012	<0.008	0.066
		14	0.03	0.015	0.012	<0.012	<0.008	**<0.055**
		21	0.02	0.016	0.012	<0.012	<0.008	<0.055
		28	0.02	0.013	0.012	<0.012	<0.008	<0.055
	pulp	**14**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.06	0.090	0.042	<0.012	0.008	**0.20**
		21	0.05	0.059	0.029	<0.012	0.008	0.14
		28	0.04	0.065	0.035	<0.012	0.008	0.15

Table 6.3.1-7: Results from supervised residue trials conducted with 2 spray applications of BYI08330 OD 100 to mandarin trees in southern Europe

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330-enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy	Mandarin	0*	0.02	0.073	0.015	<0.012	0.010	0.11
RA-2033/04	fruit	0	0.21	0.13	0.023	<0.012	0.012	0.37
R 2004 0142 6		7	0.02	0.12	0.026	<0.012	0.015	0.2
		14	0.01	0.075	0.019	<0.012	0.014	0.12
		21	0.02	0.076	0.023	<0.012	0.015	**0.13**
		28	0.01	0.069	0.017	<0.012	0.02	0.11
	pulp	14	<0.01	0.045	<0.012	<0.012	0.008	<0.055
		21	<0.01	0.053	<0.012	<0.012	0.008	**0.061**
		28	<0.01	0.035	<0.012	<0.012	0.008	<0.055
	peel	**14**	0.03	0.24	0.086	<0.012	0.048	**0.41**
		21	0.03	0.21	0.080	<0.012	0.061	0.38
		28	0.01	0.14	0.044	<0.012	0.044	0.21
Portugal	Mandarin	15	0.01	0.15	<0.012	<0.012	0.029	0.19
RA-2033/04	fruit	21	0.01	0.14	<0.012	<0.012	0.035	**0.2**
R 2004 0143 4		29	0.01	0.10	<0.012	<0.012	0.032	0.15
	pulp	15	<0.01	0.052	<0.012	<0.012	0.008	0.080
		21	<0.01	0.077	<0.012	<0.012	0.008	**0.085**
		29	<0.01	0.062	<0.012	<0.012	0.008	0.070
	peel	**15**	0.02	0.21	0.031	<0.012	0.075	**0.34**
		21	0.02	0.2	0.026	<0.012	0.081	0.31
		29	0.02	0.13	0.016	<0.012	0.073	0.23
Spain	Mandarin	0*	0.03	0.070	0.019	<0.012	0.020	0.14
RA-2033/04	fruit	0	0.20	0.12	0.026	<0.012	0.023	0.37
R 2004 0237 6		**14**	0.09	0.15	0.035	<0.012	0.044	**0.32**
		21	0.06	0.13	0.030	<0.012	0.047	0.27
		29	0.03	0.12	0.026	<0.012	0.050	0.22
	pulp	**14**	<0.01	0.060	0.012	<0.012	0.011	**0.082**
		21	<0.01	0.054	<0.012	<0.012	0.011	0.065
		29	<0.01	0.068	0.012	<0.012	0.015	0.095
	peel	**14**	0.29	0.43	0.14	<0.012	0.12	**0.97**
		21	0.16	0.34	0.12	<0.012	0.12	0.74
		29	0.09	0.20	0.068	<0.012	0.10	0.44
Spain	Mandarin	0*	0.03	0.066	0.015	<0.012	0.02	0.13
RA-2033/04	fruit	0	0.19	0.098	0.016	<0.012	0.016	0.32
R 2004 0238 4		7	0.01	0.088	0.02	<0.012	0.02	0.13
		15	0.01	0.066	0.013	<0.012	0.016	0.11
		21	0.01	0.069	0.012	<0.012	0.021	0.11
		28	0.01	0.075	0.013	<0.012	0.030	**0.13**
	pulp	**15**	<0.01	0.045	<0.012	<0.012	0.008	**<0.055**
		21	<0.01	0.034	<0.012	<0.012	0.008	<0.055
		28	<0.01	0.022	<0.012	<0.012	0.008	<0.055

	peel	**15**	0.01	0.14	0.057	<0.012	0.068	**0.28**
		21	0.01	0.11	0.052	<0.012	0.065	0.24
		28	0.01	0.071	0.038	<0.012	0.055	0.17

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1-7 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Portugal	Mandarin	0	0.18	0.084	0.012	<0.012	0.008	0.29
RA-2002/05	fruit	**14**	0.01	0.059	0.012	<0.012	0.008	**0.089**
R 2005 0041 6		21	0.01	0.045	0.012	<0.012	0.008	0.075
		28	0.01	0.046	0.012	<0.012	0.008	0.077
	pulp	**14**	<0.01	0.032	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	0.029	<0.012	<0.012	<0.008	<0.055
		28	<0.01	0.032	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.02	0.14	0.026	<0.012	0.019	**0.21**
		21	0.02	0.11	0.026	<0.012	0.020	0.17
		28	0.03	0.094	0.030	<0.012	0.036	0.18
Spain	Mandarin	0	0.11	0.078	0.012	<0.012	0.008	0.21
RA-2002/05	fruit	**14**	0.07	0.16	0.013	<0.012	0.018	**0.26**
R 2005 0042 4		21	0.04	0.12	0.012	<0.012	0.018	0.19
		28	0.06	0.12	0.014	<0.012	0.025	0.22
	pulp	**14**	0.01	0.098	0.012	<0.012	0.008	**0.13**
		21	0.01	0.083	<0.012	<0.012	0.008	0.091
		28	<0.01	0.10	0.012	<0.012	0.012	0.13
	peel	**14**	0.23	0.57	0.067	<0.012	0.064	**0.93**
		21	0.14	0.30	0.040	<0.012	0.055	0.53
		28	0.09	0.33	0.051	<0.012	0.085	0.56
Italy	Mandarin	0	0.15	0.022	0.013	<0.012	<0.008	0.18
RA-2002/05	fruit	**14**	0.10	0.033	0.033	<0.012	0.008	**0.17**
R 2005 0043 2		21	0.02	0.031	0.015	<0.012	0.008	0.070
		28	0.02	0.034	0.018	<0.012	0.008	0.083
	pulp	**14**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		28	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**14**	0.24	0.16	0.11	<0.012	0.012	**0.52**
		21	0.04	0.10	0.064	<0.012	0.015	0.23
		28	0.04	0.087	0.046	<0.012	0.016	0.19

DALT = days after last treatment, * = before the last treatment

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Table 6.3.1-7 continued:

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2002/05 R 2005 0044 0	Mandarin fruit	0	0.03	0.040	0.013	<0.012	<0.009	0.088
		0	0.23	0.086	0.019	<0.012	0.010	0.35
		7	0.14	0.092	0.042	<0.012	0.018	0.29
		14	0.12	0.057	0.031	<0.012	0.012	**0.22**
		21	0.03	0.073	0.028	<0.012	0.020	0.15
		28	0.01	0.061	0.021	<0.012	0.018	0.11
	pulp	**14**	<0.01	0.022	0.012	<0.012	0.008	**<0.055**
		21	<0.01	0.028	0.012	<0.012	0.008	<0.055
		28	<0.01	0.025	<0.012	<0.012	0.008	<0.055
	peel	**14**	0.25	0.22	0.12	<0.012	0.054	**0.64**
		21	0.07	0.18	0.10	<0.012	0.038	0.41
		28	0.03	0.13	0.077	<0.012	0.053	0.29
Italy RA-2002/05 R 2005 0045 9	Mandarin fruit	0	0.02	0.041	0.012	<0.012	0.008	0.078
		0	0.19	0.072	0.021	<0.012	0.011	0.30
		7	0.06	0.075	0.036	<0.012	0.008	0.18
		14	0.04	0.066	0.033	<0.012	0.014	**0.15**
		21	0.04	0.069	0.034	<0.012	0.018	0.16
		28	0.03	0.068	0.036	<0.012	0.022	0.16
	pulp	**14**	<0.01	0.016	<0.012	<0.012	<0.008	<0.055
		21	<0.01	0.022	<0.012	<0.012	0.008	**<0.055**
		28	<0.01	0.023	<0.012	<0.012	0.008	<0.055
	peel	**14**	0.06	0.20	0.11	<0.012	0.043	0.40
		21	0.10	0.23	0.14	<0.012	0.064	**0.54**
		28	0.06	0.16	0.096	<0.012	0.065	0.38

DALT = days after last treatment, * = before the last treatment

IIA 6.3.1.2 Lettuce

BYI08330 is to be registered for control of aphids in lettuce. The critical European GAP of BYI08330 for greenhouse and field uses in northern (EUN) and southern Europe (EUS) is summarized in Table 6.3.1.2-1.

Table 6.3.1.2-1: Critical European GAPs for the spray application of BYI08330 to lettuce

Location	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval	PHI
Greenhouse	72	500-1000	2	14	7
Field EUN	72	500-1000	2	14	7
Field EUS	72	500-1000	2	14	7

Report:	**KIIA 6.3.1.2/01, [redacted]; 2005**
Title:	**Determination of residues of BYI08330 in/on lettuce after spraying of BYI08330 (100 OD) in the greenhouse in Germany, Southern France, Italy and Spain**
Report No &	**RA-2054/04, including trials no. R 2004 0393/3, R 2004 0394/1, R 2004 0396/8, R 20040397/6, R 2004 0398/4, R 2004 0399/2, R 2004 0401/8, R 2004 0402/6**
Document No	**M-262616-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.2/02, [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on lettuce after spraying of BYI08330 (150 OD) in the greenhouse in Greece, France, Netherlands, Portugal Germany and Spain**
Report No &	**RA-2170/05, including trials no. R 2005 1023/3, R 2005 1024/1, R 2005 1026/8, R 2005 1027/6, R 2005 1028/4, R 2005 1029/2, R 2005 1030/6, R 2005 1031/4**
Document No	**M-272108-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.2/03, [redacted] 2005**
Title:	**Determination of residues of BYI08330 in/on lettuce after spraying of BYI08330 (240 SC) in the greenhouse in Germany, Italy and Spain**
Report No &	**RA-2113/04, including trials no. R 2004 0685/1, R 2004 0687/8, R 2004 0688/6, R 2004 0689/4**
Document No	**M-261625-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.2/04, [redacted].; [redacted].; 2005**
Title:	**Determination of residues of BYI08330 in/on lettuce after spraying of BYI08330 (100 OD) in the field in the Netherlands and Germany**
Report No &	**RA-2052/04, including trials no. R 2004 0385/2, R 2004 0386/0, R 2004 0387/9, R 2004 0388/7**
Document No	**M-260209-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.2/05, [redacted] 2005**
Title:	**Determination of residues of BYI08330 in/on lettuce after spraying of BYI08330 (100 OD) in the field in southern France, Spain, Portugal and Italy**
Report No &	**RA-2053/04, including trials no. R 2004 0389/5, R 2004 0390/9, R 2004 0391/7, R 2004 0392/5**
Document No	**M-260382-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test System

Altogether 28 supervised residue trials with BYI08330 in lettuce were conducted in the years 2004 and 2005. An overview on the supervised residue trials conducted with different formulations of BYI08330 is given in Table 6.3.1.2-2

Table 6.3.1.2-2: Overview on European residue trials with BYI08330 in lettuce

Location	Formulation	No of trials	Year	Use rate (g as/ha)	Water volume	No of appl.	Spray interval (days)
Greenhouse	**OD 100**	**8**	**2004**	**72**	**500-1000**	**3**	**7**
Greenhouse	**OD 150**	**8**	**2005**	**72**	**500-1000**	**2**	**14**

Greenhouse	**SC 240 + 0.2% RME EW500**	**4**	**2004**	**72**	**500-1000**	**3**	**7**
Field EUN	**OD 100**	**4**	**2004**	**72**	**500-1000**	**3**	**7**
Field EUS	**OD 100**	**4**	**2004**	**72**	**500-1000**	**3**	**7**

In 2004, supervised residue trials in lettuce were conducted in the greenhouse (12 trials) and in the field in northern (4 trials) and in southern Europe (4 trials). These trials were not conducted according to the critical GAP. BYI08330 was applied 3 times with a spray interval of 7 days. The designated PHI was 3 days. Lettuce samples were analysed on day 0 prior to and after the 3rd application and after 1, 3, 7, and 14 days. These trials were used to evaluate the influence of different formulations (OD 100 and SC 240 + RME) on the height of residue. In addition, these trials were used to evaluate the influence of greenhouse and field conditions on the residue behaviour.

In 2005, due to new results from biological trials the European GAP was changed. The number of applications was reduced to 2 and the spray interval was changed from 7 to 14 days. Hence, 8 residue trials with BYI08330 OD150 were conducted in the greenhouse according to the final critical European GAP. The field data of the residue trails are summarized in Tables 6.3.1.2-4 to 6.3.1.2-8.

Different lettuce varieties were included in the residue trials. Care was taken that one half of the trials were conducted with head lettuces and the other half with loose-leaf varieties.
Residues in lettuce were analysed according to method 00857 (see IIA 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites in lettuce at fortification levels between 0.01 and 5 mg/kg of each analyte were within the acceptable range of 70-110 %; RSD ≤ 20%. (Table 6.3.1.2-3)

Residues determined for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, expressed as BYI08330 equivalents are given in Tables 6.3.1.2-9 to 6.3.1.2-13 and in more detail in the respective Tier I summaries.

Findings

To determine the influence of different locations on the residue behaviour of BYI08330 in lettuce results from residue trials conducted with the OD 100 in the greenhouse and in the field in northern and southern Europe were compared (Tables 6.3.1.2-9, 6.3.1.2-12 and 6.3.1.2-13). Residue data in lettuce sampled 7 days after 3 applications were evaluated to be consistent with the PHI of the critical European GAP. The residues used for evaluation are marked with bold numbers. The total residue of BYI08330 in lettuce from the 4 southern European trials (Table 6.3.1.2-13) ranged between 0.09-0.25 mg/kg. The total residue of BYI08330 in lettuce from 4 northern European trials (Table 6.3.1.2-12) was in a similar range (0.11-0.43 mg/kg). In lettuce from 8 trials in the greenhouse the total residue of BYI08330 was between 0.2 and 3.5

mg/kg (Table 6.3.1.2-9). These results show that residues in lettuce grown in the greenhouse could be at similar levels as in lettuce from the field, but could also reach much higher levels. Hence, lettuce grown in the greenhouse is considered as worst case with respect to residues.

To evaluate the influence of different formulations of BYI08330 (OD and SC) on the residue behaviour results from the 8 greenhouse trials conducted with the OD 100 formulation (Table 6.3.1.2-9) were compared to the results from 4 greenhouse trials conducted with the SC240 formulation (Table 6.3.1.2-11). In all these trials 3 spray applications of BYI08330 were performed. Samples collected 7 days after the last application were evaluated to be consistent with the PHI of the critical European GAP. The total residue of BYI08330 after the application of the SC240 formulation was between 0.23 and 1.8 mg/kg and agreed well with the total residue after application of the OD100 formulation of 0.2 to 3.5 mg/kg. These results clearly show that residue data obtained after the application of both formulations are valid to support the use of either of the two formulations, the OD or the SC 240 + RME.

As the conditions in the greenhouse are considered as worst case concerning residues, 8 residue trials were conducted with the OD150 formulation in the greenhouse according to the critical European use pattern. The residue data of these trials are evaluated for estimation of the dietary risk and for MRL setting. A total residue of BYI08330 of between **0.15 and 2.3 mg/kg (STMR 1.2 mg/kg)** was determined in lettuce (Table 6.3.1.2-10).

The total residue of BYI08330 consists mainly of BYI08330 and the enol metabolite. BYI08330-ketohydroxy and –enol-glucoside are minor metabolites. BYI08330-monohydroxy was not found.

Table 6.3.1.2-3: Recovery results for BYI08330 and its metabolites in lettuce

Study Trial Nos.	Crop	Portion analysed	Analyte	Fortification level (mg/kg)			Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2054/04 RA-2113/04 RA-2052/04 RA-2053/04 all trials GLP yes 2004	Lettuce	head	BYI08330	44	0.01	5.0	76	113	96	9.3
			BYI08330 - enol	44	0.01	5.0	66	103	91	8.5
			BYI08330 - ketohydroxy	44	0.01	5.0	73	110	96	8.5
			BYI08330 enol-glucoside	44	0.01	5.0	73	115	96	10.8
			BYI08330 mono-hydroxy	44	0.01	5.0	76	111	94	8.5
RA-2170/05 all trials GLP yes 2005	Lettuce	head	BYI08330	14	0.01	10	82	96	89	5.2
			BYI08330 - enol	14	0.01	10	79	93	87	5.6
			BYI08330 - ketohydroxy	14	0.01	10	81	105	90	7.2
			BYI08330 enol-glucoside	14	0.01	10	84	98	89	5.4

			BYI08330 mono-hydroxy	14	0.01	10	83	96	90	4.3

RSD = relative standard deviation

Table 6.3.1.2-4: Use pattern of supervised residue trials with BYI08330 OD 100 in lettuce in the greenhouse

Study Trial No. Trial SubID Country Year	Crop, Variety	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2054/04 R 2004 0393 3 0393-04 Germany D-[redacted] 2004	Lettuce Alexandria, Butterhead variety	100 OD	3	7	0.0720	0.0120	3
RA-2054/04 R 2004 0394 1 0394-04 France F-[redacted] 2004	Lettuce Alexandria, Butterhead variety	100 OD	3	7	0.0720	0.0072	3
RA-2054/04 R 2004 0396 8 0396-04 Germany D-[redacted] 2004	Lettuce Roderik, Butterhead variety	100 OD	3	7	0.0720	0.0120	3
RA-2054/04 R 2004 0397 6 0397-04 Italy I-[redacted] 2004	Lettuce Kereon, Butterhead variety	100 OD	3	7	0.0720	0.0144	3

a.s. = Active Substance

Table 6.3.1.2-4 continued

Study Trial No. Trial SubID Country Year	Crop, Variety	Form.	Application				PHI days
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	
RA-2054/04 R 2004 0398 4 0398-04 Italy I-[redacted] 2004	Lettuce Loose-leaf variety	100 OD	3	7	0.0720	0.0090	3
RA-2054/04 R 2004 0399 2 0399-04 Spain E-[redacted] 2004	Lettuce Batavia, Loose-leaf variety	100 OD	3	7	0.0720 - 0.0774	0.0072 - 0.0090	3
RA-2054/04 R 2004 0401 8 0401-04 Italy I-[redacted] 2004	Lettuce Versai RZ, Loose-Leaf variety	100 OD	3	7	0.0720	0.0090	3
RA-2054/04 R 2004 0402 6 0402-04 Spain E-41310 [redacted] (Andalusia) 2004	Lettuce Solsun (Nun 8801 LT), Loose-leaf variety	100 OD	3	7	0.0720	0.0120	3

a.s. = Active Substance

Table 6.3.1.2-5: Use pattern of supervised residue trials with BYI08330 OD 150 in lettuce in the greenhouse

Study Trial No. Trial SubID Country Year	Crop, Variety	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2170/05 R 2005 1023 3 1023-05 Greece GR-[redacted] 2005	Lettuce Manita, loose-leaf variety	150 OD	2	14	0.0720	0.01440	7
RA-2170/05 R 2005 1024 1 1024-05 France F-[redacted] 2005	Lettuce Bastille, loose-leaf variety	150 OD	2	14	0.0720	0.00900	7
RA-2170/05 R 2005 1026 8 1026-05 Netherlands NL-[redacted](Noord-Holland) 2005	Lettuce Varinka, head variety	150 OD	2	14	0.0720	0.00720	7
RA-2170/05 R 2005 1027 6 1027-05 Portugal P-[redacted] 2005	Lettuce Tradition, loose-leaf variety	150 OD	2	14	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.2-5 continued:

Study Trial No. Trial SubID Country Year	Crop, Variety	Form.	Application				
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2170/05 R 2005 1028 4 1028-05 France F-[redacted] (Midi-Pyrenees) 2005	Lettuce Cabanon, head variety	150 OD	2	15	0.0720	0.00900	
RA-2170/05 R 2005 1029 2 1029-05 France F-[redacted] (Provence-Cote D'azur) 2005	Lettuce Arcadia, head variety	150 OD	2	14	0.0720	0.00720	7
RA-2170/05 R 2005 1030 6 1030-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Lettuce Alexandria, head variety	150 OD	2	14	0.0720	0.01200	7
RA-2170/05 R 2005 1031 4 1031-05 Spain E-[redacted] Riells (Barcelona) (Cataluña) 2005	Lettuce Batavia, loose-leaf variety	150 OD	2	13	0.0720-0.0764	0.00795-0.01200	7

a.s. = Active Substance

Table 6.3.1.2-6: Use patterns of BYI08330 SC 240 in residue trials with lettuce conducted in the greenhouse

Study Trial No. Trial SubID Country Year	Crop Variety	Form.	Application				PHI days
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	
RA-2113/04 R 2004 0685 1 0685-04 Germany D-[redacted] 2004	Lettuce Alexandria, Butterhead variety	SC 240	3	7	0.072	0.012	3
RA-2113/04 R 2004 0687 8 0687-04 Italy I-[redacted] 2004	Lettuce Lollo rosso, Loose-leaf variety	SC 240	3	7	0.072	0.009	3
RA-2113/04 R 2004 0688 6 0688-04 Spain E-[redacted] (Andalucia) 2004	Lettuce Solsun (Nun 8801 LT), Loose-leaf variety	SC 240	3	7	0.072	0.012	3
RA-2113/04 R 2004 0689 4 0689-04 Germany D-[redacted] 2004	Lettuce Roderick, Butterhead variety	SC 240	3	7	0.072	0.012	3

a.s. = Active Substance

Table 6.3.1.2-7: Use pattern of residue trials with BYI08330 OD 100 in lettuce conducted in the field in northern Europe

Study Trial No. Trial SubID Country Year	Crop Variety	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2052/04 R 2004 0385 2 0385-04 Netherlands NL-[redacted] (Noord-Holland) 2004	Lettuce Ponchito, Butterhead variety	100 OD	3	8/7	0.0720	0.00900	3
RA-2052/04 R 2004 0386 0 0386-04 Germany D-[redacted] (Hof [redacted]) 2004	Lettuce Ponchito, Butterhead variety	100 OD	3	7	0.0720	0.01200	3
RA-2052/04 R 2004 0387 9 0387-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Lettuce Lollo Roso, Loose-leaf variety	100 OD	3	7	0.0720	0.01200	3
RA-2052/04 R 2004 0388 7 0388-04 Germany D-[redacted] (Hof [redacted]) 2004	Lettuce Bastille, Loose-leaf variety	100 OD	3	7	0.0720	0.01200	3

a.s. = Active Substance

Table 6.3.1.2-8: Use pattern of residue trials with BYI08330 OD100 in lettuce conducted in the field in southern Europe

Study Trial No. Trial SubID Country Year	Crop Variety	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2053/04 R 2004 0389 5 0389-04 France F-[redacted] (Rhone-Alpes) 2004	Lettuce 4509, Crisphead variety	OD 100	3	8/6	0.0720	0.01309	3
RA-2053/04 R 2004 0390 9 0390-04 Spain E-[redacted] (Cataluña) 2004	Lettuce Iceberg, Crisphead variety	OD 100	3	6/8	0.0720 - 0.0770	0.00720 - 0.01200	3
RA-2053/04 R 2004 0391 7 0391-04 Portugal P-[redacted] 2004	Lettuce Vision, Loose-leaf variety	OD 100	3	7	0.0720	0.00960	3
RA-2053/04 R 2004 0392 5 0392-04 Italy I-[redacted] (Emilia - Romagna) 2004	Lettuce Gentilina, Loose-leaf variety	OD 100	3	7	0.0720	0.01440	3

a.s. = Active Substance

Table 6.3.1.2-9: Results of residue trials conducted with BYI08330 OD 100 in lettuce in the greenhouse

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany	Lettuce	0*	0.04	0.096	0.031	<0.012	0.030	0.20
RA-2054/04	head	0	0.35	0.33	0.076	<0.012	0.037	0.80
R 2004 0393 3		1	0.38	0.27	0.043	<0.012	0.037	0.73
		3	0.28	0.25	0.061	<0.012	0.052	0.64
		7	0.02	0.091	0.039	<0.012	0.060	**0.21**
		13	0.01	0.053	0.013	<0.012	0.031	0.16
France	Lettuce	0*	0.07	0.12	0.041	<0.012	0.022	0.26
RA-2054/04	head	0	0.49	0.69	0.16	<0.012	0.042	1.4
R 2004 0394 1		1	0.63	0.32	0.090	<0.012	0.027	1.1
		3	0.06	0.2	0.047	<0.012	0.038	0.32
		7	0.02	0.080	0.025	<0.012	0.059	**0.2**
		14	0.01	0.031	0.012	<0.012	0.067	0.12
Germany	Lettuce	0	2.2	0.66	0.079	<0.012	0.014	2.9
RA-2054/04	head	1	1.7	0.50	0.059	<0.012	0.012	2.3
R 2004 0396 8		**3**	1.5	0.54	0.070	<0.012	0.017	2.1
		6	1.9	0.59	0.079	<0.012	0.032	**2.6**
Italy	Lettuce	0	1.9	0.35	0.070	<0.012	0.037	2.4
RA-2054/04	head	1	1.7	0.37	0.072	<0.012	0.042	2.2
R 2004 0397 6		**3**	1.3	0.28	0.046	<0.012	0.043	1.7
		7	1.2	0.21	0.032	<0.012	0.048	**1.5**
Italy	Lettuce	0*	1.7	0.49	0.13	<0.012	0.051	2.4
RA-2054/04	head	0	5.9	0.73	0.14	<0.012	0.056	6.9
R 2004 0398 4		1	5.1	0.68	0.14	<0.012	0.052	5.9
		3	3.7	0.76	0.17	<0.012	0.13	4.7
		6	2.6	0.53	0.13	<0.012	0.15	**3.5**
		14	0.60	0.24	0.079	<0.012	0.093	1.0
Spain	Lettuce	0*	0.54	0.52	0.2	<0.012	0.057	1.3
RA-2054/04	head	0	1.4	0.75	0.24	<0.012	0.058	2.4
R 2004 0399 2		1	1.2	0.71	0.22	<0.012	0.071	2.2
		3	0.73	0.60	0.22	<0.012	0.067	1.6
		7	0.52	0.51	0.17	<0.012	0.084	**1.3**
		14	0.39	0.22	0.081	<0.012	0.074	0.77
Italy	Lettuce	0	2.2	0.55	0.2	<0.012	0.056	3.0
RA-2054/04	head	1	1.1	0.35	0.11	<0.012	0.037	1.6
R 2004 0401 8		**3**	0.4	0.31	0.093	<0.012	0.049	1.8
		7	1.0	0.27	0.096	<0.012	0.067	**1.4**
Spain	Lettuce	0	2.8	0.25	0.041	<0.012	<0.008	3.1
RA-2054/04	head	1	1.9	0.20	0.035	<0.012	<0.008	2.1
R 2004 0402 6		**3**	2.6	0.31	0.052	<0.012	<0.008	2.9
		7	1.7	0.20	0.038	<0.012	0.008	**1.9**

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.2-10: Results of residue trials conducted with BYI08330 OD 150 in lettuce in the greenhouse

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Greece	Lettuce,	0*	0.10	0.12	0.026	<0.012	0.037	0.27
RA-2170/05	loose-	0	1.5	0.31	0.039	<0.012	0.025	1.9
R 2005 1023 3	leaf var.	1	1.6	0.37	0.057	<0.012	0.033	2.1
		3	1.4	0.40	0.063	<0.012	0.034	1.9
	Head	**7**	**0.70**	**0.26**	**0.053**	**<0.012**	**0.032**	**1.0**
		14	0.58	0.28	0.053	<0.012	0.046	0.96
France	Lettuce,	0*	0.14	0.038	0.063	<0.012	0.015	0.23
RA-2170/05	loose-	0	2.0	0.57	0.11	<0.012	0.021	2.7
R 2005 1024 1	leaf var.	1	2.1	0.16	0.15	<0.012	0.017	2.5
		3	1.6	0.18	0.17	<0.012	0.018	2.0
	Head	**7**	**0.19**	**0.078**	**0.084**	**<0.012**	**0.023**	**0.38**
		14	0.09	0.023	0.052	<0.012	0.013	0.18
Netherlands	Lettuce,	0*	0.45	0.18	0.063	<0.012	<0.008	0.69
RA-2170/05	head-var.	0	1.6	0.34	0.067	<0.012	<0.008	2.0
R 2005 1026 8		1	1.5	0.30	0.085	<0.012	<0.008	1.9
		3	1.4	0.29	0.082	<0.012	<0.008	1.8
	Head	**7**	**1.3**	**0.35**	**0.086**	**<0.012**	**<0.008**	**1.8**
		14	0.87	0.26	0.066	<0.012	<0.008	1.2
Portugal	Lettuce,	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2170/05	loose-	0	1.4	1.0	0.067	<0.012	0.015	2.4
R 2005 1027 6	leaf var.	1	1.6	0.58	0.11	<0.012	0.020	2.1
		3	1.4	0.53	0.099	<0.012	0.045	1.9
	Head	**7**	**0.17**	**0.12**	**0.034**	**<0.012**	**0.038**	**0.36**
		14	0.02	0.043	0.012	<0.012	0.024	0.096
France	Lettuce,	0	1.8	0.22	0.047	<0.012	0.008	2.1
RA-2170/05	head-var.	**7**	**1.5**	**0.23**	**0.081**	**<0.012**	**0.012**	**1.9**
R 2005 1028 4	Head							
France	Lettuce,	0	1.5	0.66	0.11	<0.012	0.015	2.3
RA-2170/05	head-var.	**7**	**0.85**	**0.41**	**0.12**	**<0.012**	**0.014**	**1.4**
R 2005 1029 2	Head							
Germany	Lettuce,	0	1.3	0.30	0.014	<0.012	0.008	1.6
RA-2170/05	head-var.	**7**	**0.05**	**0.056**	**0.031**	**<0.012**	**0.014**	**0.15**
R 2005 1030 6	Head							
Spain	Lettuce,	0	1.8	0.57	0.12	<0.012	0.008	2.5
RA-2170/05	loose-	**7**	**1.6**	**0.58**	**0.12**	**<0.012**	**0.015**	**2.3**
R 2005 1031 4	leaf var. Head							

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.2-11: Results of residue trials conducted with BYI08330 SC240 in lettuce in the greenhouse

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330 BYI08330 enol BYI08330 keto-hydroxy BYI08330 mono-hydroxy BYI08330 enol-glucoside Total residue calc.					
Germany RA-2113/04 R 2004 0685 1	Lettuce head	0* 0 1 **3** 7 13	0.02 0.42 0.50 0.31 0.03 0.01	0.088 0.38 0.29 0.21 0.10 0.054	0.023 0.093 0.048 0.037 0.028 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.036 0.042 0.051 0.056 0.070 0.084	0.17 0.93 0.88 0.61 **0.23** 0.16
Italy RA-2113/04 R 2004 0687 8	Lettuce head	0* 0 1 **3** 6 14	1.2 4.2 3.2 1.7 0.99 0.21	0.36 0.66 0.49 0.22 0.41 0.23	0.12 0.15 0.12 0.14 0.11 0.069	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.042 0.043 0.042 0.021 0.12 0.11	1.7 5.1 3.8 2.5 **1.6** 0.62
Spain RA-2113/04 R 2004 0688 6	Lettuce head	0* 0 1 **3** 7	1.1 1.8 2.2 1.7 1.5	0.15 0.21 0.29 0.2 0.21	0.036 0.032 0.050 0.044 0.044	<0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008	1.3 2.0 2.6 1.9 **1.7**
Germany RA-2113/04 R 2004 0689 4	Lettuce head	0* 0 1 **3** 6	1.2 2.1 1.8 1.6 1.5	0.19 0.28 0.25 0.27 0.21	0.064 0.081 0.089 0.080 0.066	<0.012 <0.012 <0.012 <0.012 <0.012	0.010 0.012 0.010 0.013 0.019	1.5 2.4 2.2 1.9 **1.8**

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.2-12: Results of residue trials conducted with BYI08330 OD 100 in lettuce in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Netherlands RA-2052/04 R 2004 0385 2	Lettuce head	0* 0 1 **3** 7 14	0.03 0.53 0.46 0.37 0.17 0.03	0.085 0.15 0.2 0.20 0.10 0.026	0.050 0.050 0.057 0.064 0.082 0.019	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.033 0.031 0.040 0.057 0.077 0.063	0.20 0.76 0.74 0.69 **0.43** 0.13
Germany RA-2052/04 R 2004 0386 0	Lettuce head	0 1 **3** 6	0.37 0.39 0.05 0.01	0.30 0.24 0.12 0.055	0.090 0.074 0.049 0.021	<0.012 <0.012 <0.012 <0.012	0.014 0.015 0.024 0.019	0.77 0.73 0.25 **0.11**
Germany RA-2052/04 R 2004 0387 9	Lettuce head	0* 0 1 **3** 7 14	0.24 1.2 1.2 0.24 0.09 0.04	0.14 0.64 0.46 0.30 0.13 0.027	0.15 0.19 0.2 0.14 0.065 0.02	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.025 0.028 0.034 0.038 0.044 0.033	0.55 2.1 1.9 0.72 **0.33** 0.089
Germany RA-2052/04 R 2004 0388 7	Lettuce head	0 1 **3** 6	0.58 0.13 0.01 0.01	0.45 0.26 0.11 0.068	0.062 0.057 0.059 0.028	<0.012 <0.012 <0.012 <0.012	0.029 0.028 0.039 0.033	1.1 0.48 0.23 **0.14**

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.2-13: Results of residue trials conducted with BYI08330 OD 100 in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2053/04 R 2004 0389 5	Lettuce head	0* 0 1 **3** 6 14	0.01 0.01 0.04 0.02 0.01 <0.01	0.046 0.054 0.13 0.076 0.043 0.013	0.022 0.024 0.034 0.028 0.017 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.011 0.012 0.020 0.024 0.024 0.022	0.090 0.10 0.22 0.14 **0.094** 0.055
Spain RA-2053/04 R 2004 0390 9	Lettuce head	0 1 **3** 7	0.74 0.30 0.20 0.04	0.28 0.31 0.13 0.041	0.067 0.086 0.073 0.020	<0.012 <0.012 <0.012 <0.012	0.045 0.046 0.053 0.042	1.1 0.74 0.46 **0.14**
Portugal RA-2053/04 R 2004 0391 7	Lettuce head	0* 0 1 **3** 7 14	0.03 1.3 0.40 0.33 0.05 0.02	0.071 0.52 0.32 0.19 0.078 0.029	0.025 0.056 0.083 0.085 0.028 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.02 0.020 0.021 0.021 0.020 0.014	0.15 1.9 0.82 0.63 **0.17** 0.070
Italy RA-2053/04 R 2004 0392 5	Lettuce head	0 1 **3** 7	0.85 0.48 0.26 0.04	0.16 0.21 0.20 0.12	0.039 0.056 0.087 0.035	<0.012 <0.012 <0.012 <0.012	0.037 0.031 0.050 0.058	1.1 0.77 0.59 **0.25**

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.3 Pome fruit

BYI08330 is to be registered for control of aphids, scales, and mites in pomefruit. The critical European GAP for the use of BYI08330 in pome fruit in northern (EUS) and southern Europe (EUS) is summarized in Table 6.3.1.3-1

Table 6.3.1.3-1: Critical European GAP for spray application of BYI08330 to pome fruit trees

Crop	Region	Use rate (g as/ha*m CH)	Water volume (L/ha*m CH)	No	Spray interval (days)	PHI (days)
Pome fruit	EUN	72	500-1000	2	14	21
Pome fruit	EUS	72	500-1000	2	14	21

CH = canopy height

Report:	**KIIA 6.3.1.3/01, [redacted].; 2005 ; amended 12.01.2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying and low-volume spraying of BYI08330 (100 OD) in the field in Germany, United Kingdom and Northern France**
Report No & Document No	**RA-2135/04, including trials no. R 2004 0795/5, R 2004 0796/3, R 2004 0797/1, R 2004 0799/8** **M-262625-02-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.3/02, [redacted]; [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying of BYI08330 (150 OD) in the field in United Kingdom and Germany**
Report No & Document No	**RA-2012/05, including trials no. R 2005 0083/1, R 2005 0085/8, R 2005 0086/6, R 2005 0087/4, R 2005 1018/7** **M-269314-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.3/03, [redacted].; [redacted] 2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying and low-volume spraying of BYI08330 (240 SC) in the field in Germany, United Kingdom and Northern France**
Report No & Document No	**RA-2138/04, including trials no. R 2004 0809/9, R 2004 0810/2, R 2004 0811/0, R 2004 0812/9** **M-264454-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.3/04, [redacted] 2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying and low-volume spraying of BYI08330 (100 OD) in the field in Italy, Spain and southern France**
Report No & Document No	**RA-2137/04, including trials no. R 2004 0805/6, R 2004 0806/4, R 2004 0807/2, R 2004 0808/0** **M-264357-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.3/05, [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying of BYI08330 (150 OD) in the field in United Kingdom and Germany**
Report No & Document No	**RA-2015/05, including trials no. R 2005 0088/2, R 2005 0089/0, R 2005 0090/4, R 2005 0091/2** **M-268258-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.3/06, [redacted] 2006**
Title:	**Determination of residues of BYI08330 in/on apple and pear after spraying and low-volume spraying of BYI08330 (240 SC) in the field in Italy, Spain and southern France**
Report No & Document No	**RA-2136/04, including trials no. R 2004 0800/5, R 2004 0801/3, R 2004 0802/1, R 2004 0804/8** **M-264397-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Testsystem:

In Europe, altogether 25 supervised residue trials were conducted in pome fruit (apples and pears) in northern and southern Europe in the years 2004 and 2005 using three different formulations of BYI08330, the OD 100, the OD 150 and the SC 240 + 0.2 % RME EW 500. All trials were performed according to the critical European GAP. An overview on the supervised residue trials is given in Table 6.3.1.3-2.

Due to different agricultural practices in European countries different rates of water are used for spray applications in pome fruit. The generally recommended water rate is 500 L/ha x m canopy height (CH). To cover the low volume application technique 4 trials (R 2004 0799/8, R 2004 0812/9, R 2004 0808/0 and R 2004 0804/8) are included in which a water volume of 250-300 L/ha x m CH was applied while keeping the rate for the a.s. at 72 g /ha x m CH (see Tables 6.3.1.3-4, -6, -7 and -9).

Moreover, applications were performed using different formulations of BYI08330 (OD 100 and 150 and SC 240 + 0.2 % RME 500EW) to examine the influence of OD and SC formulations on the residue behaviour. OD formulations of BYI08330 (OD100 or OD150) were applied to pome fruit in 9 northern European trials (Tables 6.3.1.3-4 and -5, -10 and -11) and 8 southern European residue trials (Tables 6.3.1.3-7 and -8, -13 and -14). The SC240 formulation was applied in 4 northern European trials (Tables 6.3.1.3-6 and -12) and in 4 southern European trials (Tables 6.3.1.3-9 and -15). In 3 of these 8 trials conducted with the SC 240 formulation of BYI 08330 the additive RME EW500 was not added as recommended: RME was not added to the spray liquid at all (R 2004 0810/2), it was added to the spray liquid at the second application (R2004 0811/0), only, or was added at both applications at a reduced rate of 0.14 % instead of 0.2 % (R 2004 0804/8).

Table 6.3.1.3-2: Overview on supervised residue trials with BYI08330 in pome fruit

Study no.	Region	Formulation	No. of trials	Year	Use rate (g as/ha x m CH)	Water volume (L/ha x m CH) (a)	No of appl.	Spray interval (days)	PHI days
RA-2135/04	EUN	OD 100	4	2004	72	300/500	2	14	21
RA-2137/04	EUS	OD 100	4	2004	72	250/500	2	14	21
RA-2138/04	EUN	SC 240	4	2004	72	300/500	2	14	21
RA-2136/04	EUS	SC 240	4	2004	72	250/500	2	14	21
RA-2012/05	EUN	OD 150	5	2005	72	500	2	14	21
RA-2015/05	EUS	OD150	4	2005	72	500	2	14	21

CH = canopy height;

(a) altogether 4 trials with low volume spraying (250-300 L/ha*m water) were included, the remaining trials were conducted with a water volume of 500L/ha x m.

The field data of the individual residue trials are summarized in Tables 6.3.1.3-4 to 6.3.1.3-9. The residue results are given in Tables 6.3.1.3-10 to 6.3.1.3-15. More details to field and residue data are given in the respective Tier I summaries.

Residues were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites in pome fruit were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarized in Tables 6.3.1.3-3.

Findings:

The total residue of BYI08330 in apple and pear fruit from supervised residue trials in northern Europe sampled at the PHI of 21 days after two applications of BYI08330 ranged between <0.055 mg/kg (LOQ) and 0.25 mg/kg. Residues in pome fruit from southern European residue trials were very similar ranging between <0.055 mg/kg (LOQ) and 0.25 mg/kg. An influence of the different locations (EUS/EUN) on the residue behaviour could not be detected.

Moreover, an influence of different formulations (OD100, OD150, SC240 with and without RME) or of the amount of water used for the spray application on the height of residues was not detected.

For the estimation of the dietary risk and for MRL setting the results from 25 residue trials in northern and southern Europe conducted with different formulations and water rates are included. The total residue of BYI08330 in pome fruit (apple and pear) from northern and southern Europe residue trials samples at the PHI of 21 days ranged between **<0.055 mg/kg and 0.25 mg/kg (STMR 0.094 mg/kg).**

The parent compound generally covered the main part of the total residue of BYI08330. The enol and the ketohydroxy metabolite were also present at minor amounts. The monohydroxy metabolite was detected as minor metabolite in some trials. The enol-glucoside metabolite was not found in pome fruit or in traces only.

Table 6.3.1.3-3: Recovery results for BYI08330 and its metabolites in apple and pear fruit

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2135/04 R 2004 0795 5 0795-04	Apple	fruit	BYI08330	27	0.01	1.0	80	113	97	8.1
			BYI08330-enol	27	0.01	1.0	79	104	92	7.0
			BYI08330-ketohydroxy	27	0.01	1.0	77	106	97	7.6

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R 2004 0797 1 0797-04 RA-2137/04 R 2004 0805 6 0805-04 R 2004 0807 2 0807-04 GLP yes 2004			BYI08330-enol-glucoside	27	0.01	1.0	83	111	96	8.3
			BYI08330-monohydroxy	27	0.01	1.0	81	103	92	7.2
RA-2135/04 R 2004 0796 3 0796-04 R 2004 0799 8 0799-04 RA-2137/04 R 2004 0806 4 0806-04 R 2004 0808 0 0808-04 GLP yes 2004	Pear	fruit	BYI08330	22	0.01	1.0	84	107	101	5.9
			BYI08330 - enol	22	0.01	1.0	78	99	93	5.3
			BYI08330 ketohydroxy	22	0.01	1.0	86	106	98	5.3
			BYI08330 enol-glucoside	22	0.01	1.0	85	112	100	7.1
			BYI08330 mono-hydroxy	22	0.01	1.0	77	101	94	5.5
RA-2012/05 R 2005 0083 1 0083-05 R 2005 0086 6 0086-05 RA-2015/05 R 2005 0088 2 0088-05 R 2005 0089 0 0089-05 RA-2012/05 R 2005 1018 7 1018-05 GLP yes 2005	Apple	fruit	BYI08330	9	0.01	0.5	79	100	91	7.2
			BYI08330-enol	9	0.01	0.5	77	99	93	7.1
			BYI08330 ketohydroxy	9	0.01	0.5	76	97	92	6.8
			BYI08330-enol-glucoside	9	0.01	0.5	80	104	94	7.6
			BYI08330-monohydroxy	9	0.01	0.5	80	102	92	6.7

RSD = relative standard deviation

Table 6.3.1.3.-3 continued

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2012/05 R 2005 0085 8 0085-05	Pear	fruit	BYI08330	6	0.01	0.5	85	98	93	5.5
			BYI08330-enol	6	0.01	0.5	89	98	95	4.2
R 2005 0087 4 0087-05 RA-2015/05			BYI08330-ketohydroxy	6	0.01	0.5	93	104	97	4.7
R 2005 0090 4 0090-05			BYI08330-enol-glucoside	6	0.01	0.5	86	112	98	11.0
R 2005 0091 2 0091-05 GLP yes 2005			BYI08330-monohydroxy	6	0.01	0.5	87	101	96	5.3
RA-2136/04 R 2004 0800 5 0800-04	Apple	fruit	BYI08330	27	0.01	1.0	80	113	97	8.1
			BYI08330-enol	27	0.01	1.0	79	104	92	7.0
R 2004 0802 1 0802-04 RA-2138/04			BYI08330-ketohydroxy	27	0.01	1.0	77	106	97	7.6
R 2004 0809 9 0809-04			BYI08330-enol-glucoside	27	0.01	1.0	83	111	96	8.3
R 2004 0811 0 0811-04 GLP yes 2004			BYI08330-monohydroxy	27	0.01	1.0	81	103	92	7.2
RA-2136/04 R 2004 0801 3 0801-04	Pear	fruit	BYI08330	22	0.01	1.0	84	107	101	5.9
			BYI08330-enol	22	0.01	1.0	78	99	93	5.3
R 2004 0804 8 0804-04 RA-2138/04			BYI08330-ketohydroxy	22	0.01	1.0	86	106	98	5.3
R 2004 0810 2 0810-04			BYI08330-enol-glucoside	22	0.01	1.0	85	112	100	7.1
R 2004 0812 9 0812-04 GLP yes 2004			BYI08330-monohydroxy	22	0.01	1.0	77	101	94	5.5

RSD = relative standard deviation

Table 6.3.1.3-4: Use pattern of BYI08330 OD 100 in residue trials with pome fruit in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m CH	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2135/04 R 2004 0795 5 0795-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Apple	OD 100	2	14	0.072	0.1440	0.0144	500	21
RA-2135/04 R 2004 0797 1 0797-04 United Kingdom GB-[redacted] (Hertfordshire) 2004	Apple	OD 100	2	14	0.072	0.1370	0.0144	500	21
RA-2135/04 R 2004 0796 3 0796-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Pear	OD 100	2	14	0.072	0.1440	0.0144	500	21
RA-2135/04 R 2004 0799 8 0799-04 France F-[redacted] 2004	Pear	OD 100	2	14	0.072	0.1440	0.0240	300	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.3-5: Use pattern of BYI08330 OD 150 in residue trials with pome fruit in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						PHI (days)
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	
RA-2012/05 R 2005 0083 1 0083-05 United Kingdom GB-[redacted] 2005	Apple	OD 150	2	14	0.072	0.1440	0.01440	500	21
RA-2012/05 R 2005 0086 6 0086-05 Germany D-[redacted] (Baden-Württemberg) 2005	Apple	OD 150	2	14	0.072	0.1872	0.01440	500	21
RA-2012/05 R 2005 1018 7 1018-05 Germany D-[redacted] (Sachsen) 2005	Apple	OD 150	2	14	0.072	0.2160	0.01440	500	22

RA-2012/05 R 2005 0085 8 0085-05 United Kingdom GB-[redacted] Cambridgeshire 2005	**Pear**	**OD 150**	**2**	**14**	**0.072**	**0.1440**	**0.01440**	**500**	**21**
RA-2012/05 R 2005 0087 4 0087-05 Germany D-[redacted](Hessen) 2005	**Pear**	**OD 150**	**2**	**14**	**0.072**	**0.1440**	**0.01440**	**500**	**21**

a.s. = Active Substance; CH = canopy height

Table 6.3.1.3-6: Use pattern of BYI08330 SC 240 + 0.2 % RME 500 EW in residue trials with pome fruit in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2138/04 R 2004 0809 9 0809-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Apple	SC 240	2	14	0.072	0.1440	0.0144	500	21
RA-2138/04 R 2004 0811 0 0811-04 United Kingdom GB-[redacted] (Hertfordshire) 2004	Apple	SC 240 **	2	14	0.072	0.1368	0.0144	500	21
RA-2138/04 R 2004 0810 2 0810-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Pear	SC 240 ***	2	14	0.072	0.1440	0.0144	500	21
RA-2138/04 R 2004 0812 9 0812-04 France F-[redacted] (Ile-de-France) 2004	Pear	SC 240	2	14	0.072	0.1440	0.0240	300	21

a.s. = Active Substance; CH = canopy height

** First application was performed without addition of 0.2 % RME 500EW (rape oil fatty acid methyl ester) to spray liquid

*** Both applications were performed without addition of 0.2 % RME 500EW (rape oil fatty acid methyl ester) to spray liquid

Table 6.3.1.3-7: Use pattern of BYI08330 OD 100 in residue trials with pome fruit conducted in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2137/04 R 2004 0805 6 0805-04 Italy I-[redacted] (Emilia – Romagna) 2004	Apple	OD 100	2	14	0.072	0.2160	0.01440	500	21
RA-2137/04 R 2004 0807 2 0807-04 Spain E-[redacted] (Cataluña) 2004	Apple	OD 100	2	14	0.072	0.2160	0.01440	500	21
RA-2137/04 R 2004 0806 4 0806-04 Italy I-44040 Dodici Morelli (FE) (Emilia - Romagna) 2004	Pear	OD 100	2	14	0.072	0.2160	0.01440	500	21
RA-2137/04 R 2004 0808 0 0808-04 France F-[redacted]s (Rhone-Alpes) 2004	Pear	OD 100	2	14	0.072	0.1872	0.02880	250	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.3-8: Use pattern of BYI08330 OD 150 in residue trials with pome fruit conducted in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2015/05 R 2005 0088 2 0088-05 France F-[redacted] 2005	Apple	OD 150	2	14	0.072	0.1872	0.01440	500	21
RA-2015/05 R 2005 0089 0 0089-05 Italy I-[redacted](Emilia - Romagna) 2005	Apple	OD 150	2	14	0.072	0.1584	0.01440	500	21
RA-2015/05 R 2005 0090 4 0090-05 France F-[redacted](Midi-Pyrenees) 2005	Pear	OD 150	2	14	0.072	0.1800	0.01440	500	21
RA-2015/05 R 2005 0091 2 0091-05 Italy I-[redacted](Veneto) 2005	Pear	OD 150	2	14	0.072	0.2160	0.01440	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.3-9: Use pattern of BYI08330 SC 240 + 0.2 % RME 500 EW in residue trials with pome fruit conducted in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2136/04 R 2004 0800 5 0800-04 Italy I-[redacted] (Emilia - Romagna) 2004	Apple	SC 240	2	14	0.072	0.2160	0.0144	500	21
RA-2136/04 R 2004 0802 1 0802-04 Spain E-[redacted] (Cataluña) 2004	Apple	SC 240	2	14	0.072	0.2160	0.0144	500	21
RA-2136/04 R 2004 0801 3 0801-04 Italy I-[redacted] (FE) (Emilia - Romagna) 2004	Pear	SC 240	2	14	0.072	0.2160	0.0144	500	21
RA-2136/04 R 2004 0804 8 0804-04 France, South F-[redacted] (Rhone-Alpes) 2004	Pear	SC 240	2	14	0.072	0.1872	0.0288	250	21

a.s. = Active Substance; CH = canopy height

* The applications were performed with addition of 0.14 % instead of 0.2 % RME 500EW (rape oil fatty acid methyl ester) to spray liquid.

Table 6.3.1.3-10: Results from residue trials in pome fruit conducted with BYI08330 OD 100 in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2135/04 R 2004 0795/5	Apple fruit	0 13 21 27	0.10 0.02 0.01 0.02	< 0.012 0.016 0.012 0.012	< 0.012 < 0.012 < 0.012 0.012	< 0.012 < 0.012 < 0.012 0.012	< 0.008 < 0.008 < 0.008 0.008	0.10 < 0.055 < 0.055 **0.061**
United Kingdom RA-2135/04 R 2004 0797/1	Apple fruit	0* 0 7 13 21 28	0.07 0.21 0.12 0.07 0.04 0.02	0.014 0.017 0.025 0.026 0.034 0.033	0.012 0.012 0.018 0.013 0.021 0.025	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.092 0.24 0.17 0.11 **0.096** 0.082
Germany RA-2135/04 R 2004 0796/3	Pear fruit	0 13 21 27	0.15 0.02 0.02 0.01	0.012 < 0.012 < 0.012 < 0.012	0.012 0.012 0.012 0.012	< 0.012 < 0.012 < 0.012 < 0.012	0.008 < 0.008 < 0.008 < 0.008	0.18 < 0.055 **< 0.055** < 0.055
Northern France RA-2135/04 R 2004 0799/8	Pear fruit	0* 0 6 13 21 27	0.03 0.14 0.06 0.06 0.05 0.03	< 0.012 0.012 0.012 0.012 0.012 0.012	0.012 < 0.012 0.012 0.012 0.013 0.012	0.012 0.012 0.012 0.012 0.012 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.16 0.092 0.096 **0.090** < 0.055

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

Table 6.3.1.3-11: Results from residue trials in pome fruit conducted with BYI08330 OD 150 in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
United Kingdom	Apple	0	0.11	0.023	0.012	<0.012	<0.008	0.14
RA-2012/05	fruit	14	0.05	0.031	0.014	<0.012	<0.008	0.091
R 2005 0083 1		**21**	0.03	0.034	0.015	<0.012	<0.008	**0.080**
		29	0.01	0.021	0.019	<0.012	<0.008	0.055
Germany	Apple	0*	0.02	0.016	0.012	<0.012	<0.008	<0.055
RA-2012/05	fruit	0	0.12	0.017	<0.012	<0.012	<0.008	0.14
R 2005 0086 6		7	0.10	0.022	0.015	0.012	<0.008	0.15
		14	0.03	0.019	0.018	0.012	<0.008	0.079
		21	0.03	0.021	0.023	0.012	0.008	**0.094**
		28	0.02	0.012	0.017	0.012	<0.008	0.058
Germany	Apple	0	0.14	0.022	0.012	<0.012	<0.008	0.17
RA-2012/05	fruit	15	0.08	0.049	0.012	<0.012	<0.008	0.16
R 2005 1018 7		**22**	0.07	0.052	0.013	0.012	0.008	**0.15**
		29	0.06	0.037	0.012	0.012	0.008	0.12
United Kingdom	Pear	0	0.38	0.024	0.012	0.012	<0.008	0.42
RA-2012/05	fruit	14	0.08	0.012	0.022	0.012	<0.008	0.13
R 2005 0085 8		**21**	0.05	0.013	0.016	0.012	<0.008	**0.094**
		28	0.04	0.012	0.012	0.012	<0.008	0.077
Germany	Pear	0*	0.04	0.012	0.012	0.013	<0.008	0.081
RA-2012/05	fruit	0	0.25	0.023	0.012	0.014	<0.008	0.30
R 2005 0087 4		7	0.22	0.013	0.013	0.020	0.008	0.27
		14	0.14	0.012	0.017	0.021	0.008	0.19
		21	0.10	0.012	0.010	0.020	0.008	**0.16**
		28	0.06	0.012	0.014	0.021	<0.008	0.10

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

Table 6.3.1.3-12: Results from residue trials in pome fruit conducted with BYI08330 SC 240 + 0.2 % RME 500 EW in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2138/04 R 2004 0809 9	Apple fruit	0 14 **21** 28	0.13 0.01 0.02 0.01	<0.012 0.012 0.012 0.012	<0.012 <0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 0.008 <0.008	0.13 <0.055 **<0.055** <0.055
United Kingdom RA-2138/04 R 2004 0811 0	Apple fruit	0* 0 7 13 **21** 28	0.02 0.23 0.06 0.03 0.02 0.01	<0.012 0.012 0.012 0.012 0.012 0.012	<0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.055 0.26 0.088 0.056 **<0.055** <0.055
Germany RA-2138/04 R 2004 0810 2	Pear fruit	0 13 **21** 27	0.18 0.15 0.14 0.14	0.039 0.034 0.033 0.031	0.035 0.033 0.029 0.027	0.053 0.046 0.044 0.043	0.008 0.008 0.008 0.008	0.31 0.27 **0.25** 0.24
France RA-2138/04 R 2004 0812 9	Pear fruit	0* 0 6 13 **21** 27	0.03 0.19 0.11 0.06 0.07 0.05	<0.012 0.012 0.012 0.012 0.012 <0.012	<0.012 <0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 0.012 0.012 0.012 0.012	<0.008 <0.008 <0.008 <0.008 <0.008 0.008	<0.055 0.21 0.15 0.099 **0.10** 0.080

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

Table 6.3.1.3-13: Results from residue trials in pome fruit conducted with BYI08330 OD 100 in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2137/04 R 2004 0805/6	Apple fruit	0	0.30	0.019	0.012	< 0.012	< 0.008	0.33
		14	0.06	0.015	0.012	< 0.012	< 0.008	0.082
		21	0.04	0.014	0.012	< 0.012	< 0.008	0.063
		28	0.05	0.013	0.012	0.012	< 0.008	**0.082**
Spain RA-2137/04 R 2004 0807/2	Apple fruit	0*	0.09	0.013	0.019	0.017	< 0.008	0.14
		0	0.23	0.016	0.020	0.016	0.008	0.30
		10	0.20	0.023	0.034	0.027	0.008	0.29
		14	0.12	0.022	0.034	0.025	0.008	0.21
		20	0.10	0.015	0.041	0.028	0.008	**0.20**
		27	0.05	0.012	0.032	0.021	0.008	0.13
Italy RA-2137/03 R 2004 0806/4	Pear fruit	0	0.27	0.033	0.020	< 0.012	< 0.008	0.32
		14	0.10	0.012	0.019	< 0.012	< 0.008	0.14
		21	0.07	0.012	0.013	< 0.012	< 0.008	0.093
		28	0.10	0.012	0.019	< 0.012	< 0.008	**0.13**
France RA-2137/04 R 2004 0808/0	Pear fruit	0*	0.12	0.030	0.026	0.032	0.008	0.22
		0	0.38	0.063	0.039	0.13	< 0.008	0.61
		7	0.18	0.038	0.034	0.053	0.008	0.31
		14	0.15	0.033	0.031	0.045	0.008	0.26
		21	0.14	0.033	0.027	0.041	0.008	**0.25**
		28	0.14	0.032	0.027	0.041	0.008	0.24

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

Table 6.3.1.3-14: Results from residue trials in pome fruit conducted with BYI08330 OD 150 in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France	Apple	0*	0.03	0.012	<0.012	<0.012	<0.008	<0.055
RA-2015/05	fruit	0	0.11	0.012	<0.012	<0.012	<0.008	0.12
R 2005 0088 2		7	0.08	0.012	0.012	<0.012	<0.008	0.10
		14	0.04	0.013	0.012	<0.012	<0.008	0.060
		21	0.04	0.022	0.014	<0.012	<0.008	**0.072**
		28	0.03	0.020	0.023	<0.012	<0.008	0.069
Italy	Apple	0	0.11	0.012	0.012	0.012	<0.008	0.14
RA-2015/05	fruit	14	0.06	0.012	0.012	0.012	0.008	0.10
R 2005 0089 0		**21**	0.08	0.012	0.015	0.014	0.008	**0.13**
		28	0.02	0.012	0.012	0.012	0.008	0.066
France	Pear	0*	0.04	0.012	0.020	0.012	<0.008	0.071
RA-2015/05	fruit	0	0.14	0.022	0.016	0.012	<0.008	0.18
R 2005 0090 4		7	0.05	0.012	0.029	<0.012	<0.008	0.093
		14	0.05	0.012	0.029	<0.012	<0.008	0.089
		21	0.02	0.013	0.022	<0.012	<0.008	**0.055**
		28	0.02	<0.012	0.018	<0.012	<0.008	<0.055
Italy	Pear	0	0.11	0.013	0.012	<0.012	<0.008	0.13
RA-2015/05	fruit	14	0.03	<0.012	0.014	<0.012	<0.008	<0.055
R 2005 0091 2		**21**	0.02	<0.012	0.014	<0.012	<0.008	**<0.055**
		28	0.01	<0.012	<0.012	0.012	<0.008	<0.055

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

Table 6.3.1.3-15: Results from residue trials in pome fruit conducted with BYI08330 SC 240 + 0.2 % RME 500 EW to spray liquid in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2136/04 R 2004 0800 5	Apple fruit	0 14 **21** 28	0.35 0.04 0.01 0.01	0.019 0.012 0.012 0.012	0.015 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.38 0.067 **<0.055** 0.055
Spain RA-2136/04 R 2004 0802 1	Apple fruit	0* 0 10 14 20 27	0.14 0.33 0.25 0.11 0.09 0.05	0.012 0.012 0.012 0.013 0.012 0.012	0.012 0.012 0.017 0.019 0.022 0.014	0.012 0.012 0.012 0.012 0.012 0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.17 0.36 0.29 0.15 **0.13** 0.088
Italy RA-2136/04 R 2004 0801 3	Pear fruit	0 14 **21** 28	0.22 0.10 0.08 0.09	0.032 0.012 0.012 0.012	0.012 0.024 0.018 0.018	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.26 0.14 0.11 **0.12**
France RA-2136/04 R 2004 0804 8	Pear fruit	0* 0 7 14 **21** 28	<0.01 0.14 0.02 <0.01 0.01 <0.01	<0.012 0.012 <0.012 <0.012 <0.012 <0.012	<0.012 0.012 0.012 <0.012 0.012 <0.012	<0.012 0.012 0.012 <0.012 0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	<0.055 0.17 <0.055 <0.055 **<0.055** <0.055

DALT = days after last treatment, PHI in bold letters, * = Before the last Treatment

IIA 6.3.1.4 Peaches and apricots

BYI08330 is to be registered for use in peaches and apricots against aphids, scales and mites. The critical GAP in Europe for the use of BYI08330 in peaches and apricots is summarized in Table 6.3.1.4-1.

Table 6.3.1.4-1: Critical GAP for spray application of BYI08330 to pome fruit

Crop	Region	Use rate (g as/ha x m CH)	Water volume (L/ha x m CH)	No	Spray interval (days)	PHI (days)
Peaches/apricots	EUN	72	500	2	14	21
Peaches/apricots	EUS	72	500	2	14	21

CH = canopy height

Report:	**KIIA 6.3.1.4/01, [redacted]; 2005**
Title:	**Determination of residues of BYI08330 in/on peach and apricot after spraying and low-volume spraying of BYI08330 (100 OD) in the field in northern France and Germany**
Report No & Document No	**RA-2126/04, including trials no. R 2004 0785/8, R 2004 0786/6 M-259798-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.4/02, [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on peach and apricot after spraying of BYI08330 (150 OD) in the field in Germany and northern France**
Report No & Document No	**RA-2006/05, including trials no. R 2005 0059/9, R 2005 0060/2, R 2005 0061/0 M-268003-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.4/03, [redacted].; [redacted] 2006**
Title:	**Determination of residues of BYI08330 in/on peach and apricot after spraying of BYI08330 (100 OD) in the field in Spain and Italy**
Report No & Document No	**RA-2127/04, including trials no. R 2004 0787/4, R 2004 0788/2, R 2004 0789/0, R 2004 0790/4** **M-263878-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.4/04, [redacted]; [redacted]; 2006**
Title:	**Determination of residues of BYI08330 in/on apricot and peach after spraying of BYI08330 (150 OD) in the field in Portugal, Spain, Greece, southern France and Italy**
Report No & Document No	**RA-2007/05, including trials no. R 2005 0062/9, R 2005 0063/7, R 2005 0064/5, R 2005 0065/3, R 2005 0066/1** **M-268094-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system

Altogether 14 supervised residue trials were conducted in peaches and apricots in 2004 and 2005 using the OD 100 and the OD 150 formulation of BYI08330. Peaches and apricots are classified as minor crop in northern Europe and as major crop in southern Europe. Altogether, 5 supervised residue trials (2 in peaches, 3 in apricots) were conducted in northern Europe and 9 trials (4 in peaches and 5 in apricots) in southern Europe to apply for a group tolerance for the apricot-peach group.

Applications were conducted with the OD100 and the OD150 formulations of BYI08330. The field data of the individual residue trials are summarized in Tables 6.3.1.4-3 and 6.3.1.4-4. The results from the residue trials are given in Tables 6.3.1.4-5 and 6.3.1.4-6 and in more detail in the respective Tier I summaries.

Residues in peach and apricot fruit were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Tables 6.3.1.4-2.

Findings:

Results from residue trials in northern and southern Europe conducted according to the critical European GAP showed a total residue of **0.11 to 0.69 mg/kg (STMR 0.34 mg/kg)** in peaches and apricots sampled at the PHI of 21 days after 2 applications of BYI 08330. Residue data used for evaluation are marked with bold numbers in Tables 6.3.1-5 and -6. There was no difference between residues in fruits from northern and southern European trials.

The enol metabolite is a major component of the total residue in peaches and apricots appearing at amounts between 0.047 and 0.29 mg/kg. In peaches minor metabolites were the parent compound, the monohydroxy and ketohydroxy metabolites; the enol-glucoside metabolite was not detected or in traces only. In apricots the enol-glucoside metabolite was detected at 0.1-0.43 mg/kg and hence could occur in similar amounts as the enol metabolite; the monohydroxy metabolite was not detected or in traces, only.

Table 6.3.1.4-2: Recovery results for BYI08330 and its metabolites in peach and apricot fruit

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2126/04 R 2004 0785 8 0785-04	Peach	fruit	BYI08330	3	0.01	2.0	93	103	99	5.3
			BYI08330-enol	3	0.01	2.0	95	96	95	0.6
RA-2127/04 R 2004 0787 4 0787-04			BYI08330-ketohydroxy	3	0.01	2.0	92	102	96	5.8
R 2004 0789 0 0789-04			BYI08330-enol-glucoside	3	0.01	2.0	91	99	95	4.2
GLP yes 2004			BYI08330 monohydroxy	3	0.01	2.0	92	100	96	4.2
RA-2006/05 R 2005 0061 0 0061-05	Peach	fruit	BYI08330	6	0.01	0.5	72	96	85	11.9
			BYI08330-enol	6	0.01	0.5	75	90	83	8.3
RA-2007/05 R 2005 0063 7 0063-05			BYI08330-ketohydroxy	6	0.01	0.5	76	98	87	9.7
R 2005 0065 3 0065-05			BYI08330 enol-glucoside	6	0.01	0.5	72	96	85	11.7
GLP yes 2005			BYI08330 monohydroxy	6	0.01	0.5	71	95	85	11.5
RA-2126/04 R 2004 0786 6 0786-04	Apricot	fruit	BYI08330	4	0.01	0.1	96	105	100	3.7
			BYI08330-enol	4	0.01	0.1	92	97	94	2.2
RA-2127/04 R 2004 0788 2 0788-04			BYI08330-ketohydroxy	4	0.01	0.1	94	103	98	4.3
R 2004 0790 4 0790-04			BYI08330 enol-glucoside	4	0.01	0.1	92	93	93	0.5
GLP yes 2004			BYI08330 monohydroxy	4	0.01	0.1	97	99	98	1.0
RA-2006/05 R 2005 0059 9 0059-05	Apricot	fruit	BYI08330	8	0.01	0.5	77	101	92	7.7
			BYI08330-enol	8	0.01	0.5	75	96	87	9.5
R 2005 0060 2 0060-05			BYI08330-ketohydroxy	8	0.01	0.5	81	102	95	6.8
RA-2007/05			BYI08330 enol-glucoside	8	0.01	0.5	74	101	92	8.9

R2005 0062 9 0062-05 R2005 0064 5 0064-05 R2005 0066 1 0066-05 GLP yes 2005			BYI08330 monohydroxy	8	0.01	0.5	79	100	91	7.9

RSD = relative standard deviation

Table 6.3.1.4-3: Use pattern of BYI08330 OD100 and OD 150 in residue trials with peach and apricot conducted in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s./ ha x m CH	kg a.s./ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2126/04 R 2004 0785 8 0785-04 France F-[redacted] (Centre) 2004	Peach	100 OD	2	14	0.072	0.1800	0.01440	500	21
RA-2126/04 R 2004 0786 6 0786-04 Germany D-[redacted] (Hessen) 2004	Apricot	100 OD	2	14	0.072	0.1440	0.01440	500	21
RA-2006/05 R 2005 0061 0 0061-05 France F-[redacted] (Centre) 2005	Peach	OD 150	2	14	0.072	0.1800	0.01440	500	21
RA-2006/05 R 2005 0059 9 0059-05 Germany D-[redacted] (Sachsen-Anhalt) 2005	Apricot	OD 150	2	14	0.072	0.1800	0.01440	500	21
RA-2006/05 R 2005 0060 2 0060-05 Germany D-[redacted] (Hessen) 2005	Apricot	OD 150	2	14	0.072	0.1440	0.02400	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.4-4: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with peach and apricot conducted in Southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m CH	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2127/04 R 2004 0787 4 0787-04 Spain E-[redacted] (Cataluña) 2004	**Peach**	**OD 100**	**2**	**14**	**0.072**	**0.1800**	**0.01440**	**500**	**22**
RA-2127/04 R 2004 0788 2 0788-04 Italy I-[redacted] (Emilia - Romagna) 2004	**Apricot**	**OD 100**	**2**	**14**	**0.072**	**0.1800**	**0.01440**	**500**	**21**
RA-2127/04 R 2004 0789 0 0789-04 Italy I-[redacted] (Emilia - Romagna) 2004	**Peach**	**100 OD**	**2**	**14**	**0.072**	**0.1800**	**0.01440**	**500**	**21**
RA-2127/04 R 2004 0790 4 0790-04 Spain E-[redacted] (Comunidad Valenciana) 2004	**Apricot**	**OD 100**	**2**	**14**	**0.072**	**0.1296**	**0.01440**	**500**	**21**
RA-2007/05 R 2005 0062 9 0062-05 Portugal P-[redacted] 2005	**Apricot**	**OD 150**	**2**	**14**	**0.072**	**0.1440**	**0.01440**	**500**	**21**

a.s. = Active Substance; CH = canopy height

Table 6.3.1.4-4 continued

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m CH	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2007/05 R 2005 0063 7 0063-05 Spain E-[redacted] (Cataluña) 2005	Peach	OD 150	2	14	0.072	0.1607 - 0.1728	0.01440	500	20
RA-2007/05 R 2005 0064 5 0064-05 Greece GR-[redacted] (Peloponnesos) 2005	Apricot	OD 150	2	14	0.072	0.1800	0.01440	500	21
RA-2007/05 R 2005 0065 3 0065-05 France F-[redacted] (Provence-Cote D'azur) 2005	Peach	OD 150	2	14	0.072	0.1800	0.01440	500	21
RA-2007/05 R 2005 0066 1 0066-05 Italy I-[redacted](Emilia - Romagna) 2005	Apricot	OD 150	2	14	0.072	0.1800	0.01440	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.4-5: Results from residue trials in peach and apricot conducted with BYI08330 OD100 (RA-2126/04) and OD150 (RA-2006/05) in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents					
			BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2126/04 R 2004 0785/8	Peach fruit	0 14 **21** 27	0.51 0.10 0.07 0.07	0.13 0.24 0.15 0.15	0.053 0.041 0.029 0.032	0.036 0.057 0.053 0.053	0.009 0.013 0.012 0.012	0.74 0.45 0.31 **0.32**
Germany RA-2126/04 R 2004 0786/6	Apricot fruit	0* 0 7 14 **21** 28	0.07 0.26 0.17 0.12 0.14 0.09	0.074 0.094 0.14 0.12 0.093 0.077	0.019 0.016 0.018 0.013 0.014 0.013	0.012 0.012 0.012 0.012 0.012 0.012	0.15 0.11 0.18 0.21 0.25 0.28	0.33 0.49 0.53 0.48 **0.50** 0.48
Germany RA-2006/05 R 2005 0059/9	Apricot fruit	0 14 **21**	0.39 0.07 0.04	0.25 0.37 0.29	0.058 0.044 0.034	0.012 0.012 0.012	0.26 0.37 0.32	0.96 0.88 **0.69**
Germany RA-2006/05 R 2005 0060/2	Apricot fruit	0* 0 7 14 **21**	0.10 0.29 0.15 0.08 0.07	0.085 0.092 0.19 0.21 0.13	0.012 0.012 0.014 0.016 0.018	0.012 0.012 0.012 0.012 0.012	0.082 0.086 0.17 0.24 0.29	0.29 0.49 0.54 0.56 **0.53**
France RA-2006/05 R 2005 0061/0	Peach fruit	0* 0 7 14 **21** 27	0.12 0.26 0.14 0.10 0.06 0.04	0.080 0.088 0.25 0.24 0.25 0.18	0.032 0.032 0.042 0.033 0.035 0.027	0.012 0.012 0.062 0.074 0.083 0.065	< 0.008 < 0.008 0.008 0.009 0.010 0.009	0.24 0.39 0.50 0.45 **0.44** 0.32

DALT = Days after last Treatment, pHI in bold letters, * = Before the last Treatment

Table 6.3.1.4-6: Results from residue trials in peach and apricot conducted with BYI08330 OD 100 (RA 2127/04) and OD 150 (RA-2007/05) in southern Europe#

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2127/04 R 2004 0787/4	Peach fruit	0 14 **22** 27	0.48 0.08 0.04 0.02	0.23 0.28 0.19 0.13	0.057 0.037 0.027 0.020	0.030 0.092 0.081 0.087	0.008 0.008 0.008 0.008	0.81 0.49 **0.35** 0.26
Italy RA-2127/04 R 2004 0788/2	Apricot fruit	0 14 **21** 28	0.42 0.08 0.07 0.04	0.27 0.23 0.14 0.086	0.041 0.030 0.023 0.020	0.012 0.014 0.016 0.015	0.22 0.37 0.43 0.40	0.97 0.73 **0.67** 0.57
Italy RA-2127/04 R 2004 0789/0	Peach fruit	0* 0 7 14 **21** 28	0.08 0.33 0.15 0.05 0.03 0.01	0.048 0.068 0.12 0.10 0.071 0.044	0.024 0.046 0.050 0.034 0.017 0.012	0.023 0.028 0.039 0.040 0.044 0.039	0.008 0.009 0.009 0.008 0.008 0.008	0.20 0.48 0.37 0.24 **0.17** 0.11
Spain RA-2127/04 R 2004 0790/4	Apricot fruit	0* 0 7 14 **21** 28	0.01 0.16 0.07 0.04 0.02 0.02	0.048 0.074 0.093 0.099 0.13 0.091	0.012 0.022 0.023 0.015 0.014 0.012	0.012 < 0.012 < 0.012 < 0.012 0.012 0.012	0.036 0.050 0.073 0.077 0.11 0.12	0.11 0.30 0.26 0.23 **0.28** 0.25
Portugal RA-2007/05 R 2005 0062/9	Apricot fruit	0 14 **21** 28	0.61 0.21 0.09 0.10	0.40 0.30 0.16 0.11	0.094 0.097 0.085 0.050	0.012 0.012 0.012 0.012	0.12 0.34 0.34 0.33	1.2 0.96 **0.68** 0.60
Spain RA-2007/05 R 2005 0063/7	Peach fruit	0 13 **20** 28	0.33 0.19 0.09 0.06	0.062 0.15 0.093 0.071	0.034 0.048 0.016 0.012	0.020 0.097 0.10 0.11	0.008 0.008 0.008 0.008	0.47 0.49 **0.31** 0.26
Greece RA-2007/05 R 2005 0064/5	Apricot fruit	0 14 **21** 28	0.25 0.15 0.05 0.05	0.064 0.094 0.063 0.039	0.012 0.012 0.012 0.012	< 0.012 < 0.012 0.012 < 0.012	0.046 0.10 0.099 0.10	0.37 0.36 **0.24** 0.20
Southern France RA-2007/05 R 2005 0065/1	Peach fruit	0* 0 7 14 **21** 28	0.04 0.22 0.09 0.05 0.03 0.02	0.037 0.061 0.11 0.071 0.047 0.054	0.022 0.022 0.023 0.014 0.012 0.012	0.012 0.012 0.019 0.022 0.018 0.019	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	0.11 0.32 0.24 0.16 0.10 **0.11**

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Italy	Apricot	0*	0.04	0.058	0.012	<0.012	0.064	0.15
RA-2007/05	fruit	0	0.12	0.079	0.014	0.012	0.074	0.29
R 2005 0066/1		7	0.05	0.14	0.015	0.012	0.099	0.31
		14	0.03	0.10	0.012	0.012	0.11	0.27
		21	0.02	0.061	0.012	0.012	0.17	**0.28**
		27	0.02	0.040	0.013	0.012	0.16	0.24

DALT = Days after last Treatment, the PHI is marked in bold;* = before the last treatment

IIA 6.3.1.5 Plums

BYI08330 is to be registered for use in plums against aphids, scales and mites. The critical European GAP for the use of BYI08330 in plums is summarized in Table 6.3.1.5-1

Table 6.3.1.5-1: Critical European GAP for spray application of BYI08330 to pome fruit

Crop	Region	Use rate (g as/ha x m CH)	Water volume (L/ha x m CH)	No	Spray interval (days)	PHI (days)
Plums	EUN	72	500	2	14	21
Plums	EUS	72	500	2	14	21

CH = canopy height

Report:	**KIIA 6.3.1.5/01, [redacted]; [redacted], 2006**
Title:	**Determination of the residues of BYI08330 in/on plum after spraying of BYI08330 (100 OD) in the field in Germany, northern France and United Kingdom**
Report No & Document No	**RA-2124/04, including trials no. R 2004 0774/2, R 2004 0775/0, R 2004 0776/9, R 2004 0777/7 M-263688-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.5/02, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on plum after spraying of BYI08330 (150 OD) in the field in United Kingdom, northern France and Germany**
Report No & Document No	**RA-2004/05, including trials no. R 2005 0050/5, R 2005 0051/3, R 2005 0052/1, R 2005 0054/8 M-266052-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.5/03, [redacted].; [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on plum after spraying of BYI08330 (100 OD) in the field in southern France and Italy**
Report No & Document No	**RA-2125/04, including trials no. R 2004 0778/5, R 2004 0779/3 M-262626-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.5/04, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on plum after spraying of BYI08330 (150 OD) in the field in Italy and Spain**
Report No &	**RA-2005/05, including trials no. R 2005 0055/6, R 2005 0058/0**
Document No	**M-266062-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 12 supervised residue trials were conducted in plums in 2004 and 2005 using the OD 100 and the OD 150 formulation of BYI08330. According to the classification of plums as major crop in northern Europe and as minor crop in southern Europe 8 supervised residue trials were conducted in northern Europe and 4 trials in southern Europe. The field data of the individual residue trials are summarized in Tables 6.3.1.5-3 and 6.3.1.5-4. The results from the residue trials are given in Tables 6.3.1.5-5 and 6.3.1.5.6 and in more detail in the respective Tier I summaries.

Residues in plum fruit were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %. Recovery results are summarised in Tables 6.3.1.5-2.

Findings:

The total residue of BYI08330 in plum fruits obtained from 12 supervised residue trials in northern and southern Europe ranged between 0.12 and 0.84 mg/kg (STMR 0.37 mg/kg). There was no difference between residues in plums grown in northern or southern Europe.

The total residue of BYI08330 is composed of mainly BYI08330 enol (0.023 – 0.32 mg/kg parent equivalents). The parent compound, the ketohydroxy, the monohydroxy and enol-glucoside metabolite generally are minor compounds. In some trials the monohydroxy metabolite appeared at amounts similar to the enol metabolite (0.018 to 0.93 mg/kg).

Table 6.3.1.5-2: Recovery results for BYI08330 and its metabolites in plum fruit

Study Trial No. Trial SubID GLP Year	Crop	Portion anal.	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2124/04 R 2004 0774 2 0774-04 R 2004 0775 0 0775-04 R 2004 0776 9 0776-04 R 2004 0777 7 0777-04 RA-2125/04 R 2004 0778 5 0778-04 R 2004 0779 3 0779-04 GLP yes 2004	Plum	fruit	BYI08330	16	0.01	2.0	92	107	98	4.2
			BYI08330 - enol	16	0.01	2.0	89	99	96	2.8
			BYI08330 - ketohydroxy	16	0.01	2.0	94	112	105	6.0
			BYI08330 enol-glucoside	16	0.01	2.0	81	100	91	5.6
			BYI08330 mono-hydroxy	16	0.01	2.0	94	104	99	2.9
RA-2004/05 R 2005 0050 5 0050-05 R 2005 0051 3 0051-05 R 2005 0052 1 0052-05 R 2005 0054 8 0054-05 RA-2005/05 R 2005 0055 6 0055-05 R 2005 0058 0 0058-05 GLP yes 2005	Plum	fruit	BYI08330	8	0.01	0.5	89	101	94	4.3
			BYI08330 - enol	8	0.01	0.5	80	97	88	6.8
			BYI08330 - ketohydroxy	8	0.01	0.5	88	102	97	4.7
			BYI08330 enol-glucoside	8	0.01	0.5	76	95	91	7.2
			BYI08330 mono-hydroxy	8	0.01	0.5	87	98	92	4.4

RSD = relative standard deviation

Table 6.3.1.5-3: Use pattern of BYI08330 OD 100 and OD 150 in plum residue trials conducted in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2124/04 R 2004 0774 2 0774-04 Germany D-[redacted] (Sachsen) 2004	Plum	OD 100	2	14	0.072	500	0.216	0.0144	21
RA-2124/04 R 2004 0775 0 0775-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Plum	OD 100	2	14	0.072	500	0.144	0.0144	21
RA-2124/04 R 2004 0776 9 0776-04 France F-[redacted] 2004	Plum	OD 100	2	14	0.072	500	0.180	0.0144	21
RA-2124/04 R 2004 0777 7 0777-04 United Kingdom GB-[redacted] (Cambridgeshire) 2004	Plum	OD 100	2	14	0.072	500	0.180	0.0144	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.5-4 continued:

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2004/05 R 2005 0050 5 0050-05 United Kingdom GB-[redacted] (Cambridge-shire) 2005	Plum	OD 150	2	14	0.072	0.180	0.0144	500	21
RA-2004/05 R 2005 0051 3 0051-05 France F-[redacted] (Centre) 2005	Plum	OD 150	2	14	0.072	0.144	0.0144	500	21
RA-2004/05 R 2005 0052 1 0052-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Plum	OD 150	2	14	0.072	0.216	0.0144	500	21
RA-2004/05 R 2005 0054 8 0054-05 Germany D-[redacted] (Sachsen) 2005	Plum	OD 150	2	14	0.072	0.216	0.0144	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.5-5: Use pattern of BYI08330 formulated as OD 100 and OD 150 in plum residue trials conducted in southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2125/04 R 2004 0778 5 0778-04 France F-[redacted] (Midi-Pyrenees) 2004	Plum	100 OD	2	14	0.072	0.216	0.0144	500	21
RA-2125/04 R 2004 0779 3 0779-04 Italy I-[redacted] (Emilia-Romagna) 2004	Plum	100 OD	2	14	0.072	0.180	0.0144	500	21
RA-2005/05 R 2005 0055 6 0055-05 Italy I-[redacted] (Emilia - Romagna) 2005	Plum	OD 150	2	14	0.072	0.144	0.0144	500	21
RA-2005/05 R 2005 0058 0 0058-05 Spain E-[redacted] (Comunidad Valenciana) 2005	Plum	OD 150	2	14	0.072	0.144	0.0144	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.5-5: Results from residue trials in plum conducted with BYI08330 OD 100 (RA 2124/04) and OD 150 (RA-2004/05) in Northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2124/04 R 2004 0774/2	Plum fruit	0	0.20	0.31	0.027	0.086	0.034	0.66
		14	0.08	0.45	0.041	0.25	0.11	0.93
		21	0.05	0.32	0.031	0.25	0.10	0.75
		28	0.04	0.29	0.038	0.33	0.13	0.84
Germany RA-2124/04 R 2004 0775/0	Plum fruit	0	0.16	0.071	0.012	0.031	0.008	0.28
		14	0.02	0.061	0.012	0.072	0.020	0.18
		21	0.01	0.034	0.012	0.078	0.025	0.16
		28	0.01	0.015	0.012	0.084	0.024	0.15
Northern France RA-2124/04 R 2004 0776/9	Plum fruit	0*	0.08	0.21	0.027	0.049	0.050	0.42
		0	0.37	0.22	0.029	0.053	0.057	0.73
		7	0.16	0.31	0.029	0.058	0.078	0.63
		14	0.09	0.25	0.025	0.057	0.078	0.50
		21	0.07	0.26	0.025	0.064	0.11	0.52
		28	0.06	0.26	0.028	0.084	0.15	0.58
United Kingdom RA-2124/04 R 2004 0777/7	Plum fruit	0*	0.07	0.15	0.012	0.089	0.042	0.36
		0	0.25	0.15	0.012	0.085	0.042	0.54
		7	0.14	0.17	0.012	0.11	0.046	0.47
		14	0.10	0.17	0.015	0.13	0.055	0.48
		21	0.09	0.13	0.014	0.15	0.064	0.45
		28	0.07	0.14	0.017	0.20	0.084	0.51
United Kingdom RA-2004/05 R 2005 0050/5	Plum fruit	0	0.46	0.092	0.012	0.017	0.008	0.29
		14	0.07	0.17	0.012	0.037	0.015	0.31
		21	0.04	0.19	0.012	0.078	0.033	0.35
		28	0.03	0.14	0.012	0.083	0.034	0.30
France, N RA-2004/05 R 2005 0051/3	Plum fruit	0	0.26	0.090	0.012	0.096	0.011	0.47
		14	0.06	0.099	0.012	0.21	0.019	0.40
		21	0.04	0.11	0.012	0.23	0.024	0.42
		28	0.03	0.063	0.012	0.19	0.016	0.31
Germany RA-2004/05 R 2005 0052/1	Plum fruit	0*	0.01	0.023	0.012	0.012	< 0.008	0.057
		0	0.08	0.044	0.012	0.012	< 0.008	0.15
		7	0.05	0.095	0.017	0.062	0.009	0.23
		14	0.03	0.062	0.015	0.11	0.016	0.23
		21	0.02	0.027	0.017	0.098	0.016	0.18
		28	0.02	0.043	0.012	0.10	0.018	0.19
Germany RA-2004/05 R 2005 0054/8	Plum fruit	0*	0.02	0.039	0.012	0.014	0.008	0.091
		0	0.08	0.052	0.012	0.017	0.008	0.17
		7	0.06	0.082	0.012	0.019	0.010	0.18
		14	0.05	0.074	0.012	0.021	0.009	0.17
		21	0.02	0.041	0.012	0.018	0.010	0.10
		28	0.03	0.043	0.012	0.022	0.012	0.12

DALT = Days after Last Treatment; * = Before the Last Treatment

Table 6.3.1.5-6: Results from residue trials in plum conducted with BYI08330 OD 100 (RA 2125/04) and OD 150 (RA-2005/05) in Southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330 BYI08330 enol BYI08330 keto-hydroxy BYI08330 mono-hydroxy BYI08330 enol-glucoside Total residue calc.					
Southern France RA-2125/04 R 2004 0778/5	Plum fruit	0	0.15	0.12	0.013	0.073	0.022	0.38
		14	0.09	0.19	0.021	0.19	0.043	0.53
		21	0.06	0.16	0.021	0.20	0.044	**0.49**
		28	0.05	0.11	0.020	0.22	0.044	0.44
Italy RA-2125/04 R 2004 0779/3	Plum fruit	0*	0.03	0.093	0.014	0.012	0.009	0.16
		0	0.21	0.096	0.018	0.012	0.009	0.34
		7	0.11	0.18	0.018	0.014	0.014	0.34
		14	0.04	0.15	0.016	0.020	0.021	0.25
		21	0.03	0.09	0.013	0.023	0.023	**0.18**
		28	0.02	0.06	0.012	0.029	0.028	0.15
Italy RA-2005/05 R 2005 0055/6	**Plum fruit**	**0**	**0.34**	**0.055**	**0.012**	**0.054**	**0.018**	**0.48**
		14	**0.09**	**0.12**	**0.012**	**0.13**	**0.040**	**0.39**
		21	**0.08**	**0.088**	**0.012**	**0.17**	**0.045**	**0.39**
		28	**0.03**	**0.037**	**0.012**	**0.15**	**0.036**	**0.27**
Spain RA-2005/05 R 2005 0058/0	**Plum fruit**	**0***	**0.03**	**0.036**	**0.012**	**0.012**	**< 0.008**	**0.094**
		0	**0.12**	**0.047**	**0.012**	**0.012**	**0.008**	**0.20**
		7	**0.11**	**0.063**	**0.012**	**0.012**	**0.008**	**0.20**
		14	**0.07**	**0.054**	**0.012**	**0.018**	**0.008**	**0.16**
		21	**0.05**	**0.044**	**0.012**	**0.021**	**0.008**	**0.13**
		28	**0.03**	**0.025**	**0.012**	**0.021**	**0.009**	**0.10**

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.6 Cherries

BYI08330 is to be registered for use in cherries against aphids, scales and mites. The critical European GAP for the use of BYI08330 in sweet and sour cherries is summarized in Table 6.3.1.6-1

Table 6.3.1.6-1: Critical European GAP for spray application of BYI08330 to cherry trees

Crop	Region	Use rate (g as/ha x m CH)	Water volume (L/ha x m CH)	No	Spray interval (days)	PHI (days)
Sweet cherry Sour cherry	EUN	72	500	2	14	21
Sweet cherries	EUS	72	500	2	14	21

CH = canopy height

Report:	**KIIA 6.3.1.6/01, [redacted].; [redacted] ; [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on sweet cherry and sour cherry after spraying of BYI08330 (100 OD) in the field in northern France and Germany**
Report No & Document No	**RA-2119/04, including trials no. R 2004 0718/1, R 2004 0720/3, R 2004 0721/1, R 2004 0723/8, M-263879-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.6/02, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on sweet cherry and sour cherry after spraying of BYI08330 (150 OD) in the field in Germany and northern France**
Report No & Document No	**RA-2008/05, including trials no. R 2005 0068/8, R 2005 0071/8, R 2005 0072/6 M-267524-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.6/03, [redacted].; 2005**
Title:	**Determination of the residues of BYI08330 in/on sweet cherry after spraying of BYI08330 (100 OD) in the field in Italy and southern France**
Report No & Document No	**RA-2118/04, including trials no. R 2004 0716/5, R 2004 0717/3 M-260405-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.6/04, [redacted].; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on sweet cherry after spraying of BYI08330 (150 OD) in the field in Italy and Spain**
Report No & Document No	**RA-2009/05, including trials no. R 2005 0073/4, R 2005 0074/2 M-267488-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 12 supervised residue trials were conducted in sweet and sour cherries in 2004 and 2005 using the OD 100 and the OD 150 formulation of BYI08330. According to the classification of cherries as minor crop in northern and southern Europe 8 trials were conducted in northern Europe, 4 trials each, in sour and sweet cherry. In southern Europe 4 residue trials were conducted in sweet cherry. The field data of the individual residue trials are summarized in Tables 6.3.1.6-3 and 4. The results from the residue trials are given in Tables 6.3.1.6-5 and 6 and in more detail in the respective Tier I summaries.

Residues in cherry fruit were analysed according to method 00857 (see Point IIA 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤ 20%. Recovery results are summarised in Tables 6.3.1.6-2.

Findings:

The total residue of BYI08330 in cherry fruit from 11 supervised residue trials in northern and southern Europe ranged between **0.24 and 1.0 mg/kg (STMR 0.60 mg/kg).** There was no difference in residues of cherries from northern and southern European trials.

Major component of the total residue of BYI08330 in all trials was the enol metabolite. All other components were present at lower amounts. Only in cherry fruit from few trials (R 2005 0074/2 and R 2005 0073/4) the monohydroxy metabolite could be detected at similar amounts as the enol metabolite.

Table 6.3.1.6-2: Recovery results for BYI08330 and its metabolites in sweet and sour cherry fruit

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2119/04 R 2004 0718 1 0718-04 R 2004 0721 1 0721-04 RA-2118/04 R 2004 0716 5 0716-04 R 2004 0717 3 0717-04 GLP yes 2004	Cherry sweet	fruit	BYI08330	12	0.01	1.0	86	103	93	4.6
			BYI08330 - enol	12	0.01	1.0	79	114	92	12.5
			BYI08330 - ketohydroxy	12	0.01	1.0	85	108	95	6.9
			BYI08330 enol-glucoside	12	0.01	1.0	85	99	93	4.8
			BYI08330 mono-hydroxy	12	0.01	1.0	86	103	94	5.3
RA-2008/05 R 2005 0068 8 0068-05 R 2005 0071 8 0071-05 RA-2009/05 R 2005 0073 4 0073-05 R 2005 0074 2 0074-05 GLP yes 2005	Cherry sweet	fruit	BYI08330	7	0.01	0.5	91	94	93	1.2
			BYI08330 - enol	7	0.01	0.5	86	96	92	4.2
			BYI08330 - ketohydroxy	7	0.01	0.5	91	100	96	3.5
			BYI08330 enol-glucoside	7	0.01	0.5	77	99	90	10.3
			BYI08330 mono-hydroxy	7	0.01	0.5	88	95	94	2.8
RA-2119/04 R 2004 0720 3 0720-04 R 2004 0723 8 0723-04 GLP yes 2004	Cherry sour	fruit	BYI08330	12	0.01	1.0	86	103	93	5.6
			BYI08330 enol	12	0.01	1.0	79	114	92	13.1
			BYI08330 - ketohydroxy	12	0.01	1.0	85	108	95	6.5
			BYI08330 enol-glucoside	12	0.01	1.0	83	99	93	4.6
			BYI08330 mono-hydroxy	12	0.01	1.0	86	103	94	5.2
RA-2008/05 R 2005 0072 6 0072-05 GLP yes 2005	Cherry sour	fruit	BYI08330	3	0.01	0.5	92	95	94	1.8
			BYI08330 - enol	3	0.01	0.5	82	88	85	3.6
			BYI08330 - ketohydroxy	3	0.01	0.5	94	98	96	2.2
			BYI08330 enol-glucoside	3	0.01	0.5	79	95	85	10.0

			BYI08330 mono-hydroxy	3	0.01	0.5	94	96	95	1

RSD = relative standard deviation

Table 6.3.1.6-3: Use pattern of BYI08330 OD100 and OD150 in residue trials with sweet cherries and sour cherries conducted in northern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m CH	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2119/04 R 2004 0718 1 0718-04 France F-[redacted] (Centre) 2004	Cherry, sweet	OD 100	2	14	0.072	0.1440	0.01440	500	21
RA-2119/04 R 2004 0721 1 0721-04 France F-[redacted] (Pays de la Loire) 2004	Cherry, sweet	OD 100	2	14	0.072	0.1440	0.01440	500	21
RA-2119/04 R 2004 0720 3 0720-04 Germany D-[redacted] (Sachsen) 2004	Cherry, sour	OD 100	2	14	0.072	0.1800	0.01440	500	21
RA-2119/04 R 2004 0723 8 0723-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Cherry, sour	OD 100	2	14	0.072	0.1440	0.01440	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.6-3 continued:

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m CH	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2008/05 R 2005 0068 8 0068-05 Germany D-[redacted] (Sachsen) 2005	Cherry, sweet	OD 150	2	14	0.072	0.2160	0.01440	500	21
RA-2008/05 R 2005 0071 8 0071-05 France F-[redacted] (Centre) 2005	Cherry, sweet	OD 150	2	14	0.072	0.1440	0.01440	500	21
RA-2008/05 R 2005 0072 6 0072-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cherry, sour	OD 150	2	14	0.072	0.2160	0.01440	500	21
RA-2100/06 R 2006 0004 6 0004-06 Germany D-[redacted] (Nordrhein-Westfalen) 2006	OD 150	OD 150	2	14	0.072	0.216	0.01440	500	21

a.s. = Active Substance; CH = canopy height

Table 6.3.1.6-4: Use pattern of BYI08330 OD100 and OD150 in residue trials with sweet cherries conducted in Southern Europe

Country Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / (ha x m CH)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m CH)	PHI (days)
RA-2118/04 R 2004 0716 5 0716-04 Italy I-[redacted] 2004	**Cherry, sweet**	**OD 100**	**2**	**14**	**0.072**	**0.1440**	**0.01440**	**500**	**21**
RA-2118/04 R 2004 0717 3 0717-04 France F-84170 [redacted](Provence-Cote D'azur) 2004	**Cherry, sweet**	**OD 100**	**2**	**14**	**0.072**	**0.1584-0.1620**	**0.01440**	**500**	**21**
RA-2009/05 R 2005 0073 4 0073-05 Italy I-[redacted] (Puglia) 2005	**Cherry, sweet**	**OD 150**	**2**	**14**	**0.072**	**0.2160**	**0.0144**	**500**	**21**
RA-2009/05 R 2005 0074 2 0074-05 Spain E-[redacted] (Cataluña) 2005	**Cherry, sweet**	**OD 150**	**2**	**14**	**0.072**	**0.1944**	**0.0144**	**500**	**21**

a.s. = Active Substance; CH = canopy height

Table 6.3.1.6-5: Results from residue trials with BYI08330 in sweet cherry and sour cherry conducted in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Northern France RA-2119/04 R 2004 0718/1	Sweet cherry fruit	0* 0 14 **21** 28	0.09 0.43 0.02 0.01 0.01	0.15 0.45 0.32 0.32 0.23	0.18 0.21 0.19 0.11 0.089	0.024 0.026 0.081 0.12 0.13	0.008 0.008 0.018 0.023 0.026	0.45 0.92 0.62 **0.57** 0.49
Germany RA-2119/04 R 2004 0720/3	Sour cherry fruit	0* 0 14 **21** 28	0.12 0.56 0.03 0.01 0.01	0.20 0.25 0.25 0.24 0.12	0.10 0.10 0.060 0.033 0.024	0.018 0.017 0.021 0.021 0.022	0.017 0.014 0.013 0.011 0.013	0.45 0.95 0.38 **0.28** 0.19
Northern France RA-2119/04 R 2004 0721/1	Sweet cherry fruit	0* 0 7 14 **21** 27	0.03 0.39 0.03 0.03 0.02 0.01	0.70 0.63 0.79 0.86 0.58 0.39	0.11 0.098 0.087 0.14 0.072 0.055	0.069 0.057 0.093 0.17 0.17 0.11	0.054 0.047 0.057 0.11 0.097 0.065	0.96 1.2 1.1 1.3 **0.93** 0.63
Germany RA-2119/04 R 2004 0723/8	Sour cherry fruit	0* 0 7 14 **21** 28	0.01 0.51 0.02 0.01 0.01 < 0.01	0.099 0.17 0.41 0.29 0.21 0.13	0.013 0.014 0.018 0.016 0.012 0.013	0.012 0.012 0.019 0.030 0.040 0.041	0.008 0.008 0.011 0.016 0.023 0.020	0.15 0.71 0.49 0.36 **0.29** 0.20
Germany RA-2008/05 R 2005 0068/8	Sweet cherry fruit	0 14 **21**	0.69 0.03 0.02	0.26 0.52 0.36	0.052 0.13 0.13	0.074 0.17 0.23	0.018 0.057 0.086	1.1 0.91 **0.83**
Northern France RA-2008/05 R 2005 0071/8	Sweet cherry fruit	0* 0 7 14 **21** 28	0.03 0.28 0.04 0.02 0.01 0.01	0.092 0.27 0.44 0.31 0.23 0.19	0.072 0.090 0.12 0.082 0.068 0.067	0.012 0.012 0.049 0.059 0.091 0.21	0.008 0.008 0.011 0.013 0.018 0.047	0.21 0.66 0.66 0.48 0.42 **0.52**
Germany RA-2008/05 R 2005 0072/6	Sour cherry fruit	0* 0 7 14 **21** 28	0.02 0.31 0.10 0.02 0.01 0.01	0.041 0.13 0.30 0.29 0.15 0.093	0.035 0.030 0.046 0.040 0.022 0.015	0.012 0.012 0.033 0.054 0.037 0.038	0.008 0.008 0.024 0.039 0.029 0.028	0.12 0.49 0.50 0.44 **0.24** 0.17
Germany RA-2100/06 R 2006 0004/6	Sour cherry fruit	-0 0 14 **21** 28	0.04 0.19 0.02 0.02 0.01	0.17 0.28 0.22 0.15 0.097	0.022 0.025 0.024 0.023 0.017	0.022 0.026 0.10 0.15 0.15	0.012 0.017 0.060 0.084 0.082	0.26 0.54 0.44 **0.43** 0.35

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.6-6: Results from residue trials with BYI08330 in sweet cherry conducted in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2118/04 R 2004 0716 5	Cherry, sweet fruit	0*	0.04	0.18	0.22	0.029	0.008	0.47
		0	0.25	0.22	0.23	0.027	0.008	0.73
		14	0.04	0.48	0.19	0.067	0.018	0.79
		21	0.01	0.38	0.11	0.11	0.019	**0.63**
		28	<0.01	0.24	0.085	0.10	0.019	0.45
France, South RA-2118/04 R 2004 0717 3	Cherry, sweet fruit	0*	0.05	0.18	0.12	0.024	0.008	0.38
		0	0.43	0.28	0.12	0.022	0.008	0.86
		9	0.07	0.52	0.14	0.11	0.021	0.87
		14	0.06	0.50	0.11	0.21	0.038	0.92
		21	0.05	0.50	0.11	0.32	0.065	**1.0**
		28	0.02	0.35	0.086	0.37	0.071	0.90
Italy RA-2009/05 R 2005 0073/4	Sweet cherry fruit	0	0.29	0.77	0.093	0.54	0.11	1.8
		14	0.02	0.57	0.099	0.39	0.073	1.2
		21	0.01	0.35	0.055	0.22	0.044	**0.67**
		28	0.01	0.26	0.044	0.14	0.027	0.48
Spain RA-2009/05 R 2005 0074/2	Sweet cherry fruit	0*	0.01	0.39	0.072	0.083	0.017	0.47
		0	0.34	0.41	0.072	0.092	0.019	0.92
		7	0.12	0.47	0.076	0.20	0.042	0.91
		14	0.09	0.32	0.075	0.30	0.069	0.85
		21	0.06	0.22	0.073	0.29	0.078	**0.72**
		28	0.05	0.10	0.076	0.33	0.095	0.65

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.7 Grapes

BYI08330 is to be registered for control of mealy bugs and phylloxer in grapes. The critical European GAP for the use of BYI08330 in grapes is the southern European GAP as summarized in Table 6.3.1.7-1.

Table 6.3.1.7-1: Critical European GAP for spray application of BYI08330 to grapes

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval (days)	PHI (days)
Grape	EUS	96	150-1500	2	14	14
Table grape	EUS	96	150-1500	2	14	14

Report:	**KIIA 6.3.1.7/01, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on grape and table grape after spraying and low-volume spraying of BYI08330 (100 OD) in the field in Italy, Greece, Spain and southern France**
Report No & Document No	**RA-2049/04, including trials no. R 2004 0196/5, R 2004 0197/3, R 2004 0198/1, R 2004 0201/5, R 2004 0202/3, R 2004 0203/1 M-263864-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.7/02, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on grape after spraying of BYI08330 (150 OD) in the field in Spain and Italy**
Report No & Document No	**RA-2034/05, including trials no. R 2005 0157/9, R 2005 0158/7 M-270088-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.7/03, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on grape after spraying of BYI08330 (48 SC) in the field in France and Italy**
Report No & Document No	**RA-2036/05, including trials no. R 2005 0161/7, R 2005 0162/5 M-273708-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 10 supervised residue trials with BYI08330 in grapes were performed according to the critical European GAP in southern Europe in 2004 and 2005. Six trials were conducted with wine grapes and 4 trials with table grapes. The PHI in the residue trials was 7 days, but additional samples were taken 14 days after the last application. Applications were conducted with the OD 100 (study no. RA-2049/04, 6 trials), the OD 150 (RA-2034/05, 2 trials) and the SC 048 formulation of BYI08330 (RA-2036/05, 2 trials).

To cover the different agricultural practises of different European countries spray applications were concucted using a water volume of 150 to 1500 L water/ha. The field data of the individual residue trials are summarized in Table 6.3.1.7-3. The results from the residue trials are given in Tables 6.3.1.7-4 and in more detail in the respective Tier I summaries.

Residues in berries and bunch of grapes were analysed according to method 00857 (see IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Table 6.3.1.7-2

Findings:

The total residue of BYI08330 in bunch of grapes ranged between 0.11 and 0.53 mg/kg (STMR 0.18 mg/kg). The total residue in berries ranged between **0.16 to 0.63 mg/kg (STMR 0.27 mg/kg)** and did not differ significantly from the residue in bunch of grapes. Residues in berries were used for the estimation of the dietary risk and for MRL setting. There was no difference in residues after spraying of different water rates per ha. Moreover an influence of different formulations of BYI08330 (OD100, OD150 of SC048) was not detected. The total residue of BYI08330 in trials R 2005 0161/7 and RA2005 0162/5 conducted with the SC048 formulation of BYI08330 were 0.20 and 0.36 mg/kg in bunch of grapes and 0.19 and 0.35 for berries and hence correspond well with the total residue in grapes treated with the OD formulations.

Major component of the total residue of BYI08330 in bunch of grapes and berries from all trials sampled at the PHI of 14 days after two spray applications was the parent compound. In many trials the enol metabolite was detected at similar amounts. BYI08330-ketohydroxy and enol-glucoside were minor metabolites, BYI08330-monohydroxy was not detected or in traces, only.

Table 6.3.1.7-2: Recovery results for BYI08330 and its metabolites in berries and bunch of grapes

Study GLP year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2049/04 GLP yes 2004	Grape	bunch of grapes	BYI08330	29	0.01	1.0	60	104	90	9.6
			BYI08330 -enol	29	0.01	1.0	63	111	93	10.0
			BYI08330 - ketohydroxy	29	0.01	1.0	66	107	94	8.9
			BYI08330 enol-glucoside	29	0.01	1.0	69	108	94	8.4
			BYI08330 mono-hydroxy	29	0.01	1.0	63	108	92	9.0
		berry	BYI08330	12	0.01	1.0	67	105	89	11.6
			BYI08330 -enol	12	0.01	1.0	71	100	89	10.2
			BYI08330 - ketohydroxy	12	0.01	1.0	77	104	92	9.8
			BYI08330 enol-glucoside	12	0.01	1.0	73	114	96	11.3
			BYI08330 mono-hydroxy	12	0.01	1.0	68	110	93	12.0
RA-2034/05 GLP yes 2005	Grape	bunch of grapes	BYI08330	3	0.01	1	96	109	102	6.4
			BYI08330 -enol	3	0.01	1	88	99	94	5.9
			BYI08330 - ketohydroxy	3	0.01	1	93	97	96	2.4
			BYI08330 enol-glucoside	3	0.01	1	83	97	89	8.3
			BYI08330 mono-hydroxy	3	0.01	1	90	92	91	1.3
		berry	BYI08330	3	0.01	1	85	117	97	18.3
			BYI08330 -enol	3	0.01	1	85	91	87	3.7
			BYI08330 - ketohydroxy	3	0.01	1	83	101	92	9.8
			BYI08330 enol-glucoside	3	0.01	1	82	89	85	4.2
			BYI08330 mono-hydroxy	3	0.01	1	83	97	89	8.3

RSD = relative standard deviation

Table 6.3.1.7-2 continued

Study GLP Year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2036/05 GLP yes 2005	Grape	bunch of grapes	BYI08330	3	0.01	0.1	91	109	103	9.9
			BYI08330 - enol	3	0.01	0.1	89	105	98	8.3
			BYI08330 - ketohydroxy	3	0.01	0.1	91	107	101	8.6
			BYI08330 enol-glucoside	3	0.01	0.1	85	98	91	7.3
			BYI08330 mono-hydroxy	3	0.01	0.1	93	103	99	5.2
		berry	BYI08330	3	0.01	0.1	92	95	93	1.6
			BYI08330 - enol	3	0.01	0.1	93	96	94	1.6
			BYI08330 - ketohydroxy	3	0.01	0.1	92	103	96	6.1
			BYI08330 enol-glucoside	3	0.01	0.1	89	94	92	2.7
			BYI08330 monohydroxy	3	0.01	0.1	88	104	97	8.4

RSD = relative standard deviation

Table 6.3.1.7-3: Use pattern of BYI08330 in residue trials with grapes conducted in the field in southern Europe

Country Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2049/04 R 2004 0196 5 0196-04 Italy I-[redacted] (Emilia – Romagna) 2004	Grape	OD 100	2	14	0.0960	0.00640	7
A-2049/04 R 2004 0197 3 0197-04 Italy I-[redacted] (Emilia – Romagna) 2004	Grape	OD 100	2	14	0.0960	0.00640	7
RA-2049/04 R 2004 0198 1 0198-04 Greece GR-[redacted] (Peloponnesos) 2004	Table grape	OD 100	2	14	0.0960	0.00640	7
RA-2049/04 R 2004 0201 5 0201-04 Spain E-[redacted] (Murcia) 2004	Table grape	OD 100	2	14	0.0960	0.00640	7
RA-2049/04 R 2004 0202 3 0202-04 France F-[redacted] (Midi-Pyrenees) 2004	Table grape	OD 100	2	14	0.0960	0.06400	7

a.s. = Active Substance

Table 6.3.1.7-3 continued

Country Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2049/04 R 2004 0203 1 0203-04 Greece GR-[redacted] (Northern Greece – Macedonia) 2004	Table grape	OD 100	2	14	0.0960	0.00640	7
RA-2034/05 R 2005 0157 9 0157-05 Spain E-[redacted] (Requena) (Comunidad Valenciana) 2005	Grape	OD 150	2	14	0.0960	0.01200	7
RA-2034/05 R 2005 0158 7 0158-05 Italy I-[redacted] (Emilia – Romagna) 2005	Grape	OD 150	2	14	0.0960	0.00960	7
RA-2036/05 R 2005 0161 7 0161-05 France F-[redacted] 2005	Grape	SC 048	2	14	0.0960	0.06000	7
RA-2036/05 R 2005 0162 5 0162-05 Italy I-[redacted] (Emilia – Romagna) 2005	Grape	SC 048	2	14	0.0960	0.00960	7

a.s. = Active Substance

Table 6.3.1.7-4: Results from residue trials in grape conducted with BYI08330 in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy	Grape	0*	0.03	0.040	0.060	0.012	0.041	0.18
RA-2049/04	bunch of	0	0.37	0.10	0.078	0.012	0.042	0.61
R 2004 0196 5	grapes	3	0.14	0.11	0.047	0.012	0.031	0.34
		7	0.15	0.17	0.095	0.012	0.11	0.54
		14	0.17	0.095	0.10	0.012	0.16	0.53
		21	0.12	0.059	0.074	0.012	0.16	0.42
	berry	**7**	0.14	0.15	0.085	0.012	0.10	0.48
		14	0.12	0.092	0.072	0.012	0.18	**0.47**
		21	0.08	0.041	0.060	0.012	0.16	0.35
Italy	Grape	0*	0.14	0.030	0.025	<0.012	0.020	0.22
RA-2049/04	bunch of	0	0.20	0.042	0.027	<0.012	0.018	0.28
R 2004 0197 3	grapes	**7**	0.20	0.045	0.045	<0.012	0.026	0.32
		14	0.03	0.022	0.020	<0.012	0.019	0.091
		21	0.03	0.022	0.024	<0.012	0.030	0.11
	berry	**7**	0.17	0.037	0.031	<0.012	0.026	0.27
		14	0.06	0.035	0.038	<0.012	0.038	**0.17**
		21	0.03	0.022	0.020	<0.012	0.030	0.10
Greece	Table	0*	0.05	0.064	0.012	<0.012	0.022	0.15
RA-2049/04	grape	0	0.17	0.092	0.015	<0.012	0.023	0.30
R 2004 0198 1	bunch of	3	0.15	0.096	0.015	<0.012	0.027	0.29
	grapes	**7**	0.15	0.11	0.018	<0.012	0.033	0.31
		14	0.08	0.11	0.012	<0.012	0.043	0.24
		21	0.10	0.11	0.016	<0.012	0.054	0.28
	berry	0	0.05	0.066	0.012	<0.012	0.023	0.15
		0	0.14	0.089	0.012	<0.012	0.025	0.27
		3	0.12	0.081	0.013	<0.012	0.025	0.24
		7	0.16	0.11	0.018	<0.012	0.037	0.33
		14	0.08	0.110	0.013	<0.012	0.045	**0.25**
		21	0.08	0.11	0.014	<0.012	0.051	0.25
Spain	Table	0*	0.22	0.030	0.033	<0.012	0.028	0.31
RA-2049/04	grape	0	0.32	0.035	0.022	<0.012	0.017	0.40
R 2004 0201 5	bunch of	3	0.45	0.044	0.049	<0.012	0.033	0.58
	grapes	7	0.37	0.039	0.040	<0.012	0.029	0.48
		15	0.20	0.021	0.024	<0.012	0.027	0.27
		21	0.21	0.018	0.021	<0.012	0.030	0.28
	berry	0	0.22	0.031	0.032	<0.012	0.028	0.31
		0	0.52	0.050	0.034	<0.012	0.027	0.63
		3	0.49	0.040	0.050	<0.012	0.031	0.62
		7	0.30	0.027	0.025	<0.012	0.022	0.37
		15	0.47	0.047	0.054	<0.012	0.058	**0.63**
		21	0.33	0.031	0.035	<0.012	0.054	0.45

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.7-4 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2049/04 R 2004 0202 3	Table grape bunch of grapes	0*	0.07	0.033	0.012	<0.012	0.023	0.14
		0	0.19	0.041	0.012	<0.012	0.024	0.27
		7	0.10	0.037	0.012	<0.012	0.032	0.18
		14	0.11	0.044	0.012	<0.012	0.063	0.23
		21	0.09	0.040	0.012	<0.012	0.062	0.20
	berry	0	0.06	0.030	0.012	<0.012	0.020	0.12
		0	0.18	0.038	0.012	<0.012	0.024	0.25
		7	0.09	0.032	0.012	<0.012	0.033	0.16
		14	0.13	0.055	0.012	0.012	0.074	**0.28**
		21	0.09	0.038	0.012	<0.012	0.063	0.20
Greece RA-2049/04 R 2004 0203 1	Table grape bunch of grapes	0*	0.03	0.024	0.012	<0.012	0.028	0.089
		0	0.14	0.023	0.012	<0.012	0.027	0.20
		7	0.15	0.057	0.018	<0.012	0.060	0.29
		14	0.05	0.042	0.012	<0.012	0.040	0.14
		21	0.05	0.034	0.013	<0.012	0.043	0.15
	berry	0	0.10	0.043	0.020	<0.012	0.093	0.26
		0	0.09	0.043	0.017	<0.012	0.082	0.23
		7	0.11	0.048	0.014	<0.012	0.036	0.20
		14	0.15	0.022	0.012	<0.012	0.022	**0.21**
		21	0.02	0.022	0.012	<0.012	0.031	0.086
Spain RA-2034/05 R 2005 0157 9	Grape bunch of grapes	0*	0.09	0.029	0.013	<0.01	0.02	0.15
		0	0.39	0.038	<0.012	<0.012	0.011	0.45
		3	0.32	0.03	<0.012	<0.01	0.01	0.38
		7	0.09	0.03	0.02	<0.01	0.02	0.16
		14	0.09	0.03	0.02	<0.01	0.03	0.16
		21	0.07	0.02	0.02	<0.01	0.03	0.14
	berry	**7**	0.11	0.03	<0.012	<0.01	0.02	0.18
		14	0.07	0.03	0.02	<0.01	0.03	**0.16**
		21	0.06	0.02	0.02	<0.01	0.03	0.14
Italy RA-2034/05 R 2005 0158 7	Grape bunch of grapes	0*	0.14	0.06	0.03	<0.01	0.040	0.28
		0	0.34	0.06	0.02	<0.01	0.04	0.47
		3	0.19	0.12	0.03	<0.01	0.04	0.38
		7	0.11	0.22	0.028	0.014	0.082	0.45
		14	0.13	0.17	0.04	<0.012	0.13	0.47
		21	0.05	0.14	0.03	<0.012	0.15	0.39
	berry	**7**	0.19	0.20	0.040	0.016	0.11	0.55
		14	0.16	0.21	0.04	<0.012	0.15	**0.57**
		21	0.03	0.12	0.03	<0.012	0.15	0.35

DALT = Days after last Treatment, *= Before the last Treatment

Table 6.3.1.7-4 continued:

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2036/05 R 2005 0161 7 (SC048)	Grape bunch of grapes	0	0.21	<0.012	<0.012	<0.012	<0.008	0.24
		7	0.20	0.012	<0.012	<0.012	<0.008	0.23
		14	0.17	0.016	<0.012	<0.012	0.011	0.20
		21	0.14	0.012	<0.012	<0.012	0.015	0.18
	berry	**7**	0.14	<0.012	<0.012	<0.012	0.009	0.18
		14	0.16	<0.012	<0.012	<0.012	0.008	**0.19**
		21	0.12	0.012	<0.012	<0.012	0.017	0.17
Italy RA-2036/05 R 2005 0162 5 (SC048)	Grape bunch of grapes	0	0.11	0.027	<0.012	<0.012	0.014	0.17
		7	0.08	0.13	0.019	<0.012	0.052	0.29
		14	0.10	0.14	0.026	<0.012	0.084	0.36
		21	0.03	0.099	0.018	<0.012	0.11	0.27
	berry	**7**	0.08	0.14	0.015	<0.012	0.063	0.31
		14	0.07	0.15	0.021	<0.012	0.095	**0.35**
		21	0.03	0.10	0.018	<0.012	0.11	0.27

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.8 Strawberries

BYI08330 is is to be registered for aphids and white flies in strawberries. European residue trials were conducted according to the GAP summarised in Table 6.3.1.8.-1.

Table 6.3.1.8-1: Critical European GAP for spray application of BYI08330 to strawberry plants

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval (days)	PHI (days)
Strawberry	greenhouse	96	500 - 1000	2	14	3
Strawberry	EUN	96	500 - 1000	2	14	3
Strawberry	EUS	96	500 - 1000	2	14	3

Report:	**KIIA 6.3.1.8/01, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on strawberry after spraying of BYI08330 (100 OD) in the greenhouse in Germany and France**
Report No & Document No	**RA-2122/04, including trials no. R 2004 0726/2, R 2004 0765/3, R 2004 0766/1, R 2004 0768/8, R 2004 0769/6, R 2004 0771/8, R 2004 0772/6, R 2004 0773/4 M-263736-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.8/02, [redacted]; [redacted]; 2006 ; amended 18.01.2006**
Title:	**Determination of the residues of BYI08330 in/on strawberry after spraying of BYI08330 (100 OD) in the field in Germany and Northern France**
Report No & Document No	**RA-2120/04, including trials no. R 2004 0724/6, R 2004 0759/9, R 2004 0760/2, R 2004 0761/0 M-262423-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.8/03, [redacted].; [redacted].; 2006**
Title:	**Determination of the residues of BYI08330 in/on strawberry after spraying of BYI08330 (100 OD) in the field in Italy, Spain and Southern France**
Report No & Document No	**RA-2121/04, including trials no. R 2004 0725/4, R 2004 0762/9, R 2004 0763/7, R 2004 0764/5** **M-268388-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 16 supervised residue trials with BYI08330 were performed in strawberries in 2004, 8 trials in the greenhouse, 4 trials in the field in northern Europe and 4 trials in the field in southern Europe. Applications were conducted with the OD 100 formulation of BYI08330. The field data of the individual residue trials are summarized in Tables 6.3.1.8-3 to 6.3.1.8-5. The results from the residue trials are given in Tables 6.3.1.8-6 to 6.3.1.8-8 and in more detail in the respective Tier I summaries.
According to the European GAP generally residue data at the PHI of 3 days were evaluated. The residue data used for the evaluation are marked in bold in Tables 6.3.1.8-6 to 6.3.1.8-8.

Residues in strawberries were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Table 6.3.1.8-2

Findings:

The total residue of BYI08330 in strawberries grown in the greenhouse according to the European GAP ranged between 0.2 and 0.3 mg/kg. In strawberry fruit from 4 field trials in northern Europe a total residue of 0.15 to 0.24 mg/kg was detected, in strawberry fruit from 4 field trials in southern Europe a total residue of 0.1 to 0.14 mg/kg was measured. These results show that residues in strawberries grown in the field correspond with the lower residue level in strawberries grown in the greenhouse. As residues in strawberries from field trials are not expected to exceed residues in strawberries grown in the greenhouse, no second year residue trials in the field were considered necessary. For estimation of the dietary risk and for MRL setting the residue results from all 16 residue trials are evaluated. The total residue of BYI08330 in strawberries ranged between **0.1 and 0.33 mg/kg (STMR 0.21 mg/kg).**

Major component of the total residue of BYI08330 in strawberries from all trials collected at the PHI of 3 days was BYI08330-enol. The parent compound, the ketohydroxy and the enol-glucoside were minor components. BYI08330-monohydroxy was not found or in traces, only.

Table 6.3.1.8-2: Recovery results for BYI08330 and its metabolites in strawberry fruit

Study Nos. GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2122/04 RA-2120/04 RA-2121/04 GLP yes 2004	Straw-berry	fruit	BYI08330	37	0.01	1.0	77	106	95	8.0
			BYI08330 - enol	37	0.01	1.0	70	109	91	10.0
			BYI08330 - ketohydroxy	37	0.01	1.0	78	115	95	9.0
			BYI08330 enol-glucoside	37	0.01	1.0	71	122	96	10.8
			BYI08330 mono-hydroxy	37	0.01	1.0	79	100	93	6.5

RSD = relative standard deviation

Table 6.3.1.8-3: Use pattern of BYI08330 OD 100 in residue trials with strawberries conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2122/04 R 2004 0726 2 0726-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2122/04 R 2004 0765 3 0765-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2122/04 R 2004 0766 1 0766-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960-0.1020	0.01370-0.01530	3
RA-2122/04 R 2004 0768 8 0768-04 France F-[redacted] 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3

a.s. = Active Substance

Table 6.3.1.8-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hl	PHI (days)
RA-2122/04 R 2004 0769 6 0769-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2122/04 R 2004 0771 8 0771-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2122/04 R 2004 0772 6 0772-04 Germany D-[redacted] (Niedersachsen) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3
RA-2122/04 R 2004 0773 4 0773-04 France F-[redacted] (Provence-Cote D'azur) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3

a.s. = Active Substance

Table 6.3.1.8-4: Use pattern of BYI08330 OD 100 in residue trials with strawberries conducted in the field in Northern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hl	PHI (days)
RA-2120/04 R 2004 0724 6 0724-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2120/04 R 2004 0759 9 0759-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Strawberry	100 OD	2	14	0.0960	0.00960	3
RA-2120/04 R 2004 0760 2 0760-04 France F-[redacted] (Picardie) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3
RA-2120/04 R 2004 0761 0 0761-04 France F-[redacted] (Haute-Normandie) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3

a.s. = Active Substance

Table 6.3.1.8-5: Use pattern of BYI08330 OD 100 in residue trials with strawberries conducted in the field in southern Europe

Country Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2121/04 R 2004 0725 4 0725-04 Italy I-[redacted](FE) (Emilia - Romagna) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3
RA-2121/04 R 2004 0762 9 0762-04 Italy I-[redacted](Emilia - Romagna) 2004	Strawberry	100 OD	2	14	0.0960	0.01600	3
RA-2121/04 R 2004 0763 7 0763-04 Spain E-[redacted] (Cataluña) 2004	Strawberry	100 OD	2	14	0.0960	0.00960-0.01200	3
RA-2121/04 R 2004 0764 5 0764-04 France F-[redacted] (Rhone-Alpes) 2004	Strawberry	100 OD	2	14	0.0960	0.01370	3

a.s. = Active Substance

Table 6.3.1.8-6: Results from residue trials with BYI08330 OD100 in strawberries conducted in the greenhouse in Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents					
			BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2122/04 R 2004 0726 2	Straw-berry fruit	0	0.01	0.13	0.012	<0.012	0.008	0.16
		0	0.04	0.16	0.014	<0.012	0.008	0.22
		1	0.03	0.19	0.013	<0.012	0.008	0.25
		3	0.01	0.19	0.012	<0.012	0.008	0.22
		7	0.01	0.24	0.012	<0.012	0.008	**0.27**
		14	0.01	0.18	0.015	<0.012	0.011	0.21
Germany RA-2122/04 R 2004 0765 3	Straw-berry fruit	0	0.01	0.16	0.012	<0.012	0.018	0.20
		0	0.04	0.22	0.012	<0.012	0.022	0.29
		1	0.01	0.13	0.012	<0.012	0.014	0.17
		3	0.01	0.16	0.012	<0.012	0.011	0.19
		7	0.01	0.15	0.012	0.012	0.010	0.18
		14	0.01	0.14	0.012	0.012	0.019	**0.20**
Germany RA-2122/04 R 2004 0766 1	Straw-berry fruit	0	0.01	0.062	0.012	<0.012	0.008	0.093
		0	0.08	0.11	0.013	<0.012	0.009	0.21
		1	0.06	0.15	0.014	<0.012	0.009	0.23
		3	0.04	0.16	0.014	<0.012	0.013	0.22
		7	0.03	0.16	0.016	0.012	0.026	**0.25**
		14	0.02	0.074	0.014	0.012	0.030	0.14
France RA-2122/04 R 2004 0768 8	Straw-berry fruit	0	0.01	0.12	0.012	<0.012	0.008	0.15
		0	0.04	0.14	0.012	<0.012	0.008	0.20
		1	0.02	0.14	0.012	<0.012	0.008	0.18
		3	0.02	0.22	0.012	<0.012	0.013	0.27
		7	0.01	0.28	0.012	<0.012	0.014	0.32
		14	0.01	0.27	0.012	0.012	0.021	**0.33**
Germany RA-2122/04 R 2004 0769 6	Straw-berry fruit	0	0.03	0.11	0.012	<0.012	0.008	0.16
		0	0.12	0.16	0.012	<0.012	0.008	0.30
		1	0.04	0.16	0.013	<0.012	0.008	0.22
		3	0.03	0.11	0.012	<0.012	0.008	0.16
		7	0.03	0.21	0.012	<0.012	0.008	**0.28**
Germany RA-2122/04 R 2004 0771 8	Straw-berry fruit	0	0.02	0.075	0.012	<0.012	0.008	0.12
		0	0.11	0.14	0.012	<0.012	0.009	0.28
		1	0.06	0.18	0.012	<0.012	0.009	0.26
		3	0.04	0.16	0.012	<0.012	0.010	**0.22**
		7	0.03	0.13	0.012	<0.012	0.009	0.19
Germany RA-2122/04 R 2004 0772 6	Straw-berry fruit	0	0.04	0.15	0.012	<0.012	0.008	0.21
		0	0.13	0.18	0.012	<0.012	0.008	0.34
		1	0.11	0.21	0.012	<0.012	0.008	0.34
		3	0.08	0.17	0.012	<0.012	0.008	**0.27**
		7	0.08	0.14	0.012	<0.012	0.008	0.24
France RA-2122/04 R 2004 0773 4	Straw-berry fruit	0	0.01	0.18	0.012	0.012	0.008	0.23
		0	0.03	0.22	0.013	0.012	0.008	0.29
		1	0.02	0.23	0.013	0.012	0.008	0.28
		3	0.02	0.25	0.013	0.012	0.008	**0.30**
		7	0.02	0.21	0.013	0.012	0.009	0.26

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.8-7: Results from residue trials with BYI08330 OD100 in strawberries conducted in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2120/04 R 2004 0724 6	Straw-berry fruit	0	0.01	0.14	0.012	<0.012	0.008	0.17
		0	0.01	0.064	0.012	<0.012	0.008	0.098
		1	0.01	0.084	0.012	<0.012	0.008	0.11
		3	0.01	0.12	0.012	<0.012	0.008	0.15
		7	0.01	0.14	0.012	<0.012	0.008	**0.17**
		14	<0.01	0.060	0.012	<0.012	0.008	0.080
Germany RA-2120/04 R 2004 0759 9	Straw-berry fruit	0	<0.01	0.039	0.012	<0.012	0.008	0.059
		0	0.02	0.033	0.012	<0.012	0.008	0.068
		1	0.01	0.050	0.012	<0.012	0.008	0.080
		3	0.01	0.088	0.012	<0.012	0.008	0.12
		7	0.01	0.12	0.012	<0.012	0.008	**0.15**
		14	<0.01	0.049	0.012	<0.012	0.008	0.069
France RA-2120/04 R 2004 0760 2	Straw-berry fruit	0	0.01	0.084	0.012	<0.012	0.013	0.12
		0	0.05	0.11	0.012	<0.012	0.014	0.19
		1	0.02	0.16	0.012	<0.012	0.016	0.21
		3	0.02	0.20	0.012	<0.012	0.014	**0.24**
		7	0.01	0.19	0.014	<0.012	0.025	0.24
		14	0.01	0.14	0.019	0.012	0.033	0.21
France RA-2120/04 R 2004 0761 0	Straw-berry fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.14	0.086	<0.012	<0.012	0.008	0.23
		1	0.08	0.078	<0.012	<0.012	0.008	0.17
		3	0.07	0.11	0.012	<0.012	0.008	**0.19**
		7	0.02	0.12	0.012	<0.012	0.009	0.16
		14	0.01	0.060	0.013	<0.012	0.012	0.094

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.8-8: Results from residue trials with BYI08330 OD100 in strawberries conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2121/04 R 2004 0725 4	Straw-berry fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	0.055
		0	0.04	0.020	<0.012	<0.012	<0.008	0.057
		1	0.02	0.050	0.012	<0.012	0.008	0.088
		3	0.02	0.080	0.012	<0.012	0.012	0.12
		7	0.01	0.075	0.012	0.012	0.034	**0.14**
		14	<0.01	0.029	0.012	<0.012	0.020	0.062
Italy RA-2121/04 R 2004 0762 9	Straw-berry fruit	0	<0.01	0.037	0.012	<0.012	<0.008	<0.055
		0	0.05	0.070	0.015	<0.012	0.008	0.14
		1	0.02	0.080	0.012	<0.012	<0.008	0.11
		3	0.01	0.11	0.012	<0.012	0.008	**0.14**
		7	<0.01	0.066	0.012	<0.012	0.008	0.086
		14	0.01	0.042	0.012	<0.012	0.014	0.078
Spain RA-2121/04 R 2004 0763 7	Straw-berry fruit	0	0.01	0.024	0.012	<0.012	0.008	<0.055
		0	0.03	0.060	0.012	<0.012	0.008	0.11
		1	0.03	0.089	0.012	<0.012	0.008	0.14
		3	0.02	0.090	0.012	<0.012	0.009	**0.13**
		7	0.01	0.069	0.012	<0.012	0.011	0.10
France RA-2121/04 R 2004 0764 5	Straw-berry fruit	0	0.01	0.052	0.012	<0.012	0.011	0.085
		0	0.10	0.058	0.015	<0.012	0.012	0.18
		1	0.06	0.049	0.015	<0.012	0.008	0.13
		3	0.02	0.061	0.012	<0.012	0.008	**0.10**
		7	0.01	0.019	0.012	<0.012	0.008	<0.055
		15	<0.01	0.012	0.012	<0.012	0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.9 Onions

BYI08330 is to be registered for control of *Thrips tabacchi* in onions. European residue trials were conducted according to the GAP summarised in Table 6.3.1.9.-1.

Table 6.3.1.9-1: Critical European GAP for spray application of BYI08330 to onions

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval (days)	PHI (days)
Onion	EUN	72	400-600	4	7	7
Onion	EUS	72	400-600	4	7	7

Report:	**KIIA 6.3.1.9/01, [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on onion after spraying of BYI08330 (100 OD) in the field in Germany and Northern France**
Report No & Document No	**RA-2131/04, including trials no. R 2004 0854/4, R 2004 0855/2, R 2004 0856/0, R 2004 0857/9** **M-259115-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.9/02, [redacted]; [redacted].; 2006**
Title:	**Determination of the residues of BYI08330 in/on onion after spraying of BYI08330 (150 OD) in the field in United Kingdom, Northern France and Germany**
Report No & Document No	**RA-2040/05, including trials no. R 2005 0212/5, R 2005 0214/1, R 2005 0216/8, R 2005 0217/6** **M-269474-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.9/03, [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on onion after spraying of BYI08330 (100 OD) in the field in Southern France, Greece, Italy and Spain**
Report No & Document No	**RA-2132/04, including trials no. R 2004 0858/7, R 2004 0859/5, R 2004 0860/9, R 2004 0861/7** **M-259663-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.9/04, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on onion after spraying of BYI08330 (150 OD) in the field in Italy, Spain and Southern France**
Report No & Document No	**RA-2041/05, including trials no. R 2005 0225/7, R 2005 0226/5, R 2005 0227/3, R 2005 0228/1** **M-269869-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 16 supervised residue trials with BYI08330 in onions were performed in the field in northern Europe (8 trials) and southern Europe (8 trials) in 2004 and 2005. Applications were conducted with the OD 100 and the OD 150 formulation of BYI08330. The field data of the individual residue trials are summarized in Tables 6.3.1.9-3 to 6.3.1.9-4. The results from the residue trials are given in Tables 6.3.1.9-5 to 6.3.1.9-6 and in more detail in the respective Tier I summaries.

Residues in onion bulb were analysed according to method 00857 (see Point 4.3.1). Mean recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Table 6.3.1.9-2

Findings:

The total residue of BYI08330 in onion bulb sampled at the PHI of 7 days after four spray applications of 72 g as/ha ranged between <0.055 and 0.16 mg/kg (STMR 0.062 mg/kg). There was no difference of residues in onion bulbs grown in northern or southern Europe.
Major component of the total residue of BYI08330 in onion was BYI08330-enol.

Table 6.3.1.9-2: Recovery results for BYI08330 and its metabolites in onion bulb

Study No. GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2131/04 RA-2132/04 GLP yes 2004	Onion	Bulb	BYI08330	13	0.01	1.0	85	121	99	8.6
			BYI08330 - enol	13	0.01	1.0	77	112	86	11.1
			BYI08330 - ketohydroxy	13	0.01	1.0	74	121	90	14.7
			BYI08330 enol-glucoside	13	0.01	1.0	69	122	87	14.4
			BYI08330 mono-hydroxy	13	0.01	1.0	67	112	85	12.0
RA-2040/05 GLP yes 2005	Onion	Bulb	BYI08330	3	0.010	0.100	79	92	86	7.6
			BYI08330 - enol	3	0.010	0.100	83	86	85	1.8
			BYI08330 - ketohydroxy	3	0.010	0.100	85	108	98	12.0
			BYI08330 enol-glucoside	3	0.010	0.100	79	91	85	7.1
			BYI08330 mono-hydroxy	3	0.010	0.100	80	93	85	8.0
RA-2041/05 GLP yes 2005	Onion	Bulb	BYI08330	3	0.01	0.5	83	97	90	7.8
			BYI08330 - enol	3	0.01	0.5	79	94	88	9.0
			BYI08330 - ketohydroxy	3	0.01	0.5	80	92	88	7.6
			BYI08330 enol-glucoside	3	0.01	0.5	78	99	85	13.9
			BYI08330 mono-hydroxy	3	0.01	0.5	81	95	90	8.4

RSD = relative standard deviation

Table 6.3.1.9-3: Use pattern of BYI08330 OD100 and OD150 in residue trials with onions conducted in the field in northern Europe

Study Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2131/04 R 2004 0854 4 0854-04 Germany D-[redacted] (Hof [redacted]) 2004	Onion	100 OD	4	7	0.0720	0.01200	7
RA-2131/04 R 2004 0855 2 0855-04 France F-[redacted] (Picardie) 2004	Onion	100 OD	4	7	0.0720	0.01800	7
RA-2131/04 R 2004 0856 0 0856-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Onion	100 OD	4	7	0.0720	0.01440	7
RA-2131/04 R 2004 0857 9 0857-04 France F-[redacted] (Ile-de-France) 2004	Onion	100 OD	4	7	0.0720	0.01800	7

a.s. = Active Substance

Table 6.3.1.9-3 continued

Study Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2040/05 R 2005 0212 5 0212-05 United Kingdom GB-[redacted] (Suffolk) 2005	Onion	150 OD	4	8/6/7	0.0720	0.02400	7
RA-2040/05 R 2005 0214 1 0214-05 France F-[redacted] (Picardie) 2005	Onion	150 OD	4	7	0.0720	0.02400	7
RA-2040/05 R 2005 0216 8 0216-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Onion	150 OD	4	7	0.0720	0.02400	7
RA-2040/05 R 2005 0217 6 0217-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Onion	150 OD	4	7	0.0720	0.01800	7

a.s. = Active Substance

Table 6.3.1.9-4: Use pattern of BYI08330 OD100 and OD150 in residue trials with onions conducted in the field in southern Europe

Study Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2132/04 R 2004 0858 7 0858-04 France F-[redacted] (Rhone-Alpes) 2004	Onion	100 OD	4	7	0.0720	0.01440	7
RA-2132/04 R 2004 0859 5 0859-04 Greece GR-[redacted] (Central Greece) 2004	Onion	100 OD	4	7	0.0720	0.01200	7
RA-2132/04 R 2004 0860 9 0860-04 Italy I-[redacted] (Emilia - Romagna) 2004	Onion	100 OD	4	7	0.0720	0.01800	7
RA-2132/04 R 2004 0861 7 0861-04 Spain E-[redacted] (Comunidad Valenciana) 2004	Onion	100 OD	4	7/8/6	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.9-4 continued

Study Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2041/05 R 2005 0225 7 0225-05 Italy I-[redacted] (Emilia - Romagna) 2005	Onion	150 OD	4	7	0.0720	0.01200	7
RA-2041/05 R 2005 0226 5 0226-05 Spain E-[redacted] (Cataluña) 2005	Onion	150 OD	4	9/6/8	0.0720-0.0777	0.01200-0.01440	7
RA-2041/05 R 2005 0227 3 0227-05 France F-[redacted] (Midi-Pyrenees) 2005	Onion	150 OD	4	7/6/7	0.0720	0.01200	7
RA-2041/05 R 2005 0228 1 0228-05 Spain E-[redacted] (Comunidad Valenciana) 2005	Onion	150 OD	4	7	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.9-5: Results from residue trials with BYI08330 OD100 and OD150 in onions conducted in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2131/04 R 2004 0854 4	Onion bulb	0 **7** 14 21	0.04 <0.01 <0.01 <0.01	0.16 0.16 0.031 0.060	<0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.19 **0.16** 0.055 0.060
France RA-2131/04 R 2004 0855 2	Onion bulb	0 **7** 14 21	0.03 <0.01 <0.01 <0.01	0.061 0.055 0.045 0.052	<0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.090 **0.055** <0.055 <0.055
Germany RA-2131/04 R 2004 0856 0	Onion bulb	0* 0 4 **7** 14 21	0.01 0.04 0.02 <0.01 <0.01 <0.01	0.061 0.063 0.066 0.055 0.066 0.067	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.072 0.10 0.082 0.055 0.066 **0.067**
France RA-2131/04 R 2004 0857 9	Onion bulb	0* 0 3 **7** 14 21	<0.01 0.01 <0.01 <0.01 <0.01 <0.01	0.047 0.052 0.052 0.071 0.058 0.053	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	<0.055 0.066 0.055 **0.071** 0.058 0.055
United Kingdom RA-2040/05 R 2005 0212 5	Onion bulb	0 8	0.01 <0.01	0.11 0.12	<0.012 <0.012	<0.012 <0.012	<0.008 <0.008	0.13 **0.12**
France RA-2040/05 R 2005 0214 1	Onion bulb	0 **7**	0.02 0.01	<0.012 <0.012	<0.012 <0.012	<0.012 <0.012	<0.008 <0.008	<0.055 **<0.055**
Germany RA-2040/05 R 2005 0216 8	Onion bulb	0* 0 3 **7** 14 21	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.042 0.043 0.042 0.042 0.043 0.038	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	<0.055 0.055 <0.055 **<0.055** <0.055 <0.055
Germany RA-2040/05 R 2005 0217 6	Onion bulb	0* 0 3 **7** 15 21	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.020 0.038 0.040 0.050 0.040 0.031	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	<0.055 0.078 <0.055 **<0.055** <0.055 <0.055

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.9-6: Results from residue trials with BYI08330 OD100 and OD150 in onions conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2132/04 R 2004 0858 7	Onion bulb	0 **7** 14 21	<0.01 <0.01 <0.01 <0.01	0.040 0.020 0.024 0.022	<0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.055 **<0.055** <0.055 <0.055
Greece RA-2132/04 R 2004 0859 5	Onion bulb	0 **7** 14 21	<0.01 <0.01 <0.01 <0.01	0.064 0.061 0.061 0.055	<0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008	0.064 **0.081** 0.061 0.055
Italy RA-2132/04 R 2004 0860 9	Onion bulb	0* 0 3 **7** 14 21	0.02 0.02 <0.01 <0.01 <0.01 <0.01	0.042 0.038 0.050 0.052 0.052 0.056	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.066 0.059 0.055 0.055 0.055 **0.056**
Spain RA-2132/04 R 2004 0861 7	Onion bulb	0* 0 3 **7** 14 21	<0.01 0.01 <0.01 <0.01 <0.01 <0.01	0.090 0.083 0.11 0.13 0.12 0.11	<0.012 <0.012 <0.012 0.013 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.090 0.097 0.11 **0.13** 0.12 0.11
Italy RA-2041/05 R 2005 0225 7	Onion bulb	0 7	< 0.01 < 0.01	0.030 0.034	< 0.012 < 0.012	< 0.012 < 0.012	< 0.008 < 0.008	< 0.055 **< 0.055**
Spain RA-2041/05 R 2005 0226 5	Onion bulb	0 7	0.02 0.02	0.032 0.037	0.012 0.017	< 0.012 < 0.012	< 0.008 < 0.008	0.059 **0.075**
France RA-2041/05 R 2005 0227 3	Onion bulb	0* 0 3 **7** 14 21	< 0.01 0.01 0.01 0.01 < 0.01 < 0.01	0.037 0.051 0.14 0.10 0.050 0.034	< 0.012 0.015 < 0.012 0.013 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 0.078 0.16 **0.11** 0.061 < 0.055
Spain RA-2041/05 R 2005 0228 1	Onion bulb	0* 0 3 **7** 14 21	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.012 < 0.012 < 0.012 < 0.012 < 0.012 < 0.012	< 0.008 < 0.008 < 0.008 < 0.008 < 0.008 < 0.008	< 0.055 < 0.055 < 0.055 **< 0.055** < 0.055 < 0.055

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.10 Tomatoes

BYI08330 is to be registered for use in tomatoes against whiteflies, aphids, and mites. The critical European GAPs in the greenhouse and in the field in southern Europe (EUS) are summarized in Table 6.3.1.10-1.

Table 6.3.1.10-1: Critical European GAP for spray application of BYI08330 to tomatoes

Crop	Region	Use rate of the a.s.	Water volume	No of appl.	Spray interval (days)	PHI (days)
Tomatoes	Greenhouse	72 g/ha x m*	750-1500 L/ha x m*	4	7	3
Tomatoes	Field EUS	72 g/ha	750 L/ha	4	7	3

a.s. active substance; * rate per ha and m of leafy surface

Report:	**KIIA 6.3.1.10/01, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on cherry tomato after spraying of BYI08330 (100 OD) in the greenhouse in Italy and Spain**
Report No & Document No	**RA-2139/04, including trials no. R 2004 0823/4, R 2004 0824/2, R 2004 0825/0, R 2004 0826/9** **M-264462-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.10/02, [redacted]; [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on tomato after spraying of BYI08330 (100 OD) in the greenhouse in Greece, Spain and Italy**
Report No & Document No	**RA-2140/04, including trials no. R 2004 0827/7, R 2004 0828/5, R 2004 0829/3, R 2004 0830/7** **M-263523-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.10/03, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on tomato after spraying of BYI08330 (100 OD) in the field in Spain, Portugal, Greece and Italy**
Report No & Document No	**RA-2130/04, including trials no. R 2004 0849/8, R 2004 0850/1, R 2004 0852/8, R 2004 0853/6** **M-263566-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 12 supervised residue trials with BYI08330 in tomatoes have been performed in the greenhouse (8 trials) and in the field in southern Europe (4 trials) in 2004 according to the critical European GAP. The 8 greenhouse trials include 4 trials with cherry tomatoes. X. The height of the plants at the last applications was generally 2 m and in trials R 2004 0828/5 and R 2004 0827/7 1.60 and 1,65 m, respectively. Applications were performed with the OD 100 formulation of BYI08330. Due to different plant heights the application rates of 72 g as/ha and m resulted in rates between 118 and 165 g as/ha. The field data of the individual residue trials are summarized in Tables 6.3.1.10-3 to 6.3.1.10-4. The results from the residue trials are given in Tables 6.3.1.10-5 to 6.3.1.10-6 and in more detail in the respective Tier I summaries.

Residues in tomato fruit were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %; RSD ≤20%. Recovery results are summarised in Tables 6.3.1.10-2.

Findings:

In tomatoes and cherry tomatoes grown in the greenhouse the total residue of BYI08330 ranged between 0.20 and 0.72 mg/kg. Residues in cherry tomatoes were between 0.43 and 0.72 mg/kg, residues in tomatoes between 0.2 and 0.5 mg/kg. In tomatoes grown in the field in southern Europe the total residue of BYI08330 was between 0.11 and 0.20 mg/kg ranging at the lower limit of the total residue in tomatoes from greenhouse trials. Generally residue data of day 3 after the last application were evaluated according to the PHI of the critical European GAP. If the total residue of BYI08330 at longer intervals exceeded the residue of day 3, the higher value was evaluated to cover the worst case residue. The residue data used for evaluation are marked in bold in Tables 6.3.1.10-5 to -6.

For dietary risk estimations and calculation of the MRL residues from 12 supervised residue trials conducted according to the critical GAPs in the greenhouse and in the field in southern Europe are evaluated. The total residue of BYI08330 in tomato fruit ranged between **0.11 and 0.72 mg/kg**. The **STMR** was determined to be **0.29 mg/kg**.

The total residue of BYI08330 in tomato fruit is mainly composed of the parent compound and the enol metabolite. BYI08330-ketohydroxy and -enol-glucoside were minor metabolites. BYI08330-monohydroxy was not found.

Table 6.3.1.10-2: Recovery results of BYI08330 and its metabolites in tomato fruit

Study No. / GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2139/04 RA-2140/04 RA-2130/04 GLP yes 2004	Tomato	Fruit	BYI08330	30	0.01	2.0	75	102	90	7.8
			BYI08330 - enol	30	0.01	2.0	71	112	93	12.5
			BYI08330 - ketohydroxy	30	0.01	2.0	81	110	93	6.6
			BYI08330 enol-glucoside	30	0.01	2.0	84	115	97	7.4
			BYI08330 mono-hydroxy	30	0.01	2.0	79	106	93	7.1

RSD = relative standard deviation

Table 6.3.1.10-3: Use pattern of BYI08330 OD 100 in residue trials with tomato conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m*)	PHI days
RA-2139/04 R 2004 0823 4 0823-04 Italy I-[redacted] (Puglia) 2004	Tomato cherry	OD 100	4	7	0.072	0.1440	0.0090	800	3
RA-2139/04 R 2004 0824 2 0824-04 Italy I-[redacted] (Puglia) 2004	Tomato cherry	OD 100	4	7	0.072	0.1440	0.0090	800	3
RA-2139/04 R 2004 0825 0 0825-04 Spain E-[redacted] (Andalucia) 2004	Tomato cherry	OD 100	4	7	0.072	0.1440 - 0.1656	0.0090	800	3
RA-2139/04 R 2004 0826 9 0826-04 Spain E-[redacted] (Andalucia) 2004	Tomato cherry	OD 100	4	7	0.072	0.1440 - 0.1584	0.0090	800	3

a.s. = Active Substance, * Rate per ha and m leafy surface

Table 6.3.1.10-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application					Water rate (L/ha x m*)	PHI days
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL		
RA-2140/04 R 2004 0827 7 0827-04 Greece GR-[redacted] (Northern Greece - Macedonia) 2004	Tomato	OD 100	4	7	0.072	0.1080 - 0.1188	0.00960	750	3
RA-2140/04 R 2004 0828 5 0828-04 Spain E-[redacted] (Andalucia) 2004	Tomato	OD 100	4	7	0.072	0.1152	0.00720	1000	3
RA-2140/04 R 2004 0829 3 0829-04 Spain E-[redacted] (Catalunia) 2004	Tomato	OD 100	4	7	0.072	0.1340 - 0.1440	0.00960 - 0.00961	698 - 750	3
RA-2140/04 R 2004 0830 7 0830-04 Italy I-[redacted] (RG) (Sicilia) 2004	Tomato	OD 100	4	7	0.072	0.1044 - 0.1440	0.00720 - 0.00960	750 - 1000	3

a.s. = Active Substance, * Rate per ha and m leafy surface

Table 6.3.1.10-4: Use pattern of BYI08330 OD100 in residue trials with tomato conducted in the field in southern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2130/04 R 2004 0849 8 0849-04 Spain E-[redacted] (Cataluña)	Tomato	100 OD	4	9/6/6	0.0720	0.00960	7
RA-2130/04 R 2004 0850 1 0850-04 Portugal P-[redacted]	Tomato	100 OD	4	8/6/7	0.0720	0.00960	7
RA-2130/04 R 2004 0852 8 0852-04 Greece GR-[redacted] (Central Greece)	Tomato	100 OD	4	7/8	0.0720	0.00960	7
RA-2130/04 R 2004 0853 6 0853-04 Italy I-[redacted] (Fg) (Puglia)	Tomato	100 OD	4	7	0.0720	0.00960	7

a.s. = Active Substance

Table 6.3.1.10-5: Results from residue trials with BYI08330 OD100 in tomato conducted in the greenhouse in Europe

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Italy RA-2139/04 R 2004 0823/4	Tomato cherry fruit	0*	0.12	0.20	0.065	<0.012	0.080	0.46
		0	0.25	0.21	0.056	<0.012	0.084	0.60
		1	0.11	0.19	0.040	<0.012	0.082	0.42
		3	0.09	0.18	0.039	<0.012	0.096	0.41
		5	0.11	0.17	0.050	<0.012	0.10	0.43
		7	0.05	0.16	0.032	<0.012	0.11	0.35
Italy RA-2139/04 R 2004 0824/2	Tomato cherry fruit	0*	0.13	0.16	0.019	<0.012	0.065	0.36
		0	0.19	0.14	0.019	<0.012	0.059	0.41
		1	0.10	0.17	0.014	<0.012	0.062	0.34
		3	0.04	0.17	0.012	<0.012	0.061	0.28
		5	0.16	0.16	0.022	<0.012	0.082	0.43
		7	0.14	0.15	0.020	<0.012	0.094	0.41
Spain RA-2139/04 R 2004 0825/0	Tomato cherry fruit	0*	0.18	0.22	0.013	<0.012	0.15	0.56
		0	0.39	0.27	0.017	<0.012	0.17	0.85
		1	0.24	0.23	0.016	<0.012	0.15	0.64
		3	0.22	0.25	0.022	<0.012	0.17	0.66
		4	0.25	0.24	0.021	<0.012	0.18	0.69
		8	0.25	0.21	0.024	<0.012	0.24	0.72
Spain RA-2139/04 R 2004 0826/9	Tomato cherry fruit	0*	0.23	0.22	0.044	<0.012	0.12	0.60
		0	0.27	0.21	0.037	<0.012	0.11	0.62
		1	0.22	0.20	0.033	<0.012	0.12	0.57
		3	0.25	0.23	0.045	<0.012	0.14	0.66
		4	0.16	0.23	0.036	<0.012	0.14	0.57
		8	0.16	0.21	0.034	<0.012	0.19	0.60
Greece RA-2140/04 R 2004 0827/7	Tomato fruit	0*	0.04	0.11	0.012	<0.012	0.026	0.19
		0	0.05	0.11	0.012	<0.012	0.019	0.19
		1	0.04	0.19	0.012	<0.012	0.021	0.26
		3	0.06	0.39	0.021	<0.012	0.031	0.50
		5	0.03	0.23	0.012	<0.012	0.028	0.29
		8	0.03	0.18	0.012	<0.012	0.030	0.26
Spain RA-2140/04 R 2004 0828/5	Tomato fruit	0*	0.09	0.077	0.012	<0.012	0.039	0.22
		0	0.10	0.078	0.012	<0.012	0.040	0.23
		1	0.10	0.093	0.012	<0.012	0.042	0.24
		3	0.09	0.10	0.012	<0.012	0.043	0.25
		6	0.04	0.081	0.012	<0.012	0.048	0.18
		7	0.09	0.099	0.012	<0.012	0.078	0.28
Spain RA-2140/04 R 2004 0829/3	Tomato fruit	0*	0.11	0.093	0.012	<0.012	0.034	0.25
		0	0.13	0.073	0.012	<0.012	0.034	0.25
		1	0.14	0.075	0.012	<0.012	0.034	0.26
		3	0.15	0.11	0.012	<0.012	0.052	0.32
		4	0.15	0.079	0.012	<0.012	0.039	0.28
		7	0.14	0.11	0.012	<0.012	0.062	0.32

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Table 6.3.1.10-5 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Italy RA-2140/04 R 2004 0830/7	Tomato fruit	0*	0.03	0.070	0.012	<0.012	0.020	0.13
		0	0.06	0.073	0.012	<0.012	0.021	0.17
		1	0.06	0.079	0.012	<0.012	0.021	0.17
		3	0.07	0.093	0.012	<0.012	0.028	0.20
		5	0.03	0.084	0.012	<0.012	0.035	0.17
		7	0.03	0.095	0.012	<0.012	0.040	0.18

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.10-6: Results from residue trials with BYI08330 OD100 in tomato conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330 BYI08330 enol BYI08330 keto-hydroxy BYI08330 mono-hydroxy BYI08330 enol-glucoside Total residue calc.					
Spain RA-2130/04 R 2004 0849/8	Tomato fruit	0	0.04	0.045	0.012	<0.012	0.018	0.11
		3	0.02	0.058	<0.012	<0.012	0.023	0.10
		6	0.04	0.088	0.012	<0.012	0.036	0.18
		7	0.03	0.092	0.012	<0.012	0.041	0.18
		13	0.01	0.075	<0.012	<0.012	0.041	0.13
Portugal RA-2130/04 R 2004 0850/1	Tomato fruit	0	0.06	0.056	0.012	<0.012	0.018	0.15
		3	0.04	0.061	0.012	<0.012	0.019	0.13
		5	0.03	0.057	0.012	<0.012	0.026	0.13
		7	0.02	0.059	0.012	<0.012	0.026	0.12
		14	0.01	0.048	<0.012	<0.012	0.030	0.092
Greece RA-2130/04 R 2004 0852/8	Tomato fruit	0*	0.01	0.035	0.012	<0.012	0.017	0.078
		0	0.05	0.057	0.012	<0.012	0.024	0.14
		1	0.04	0.057	0.012	<0.012	0.024	0.14
		3	0.02	0.038	0.012	<0.012	0.023	0.097
		5	0.02	0.045	0.012	<0.012	0.031	0.11
		7	0.02	0.041	0.012	<0.012	0.026	0.095
		14	0.01	0.034	0.012	<0.012	0.038	0.095
Italy RA-2130/04 R 2004 0853/6	Tomato fruit	0*	0.01	0.13	0.012	<0.012	0.012	0.17
		0	0.03	0.13	0.012	<0.012	0.013	0.19
		1	0.03	0.12	0.012	<0.012	0.015	0.17
		3	0.03	0.13	0.012	<0.012	0.025	0.20
		5	0.03	0.11	0.012	<0.012	0.023	0.17
		7	0.04	0.065	0.012	<0.012	0.022	0.14
		14	0.04	0.074	0.012	<0.012	0.042	0.16

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.11 Peppers

BYI08330 is to be registered for the use in peppers against aphids, scales and mites. The critical European GAPs for the use of BYI08330 in pepper in the greenhouse and in the field in southern Europe (EUS) are summarized in Table 6.3.1.11-1

Table 6.3.1.11-1: Critical European GAP for spray application of BYI08330 to pepper

Crop	Region	Use rate of the a.s.	Water volume	No	Spray interval (days)	PHI (days)
Pepper, sweet	Greenhouse	72 g/ha x m* max. 144 g/ha	750-1000 L/ha x m*	4	7	3
Pepper, sweet	EUS	72 g/ha	750 L/ha	4	7	3

0.. rate per ha and m of leafy surface

Report:	**KIIA 6.3.11/01, [redacted]; [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on pepper after spraying of BYI08330 (100 OD) in the greenhouse in the Netherlands, Germany, southern France, Portugal, Italy and Spain**
Report No & Document No	**RA-2026/04, including trials no. R 2004 0113/2, R 2004 0114/0, R 2004 0115/9, R 2004 0116/7, R 2004 0117/5, R 2004 0118/3, R 2004 0119/1, R 2004 0120/5 M-259820-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.11/02, [redacted]; [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on pepper after spraying of BYI08330 (100 OD) in the field in Spain, southern France, Italy and Portugal**
Report No & Document No	**RA-2027/04, including trials no. R 2004 0121/3, R 2004 0122/1, R 2004 0124/8, R 2004 0125/6 M-260011-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.11/03, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on pepper after spraying of BYI08330 (240 SC) in the greenhouse in southern France, Germany, Italy and Portugal**
Report No & Document No	**RA-2134/04, including trials no. R 2004 0791/2, R 2004 0792/0, R 2004 0793/9, R 2004 0794/7** **M-263426-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.11/04, [redacted]; [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on pepper after spraying of BYI08330 (150 OD) in the field in Italy and Portugal**
Report No & Document No	**RA-2039/05, including trials no. R 2005 0200/1, R 2005 0202/8** **M-266615-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.11/05, [redacted]; [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on pepper after spraying of BYI08330 (048 SC) in the field in Italy and Portugal**
Report No & Document No	**RA-2046/05, including trials no. R 2005 0707/0, R 2005 0708/** **M-266682-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 20 supervised residue trials were conducted in pepper in 2004 and 2005 using the OD 100, OD 150, SC 240 + 0.2% RME EW 500 and the SC 048 formulation of BYI08330. An overview on the use pattern of the supervised residue trials conducted with different formulations of BYI08330 is given in Table 6.3.1.11-2

Table 6.3.1.11-2: Overview on European residue trials with BYI08330 in pepper

Location	Formulation	No. of trials	Year	Use rate	Water volume	PHI (d)
Greenhouse	OD 100	8	2004	72 g as/ha x m	750-1000 L/ha x m	3
Greenhouse	SC 240	4	2004	72 g as/ha x m	750-1000 L/ha x m	3
Field EUS	OD 100	4	2004	72 g as/ha	750 L/ha	3
Field EUS	OD 150	2	2005	72 g as/ha	750 L/ha	3
Field EUS	SC 048	2	2005	72 g as/ha	750 L/ha	3

In the greenhouse trials the use rate of BYI08330 iss adapted to the height of the leafy surface of the peeper plants. The plant height at the last application was between 0.7 and 1.9 m (see Tables 6.3.1.11-4 and 6.3.1.11-5). Hence, the application rate per ha ranged between 0.068 and 0.137 kg as. The field data of the individual residue trials are summarized in Tables 6.3.1.11-4 to 6.3.1.11-6. The results from the residue trials are given in Tables 6.3.1.11-7 and 6.3.1.11-8 and in more detail in the respective Tier I summaries. Generally residue data at day 3 after the last application were evaluated according to the PHI of the critical GAP. If the total residue of BYI08330 at later intervals exceeded the residue of day 3, the higher value was evaluated to cover the worst case residue. The residue data used for evaluation are marked with bold numbers in Tables 6.3.1.11-7 and 6.3.1.11-8.

Residues in pepper fruit were analysed according to method 00857 (see IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarized in Tables 6.3.1.11-3.

Findings:

To determine the influence of different formulations (SC and OD) on the residue behaviour of BYI08330 residues in pepper grown in the greenhouse and treated with BYI08330 OD 100 or SC 240 + RME were compared. Moreover, residues from field trials conducted with the SC 048 formulation were compared to residues in pepper treated with the OD 100 and 150 formulations.

The total residue of BYI08330 in pepper fruit sampled 3 days after four applications of BYI08330 OD100 in the greenhouse ranged from 0.25 to 0.58 mg/kg. In four greenhouse trials conducted with the SC240 formulation + 0.2 % RME EW500 a total residue of 0.27 to 0.56 mg/kg was determined corresponding well to the residues obtained with the OD formulation. In pepper fruit from 6 field trials sampled 3 days after four applications of BYI08330 OD100 or OD150 total residues were between 0.13 and 0.81 mg/kg. The total residue from two field trials conducted with the SC048 formulation of BYI08330 was 0.1 and 0.16 mg/kg. These values correspond well with the total residue in pepper after application of the OD formulations.

Results obtained with different formulations show that no difference can be detected in residues of BYI08330 in pepper after the application of the different formulations of BYI08330 (OD100, OD150, SC 240, SC048). Moreover results show that there is no difference in residues, if pepper is grown in the field or in the greenhouse. The application rate for use of BYI08330 in the greenhouse is adapted to the height of the plants (72 g as/ha x m). Results from altogether 12 greenhouse trials in peppers where BYI08330 was applied at the rate of 72 g as/ha to plants with different heights (0.7 – 1.9 m) clearly show, that there is no correlation between the amount of BYI08330 applied per ha (i.e. the height of the plants) and the height of the residues.

Based on all these observations the results from all 20 residue trials conducted in pepper were evaluated for estimation of the dietary risk and for calculation of the MRL. The total residue of BYI08330 in pepper fruit ranged between **0.1 and 0.81 mg/kg (STMR 0.34 mg/kg)**.

Main component of the total residue of BYI08330 in pepper is BYI08330-enol. The parent compound, BYI08330-ketohydroxy and BYI08330-enol-glucoside are minor components. BYI08330-monohydroxy was not detected in pepper fruit or in traces, only.

Table 6.3.1.11-3: Recovery results for BYI08330 and its metabolites in pepper fruit

Study GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2026/04 RA-2027/04 RA-2134/04 GLP yes 2004	Pepper, sweet	Fruit	BYI08330	24	0.01	1.0	70	109	96	8.9
			BYI08330 – enol	24	0.01	1.0	60	127	96	15.4
			BYI08330 – ketohydroxy	24	0.01	1.0	70	116	99	9.9
			BYI08330 enol-glucoside	24	0.01	1.0	69	113	97	8.9
			BYI08330 mono-hydroxy	24	0.01	1.0	69	113	98	8.2
RA-2039/05 RA-2046/05 GLP yes 2005	Pepper, sweet	Fruit	BYI08330	8	0.01	1.0	87	99	94	3.8
			BYI08330 – enol	8	0.01	1.0	87	100	95	4.9
			BYI08330 – ketohydroxy	8	0.01	1.0	88	105	96	6.0
			BYI08330 enol-glucoside	8	0.01	1.0	88	96	93	2.9
			BYI08330 mono-hydroxy	8	0.01	1.0	86	96	91	3.5

RSD = relative standard deviation

Table 6.3.1.11-4: Use pattern of BYI08330 OD 100 in residue trials with pepper conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application					Water rate (L/ha x m*)	Plant height ** (m)
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL		
RA-2026/04 R 2004 0113 2 0113-04 Netherlands NL-[redacted] (Noord-Holland) 2004	Pepper, sweet	100 OD	4	7	0.072	0.1224-0.1368	0.00720	1000	1.9
RA-2026/04 R 2004 0114 0 0114-04 Germany D-[redacted] 2004	Pepper, sweet	100 OD	4	7	0.072	0.0432-0.0576	0.00960	750	1.0
RA-2026/04 R 2004 0115 9 0115-04 France F-[redacted] (Provence-Cote D'azur) 2004	Pepper, sweet	100 OD	4	6/7	0.072	0.0504-0.0684	0.00670-0.00720	1000	0.7
RA-2026/04 R 2004 0116 7 0116-04 Portugal P-[redacted] 2004	Pepper, sweet	100 OD	4	7	0.072	0.0504-0.0720	0.00960	750	0.7

a.s. = Active Substance, * Rate per ha and m leafy surface, **height of the leafy surface at the last application

Table 6.3.1.11-4 continued

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m*)	Plant height ** (m)
RA-2026/04 R 2004 0117 5 0117-04 Italy I-[redacted](Puglia) 2004	Pepper, sweet	100 OD	4	7	0.098	0.1080	0.00960	1000	1.0-1.1
RA-2026/04 R 2004 0118 3 0118-04 Germany D-[redacted] 2004	Pepper, sweet	100 OD	4	7	0.072	0.0432-0.0576	0.00960	750	0.8
RA-2026/04 R 2004 0119 1 0119-04 France F-[redacted] (Provence-Cote D'azur) 2004	Pepper, sweet	100 OD	4	7	0.072	0.0504-0.0612	0.00720	1000	0.8-0.9
RA-2026/04 R 2004 0120 5 0120-04 Spain E-[redacted](Cataluña) 2004	Pepper, sweet	100 OD	4	7	0.072	0.0936-0.1152	0.00720	1000	1.5-1.7

a.s. = Active Substance, * Rate per ha and m leafy surface, **height of the leafy surface at the last application

Table 6.3.1.11-5: Use pattern of BYI08330 SC 240 in residue trials with pepper conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m*)	Plant height **(m)
RA-2134/04 R 2004 0791 2 0791-04 France F-[redacted] (Provence-Cote D'azur) 2004	Pepper, sweet	SC 240	4	6/7	0.072	0.0540 – 0.0684	0.0072	1000	1.0
RA-2134/04 R 2004 0792 0 0792-04 Germany D-[redacted] 2004	Pepper, sweet	SC 240	4	7	0.072	0.0432 0.0576	0.0096	750	0.8
RA-2134/04 R 2004 0793 9 0793-04 Italy I-[redacted] (Puglia) 2004	Pepper, sweet	SC 240	4	7	0.072	0.1080	0.0096	750	1.5***
RA-2134/04 R 2004 0794 7 0794-04 Portugal P-[redacted] 2004	Pepper, sweet	SC 240	4	7	0.072	0.0504 – 0.0720	0.0096	750	1.0

a.s. = Active Substance, * Rate per ha and m leafy surface, **height of the leafy surface at the last application
***: A vertical boom sprayer with 3 nozzles and a working width of 1.5 m was used for the 4 applications, while the actual height of the leafy surface amounted to only 1.0 to 1.1 m. It was assumed by the PI Field that only the requested amount of spray liquid hit the plants and that the spray liquid emitted above the leafy surface was not applied to the treated plot.

Table 6.3.1.11-6: Use pattern of BYI08330 OD 100, OD 150 and 048 SC in residue trials with pepper conducted in the field in southern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2027/04 R 2004 0121 3 0121-04 Spain E-[redacted] (Comunidad Valenciana) 2004	Pepper, sweet	100 OD	4	7/6	0.0720	0.00900-0.01200	3
RA-2027/04 R 2004 0122 1 0122-04 France F-[redacted] (Midi-Pyrenees) 2004	Pepper, sweet	100 OD	4	7	0.0720-0.0789	0.00960	3
RA-2027/04 R 2004 0124 8 0124-04 Italy I-[redacted] (Puglia) 2004	Pepper, sweet	100 OD	4	7	0.0720	0.00720	3
RA-2027/04 R 2004 0125 6 0125-04 Portugal P-[redacted] 2004	Pepper, sweet	100 OD	4	7	0.0720-00761	0.00960	3

a.s. = Active Substance

Table 6.3.1.11-6 continued

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2039/05 R 2005 0200 1 0200-05 Italy I-[redacted] (Puglia) 2005	Pepper, sweet	OD 150	4	7	0.0720	0.00900	3
RA-2039/05 R 2005 0202 8 0202-05 Portugal P-[redacted] 2005	Pepper, sweet	OD 150	4	7	0.0720	0.01440	3
RA-2046/05 R 2005 0707 0 0707-05 Italy I-[redacted] di Puglia [redacted] (Puglia) 2005	Pepper, sweet	48 SC	4	7	0.0720	0.00902	3
RA-2046/05 R 2005 0708 9 0708-05 Portugal P-2140-427 Caniceira – Vale de Cavalos [redacted] 2005	Pepper, sweet	48 SC	4		0.0720	0.01440	3

a.s. = Active Substance

Table 6.3.1.11-7: Results from residue trials with BYI08330 OD100 in pepper conducted in the greenhouse in Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Netherlands RA-2026/04 R 2004 0113 2	Pepper, sweet fruit	0*	0.05	0.35	0.021	<0.012	0.016	0.43
		0	0.10	0.38	0.021	<0.012	0.017	0.52
		1	0.07	0.40	0.024	<0.012	0.018	0.51
		3	0.08	0.41	0.024	<0.012	0.021	**0.54**
		5	0.05	0.39	0.022	<0.012	0.023	0.49
		7	0.04	0.46	0.027	<0.012	0.026	0.55
Germany RA-2026/04 R 2004 0114 0	Pepper, sweet fruit	0*	0.06	0.39	0.021	<0.012	0.054	0.52
		0	0.11	0.36	0.021	<0.012	0.044	0.53
		1	0.09	0.39	0.021	<0.012	0.053	0.55
		3	0.07	0.38	0.022	<0.012	0.048	0.52
		4	0.07	0.40	0.025	<0.012	0.053	0.54
		7	0.04	0.46	0.021	<0.012	0.048	**0.58**
France RA-2026/04 R 2004 0115 9	Pepper, sweet fruit	0*	0.03	0.25	0.024	<0.012	0.019	0.32
		0	0.07	0.29	0.041	<0.012	0.022	0.42
		1	0.06	0.28	0.028	<0.012	0.020	0.39
		3	0.05	0.31	0.027	<0.012	0.022	**0.41**
		5	0.04	0.32	0.029	<0.012	0.025	0.41
		7	0.04	0.29	0.025	<0.012	0.025	0.38
Portugal RA-2026/04 R 2004 0116 7	Pepper, sweet fruit	0*	0.03	0.29	0.027	<0.012	0.013	0.36
		0	0.06	0.28	0.030	<0.012	0.013	0.37
		1	0.03	0.25	0.026	<0.012	0.014	0.33
		3	0.03	0.25	0.019	<0.012	0.014	0.32
		6	0.04	0.26	0.033	<0.012	0.016	**0.33**
		7	0.02	0.25	0.019	<0.012	0.018	0.31
Italy RA-2026/04 R 2004 0117 5	Pepper, sweet fruit	0*	0.08	0.23	0.015	<0.012	0.019	0.34
		0	0.14	0.25	0.017	<0.012	0.023	0.43
		1	0.08	0.25	0.015	<0.012	0.020	0.36
		3	0.12	0.31	0.021	<0.012	0.027	0.47
		5	0.08	0.31	0.019	<0.012	0.030	0.44
		7	0.13	0.34	0.025	<0.012	0.039	**0.54**
Germany RA-2026/04 R 2004 0118 3	Pepper, sweet fruit	0*	0.05	0.32	0.018	<0.012	0.052	0.44
		0	0.11	0.30	0.016	<0.012	0.036	0.46
		1	0.08	0.33	0.019	<0.012	0.040	0.47
		3	0.07	0.26	0.015	<0.012	0.039	0.38
		4	0.05	0.30	0.019	<0.012	0.046	0.42
		7	0.05	0.35	0.018	<0.012	0.050	**0.46**
France RA-2026/04 R 2004 0119 1	Pepper, sweet fruit	0*	0.02	0.17	0.014	<0.012	0.010	0.21
		0	0.03	0.18	0.017	<0.012	0.010	0.24
		1	0.03	0.19	0.017	<0.012	0.010	0.25
		3	0.03	0.20	0.016	<0.012	0.010	**0.25**
		5	0.01	0.20	0.017	<0.012	0.013	0.24
		7	0.02	0.18	0.015	<0.012	0.013	0.23

Table 6.3.1.11-7 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2026/04 R 2004 0120 5	Pepper, sweet fruit	0*	0.03	0.37	0.018	<0.012	0.052	0.46
		0	0.05	0.38	0.019	<0.012	0.034	0.48
		1	0.06	0.42	0.020	<0.012	0.029	0.53
		3	0.03	0.38	0.019	<0.012	0.036	0.46
		4	0.03	0.42	0.020	<0.012	0.027	0.50
		7	0.03	0.43	0.020	<0.012	0.044	**0.53**

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.11-8: Results from residue trials with BYI08330 SC240 in pepper conducted in the greenhouse in Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2134/04 R 2004 0791 2	Pepper, sweet fruit	0*	0.03	0.28	0.029	<0.012	0.022	0.36
		0	0.06	0.30	0.028	<0.012	0.023	0.42
		1	0.06	0.31	0.032	<0.012	0.021	0.43
		3	0.06	0.36	0.028	<0.012	0.026	**0.46**
		5	0.05	0.32	0.028	<0.012	0.028	0.42
		7	0.04	0.29	0.029	<0.012	0.029	0.39
Germany RA-2134/04 R 2004 0792 0	Pepper, sweet fruit	0*	0.09	0.21	0.013	<0.012	0.026	0.34
		0	0.18	0.23	0.015	<0.012	0.027	0.45
		1	0.13	0.28	0.016	<0.012	0.033	0.46
		3	0.12	0.26	0.016	<0.012	0.028	0.44
		4	0.12	0.27	0.017	<0.012	0.031	0.44
		7	0.12	0.37	0.021	<0.012	0.051	**0.56**
Italy RA-2134/04 R 2004 0793 9	Pepper, sweet fruit	0*	0.08	0.10	0.012	<0.012	0.008	0.20
		0	0.16	0.11	0.012	<0.012	0.008	0.28
		1	0.12	0.11	0.012	<0.012	0.009	0.25
		3	0.10	0.13	0.012	<0.012	0.009	0.25
		5	0.06	0.13	0.012	<0.012	0.010	0.21
		7	0.12	0.15	0.013	<0.012	0.016	**0.30**
Portugal RA-2134/04 R 2004 0794 7	Pepper, sweet fruit	0*	0.04	0.20	0.013	<0.012	0.010	0.26
		0	0.09	0.20	0.023	<0.012	0.012	0.32
		1	0.05	0.21	0.015	<0.012	0.011	0.28
		3	0.04	0.21	0.014	<0.012	0.013	**0.27**
		6	0.02	0.18	0.012	<0.012	0.013	0.23
		7	0.03	0.19	0.012	<0.012	0.017	0.25

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.11-9: Results from residue trials with BYI08330 OD100 (Study No. RA-2027/04), OD150 (Study No. 2039/05) and SC 048 (Study No. RA-2046/05) in pepper conducted in the field in southern Europe

Country Study No. Trial No. Formulation	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2027/04 R 2004 0121 3 OD 100	Pepper, sweet fruit	0* 0 1 **3** 6 7	0.13 0.28 0.20 0.14 0.08 0.10	0.51 0.51 0.55 0.54 0.51 0.48	0.034 0.039 0.057 0.062 0.047 0.053	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.051 0.043 0.050 0.063 0.053 0.066	0.73 0.87 0.85 **0.81** 0.69 0.70
France RA-2027/04 R 2004 0122 1 OD 100	Pepper, sweet fruit	0* 0 1 **3** 5 7	<0.01 0.01 0.01 0.01 <0.01 <0.01	0.19 0.19 0.15 0.21 0.18 0.21	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.016 0.014 0.013 0.019 0.017 0.022	0.22 0.22 0.19 **0.25** 0.21 0.24
Italy RA-2027/04 R 2004 0124 8 OD 100	Pepper, sweet fruit	0* 0 1 **3** 5 7	<0.01 0.01 0.01 0.01 <0.01 <0.01	0.11 0.12 0.13 0.13 0.16 0.12	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.010 0.009 0.009 0.010 0.012 0.011	0.13 0.15 0.17 0.16 **0.18** 0.15
Portugal RA-2027/04 R 2004 0125 6 OD 100	Pepper, sweet fruit	0* 0 1 **3** 5 7	0.02 0.04 0.04 0.02 0.02 0.02	0.23 0.25 0.24 0.25 0.29 0.29	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.015 0.014 0.013 0.015 0.018 0.019	0.28 0.31 0.30 0.29 **0.34** 0.34
Italy RA-2039/05 R 2005 0200 1 OD 150	Pepper, sweet fruit	0 0 1 **3** 5 7	0.01 0.03 0.04 0.02 0.01 0.01	0.058 0.048 0.049 0.052 0.067 0.092	0.012 0.012 0.012 0.012 0.012 0.013	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.010 0.012	0.093 0.10 0.11 0.088 0.10 **0.13**
Portugal RA-2039/05 R 2005 0202 8 OD 150	Pepper, sweet fruit	0 0 1 **3** 5 7	0.01 0.03 0.01 0.01 0.01 0.01	0.13 0.15 0.13 0.12 0.13 0.098	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.16 0.20 0.17 0.15 **0.16** 0.13
Italy RA-2046/05 R 2005 0707 0 SC 048	Pepper, sweet fruit	0 0 1 **3** 5 7	0.01 0.04 0.03 0.02 0.01 0.01	0.043 0.050 0.044 0.053 0.047 0.069	0.012 0.012 0.012 0.014 0.012 0.013	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.008 0.009	0.075 0.11 0.096 0.092 0.079 **0.10**

Portugal	Pepper,	0	0.01	0.089	0.012	<0.012	0.008	0.12
RA-2046/05	sweet	0	0.04	0.11	0.012	<0.012	0.008	0.17
R 2005 0708 9		1	0.02	0.096	0.012	<0.012	0.008	0.14
	fruit	**3**	0.02	0.12	0.012	<0.012	0.008	**0.16**
		5	0.02	0.11	0.012	<0.012	0.008	0.15
SC 048		7	0.01	0.11	0.012	<0.012	0.008	0.14

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.12 Cucumbers

BYI08330 is to be registered for the use in cucumber against aphids, whiteflies and mites. The critical European GAPs for the greenhouse and field uses of BYI08330 in cucumber are summarised in Table 6.3.1.12-1.

Table 6.3.1.12-1: Critical European GAP for spray application of BYI08330 to cucumber

Crop	Region	Use rate (g as/ha x m)* (g as/ha)	Water volume (L/ha x m)* (L/ha)	No	Spray interval (days)	PHI (days)
Cucumber	Greenhouse	72 g/ha x m*	750-1500 L/ha x m*	4	7	3
Cucumber	EUS	72 g/ha	750 L/ha	4	7	3

* rate per ha and m of leafy surface

Report: KIIA 6.3.1.12/01, [redacted]; 2005
Title: Determination of the residues of BYI08330 in/on cucumber after spraying of BYI08330 (100 OD) in the greenhouse in Germany, Italy, Spain and Greece
Report No & Document No: RA-2030/04, including trials no. R 2004 0130/2, R 2004 0131/0, R 2004 0132/9, R 2004 0133/7, R 2004 0134/5, R 2004 0135/3, R 2004 0136/1, R 2004 0138/8 M-259128-01-1
Guidelines: EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed
GLP: yes

Report: KIIA 6.3.1.12/02, [redacted]; 2005
Title: Determination of the residues of BYI08330 in/on cucumber after spraying of BYI08330 (100 OD) in the field in Spain and Italy
Report No & Document No: RA-2028/04, including trials no. R 2004 0126/4, R 2004 0128/0, R 2004 0129/9 M-259667-01-1
Guidelines: EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed
GLP: Yes

Report: KIIA 6.3.1.12/03, [redacted]; 2005
Title: Determination of the residues of BYI08330 in/on cucumber after spraying of BYI08330 (150 OD) in the field in Spain and Italy
Report No & Document No: RA-2043/05, including trials no. R 2005 0239/7, R 2005 0240/0, R 2005 0241/9, R 2005 0715/1 M-268869-01-1

Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 15 supervised residue trials with BYI08330 in cucumber have been performed in the greenhouse (8 trials) in 2004 and in the field in southern Europe (7 trials) in 2004 and 2005. Applications were conducted with the OD100 and the OD150 formulation of BYI08330 according to the critical European GAP. In the greenhouse trials the use rate was adapted to the height of the plants. As the plants were 2 m high at the last application (1.8 m in trial R 2004 0133/7 and 1.5 m in trials R 2004 0138/8) the use rate of 72 g as/ha resulted in a rate per ha of 108 to 144 g. The use patterns of the individual residue trials are summarized in Tables 6.3.1.12-3 and 6.3.1.12-4. The results from the residue trials are given in Tables 6.3.1.12-5 and 6.3.1.12-6 and in more detail in the respective Tier I summaries.

Residues in cucumber fruit were analysed according to method 00857 (see IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Tables 6.2.12-2.

Findings:

The total residue in cucumber from 8 greenhouse trials and from 6 field trials collected 3 days after the last application was below the LOQ of 0.055 mg/kg. In cucumber from one field trial (R 2005 0715/1) the total residue of BYI08330 was 0.1 mg/kg. This trial was conducted in November 2005. Daily mean temperatures were 5-16°C. Fruits were small (average weight 111-172 g) compared to cucumbers from the other trials conducted from June until August 2005: R 2005 0239/7 (411-528 g), R 2005 0240/0 (227-318 g) and R 2005 0241/9 (236-270 g). Hence, the higher residues in cucumber from trial R 2005 0715/1 can be explained by lower temperatures slowing down metabolic processes and by the smaller size of the cucumber accompanied with a higher surface/volume ratio leading to higher residues expressed in mg/kg. This value was not excluded as an outlier, because growing of cucumber in October/November is according to agricultural practice in southern European countries although main growing season is summer.

In summary, the total residue of BYI08330 in cucumber from greenhouse and field trials collected 3 days after the last application was found to be generally **below the LOQ of 0.055 mg/kg** and could reach **0.1 mg/kg** in cucumber. The **STMR is <0.055 mg/kg**.

The main component of the total residue was parent compound. In addition, traces of enol or ketohydroxy were found. BYI08330-monohydroxy and enol-glucoside were not detected.

Table 6.3.1.12-2: Recovery results for BYI08330 and its metabolites in cucumber fruit

Study Trial No. Trial SubID	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2030/04 RA-2028/04 all trial no. GLP yes 2004	Cucumber	Fruit	BYI08330	24	0.010	1.000	78	108	96	8.0
			BYI08330 - enol	24	0.010	1.000	81	97	88	4.8
			BYI08330 - ketohydroxy	24	0.010	1.000	79	112	92	7.2
			BYI08330 enol-glucoside	24	0.010	1.000	79	107	91	7.1
			BYI08330 mono-hydroxy	24	0.010	1.000	79	109	92	7.9
RA-2043/05 GLP yes 2005	Cucumber	Fruit	BYI08330	5	0.01	0.1	83	92	89	4.2
			BYI08330 - enol	5	0.01	0.1	83	89	87	2.9
			BYI08330 - ketohydroxy	5	0.01	0.1	84	92	88	3.3
			BYI08330 enol-glucoside	5	0.01	0.1	81	91	86	4.9
			BYI08330 mono-hydroxy	5	0.01	0.1	86	91	88	2.4

RSD = relative standard deviation

Table 6.3.1.12-3: Use pattern of BYI08330 OD 100 in residue trials with cucumbers conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application					Water rate (L/ha x m*)	PHI days
			No.	Spray interval (days)	kg a.s./ ha x m *	kg a.s. / ha	kg a.s./hL		
RA-2030/04 R 2004 0130 2 0130-04 Germany D-[redacted] 2004	Cucumber	100 OD	4	7	0.072	0.1008-0.1440	0.00960	750	3
RA-2030/04 R 2004 0131 0 0131-04 Italy I-[redacted] (RG) (Sicilia) 2004	Cucumber	100 OD	4	7	0.072	0.1440	0.00960	750	3
RA-2030/04 R 2004 0132 9 0132-04 Spain E-[redacted] (Cataluña) 2004	Cucumber	100 OD	4	7	0.072	0.1152-0.1440	0.00960	750	3
RA-2030/04 R 2004 0133 7 0133-04 Greece GR-[redacted] (Northern Greece - Macedonia) 2004	Cucumber	100 OD	4	7	0.072	0.0360-0.1296	0.00960	750	3

a.s. = Active Substance, * Rate per ha and m leafy surface

Table 6.3.1.12-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m*	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m *)	PHI days
RA-2030/04 R 2004 0134 5 0134-04 Germany D-[redacted] 2004	Cucumber	100 OD	4	7	0.072	0.1152-0.1440	0.00960	750	3
RA-2030/04 R 2004 0135 3 0135-04 Italy I-[redacted] (Puglia) 2004	Cucumber	100 OD	4	7	0.072	0.1440	0.00960	750	3
RA-2030/04 R 2004 0136 1 0136-04 Spain E-[redacted] (Almeira) (Andalucia) 2004	Cucumber	100 OD	4	7	0.072	0.1224-0.1440	0.00960	750	3
RA-2030/04 R 2004 0138 8 0138-04 Greece GR-[redacted] (Northern Greece - Macedonia) 2004	Cucumber	100 OD	4	7	0.072	0.0360-0.1080	0.00960	750	3

a.s. = Active Substance, * Rate per ha and m leafy surface

Table 6.3.1.12-4: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with cucumbers conducted in the field in southern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2028/04 R 2004 0126 4 0126-04 Spain E-[redacted] (Andalucia) 2004	Cucumber	100 OD	4	7/6/7	0.0720	0.01200	3
RA-2028/04 R 2004 0128 0 0128-04 Spain E-[redacted] (Cataluña) 2004	Cucumber	100 OD	4	5/6/7	0.0720	0.00720-0.00900	3
RA-2028/04 R 2004 0129 9 0129-04 Italy I-[redacted] ([redacted]) (Puglia) 2004	Cucumber	100 OD	4	7	0.0720	0.00900	3
RA-2043/05 R 2005 0239 7 0239-05 Spain E-[redacted] (Comunidad Valenciana) 2005	Cucumber	150 OD	4	7	0.0720	0.00900-0.01200	3

a.s. = Active Substance

Table 6.3.1.12-4 continued:

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2043/05 R 2005 0240 0 0240-05 Spain E-[redacted] (Cataluña) 2005	Cucumber	150 OD	4	8/7/7	0.0720-0.0792	0.00720-0.01035	3
RA-2043/05 R 2005 0241 9 0241-05 Italy I-[redacted] (Sicilia) 2005	Cucumber	150 OD	4	7	0.0720	0.00900-0.01200	3
RA-2043/05 R 2005 0715 1 0715-05 Italy I-[redacted] (Puglia) 2005	Cucumber	150 OD	4	7	0.0720	0.01035	3

a.s. = Active Substance

Table 6.3.1.12-5: Results from residue trials with BYI08330 OD100 in cucumber conducted in the greenhouse in Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2030/04 R 2004 0130 2	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.02	<0.012	0.017	<0.012	<0.008	<0.055
		1	0.02	<0.012	0.017	<0.012	<0.008	<0.055
		3	0.02	<0.012	0.023	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	0.013	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2030/04 R 2004 0131 0	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.02	<0.012	0.012	<0.012	<0.008	<0.055
		1	0.03	<0.012	0.015	<0.012	<0.008	<0.055
		3	0.01	<0.012	0.017	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Spain RA-2030/04 R 2004 0132 9	Cucumber fruit	0*	<0.01	<0.012	0.012	<0.012	<0.008	<0.055
		0	0.04	<0.012	0.020	<0.012	<0.008	0.071
		1	0.03	<0.012	0.020	<0.012	<0.008	<0.055
		3	0.02	<0.012	0.018	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Greece RA-2030/04 R 2004 0133 7	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.03	0.022	0.022	<0.012	<0.008	0.076
		1	0.05	0.016	0.020	<0.012	<0.008	0.086
		3	0.02	<0.012	0.022	<0.012	<0.008	**<0.055**
		5	0.02	<0.012	0.015	<0.012	<0.008	<0.055
		7	0.01	<0.012	0.013	<0.012	<0.008	<0.055
Germany RA-2030/04 R 2004 0134 5	Cucumber fruit	0*	0.02	<0.012	0.019	<0.012	<0.008	<0.055
		0	0.05	<0.012	0.024	<0.012	<0.008	0.071
		1	0.05	<0.012	0.019	<0.012	<0.008	0.064
		3	0.03	<0.012	0.015	<0.012	<0.008	**<0.055**
		5	0.02	<0.012	0.020	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2030/04 R 2004 0135 3	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.01	<0.012	0.026	<0.012	<0.008	<0.055
		1	0.01	<0.012	0.015	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Spain RA-2030/04 R 2004 0136 1	Cucumber fruit	0*	<0.01	<0.012	0.013	<0.012	<0.008	<0.055
		0	0.02	0.019	0.038	<0.012	<0.008	0.075
		1	<0.01	0.012	0.039	<0.012	<0.008	0.061
		3	<0.01	<0.012	0.015	<0.012	<0.008	**<0.055**
		6	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055

Greece	Cucumber	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2030/04	fruit	0	0.04	<0.012	0.048	<0.012	<0.008	0.083
R 2004 0138 8		1	0.01	<0.012	0.021	<0.012	<0.008	<0.055
		3	<0.01	<0.012	0.013	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.12-6: Results from residue trials with BYI08330 OD100 and OD150 in cucumbers conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2028/04 R 2004 0126 4	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	0.055
		0	0.04	<0.012	0.018	<0.012	<0.008	0.056
		1	0.02	<0.012	0.015	<0.012	<0.008	<0.055
		3	0.02	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Spain RA-2028/04 R 2004 0128 0	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		1	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2028/04 R 2004 0129 9	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.02	<0.012	0.033	<0.012	<0.008	<0.055
		1	0.01	<0.012	0.015	<0.012	<0.008	<0.055
		3	<0.01	<0.012	0.013	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Spain RA-2043/05 R 2005 0239 7	Cucumber fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.03	<0.012	<0.012	<0.012	<0.008	<0.055
		1	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
		3	0.02	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Spain RA-2043/05 R 2005 0240 0	Cucumber fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2043/05 R 2005 0241 9	Cucumber fruit	0	0.01	0.017	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2043/05 R 2005 0715 1	Cucumber fruit	0*	0.03	0.021	<0.012	<0.012	<0.008	0.059
		0	0.06	0.035	<0.012	<0.012	<0.008	0.11
		1	0.07	0.025	<0.012	<0.012	<0.008	0.10
		3	0.06	0.027	<0.012	<0.012	<0.008	**0.10**
		5	0.05	0.020	<0.012	<0.012	<0.008	0.080
		7	0.03	0.019	<0.012	<0.012	<0.008	0.063

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.13 Melons

BYI08330 is to be registered for the use in cucumber against aphids, white flies and mites. The critical European GAPs for the greenhouse and field uses of BYI08330 in melon are summarised in Table 6.3.1.13-1.

Table 6.3.1.13-1: Critical European GAP for spray application of BYI08330 to melon

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval (days)	PHI (days)
Melon	Greenhouse	72	750	4	7	3
Melon	EUS	72	750	4	7	3

Report:	**KIIA 6.3.1.13/01, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on melon after spraying of BYI08330 (100 OD) in the greenhouse in Italy, Spain, southern France and Portugal**
Report No & Document No	**RA-2128/04, including trials no. R 2004 0836/6, R 2004 0837/4, R 2004 0838/2, R 2004 0839/0, R 2004 0840/4, R 2004 0841/2, R 2004 0881/1, R 2004 0883/0 M-259446-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.13/02, [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on melon after spraying of BYI08330 (100 OD) in the field in Italy, Spain and Greece**
Report No & Document No	**RA-2129/04, including trials no. R 2004 0842/0, R 2004 0843/9, R 2004 0844/7, R 2004 0845/5 M-259449-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.13/03, [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on melon after spraying of BYI08330 (150 OD) in the field in Greece,Spain, Portugal and Italy**
Report No & Document No	**RA-2042/05, including trials no. R 2005 0230/3, R 2005 0231/1, R 2005 0233/8, R 2005 0234/6, R 2005 0717/8 M-268388-02-1**

Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 17 supervised residue trials with BYI08330 in melon were performed according to the critical European GAP in the greenhouse (8 trials) and in the field in southern Europe (9 trials) in 2004 and 2005. Applications were conducted with the OD100 and the OD150 formulation of BYI08330. The field data of the individual residue trials are summarized in Tables 6.3.1.13-3 and 6.3.1.13-4. Residue results are given in Tables 6.3.1.13-5 and 6.3.1.13-6 and in more detail in the respective Tier I summaries.

Residues in melon fruit, pulp and peel were analysed according to method 00857 (see IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites were for all fortification levels within the acceptable range of 70-110 %, RSD ≤20%. Recovery results are summarised in Tables 6.3.13-2.

Findings

The total residue of BYI08330 in melon fruit was generally below the LOQ of 0.055 mg/kg in melon fruit sampled on day 3 after the last application. In melon fruit from one field trial (R 2005 0230/3) a calculated total residue of 0.071 mg/kg was determined at the PHI of 3 days. Hence, the total residue of BYI 08330 in melon fruit collected 3 days after 4 applications of BYI08330 was between **<0.055 and 0.071 mg/kg (STMR <0.055 mg/kg)**. No residues were detected in melon pulp (total residue < 0.055 mg/kg). In melon peel the total residue of BYI08330 ranged between below the LOQ and 0.13 mg/kg.

The total residue of BYI08330 in melon fruit, pulp and peel from trial R 2005 0230/3 is mainly composed of BYI08330-monohydroxy. The total residue of BYI08330 in melon peel from the remaining trials collected at the PHI of 3 days after 4 applications is composed of BYI08330 and/or the enol metabolite.

Table 6.3.1.13-2: Recovery results for BYI08330 and its metabolites in melon fruit, pulp and peel

Study No. / GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Fortification level (mg/kg) Max	Recovery (%) Min	Recovery (%) Max	Recovery (%) Mean	Recovery (%) RSD
RA-2128/04 RA-2129/04 GLP yes 2004	Melon	fruit	BYI08330	16	0.01	1	86	113	97	8.2
			BYI08330 - enol	16	0.01	1	78	96	86	6.4
			BYI08330 - ketohydroxy	16	0.01	1	82	112	92	7.7
			BYI08330 enol-glucoside	16	0.01	1	79	98	89	6.0
			BYI08330 mono-hydroxy	16	0.01	1	83	110	90	6.8
		pulp	BYI08330	6	0.01	1	85	103	94	6.9
			BYI08330 - enol	6	0.01	1	86	95	90	4.0
			BYI08330 ketohydroxy	6	0.01	1	90	94	92	2.1
			BYI08330 enol-glucoside	6	0.01	1	86	95	90	3.4
			BYI08330 mono-hydroxy	6	0.01	1	87	95	91	3.5
		peel	BYI08330	4	0.01	1	84	108	96	13.9
			BYI08330 - enol	4	0.01	1	75	90	80	8.6
			BYI08330 - ketohydroxy	4	0.01	1	77	91	82	7.4
			BYI08330 enol-glucoside	4	0.01	1	81	88	85	4.2
			BYI08330 mono-hydroxy	4	0.01	1	80	92	87	6.9

RSD = relative standard deviation

Table 6.3.1.13-2 continued:

Study No. / GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Fortification level (mg/kg) Max	Recovery (%) Min	Recovery (%) Max	Recovery (%) Mean	Recovery (%) RSD
RA-2042/05 GLP yes 2005	Melon	fruit	BYI08330	6	0.01	0.1	86	105	92	7.6
			BYI08330 - enol	6	0.01	0.1	84	101	90	6.7
			BYI08330 - ketohydroxy	6	0.01	0.1	90	105	94	5.9
			BYI08330 enol-glucoside	6	0.01	0.1	83	94	89	5.0
			BYI08330 mono-hydroxy	6	0.01	0.1	84	99	89	6.2
		pulp	BYI08330	6	0.01	0.1	100	110	105	3.5
			BYI08330 - enol	6	0.01	0.1	86	103	96	6.4
			BYI08330 - ketohydroxy	6	0.01	0.1	89	108	99	6.8
			BYI08330 enol-glucoside	6	0.01	0.1	88	101	96	5.0
			BYI08330 mono-hydroxy	6	0.01	0.1	85	100	94	6.1
		peel	BYI08330	4	0.01	0.1	84	96	89	5.9
			BYI08330 - enol	4	0.01	0.1	88	95	91	3.7
			BYI08330 - ketohydroxy	4	0.01	0.1	87	97	91	4.7
			BYI08330 enol-glucoside	4	0.01	0.1	89	95	92	3.5
			BYI08330 mono-hydroxy	4	0.01	0.1	87	90	89	1.7

RSD = relative standard deviation

Table 6.3.1.13-3: Use pattern of BYI08330 OD100 in residue trials with melons conducted in the greenhouse in Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2128/04 R 2004 0836 6 0836-04 Italy I-[redacted] (Puglia) 2004	Melon	100 OD	4	7	0.0720	0.00900	3
RA-2128/04 R 2004 0837 4 0837-04 Spain E-[redacted] (Andalucia) 2004	Melon	100 OD	4	7/7/6	0.0720	0.00720	3
RA-2128/04 R 2004 0838 2 0838-04 France F-[redacted] (Provence-Côte D'azur) 2004	Melon	100 OD	4	6/7/7	0.0720	0.01200	3
RA-2128/04 R 2004 0839 0 0839-04 Portugal P-[redacted] 2004	Melon	100 OD	4	7	0.0720	0.00720	3

a.s. = Active Substance

Table 6.3.1.13-3 continued:

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hl	PHI (days)
RA-2128/04 R 2004 0840 4 0840-04 Portugal P-[redacted] 2004	Melon	100 OD	4	7	0.0720	0.00720	3
RA-2128/04 R 2004 0841 2 0841-04 Italy I-[redacted] (Puglia) 2004	Melon	100 OD	4	7	0.0720	0.00720	3
RA-2128/04 R 2004 0881 1 0881-04 Spain E-[redacted] (Andalucia) 2004	Melon	100 OD	4	7	0.0720	0.00720	3
RA-2128/04 R 2004 0883 8 0883-04 France F-[redacted] (Midi-Pyrenees) 2004	Melon	100 OD	4	7	0.0720	0.00720	3

a.s. = Active Substance

Table 6.3.1.13-4: Use pattern of BYI08330 OD100 or OD150 in residue trials with melons conducted in the field in southern Europe

Country Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2129/04 R 2004 0842 0 0842-04 Italy I-[redacted]([redacted]) (Puglia) 2004	Melon	100 OD	4	7	0.0720	0.00960	3
RA-2129/04 R 2004 0843 9 0843-04 Spain E-[redacted] [redacted](Cataluña) 2004	Melon	100 OD	4	6/7	0.0720	0.01030	3
RA-2129/04 R 2004 0844 7 0844-04 Spain E-[redacted] (Comunidad Valenciana) 2004	Melon	100 OD	4	7	0.0720	0.00960	3
RA-2129/04 R 2004 0845 5 0845-04 Greece GR-[redacted] (Northern Greece - Macedonia) 2004	Melon	100 OD	4	7	0.0720	0.01440	3

a.s. = Active Substance

Table 6.3.1.13-4 continued

Country Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2042/05 R 2005 0230 3 0230-05 Greece GR-[redacted] (Northern Greece - Macedonia) 2005	Melon	150 OD	4	7	0.0720	0.01200	3
RA-2042/05 R 2005 0231 1 0231-05 Spain E-[redacted](Cataluña) 2005	Melon	150 OD	4	7	0.0669-0.0720	0.01200	3
RA-2042/05 R 2005 0233 8 0233-05 Portugal P-[redacted] 2005	Melon	150 OD	4	7	0.0720	0.00900	3
RA-2042/05 R 2005 0234 6 0234-05 Italy I-[redacted](Sicilia) 2005	Melon	150 OD	4	7	0.0720	0.00720-0.01200	3
RA-2042/05 R 2005 0717 8 0717-05 Spain E-[redacted] (Comunidad Valenciana) 2005	Melon	150 OD	4	10/7/7	0.0720	0.00900	3

a.s. = Active Substance

Table 6.3.1.13-5: Results from residue trials with BYI08330 OD100 in melon fruit, peel and pulp conducted in the greenhouse

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy	Melon	0	0.01	<0.012	<0.012	<0.012	<0.008	0.055
RA-2128/04	fruit	0	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0836 6		1	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
		3	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.05	0.019	<0.012	<0.012	<0.008	**0.067**
		5	0.02	0.015	<0.012	<0.012	<0.008	<0.055
Spain	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0837 4		1	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		6	0.02	0.021	0.015	<0.012	<0.008	0.057
France	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0838 2		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	0.01	0.014	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.02	0.027	<0.012	<0.012	<0.008	**<0.055**
		5	0.02	0.024	<0.012	<0.012	<0.008	<0.055
Portugal	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0839 0		1	0.01	<0.012	0.015	<0.012	<0.008	<0.055
		3	0.01	<0.012	0.012	<0.012	<0.008	**<0.055**
		5	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.04	0.017	0.029	<0.012	<0.008	**0.085**
		5	0.03	0.012	0.027	<0.012	<0.008	0.065

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.13-5 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Portugal	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0840 4		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	<0.01	0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.02	0.020	<0.012	<0.012	<0.008	<0.055
Italy	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0841 2		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.02	<0.012	0.013	<0.012	<0.008	<0.055
Spain	Melon	0	<0.01	0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	<0.01	0.017	<0.012	<0.012	<0.008	<0.055
R 2004 0881 1		1	<0.01	0.019	<0.012	<0.012	<0.008	<0.055
		3	<0.01	0.015	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		5	<0.01	0.019	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	0.012	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	<0.01	0.022	<0.012	<0.012	<0.008	**<0.055**
		4	0.01	0.015	<0.012	<0.012	<0.008	<0.055
France	Melon	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2128/04	fruit	0	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2004 0883 8		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.13-6: Results from residue trials with BYI08330 OD 100 or OD 150 in melon fruit, peel and pulp conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
RA-2129/04 R 2004 0842 0 0842-04 Italy I-[redacted](Puglia) 2004	Melon fruit	0*	0.02	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.05	<0.012	<0.012	<0.012	<0.008	<0.055
		1	0.05	0.014	<0.012	<0.012	<0.008	0.067
		3	0.04	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.04	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.03	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.08	0.021	<0.012	<0.012	<0.008	**0.096**
		7	0.10	0.025	<0.012	<0.012	<0.008	0.13
RA-2129/04 R 2004 0843 9 0843-04 Spain E-[redacted] (Cataluña) 2004	Melon fruit	1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.02	0.026	<0.012	<0.012	<0.008	**<0.055**
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2129/04 R 2004 0844 7 0844-04 Spain E-[redacted] (Comunidad Valenciana) 2004	Melon fruit	0*	0.02	0.025	<0.012	<0.012	<0.008	<0.055
		0	0.03	0.043	<0.012	<0.012	<0.008	0.072
		1	0.02	0.027	<0.012	<0.012	<0.008	<0.055
		3	0.02	0.036	<0.012	<0.012	<0.008	**<0.055**
		6	0.02	0.026	<0.012	<0.012	<0.008	<0.055
		7	0.01	0.021	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.06	0.073	<0.012	<0.012	<0.008	**0.13**
		7	0.03	0.041	<0.012	<0.012	<0.008	0.071
RA-2129/04 R 2004 0845 5 0845-04 Greece GR-[redacted] (Northern Greece - Macedonia) 2004	Melon fruit	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		0	0.01	0.019	<0.012	<0.012	<0.008	<0.055
		1	0.02	0.020	<0.012	<0.012	<0.008	<0.055
		3	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		7	0.01	<0.012	<0.012	0.012	<0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.13-6 continued

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Greece	Melon	0	0.01	<0.012	<0.012	0.049	<0.008	0.087
RA-2042/05	fruit	**3**	<0.01	<0.012	<0.012	0.037	<0.008	**0.071**
R 2005 0230 3		5	<0.01	<0.012	<0.012	0.023	<0.008	<0.055
		7	<0.01	<0.012	<0.012	0.031	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	0.033	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	0.022	<0.008	<0.055
		7	<0.01	<0.012	<0.012	0.022	<0.008	<0.055
	peel	**3**	0.02	<0.012	<0.012	0.032	<0.008	**0.075**
		5	0.02	<0.012	<0.012	0.028	<0.008	<0.055
		7	0.01	<0.012	<0.012	0.019	<0.008	<0.055
Spain	Melon	0	<0.01	0.014	<0.012	<0.012	<0.008	<0.055
RA-2042/05	fruit	**3**	<0.01	0.014	<0.012	<0.012	<0.008	**<0.055**
R 2005 0231 1		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.03	0.041	<0.012	<0.012	<0.008	**0.065**
		5	0.02	0.029	<0.012	<0.012	<0.008	<0.055
		7	0.02	0.015	<0.012	<0.012	<0.008	<0.055
Portugal	Melon	0*	<0.01	0.012	<0.012	<0.012	<0.008	<0.055
RA-2042/05	fruit	0	<0.01	0.016	<0.012	<0.012	<0.008	<0.055
R 2005 0233 8		1	<0.01	0.031	<0.012	<0.012	<0.008	<0.055
		3	<0.01	0.017	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	0.015	<0.012	<0.012	<0.008	<0.055
		7	<0.01	0.012	<0.012	<0.012	<0.008	<0.055
	pulp	1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	1	<0.01	0.041	<0.012	<0.012	<0.008	<0.055
		3	<0.01	0.036	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	0.031	<0.012	<0.012	<0.008	<0.055
		7	<0.01	0.023	<0.012	<0.012	<0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.13-6 continued

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy	Melon	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2042/05	fruit	0	0.01	<0.012	<0.012	<0.012	<0.008	<0.055
R 2005 0234 6		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		5	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	0.01	0.031	<0.012	<0.012	<0.008	**0.055**
		5	<0.01	0.016	<0.012	<0.012	<0.008	<0.055
		7	<0.01	0.015	<0.012	<0.012	<0.008	<0.055
Spain	Melon	0*	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
RA-2042/05	fruit	0	<0.01	0.013	<0.012	<0.012	<0.008	<0.055
R 2005 0717 8		1	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		3	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pulp	**3**	<0.01	<0.012	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	peel	**3**	<0.01	0.018	<0.012	<0.012	<0.008	**<0.055**
		4	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.14 Flowering brassica

BYI 08330 is to be registered for control of aphids in brassica vegetables. European residue data in cauliflower and broccoli are submitted to support the use of BYI08330 in flowering brassica. The critical European GAP for the application of BYI08330 to flowering brassica is given in Table 6.3.1.14-1.

Table 6.3.1.14-1: Critical European GAP for spray application of BYI08330 to flowering brassica

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No	Spray interval (days)	PHI (days)
Flowering brassica	EUN	72	750	2	14	3
Flowering brassica	EUS	72	750	2	14	3

Report:	**KIIA 6.3.1.14/01, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on broccoli after spraying of BYI08330 (100 OD) in the field in Germany and United Kingdom**
Report No & Document No	**RA-2022/04, including trials no. R 2004 0105/1, R 2004 0108/6 M-259571-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.14/02, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on cauliflower after spraying of BYI08330 (100 OD) in the field in Germany and France**
Report No & Document No	**RA-2023/04, including trials no. R 2004 0109/4, R 2004 0110/8 M-259580-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.14/03, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on broccoli after spraying of BYI08330 (100 OD) in the field in Italy**
Report No & Document No	**RA-2024/04, including trials no. R 2004 0111/6 M-259272-01-1**

Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Report:	**KIIA 6.3.1.14/04, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on cauliflower after spraying of BYI08330 (100 OD) in the field in France**
Report No &	**RA-2025/04, including trials no. R 2004 0112/4**
Document No	**M-258975-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.14/03, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on broccoli and cauliflower after spraying of BYI08330 (150 OD) in the field in Germany, northern France, and United Kingdom**
Report No &	**RA-2062/05, including trials no. R 2005 0363/6, R 2005 0364/4, R 2005 0365/2, R 2005 1017/9, R 2005 1047/0**
Document No	**M-275226-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**
Report:	**KIIA 6.3.1.14/04, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on broccoli and cauliflower after spraying of BYI08330 (150 OD) in the field in Italy and Spain**
Report No &	**RA-2063/05, including trials no. R 2005 0361/1, R 2005 0362/8**
Document No	**M-275233-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**Yes**

Test system:

Flowering brassica are classified as major crops in northern Europe and as minor crop in southern Europe. Altogether 9 supervised residue trials with BYI08330 in broccoli and cauliflower were performed in the field in northern Europe in 2004 and 2005. Four residue trials were performed in southern Europe. In 2004, 3 spray applications of BYI08330 were performed with a spray interval of 7 days. Samples were taken directly before the last application and 0-21 days after the last application. In the meantime, due to new results from biological trials the critical GAP changed: The number of applications was changed from 3 to 2 and the spray interval from 7 days to 14 days. In 2005, residue trials were performed with 3 applications and a spray interval of 14 days. Samples were taken 0-21 days after the last application. To cover the use pattern with two applications additional samples were taken 3 days after the second application. In trial R 2005 0362/8 plants were very small due to cold wheather conditions. No curds were formed on day 0 and 3 after after the 2nd application; whole plants were sampled and analysed. In trial R

2005 1047/0 the 3rd application was delayed for one week, because the plants grew slowly due to cold wheather conditions.
The use pattern of the individual residue trials is summarized in Tables 6.3.1.14-3 and 6.3.1.14-4. The results from the residue trials are given in Tables 6.3.1.14-5 and -6, and in more detail in the respective Tier I summaries.

Residues in broccoli and cauliflower curd were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.14-2)

Findings:
The total residue of BYI08330 in broccoli and cauliflower curd 3 days after the 3rd application was used to evaluate the influence of the different spray intervals of 7 and 14 days and of different locations (northern and southern Europe) on the residue behaviour of BYI08330 and to compare the residue behaviour in broccoli and in cauliflower. Generally residues at day 3 were evaluated. If the total residue at later intervals after the last application exceeded the total residue at day 3, the result from the later interval was evaluated. The total residue of BYI08330 ranged from 0.11 to 0.63 mg/kg. There was no difference between residues in cauliflower and broccoli and between residues in broccoli and cauliflower grown in northern or southern Europe. Moreover an influence of different spray intervals on the residue behaviour could not be detected.

From altogether 5 trials curd samples were taken 3 days after 2 applications of BYI08330 (generally day -11; day -19 in trial R 2005 1047-05) according to the critical European GAP. The total residue in curd from these trials ranged between 0.14 and 0.3 mg/kg and corresponds well with the total residue in curd samples collected 3 days after 3 applications. Residues in whole plants collected on day 3 after 2 applications (R 2005 0362/8) are not considered in this evaluation.

Hence, residue data from 2004 residue trial (from day 3 after 3 applications) are evaluated together with the residue data from 2005 residue trials (from day 3 after 2 applications) to support the critical European GAP. If available, residue data in curds from day 3 after 2 applications were evaluated. In those trials where no data from day 3 after two applications are available the residue data from day 3 after 3 applications were evaluated. Hence, the total residue of BYI08330 in cauliflower and broccoli curd ranged between **0.11 and 0.63 mg/kg (STMR 0.24 mg/kg).** The residue values used for evaluation are marked with bold numbers in Tables 6.3.1.14-5 and 6.

The total residue of BYI08330 is mainly composed of the enol and the ketohydroxy metabolites. The parent compound and the enol-glucoside were present at lower amounts. BYI08330-monohydroxy was not detected or in traces only.

Table 6.3.1.14-2: Recovery results for BYI08330 and its metabolites in broccoli and cauliflower curd

Study No. Trial No.	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2023/04 RA-2025/04 All trials	Cauli-flower	Curd	BYI08330	10	0.01	1.0	71	106	91	12.8
			BYI0833 -enol	10	0.01	1.0	68	112	99	14.3
			BYI08330-ketohydroxy	10	0.01	1.0	72	108	94	11.7
			BYI08330 enol-glucoside	10	0.01	1.0	72	116	95	15.6
			BYI08330 monohydroxy	10	0.01	1.0	74	108	93	11.5
RA-2062/05 R 2005 0365/2 R 2005 1047/0	Cauli-flower	Curd	BYI 08330	12	0.01	1.00	69	105	88	12.0
			BYI 08330-enol	12	0.01	1.0	67	105	90	11.7
			BYI 08330-keto-hydroxy	12	0.01	1.0	68	103	91	10.6
			BYI 08330 enol-glucoside	12	0.01	1.0	72	109	91	12.5
			BYI 08330 monohydroxy	12	0.01	1.0	71	119	93	12.5
RA-2022/04 All trials RA-2024/04 All trials	Broccoli	Curd	BYI08330	10	0.01	1.0	83	100	93	5.3
			BYI08330-enol	10	0.01	1.0	71	108	88	14.4
			BYI0833 -ketohydroxy	10	0.01	1.0	83	110	93	10.7
			BYI08330enol-glucoside	10	0.01	1.0	92	107	99	5.4
			BYI08330 mono-hydroxy	10	0.01	1.0	82	95	90	4.5
RA-2062/05 R 2005 0363/6 R 2005 0364/4 R 2005 1017 9 R 2005 0360/1	Broccoli	Curd	BYI 08330	12	0.01	1.0	64	102	88	13.0
			BYI 08330 cis-enol	12	0.01	1.0	70	97	88	8.2
			BYI 08330 cis-keto-hydroxy	12	0.01	1.0	72	108	89	11.8
			BYI 08330 enol-glucoside	12	0.01	1.0	76	119	95	12.1
			BYI 08330 mono-hydroxy	12	0.01	1.0	67	110	89	12.9

RSD = relative standard deviation

Table 6.3.1.14-3: Use pattern of BYI08330 OD 100 in residue trials with broccoli and cauliflower conducted in the field in northern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2022/04 R 2004 0105 1 0105-04 Germany D-[redacted] ([redacted]) 2004	Broccoli	OD 100	3	7	0.0720	0.02400	3
RA-2022/04 R 2004 0108 6 0108-04 United Kingdom GB-[redacted] [redacted](Norfolk) 2004	Broccoli	OD 100	3	7	0.0720 - 0.0774	0.02396 - 0.02400	3
RA-2023/04 R 2004 0109 4 0109-04 Germany D-[redacted] [redacted]([redacted]) 2004	Cauliflower	OD 100	3	7	0.0720	0.02400	3
RA-2023/04 R 2004 0110 8 0110-04 France F-[redacted] [redacted] (Haute-Normandie) 2004	Cauliflower	OD 100	3	7	0.0720	0.02400	3
RA-2062/05 R 2005 0363 6 0363-05 Germany D-[redacted] [redacted] (Nordrhein-Westfalen) 2005	Broccoli	150 OD	3	14	0.0720	0.01440	3
RA-2062/05 R 2005 0364 4 0364-05 France F-[redacted] (Picardie) 2005	Broccoli	150 OD	3	14	0.0720	0.01440	3

Table 6.3.1.14-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2062/05 R 2005 1017 9 1017-05 Germany D-[redacted] (Baden-Württemberg)	Broccoli	150 OD	2 (a)	14	0.0720	0.01200	-
RA-2062/05 R 2005 0365 2 0365-05 Germany D-[redacted] (Rheinland-Pfalz)	Cauliflower	150 OD	3	14	0.0720	0.01440	3
RA-2062/05 R 2005 1047 0 1047-05 United Kingdom GB-[redacted] (Suffolk)	Cauliflower	150 OD	3	14/21 (b)	0.0720	0.01440	3

a.s. = Active Substance;
(a) Two applications were performed instead of 3 due to an erroneous destruction of the crop on the field
(b) The last application had to be delayed for one week, because the plants stopped growing due to cold weather conditions.

Table 6.3.1.14-4:Use pattern of BYI08330 OD 100 in residue trials with flowering brassica conducted in the field in southern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hl	PHI (days)
RA-2024/04 R 2004 0111 6 0111-04 Italy I-[redacted] (FG) (Puglia)	Broccoli	OD 100	3	7	0.0720	0.0090	3
RA-2025/04 R 2004 0112 4 0112-04 France F-[redacted] (Midi-Pyrenees)	Cauliflower	OD 100	3	7	0.0720	0.01440	3
RA-2063/05 R 2005 0360 1 0360-05 Italy I-[redacted] (Puglia)	Broccoli	150 OD	3	14	0.0720	0.01200	3
RA-2063/05 R 2005 0362 8 0362-05 Spain E-[redacted] (Cataluña)	Cauliflower	150 OD	3	14	0.0720	0.01200	3

a.s. = Active Substance

Table 6.3.1.14-5: Results from residue trials in flowering brassica conducted with BYI08330 OD 100 in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2022/04 R 2004 0105/1	Broccoli curd	0*	<0.01	0.17	0.21	<0.012	0.013	0.39
		0	0.08	0.17	0.22	<0.012	0.013	0.48
		3	0.07	0.20	0.28	<0.012	0.016	**0.57**
		7	0.01	0.14	0.20	<0.012	0.012	0.36
		13	0.01	0.097	0.12	<0.012	0.008	0.24
United Kingdom RA-2022/04 R 2004 0108/6	Broccoli curd	0*	0.01	0.29	0.067	<0.012	0.009	0.37
		0	0.24	0.48	0.14	<0.012	0.008	0.86
		3	0.09	0.28	0.13	<0.012	0.009	**0.50**
		7	0.01	0.29	0.13	<0.012	0.008	0.42
		14	<0.01	0.18	0.10	<0.012	0.008	0.28
		21	<0.01	0.15	0.048	<0.012	0.008	0.21
Germany RA-2023/04 R 2004 0109/4	Cauli-flower curd	0*	<0.01	0.074	0.20	<0.012	0.008	0.28
		0	0.02	0.033	0.24	<0.012	0.011	0.30
		3	<0.01	0.055	0.34	<0.012	0.010	**0.40**
		7	<0.01	0.019	0.28	<0.012	0.010	0.31
		15	<0.01	0.013	0.14	<0.012	0.008	0.16
France North RA-2023/04 R 2004 0110/8	Cauli-flower curd	0*	<0.01	0.035	0.034	<0.012	0.008	0.077
		0	0.01	0.079	0.048	<0.012	0.008	0.15
		3	0.02	0.077	0.046	<0.012	0.008	0.16
		7	<0.01	0.14	0.069	<0.012	0.008	**0.22**
		14	<0.01	0.15	0.061	<0.012	0.008	0.22
		21	<0.01	0.12	0.076	<0.012	0.008	0.21
Germany RA-2062/05 R 2005 0363/6	Broccoli curd	-14	0.57	0.25	0.10	<0.012	<0.008	0.92
		-11	0.19	0.24	0.18	<0.012	0.019	**0.63**
		0*	0.01	0.073	0.074	<0.012	0.011	0.17
		0	0.10	0.26	0.17	<0.012	0.008	0.54
		3	0.01	0.14	0.13	<0.012	0.021	0.31
		7	<0.01	0.18	0.15	<0.012	0.032	0.36
		14	<0.01	0.089	0.047	<0.012	0.011	0.15
		21	<0.01	0.092	0.038	<0.012	0.011	0.14
France North RA-2062/05 R 2005 0364/4	Broccoli curd	-14	0.09	0.28	0.12	<0.012	<0.008	0.48
		-11	0.03	0.12	0.082	<0.012	0.018	**0.23**
		0	0.11	0.078	0.047	<0.012	0.008	0.25
		3	0.01	0.048	0.032	<0.012	<0.008	0.090
		7	0.01	0.046	0.025	<0.012	<0.008	0.081
		14	0.01	0.033	0.022	<0.012	0.008	0.073
Germany RA-2062/05 R 2005 1017/9	Broccoli curd	-14	0.07	0.15	0.099	<0.012	0.008	0.32
		-11 (a)	0.01	0.18	0.098	<0.012	0.008	**0.30**

DALT = Days after last Treatment, * = Before the last Treatment; (a) 2 instead of 3 applications were performed

Table 6.3.1.14-5 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2062/05 R 2005 0365 2	Cauli-flower curd	-14 -11 0* 0 **3** 7 14 21	0.01 <0.01 <0.01 0.02 0.02 0.02 0.01 <0.01	0.11 0.15 0.091 0.13 0.14 0.13 0.12 0.086	0.027 0.029 0.023 0.048 0.040 0.031 0.034 0.030	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 0.008 0.008 <0.008 0.008 0.008	0.15 **0.18** 0.11 0.21 0.20 0.18 0.17 0.12
United Kingdom RA-2062/05 R 2005 1047 0 1047-05	Cauli-flower curd	-21 -19 0 **3** 7 13	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.079 0.12 0.25 0.24 0.31 0.25	0.012 0.012 0.036 0.059 0.029 0.039	<0.012 0.012 <0.012 <0.012 <0.012 0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.090 **0.14** 0.27 0.30 0.34 0.30

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.14-6: Results from residue trials in flowering brassica conducted with BYI08330 OD 100 in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI083 30	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2024/04 R 2004 0111 6	Broccoli curd	0* 0 **3** 7 14	0.04 0.13 0.02 0.02 0.01	0.13 0.19 0.20 0.31 0.25	0.069 0.094 0.080 0.089 0.068	<0.012 <0.012 <0.012 <0.012 <0.012	<0.008 0.008 <0.008 0.008 0.008	0.23 0.43 0.30 **0.42** 0.33
France RA-2025/04 R 2004 0112 4	Cauli-flower curd	0* 0 **3** 7 14 20	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.075 0.095 0.077 0.13 0.13 0.11	0.067 0.078 0.081 0.10 0.074 0.067	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.008 0.008	0.15 0.18 0.17 **0.24** 0.21 0.19
Italy RA-2063/05 R 2005 0360 1	Broccoli curd	-14 -11 0* 0 3 8 14 20	0.08 0.06 0.01 0.11 0.01 0.01 0.01 <0.01	0.11 0.099 0.11 0.15 0.11 0.12 0.13 0.087	0.037 0.036 0.025 0.043 0.029 0.035 0.036 0.026	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 0.008 0.008 0.008 0.008 0.008 0.008 0.011	0.22 **0.21** 0.15 0.31 0.16 0.17 0.18 0.12

Spain RA-2063/05 R 2005 0362 8	Cauli-flower curd	0* 0 3 7	0.01 0.13 0.01 <0.01	0.039 0.085 0.070 0.084	0.012 0.013 0.013 0.014	<0.012 <0.012 <0.012 <0.012	0.008 0.013 0.008 0.010	0.069 0.24 0.10 **0.11**
	whole plant without roots	-14 -11 (b)	1.0 0.06	0.23 0.10	0.049 0.019	<0.012 0.012	0.008 0.008	1.3 0.20

DALT = Days after last Treatment, * = Before the last Treatment (b)

IIA 6.3.1.15 Brussels sprouts

BYI08330 is to be registered for the control of aphids in Brussels sprouts in northern Europe (EUN). The critical European GAP is summarised in Table 6.3.1.15-1.

Table 6.3.1.15-1: Critical European GAP for the use of BYI08330 in Brussels sprouts

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Brussels sprouts	EUN	72	750	2	14	3

Report:	**KIIA 6.3.1.15/01, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on Brussels sprouts after spraying of BYI08330 (100 OD) in the field in Germany and Northern France**
Report No & Document No	**RA-2039/04, including trials no. R 2004 0160/4, R 2004 0161/2, R 2004 0162/0, R 2004 0163/9** **M-260437-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.15/02, [redacted] ; [redacted].; 2006**
Title:	**Determination of the residues of BYI08330 in/on Brussels sprouts after spraying of BYI08330 (150 OD) in the field in Germany, Northern France and United Kingdom**
Report No & Document No	**RA-2066/05, including trials no. R 2005 0369/5, R 2005 0370/9, R 2005 0371/7, R 2005 0372/5** **M-273238-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 8 supervised residue trials with BYI08330 in Brussels sprouts were performed in the field in northern Europe in 2004 and 2005. In 2004, 3 spray applications of BYI08330 were performed with a spray interval of 7 days. Samples were taken directly before the 3rd application and 0-21 days after the 3rd application. In 2005, due to new results from biological trials the critical GAP changed: The number of applications was changed from 3 to 2 and the spray interval from 7 days to 14 days. In 2005, residue trials were performed with 3 applications and a spray interval of 14 days. Samples were taken 0-21 days after the last application. To cover the use pattern with 2 applications additional samples were taken 3

days after the second application. The use pattern of the individual residue trials is summarized in Table 6.3.1.15-3. The results from the residue trials are given in Tables 6.3.1.15-4 and in more detail in the respective Tier I summaries.

Residues in Brussels sprouts were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites in sprouts at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.15-2)

Findings:
The total residue of BYI08330 in Brussels sprouts 3 days after the 3rd application was evaluated to compare residue data from 2004 and 2005, which were obtained with different spray intervals of 7 and 14 days, respectively. Generally data from day 3 were evaluated. If the total residue at later intervals after the last application exceeded the residue at day 3, the data from later intervals, i.e. before the last application (0*) were evaluated. The total residue of BYI08330 was 0.067-0.19 mg/kg in Brussels sprouts from 2004 residue trials (spray interval 7 days). The total residue from these trials corresponds well with the total residue of 0.077-0.13 mg/kg in samples from 2005 residue trials (spray interval 14 days). An influence of different spray intervals on the residue behaviour was not found.

From 4 trials samples were taken 3 days after the 2nd application (day -11). The total residue of BYI08330 in Brussels sprouts ranged between 0.082 and 0.14 mg/kg. These values correspond well with the total residue of BYI08330 in Brussels sprouts sampled 3 days after 3 applications. According to these findings it can be concluded that residue data from Brussels sprouts collected 3 days after 3 applications of BYI08330 support also the critical European GAP with 2 applications and a PHI of 3 days.

Hence, residue data in Brussels sprouts from 2004 residue trial samples on day 3 after 3 applications are evaluated together with residue data in Brussels sprouts from 2005 residue trials sampled on day 3 after 2 applications to support the critical European GAP. In those trials where no data from day 3 after two applications are available the total residue from day 3 after 3 applications was evaluated. The total residue of BYI08330 ranged between 0.067 and 0.19 mg/kg (STMR 0.092 mg/kg). The values used for the final evaluation are marked with bold numbers in Table 6.3.1.15-4.

The total residue ob BYI08330 is mainly composed of the enol and the ketohydroxy metabolite.

Table 6.3.1.15-2: Recovery results for BYI08330 and its metabolites in Brussels sprouts

Study No.	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2039/04	Brussels sprouts	Sprout	BYI08330	12	0.01	1.0	78	101	94	7.4
			BYI08330 - enol	12	0.01	1.0	73	113	93	14.0
			BYI08330 keto-hydroxy	12	0.01	1.0	69	108	91	12.7
			BYI08330 enol-glucoside	12	0.01	1.0	74	103	93	8.8
			BYI08330 mono-hydroxy	12	0.01	1.0	79	101	93	7.0
RA-2066/05	Brussels sprouts	Sprout	BYI08330	15	0.01	1.0	68	105	91	11.3
			BYI08330 - enol	15	0.01	1.0	73	105	91	7.7
			BYI08330 - ketohydroxy	15	0.01	1.0	74	112	93	11.7
			BYI08330 enol-glucoside	15	0.01	1.0	76	117	96	11.3
			BYI08330 mono-hydroxy	15	0.01	1.0	68	110	91	13.4

RSD = relative standard deviation

Table 6.3.1.15-3: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with Brussels sprouts conducted in the field in northern Europe

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2039/04 R 2004 0160 4 0160-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Brussels sprouts	OD 100	3	7	0.0720	0.01440	3
RA-2039/04 R 2004 0161 2 0161-04 Germany D-[redacted], Hof [redacted] 2004	Brussels sprouts	OD 100	3	7	0.0720	0.01440	3
RA-2039/04 R 2004 0162 0 0162-04 France F-[redacted] (Haute-Normandie) 2004	Brussels sprouts	OD 100	3	3/10	0.0720	0.01440	3
RA-2039/04 R 2004 0163 9 0163-04 France F-[redacted] 2004	Brussels sprouts	OD 100	3	7/8	0.0720	0.01440	3

a.s. = Active Substance

Table 6.3.1.15-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application				
			No.	Spray interval (days)	kg a.s. / ha	kg a.s./hL	PHI (days)
RA-2066/05 R 2005 0369 5 0369-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Brussels sprouts	150 OD	3	14	0.0720	0.01440	3
RA-2066/05 R 2005 0370 9 0370-05 France F-[redacted] (Haute-Normandie) 2005	Brussels sprouts	150 OD	3	14	0.0720	0.01440	3
RA-2066/05 R 2005 0371 7 0371-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Brussels sprouts	150 OD	3	14	0.0720	0.01440	3
RA-2066/05 R 2005 0372 5 0372-05 United Kingdom GB-[redacted] (Suffolk) 2005	Brussels sprouts	150 OD	3	14	0.0720	0.01440	3

a.s. = Active Substance

Table 6.3.1.15-4: Results from residue trials in Brussels sprouts with BYI08330 OD 100 and OD 150 conducted in the field in northern Europe

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany	Brussels	0*	0.01	0.022	0.012	<0.012	<0.008	0.055
RA-2039/04	sprouts	0	0.03	0.040	0.016	<0.012	<0.008	0.086
R 2004 0160 4	sprout	**3**	0.01	0.041	0.013	<0.012	<0.008	0.069
		7	0.01	0.051	0.025	<0.012	<0.008	**0.086**
		14	0.01	0.053	0.014	<0.012	<0.008	0.077
Germany	Brussels	0*	<0.01	0.012	0.012	<0.012	<0.008	<0.055
RA-2039/04	sprouts	0	0.01	0.018	0.013	<0.012	<0.008	<0.055
R 2004 0161 2	sprout	**3**	0.01	0.021	0.012	<0.012	<0.008	<0.055
		7	0.01	0.035	0.018	<0.012	<0.008	0.063
		14	0.01	0.041	0.017	<0.012	<0.008	**0.067**
France	Brussels	0*	0.01	0.023	0.023	<0.012	<0.008	0.056
RA-2039/04	sprouts	0	0.02	0.043	0.034	<0.012	<0.008	0.093
R 2004 0162 0	sprout	**3**	0.01	0.039	0.025	<0.012	<0.008	0.074
		8	<0.01	0.069	0.032	<0.012	<0.008	**0.10**
		14	<0.01	0.051	0.023	<0.012	<0.008	0.074
		21	<0.01	0.051	0.016	<0.012	<0.008	0.067
France	Brussels	0*	<0.01	0.042	0.014	<0.012	<0.008	0.057
RA-2039/04	sprouts	0	0.01	0.051	0.023	<0.012	<0.008	0.086
R 2004 0163 9	sprout	**3**	0.01	0.075	0.032	<0.012	<0.008	0.12
		7	0.01	0.099	0.045	<0.012	<0.008	0.15
		14	<0.01	0.098	0.043	<0.012	<0.008	0.14
		21	<0.01	0.13	0.058	<0.012	<0.008	**0.19**
Germany	Brussels	-14	0.01	0.032	0.029	<0.012	0.008	0.079
RA-2066/05	sprouts	-11	0.01	0.036	0.038	<0.012	0.009	**0.093**
R 2005 0369 5	sprout	0*	0.02	0.049	0.039	<0.012	0.011	0.12
		3	0.01	0.029	0.030	<0.012	0.008	0.078
		8	<0.01	0.026	0.021	<0.012	0.008	0.056
		14	<0.01	0.024	0.019	<0.012	0.008	<0.055
France	Brussels	-14	0.01	0.043	0.027	<0.012	0.008	0.090
RA-2066/05	sprouts	-11	0.01	0.041	0.023	<0.012	0.008	**0.082**
R 2005 0370 9	sprout	0	0.01	0.045	0.020	<0.012	0.008	0.083
		3	0.01	0.035	0.020	<0.012	0.008	0.074
		7	0.01	0.041	0.017	<0.012	0.008	0.066
		14	0.01	0.041	0.018	<0.012	0.008	0.077
Germany	Brussels	-14	0.01	0.030	0.020	<0.012	<0.008	0.060
RA-2066/05	sprouts	-11	0.01	0.033	0.025	<0.012	0.012	0.081
R 2005 0371 7	sprout	0*	0.02	0.071	0.046	<0.012	0.008	**0.14**
		0	<0.01	0.057	0.023	<0.012	0.008	0.088
		3	0.01	0.057	0.046	<0.012	0.008	0.12
		7	0.01	0.064	0.034	<0.012	<0.008	0.11
		14	0.01	0.064	0.039	<0.012	0.008	0.12
		21	0.01	0.060	0.027	<0.012	0.030	0.13

United Kingdom RA-2066/05 R 2005 0372 5	Brussels sprouts sprout	-15	0.02	0.032	0.012	<0.012	0.008	0.06
		-11	0.01	0.033	0.012	<0.012	0.008	0.063
		0*	0.02	0.059	0.012	<0.012	<0.008	**0.091**
		0	<0.01	0.044	0.012	<0.012	0.008	0.064
		3	0.01	0.053	0.012	<0.012	<0.008	0.075
		7	0.01	0.068	0.012	<0.012	<0.008	0.090
		14	0.01	0.062	0.012	<0.012	<0.008	0.084
		21	<0.01	0.065	0.012	<0.012	<0.008	0.076

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.16 Head cabbage (white/round, red, Savoy)

BYI08330 is to be registered for the control of aphids in head cabbage. Residue data in white (round) cabbage, red cabbage and Savoy cabbage are reported to support the critical European GAP for head cabbage, which is summarised in Table 6.3.1.16-1.

Table 6.3.1.16-1: Critical European GAP for the use of BYI08330 in head cabbage

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Head cabbage	EUN	72	750	2	14	3
Head cabbage	EUS	72	750	2	14	3

Report:	**KIIA 6.3.1.16/01, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on round cabbage, red cabbage and Savoy cabbage after spraying of BYI08330 (100 OD) in the field in Germany, United Kingdom and Northern France**
Report No & Document No	**RA-2037/04, including trials no. R 2004 0152/3, R 2004 0156/6, R 2004 0157/4 M-260141-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.16/02, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on red cabbage and round cabbage after spraying of BYI08330 (100 OD) in the field in Spain and Italy**
Report No & Document No	**RA-2038/04, including trials no. R 2004 0158/2, R 2004 0156/6, R 2004 0159/0 M-260014-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.16/03, [redacted]; [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on red cabbage, round cabbage and Savoy cabbage after spraying of BYI08330 (150 OD) in the field in Northern France and Germany**
Report No & Document No	**RA-2060/05, including trials no. R 2005 0352/0, R 2005 0353/9, R 2005 0354/7, R 2005 0355/5, R 2005 0356/3, R 2005 0357/1, R 2005 0359/8 M-272557-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.16/04, [redacted]; [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on red cabbage and round cabbage after spraying of BYI08330 (150 OD) in the field in Italy and Spain**
Report No & Document No	**RA-2061/05, including trials no. R 2005 0350/4, R 2005 0351/2 M-272570-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Head cabbage is classified as major crop in northern Europe and as minor crop in southern Europe. Altogether 14 supervised residue trials have been performed, 10 trials in northern Europe and 4 trials in southern Europe in the years 2004 and 2005. In 2004, 3 spray applications of BYI08330 were conducted with a spray interval of 7 days. Samples were taken directly before the last application and 0-21 days after the last application. In the meantime, due to new results from biological trials the critical GAP was changed. The number of applications was changed from 3 to 2 and the spray interval from 7 days to 14 days. In 2005, residue trials were performed with 3 applications and a spray interval of 14 days. Samples were taken 0-21 days after the last application. Additional samples were taken 3 days after the second application to cover the use pattern with 2 applications. The use patterns of the individual residue trials are summarized in Tables 6.3.1.16-3 to 6.1.3.16-4. The results from the residue trials are given in Tables 6.3.1.16-5 and -6 and in more detail in the respective Tier I summaries.

Residues in red, white and Savoy cabbage were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites in cabbage heads at all fortification levels were within the acceptable range of 70-120 %; RSD ≤ 20%. (Table 6.3.1.16-2)

Findings:

The total residue of BYI08330 in head cabbage 3 days after the 3rd application was evaluated to compare residue data from different head cabbage crops (white, red, Savoy), from different locations (northern and southern Europe) and to compare residue data from 2004 and 2005 which were obtained with different

spray intervals of 7 and 14 days. Generally residue data from day 3 after 3 applications were evaluated. If the total residue at later intervals exceeded the residue at day 3, residues at later intervals were evaluated. The total residue of BYI08330 in cabbage heads on day 3 after 3 applications ranged from <0.055 to 0.25 mg/kg. There was no difference in residues from different varieties of head cabbage or in head cabbage grown in northern or southern Europe. Moreover, an influence of different spray intervals on the residue behaviour was not found.

From 9 trials additional samples were taken on day 3 after the 2nd application. The total residue in these samples ranged between <0.055 and 0.47 mg/kg corresponding well with the residue data from day 3 after 3 applications. It can be concluded that residue data from head cabbage collected 3 days after 2 applications of BYI08330 are valid to support the critical European GAP.

According to this conclusion residue data from day 3 after 3 applications are evaluated to support the critical European GAP from those trials where no residue data from day 3 after 2 applications were available. The total residue of BYI08330 in cabbage head ranged between <0.055 and 0.47 mg/kg **(STMR 0.079 mg/kg)**. The total residue used for evaluation is marked with bold numbers in Tables 6.3.1.16-5 and -6.

The total residue ob BYI08330 is mainly composed of the enol and the ketohydroxy metabolites. The parent compound, the monohydroxy and the enol-glucoside metabolite were not present or in traces, only.

Table 6.3.1.16-2: Recovery results for BYI08330 and its metabolites in head cabbage (white, red, Savoy)

Study No. Trial No. GLP Year	Crop	Portion analysed	Analyte	Fortification level (mg/kg)			Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2037/04 0152-04 RA-2038/04 0159-04 GLP, yes 2004	Cabbage, white	Head	BYI08330	7	0.01	1.0	72	96	87	9.2
			BYI08330 - enol	7	0.01	1.0	66	109	88	17.2
			BYI08330 - ketohydroxy	7	0.01	1.0	79	106	94	11.9
			BYI08330 enol-glucoside	7	0.01	1.0	74	107	91	11.3
			BYI08330 mono-hydroxy	7	0.01	1.0	76	103	90	9.9
RA-2060/05 0354-05 0355-05	Cabbage, white	Head	BYI08330	11	0.010	5	80	93	86	5.0
			BYI08330 enol	11	0.010	5	77	90	84	4.8
			BYI08330 keto-hydroxy	11	0.010	5	78	94	87	5.4

GLP yes 2005			BYI08330 enol-glucoside	11	0.010	5	71	87	78	
			BYI08330 mono-hydroxy	11	0.010	5	74	91	85	5.9
RA-2061/05 0351-05 GLP yes 2005	Cabbage, white	Head	BYI08330	2	0.1	5	84	97	91	
			BYI08330 - enol	2	0.1	5	78	78	78	
			BYI08330 - ketohydroxy	2	0.1	5	77	88	83	
			BYI08330 enol-glucoside	2	0.1	5	79	82	81	
			BYI08330 mono-hydroxy	2	0.1	5	74	84	79	
RA-2037/04 0156-04 RA-2038/04 0158-04 GLP yes 2004	Cabbage, red	Head	BYI08330	8	0.01	1.0	69	99	88	15.2
			BYI08330 - enol	8	0.01	1.0	76	107	89	14.6
			BYI08330 - ketohydroxy	8	0.01	1.0	82	100	92	7.4
			BYI08330 enol-glucoside	8	0.01	1.0	80	109	97	9.0
			BYI08330 mono-hydroxy	8	0.01	1.0	79	100	92	8.1
RA-2060/05 0352-05 0353-05 GLP yes 2005	Cabbage, red	Head	BYI08330	10	0.0100	5	79	94	86	4.8
			BYI08330 enol	10	0.010	5	78	90	85	4.9
			BYI08330 keto-hydroxy	10	0.010	5	76	93	86	7.2
			BYI08330 enol-glucoside	10	0.010	5	71	100	80	10.6
			BYI08330 mono-hydroxy	10	0.010	5	73	91	86	6.1
RA-2061/05 0350-05 GLP yes 2005	Cabbage, red	Head	BYI08330	1	0.01	0.01	86	86	86	
			BYI08330 - enol	1	0.01	0.01	71	71	71	
			BYI08330 - ketohydroxy	1	0.01	0.01	85	85	85	
			BYI08330 enol-glucoside	1	0.01	0.01	79	79	79	
			BYI08330 mono-hydroxy	1	0.01	0.01	78	78	78	

RSD = relative standard deviation

Table 6.3.1.16-2 continued

Study No. Trial No. GLP Year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2037/04 0157-04 GLP yes 2004	Cabbage, Savoy	Head	BYI08330	6	0.01	1.0	91	96	94	2.0
			BYI08330 - enol	6	0.01	1.0	77	101	93	9.7
			BYI08330 - ketohydroxy	6	0.01	1.0	88	105	95	6.9
			BYI08330 - enol-glucoside	6	0.01	1.0	93	111	100	7.0
			BYI08330 mono-hydroxy	6	0.01	1.0	93	105	99	4.6
RA-2060/05 0356-05 0357-05 0359-05 GLP yes 2005	Cabbage, Savoy	Head	BYI08330	7	0.010	5	78	93	83	5.9
			BYI08330 enol	7	0.010	5	65	86	78	10.0
			BYI08330 keto-hydroxy	7	0.010	5	75	93	85	7.7
			BYI08330 enol-glucoside	7	0.010	5	70	83	76	6.3
			BYI08330 mono-hydroxy	7	0.010	5	72	87	81	7.1

RSD = relative standard deviation

Table 6.3.1.16-3: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with head cabbage (white, red, Savoy) conducted in the field in northern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	PHI (days)
RA-2037/04 R 2004 0152 3 0152-04 Germany D-[redacted] 2004	**Cabbage, white**	**OD 100**	**3**	**7**	**0.0720**	**0.01200**	**3**
RA-2037/04 R 2004 0156 6 0156-04 United Kingdom GB-[redacted] (Lincolnshire) 2004	**Cabbage, red**	**OD 100**	**3**	**7/8**	**0.0720**	**0.01200**	**3**
RA-2037/04 R 2004 0157 4 0157-04 France F-80500 Faverolles (Picardie) 2004	**Cabbage, Savoy**	**OD 100**	**3**	**8/6**	**0.0720**	**0.01440**	**3**
RA-2060/05 R 2005 0352 0 0352-05 France F-[redacted] (Picardie) 2005	Cabbage, red	150 OD	3	14	0.0720	0.01440	7
RA-2060/05 R 2005 0353 9 0353-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cabbage, red	150 OD	3	14	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.16-3 continued

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2060/05 R 2005 0354 7 0354-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cabbage, white	150 OD	3	14	0.0720	0.01200	7
RA-2060/05 R 2005 0355 5 0355-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cabbage, white	150 OD	3	14	0.0720	0.01440	8
RA-2060/05 R 2005 0356 3 0356-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cabbage, Savoy	150 OD	3	14	0.0720	0.01200	7
RA-2060/05 R 2005 0357 1 0357-05 France F-[redacted] (Picardie) 2005	Cabbage, Savoy	150 OD	3	14	0.0720	0.01440	7
RA-2060/05 R 2005 0359 8 0359-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Cabbage, Savoy	150 OD	3	14	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.16-4: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with head cabbage (white, red, Savoy) conducted in the field in southern Europe

Study Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2038/04 **R 2004 0158 2** **0158-04** **Spain** **E-08850 Gavá** **(Cataluña)** **2005**	**Cabbage, red**	**OD 100**	**3**	**7**	**0.0720**	**0.01029-** **0.01200**	**3**
RA-2038/04 **R 2004 0159 0** **0159-04** **Italy** **I-[redacted]** **2004**	**Cabbage, white**	**OD 100**	**3**	**7**	**0.0720**	**0.00900**	**3**
RA-2061/05 R 2005 0350 4 0350-05 Italy I-[redacted] (Puglia) 2005	Cabbage, red	150 OD	3	14	0.0720	0.00900	3
RA-2061/05 R 2005 0351 2 0351-05 Spain E-08840 [redacted] (Cataluña) 2005	Cabbage, white	150 OD	3	22/15	0.0720	0.01200- 0.01440	3

a.s. = Active Substance

Table 6.3.1.16-5: Results from residue trials in head cabbage (white, red, Savoy) conducted with BYI08330 OD 100 and OD 150 in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2037/04 R 2004 0152 3	Cabbage, white head	0*	0.01	0.024	0.024	<0.012	<0.008	0.058
		0	0.13	0.026	0.022	<0.012	<0.008	0.18
		3	0.01	0.032	0.023	<0.012	<0.008	0.065
		7	0.01	0.037	0.030	<0.012	<0.008	**0.077**
		14	<0.01	0.018	0.025	<0.012	<0.008	<0.055
United Kingdom RA-2037/04 R 2004 0156 6	Cabbage, red head	0*	0.01	0.065	0.013	<0.012	<0.008	0.092
		0	0.04	0.062	0.012	<0.012	<0.008	0.11
		3	0.01	0.060	0.012	<0.012	<0.008	**0.084**
		6	0.01	0.059	0.012	<0.012	<0.008	0.080
		14	<0.01	0.062	0.012	<0.012	<0.008	0.074
		20	<0.01	0.039	0.012	<0.012	<0.008	0.071
France RA-2037/04 R 2004 0157 4	Cabbage, Savoy head	0*	0.01	0.012	0.035	<0.012	<0.008	<0.055
		0	0.04	0.045	0.070	<0.012	0.008	0.16
		3	0.01	0.017	0.044	<0.012	0.008	**0.080**
		7	<0.01	0.012	0.014	<0.012	<0.008	<0.055
		14	<0.01	0.012	0.012	<0.012	<0.008	<0.055
		21	<0.01	0.012	0.013	<0.012	<0.008	<0.055
France RA-2060/05 R 2005 0352 0	Cabbage, red head	-14	<0.01	0.014	<0.012	<0.012	<0.008	<0.055
		-11	0.01	0.019	<0.012	<0.012	<0.008	**<0.055**
		0*	<0.01	0.014	<0.012	<0.012	<0.008	<0.055
		0	0.02	0.020	<0.012	<0.012	<0.008	<0.055
		3	0.01	0.025	<0.012	<0.012	<0.008	<0.055
		7	<0.01	0.025	<0.012	<0.012	<0.008	<0.055
		14	<0.01	0.017	<0.012	<0.012	<0.008	<0.055
		21	<0.01	0.024	<0.012	<0.012	<0.008	<0.055
Germany RA-2060/05 R 2005 0353 9	Cabbage, red head	-14	0.04	0.10	<0.012	<0.012	<0.008	0.16
		-11	<0.01	0.095	<0.012	<0.012	<0.008	**0.11**
		0*	0.04	0.11	<0.012	<0.012	<0.008	0.16
		3	<0.01	0.092	0.014	<0.012	<0.008	0.11
		7	<0.01	0.090	<0.012	<0.012	<0.008	0.10
		14	<0.01	0.072	<0.012	<0.012	<0.008	0.084
Germany RA-2060/05 R 2005 0354 7	Cabbage, white head	-14	<0.01	0.032	0.044	<0.012	<0.008	0.086
		-11	<0.01	0.052	0.067	<0.012	<0.008	**0.13**
		0*	<0.01	0.040	0.071	<0.012	<0.008	0.12
		0	0.06	0.058	0.087	<0.012	<0.008	0.21
		3	0.01	0.061	0.094	<0.012	<0.008	0.17
		7	0.01	0.062	0.093	<0.012	<0.008	0.16
		14	<0.01	0.053	0.099	<0.012	<0.008	0.16
		21	<0.01	0.037	0.074	<0.012	<0.008	0.12
Germany RA-2060/05 R 2005 0355 5	Cabbage, white head	-14	<0.01	0.036	0.021	<0.012	<0.008	0.067
		-11	<0.01	0.035	0.022	<0.012	<0.008	**0.057**
		0	<0.01	0.037	0.021	<0.012	<0.008	0.068
		3	<0.01	0.024	0.014	<0.012	<0.008	<0.055
		8	<0.01	0.032	0.015	<0.012	<0.008	<0.055
		14	<0.01	0.026	0.013	<0.012	<0.008	<0.055

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2060/05 R 2005 0356 3	Cabbage, Savoy head	-14	0.22	0.11	0.084	<0.012	<0.008	0.41
		-11	0.09	0.12	0.11	<0.012	<0.008	**0.31**
		0*	<0.01	0.076	0.066	<0.012	<0.008	0.16
		0	0.11	0.093	0.11	<0.012	<0.008	0.32
		3	0.03	0.11	0.10	<0.012	<0.008	0.25
		7	<0.01	0.064	0.084	<0.012	<0.008	0.16
		14	<0.01	0.081	0.074	<0.012	<0.008	0.18
		21	<0.01	0.055	0.068	<0.012	<0.008	0.13
France RA-2060/05 R 2005 0357 1	Cabbage, Savoy head	-14	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
		-11	0.01	0.015	<0.012	<0.012	<0.008	**<0.055**
		0	0.01	0.024	0.028	<0.012	<0.008	0.065
		3	<0.01	0.031	0.031	<0.012	<0.008	0.072
		7	<0.01	0.026	0.021	<0.012	<0.008	<0.055
		14	0.01	0.027	0.018	<0.012	<0.008	<0.055
Germany RA-2060/05 R 2005 0359 8	Cabbage, Savoy head	-14	0.38	0.13	0.12	<0.012	<0.008	0.64
		-11	0.24	0.12	0.098	<0.012	<0.008	**0.47**
		0	0.30	0.10	0.081	<0.012	<0.008	0.48
		3	<0.01	0.060	0.046	<0.012	<0.008	0.12
		7	<0.01	0.060	0.061	<0.012	<0.008	0.14
		14	<0.01	0.042	0.054	<0.012	<0.008	0.10

DALT = Days after last Treatment; * = Before the last Treatment

Table 6.3.1.16-6: Results from residue trials in head cabbage (white, red, Savoy) conducted with BYI08330 OD 100 and OD 150 in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Spain RA-2038/04 R 2004 0158 2	Cabbage, red head	0* 0 **3** 7 14 23	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.098 0.11 0.13 0.19 0.17 0.14	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.11 0.12 0.16 **0.20** 0.18 0.15
Italy RA-2038/04 R 2004 0159 0	Cabbage, white head	0* 0 **3** 7 14	0.01 0.01 0.01 <0.01 <0.01	0.024 0.039 0.036 0.051 0.065	0.012 0.021 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008	<0.055 0.13 0.058 0.062 **0.077**
Italy RA-2061/05 R 2005 0350 4	Cabbage, red head	-14 -11 0* 0 **3** 7 14 21	0.04 <0.01 <0.01 0.03 <0.01 <0.01 <0.01 <0.01	0.036 0.025 0.031 0.047 0.046 0.058 0.062 0.071	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008 <0.008 <0.008	0.089 **<0.055** <0.055 0.077 0.056 0.058 0.062 0.071
Spain RA-2061/05 R 2005 0351 2	Cabbage, white head	-16 -13 0 2 7 14	0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.019 0.022 0.032 0.029 0.032 0.034	0.020 0.018 0.017 0.017 0.014 0.018	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008 <0.008	<0.055 **<0.055** 0.059 0.063 <0.055 0.059

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.17 Leafy brassica

BYI08330 is to be registered for control of aphids in leafy cabbage. Residue data in curly kale, Chinese kale and Chinese cabbage are reported to support the critical European GAP, which is summarised in Table 6.3.1.17-1.

Table 6.3.1.17-1: Critical European GAP for the use of BYI08330 in leafy cabbage

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Leafy cabbage	EUN	72	750	3	14	3
Leafy cabbage	EUS	72	750	3	14	3

Report:	**KIIA 6.3.1.17/01, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on curly kale after spraying of BYI08330 (100 OD) in the field in United Kingdom and Germany**
Report No & Document No	**RA-2040/04, including trials no. R 2004 0164/7, R 2004 0165/5 M-263745-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.17/02, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on curly kale after spraying of BYI08330 (150 OD) in the field in Germany**
Report No & Document No	**RA-2064/05, including trials no. R 2005 0367/9, R 2005 0368/7 M-272573-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.17/03, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on Chinese kale after spraying of BYI08330 (100 OD) in the field in Southern France and Spain**
Report No & Document No	**RA-2041/04, including trials no. R 2004 0166/3, R 2004 0167/1 M-264301-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.17/04, [redacted] 2006**

Title:	**Determination of the residues of BYI08330 in/on Chinese cabbage after spraying of BYI08330 (150 OD) in the field in Spain and Italy**
Report No & Document No	**RA-2136/05, including trials no. R 2005 0709/7, R 2005 0710/0 M-273243-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Leafy cabbage is classified as minor crop in northern and southern Europe. In the years 2004 and 2005 four supervised residue trials were conducted in curly kale typically grown in northern Europe and 4 trials in Chinese kale and Chinese cabbage typically grown in Southern Europe. All trials were performed according to the critical European GAP. According to the critical European GAP residue data from day 3 after 3 applications were evaluated. If the total residue at later intervals exceeded the residue at day 3, residues at later intervals were evaluated to cover the worst case.

The use patterns of the individual residue trials are summarized in Tables 6.3.1.17-3 to 6.3.1.17-4. The results from the residue trials are given in Table 6.3.1.17-5 and in more detail in the respective Tier I summaries.

Residues in leafy cabbage were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites in cabbage leaves at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.17-2).

Findings:

The total residue of BYI08330 in leafy cabbage on day 3 after 3 applications ranged from **0.2 to 0.76 mg/kg (STMR 0.42 mg/kg)**. There was no difference in residues from different varieties of leafy cabbage or in leafy cabbage grown in northern or southern Europe. Moreover, an influence of different spray intervals on the residue behavior could not be found. The total residue values used for the evaluation are marked with bold numbers in Tables 6.3.1.16-5.

The total residue of BYI08330 is mainly composed of BYI08330, the enol and the ketohydroxy metabolite. BYI08330-monohydroxy and enol-glucoside were not found or in traces, only

Table 6.3.1.17-2: Recovery results for BYI08330 and its metabolites in leafy cabbage

Study No. / GLP / Year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2040/04 / GLP yes / 2004	Kale, curly	leaf	BYI08330	8	0.01	1.0	73	106	90	12.5
			BYI08330 - enol	8	0.01	1.0	73	100	87	11.7
			BYI08330 - ketohydroxy	8	0.01	1.0	77	95	88	5.9
			BYI08330 enol-glucoside	8	0.01	1.0	80	112	99	10.2
			BYI08330 mono-hydroxy	8	0.01	1.0	83	109	94	8.8
RA-2064/05 / GLP yes / 2005	Kale, curly	leaf	BYI08330	8	0.01	2	77	106	84	11.2
			BYI08330 - enol	8	0.01	2	70	88	78	7.2
			BYI08330 - ketohydroxy	8	0.01	2	73	87	80	4.8
			BYI08330 enol-glucoside	8	0.01	2	60	85	74	12.2
			BYI08330 mono-hydroxy	8	0.01	2	72	87	79	6.6
RA-2041/04 / GLP yes / 2004	Kale, Chinese	leaf	BYI08330	8	0.01	1.0	68	98	84	13.9
			BYI08330 - enol	8	0.01	1.0	71	104	87	14.0
			BYI08330 - ketohydroxy	8	0.01	1.0	75	109	94	14.2
			BYI08330 enol-glucoside	8	0.01	1.0	75	105	90	10.5
			BYI08330 mono-hydroxy	8	0.01	1.0	79	104	91	9.4
RA-2136/05 / GLP yes / 2005	Cabbage, Chinese	head	BYI08330	9	0.01	5	73	112	88	14.3
			BYI08330 - enol	9	0.01	5	68	88	83	7.1
			BYI08330 - ketohydroxy	9	0.01	5	81	95	89	5.2
			BYI08330 enol-glucoside	9	0.01	5	75	89	83	6.0
			BYI08330 mono-hydroxy	9	0.01	5	82	91	86	3.6

RSD = relative standard deviation

Table 6.3.1.17-3: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with leafy cabbage (curly kale) conducted in the field in northern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval (days)	kg a.s. / ha	kg a.s. / hL	
RA-2040/04 R 2004 0164 7 0164-04 United Kingdom GB-[redacted] (Cambridgeshire) 2004	Kale, curly	100 OD	3	6	0.0720	0.01440	3
RA-2040/04 R 2004 0165 5 0165-04 Germany D-[redacted] 2004	Kale, curly	100 OD	3	7	0.0720	0.01440	3
RA-2064/05 R 2005 0367 9 0367-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Kale, curly	150 OD	3	14	0.0720	0.01200	7
RA-2064/05 R 2005 0368 7 0368-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Kale, curly	150 OD	3	14	0.0720	0.01440	7

a.s. = Active Substance

Table 6.3.1.17-3: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with leafy cabbage (Chinese kale and Chinese cabbage) conducted in the field in southern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2041/04 R 2004 0166 3 0166-04 France F-[redacted] 2004	Kale, Chinese	100 OD	3	7	0.0720	0.01200	3
RA-2041/04 R 2004 0167 1 0167-04 Spain E-[redacted] (Cataluña) 2004	Kale, Chinese	100 OD	3	6/8	0.0720-0.0760	0.01200	3
RA-2136/05 R 2005 0709 7 0709-05 Spain E-08840 [redacted] (Cataluña) 2005	Cabbage, Chinese	150 OD	3	14	0.0660-0.0720	0.00480-0.01200	7
RA-2136/05 R 2005 0710 0 0710-05 Italy I-[redacted] 2005	Cabbage, Chinese	150 OD	3	14	0.0720	0.00720	7

a.s. = Active Substance

Table 6.3.1.17-5: Results from residue trials with BYI08330 OD 100 and OD 150 in leafy cabbage conducted in the field in Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
United Kingdom RA-2040/04 R 2004 0164 7	Kale, curly leaf	0	0.40	0.33	0.12	<0.012	0.008	0.85
		0	1.2	0.42	0.24	<0.012	0.008	1.9
		3	0.15	0.22	0.081	<0.012	0.008	0.45
		8	0.20	0.29	0.11	<0.012	0.008	**0.60**
		15	0.07	0.28	0.080	<0.012	0.012	0.44
Germany RA-2040/04 R 2004 0165 5	Kale, curly leaf	-1	0.08	0.070	0.094	<0.012	0.012	0.26
		0	1.0	0.23	0.18	<0.012	0.014	1.5
		3	0.50	0.12	0.12	<0.012	0.013	**0.76**
		7	0.07	0.053	0.064	<0.012	0.013	0.20
		14	0.05	0.050	0.048	<0.012	0.020	0.16
		20	0.03	0.041	0.037	<0.012	0.018	0.12
Germany RA-2064/05 R 2005 0367 9	Kale, curly leaf	-14	1.2	0.15	0.055	<0.012	<0.008	1.4
		-1	0.90	0.079	0.072	<0.012	<0.008	1.1
		0	0.05	0.059	0.019	<0.012	<0.008	0.13
		0	0.87	0.21	0.053	<0.012	<0.008	1.1
		3	0.09	0.092	0.042	<0.012	<0.008	**0.23**
		7	0.05	0.061	0.033	<0.012	<0.008	0.15
		14	0.03	0.062	0.021	<0.012	0.010	0.12
		21	0.01	0.038	0.014	<0.012	<0.008	0.071
Germany RA-2064/05 R 2005 0368 7	Kale, curly leaf	-14	1.1	0.18	0.051	<0.012	<0.008	1.4
		-1	0.91	0.18	0.072	<0.012	<0.008	1.2
		0	1.1	0.28	0.075	<0.012	<0.008	1.4
		3	0.03	0.16	0.035	<0.012	<0.008	0.23
		7	0.02	0.21	0.051	<0.012	<0.008	**0.29**
		14	0.02	0.12	0.022	<0.012	<0.008	0.17
France RA-2041/04 R 2004 0166 3	Kale, Chinese leaf	0	0.38	0.37	0.14	<0.012	0.029	0.88
		3	0.11	0.28	0.12	<0.012	0.034	**0.54**
		7	0.01	0.19	0.056	<0.012	0.037	0.30
		14	<0.01	0.15	0.046	<0.012	0.039	0.24
Spain RA-2041/04 R 2004 0167 1	Kale, Chinese leaf	0	0.16	0.28	0.099	<0.012	0.043	0.52
		0	0.47	0.50	0.18	<0.012	0.054	1.2
		4	0.08	0.38	0.12	<0.012	0.039	**0.61**
		7	0.07	0.31	0.11	<0.012	0.043	0.53
		14	<0.01	0.38	0.16	<0.012	0.028	0.56
		20	<0.01	0.25	0.11	<0.012	0.030	0.39
Spain RA-2136/05 R 2005 0709 7	Cabbage, Chinese head	14	0.94	0.72	0.13	<0.012	<0.008	1.8
		12	0.28	0.49	0.15	<0.012	<0.008	0.93
		0	<0.01	0.12	0.047	<0.012	<0.008	0.18
		2	<0.01	0.19	0.069	<0.012	<0.008	0.26
		7	<0.01	0.16	0.12	<0.012	<0.008	**0.28**
		14	<0.01	0.082	0.068	<0.012	<0.008	0.16
		21	<0.01	0.060	0.055	<0.012	<0.008	0.12

Italy RA-2136/05 R 2005 0710 0	Cabbage, Chinese head	-14	0.05	0.11	0.033	<0.012	<0.008	0.17
		-11	<0.01	0.16	0.028	<0.012	<0.008	0.19
		0	<0.01	0.11	0.021	<0.012	<0.008	0.14
		0	0.02	0.11	0.029	<0.012	<0.008	0.17
		3	<0.01	0.13	0.026	<0.012	<0.008	0.17
		7	<0.01	0.15	0.032	<0.012	<0.008	**0.20**
		14	<0.01	0.13	0.026	<0.012	<0.008	0.16
		21	<0.01	0.13	0.035	<0.012	<0.008	0.17

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.18 Kohlrabi

BYI08330 is to be registered for control of aphids in kohlrabi. Residue data in kohlrabi are reported to support the critical European GAP, which is summarised in Table 6.3.1.18-1.

Table 6.3.1.18-1: Critical European GAP for the use of BYI08330 in kohlrabi

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Kohlrabi	EUN	72	750	2	14	3

Report:	**KIIA 6.3.1.18/01, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on kohlrabi and after spraying of BYI08330 (100 OD) in the field in Germany and the Netherlands**
Report No & Document No	**RA-2043/04, including trials no. R 2004 0169/8, R 2004 0170/1 M-265036-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.18/02, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on kohlrabi and after spraying of BYI08330 (150 OD) in the field in Germany**
Report No & Document No	**RA-2065/05, including trials no. R 2005 0373/3, R 2005 0374/1 M-272128-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Kohlrabi is classified as minor crop in northern Europe. Altogether 4 supervised residue trials have been performed in northern European countries in the years 2004 and 2005. In 2004, 2 trials were conducted with 3 spray applications of BYI08330 and a spray interval of 7 days. Samples were taken directly before the last application and 0-21 days after the last application. In 2005, due to new results from biological trials the critical GAP was changed: The number of applications was changed from 3 to 2 and the spray interval from 7 days to 14 days. In 2005, 2 residue trials were performed with 3 applications and a spray interval of 14 days. Samples were taken 0-21 days after the last application. Additional samples were

taken 3 days after the second application to cover the use pattern with 2 applications. The use patterns of the individual residue trials are summarized in Tables 6.3.1.18-3. The results from the residue trials are given in Tables 6.3.1.18-4 and in more detail in the respective Tier I summaries.

Residues in kohlrabi corm and leaf were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites in corm and leaf at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.18-2)

Findings:
The total residue of BYI08330 in kohlrabi corm on day 3 after 3 applications from 4 trials ranged from 0.12 to 0.66 mg/kg.
In 2 trials (R 2005 0373/3 and R 2005 0374/1) additional samples were taken on day 3 after the 2nd application. The total residue in these samples was 0.25 and 0.19 mg/kg corresponding well with their residue data from day 3 after 3 applications (0.21 and 0.12 mg/kg). According to these findings it can be concluded that residue data from corms collected 3 days after 3 applications of BYI08330 can be used to support the critical European GAP.

Based on these findings residue data from day 3 after 3 applications are evaluated from 2 trials where no residue data from day 3 after 2 applications is available to support the critical European GAP. The so calculated total residue of BYI08330 in kohlrabi corm ranged between **0.19 and 0.66 mg/kg (STMR 0.040 mg/kg)**. The total residue used for evaluation is marked with bold numbers in Table 6.3.1.16-4.

The total residue of BYI08330 is mainly composed of the enol and the ketohydroxy metabolites. The parent compound and BYI08330-ketohydroxy were present at minor amounts. BYI 08330-monohydroxy and the enol-glucoside were not found in kohlrabi corms or in taces, only.

Table 6.3.1.18-2: Recovery results for BYI08330 and its metabolites in kohlrabi

Study No. / GLP Year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2043/04 GLP yes 2004	Kohlrabi	corm	BYI08330	8	0.01	1.0	85	98	93	4.2
			BYI08330 - enol	8	0.01	1.0	84	110	97	8.8
			BYI08330 - ketohydroxy	8	0.01	1.0	85	102	95	6.1
			BYI08330 enol-glucoside	8	0.01	1.0	90	112	98	7.6
			BYI08330 mono-hydroxy	8	0.01	1.0	88	103	97	5.1
		leaf	BYI08330	9	0.01	1.0	85	99	92	5.2
			BYI08330 - enol	9	0.01	1.0	85	109	97	8.1
			BYI08330 - ketohydroxy	9	0.01	1.0	86	105	93	5.6
			BYI08330 enol-glucoside	9	0.01	1.0	87	114	98	10.1
			BYI08330 mono-hydroxy	9	0.01	1.0	92	100	96	3.5
RA-2065/05 GLP yes 2005	Kohlrabi	corm	BYI08330	11	0.01	1.0	73	116	92	15.1
			BYI08330 - enol	11	0.01	1.0	75	115	94	11.3
			BYI08330 - ketohydroxy	11	0.01	1.0	73	117	94	13.2
			BYI08330 enol-glucoside	11	0.01	1.0	70	118	94	15.1
			BYI08330 mono-hydroxy	11	0.01	1.0	70	114	90	14.0
		leaf	BYI08330	11	0.01	1.0	71	108	93	11.3
			BYI08330 - enol	11	0.01	1.0	77	100	94	6.7
			BYI08330 - ketohydroxy	11	0.01	1.0	78	101	94	7.1
			BYI08330 enol-glucoside	11	0.01	1.0	76	106	94	7.8
			BYI08330 mono-hydroxy	11	0.01	1.0	71	106	92	10.2

RSD = relative standard deviation

Table 6.3.1.18-3: Use pattern of BYI08330 OD 100 and OD 150 W in residue trials with kohlrabi conducted in the field in northern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hl	
RA-2043/04 R 2004 0169 8 0169-04 Germany D-[redacted] (Nordrhein-Westfalen) 2004	Kohlrabi	100 OD	3	8/7	0.0720	0.01800	3
RA-2043/04 R 2004 0170 1 0170-04 Netherlands NL-[redacted](Noord-Holland) 2004	Kohlrabi	100 OD	3	8/7	0.0720	0.01200	3
RA-2065/05 R 2005 0373 3 0373-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Kohlrabi	150 OD	3	15/14	0.0720	0.01200	3
RA-2065/05 R 2005 0374 1 0374-05 Germany D-[redacted] (Nordrhein-Westfalen) 2005	Kohlrabi	150 OD	3	14	0.0720	0.00720	3

a.s. = Active Substance

Table 6.3.1.18-4: Results from residue trials in kohlrabi in the field conducted with BYI08330 OD 100 and OD 150 in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2043/04 R 2004 0169 8	Kohlrabi corm	0*	0.01	0.42	0.064	<0.012	<0.008	0.50
		0	0.03	0.53	0.11	<0.012	0.008	0.69
		3	0.01	0.52	0.12	<0.012	0.008	**0.66**
		7	0.01	0.51	0.083	<0.012	<0.008	0.60
		14	<0.01	0.33	0.020	<0.012	<0.008	0.35
		21	<0.01	0.13	0.012	<0.012	<0.008	0.15
	leaf	0*	0.04	0.41	0.11	<0.012	0.021	0.57
		0	1.2	2.1	0.48	<0.012	0.023	3.8
		3	0.66	1.2	0.29	<0.012	0.027	2.2
		7	0.06	0.73	0.14	<0.012	0.028	0.96
		14	<0.01	0.10	0.032	<0.012	0.017	0.15
		21	<0.01	0.023	0.012	<0.012	0.014	<0.055
Netherlands RA-2043/04 R 2004 0170 1	Kohlrabi corm	0*	0.01	0.37	0.032	<0.012	<0.008	0.40
		0	0.01	0.42	0.038	<0.012	<0.008	0.47
		3	0.01	0.42	0.033	<0.012	<0.008	0.46
		7	<0.01	0.49	0.034	<0.012	0.008	**0.54**
		14	<0.01	0.28	0.018	<0.012	0.008	0.31
		21	<0.01	0.20	0.012	<0.012	<0.008	0.22
	leaf	0*	0.08	0.10	0.038	<0.012	0.033	0.26
		0	1.3	0.62	0.21	<0.012	0.042	2.4
		3	0.91	0.35	0.097	<0.012	0.042	1.4
		7	0.49	0.16	0.059	<0.012	0.056	0.76
		14	0.05	0.041	0.012	<0.012	0.067	0.17
		21	0.01	0.041	0.012	<0.012	0.061	0.13

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.18-4 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2065/05 R 2005 0373 3	Kohlrabi corm	-14	0.01	0.096	0.013	<0.012	<0.008	0.12
		-11	0.01	0.22	0.017	<0.012	<0.008	**0.25**
		0*	0.01	0.15	0.013	<0.012	<0.008	0.18
		0	<0.01	0.13	0.013	<0.012	<0.008	0.15
		3	0.01	0.19	0.012	<0.012	<0.008	0.21
		7	0.01	0.15	0.012	<0.012	<0.008	0.17
		14	<0.01	0.094	0.012	<0.012	<0.008	0.11
		21	<0.01	0.045	0.012	<0.012	<0.008	0.057
	leaf	-14	0.57	0.87	0.28	<0.012	0.022	1.7
		-11	0.12	0.18	0.062	<0.012	0.025	0.38
		0*	1.1	0.42	0.11	<0.012	0.022	1.6
		0	1.3	0.22	0.067	<0.012	0.019	0.95
		3	0.08	0.14	0.044	<0.012	0.038	0.30
		7	0.10	0.032	<0.012	<0.012	0.040	0.17
		14	0.02	0.012	<0.012	<0.012	0.032	0.063
		21	0.01	0.012	<0.012	<0.012	0.029	<0.055
Germany RA-2065/05 R 2005 0374 1	Kohlrabi corm	-14	0.03	0.18	0.015	<0.012	0.008	0.23
		-11	0.01	0.16	0.014	<0.012	0.008	**0.19**
		0*	0.02	0.13	0.012	<0.012	0.008	0.17
		0	0.01	0.11	0.012	<0.012	<0.008	0.13
		3	<0.01	0.11	0.012	<0.012	<0.008	0.12
		7	<0.01	0.088	0.012	<0.012	<0.008	0.10
		14	<0.01	0.068	0.012	<0.012	<0.008	0.080
	leaf	-14	1.3	0.38	0.044	<0.012	0.038	1.8
		-11	0.38	0.17	0.025	<0.012	0.044	0.62
		0*	0.77	0.24	0.034	<0.012	0.054	1.1
		0	0.03	0.027	0.012	<0.012	0.048	0.11
		3	0.01	0.074	0.014	<0.012	0.062	0.16
		7	0.01	0.045	0.013	<0.012	0.057	0.12
		14	<0.01	0.023	0.012	<0.012	0.052	0.087

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.19 Beans and peas

BYI08330 is to be registered for control of aphids, white flies and mites on bean a nd pea plants. Residue data in French climbing beans grown in the greenhouse are reported to support the critical European GAP, which is summarised in Table 6.3.1.19-1.

Table 6.3.1.19-1: Critical European GAP for the use of BYI08330 in beans and peas

Crop	Region	Use rate (g as/ha x m*)	Water volume (L/ha x m*)	No. of appl.	Spray interval (days)	PHI (days)
Beans, peas	Greenhouse	72	750	4	7	14

* the application rate is adapted to the height of the leafy surface

Report:	**KIIA 6.3.1.19/01, [redacted], 2006**
Title:	**Determination of the residues of BYI08330 in/on climbing french bean after spraying of BYI08330 (100 OD) in the greenhouse in Italy, Germany and Southern France**
Report No & Document No	**RA-2042/04, including trials no. R 2004 0172/8, R 2004 0173/6, R 2004 0174/4, R 2004 0175/2, R 2004 0176/0, R 2004 0177/9, R 2004 0178/7, R 2004 0179/5 M-263646-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 8 supervised residue trials have been performed with BYI08330 OD100 in French climbing beans in the greenhouse in 2004. The trials were conducted according to the critical European GAP. The application of 72 g as/ha and m to plants with a height of 1.75 m (trials R 2004 0175/2 and R 2004 0178/7) and 2 m (remaining 6 trials) resulted in application rates per ha of 126 and 144 g. The use patterns of the individual residue trials are summarized in Tables 6.3.1.19-3. The results from the residue trials are given in Table 6.3.1.19-4 and in more detail in the respective Tier I summaries.

Residues in beans were analysed according to method 00857 (IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites in bean with pod at all fortification levels were within the acceptable range of 70-110 %; RSD ≤ 20%. (Table 6.3.1.19-2)

Findings:

The total residue of BYI08330 in beans sampled 14 days after 4 applications ranged between 0.071 and 0.63 mg/kg (STMR 0.35 mg/kg). The values of the total residue used for evaluation are marked with bold numbers in Table 6.3.1.16-4.

The total residue of BYI08330 in beans is mainly composed of BYI08330, the enol and the ketohydroxy metabolites. BYI 08330 monohydroxy and enol-glucoside were not detected or in traces only.

Table 6.3.1.19-2: Recovery results for BYI08330 and its metabolites in beans with pods

Study GLP Year	Crop	Portion analysed	Analyte	Fortification level (mg/kg)			Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2042/04 GLP yes 2004	Bean, climbing French	bean with pod	BYI08330	19	0.01	2.0	83	99	92	5.4
			BYI08330 - enol	19	0.01	2.0	76	99	88	6.6
			BYI08330 - ketohydroxy	19	0.01	2.00	83	101	94	4.7
			BYI08330 enol-glucoside	19	0.01	2.0	81	110	96	9.8
			BYI08330 mono-hydroxy	19	0.01	2.0	84	101	94	4.9

RSD = relative standard deviation

Table 6.3.1.19-3: Use pattern of BYI08330 OD 100 in residue trials with French climbing beans conducted in the greenhouse

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s./ (ha x m *)	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m *)	PHI (days)
RA-2042/04 R 2004 0172 8 0172-04 Italy I-[redacted] ([redacted]) (Lazio) 2004	Bean, climbing French	100 OD	4	7	0.072	0.0864-0.1440	0.01440	500	14
RA-2042/04 R 2004 0173 6 0173-04 Italy I-[redacted] (Fg) (Puglia) 2004	Bean, climbing French	100 OD	4	7	0.072	0.1440	0.01440	500	14
RA-2042/04 R 2004 0174 4 0174-04 Germany D-[redacted] 2004	Bean, climbing French	100 OD	4	7	0.072	0.1440	0.01440	500	14
RA-2042/04 R 2004 0175 2 0175-04 France F-[redacted] (Provence-Cote D'azur) 2004	Bean, climbing French	100 OD	4	7	0.072	0.1260	0.01440	500	14

a.s. = Active Substance; * application rate adapted to the height of the leafy surface

Table 6.3.1.19-3 continued

Study No. Trial No. Country Year	Crop	Form.	Application						
			No.	Spray interval (days)	kg a.s. / ha x m *	kg a.s. / ha	kg a.s./hL	Water rate (L/ha x m *)	PHI days
RA-2042/04 R 2004 0176 0 0176-04 Italy I-[redacted] 2004	Bean, climbing French	100 OD	4		0.072 -	0.0864 - 0.1440	0.01440	500	14
RA-2042/04 R 2004 0177 9 0177-04 Italy I-[redacted](Puglia) 2004	Bean, climbing French	100 OD	4	7	0.072	0.1440	0.01440	500	14
RA-2042/04 R 2004 0178 7 0178-04 France F-[redacted] (Provence-Cote D'Azur) 2004	Bean, climbing French	100 OD	4	7	0.072	0.1260	0.01440	500	14
RA-2042/04 R 2004 0179 5 0179-04 Germany D-[redacted] (Kals) 2004	Bean, climbing French	100 OD	4	7	0.072	0.1440	0.01440	500	14

a.s. = Active Substance, * application rate adapted to the height of the leafy surface

Table 6.3.1.19-4: Results from residue trials with BYI08330 OD 100 in French climbing beans conducted in the greenhouse

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Italy RA-2042/04 R 2004 0172 8	Bean, climbing French bean with pod	0*	0.03	0.17	0.19	<0.012	0.024	0.42
		0	0.24	0.26	0.22	0.012	0.030	0.77
		7	0.13	0.25	0.20	0.012	0.038	0.63
		10	0.06	0.11	0.12	0.012	0.025	0.32
		14	0.06	0.12	0.081	0.012	0.030	**0.31**
		21	0.04	0.063	0.042	0.012	0.023	0.18
Italy RA-2042/04 R 2004 0173 6	Bean, climbing French bean with pod	0*	0.19	0.25	0.077	<0.012	0.021	0.54
		0	0.42	0.46	0.12	<0.012	0.025	1.0
		7	0.52	0.34	0.089	<0.012	0.035	0.99
		10	0.28	0.25	0.076	<0.012	0.029	0.63
		14	0.01	0.066	0.020	<0.012	0.008	**0.11**
		21	0.01	0.036	0.012	<0.012	0.008	0.066
Germany RA-2042/04 R 2004 0174 4	Bean, climbing French bean with pod	0*	0.16	0.22	0.11	<0.012	0.018	0.51
		0	0.20	0.22	0.13	<0.012	0.018	0.56
		7	0.15	0.27	0.12	0.012	0.026	0.58
		10	0.04	0.23	0.099	0.012	0.021	0.40
		14	0.13	0.29	0.099	0.012	0.035	**0.57**
		21	0.03	0.19	0.055	0.012	0.032	0.32
France RA-2042/04 R 2004 0175 2	Bean, climbing French bean with pod	0*	0.10	0.088	0.16	0.012	0.024	0.38
		0	0.28	0.15	0.21	0.012	0.025	0.67
		7	0.22	0.24	0.17	0.012	0.033	0.68
		10	0.35	0.28	0.10	0.012	0.040	0.78
		14	0.15	0.26	0.099	0.012	0.043	**0.57**
		21	0.04	0.19	0.080	0.012	0.054	0.38
Italy RA-2042/04 R 2004 0176 0	Bean, climbing French bean with pod	0*	0.01	0.041	0.10	<0.012	0.009	0.16
		0	0.04	0.054	0.10	<0.012	0.010	0.21
		7	0.01	0.049	0.11	<0.012	0.014	0.18
		10	0.01	0.031	0.070	<0.012	0.012	0.12
		14	0.01	0.015	0.037	<0.012	0.008	**0.071**
		21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Italy RA-2042/04 R 2004 0177 9	Bean, climbing French bean with pod	0*	0.01	0.037	0.084	<0.012	0.009	0.14
		0	0.08	0.089	0.20	<0.012	0.009	0.37
		7	0.02	0.068	0.14	<0.012	0.012	0.24
		10	0.01	0.046	0.075	<0.012	0.009	0.14
		14	0.01	0.090	0.048	<0.012	0.012	**0.16**
		21	0.01	0.026	0.023	<0.012	0.008	0.057
France RA-2042/04 R 2004 0178 7	Bean, climbing French bean with pod	0*	0.06	0.10	0.14	0.012	0.020	0.33
		0	0.13	0.13	0.17	0.012	0.020	0.46
		7	0.08	0.22	0.16	0.012	0.027	0.50
		10	0.13	0.26	0.11	0.012	0.031	0.53
		14	0.11	0.27	0.12	0.012	0.043	0.56
		21	0.13	0.29	0.12	0.017	0.067	**0.63**

Germany RA-2042/04 R 2004 0179 5	Bean, climbing French bean with pod	0*	0.02	0.23	0.16	0.012	0.012	0.45
		0	0.09	0.26	0.14	<0.012	0.012	0.50
		7	0.06	0.40	0.11	0.012	0.023	0.60
		9	0.07	0.36	0.13	0.012	0.022	0.59
		14	0.04	0.23	0.098	<0.012	0.021	**0.39**
		21	0.02	0.15	0.061	<0.012	0.015	0.24

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.20 Potatoes

Residue trials with BYI08330 in potato were conducted according to the GAP summarised in Table 6.3.1.20-1.

Table 6.3.1.20-1: GAP for the use of BYI08330 in potatoes

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Potato	EUN	72	750	4	14	14
Potato	EUS	72	750	4	14	14

Report:	**KIIA 6.3.1.20/01, [redacted]; 2005**
Title:	**Determination of the residues of BYI08330 in/on potato after spraying of BYI08330 (100 OD) in the field in Germany, Northern France and United Kingdom**
Report No & Document No	**RA-2114/04, including trials no. R 2004 0690/8, R 2004 0691/6, R 2004 0692/4, R 2004 0693/2** **M-259808-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.3.1.20/02, [redacted] 2005**
Title:	**Determination of the residues of BYI08330 in/on potato after spraying of BYI08330 (100 OD) in the field in Southern France, Italy, Spain and Portugal**
Report No & Document No	**RA-2115/04, including trials no. R 2004 0694/0, R 2004 0695/9, R 2004 0696/7, R 2004 0697/5** **M-262622-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Altogether 8 supervised residue trials with BYI08330 OD 100 in potato have been performed in the field in northern Europe (4 trials) and southern Europe (4 trials) in 2004. The use patterns of the individual residue trials are summarized in Tables 6.3.1.20-3 and 6.3.1.20-4. The results from the residue trials are given in Tables 6.3.1.20-5 and 6.3.1.20-6 and in more detail in the respective Tier I summaries. The residue data are not used to support a European registration of BYI08330. The results of these trials are reported to support the results from US residue trials.

Residues in potato tubers were analysed according to method 00857 (IIA Point 4.3.1). Mean concurrent recoveries for BYI08330 and its metabolites in potato tubers at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.20-2)

Findings:

The total residue of BYI08330 in potatoes ranged between **<0.055 and 0.19 mg/kg (STMR 0.12 mg/kg)**.
There was no difference in residues in potatoes from northern or southern European residue trials.
BYI08330-enol was major component of the total residue

Table 6.3.1.20-2: Recovery results for BYI08330 and its metabolites in potato tuber

Study GLP Year	Crop	Portion analysed	Analyte	Fortification level (mg/kg)			Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2114/04 RA-2115/04 GLP yes 2004	Potato	Tuber	BYI08330	25	0.01	1.0	78	102	92	6.9
			BYI08330 -enol	25	0.01	1.0	76	102	90	6.7
			BYI08330-ketohydroxy	25	0.01	1.0	77	104	93	6.8
			BYI08330 enol-glucoside	25	0.01	1.0	72	103	90	7.1
			BYI08330-mono-hydroxy	25	0.01	1.0	73	97	89	6.2

RSD = relative standard deviation

Table 6.3.1.20-3: Use pattern of BYI08330 OD 100 in residue trials with potatoes conducted in the field in northern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hl	
RA-2114/04 R 2004 0690 8 0690-04 Germany D-[redacted] (Niedersachsen)	Potato	100 OD	4	14	0.0720	0.01440	14
RA-2114/04 R 2004 0691 6 0691-04 Germany D-[redacted]	Potato	100 OD	4	14	0.0720	0.01440	14
RA-2114/04 R 2004 0692 4 0692-04 France F-[redacted]	Potato	100 OD	4	14	0.0720	0.01440	14
RA-2114/04 R 2004 0693 2 0693-04 United Kingdom GB-[redacted] (Norfolk)	Potato	100 OD	4	13/14/14	0.0720	0.01440	14

a.s. = Active Substance

Table 6.3.1.20-3: Use pattern of BYI08330 OD 100 in residue trials with potatoes conducted in the field in Southern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2115/04 R 2004 0694 0 0694-04 France F-[redacted] (Rhone-Alpes)	Potato	100 OD	4	14	0.0720	0.01440	14
RA-2115/04 R 2004 0695 9 0695-04 Italy I-[redacted] ([redacted])	Potato	100 OD	4	14	0.0720	0.01440	14
RA-2115/04 R 2004 0696 7 0696-04 Spain E-[redacted] (Cataluña)	Potato	100 OD	4	16-14-14	0.0720	0.01440	13
RA-2115/04 R 2004 0697 5 0697-04 Portugal P-[redacted]	Potato	100 OD	4	14	0.0720	0.01440	14

a.s. = Active Substance

Table 6.3.1.20-5: Results from residue trials with BYI08330 OD 100 in potatoes conducted in the field in northern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI 08330	BYI 08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany RA-2114/04 R 2004 0690 8	Potato tuber	0* 0 7 **14** 21	<0.01 <0.01 <0.01 <0.01 <0.01	0.048 0.059 0.057 0.050 0.058	0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 <0.008	0.059 0.071 0.069 0.062 **0.069**
Germany RA-2114/04 R 2004 0691 6	Potato tuber	0* 0 7 **14** 21	<0.01 <0.01 <0.01 <0.01 <0.01	0.092 0.12 0.066 0.11 0.10	0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.008	0.11 0.14 0.086 **0.13** 0.12
France RA-2114/04 R 2004 0692 4	Potato tuber	0* 0 7 **14** 21 28	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.037 0.038 0.033 0.047 0.033 0.039	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 0.008 0.008 0.008	<0.055 <0.055 <0.055 **0.055** <0.055 <0.055
United Kingdom RA-2114/04 R 2004 0693 2	Potato tuber	0* 0 7 **14** 21 28	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.094 0.11 0.098 0.17 0.11 0.081	0.012 0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 0.008 0.008 0.008 0.008	0.11 0.12 0.12 **0.19** 0.13 0.10

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.20-6: Results from residue trials with BYI08330 OD 100 in potatoes conducted in the field in southern Europe

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI08330 equivalents BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France RA-2115/04 R 2004 0694 0	Potato tuber	0* 0 7 **14** 21	<0.01 <0.01 <0.01 <0.01 <0.01	0.047 0.078 0.053 0.057 0.061	0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.009 0.014 0.033	0.067 0.097 0.073 0.083 **0.11**
Italy RA-2115/04 R 2004 0695 9	Potato tuber	0* 0 7 **14** 20	<0.01 <0.01 <0.01 <0.01 <0.01	0.09 0.11 0.17 0.096 0.10	0.012 0.012 0.012 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012	0.008 0.008 0.008 0.008 0.008	0.12 0.13 0.19 **0.12** 0.12
Spain RA-2115/04 R 2004 0696 7	Potato tuber	0* 0 7 **13** 21 27	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.032 0.039 0.044 0.025 0.034 0.031	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 0.008 0.008	<0.055 <0.055 <0.055 **<0.055** <0.055 <0.055
Portugal RA-2115/04 R 2004 0697 5	Potato tuber	0* 0 7 **14** 21 28	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.082 0.093 0.096 0.11 0.093 0.081	0.016 0.016 0.016 0.014 0.012 0.012	<0.012 <0.012 <0.012 <0.012 <0.012 <0.012	<0.008 <0.008 <0.008 <0.008 0.008 <0.008	0.098 0.11 0.11 **0.12** 0.11 0.092

DALT = Days after last Treatment, * = Before the last Treatment

IIA 6.3.1.21 Hops

BYI08330 is to be registered for control of aphids, scales and mites in hops. Residue data in hops are reported to support the critical European GAP, which is summarised in Table 6.3.1.21-1.

Table 6.3.1.21-1: Critical European GAP for the use of BYI08330 in hops

Crop	Region	Use rate (g as/ha)	Water volume (L/ha)	No. of appl.	Spray interval (days)	PHI (days)
Hops	EUN	150	2200-3300	1	–	14

Report:	**KIIA 6.3.1.21/01, [redacted] 2006**
Title:	**Determination of the residues of BYI08330 in/on hop after spraying of BYI08330 (100 OD) in the field in Northern France and Germany**
Report No & Document No	**RA-2036/04, including trials no. R 2004 0148/5, R 2004 0149/3, R 2004 0150/7, R 2004 0151/5 M-265047-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.3.1.21/02, [redacted]; 2006**
Title:	**Determination of the residues of BYI08330 in/on hop after spraying of BYI08330 (150 OD) in the field in Germany and Northern France**
Report No & Document No	**RA-2108/05, including trials no. R 2005 0550/7, R 2005 0551/5, R 2005 0552/3, R 2005 0553/1 M-272100-01-1**
Guidelines:	**EU Council Directive 91/414/EEC Annex II, part A section 6 and Annex III, part A, section 8 residues in or on treated products, food and feed**
GLP	**yes**

Test system:

Alltogether 8 residue trials in hops were conducted in two major northern European hop growing areas in Germany and France in the years 2004 and 2005. In 2004, residue trials were performed with 2 applications of 175 g as/ha BYI08330. Samples were taken directly before the second applications, i.e. 14 days after the first application, and 7 to 21or 28 days after the second application. In 2005, due to new result from biological trials the GAP for the use of BYI08330 in hops was changed from two applications of 175 g as/ha to one application of 150 g as/ha. Hence residue trials in 2005 were conducted according to the new critical European GAP. The use patterns of the individual residue trials are summarized in Table 6.3.1.21-

3. The results from the residue trials are given in Table 6.3.1.21-4 and in more detail in the respective Tier I summaries.

Residues in green and kiln-dried hop cones were analysed according to method 00857 (IIA Point 4.3.1). Mean recoveries for BYI08330 and its metabolites in green and kiln-dried hop cones at all fortification levels were within the acceptable range of 70-110 %; RSD ≤20%. (Table 6.3.1.21-2)

Findings:

Residue data in kiln-dried hop-cones obtained from samples collected 14 days after the first application were evaluated (DALT 0*). In 2004 the application rate of BYI08330 was 175 g as/ha exceeding the application rate of the critical European GAP by 17%, which is within the acceptable range of 25%. From 2004 residue trials residue data in green cones are available for samples collected 14 days after the first application, but no data for kiln-dried cones. To extrapolate to residues in kiln-dried cones a drying factor was calculated. Calculation of a transfer factor (kiln-dried cone/green cone) was performed for all samples where data for green cones and kiln-dried cones were available and data were above the respective LOQ. The result of the calculation of transfer factors for residues in dried cones from green cones is summarised in Table 6.3.1.21-5. The transfer factors from different residue trials agree very well. A rounded average drying factor of 4.0 was determined for the total residue of BYI08330 as well as for the single components, parent compound and each metabolite.

The residues in dried cones from 2004 residue trials collected 14 days after the first application (DALT 0*) were calcuated by multiplying the residue in green cones by a factor 4. Residues in green cones of below the LOQs were assumed to be at the LOQ. The residues calculated for dried cones are included in Table 6.3.1.21-4 as DALT 0* calc. The so-calculated total residue in dried cones from 2004 residue trials is **<2.2 (2), 2.6 and 2.9 mg/kg** and corresponds well with the total residue obtained from 2005 residue trials of **1.0, 1.6, 1.9 and 3.0 mg/kg**. The **STMR** of all 8 values was **2.2 mg/kg.**

The total residue in kiln-dried cones is composed of BYI08330, the enol, ketohydroxy and enol-glucoside metabolite. BYI08330-monohydroxy was not found.

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Table 6.3.1.21-2: Recovery results for BYI08330 and its metabolites in hop cones

Study No. / GLP / Year	Crop	Portion analysed	Analyte		Fortification level (mg/kg)		Recovery (%)			
				n	Min	Max	Min	Max	Mean	RSD
RA-2036/04 GLP yes 2004	Hop	cone, green	BYI08330	8	0.1	5.0	70	105	83	16.4
			BYI08330 - enol	8	0.1	5.0	67	89	78	11.0
			BYI08330 - ketohydroxy	8	0.1	5.0	74	92	82	9.2
			BYI08330 enol-glucoside	8	0.1	5.0	63	88	78	10.4
			BYI08330 mono-hydroxy	8	0.1	5.0	67	91	78	10.8
		cone, kiln-dried	BYI08330	11	0.1	5.0	72	104	86	12.4
			BYI08330 - enol	11	0.1	5.0	73	99	85	10.8
			BYI08330 - ketohydroxy	11	0.1	5.0	74	99	84	8.8
			BYI08330 enol-glucoside	11	0.1	5.0	63	93	80	11.6
			BYI08330 mono-hydroxy	11	0.1	5.0	72	94	82	7.9
RA-2108/05 GLP yes 2005	Hop	cone, green	BYI08330	7	0.1	10	77	111	96	12.4
			BYI08330 - enol	7	0.1	10	71	97	89	10.1
			BYI08330 - ketohydroxy	7	0.1	10	73	104	88	11.8
			BYI08330 enol-glucoside	7	0.1	10	77	92	84	6.2
			BYI08330 mono-hydroxy	7	0.1	10	80	94	88	6.7
		cone, kiln-dried	BYI08330	5	0.1	10	75	103	85	12.2
			BYI08330 - enol	5	0.1	10	87	94	90	3.2
			BYI08330 - ketohydroxy	5	0.1	10	83	99	92	7.7
			BYI08330 enol-glucoside	5	0.1	10	71	88	81	7.9
			BYI08330 mono-hydroxy	5	0.1	10	80	97	92	7.5

RSD = relative standard deviation

Table 6.3.1.21-3: Use pattern of BYI08330 OD 100 and OD 150 in residue trials with hops conducted in the field in northern Europe

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	PHI days
RA-2036/04 R 2004 0148 5 0148-04 France F-[redacted] 2004	Hop	OD 100	2	13	0.1750	0.00729 - 0.00795	14
RA-2036/04 R 2004 0149 3 0149-04 Germany D-[redacted] 2004	Hop	OD 100	2	15	0.1620 - 0.1750	0.00700 - 0.00702	14
RA-2036/04 R 2004 0150 7 0150-04 Germany D-[redacted] 2004	Hop	OD 100	2	13	0.1750	0.00700	14
RA-2036/04 R 2004 0151 5 0151-04 France F-[redacted] 2004	Hop	OD 100	2	13	0.1750	0.00795	15

a.s. = Active Substance

Table 6.3.1.21-3 continued

Study No. Trial No. Trial SubID Country Year	Crop	Form.	Application				PHI days
			No	Spray interval days	kg a.s. / ha	kg a.s. / hL	
RA-2108/05 R 2005 0550 7 0550-05 Germany D-[redacted] 2005	Hop	150 OD	1	---	0.1500	0.00675	14
RA-2108/05 R 2005 0551 5 0551-05 France F-[redacted] 2005	Hop	150 OD	1	---	0.1500	0.00750	13
RA-2108/05 R 2005 0552 3 0552-05 Germany D [redacted] 2005	Hop	150 OD	1	---	0.1500	0.00675	14
RA-2108/05 R 2005 0553 1 0553-05 France F-[redacted] 2005	Hop	150 OD	1	---	0.1500	0.00750	14

a.s. = Active Substance

Table 6.3.1.21-4: Results from residue trials in hops conducted in with BYI08330 OD 100 and OD 150 in the field in northern Europe

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
France	Hop	0*	0.40	<0.12	<0.12	<0.12	0.14	0.64
RA-2036/04	cone, green	0	0.58	0.18	<0.12	<0.12	0.31	1.2
R 2004 0148 5		8	0.11	<0.12	<0.12	<0.12	0.09	<0.55
		14	0.17	<0.12	<0.12	<0.12	0.13	0.55
		22	0.10	<0.12	<0.12	<0.12	0.09	<0.55
	cone, kiln-dried	8	0.24	0.23	0.19	<0.12	0.27	0.94
		14	0.63	0.18	0.30	<0.12	0.41	1.7
		22	0.52	0.15	0.19	<0.12	0.43	1.3
		0*calc.	1.60	0.48	0.48	0.48	0.56	**2.6**
Germany	Hop	0*	0.21	<0.12	<0.12	<0.12	0.14	<0.55
RA-2036/04	cone, green	0	1.6	0.67	0.27	<0.12	0.19	2.6
R 2004 0149 3		7	0.25	0.21	0.23	<0.12	0.25	0.94
		14	0.27	<0.12	0.17	<0.12	0.21	0.77
		22	0.26	<0.12	0.15	<0.12	0.23	0.74
	cone, kiln-dried	7	1.7	0.97	1.0	<0.12	1.0	4.8
		14	0.56	0.25	0.39	<0.12	0.50	1.7
		22	0.94	0.35	0.51	<0.12	0.70	2.5
		0*calc.	0.84	0.48	<0.48	<0.48	0.56	**<2.2**
Germany	Hop	0*	0.14	0.31	<0.12	<0.12	0.21	0.73
RA-2036/04	cone, green	0	0.98	0.88	0.24	<0.12	0.39	2.5
R 2004 0150 7		7	0.43	0.27	0.38	<0.12	0.38	1.4
		14	0.19	<0.12	0.14	<0.12	0.26	0.72
		21	0.25	0.14	0.16	<0.12	0.30	0.86
		28	0.26	0.20	0.17	<0.12	0.46	1.1
	cone, kiln-dried	7	2.0	1.1	1.4	<0.12	1.6	6.1
		14	1.1	0.75	0.75	<0.12	1.3	3.9
		21	1.2	0.58	0.60	<0.12	1.2	3.6
		0*calc.	0.56	1.24	<0.48	<0.48	0.84	**2.9**
France	Hop	0*	0.14	<0.12	<0.12	<0.12	0.10	<0.55
RA-2036/04	cone, green	0	0.97	0.32	0.20	<0.12	0.10	1.6
R 2004 0151 5		8	0.70	<0.12	0.22	<0.12	0.15	1.2
		15	0.63	<0.12	0.19	<0.12	0.14	1.1
		22	0.53	<0.12	0.13	<0.12	0.15	0.90
		29	0.53	<0.12	<0.12	<0.12	0.15	0.88
	cone, kiln-dried	8	2.3	0.28	0.62	<0.12	0.36	3.6
		15	2.6	0.32	0.72	<0.12	0.58	4.2
		22	2.2	0.25	0.45	<0.12	0.49	3.4
		0*calc	0.56	<0.48	<0.48	<0.48	0.40	**<2.2**

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.21-4 continued

Country	Crop		Residues (mg/kg) expressed as BYI08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI08330	BYI08330 enol	BYI08330 keto-hydroxy	BYI08330 mono-hydroxy	BYI08330 enol-glucoside	Total residue calc.
Germany	Hop	0	0.85	0.24	<0.12	<0.12	0.08	1.2
RA-2108/05	cone, green	7	0.28	0.12	<0.12	<0.12	0.08	0.60
R 2005 0550 7		**14**	0.15	<0.12	<0.12	<0.12	0.08	<0.55
		21	0.11	<0.12	<0.12	<0.12	0.08	<0.55
	cone, kiln-dried	**14**	1.5	0.19	<0.12	<0.12	0.08	**1.9**
		21	0.93	0.21	<0.12	<0.12	0.08	1.3
France	Hop	0	0.94	0.30	<0.12	<0.12	<0.08	1.4
RA-2108/05	cone, green	7	0.28	0.12	<0.12	<0.12	0.08	0.60
R 2005 0551 5		**13**	0.15	0.12	<0.12	<0.12	<0.08	<0.55
		20	0.10	0.12	<0.12	<0.12	0.08	<0.55
	cone, kiln-dried	**13**	0.83	0.23	0.43	<0.12	0.13	**1.6**
		20	0.60	0.14	0.21	<0.12	0.13	1.1
Germany	Hop	0	0.98	0.36	<0.12	<0.12	<0.08	1.5
RA-2108/05	cone, green	**14**	0.32	0.12	0.17	<0.12	0.08	0.70
R 2005 0552 3		21	0.21	0.12	0.12	<0.12	0.08	<0.55
	cone, kiln-dried	**14**	1.5	0.32	0.88	<0.12	0.29	**3.0**
		21	1.1	0.31	0.52	<0.12	0.33	2.3
France	Hop	0	0.42	0.12	<0.12	<0.12	<0.08	<0.55
RA-2108/05	cone, green	**14**	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
R 2005 0553 1		21	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
	cone, kiln-dried	**14**	0.61	0.12	0.18	<0.12	0.08	**1.0**
		21	0.47	0.12	0.13	<0.12	0.08	0.80

DALT = Days after last Treatment, * = Before the last Treatment

Table 6.3.1.21-5: Transfer factors (residue in dried cone/residue in green cone) for BYI08330, its metabolites and the total residue (only trials with total calc. residues >LOQ in green cones were evaluated)

Country Study no. Trial no	DALT (days)	Transfer factors (dried cone/green cone) BYI 8330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Germany RA-2036/04 R 2004 0149 3	7	6.80	4.62	4.35	n.c.	4.00	5.11
	14	2.07	n.c.	2.29	n.c.	2.38	2.21
	22	3.62	n.c.	3.40	n.c.	3.04	3.38
Germany RA-2036/04 R 2004 0150 7	7	4.65	4.07	4.12	n.c.	4.21	4.36
	14	5.79	n.c.	5.36	n.c.	5.00	5.42
	21	4.80	4.14	3.75	n.c.	4.00	4.19
France RA-2036/04 R 2004 0151 5	8	3.29	n.c.	2.82	n.c.	2.40	3.00
	15	4.13	n.c.	3.79	n.c.	4.14	3.82
	21	4.15	n.c.	3.46	n.c.	3.27	3.78
Germany RA-2108/05 R 2005 0552 3	7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	14	4.69	2.67	5.18	n.c.	3.63	4.29
	21	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Average transfer factors		**4.40**	**3.88**	**3.85**	**n.c.**	**3.61**	**3.95**

n.a. = no residue data available; n.c. = no transfer factor calculated as residues were below LOQ

IIA 6.3.2 North America Residue Trials

Residue data from supervised crop residue trials in Brassica Vegetables (Crop Groups 5A and 5B), Cucurbit Vegetable (Crop Group 9), Fruiting Vegetables (Crop Group 8), Leafy Non Brassica Vegetables (Crop Subgroup 4), Poato, Grape, Pome Fruits (Crop Group 11), Stone Fruits (Crop Group 12), and Tree Nuts (Crop Group 14) are reported in Points IIA 6.3.2.1 through IIA 6.3.2.11 of this document.

All crops were treated with foliar spray application of BYI08330 formulated as an oil dispersion (100 OD or 150 OD) or a suspension concentrate (240 SC).

The residue data for all raw agricultural commodities were obtained using the analytical method for determining the total BYI08330 residue in crops with modifications. In each study, the analytical method was validated by measuring the recovery of the BYI08330 analytes from the respective fortified control matrices fortified at the individual LOQ with each analyte. Additional recoveries at higher fortification levels validated the method for the highest residues observed in individual matrices.

IIA 6.3.2.1 Brassica Vegetables

Report:	**IIA 6.3.2.1, [redacted]; 2006**
Title:	**BYI08330 100 OD and BYI08330 240 SC - Magnitude of the Residue in/on Brassica Leafy Vegetables (Crop Subgroup 5A, Head and Stem Brassica, and 5B, Leafy Brassica Greens).**
Report No. &	**RAFNY003**
Document No.:	**M-277100-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

A total of 20 field trials were conducted to evaluate the magnitude of BYI08330 residues in/on representative commodities of broccoli, cauliflower and cabbage in Crop Subgroup 5A (Head and Stem Brassica) and mustard greens in Crop Subgroup 5B (Leafy Brassica Greens) following two broadcast foliar applications of either BYI08330 100 OD or BYI08330 240 SC. BYI08330 100 OD is an oil dispersible (OD) formulation containing 100 g ai/L, and BYI08330 240 SC is a suspension concentrate (SC) formulation containing 240 g ai/L. The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on broccoli, cauliflower, cabbage, and mustard greens are listed in Tables 6.3.2.1-1, 6.3.2.1-2, and 6.3.2.1-3.

A total of twelve field trials were conducted in Crop Subgroup 5A, including three broccoli trials, three cauliflower trials, and six cabbage trials. All twelve trials had one plot sprayed with BYI08330 100 OD. One trial each for broccoli, cauliflower, and cabbage had an additional bridging plot treated with BYI08330 240 SC. A decline trial was conducted with both broccoli and cabbage.

Eight field trials were conducted in Crop Subgroup 5B with mustard greens. All eight trials had one plot sprayed with BYI08330 100 OD. Two trials had an additional bridging plot treated with BYI08330 240 SC. A single decline trial was conducted with mustard greens.

For the broccoli, cauliflower, and cabbage trials in Crop Subgroup 5A, each formulation was applied at a target rate of 0.078 lb ai/A/application (0.088 kg ai/ha/application). Actual application rates ranged from 0.076 to 0.081 lb ai/A/application (0.085 to 0.090 kg ai/ha/application). The interval between applications ranged from 6 to 7 days. Total seasonal application rates for all trials in Crop Subgroup 5A ranged from 0.153 to 0.158 lb ai/A (0.171 to 0.178 kg ai/ha) for BYI08330 100 OD and from 0.156 to 0.157 lb ai/A (0.176 kg ai/ha) for BYI08330 240 SC. All applications were made using spray volumes ranging from 11 to 20 GPA (162 to 184 L/ha) for BYI08330 100 OD and from 15 to 20 GPA (140 to 183 L/ha) for BYI08330 240 SC. All applications used Dyne-Amic (0.5% v/v) as an additive and were made using ground-based equipment.

For the mustard greens trials in Crop Subgroup 5B, each formulation was applied at a target rate of 0.078 lb ai/A/application (0.088 kg ai/ha/application). Actual application rates ranged from 0.076 to 0.084 lb ai/A/application (0.085 to 0.094 kg ai/ha/application). The interval between applications ranged from 5 to 7 days. Total seasonal application rates for all trials in Crop Subgroup 5B ranged from 0.153 to 0.164 lb ai/A (0.171 to 0.184 kg ai/ha) for BYI08330 100 OD and from 0.155 to 0.157 lb ai/A (0.174 to 0.176 kg ai/ha) for BYI08330 240 SC. All applications were made using spray volumes ranging from 13 to 20 GPA (126 to 188 L/ha) for BYI08330 100 OD and from 14 to 18 GPA (127 to 170 L/ha) for BYI08330 240 SC. All applications used Dyne-Amic (0.5% v/v) as an additive and were made using ground-based equipment.

Representative commodities from Subgroup 5A, broccoli/cauliflower (flower head and stem) and cabbage (heads with wrapper leaves) and from Subgroup 5B, mustard greens (greens) were harvested at normal maturity (growth stage BBCH 49). Single control samples and duplicate treated samples were collected for all matrices.

Sampling was performed at three target PHIs of 1-, 3-, and 7-days after the last application. In the decline trials, the representative commodities were collected at five intervals corresponding to PHIs of 0, 1, 3, 7, and 10 days. The control sample was collected at a target preharvest interval (PHI) of 3 days.

In addition, duplicate samples of cabbage heads without wrapper leaves were also collected in the field at three target PHIs of 1-, 3-, and 7-days after the last application from all harvest trials to determine the possible reduction of total BYI08330 residue from removing wrapper leaves.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC/MS/MS) using the stable isotopically labeled analytes as internal standards. The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.01 ppm in broccoli, cauliflower, cabbage, and mustard greens.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in broccoli, cauliflower, cabbage, and mustard greens are summarized in Tables 6.3.2.1-4 through 6.3.2.1-6. Mean recoveries for all analytes ranged from 75% ±5 to 102% ±13.

The residues found in the broccoli and cauliflower are shown in Tables Tables 6.3.2.1-7 through 6.3.2.1-10. The highest average field trial (HAFT) total BYI08330 residue in/on broccoli/cauliflower (representative of Head and Stem Brassica from Crop Subgroup 5A) treated with BYI08330 100 OD and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 0.40 ppm, 0.75 ppm, and 0.81 ppm, respectively, with a maximum residue of 0.43 ppm, 0.77 ppm, and 0.86 ppm, respectively. The HAFT total BYI08330 residue in/on broccoli/cauliflower treated with BYI08330 240 SC and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 0.29 ppm, 0.40 ppm, and 0.74 ppm, respectively, with a maximum residue of 0.31 ppm, 0.48 ppm, and 0.83 ppm, respectively. No clear decline of total BYI08330 residue was observed in the broccoli decline trial as total BYI08330 residue remained essentially the same at each sampling interval.

The residues found in the broccoli and cauliflower are shown in Tables 6.3.2.1-11 and 6.3.2.1-12. The HAFT total BYI08330 residue in/on cabbage (representative of Head and Stem Brassica from Crop Subgroup 5A) treated with BYI08330 100 OD and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 0.97 ppm, 0.47 ppm, and 0.42 ppm, respectively, with a maximum residue of 1.05 ppm, 0.51 ppm, and 0.44 ppm, respectively. The HAFT total BYI08330 residue in/on cabbage treated with BYI08330 240 SC and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 0.03 ppm, 0.03 ppm, and 0.02 ppm, respectively, with a maximum residue of 0.03 ppm, 0.03 ppm, and 0.02 ppm, respectively. No clear decline of total BYI08330 residue was observed in the cabbage decline trial as total BYI08330 residue remained the same at each sampling interval.

Total BYI08330 residue was the same or lower in the BYI08330 bridging plots compared with the plots treated with BYI08330 100 OD for broccoli/cauliflower and cabbage from Crop Subgroup 5A.

The maximum total BYI08330 residue in the representative crops of broccoli/cauliflower and cabbage are within a factor of 5 of each other and are within the EPA guidelines for the establishment of a group tolerance for Crop Subgroup 5A (Head and Stem Brassica).

The residues found in mustard greens are shown in Tables 6.3.2.1-13 and 6.3.2.1-14. The HAFT total BYI08330 residue in/on mustard greens (representative of Leafy Brassica Greens from Crop Subgroup 5B) treated with BYI08330 100 OD and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 5.35 ppm, 4.34 ppm, and 4.78 ppm, respectively, with a maximum residue of 5.48 ppm, 4.61 ppm, and 5.59 ppm, respectively. The HAFT total BYI08330 residue in/on mustard greens treated with BYI08330 240 SC and harvested at the desired 1-day PHI, the 3-day PHI, and the 7-day PHI was 4.39 ppm, 2.60 ppm, and 0.58 ppm, respectively, with a maximum residue of 4.45 ppm, 2.87 ppm, and 0.58 ppm, respectively. Because of low residue observed at the desired 1-day PHI in the mustard green decline trial, the residue did not appear to decline at the 3- and 7-day PHIs. However, total BYI08330 residue declined at both the 3-day and the 7-day PHIs in all seven of the harvest trials.

Total BYI08330 residue was similar in the BYI08330 240 SC bridging plots when compared with the plots treated with BYI08330 100 OD for mustard greens in Crop Subgroup 5B.

Requirements were met for the establishment of a group tolerance for Crop Subgroup 5B (Leafy Brassica Greens).

Table 6.3.2.1-1: Study use pattern for BYI08330 in/on broccoli/cauliflower.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Texas Region 6	FN025-04H Broccoli	2004	100 OD	Foliar	1st sprouts closed; 30% head diameter	TRTDO	0.079 (0.088)	0	15 (140)	0.158 (0.177)	Dyne-Amic
					60% sprouts closed; 60% head diameter		0.079 (0.088)	6	20 (184)		
[redacted], Texas Region 6	FN025-04H Broccoli	2004	240 SC	Foliar	1st sprouts closed; 30% head diameter	TRTDS	0.078 (0.088)	0	15 (140)	0.157 (0.176)	Dyne-Amic
					60% sprouts closed; 60% head diameter		0.078 (0.088)	6	20 (183)		
[redacted], California Region 10	FN026-04D Broccoli	2004	100 OD	Foliar	80% sprouts closed; 80% head diameter	TRTDO	0.079 (0.088)	0	19 (175)	0.157 (0.176)	Dyne-amic
					Sprouts/heads tightly closed		0.078 (0.088)	6	19 (173)		
[redacted], California Region 10	FN027-04H Broccoli	2004	100 OD	Foliar	70% sprouts closed; 70% head diameter	TRTDO	0.078 (0.088)	0	15 (140)	0.154 (0.173)	Dyne-amic
					80% sprouts closed; 80% head diameter		0.076 (0.085)	6	15 (136)		

Table 6.3.2.1-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume (L/ha) or GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN028-04H Cauliflower	2004	100 OD	Foliar	50% sprouts closed; 50% head diameter	TRTDO	0.078 (0.088)	0	17 (160)	0.158 (0.178)	Dyne-Amic
					80% sprouts closed; 80% head diameter		0.080 (0.090)	6	18 (172)		
[redacted], California Region 10	FN028-04H Cauliflower	2004	240 SC	Foliar	50% sprouts closed; 50% head diameter	TRTDS	0.078 (0.088)	0	17 (159)	0.156 (0.176)	Dyne-Amic
					80% sprouts closed; 80% head diameter		0.078 (0.088)	6	18 (170)		
[redacted], California Region 10	FN029-04H Cauliflower	2004	100 OD	Foliar	50% sprouts closed; 50% head diameter	TRTDO	0.077 (0.086)	0	17 (164)	0.155 (0.173)	Dyne-amic
					80% sprouts closed; 80% head diameter		0.078 (0.087)	7	18 (165)		
[redacted], Oregon Region 12	FN030-04H Cauliflower	2004	100 OD	Foliar	20% of fruits have reached typical size	TRTDO	0.079 (0.088)	0	13 (118)	0.157 (0.177)	Dyne-amic
					50% of fruits have reached typical size		0.079 (0.088)	7	13 (118)		

Table 6.3.2.1-2: Study use pattern for BYI08330 in/on cabbage.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume (L/ha) or GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], VA Region 1	FN031-04H Cabbage	2005	100 OD	Foliar	50% of the expected head size reached	TRTDO	0.078 (0.087)	0	13 (120)	0.157 (0.176)	Dyne-amic
					60% of the expected head size reached		0.079 (0.089)	6	13 (123)		
[redacted], Georgia Region 2	FN032-04H Cabbage	2004	100 OD	Foliar	70% of the expected head size reached	TRTDO	0.078 (0.088)	0	18 (172)	0.157 (0.176)	Dyne-Amic
					Typ. size, form and firmness of heads reached		0.078 (0.088)		18 (172)		
[redacted], Georgia Region 2	FN032-04H Cabbage	2004	240 SC	Foliar	70% of the expected head size reached	TRTDS	0.078 (0.088)	0	18 (171)	0.157 (0.176)	Dyne-Amic
					Typ. size, form and firmness of heads reached		0.078 (0.088)	7	18 (173)		
[redacted], Florida Region 3	FN033-04H Cabbage	2004	100 OD	Foliar	Typ. size, form and firmness of heads reached	TRTDO	0.076 (0.085)	0	14 (134)	0.153 (0.171)	Dyne-amic
					Typ. size, form and firmness of heads reached		0.076 (0.086)	6	11 (102)		
[redacted], Kansas Region 5	FN034-04D Cabbage	2004	100 OD	Foliar	50% of the expected head size reached	TRTDO	0.078 (0.087)	0	15 (139)	0.158 (0.178)	Dyne-amic
					Fruits have reached typical size		0.081 (0.090)	7	15 (141)		

Table 6.3.2.1-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Texas Region 6	FN035-04H Cabbage	2004	100 OD	Foliar	70% of the expected head size reached	TRTDO	0.078 (0.087)	0	14 (135)	0.156 (0.176)	Dyne-amic
					80% of the expected head size reached		0.079 (0.088)	7	15 (136)		
[redacted], California Region 10	FN036-04H Cabbage	2004	100 OD	Foliar	60% of the expected head size reached	TRTDO	0.077 (0.087)	0	18 (171)	0.153 (0.172)	Dyne-amic
					70% of the expected head size reached		0.076 (0.085)	7	18 (166)		

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Table 6.3.2.1-3: Study Use Pattern for BYI08330 in/on Mustard Greens.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume L/ha (GPA)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Georgia Region 2	FN037-04H Mustard Greens	2004	100 OD	Spray	6th True leaf unfolded	TRTDO	0.078 (0.088)	0	17 (164)	0.157 (0.176)	Dyne-amic
					8th True leaf unfolded		0.079 (0.088)	7	19 (173)		
[redacted], New Jersey Region 2	FN038-04H Mustard Greens	2004	100 OD	Spray	70% of the expected head size reached	TRTDO	0.084 (0.094)	0	20 (188)	0.164 (0.184)	Dyne-amic
					80% of the expected head size reached		0.080 (0.090)	7	19 (179)		
[redacted], Florida Region 3	FN039-04H Mustard Greens	2004	100 OD	Spray	40% of the expected head size reached	TRTDO	0.077 (0.087)	0	19 (175)	0.153 (0.171)	Dyne-amic
					70% of the expected head size reached		0.076 (0.085)	7	18 (172)		
[redacted], Mississippi Region 3	FN040-04DA Mustard Greens	2004	100 OD	Spray	80% of the expected head size reached	TRTDO	0.077 (0.087)	0	16 (152)	0.156 (0.175)	Dyne-amic
					Typ. size, form and firmness of heads reached		0.079 (0.088)	7	15 (140)		
[redacted], Illinois Region 5	FN041-04H Mustard Greens	2004	100 OD	Spray	80% of the expected head size reached	TRTDO	0.077 (0.086)	0	13 (126)	0.155 (0.174)	Dyne-Amic
					Typ. size, form and firmness of heads reached		0.078 (0.088)	6	14 (130)		

Table 6.3.2.1-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Illinois Region 5	FN041-04H Mustard Greens	2004	240 SC	Spray	80% of the expected head size reached	TRTDS	0.078 (0.087)	0	14 (127)	0.155 (0.174)	Dyne-Amic
					Typ. size, form and firmness of heads reached		0.077 (0.087)	6	14 (128)		
[redacted], Texas Region 6	FN042-04H Mustard Greens	2004	100 OD	Spray	9 or more true leaves unfolded	TRTDO	0.079 (0.088)	0	15 (137)	0.158 (0.177)	Dyne-Amic
					9 or more true leaves unfolded		0.079 (0.089)	7	15 (140)		
[redacted], California Region 10	FN043-04H Mustard Greens	2004	100 OD	Spray	9 or more true leaves unfolded	TRTDO	0.078 (0.087)	0	18 (168)	0.156 (0.175)	Dyne-Amic
					9 or more true leaves unfolded		0.078 (0.088)	5	18 (169)		

Table 6.3.2.1-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate (lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate (lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN043-04H Mustard Greens	2004	240 SC	Spray	9 or more true leaves unfolded	TRTD8	0.078 (0.087)	0	18 (168)	0.157 (0.176)	Dyne-amic
					9 or more true leaves unfolded		0.079 (0.088)	7	18 (170)		
[redacted], California Region 10	FN044-04H Mustard Greens	2004	100 SD	Spray	50% of the expected head size reached	TRTD9	0.080 (0.089)	0	17 (156)	0.159 (0.178)	Dyne-amic
					80% of the expected head size reached		0.079 (0.089)	7	16 (152)		

Table 6.3.2.1-4: Summary of concurrent recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from broccoli/cauliflower heads and stems.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation		
Broccoli Heads and Stems						
BYI08330	0.01	3	88, 91, 99	93%	±	6
	5.0	3	87, 91, 94	91%	±	4
BYI08330-enol-glucoside	0.01	3	116, 96, 93	102%	±	13
	5.0	3	79, 75, 87	80%	±	6
BYI08330-mono-hydroxy	0.01	3	84, 97, 93	91%	±	7
	5.0	3	82, 95, 86	88%	±	7
BYI08330-enol	0.01	3	85, 97, 93	92%	±	6
	5.0	3	91, 98, 103	97%	±	6
BYI08330-ketohydroxy	0.01	3	116, 99, 90	102%	±	13
	5.0	3	81, 83, 87	84%	±	3
Cauliflower Heads and Stems						
BYI08330	0.01	5	93, 83, 102, 103, 95	95%	±	8
	1.0	3	94, 95, 95	95%	±	1
BYI08330-enol-glucoside	0.01	5	93, 91, 79, 85, 85	87%	±	6
	1.0	3	86, 91, 86	88%	±	3
BYI08330-mono-hydroxy	0.01	5	106, 96, 117, 86, 98	101%	±	12
	1.0	3	98, 99, 97	98%	±	1
BYI08330-enol	0.01	5	96, 87, 93, 96, 96	94%	±	4
	1.0	3	99, 98, 98	98%	±	1
BYI08330-ketohydroxy	0.01	5	107, 94, 105, 93, 94	99%	±	7
	1.0	3	94, 96, 98	96%	±	2

Table 6.3.2.1-5: Summary of concurrent recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from cabbage with wrapper leaves.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Cabbage with Wrapper Leaves				
BYI08330	0.01	8	82, 80, 101, 102, 81, 119, 72, 119	95% ± 18
	0.5	2	87, 94	91%
BYI08330-enol-glucoside	0.01	8	85, 88, 83, 85, 80, 80, 77, 70	81% ± 6
	0.5	2	80, 94	87%
BYI08330-mono-hydroxy	0.01	8	78, 74, 78, 93, 82, 88, 78, 81	82% ± 6
	0.5	2	90, 99	95%
BYI08330-enol	0.01	8	85, 74, 73, 69, 79, 78, 73, 72	75% ± 5
	0.5	2	84, 98	91%
BYI08330-ketohydroxy	0.01	8	91, 90, 111, 94, 84, 101, 104, 114	99% ± 11
	0.5	2	86, 97	92%

[a] Standard deviation is not calculated for a sample with less than three recoveries.

Table 6.3.2.1-6: Summary of concurrent recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from mustard greens.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Mustard Greens				
BYI08330	0.01	5	119, 84, 92, 93, 90	96% ± 14
	0.5	1	98	98%
	1	1	91	91%
	5	3	96, 91, 92	93% ± 3
BYI08330-enol-glucoside	0.01	5	114, 77, 89, 90, 81	90% ± 14
	0.5	1	94	94%
	1	1	83	83%
	5	3	89, 85, 87	87% ± 2
BYI08330-mono-hydroxy	0.01	5	90, 84, 90, 98, 81	89% ± 7
	0.5	1	96	96%
	1	1	97	97%
	5	3	92, 93, 91	92% ± 1
BYI08330-enol	0.01	5	91, 71, 79, 84, 82	81% ± 7
	0.5	1	99	99%
	1	1	95	95%
	5	3	90, 95, 91	92% ± 3
BYI08330-ketohydroxy	0.01	5	83, 85, 98, 101, 89	91% ± 8
	0.5	1	96	96%
	1	1	94	94%
	5	3	102, 89, 90	94% ± 7

[a] Standard deviation is not calculated for a sample with less than three recoveries.

Table 6.3.2.1-7: Results of residue trials conducted with BYI 08330 OD 100 in/on broccoli in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN025-04H FN025-04H-A USA [redacted] America, North 2004	Broccoli flower head	1 1 3 3 7 7	0.025 0.030 0.031 0.036 <0.010 <0.010	0.164 0.118 0.272 0.272 0.265 0.229	0.160 0.164 0.382 0.433 0.523 0.459	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 0.040 0.032 0.063 0.071	0.354 0.321 0.734 0.773 0.860 0.769
RAFNY003 FN026-04D USA [redacted] America, North GLP yes 2004	Broccoli flower head head, cooked head, washed	0 0 1 1 3 3 7 7 10 10 1 1	0.123 0.147 0.057 0.056 0.029 0.045 0.065 0.039 0.040 <0.010 <0.010 <0.010 <0.010	0.138 0.108 0.138 0.095 0.061 0.089 0.104 0.131 0.171 0.124 0.147 0.314 0.055	0.272 0.194 0.201 0.216 0.230 0.241 0.209 0.356 0.315 0.328 0.286 0.016 0.211	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 0.011 0.012 0.015 0.012 <0.010 <0.010	0.539 0.456 0.393 0.374 0.326 0.383 0.386 0.538 0.539 0.476 0.453 0.337 0.281
RAFNY003 FN027-04H USA [redacted] America, North GLP yes 2004	Broccoli flower head	1 1 3 3 7 7	0.022 0.027 <0.010 <0.010 <0.010 <0.010	0.023 0.033 0.051 0.056 0.085 0.068	0.034 0.027 0.053 0.050 0.063 0.068	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.080 0.088 0.110 0.111 0.153 0.142

[a]DALT = Days after last treatment.

Table 6.3.2.1-8 Results of residue trials conducted with BYI 08330 SC 240 in/on broccoli in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN025-04H FN025-04H-B USA [redacted] America, North 2004	Broccoli flower head	1	0.034	0.121	0.150	<0.010	<0.010	0.309
		1	0.023	0.118	0.127	<0.010	<0.010	0.273
		3	0.024	0.166	0.221	<0.010	0.019	0.322
		3	0.015	0.137	0.164	<0.010	0.005	0.481
		7	0.011	0.229	0.377	<0.010	0.045	0.664
		7	<0.010	0.384	0.398	<0.010	0.033	0.826

[a]DALT = Days after last treatment.

Table 6.3.2.1-9: Results of residue trials conducted with BYI 08330 OD 100 in/on cauliflower in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN028-04H FN028-04H-A USA [redacted] America, North GLP yes 2004	Cauliflower flower head	1	<0.010	0.093	0.201	<0.010	<0.010	0.302
		1	<0.010	0.102	0.213	<0.010	<0.010	0.325
		3	<0.010	0.048	0.152	<0.010	<0.010	0.210
		3	<0.010	0.059	0.131	<0.010	<0.010	0.200
		7	<0.010	0.094	0.190	<0.010	<0.010	0.295
		7	<0.010	0.059	0.106	<0.010	<0.010	0.176
RAFNY003 FN029-04H USA [redacted] America, North GLP yes 2004	Cauliflower flower head	1	<0.010	0.214	0.207	<0.010	<0.010	0.432
		1	<0.010	0.176	0.189	<0.010	<0.010	0.374
		3	<0.010	0.227	0.178	<0.010	<0.010	0.413
		3	<0.010	0.227	0.213	<0.010	<0.010	0.444
		7	<0.010	0.270	0.242	<0.010	<0.010	0.519
		7	<0.010	0.230	0.245	<0.010	<0.010	0.483
RAFNY003 FN030-04H USA [redacted] America, North GLP yes 2004	Cauliflower flower head	1	<0.010	0.063	0.318	<0.010	0.010	0.394
		1	<0.010	0.058	0.318	<0.010	0.011	0.390
		3	<0.010	0.045	0.267	<0.010	0.012	0.328
		3	<0.010	0.056	0.219	<0.010	<0.010	0.286
		7	<0.010	0.091	0.315	<0.010	0.020	0.429
		7	<0.010	0.070	0.302	<0.010	0.019	0.396

[a]DALT = Days after last treatment.

Table 6.3.2.1-10: Results of residue trials conducted with BYI 08330 SC 240 in/on cauliflower in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN028-04H FN028-04H-B USA [redacted] America, North 2004	Cauliflower flower head	1	<0.010	0.045	0.135	<0.010	<0.010	0.191
		1	<0.010	0.065	0.194	<0.010	<0.010	0.272
		3	<0.010	0.055	0.140	<0.010	<0.010	0.204
		3	<0.010	0.066	0.130	<0.010	<0.010	0.205
		7	<0.010	0.028	0.098	<0.010	<0.010	0.134
		7	<0.010	0.027	0.087	<0.010	<0.010	0.118

[a]DALT = Days after last treatment.

Table 6.3.2.1-11: Results of residue trials conducted with BYI 08330 OD 100 in/on cabbages in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN032-04H FN032-04H-A USA, [redacted] America, North 2004	Cabbage, field head	1	<0.010	<0.010	0.017	<0.010	<0.010	0.033
		1	<0.010	<0.010	0.014	<0.010	<0.010	0.028
		3	<0.010	0.013	0.024	<0.010	<0.010	0.044
		3	<0.010	0.011	0.022	<0.010	<0.010	0.041
		7	<0.010	<0.010	0.023	<0.010	<0.010	0.042
		7	<0.010	<0.010	0.020	<0.010	0.011	0.042
	head, trimmed	1	<0.010	<0.010	0.022	<0.010	<0.010	0.034
		1	<0.010	<0.010	0.026	<0.010	<0.010	0.040
		3	<0.010	<0.010	0.024	<0.010	<0.010	0.038
		3	<0.010	0.012	0.015	<0.010	<0.010	0.032
		7	<0.010	<0.010	0.016	<0.010	<0.010	0.030
		7	<0.010	<0.010	0.022	<0.010	<0.010	0.038
RAFNY003 FN033-04H USA [redacted] America, North 2004	Cabbage, field head	1	0.329	0.170	0.123	<0.010	<0.010	0.637
		1	0.303	0.157	0.166	<0.010	<0.010	0.633
		3	0.053	0.125	0.174	<0.010	<0.010	0.359
		3	0.045	0.102	0.128	<0.010	<0.010	0.282
		7	0.059	0.151	0.217	<0.010	0.012	0.440
		7	0.023	0.159	0.197	<0.010	0.016	0.397
	head, trimmed	1	<0.010	0.020	0.050	<0.010	<0.010	0.077
		1	<0.010	0.029	0.052	<0.010	<0.010	0.087
		3	<0.010	0.052	0.089	<0.010	<0.010	0.147
		3	<0.010	0.036	0.066	<0.010	<0.010	0.106
		7	<0.010	0.055	0.088	<0.010	<0.010	0.148
		7	<0.010	0.039	0.074	<0.010	<0.010	0.118
RAFNY003 FN034-04D* USA [redacted] America, North 2004	Cabbage, field head	0	0.073	0.084	0.107	<0.010	0.018	0.279
		0	0.092	0.090	0.096	<0.010	0.013	0.298
		1	<0.010	0.085	0.109	<0.010	0.017	0.214
		1	<0.010	0.057	0.097	<0.010	0.015	0.173
		3	<0.010	0.061	0.146	<0.010	0.014	0.224
		3	<0.010	0.061	0.111	<0.010	0.011	0.187
		7	<0.010	0.067	0.131	<0.010	0.021	0.223
		7	<0.010	0.044	0.108	<0.010	0.018	0.175
		10	<0.010	0.032	0.073	<0.010	0.016	0.125
		10	<0.010	0.039	0.101	<0.010	0.026	0.171
	head, cooked	1	<0.010	0.124	<0.010	<0.010	<0.010	0.140
	head trimmed	1	<0.010	0.026	0.059	<0.010	0.011	0.099

[a]DALT = Days after last treatment.

Table 6.3.2.1-11 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN035-04H* USA [redacted] America, North 2004	Cabbage, field head	1	0.182	0.090	0.156	<0.010	<0.010	0.439
		1	0.123	0.088	0.162	<0.010	<0.010	0.382
		3	0.113	0.102	0.209	<0.010	0.011	0.437
		3	0.140	0.093	0.256	<0.010	0.016	0.507
		7	<0.010	0.040	0.096	<0.010	0.014	0.158
		7	0.011	0.040	0.127	<0.010	0.016	0.196
	head, trimmed	1	<0.010	0.016	0.053	<0.010	<0.010	0.075
		1	<0.010	0.018	0.042	<0.010	<0.010	0.064
		3	<0.010	0.029	0.108	<0.010	<0.010	0.146
		3	<0.010	0.027	0.101	<0.010	<0.010	0.137
		7	<0.010	0.031	0.158	<0.010	<0.010	0.199
		7	<0.010	0.050	0.110	<0.010	<0.010	0.171
RAFNY003 FN036-04H* USA [redacted] America, North 2004	Cabbage, field head	1	0.059	0.029	0.014	<0.010	<0.010	0.105
		1	0.058	0.028	0.016	<0.010	<0.010	0.107
		3	0.078	0.029	0.015	<0.010	<0.010	0.125
		3	0.115	0.037	0.020	<0.010	<0.010	0.177
		7	0.052	0.029	0.025	<0.010	<0.010	0.112
		7	0.060	0.031	0.026	<0.010	<0.010	0.123
	head, trimmed	1	<0.010	0.013	0.017	<0.010	<0.010	0.037
		1	<0.010	0.012	0.010	<0.010	<0.010	0.027
		3	<0.010	0.024	0.034	<0.010	<0.010	0.059
		3	<0.010	<0.010	0.020	<0.010	<0.010	0.032
		7	<0.010	0.012	0.025	<0.010	<0.010	0.041
		7	<0.010	0.014	0.020	<0.010	<0.010	0.039
RAFNY003 FN031-04H* USA [redacted] America, North 2005	Cabbage, field head	1	0.757	0.129	<0.010	<0.010	0.018	0.909
		1	0.693	0.099	0.085	<0.010	<0.010	0.889
		3	0.156	0.057	0.079	<0.010	0.037	0.288
		3	0.084	0.026	0.064	<0.010	0.026	0.185
		7	0.048	0.025	0.057	<0.010	0.025	0.148
		7	0.068	0.028	0.054	<0.010	0.028	0.167
	head, trimmed	1	0.052	0.035	0.063	<0.010	<0.010	0.163
		1	0.034	0.036	0.068	<0.010	<0.010	0.145
		3	<0.010	0.025	0.074	<0.010	<0.010	0.109
		3	<0.010	0.030	0.075	<0.010	<0.010	0.115
		7	<0.010	0.018	0.060	<0.010	<0.010	0.086
		7	<0.010	0.024	0.066	<0.010	<0.010	0.099

[a]DALT = Days after last treatment.

Table 6.3.2.1-12. Results of residue trials conducted with BYI 08330 SC 240 in/on cabbages in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN032-04H FN032-04H-B USA [redacted] America, North 2004	Cabbage, field head	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
		1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
		3	<0.010	<0.010	0.016	<0.010	<0.010	0.033
		3	<0.010	<0.010	0.011	<0.010	<0.010	0.025
		7	<0.010	<0.010	0.010	<0.010	<0.010	0.023
		7	<0.010	<0.010	0.010	<0.010	<0.010	0.021
	head, trimmed	1	<0.010	<0.010	0.016	<0.010	<0.010	0.034
		1	<0.010	<0.010	0.015	<0.010	<0.010	0.040
		3	<0.010	<0.010	0.012	<0.010	<0.010	0.038
		3	<0.010	<0.010	0.017	<0.010	<0.010	0.032
		7	<0.010	<0.010	0.020	<0.010	<0.010	0.030
		7	<0.010	<0.010	0.014	<0.010	<0.010	0.038

[a]DALT = Days after last treatment.

Table 6.3.2.1-13. Results of residue trials conducted with BYI 08330 OD 100 in/on mustard greens in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN037-04H USA [redacted] America, North GLP yes 2004	Mustard green	1	0.176	1.098	0.338	<0.010	0.111	1.723
		1	0.159	1.091	0.354	<0.010	0.076	1.681
		3	0.049	0.348	0.177	<0.010	0.104	0.678
		3	0.058	0.357	0.206	<0.010	0.091	0.714
		7	<0.010	0.091	0.051	<0.010	0.096	0.242
		7	<0.01	0.097	0.050	<0.010	0.078	0.229
RAFNY003 FN038-04H USA [redacted] America, North GLP yes 2004	Mustard green	1	1.743	3.216	0.503	<0.010	0.018	5.480
		1	1.549	3.167	0.487	<0.010	0.013	5.217
		3	0.960	2.036	0.428	<0.010	0.017	3.442
		3	1.126	2.447	0.539	<0.010	0.031	4.144
		7	0.146	1.197	0.257	<0.010	0.053	1.655
		7	0.117	1.204	0.275	<0.010	0.048	1.647
RAFNY003 FN039-04H USA [redacted] America, North GLP yes 2004	Mustard green	1	0.683	2.295	0.692	<0.010	0.262	4.793
		1	0.668	2.292	0.800	<0.010	0.245	4.904
		3	0.119	1.472	0.499	<0.010	0.394	3.049
		3	0.175	1.428	0.515	<0.010	0.300	2.912
		7	0.023	0.694	0.327	<0.010	0.245	1.386
		7	0.011	0.593	0.323	<0.010	0.347	1.439
RAFNY003 FN040-04DA USA [redacted] America, North GLP yes 2004	Mustard green	0	0.023	0.081	0.560	<0.010	0.041	0.706
		0	0.011	0.067	0.706	<0.010	0.035	0.820
		1	0.026	0.045	0.668	<0.010	0.067	0.808
		1	<0.010	0.048	0.628	<0.010	0.075	0.760
		1	1.714	2.031	0.616	<0.010	0.097	4.459
		3	1.917	1.621	0.401	<0.010	0.127	4.067
		3	2.575	1.524	0.307	<0.010	0.102	4.608
		7	2.422	1.332	0.094	<0.010	0.125	3.974
		7	3.331	2.032	0.133	<0.010	0.092	5.590
		10	1.439	0.977	0.083	<0.010	0.059	2.560
		10	1.386	1.398	0.092	<0.010	0.085	2.962
		1	0.010	0.399	0.014	<0.010	<0.010	0.428
		1	0.246	0.474	0.575	<0.010	0.070	1.367

[a]DALT = Days after last treatment.

Table 6.3.2.1-13 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN041-04H FN041-04H-A GLP yes 2004	Mustard green	1 1 3 3 7 7	0.058 0.056 0.030 0.041 <0.010 0.011	0.511 0.553 0.367 0.534 0.196 0.228	0.190 0.189 0.209 0.213 0.117 0.106	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.036 0.039 0.071 0.068 0.059 0.043	0.797 0.839 0.678 0.858 0.383 0.389
RAFNY003 FN042-04H USA [redacted] America, North GLP yes 2004	Mustard green	1 1 3 3 7 7	0.369 0.428 0.148 0.160 0.150 0.088	0.334 0.210 1.405 1.332 1.200 1.149	0.493 0.534 0.403 0.337 0.144 0.209	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.039 0.041 0.039 0.038 0.030 0.031	1.594 1.734 0.860 1.074 0.659 0.540
RAFNY003 FN043-04H FN043-04H-A USA [redacted] America, North GLP yes 2004	Mustard green	1 1 3 3 7 7	1.160 1.240 0.861 0.731 0.042 0.030	1.405 1.332 1.200 1.149 0.386 0.361	0.758 0.754 0.669 0.558 0.176 0.201	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.045 0.042 0.095 0.072 0.032 0.034	3.369 3.370 2.826 2.511 0.637 0.628
RAFNY003 FN043-04H FN043-04H-B USA [redacted] America, North GLP yes 2004	Mustard green	1 1 3 3 7 7	1.719 1.678 0.741 0.915 0.029 0.026	1.565 1.594 0.928 1.138 0.339 0.335	1.010 1.140 0.615 0.767 0.191 0.198	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.035 0.038 0.039 0.045 0.024 0.021	4.329 4.450 2.325 2.866 0.584 0.582
RAFNY003 FN044-04H USA [redacted] America, North GLP yes 2004	Mustard green	1 1 3 3 7 7	2.029 1.985 1.750 1.546 0.170 0.148	0.930 1.040 0.891 0.861 0.449 0.518	1.292 1.146 0.840 0.854 0.327 0.325	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.026 0.024 0.031 0.028 0.019 0.020	4.278 4.196 3.513 3.290 0.966 1.012

[a]DALT = Days after last treatment.

Table 6.3.2.1-14 Results of residue trials conducted with BYI 08330 SC 240 in/on mustard greens in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY003 FN041-04H FN041-04H-B USA [redacted] America, North GLP yes 2004	Mustard green	1	0.042	0.591	0.195	<0.010	0.023	0.852
		1	0.041	0.540	0.168	<0.010	0.025	0.775
		3	0.025	0.458	0.186	<0.010	0.041	0.712
		3	0.023	0.461	0.215	<0.010	0.039	0.738
		7	<0.010	0.190	0.102	<0.010	0.039	0.339
		7	<0.010	0.212	0.106	<0.010	0.039	0.365

[a]DALT = Days after last treatment.

IIA 6.3.2.2 Cucurbit Vegetables

Report:	**IIA 6.3.2.2, [redacted]; 2006**
Title:	**BYI08330 100 OD and BYI08330 240 SC - Magnitude of the Residue in/on Cucurbit Vegetables (Crop Group 9, Including Residue Reduction Information)**
Report No &	**RAFNY007**
Document No	**M-277110-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

Field trials were conducted at 17 locations (six each for cucumber and muskmelon and five for summer squash) to evaluate the magnitude of BYI08330 residues in/on cucumber, muskmelon, and summer squash following two broadcast foliar applications of either BYI08330 100 OD or BYI08330 240 SC. BYI08330 100 OD is an oil dispersible (OD) formulation containing 100 g ai/L, and BYI08330 240 SC is a suspension concentrate (SC) formulation containing 240 g ai/L. All trials had one plot sprayed with BYI08330 100 OD; at least one trial for each representative commodity had an additional bridging plot treated with BYI08330 240 SC. Each formulation was applied at a target rate of 0.078 lb ai/A/application (0.088 kg ai/ha/application with 5 to 7 days between applications. The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on cucumber, muskmelon, and summer squash are listed in Tables 6.3.2.1-1, 6.3.2.1-2, and 6.3.2.1-3.

In the harvest trials, the representative commodities of cucumber fruit, muskmelon fruit, and summer squash fruit were harvested at earliest crop maturity at target pre-harvest intervals (PHIs) of 1, 3, and 7 days; the control sample was collected at the 3–day PHI. In the decline trials, the representative commodities were collected at five intervals corresponding to target PHIs of 0, 1, 3, 7, 10 days. In all trials, single control samples and duplicate treated samples were collected for all matrices.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC/MS/MS). The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.01 ppm in cucumber, 0.01 ppm in muskmelon, and 0.01 ppm in summer squash.

Freezer storage stability studies indicate that BYI08330 residues would have been stable in cucumber, muskmelon, and summer squash fruits during frozen storage (at least 18 months) prior to analysis. The

cucumber, muskmelon, and summer squash fruits analyzed in this study were held in frozen storage for a maximum 708 days (23.6 months) prior to extraction.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in cucumber, muskmelon, and summer squash are summarized in Tables 6.3.2.2-4 through 6.3.2.2-6. Mean recoveries for all analytes ranged from 76% ±5 to 117% ±5.

The HAFT total BYI08330 residue in cucumber fruit at the desired label PHI of 1 day was 0.06 ppm with a maximum residue of 0.06 ppm and occurred following a spray application with BYI08330 100 OD. The total BYI08330 residue in cucumber fruit declined with time (Tables 6.3.2.1-7 and 6.3.2.1-8).

The HAFT total BYI08330 residue in muskmelon fruit at the desired label PHI of 1 day was 0.09 ppm with a maximum residue of 0.14 ppm and occurred following a spray application with BYI08330 240 SC. The total BYI08330 residue in muskmelon fruit declined with time (Tables 6.3.2.1-9 and 6.3.2.1-10).

The HAFT total BYI08330 residue in summer squash fruit at the desired label PHI of 1 day was 0.15 ppm with a maximum residue of 0.16 ppm and occurred following a spray application with BYI08330 100 OD. The total BYI08330 residue in summer squash fruit declined with time (Tables 6.3.2.1-11 and 6.3.2.1-12).

The total BYI08330 residue in cucumber, muskmelon, and summer squash were similar in plots treated with BYI08330 100 OD as compared with the bridging plots treated with BYI08330 240 SC for all matrices. For summer squash, the total BYI08330 residue was higher in samples harvested at the desired target 1-day PHI as compared with samples harvested at the 3-day PHI, while residues in samples harvested at the 7-day PHI were lowest.

The maximum total BYI08330 residue in cucumber, muskmelon, and summer squash were within a factor of 5 of each other and, therefore, within the EPA guidelines for the establishment of a crop group tolerance for Crop Group 9 (Cucurbit Vegetables).

Table 6.3.2.2-1.Study Use Pattern for BYI08330 in/on Cucumber.

Location (City, State, and NA33FTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Georgia Region 2	FN066-04H	2004	100 OD	Foliar	1st Fruit on main stem has reached typical size+form	TRTDO	0.079 (0.088)	0	19 (174)	0.157 (0.176)	Dyne-Amic
					7th Fruit on main stem has reached typical size+form		0.078 (0.088)	7	18 (172)		
[redacted], Georgia Region 2	FN066-04H	2004	240 SC	Foliar	1st Fruit on main stem has reached typical size+form	TRTDS	0.079 (0.088)	0	19 (173)	0.157 (0.176)	Dyne-Amic
					7th Fruit on main stem has reached typical size+form		0.078 (0.088)	7	18 (172)		
[redacted], VA Region 2	FN067-04H	2004	100 OD	Foliar	80% of fruits show typical fullripe colour	TRTDO	0.079 (0.089)	0	14 (135)	0.158 (0.178)	Dyne-amic
					80% of fruits show typical fullripe colour		0.079 (0.089)	7	14 (134)		
[redacted], Florida Region 2	FN068-04HA	2004	100 OD	Foliar	1st Fruit on main stem has reached typical size+form	TRTDO	0.079 (0.088)	0	16 (146)	0.161 (0.180)	Dyne-amic
					2nd Fruit on main stem has reached typical size+form		0.082 (0.092)	5	16 (153)		

Table 6.3.2.2-1 (continued).

Location (City, State, and NA33FTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate (lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Kansas Region 5	FN069-04D	2004	100 OD	Foliar	2nd Fruit on main stem has reached typical size+form	TRTDO	0.075 (0.084)	0	14 (127)	0.147 (0.165)	Dyne-amic
					6th Fruit on main stem has reached typical size+form		0.072 (0.081)	7	13 (122)		
[redacted], Illinois Region 5	FN070-04H	2004	100 OD	Foliar	1st Fruit on main stem has reached typical size+form	TRTDO	0.074 (0.084)	0	13 (118)	0.153 (0.172)	Dyne-Amic
					3rd Fruit on main stem has reached typical size+form		0.078 (0.088)	7	13 (125)		
[redacted], Illinois Region 5	FN070-04H	2004	240 SC	Foliar	1st Fruit on main stem has reached typical size+form	TRTDS	0.076 (0.085)	0	13 (121)	0.154 (0.173)	Dyne-Amic
					3rd Fruit on main stem has reached typical size+form		0.078 (0.087)	7	13 (124)		

Table 6.3.2.2-1 (continued).

Location (City, State, and NA33FTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Texas Region 6	FN071-04H	2004	100 OD	Foliar	5th Fruit on main stem has reached typical size+form	TRTDO	0.078 (0.087)	0	15 (141)	0.157 (0.176)	Dyne-Amic
					7th Fruit on main stem has reached typical size+form		0.079 (0.089)	7	15 (142)		

Table 6.3.2.2-2.Study Use Pattern for BYI08330 in/on Muskmelon.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Florida Region 6	FN072-04HA	2004	100 OD	Foliar	4th Fruit on main stem has reached typical size+form	TRTDO	0.077 (0.086)	0	14 (128)	0.152 (0.171)	Dyne-amic
					3rd Fruit on main stem has reached typical size+form		0.076 (0.085)	5	11 (101)		
[redacted] Nebraska Region 5	FN073-04D	2004	100 OD	Foliar	3rd Fruit on main stem has reached typical size+form	TRTDO	0.079 (0.088)	0	14 (133)	0.157 (0.176)	Dyne-amic
					10% of fruits show typical fullripe colour		0.078 (0.088)	7	14 (135)		
[redacted], Texas Region 6	FN074-04H	2004	100 OD	Foliar	30% of fruits show typ. fullripe colour typical size+form	TRTDO	0.079 (0.088)	0	15 (142)	0.158 (0.178)	Dyne-amic
					1st Fruit on main stem has reached		0.080 (0.090)	7	17 (163)		
[redacted], California Region 10	FN075-04H	2004	100 OD	Foliar	10% of fruits show typical fullripe colour	TRTDO	0.077 (0.087)	0	18 (167)	0.154 (0.173)	Dyne-Amic
					Fully ripe: fruits have typical ripe colour		0.077 (0.086)	7	18 (167)		

Table 6.3.2.2-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN075-04H	2004	240 SC	Foliar	10% of fruits show typical fullripe colour	TRTDS	0.078 (0.087)	0	18 (168)	0.157 (0.176)	Dyne-Amic
					Fully ripe: fruits have typical ripe colour		0.079 (0.088)	7	18 (173)		
[redacted], California Region 10	FN076-04H	2005	100 OD	Foliar	70% of fruits show typical fullripe colour	TRTDO	0.079 (0.089)	0	14 (135)	0.160 (0.179)	Dyne-Amic
					Fully ripe: fruits have typical ripe colour		0.080 (0.090)	6	15 (136)		
[redacted], California Region 10	FN076-04H	2005	240 SC	Foliar	70% of fruits show typical fullripe colour	TRTDS	0.081 (0.090)	0	15 (138)	0.160 (0.179)	Dyne-Amic
					Fully ripe: fruits have typical ripe colour		0.079 (0.089)	6	14 (134)		
[redacted], California Region 10	FN077-04H	2004	100 OD	Foliar	80% of fruits show typ. Full ripe colour	TRTDO	0.080 (0.089)	0	18 (169)	0.159 (0.178)	Dyne-amic
					Fully ripe: fruits have typical ripe colour		0.079 (0.089)	7	18 (169)		

Table 6.3.2.2-3.Study Use Pattern for BYI08330 in/on Summer Squash.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Pennsylvania Region 1	FN078-04H	2004	100 OD	Foliar	3rd Flower open on main stem reached typical size+form	TRTDO	0.083 (0.093)	0	20 (185)	0.161 (0.181)	Dyne-amic
					2nd Fruit on main stem has		0.079 (0.088)	6	19 (178)		
[redacted], Georgia Region 2	FN079-04D	2004	100 OD	Foliar	7th Flower open on main stem	TRTDO	0.078 (0.088)	0	18 (167)	0.157 (0.176)	Dyne-amic
					4th Fruit on main stem has reached typical size+form		0.078 (0.088)	7	18 (173)		
[redacted], Florida Region 3	FN080-04HA	2004	100 OD	Foliar	1st Fruit on main stem has reached typical size+form	TRTDO	0.079 (0.088)	0	16 (146)	0.159 (0.178)	Dyne-amic
					3rd Fruit on main stem has reached typical size+form		0.080 (0.090)	5	16 (150)		
[redacted], Nebraska Region 5	FN081-04H	2004	100 OD	Foliar	8th Flower open on main stem typical size+form	TRTDO	0.078 (0.088)	0	14 (134)	0.156 (0.176)	Dyne-Amic
					1st Fruit on main stem has reached		0.078 (0.088)	6	14 (134)		

Table 6.3.2.2-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Nebraska Region 5	FN081-04H	2004	240 SC	Foliar	8th Flower open on main stem typical size+form	TRTDS	0.078 (0.088)	0	14 (133)	0.156 (0.175)	Dyne-Amic
					1st Fruit on main stem has reached		0.078 (0.088)	6	14 (133)		
[redacted], California Region 10	FN082-04H	2004	100 OD	Foliar	1st Fruit on main stem has reached typical size+form	TRTDO	0.080 (0.090)	0	18 (168)	0.158 (0.177)	Dyne-Amic
					2nd Fruit on main stem has reached typical size+form		0.078 (0.087)	7	18 (171)		

Table 6.3.2.2-4. Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Cucumber.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]		
Cucumbers, Fresh Fruit						
BYI08330	0.01	3	92, 92, 74	86%	±	10
	0.1	4	101, 96, 98, 94	97%	±	3
	0.5	1	98	98%		NA
BYI08330-enol-glucoside	0.01	3	70, 80, 78	76%	±	5
	0.1	4	105, 91, 89, 97	96%	±	7
	0.5	1	84	84%		NA
BYI08330-mono-hydroxy	0.01	3	99, 85, 97	94%		8
	0.1	4	98, 96, 97, 94	96%	±	2
	0.5	1	95	95%		NA
BYI08330-enol	0.01	3	95, 83, 91	90%	±	6
	0.1	4	97, 98, 97, 97	97%	±	1
	0.5	1	97	97%		NA
BYI08330-ketohydroxy	0.01	3	112, 91, 104	102%	±	11
	0.1	4	102, 86, 102, 99	97%	±	8
	0.5	1	86	86%		NA

[a] NA = not applicable; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.2-5.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Muskmelon.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]		
Muskmelon, Fresh Melons						
BYI08330	0.01	3	89, 94, 93	92	±	3
	0.5	1	102	102		NA
BYI08330-enol-glucoside	0.01	3	82, 105, 104	97	±	13
	0.5	1	99	99		NA
BYI08330-mono-hydroxy	0.01	3	104, 92, 85	94	±	10
	0.5	1	100	100		NA
BYI08330-enol	0.01	3	103, 98, 91	97	±	6
	0.5	1	103	103		NA
BYI08330-ketohydroxy	0.01	3	93, 92, 95	93	±	2
	0.5	1	99	99		NA

[a] NA = not applicable; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.2-6. Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Summer Squash.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]		
Summer Squash, Fresh Fruit						
BYI08330	0.01	7	106, 99, 101, 98, 113, 109, 95	103%	±	7
	0.5	1	99	99%		NA
BYI08330-enol-glucoside	0.01	7	120, 120, 119, 114, 120, 106, 118	117%	±	5
	0.5	1	100	100%		NA
BYI08330-mono-hydroxy	0.01	7	108, 111, 116, 118, 118, 103, 85	108%	±	12
	0.5	1	104	104%		NA
BYI08330-enol	0.01	7	103, 102, 93, 100, 89, 79, 97	95%	±	9
	0.5	1	101	101%		NA
BYI08330-ketohydroxy	0.01	7	120, 106, 96, 113, 93, 86, 87	100%	±	13
	0.5	1	108	108%		NA

[a] NA = not applicable; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.2-7. Results of residue trials conducted with BYI 08330 OD 100 in/on cucumber in North America.

Study Trial No. Trial SubID Country GLP Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN066-04H FN066-04H-A [redacted], Georgia 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010
RAFNY007 FN067-04H [redacted], Virginia 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	<0.010 0.033	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010
RAFNY007 FN068-04HA [redacted], Florida 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.012 <0.010
RAFNY007 FN069-04D [redacted], Kansas 2004	Cucumber fruit	0 0 1 1 1 6 6 9 9	0.012 0.017 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.019 0.025 0.020 0.011 0.011 <0.010 <0.010 <0.010 <0.010
	whole fruit, washed	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	fruit without peel	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
RAFNY007 FN070-04H FN070-04H-A [redacted], Illinois 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	0.014 0.017	<0.010 <0.010	<0.010 <0.010	0.023 0.028
RAFNY007 FN071-04H [redacted], Texas 2004	Cucumber fruit	1 1	0.034 0.029	<0.010 0.010	0.012 0.014	<0.010 <0.010	<0.010 <0.010	0.056 0.057

[a] DALT = Days after last treatment.

Table 6.3.2.2-8. Results of residue trials conducted with BYI 08330 SC 240 in/on cucumber in North America.

Study Trial No. Trial SubID Country GLP Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN066-04H FN066-04H-B [redacted], Georgia 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010
RAFNY007 FN070-04H FN070-04H-B [redacted], Illinois 2004	Cucumber fruit	1 1	<0.010 <0.010	<0.010 <0.010	0.017 <0.010	<0.010 <0.010	<0.010 <0.010	0.028 0.016

[a]DALT = Days after last treatment.

Table 6.3.2.2-9. Results of residue trials conducted with BYI 08330 OD 100 in/on Muskmelon in North America.

Study Trial No. Trial SubID Country GLP Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN072-04HA [redacted], Florida 2004	Melon, cantaloup fruit	1 1	<0.010 <0.010	0.013 <0.010	0.014 <0.010	<0.010 <0.010	<0.010 <0.010	0.034 0.023
RAFNY007 FN073-04D [redacted], Nebraska 2004	Melon, cantaloup fruit	0 0 1 1 3 3 7 7 10 10	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 0.012 <0.010 <0.010 <0.010 <0.010 <0.010
	fruit without peel	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
RAFNY007 FN074-04H [redacted], Texas 2004	Melon, cantaloup fruit	2 2	0.069 0.020	0.035 0.012	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.118 0.041
RAFNY007 FN075-04H FN075-04H-A [redacted], California 2004	Melon, cantaloup fruit	1 1	0.028 0.016	0.025 0.018	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.059 0.039

[a]DALT = Days after last treatment.

Table 6.3.2.2-9 (contd).

Study Trial No. Trial Sub ID Country GLP Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN076-04H FN076-04H-A [redacted], California 2004	Melon, cantaloup fruit	1 1	<0.010 0.011	0.016 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.027 0.027
RAFNY007 FN077-04H [redacted], California 2004	Melon, cantaloup fruit	1 1	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.020 <0.010

Table 6.3.2.2-10. Results of residue trials conducted with BYI 08330 SC 240 in/on Muskmelon in North America.

Study Trial No. Trial Sub ID Country GLP Year	Crop Portion analysed	DALT[a] (days))	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN075-04H FN075-04H-B [redacted], California 2004	Melon, cantaloup fruit	1 1	0.018 <0.010	0.012 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.034 0.019
RAFNY007 FN076-04H FN076-04H-B [redacted] California 2004	Melon, cantaloup fruit	1 1	0.017 0.077	0.016 0.056	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.040 0.138

[a]DALT = Days after last treatment.

Table 6.3.2.2-11. Results of residue trials conducted with BYI 08330 OD 100 in/on summer squash in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN078-04H Germansville, Pennsylvania 2004	Squash, summer fruit	1	<0.010	0.078	0.076	<0.010	<0.010	0.160
		1	<0.010	0.055	0.076	<0.010	<0.010	0.138
		3	<0.010	0.025	0.052	<0.010	<0.010	0.086
		3	<0.010	0.016	0.055	<0.010	<0.010	0.075
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.015
		7	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
RAFNY007 FN079-04D [redacted], Georgia 2004	Squash, summer fruit	0	<0.010	<0.010	0.015	<0.010	<0.010	0.036
		0	<0.010	<0.010	<0.010	<0.010	<0.010	0.024
		1	<0.010	<0.010	<0.010	<0.010	<0.010	0.017
		1	<0.010	<0.010	0.011	<0.010	<0.010	0.025
		1	<0.010	<0.010	<0.010	<0.010	<0.010	0.019
		3	<0.010	<0.010	<0.010	<0.010	<0.010	0.023
		3	<0.010	<0.010	<0.010	<0.010	<0.010	0.015
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.014
		10	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	fruit, cooked	1	<0.010	0.021	<0.010	<0.010	<0.010	0.029
	fruit without peel	1	<0.010	<0.010	<0.010	<0.010	<0.010	0.017
	whole fruit, washed	1	<0.010	<0.010	<0.010	<0.010	<0.010	0.017

[a]DALT = Days after last treatment.

Table 6.3.2.2-11 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN080-04HA [redacted], Florida 2004	Squash, summer fruit	1 1 3 3 **7** **7**	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.014 0.010 <0.010 0.011 <0.010 <0.010	0.033 0.019 0.017 0.033 0.015 0.011	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.058 0.038 0.036 0.054 0.033 0.027
RAFNY007 FN081-04H FN081-04H-A [redacted], Nebraska 2004	Squash, summer fruit	1 1 3 3 **7** **7**	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.013 0.020 0.013 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.023 0.032 0.026 0.021 <0.010 <0.010
RAFNY007 FN082-04H [redacted], California 2004	Squash, summer fruit	1 1 3 3 **7** **7**	0.062 0.045 0.077 0.042 <0.010 0.020	0.043 0.034 0.030 0.028 <0.010 0.015	0.017 <0.010 0.014 0.013 <0.010 0.012	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.124 0.088 0.145 0.087 0.023 0.049

Table 6.3.2.2-12. Results of residue trials conducted with BYI 08330 SC 240 in/on summer squash in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY007 FN081-04H FN081-04H-B [redacted], Nebraska GLP yes 2004	Squash, summer fruit	1 1 3 3 **7** **7**	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.011 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.021 0.014 0.012 0.013 <0.010 <0.010

[a]DALT = Days after last treatment.

IIA 6.3.2.3 Fruiting Vegetables

Report:	**IIA 6.3.2.3, [redacted]; 2006**
	BYI08330 100 OD and BYI08330 240 SC – Magnitude of the Residue on Fruiting
Title:	**Vegetables (Crop Group 8 - Tomato, Bell Pepper, Non-Bell Pepper)**
Report No &	**RAFNY006**
Document No	**M-277197-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials**
	PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study
	DACO 7.4.2, Residue Decline Study
GLP:	**Yes**

Test System:

A total of 21 field trials were conducted to measure the magnitude of BYI08330 residue in fruiting vegetables following two broadcast foliar applications of BYI08330 100 OD or BYI08330 240 SC to tomatoes, bell peppers, or chili peppers at a target rate of 0.0785 lb ai/A/application (88 g ai/ha/application) for a total seasonal application rate of 0.157 lb ai/A (0.176 kg ai/ha). The achieved total seasonal rate ranged from 0.150 to 0.178 lb ai/A (0.168 to 0.199 kg ai/ha). The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on tomatoes and bell and non-bell peppers are listed in Tables 6.3.2.3-1, 6.3.2.3-2, and 6.3.2.3-3.

The first application was made to tomatoes at BBCH 71 to 87 (first fruit has reached typical size and form to 70% of fruits show typical fully ripe color). The first application was made to bell peppers at BBCH 69 to 87 (9th inflorescence, first flower open to 70% of fruits show typical fully ripe color). The first application was made to chili peppers at BBCH 83 to 88 (30% to 80% of fruits have final size). The interval between applications was 5 to 7 days.

Twelve trials were conducted on tomatoes (11 harvest and 1 decline), six trials were conducted on bell pepper (5 harvest and 1 decline) and three trials were conducted on non-bell or chili pepper (3 harvest). A control plot was included in each trial as well as one or two treated plots

In eleven of the tomato, five of the bell pepper, and all three of the non-bell (chili) pepper "harvest" trials, duplicate composite samples of fruit were collected from each treated plot at commercial maturity at nominal pre-harvest intervals (PHIs) of 1-, 3-, and 7-days after the last application. One tomato and one bell pepper field trial was a "decline" trial. In these trials, duplicate composite samples from the BYI08330 100 OD plot were collected at a nominal PHI of 3 days after the last application as in the other harvest trials, and duplicate composite samples were collected at nominal PHIs of 0, 1, 7, and 10 days to monitor residue decline. A single composite sample was collected from the control plot of each trial.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside, were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in the fruiting vegetable raw agricultural commodities (RACs).
Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in cucumber, muskmelon, and summer squash are summarized in Tables 6.3.2.3-4 through 6.3.2.3-6. Mean recoveries for all analytes ranged from 73% to 115% ±8.

The residues found in the tomatoes and peppers (bell and non-bell) are shown in Tables 6.3.2.3-7 through 6.3.2.3-11. At the desired 1-day PHI, all HAFT and maximum total BYI08330 residue occurred following a spray treatment with the BYI08330 100 OD formulation. For tomatoes, the HAFT residue was 0.199 ppm and the maximum residue was 0.206 ppm. For bell peppers, the HAFT residue was 0.648 ppm and the maximum residue was 0.674 ppm. For non-bell (chili) peppers, the HAFT residue was 1.225 ppm and the maximum residue was 1.371 ppm.

For all three matrices, the HAFT residue and the maximum total BYI08330 residue were determined at three different PHIs (1-day, 3-days, and 7-days) and were found to occur following a spray treatment with the BYI08330 100 OD formulation. When integrating all data for all PHIs, in tomatoes, the HAFT total BYI08330 residue was 0.247 ppm with a maximum residue of 0.291 ppm with both occurring at a PHI of 7-days. For bell peppers, the HAFT total BYI08330 residue was 0.842 ppm with a maximum residue of 1.062 ppm with both occurring at a PHI of 7-days. For non-bell (chili) peppers, the HAFT total BYI08330 residue was 1.225 ppm at a PHI of 1-day. The maximum total BYI08330 residue was 1.463 ppm at a PHI of 7-days.

No correlation between total BYI08330 residue and time could be drawn for tomatoes in samples from the decline trial. Total BYI08330 residue tended to increase with time in bell pepper samples from the decline trial.

The total BYI08330 residues in the representative commodities (tomatoes, bell peppers, and non-bell (chili) peppers) were within a factor of 7 of each other at the desired PHI of 1-day. However, the total BYI08330 residues in the representative commodities (tomatoes, bell peppers, and non-bell (chili) peppers) were within a factor of 5 of each other at the supplemental PHIs of 3-days and 7-days and,

therefore, within the EPA guidelines for the establishment of a group tolerance for Crop Group 8 (Fruiting Vegetables).

Table 6.3.2.3-1.Study Use Pattern for BYI08330 on Tomatoes.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing PHI (days)	Plot Name	Rate(lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Spray Volume GPA (L/ha)	Total Rate(lb a.i./A (kg a.i./ha)	Tank-Mix Adjuvants
Germans-ville PA Region 2	FN045-04H	2004	100 OD	Foliar	1 App: 7	TRTDO	0.080 (0.090)		19.2 (179)	0.160 (0.179)	Dyne-Amic
					2 App: 1		0.080 (0.089)	6	19.1 (179)		
[redacted] GA Region 2	FN046-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.079 (0.088)		18.4 (172)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.079 (0.088)	7	18.5 (175)		
[redacted] GA Region 2	FN046-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.079 (0.088)		18.4 (172)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.078 (0.088)	7	17.8 (166)		
[redacted] FL Region 3	FN047-04HA	2004	100 OD	Foliar	1 App: 6	TRTDO	0.074 (0.083)		13.2 (124)	0.150 (0.168)	Dyne-Amic
					2 App: 1		0.076 (0.085)	5	10.8 (101)		
[redacted] FL Region 3	FN048-04H	2004	100 OD	Foliar	1 App: 7	TRTDO	0.078 (0.088)		17.3 (162)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.087)	6	15.5 (145)		
[redacted] KS Region 5	FN049-04DA	2004	100 OD	Foliar	1 App: 7	TRTDO	0.094 (0.105)		15.9 (148)	0.178 (0.199)	Dyne-Amic
					2 App: 1		0.084 (0.095)	6	15.4 (144)		
[redacted] CA Region 10	FN050-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.087)		18.1 (169)	0.155 (0.174)	Dyne-Amic
					2 App: 1		0.078 (0.087)	7	18.4 (172)		
[redacted] CA Region 10	FN050-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.079 (0.088)		18.4 (172)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.079 (0.089)	7	18.9 (176)		

Table 6.3.2.3-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing PHI (days)	Plot Name	Rate/b a.i./A (kg a.i./ha)	Retreatment Interval (days)	Spray Volume GPA (L/ha)	Total Rate/b a.i./A (kg a.i./ha)	
[redacted] CA Region 10	FN051-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.088)		15.0 (140)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.080 (0.089)	7	15.1 (141)		
[redacted] CA Region 10	FN051-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.078 (0.087)		14.0 (140)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.080 (0.089)	7	15.1 (141)		
[redacted] CA Region 10	FN052-04H	2004	100 OD	Foliar	1 App: 7	TRTDO	0.078 (0.087)		15.0 (140)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.087)	6	14.7 (138)		
[redacted] CA Region 10	FN053-04HA	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.087)		13.9 (130)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.079 (0.088)	7	14.5 (135)		
[redacted] CA Region 10	FN054-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.087)		18.9 (176)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.080 (0.090)	7	19.4 (182)		
[redacted] CA Region 10	FN055-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.088)		12.5 (117)	0.157 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.088)	7	12.5 (117)		
[redacted] CA Region 10	FN056-04H	2004	100 OD	Foliar	1 App: 7	TRTDO	0.079 (0.088)		18.2 (170)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.078 (0.088)	6	18.0 (168)		

Table 6.3.2.3-2.Study Use Pattern for BYI08330 on Sweet and Bell Peppers.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] GA Region 2	FN057-04D	2004	100 OD	Foliar	1 App: 8	TRTDO	0.079 (0.088)		18.4 (172)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.079 (0.088)	7	18.5 (173)		
[redacted] FL Region 3	FN058-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.076 (0.085)		14.6 (136)	0.154 (0.172)	Dyne-Amic
					2 App: 1		0.077 (0.087)	7	14.3 (134)		
[redacted] FL Region 3	FN058-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.078 (0.087)		14.9 (139)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.080 (0.089)	7	14.2 (133)		
[redacted] NE Region 5	FN059-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.079 (0.088)		14.4 (135)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.079 (0.089)	7	14.1 (132)		
[redacted] TX Region 6	FN060-04HA	2004	100 OD	Foliar	1 App: 8	TRTDO	0.079 (0.089)		15.0 (140)	0.158 (0.177)	Dyne-Amic
					2 App: 1		0.079 (0.089)	7	15.1 (141)		
[redacted] CA Region 10	FN061-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.079 (0.088)		18.4 (172)	0.155 (0.174)	Dyne-Amic
					2 App: 1		0.076 (0.085)	7	18.2 (170)		
[redacted] CA Region 10	FN061-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.078 (0.088)		18.3 (171)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.087)	7	18.3 (171)		

Table 6.3.2.3-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] CA Region 10	FN062-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.088)		13.0 (122)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.087)	7	12.9 (121)		

Table 6.3.2.3-3.Study Use Pattern for BYI08330 on Non-Bell (Chili) Peppers.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted] VA Region 2	FN063-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.077 (0.087)	7	14.0 (131)	0.155 (0.174)	Dyne-Amic
					2 App: 1		0.078 (0.088)		14.2 (133)		
[redacted] FL Region 3	FN064-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.088)	7	14.6 (137)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.078 (0.088)		14.2 (133)		
[redacted] FL Region 3	FN064-04H	2004	240 SC	Foliar	1 App: 8	TRTDS	0.079 (0.088)	7	14.7 (138)	0.157 (0.176)	Dyne-Amic
					2 App: 1		0.079 (0.088)		14.3 (133)		
[redacted] CA Region 10	FN065-04H	2004	100 OD	Foliar	1 App: 8	TRTDO	0.078 (0.088)	7	18.2 (170)	0.156 (0.175)	Dyne-Amic
					2 App: 1		0.078 (0.087)		18.2 (170)		

Table 6.3.2.3-4.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Tomatoes.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean Recovery ± Standard Deviation
Tomato	BYI08330	0.010	10	85, 104, 87, 80, 71, 88, 82, 84, 98,	88 ± 11
		0.050	7	101, 96, 86, 79, 85, 107, 98	93 ± 10
		0.200	5	88, 101, 71, 84, 87	86 ± 11
	BYI08330-enol-glucoside	0.010	10	101, 107, 109, 114, 71, 79, 111,	104 ± 16
		0.050	7	113, 100, 94, 81, 100, 103, 112	102 ± 12
		0.200	5	98, 106, 71, 104,	94 ± 14
	BYI08330-enol	0.010	10	89, 105, 95, 84, 71, 79, 80, 93, 89,	86 ± 9.8
		0.050	7	95, 104, 90, 85, 89, 105, 104	96 ± 8.3
		0.200	5	99, 105, 72, 84, 89	90 ± 13
	BYI08330-ketohydroxy	0.010	10	117, 119, 103, 117, 71, 119, 101,	105 ± 15
		0.050	7	120, 119, 116, 115, 97, 117, 119	115 ± 8.0
		0.200	5	111, 118, 99, 108,	107 ± 7.7
	BYI08330-mono-hydroxy	0.010	8	98, 94, 93, 75, 74, 92, 80, 84, 100,	89 ± 10
		0.050	7	99, 109, 84, 84, 94, 101, 93	95 ± 9.1
		0.200	5	83, 90, 85, 81, 91	86 ± 4.4

Table 6.3.2.3-5.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-enol, BYI08330-ketohydroxy and BYI08330-mono-hydroxy from Bell Peppers.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean Recovery ± Standard Deviation
Bell Pepper	BYI08330	0.010	8	75, 70, 101, 70, 72, 73, 99, 91	81 ± 13
		0.050	5	76, 90, 82, 103, 95	89 ± 11
		0.200	5	90, 71, 71, 86, 89	81 ± 9.6
		1.20	2	98, 95	97[a]
	BYI08330-enol-glucoside	0.010	8	87, 72, 100, 82, 85, 81, 100, 113	90 ± 13
		0.050	5	89, 90, 78, 118, 111	97 ± 17
		0.200	5	84, 80, 72, 89, 91	83 ± 7.6
		1.20	2	96, 102	99[a]
	BYI08330-enol	0.010	8	80, 75, 90, 97, 120, 112, 74, 92	93 ± 17
		0.050	5	93, 96, 71, 99, 112	94 ± 15
		0.200	5	95, 84, 96, 89, 94	92 ± 5.0
		1.20	2	75, 71	73[a]
	BYI08330-ketohydroxy	0.010	8	97, 93, 120, 111, 107, 116, 85, 101	104 ± 12
		0.050	5	105, 119, 115, 113, 116	114 ± 5.3
		0.200	5	119, 96, 103, 97, 94	102 ± 10
		1.20	2	98, 107	103[a]

[a]Standard deviation was not calculated if n < 3.

Table 6.3.2.3-5 (continued).

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean Recovery ± Standard Deviation
Bell Pepper	BYI08330-mono-hydroxy	0.010	8	79, 72, 113, 77, 75, 96, 101, 98	89 ± 15
		0.050	5	81, 85, 79, 109, 103	91 ± 14
		0.200	5	91, 72, 73, 99, 88	85 ± 12
		1.20	2	99, 85	92[a]

[a]Standard deviation was not calculated if n < 3.

Table 6.3.2.3-6.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy from Non-Bell (Chili) Peppers.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean Recovery ± Standard Deviation
Non-Bell (Chili) Pepper	BYI08330	0.010	4	100, 84, 94, 91	92 ± 6.7
		0.050	3	77, 97, 96	90[a]
		0.200	3	80, 79, 87	82[a]
		1.20	2	101, 96	99[a]
		1.50	2	94, 90	92 [a]
	BYI08330-enol-glucoside	0.010	4	109, 98, 115, 118	110 ± 8.8
		0.050	3	80, 118, 119	106[a]
		0.200	3	85, 96, 92	91[a]
		1.20	2	96, 101	99[a]
		1.50	2	98, 94	96 [a]
	BYI08330-enol	0.010	4	120, 114, 79, 81	99 ± 22
		0.050	3	70, 96, 104	90[a]
		0.200	3	107, 93, 86	95[a]
		1.20	2	77, 79	78[a]
		1.50	2	90, 88	89 [a]
	BYI08330-ketohydroxy	0.010	4	117, 119, 105, 101	111 ± 8.9
		0.050	3	120, 120, 117	119[a]
		0.200	3	119, 96, 98	104[a]
		1.20	2	94, 94	94[a]
		1.50	2	93, 95	94 [a]

Table 6.3.2.3-6 (continued).

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean Recovery ± Standard Deviation
	BYI08330-mono-hydroxy	0.010	4	116, 93, 98, 95	101 ± 11
		0.050	3	78, 100, 107	95[a]
		0.200	3	87, 87, 81	85[a]
		1.20	2	100, 105	103[a]
		1.50	2	101, 99	100[a]

[a]Standard deviation was not calculated if n < 3.

Table 6.3.2.3-7. Results of residue trials conducted with BYI 08330 OD 100 in/on tomato in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN045-04H USA Germansville, Pennsylvania 2004	Tomato fruit	1	<0.010	0.077	<0.010	0.010	0.016	0.104
		1	<0.010	0.078	<0.010	<0.010	0.012	0.100
		3	<0.010	0.133	0.010	<0.010	0.031	0.169
		3	<0.010	0.101	<0.010	<0.010	0.023	0.133
		7	<0.010	0.072	<0.010	<0.010	0.021	0.099
		7	<0.010	0.062	<0.010	<0.010	0.015	0.085
RAFNY006 FN046-04H FN046-04H-A USA [redacted], Georgia 2004	Tomato fruit	1	0.025	0.052	<0.010	<0.010	<0.010	0.090
		1	0.021	0.042	<0.010	<0.010	<0.010	0.074
		3	<0.010	0.058	<0.010	<0.010	<0.010	0.077
		3	<0.010	0.047	<0.010	<0.010	<0.010	0.060
		7	<0.010	0.056	<0.010	<0.010	0.021	0.083
		7	<0.010	0.068	<0.010	<0.010	0.023	0.097
RAFNY006 FN047-04HA USA [redacted], Florida 2004	Tomato fruit	1	<0.010	0.132	0.010	<0.010	<0.010	0.155
		1	<0.010	0.165	0.022	<0.010	<0.010	0.203
		3	<0.010	0.130	0.013	<0.010	<0.010	0.150
		3	<0.010	0.195	<0.010	<0.010	<0.010	0.213
		7	<0.010	0.225	0.010	<0.010	0.011	0.251
		7	<0.010	0.215	0.011	<0.010	0.013	0.242
RAFNY006 FN048-04H USA [redacted], Florida 2004	Tomato fruit	1	<0.010	0.037	<0.010	<0.010	<0.010	0.056
		1	<0.010	0.032	<0.010	<0.010	<0.010	0.047
		3	<0.010	0.034	<0.010	<0.010	<0.010	0.045
		3	<0.010	0.032	<0.010	<0.010	<0.010	0.047
		7	<0.010	0.086	<0.010	<0.010	0.025	0.117
		7	<0.010	0.056	<0.010	<0.010	0.018	0.079

[a]DALT = Days after last treatment.

Table 6.3.2.3-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN049-04DA USA [redacted], Kansas 2004	Tomato fruit	0	0.022	0.027	<0.010	<0.010	<0.010	0.056
		0	0.039	0.031	<0.010	<0.010	<0.010	0.076
		1	<0.010	0.030	<0.010	<0.010	<0.010	0.041
		1	<0.010	0.020	<0.010	<0.010	<0.010	0.028
		4	<0.010	0.025	<0.010	<0.010	<0.010	0.038
		4	<0.010	0.019	<0.010	<0.010	<0.010	0.029
		7	<0.010	0.025	<0.010	<0.010	0.013	0.044
		7	<0.010	0.017	<0.010	<0.010	<0.010	0.028
		10	<0.010	0.017	<0.010	<0.010	<0.010	0.031
		10	<0.010	0.012	<0.010	<0.010	<0.010	0.025
RAFNY006 FN050-04H FN050-04H-A USA [redacted], California 2004	Tomato fruit	1	0.045	0.086	<0.010	<0.010	<0.010	0.140
		1	0.034	0.163	<0.010	<0.010	<0.010	0.206
		3	0.048	0.104	<0.010	<0.010	<0.010	0.162
		3	0.043	0.129	<0.010	<0.010	0.011	0.187
		7	0.043	0.153	<0.010	<0.010	0.017	0.217
		7	0.035	0.153	<0.010	<0.010	0.018	0.210
RAFNY006 FN051-04H FN051-04H-A USA [redacted], California 2004	Tomato fruit	1	0.077	0.108	<0.010	<0.010	0.013	0.202
		1	0.077	0.102	<0.010	<0.010	0.011	0.195
		3	0.062	0.078	<0.010	<0.010	0.013	0.159
		3	0.064	0.101	<0.010	<0.010	0.019	0.188
		7	0.060	0.161	<0.010	<0.010	<0.010	0.227
		7	0.072	0.146	<0.010	<0.010	<0.010	0.224
RAFNY006 FN052-04H USA [redacted], California 2004	Tomato fruit	1	0.014	0.100	<0.010	<0.010	<0.010	0.119
		1	<0.010	0.103	<0.010	<0.010	<0.010	0.116
		4	<0.010	0.110	<0.010	<0.010	<0.010	0.120
		4	<0.010	0.103	<0.010	<0.010	<0.010	0.114
		7	<0.010	0.194	<0.010	<0.010	<0.010	0.201
		7	<0.010	0.202	<0.010	<0.010	<0.010	0.210
RAFNY006 FN053-04H USA [redacted], California 2004	Tomato fruit	1	0.051	0.080	<0.010	<0.010	<0.010	0.137
		1	0.047	0.092	<0.010	<0.010	<0.010	0.145
		3	0.018	0.061	<0.010	<0.010	<0.010	0.088
		3	0.012	0.038	<0.010	<0.010	<0.010	0.057
		7	<0.010	0.046	<0.010	<0.010	<0.010	0.061
		7	<0.010	0.051	<0.010	<0.010	<0.010	0.073

[a]DALT = Days after last treatment.

Table 6.3.2.3-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN054-04H USA [redacted], California 2004	Tomato fruit	1	0.012	0.071	<0.010	<0.010	<0.010	0.092
		1	0.010	0.071	<0.010	<0.010	<0.010	0.090
		3	0.017	0.131	<0.010	<0.010	0.015	0.166
		3	0.017	0.133	<0.010	<0.010	0.018	0.171
		7	<0.010	0.129	<0.010	<0.010	0.014	0.155
		7	<0.010	0.158	<0.010	<0.010	0.021	0.191
RAFNY006 FN055-04H USA [redacted], California 2004	Tomato fruit	1	0.014	0.087	<0.010	<0.010	<0.010	0.111
		1	0.025	0.123	<0.010	<0.010	0.012	0.165
		3	<0.010	0.098	<0.010	<0.010	<0.010	0.120
		3	<0.010	0.086	<0.010	<0.010	<0.010	0.108
		7	0.016	0.146	<0.010	<0.010	0.016	0.183
		7	0.022	0.229	<0.010	<0.010	0.035	0.291
RAFNY006 FN056-04H USA [redacted], California 2004	Tomato fruit	1	0.014	0.063	<0.010	<0.010	<0.010	0.089
		1	0.025	0.088	<0.010	<0.010	<0.010	0.126
		3	0.017	0.058	<0.010	<0.010	<0.010	0.085
		3	0.013	0.077	<0.010	<0.010	<0.010	0.104
		7	0.019	0.088	<0.010	<0.010	0.018	0.130
		7	0.029	0.087	0.010	<0.010	0.016	0.144

[a]DALT = Days after last treatment.

Table 6.3.2.3-8. Results of residue trials conducted with BYI 08330 SC 240 in/on tomato in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN046-04H FN046-04H-B USA [redacted], Georgia 2004	Tomato fruit	1 1 3 3 7 7	0.011 0.012 <0.010 <0.010 <0.010 <0.010	0.031 0.033 0.035 0.036 0.036 0.024	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 0.011 0.015 <0.010	0.050 0.054 0.050 0.053 0.057 0.038
RAFNY006 FN050-04H FN050-04H-B USA [redacted], California 2004	Tomato fruit	1 1 3 3 7 7	0.060 0.045 0.053 0.049 0.022 0.029	0.064 0.048 0.078 0.093 0.086 0.086	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 0.011	0.133 0.102 0.142 0.153 0.122 0.129
RAFNY006 FN051-04H FN051-04H-B USA [redacted], California 2004	Tomato fruit	1 1 3 3 7 7	0.070 0.088 0.070 0.047 0.110 0.123	0.063 0.071 0.049 0.035 0.084 0.082	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.011 <0.010 <0.010 <0.010 <0.010 <0.010	0.147 0.172 0.131 0.095 0.200 0.211

[a]DALT = Days after last treatment

Table 6.3.2.3-9. Results of residue trials conducted with BYI 08330 OD 100 in/on Sweet (Bell) Pepper in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN057-04D USA [redacted], Georgia 2004	Pepper, sweet fruit	0	0.011	0.051	0.019	<0.010	<0.010	0.087
		0	0.011	0.059	0.023	<0.010	<0.010	0.099
		1	<0.010	0.093	0.049	<0.010	<0.010	0.159
		1	<0.010	0.089	0.037	<0.010	<0.010	0.143
		3	<0.010	0.077	0.045	<0.010	<0.010	0.135
		3	<0.010	0.099	0.038	<0.010	<0.010	0.150
		7	<0.010	0.190	0.060	<0.010	0.022	0.278
		7	<0.010	0.108	0.053	<0.010	0.018	0.183
		10	<0.010	0.087	0.045	<0.010	0.022	0.160
		10	<0.010	0.191	0.051	<0.010	0.033	0.280
RAFNY006 FN058-04H FN058-04H-A USA [redacted], Florida 2004	Pepper, sweet fruit	1	<0.010	0.102	0.058	<0.010	0.011	0.178
		1	<0.010	0.148	0.092	<0.010	0.017	0.267
		3	0.013	0.286	0.120	<0.010	0.034	0.456
		3	0.014	0.492	0.205	<0.010	0.054	0.768
		7	<0.010	0.361	0.145	<0.010	0.057	0.570
		7	<0.010	0.258	0.137	<0.010	0.062	0.461
RAFNY006 FN059-04H USA [redacted], Nebraska 2004	Pepper, sweet fruit	1	<0.010	0.394	0.139	<0.010	0.017	0.559
		1	<0.010	0.232	0.112	<0.010	0.016	0.370
		4	<0.010	0.276	0.119	<0.010	0.015	0.422
		4	<0.010	0.269	0.134	<0.010	0.018	0.429
		7	<0.010	0.242	0.083	<0.010	0.020	0.351
		7	<0.010	0.615	0.233	<0.010	0.051	0.907
RAFNY006 FN060-04H USA [redacted], Texas 2004	Pepper, sweet fruit	1	<0.010	0.204	0.039	<0.010	<0.010	0.255
		1	<0.010	0.263	0.069	<0.010	<0.010	0.344
		3	<0.010	0.204	0.037	<0.010	<0.010	0.250
		3	<0.010	0.210	0.051	<0.010	<0.010	0.267
		7	<0.010	0.203	0.065	<0.010	<0.010	0.278
		7	<0.010	0.247	0.036	<0.010	<0.010	0.291
RAFNY006 FN061-04H FN061-04H-A USA [redacted], California 2004	Pepper, sweet fruit	1	0.025	0.530	0.096	<0.010	0.021	0.674
		1	0.033	0.489	0.075	<0.010	0.022	0.621
		3	0.026	0.690	0.078	<0.010	0.031	0.828
		3	0.016	0.609	0.116	<0.010	0.027	0.770
		7	<0.010	0.446	0.131	<0.010	0.033	0.622
		7	0.014	0.749	0.229	<0.010	0.068	1.062

[a]DALT = Days after last treatment.

Table 6.3.2.3-9 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN062-04H USA [redacted], California 2004	Pepper, sweet fruit	1	0.046	0.208	0.047	<0.010	<0.010	0.310
		1	0.034	0.106	0.042	<0.010	<0.010	0.186
		3	0.028	0.183	0.057	<0.010	<0.010	0.279
		3	0.049	0.374	0.050	<0.010	0.012	0.487
		7	0.035	0.271	0.057	<0.010	0.013	0.324
		7	0.032	0.413	0.070	<0.010	0.024	0.542

Table 6.3.2.3-10 Results of residue trials conducted with BYI 08330 SC 240 in/on Sweet (Bell) Pepper in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN058-04H FN058-04H-B USA [redacted], Florida 2004	Pepper, sweet fruit	1	0.016	0.093	0.059	<0.010	<0.010	0.180
		1	0.031	0.175	0.124	<0.010	0.021	0.353
		3	0.020	0.235	0.099	<0.010	0.026	0.382
		3	0.032	0.208	0.088	<0.010	0.020	0.351
		7	<0.010	0.247	0.077	<0.010	0.040	0.373
		7	<0.010	0.200	0.096	<0.010	0.045	0.346
RAFNY006 FN061-04H FN061-04H-B USA [redacted], California 2004	Pepper, sweet fruit	1	0.022	0.141	0.031	<0.010	<0.010	0.202
		1	0.019	0.225	0.040	<0.010	<0.010	0.296
		3	0.028	0.375	0.059	<0.010	0.016	0.480
		3	0.025	0.278	0.052	<0.010	0.013	0.371
		7	<0.010	0.304	0.043	<0.010	0.023	0.382
		7	0.011	0.289	0.056	<0.010	0.024	0.382

[a]DALT = Days after last treatment.

Table 6.3.2.3-11. Results of residue trials conducted with BYI 08330 OD 100 in/on Non-bell Pepper (Chilli) in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY006 FN063-04H USA [redacted], Virginia 2004	Pepper, cayenne fruit	1	0.067	0.956	0.139	<0.010	0.014	1.078
		1	0.088	1.116	0.143	<0.010	0.022	1.371
		3	0.024	0.678	0.145	<0.010	0.026	0.875
		3	0.029	0.670	0.129	<0.010	0.020	0.849
		7	<0.010	0.796	0.088	<0.010	0.039	0.932
		7	0.011	1.267	0.129	<0.010	0.054	1.463
RAFNY006 FN064-04H FN064-04H-A USA [redacted], Florida 2004	Pepper, cayenne fruit	1	0.052	0.452	0.057	<0.010	<0.010	0.532
		1	0.053	0.402	0.060	<0.010	<0.010	0.527
		3	0.041	0.524	0.074	<0.010	0.013	0.653
		3	0.027	0.445	0.059	<0.010	0.011	0.543
		7	0.036	0.710	0.138	<0.010	0.029	0.916
		7	0.028	0.421	0.110	<0.010	0.019	0.580
RAFNY006 FN065-04H USA [redacted], California 2004	Pepper, cayenne fruit	1	0.027	0.343	0.035	<0.010	0.012	0.418
		1	0.038	0.391	0.032	<0.010	0.010	0.473
		3	0.048	0.594	0.080	<0.010	0.026	0.750
		3	0.051	0.577	0.093	<0.010	0.036	0.759
		7	0.025	0.566	0.070	<0.010	0.040	0.701
		7	0.021	0.802	0.091	<0.010	0.044	0.960

[a]DALT = Days after last treatment.

IIA 6.3.2.4 Leafy (Non-Brassica) Vegetables

Report:	**IIA 6.3.2.4, [redacted]; 2006**
Title:	**BYI08330 100 OD and BYI08330 240 SC - Magnitude of the Residue in/on Leafy Vegetables**
Report No &	**RAFNY002**
Document No	**M-277098-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

Field trials were conducted to evaluate the magnitude of BYI08330 residues in/on head lettuce, leaf lettuce, celery, and spinach following two broadcast foliar applications of either BYI08330 100 OD or BYI08330 240 SC. All trials had one plot sprayed with BYI08330 100 OD; one leaf lettuce and spinach trial and two head lettuce and celery trials had an additional plot treated with BYI08330 240 SC. Each formulation was applied at a target rate of 0.078 lb ai/A/application (0.088 kg ai/ha/application); actual application rates ranged from 0.076 to 0.082 lb ai/A/application (0.085 to 0.092 kg ai/ha/application). The interval between applications ranged from 5 to 8 days. Total seasonal application rates for all trials ranged from 0.152 to 0.163 lb ai/A (0.171 to 0.183 kg ai/ha). All applications were made using spray volumes of 9 to 20 GPA (83 to 189 L/ha) and Dyne-Amic (0.5% v/v) as an additive.

The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on head and leaf lettuce, celery and spinach are listed in Tables 6.3.2.4-1 through 6.3.2.3-4.

In all trials, single control samples and duplicate treated samples were collected for all matrices. In the harvest trials, the representative commodities of the head lettuce heads with wrapper leaves, leaf lettuce leaves, celery untrimmed stalks, and spinach leaves were harvested at normal maturity. Sampling was performed at two pre-harvest intervals (PHIs); the first occurred at a preferred 3-day PHI, with additional samples collected at a 6- to 7-day PHI. In the decline trials, the representative commodities were collected at five intervals corresponding to PHIs of 0, 1, 3, 7, and 10 days. For all trials, the control sample was collected at a PHI of 3 days.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (lc-ms/ms) using the stable isotopically labeled analytes as internal standards and the method of external standard quantitation. The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330

residue. The limit of quantitation (LOQ) for each analyte was 0.01 ppm in head lettuce, leaf lettuce, celery, and spinach.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in head and leaf lettuce, celery, and spinach are summarized in Tables 6.3.2.4-5 through 6.3.2.4-8. Mean recoveries for all analytes ranged from 77% ±3 to 118%.

The residues found in head and leaf lettuce, cel;ery, and spinach are shown in Tables 6.3.2. 4-9 through 6.3.2.4-16.

The highest average field trial (HAFT) total BYI08330 residue in head lettuce heads with wrapper leaves treated with BYI08330 100 OD and harvested at the desired PHI of 3 days was 0.81 ppm with a maximum residue of 0.91 ppm (Tables . The HAFT total BYI08330 residue declined with time in head lettuce heads with wrapper leaves.

The HAFT total BYI08330 residue in leaf lettuce leaves treated with BYI08330 100 OD and harvested at the desired PHI of 3 days was 1.60 ppm with a maximum residue of 1.67 ppm. The HAFT total BYI08330 residue declined with time in leaf lettuce leaves.

The HAFT total BYI08330 residue in celery untrimmed stalks treated with BYI08330 100 OD and harvested at the desired PHI of 3 days was 2.53 ppm with a maximum residue of 2.63 ppm. The HAFT total BYI08330 residue declined with time in celery untrimmed stalks.

The HAFT total BYI08330 residue in spinach leaves treated with BYI08330 100 OD and harvested at the desired PHI of 3 days was 3.06 ppm with a maximum residue of 3.35 ppm. The HAFT total BYI08330 residue declined with time in spinach leaves.

Residues were similar in plots treated with BYI08330 100 OD as compared with the bridging plots treated with BYI08330 240 SC for all matrices. The HAFT and maximum total BYI08330 residues were similar in the leafy vegetables for the representative crops of head lettuce heads with wrapper leaves, leaf lettuce leaves, celery untrimmed stalks, and spinach leaves (within a factor of 5X) collected at the desired PHI of 3 days from the plots treated with BYI08330 100 OD. Therefore, the residue data reported from the use of BYI08330 100 OD and BYI08330 240 SC on the representative crops are within the EPA guidelines for the establishment of a group tolerance for Crop Subgroup 4 (Leafy Vegetables).

The practice of removing the outer wrapper leaves from head lettuce in the field reduced the total BYI08330 residue from an average concentration (based on five field trials) of 0.67 ppm to an average concentration of 0.19 ppm (removal of wrapper leaves processing factor of 0.3X) for the samples collected at the desired 3-day PHI from plots treated with BYI08330 100 OD.

Table 6.3.2.4-1.Study Use Pattern for BYI08330 in/on Head Lettuce.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate(lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate, lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], VA Region 2	FN001-04H	2004	100 OD	Foliar	70% of the expected head size reached	TRTDO	0.079 (0.087)	0	17 (161)	0.155 (0.174)	Dyne-amic
					30% of the expected head size reached		0.078 (0.088)	6	17 (162)		
[redacted], Florida Region 3	FN002-04H	2005	100 OD	Foliar	Typ. size,form and firmness of heads reached	TRTDO	0.078 (0.087)	0	13 (121)	0.154 (0.173)	Dyne-Amic
					Typ. size,form and firmness of heads reached		0.076 (0.086)	6	13 (118)		
[redacted], Florida Region 3	FN002-04H	2005	240 SC	Foliar	Typ. size,form and firmness of heads reached	TRTDS	0.079 (0.088)	0	13 (122)	0.160 (0.180)	Dyne-Amic
					Typ. size,form and firmness of heads reached		0.082 (0.092)	6	13 (126)		
[redacted], California Region 10	FN003-04D	2004	100 OD	Foliar	20% of fruits have reached typical size	TRTDO	0.078 (0.088)	0	20 (189)	0.157 (0.176)	Dyne-Amic
					70% Fruits ripe,o.70%seeds typ.colour,dry and hard		0.079 (0.089)	6	20 (189)		

Table 6.3.2.4-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN004-04H	2004	100 OD	Foliar	70% of the expected head size reached	TRTDO	0.078 (0.088)	0	19 (180)	0.156 (0.175)	Dyne-Amic
					Typ. Size,form and firmness of heads reached		0.078 (0.088)	7	19 (180)		
[redacted], California Region 10	FN004-04H	2004	240 SC	Foliar	70% of the expected head size reached	TRTDS	0.078 (0.088)	0	19 (180)	0.157 (0.176)	Dyne-Amic
					Typ. Size,form and firmness of heads reached		0.078 (0.088)	7	19 (180)		
[redacted], California Region 10	FN005-04H	2004	100 OD	Foliar	60% of the expected head size reached	TRTDO	0.077 (0.086)	0	17 (163)	0.154 (0.173)	Dyne-Amic
					80% of the expected head size reached		0.077 (0.087)	7	18 (164)		
[redacted], California Region 10	FN006-04H	2004	100 OD	Foliar	30% of the expected head size reached	TRTDO	0.079 (0.089)	0	14 (132)	0.157 (0.176)	Dyne-Amic
					70% of the expected head size reached		0.078 (0.087)	7	14 (130)		

Table 6.3.2.4-2.Study Use Pattern for BYI08330 in/on Leaf Lettuce.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Georgia Region 2	FN007-04H	2005	100 OD	Foliar	Stem (rosette) 70% of final length (diameter)	TRTDO	0.079 (0.089)	0	9 (83)	0.158 (0.177)	Dyne-Amic
					Stem (rosette) 80% of final length (diameter)		0.078 (0.088)	7	10 (96)		
[redacted], Florida Region 3	FN008-04D	2005	100 OD	Foliar	Harvest. vegetative plant parts have final size	TRTDO	0.080 (0.090)	0	13 (120)	0.159 (0.178)	Dyne-Amic
					Harvest. vegetative plant parts have final size		0.079 (0.088)	6	12 (112)		
[redacted], California Region 10	FN009-04H	2004	100 OD	Foliar	9 or more true leaves, leaf pairs, whorls unfolded	TRTDO	0.079 (0.089)	0	18 (171)	0.158 (0.177)	Dyne-Amic
					9 or more true leaves, leaf pairs, whorls unfolded		0.079 (0.089)	6	18 (171)		
[redacted], California Region 10	FN009-04H	2004	240 SC	Foliar	9 or more true leaves, leaf pairs, whorls unfolded	TRTDS	0.078 (0.088)	0	19 (175)	0.161 (0.181)	Dyne-Amic
					9 or more true leaves, leaf pairs, whorls unfolded		0.083 (0.093)	6	18 (170)		

Table 6.3.2.4-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN010-04H	2004	100 OD	Foliar	Harvest. Vegetative plant parts 70% of final size	TRTDO	0.078 (0.088)	0	15 (140)	0.158 (0.177)	Dyne-amic
					Harvest. Vegetative plant parts 70% of final size		0.079 (0.089)		15 (141)		
[redacted], California Region 10	FN011-04H	2004	100 OD	Foliar	9 or more true leaves, leaf pairs, whorls unfolded	TRTDO	0.077 (0.087)	0	13 (121)	0.155 (0.174)	Dyne-amic
					9 or more true leaves, leaf pairs, whorls unfolded		0.078 (0.087)	7	13 (121)		
[redacted], California Region 10	FN012-04H	2004	100 OD	Foliar	Harvest. vegetative plant parts 30% of final size	TRTDO	0.076 (0.086)	0	15 (139)	0.152 (0.171)	Dyne-amic
					Harvest. vegetative plant parts 70% of final size		0.076 (0.085)	7	16 (145)		

Table 6.3.2.4-3. Study Use Pattern for BYI08330 in/on Celery.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN013-04H	2004	100 OD	Foliar	Harvest. vegetative plant parts 50% of final size	TRTDO	0.079 (0.089)	0	10 (95)	0.158 (0.177)	Dyne-Amic
					Harvest. vegetative plant parts 50% of final size		0.079 (0.088)	6	12 (108)		
[redacted], Nebraska Region 5	FN014-04D	2004	100 OD	Foliar	Crop Height: 14 – 18 in	TRTDO	0.079 (0.088)	0	14 (135)	0.157 (0.176)	Dyne-Amic
					Crop Height: 18 – 24 in		0.078 (0.088)	7	14 (131)		
[redacted], Nebraska Region 5	FN014-04D	2004	240 SC	Foliar	Crop Height: 14 – 18 in	TRTDO	0.078 (0.088)	0	14 (135)	0.157 (0.176)	Dyne-Amic
					Crop Height: 18 – 24 in		0.079 (0.088)	7	14 (131)		
[redacted], California Region 10	FN015-04H	2004	100 OD	Foliar	Harvest. vegetative plant parts 70% of final size	TRTDO	0.078 (0.088)	0	16 (150)	0.160 (0.179)	Dyne-Amic
					Harvest. vegetative plant parts have final size		0.081 (0.091)	7	17 (157)		

Table 6.3.2.4-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN015-04H	2004	240 SC	Foliar	Harvest. vegetative plant parts 70% of final size	TRTDS	0.079 (0.088)	0	16 (150)	0.154 (0.173)	Dyne-Amic
					Harvest. vegetative plant parts have final size		0.076 (0.085)	7	16 (145)		
[redacted], California Region 10	FN016-04H	2004	100 OD	Foliar	Harvest. vegetative plant parts 70% of final size	TRTDO	0.080 (0.089)	0	15 (142)	0.159 (0.178)	Dyne-amic
					Harvest. vegetative plant parts have final size		0.079 (0.089)	7	15 (142)		
[redacted], California Region 10	FN017-04H	2004	100 OD	Foliar	60% fruits have final size/fruit 60% of final size	TRTDO	0.078 (0.087)	0	20 (189)	0.156 (0.175)	Dyne-amic
					80% fruits h.final size/fr.80% of final s.		0.078 (0.088)	5	20 (188)		
[redacted], California Region 10	FN018-04H	2004	100 OD	Foliar	Harvest. vegetative plant parts 50% of final size	TRTDO	0.078 (0.088)	0	15 (136)	0.155 (0.174)	Dyne-amic
					Harvest. vegetative plant parts 70% of final size		0.077 (0.087)	7	15 (136)		

Table 6.3.2.4-4 Study Use Pattern for BYI08330 in/on Spinach.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate (lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate, lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
Germansville, Pennsylvania Region 1	FN019-04H	2004	100 OD	Foliar	Crop Height: 4 – 6 in	TRTDO	0.081 (0.091)	0	19 (180)	0.163 (0.183)	Dyne-amic
					Crop Height: 6 – 10 in		0.082 (0.092)	8	20 (184)		
[redacted], Florida Region 2	FN020-04D	2005	100 OD	Foliar	9 or more true leaves, leaf pairs, whorls unfolded	TRTDO	0.077 (0.086)	0	13 (125)	0.157 (0.176)	Dyne-amic
					Harvest, vegetative plant parts have final size		0.080 (0.089)	9	15 (143)		
[redacted] Texas Region 6	FN021-04H	2004	100 OD	Foliar	7 True leaves, leaf pairs or whorls unfolded size	TRTDO	0.077 (0.086)	0	15 (138)	0.157 (0.176)	Dyne-amic
					Harvest, vegetative plant parts 70% of final		0.079 (0.089)	7	15 (141)		
[redacted], Idaho Region 9	FN022-04H	2004	100 OD	Foliar	Stem (rosette) 60% of final length (diameter)	TRTDO	0.078 (0.087)	0	19 (181)	0.156 (0.175)	Dyne-amic
					Stem (rosette) 70% of final length (diameter)		0.078 (0.087)	7	19 (177)		

Table 6.3.2.4-4 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], California Region 10	FN023-04H	2004	100 OD	Foliar	Harvest, vegetative plant parts 50% of final size	TRTDO	0.077 (0.087)	0	15 (138)	0.155 (0.174)	Dyne-Amic
					Harvest, vegetative plant parts 70% of final size		0.078 (0.087)	7	15 (139)		
[redacted], California Region 10	FN023-04H	2004	240 SC	Foliar	Harvest, vegetative plant parts 50% of final size	TRTDS	0.076 (0.086)	0	15 (137)	0.155 (0.174)	Dyne-Amic
					Harvest, vegetative plant parts 70% of final size		0.078 (0.088)	7	15 (140)		
[redacted], California Region 10	FN024-04H	2004	100 OD	Foliar	6 True leaves, leaf pairs or whorls unfolded	TRTDO	0.079 (0.089)	0	18 (170)	0.156 (0.175)	Dyne-Amic
					9 or more true leaves, leaf pairs, whorls unfolded		0.077 (0.086)	7	18 (168)		

Table 6.3.2.4-5. Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Head Lettuce with Wrapper Leaves.

Analyte[a]	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation		
Head Lettuce With Wrapper Leaves						
BYI08330	0.01	4	97, 93, 82, 106	95%	±	10
	0.1	1	95	95%		NA[b]
	1	3	93, 94, 101	96%	±	4
BYI08330-enol-glucoside	0.01	4	101, 86, 99, 105	98%	±	8
	0.1	1	106	106%		NA[b]
	1	3	92, 96, 97	95%	±	3
BYI08330-mono-hydroxy	0.01	4	97, 105, 103, 101	102%	±	3
	0.1	1	98	98%		NA[b]
	1	3	92, 98, 99	96%	±	4
BYI08330-enol	0.01	4	104, 91, 100, 120	104%	±	12
	0.1	1	105	105%		NA[b]
	1	3	95, 99, 97	97%	±	2
BYI08330-ketohydroxy	0.01	4	95, 99, 83, 88	91%	±	7
	0.1	1	105	105%		NA[b]
	1	3	95, 95, 96	95%	±	1

[a] Analytes: enol-glucoside = BYI08330-enol-glucoside; mono-hydroxy = BYI08330-mono-hydroxy; enol = BYI08330-enol; ketohydroxy = BYI08330-ketohydroxy.

[b] NA = Not applicable. Standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.4-6.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Leaf Lettuce.

Analyte[a]	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation		
Fresh Leaves						
BYI08330	0.01	3	102, 102, 102	102%		0
	0.10	1	108	108%		NA[b]
	2.00	3	97, 102, 99	99%		3
BYI08330-enol-glucoside	0.01	3	105, 106, 106	106%		1
	0.10	1	104	104%		NA[b]
	2.00	3	101, 107, 104	104%		3
BYI08330-mono-hydroxy	0.01	3	89, 92, 99	93%		5
	0.10	1	104	104%		NA[b]
	2.00	3	99, 100, 96	98%		2
BYI08330-enol	0.01	3	112, 96, 104	104%		8
	0.10	1	114	114%		NA[b]
	2.00	3	111, 116, 118	115%		4
BYI08330-ketohydroxy	0.01	3	86, 111, 77	91%		18
	0.10	1	112	112%		NA[b]
	2.00	3	99, 98, 107	101%		5

[a] Analytes: enol-glucoside = BYI08330-enol-glucoside; mono-hydroxy = BYI08330-mono-hydroxy; enol = BYI08330-enol; ketohydroxy = BYI08330-ketohydroxy.

[b] NA = Not applicable. Standard deviations not applicable for a sample with less than three recoveries.

Table 6.3.2.4-7.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Celery.

Analyte[a]	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation		
Celery Untrimmed Stalks						
BYI08330	0.01	7	88, 94, 46, 115, 113, 112, 75	92%	±	25
	0.5	2	93, 87	90%		NA[b]
	5	3	82, 93, 83	86%	±	6
BYI08330-enol-glucoside	0.01	7	89, 82, 86, 84, 83, 105, 88	88%	±	8
	0.5	2	78, 89	84%		NA[b]
	5	3	79, 80, 104	88%	±	14
BYI08330-mono-hydroxy	0.01	7	85, 93, 81, 75, 73, 90, 88	84%	±	8
	0.5	2	95, 95	95%		NA[b]
	5	3	79, 79, 74	77%	±	3
BYI08330-enol	0.01	7	84, 83, 83, 94, 91, 93, 112	91%	±	10
	0.5	2	97, 100	99%		NA[b]
	5	3	86, 84, 84	85%	±	1
BYI08330-ketohydroxy	0.01	7	100, 95, 105, 106, 86, 89, 92	96%	±	8
	0.5	2	90, 99	95%	±	NA[b]
	5	3	76, 82, 77	78%	±	3

[a] Analytes: enol-glucoside = BYI08330-enol-glucoside; mono-hydroxy = BYI08330-mono-hydroxy; enol = BYI08330-enol; ketohydroxy = BYI08330-ketohydroxy.

[b] NA = Not applicable. Standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.4-8.Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol and BYI08330-ketohydroxy from Spinach.

Analyte[a]	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation		
Spinach						
BYI08330	0.01	11	104, 97, 106, 84, 102, 92, 104, 114, 98, 99, 98	100%	±	8
	0.05	3	104, 95, 104	101%	±	5
	0.1	2	101, 107	104%		NA[b]
	0.2	2	111, 108	110%		NA[b]
	3	3	98, 98, 102	99%	±	2
BYI08330-enol-glucoside	0.01	11	90, 94, 81, 88, 81, 118, 96, 100, 104, 90, 101	95%	±	11
	0.05	3	99, 97, 97	98%	±	1
	0.1	2	98, 99	99%		NA[b]
	0.2	2	113, 119	116%		NA[b]
	3	3	102, 101, 103	102%	±	1
BYI08330-mono-hydroxy	0.01	11	87, 93, 103, 85, 100, 97, 102, 88, 87, 84, 89	92%	±	7
	0.05	3	102, 101, 106	103%	±	3
	0.1	2	103, 99	101%		NA[b]
	0.2	2	111, 111	111%		NA[b]
	3	3	97, 100, 101	99%	±	2
BYI08330-enol	0.01	11	81, 97, 100, 80, 110, 99, 102, 118, 93, 110, 83	98%	±	13
	0.05	3	112, 104, 102	106%	±	5
	0.1	2	112, 113	113%		NA[b]
	0.2	2	119, 117	118%		NA[b]
	3	3	109, 109, 104	107%	±	3
BYI08330-ketohydroxy	0.01	11	80, 103, 81, 89, 109, 87, 89, 82, 106, 88, 91	91%	±	10
	0.05	3	94, 103, 93	97%	±	6
	0.1	2	92, 95	94%		NA[b]
	0.2	2	104, 114	109%		NA[b]
	3	3	113, 101, 109	108%	±	6

[a] Analytes: enol-glucoside = BYI08330-enol-glucoside; mono-hydroxy = BYI08330-mono-hydroxy; enol = BYI08330-enol; ketohydroxy = BYI08330-ketohydroxy.

[b] NA = Not applicable. Standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.4-9. Results of residue trials conducted with BYI 08330 OD 100 in/on head lettuce in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN001-04H USA [redacted], Virginia 2004	Lettuce, head Desert Queen	3	0.311	0.270	0.053	<0.010	0.023	0.659
		3	0.277	0.411	0.096	<0.01	0.042	0.827
		7	0.083	0.172	0.031	<0.01	0.030	0.317
		7	0.057	0.172	0.031	<0.01	0.027	0.290
	Leaf, inner	3	0.094	0.220	0.050	<0.01	0.011	0.377
		3	0.075	0.215	0.068	<0.01	0.013	0.373
		7	0.017	0.122	0.048	<0.01	0.014	0.202
		7	0.014	0.146	0.044	<0.01	0.012	0.218
RAFNY002 FN002-04H FN002-04H-A USA [redacted], Florida 2005	Lettuce, head Summertime	3	0.010	0.143	0.025	<0.01	0.143	0.322
		3	<0.01	0.118	0.027	<0.01	0.115	0.272
		7	<0.01	0.058	0.022	<0.01	0.167	0.250
		7	<0.01	0.030	0.016	<0.01	0.102	0.151
	Leaf, inner	3	<0.01	0.078	0.014	<0.01	0.065	0.159
		3	<0.01	0.063	0.016	<0.01	0.058	0.139
		7	<0.01	0.071	0.022	<0.01	0.099	0.194
		7	<0.01	0.066	0.018	<0.01	0.075	0.161
RAFNY002 FN003-04D USA [redacted], California 2004	Head Lettuce Van Crisp	0	0.230	0.153	0.063	<0.01	0.010	0.458
		0	0.398	0.209	0.090	<0.01	0.011	0.710
		1	0.334	0.151	0.098	<0.01	0.017	0.602
		1	0.346	0.207	0.083	<0.01	0.020	0.658
		3	0.038	0.089	0.044	<0.01	0.016	0.189
		3	0.066	0.149	0.041	<0.01	0.020	0.247
		7	0.014	0.057	0.043	<0.01	0.022	0.137
		7	0.035	0.060	0.034	<0.01	0.021	0.151
		10	<0.01	0.039	0.028	<0.01	0.018	0.095
		10	<0.01	0.043	0.026	<0.01	0.010	0.085
RAFNY002 FN004-04H FN004-04H-A USA [redacted], California 2004	Lettuce, head Bayview	3	0.324	0.271	0.100	<0.010	0.021	0.718
		3	0.226	0.267	0.069	<0.01	0.018	0.682
		7	0.144	0.146	0.078	<0.01	0.022	0.392
		7	0.244	0.209	0.090	<0.01	0.025	0.580
	Leaf, inner	3	0.037	0.090	0.038	<0.01	<0.01	0.172
		3	0.058	0.103	0.049	<0.01	<0.01	0.220
		7	<0.01	0.055	0.035	<0.01	<0.01	0.098
		7	<0.01	0.034	0.042	<0.01	<0.01	0.088

[a]DALT = Days after last treatment.

Table 6.3.2.4-9 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN005-04H USA [redacted], California 2004	Lettuce, head Sharpshooter	3	0.365	0.176	0.230	<0.01	0.032	0.806
		3	0.373	0.230	0.178	<0.01	0.026	0.810
		7	0.025	0.135	0.062	<0.01	0.015	0.238
		7	0.012	0.111	0.051	<0.01	0.010	0.186
	Leaf, inner	3	<0.01	0.045	0.036	<0.01	<0.01	0.095
		3	0.01	0.078	0.045	<0.01	<0.01	0.136
		7	<0.01	0.091	0.046	<0.01	<0.01	0.148
		7	<0.01	0.127	0.046	0.012	<0.01	0.193
RAFNY002 FN006-04H USA [redacted], California 2004	Lettuce, head Tiber	3	0.338	0.327	0.197	<0.01	0.046	0.909
		3	0.282	0.234	0.165	<0.01	0.034	0.716
		7	0.165	0.132	0.138	<0.01	0.034	0.471
		7	0.215	0.170	0.138	<0.01	0.028	0.553
	Leaf, inner	3	<0.01	0.047	0.043	<0.01	<0.01	0.104
		3	<0.01	0.054	0.043	<0.01	<0.01	0.111
		7	<0.01	0.016	0.027	<0.01	<0.01	0.050
		7	<0.01	0.014	0.028	<0.01	<0.01	0.044

[a]DALT = Days after last treatment

Table 6.3.2.4-10. Results of residue trials conducted with BYI 08330 SC 240 in/on head lettuce in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN002-04H FN002-04H-B USA [redacted], Florida 2005	Lettuce, head Summertime	3	<0.01	0.069	0.017	<0.01	0.067	0.160
		3	0.026	0.117	0.026	<0.01	0.107	0.278
		7	<0.01	0.019	0.013	<0.01	0.084	0.119
		7	<0.01	0.011	<0.01	<0.01	0.042	0.062
	Lettuce, without wrapper leaves	3	<0.01	0.075	0.014	<0.01	0.051	0.143
		3	<0.01	0.099	0.021	<0.01	0.084	0.204
		7	<0.01	0.020	0.012	<0.01	0.071	0.106
		7	<0.01	0.037	0.010	<0.01	0.055	0.106
RAFNY002 FN004-04H FN004-04H-B USA [redacted], California 2004	Lettuce, head Bayview	3	0.382	0.366	0.097	<0.01	0.024	0.871
		3	0.446	0.398	0.159	<0.01	0.022	1.027
		7	0.110	0.188	0.073	<0.01	0.025	0.397
		7	0.106	0.134	0.085	<0.01	0.020	0.337
	Leaf, inner	3	0.048	0.107	0.051	<0.01	<0.01	0.215
		3	0.061	0.107	0.053	<0.01	<0.01	0.229
		7	<0.01	0.037	0.050	<0.01	<0.01	0.097
		7	0.020	0.072	0.040	<0.01	<0.01	0.138

[a]DALT = Days after last treatment.

Table 6.3.2.4-11 Results of residue trials conducted with BYI 08330 OD 100 in/on leaf lettuce in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN007-04HA USA [redacted], Georgia 2005	Lettuce, leaf Buttercrunch	3 3 7 7	0.226 0.209 0.046 0.038	0.303 0.286 0.143 0.131	0.063 0.065 0.034 0.036	<0.010 <0.010 <0.010 <0.010	0.123 0.120 0.134 0.120	0.717 0.682 0.359 0.328
RAFNY002 FN008-04D USA [redacted], Florida 2005	Lettuce, leaf Green Leaf	0 0 1 1 3 3 7 7 10 10	1.937 1.971 1.008 0.461 0.027 0.043 <0.01 <0.01 <0.01 <0.01	1.814 1.591 1.598 1.193 0.569 0.458 0.210 0.197 0.126 0.105	0.264 0.262 0.242 0.171 0.046 0.056 0.028 0.026 0.012 0.011	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.205 0.202 0.501 0.302 0.374 0.429 0.296 0.271 0.060 0.046	4.221 4.028 3.350 2.128 1.018 0.987 0.541 0.497 0.201 0.166
RAFNY002 FN009-04H FN009-04H-A USA [redacted], California 2004	Lettuce, leaf Butterhead	3 3 7 7	<0.01 <0.01 <0.01 <0.01	0.098 0.102 0.045 0.042	0.034 0.040 0.018 0.017	<0.010 <0.010 <0.010 <0.010	0.036 0.046 0.030 0.036	0.177 0.198 0.096 0.100
RAFNY002 FN010-04H USA [redacted], California 2004	Lettuce, leaf Darkland	3 3 7 7	0.453 0.306 0.336 0.260	0.502 0.434 0.257 0.231	0.095 0.071 0.045 0.041	<0.010 <0.010 <0.010 <0.010	0.112 0.096 0.159 0.157	1.164 0.908 0.798 0.690

[a]DALT = Days after last treatment

Table 6.3.2.4-11 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg) DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN011-04H USA [redacted], California 2004	Lettuce, leaf Outback	3 3 7 7	0.995 0.874 0.463 0.529	0.510 0.482 0.324 0.345	0.133 0.143 0.121 0.100	<0.010 <0.010 <0.010 <0.010	0.028 0.022 0.041 0.036	1.668 1.526 0.950 1.011
RAFNY002 FN012-04H USA [redacted], California 2004	Lettuce, leaf Red Tide	3 3 7 7	0.142 0.166 0.060 0.042	0.502 0.509 0.201 0.188	0.033 0.041 0.027 0.028	<0.010 <0.010 <0.010 <0.010	0.024 0.028 0.027 0.023	0.703 0.736 0.317 0.282

Table 6.3.2.4-12. Results of residue trials conducted with BYI 08330 SC 240 in/on leaf lettuce in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg) DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN009-04H FN009-04H-B USA [redacted] California 2004	Lettuce, leaf Butterhead	3 3 7 7	0.015 <0.01 <0.01 <0.01	0.123 0.109 0.040 0.038	0.048 0.045 0.018 0.020	<0.010 <0.010 <0.010 <0.010	0.031 0.037 0.039 0.046	0.220 0.200 0.104 0.110

[a]DALT = Days after last treatment.

Table 6.3.2.4-13. Results of residue trials conducted with BYI 08330 OD 100 in/on celery in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN013-04H USA [redacted], Florida 2004	Celery M9 stalk	3 3 **7** **7**	0.089 0.252 <0.01 <0.01	0.065 0.133 0.037 0.037	0.062 0.071 0.034 0.031	<0.010 <0.010 <0.010 <0.010	0.022 0.024 0.031 0.027	0.240 0.481 0.112 0.106
RAFNY002 FN014-04D FN014-04D-A USA [redacted], Nebraska 2004	Celery unknown stalk	0 0 1 1 3 3 3 3 7 7 10 10	1.088 0.767 0.695 0.458 0.248 0.222 0.108 0.112 0.119 0.127 0.172 0.042 0.037	0.522 0.390 0.357 0.264 0.214 0.198 0.150 0.125 0.144 0.073 0.089 0.035 0.034	0.185 0.130 0.210 0.155 0.229 0.214 0.184 0.164 0.197 0.152 0.169 0.091 0.079	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.075 0.068 0.082 0.071 0.064 0.073 0.101 0.081 0.078 0.107 0.128 0.131 0.155	1.872 1.377 1.346 0.951 0.758 0.708 0.570 0.484 0.540 0.462 0.560 0.300 0.307
	stalk, trimmed	3 3 3	<0.01 <0.01 <0.01	0.028 0.028 0.034	0.038 0.041 0.048	<0.010 <0.010 <0.010	0.030 0.043 0.054	0.101 0.117 0.142
	stalk, trimmed, washed	3 3 3	<0.01 <0.01 <0.01	0.033 0.036 0.035	0.061 0.077 0.076	<0.010 <0.010 <0.010	0.041 0.053 0.056	0.142 0.172 0.178
RAFNY002 FN015-04H FN015-04H-A USA [redacted], California 2004	Celery Conquista dor stalk	3 3 7 7	0.107 0.085 0.099 0.142	0.134 0.126 0.089 0.110	0.093 0.084 0.070 0.080	<0.010 <0.010 <0.010 <0.010	0.043 0.045 0.053 0.051	0.377 0.342 0.313 0.390

[a]DALT = Days after last treatment.

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Table 6.3.2.4-13 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN016-04H USA [redacted], California 2004	Celery Conquistador stalk	3 3 7 7	1.401 1.309 0.845 1.078	0.539 0.548 0.322 0.388	0.246 0.224 0.216 0.265	<0.010 <0.010 <0.010 <0.010	0.049 0.051 0.071 0.082	2.237 2.135 1.456 1.814
RAFNY002 FN017-04H USA [redacted], California 2004	Celery Sonora stalk	3 3 7 7	0.261 0.276 0.096 0.092	0.158 0.171 0.093 0.087	0.147 0.159 0.129 0.139	<0.010 <0.010 <0.010 <0.010	0.030 0.035 0.047 0.043	0.597 0.643 0.367 0.364
RAFNY002 FN018-04H USA [redacted], California 2004	Celery Conquistador stalk	3 3 7 7	1.948 1.605 1.345 1.395	0.494 0.548 0.349 0.380	0.078 0.092 0.056 0.059	<0.010 <0.010 <0.010 <0.010	0.103 0.117 0.126 0.162	2.628 2.424 1.878 1.998

[a]DALT = Days after last treatment.

Table 6.3.2.4-14. Results of residue trials conducted with BYI 08330 SC 240 in/on celery in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN014-04D FN014-04D-B USA [redacted], Nebraska 2004	Celery unknown stalk	3 3 7 7	0.127 0.189 0.172 0.221	0.125 0.139 0.075 0.096	0.145 0.149 0.128 0.145	<0.01 <0.01 <0.01 <0.01	0.033 0.033 0.047 0.066	0.431 0.481 0.423 0.529
RAFNY002 FN015-04H FN015-04H-B USA [redacted], California 2004	Celery Conquistador stalk	3 3 7 7	0.164 0.155 0.099 0.189	0.129 0.121 0.090 0.106	0.077 0.085 0.081 0.083	<0.01 <0.01 <0.01 <0.01	0.028 0.031 0.037 0.040	0.400 0.394 0.309 0.420

[a]DALT = Days after last treatment.

Table 6.3.2.4-15. Results of residue trials conducted with BYI 08330 OD 100 in/on spinach in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN019-04H USA Germansville, Pennsylvania 2004	Spinach Tyee leaf	3 3 6 6	0.216 0.040 0.025 0.184	0.943 0.173 0.179 0.936	0.296 0.055 <0.01 0.285	<0.01 <0.01 <0.01 <0.01	0.086 0.063 0.072 0.097	1.543 0.332 0.357 1.503
RAFNY002 FN020-04D USA [redacted], Florida 2005	Spinach Bloomingdale leaf	0 0 1 1 3 3 7 7 10 10	1.724 2.226 0.031 0.026 0.026 0.023 0.011 0.017 <0.01 <0.01	1.472 2.137 0.215 0.173 0.107 0.083 0.012 0.012 <0.01 <0.01	0.313 0.565 0.099 0.088 0.058 0.055 0.016 0.014 <0.01 <0.01	<0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01	0.015 0.029 0.027 0.026 0.034 0.033 0.015 0.034 0.025 0.020	3.526 4.959 0.374 0.315 0.227 0.196 0.056 0.080 0.038 0.034
RAFNY002 FN021-04H USA [redacted], Texas 2004	Spinach Melody leaf	3 3 7 7	0.561 0.577 0.090 0.163	0.815 0.703 0.146 0.167	0.143 0.167 0.033 0.045	<0.01 <0.01 <0.01 <0.01	<0.01 0.010 0.010 0.010	1.528 1.462 0.280 0.386
RAFNY002 FN022-04H FN022-04H GLP yes 2004	Spinach Limpack 131 leaf	3 3 7 7	0.852 1.272 0.774 0.617	1.581 1.734 1.151 1.230	0.324 0.325 0.170 0.166	<0.01 <0.01 <0.01 <0.01	0.014 0.019 0.017 0.019	2.772 3.352 2.112 2.034
RAFNY002 FN023-04H FN023-04H-A GLP yes 2004	Spinach Hybrid 424 leaf	3 3 7 7	0.491 0.470 0.320 0.327	0.613 0.648 0.298 0.262	0.072 0.052 0.032 0.024	<0.01 <0.01 <0.01 <0.01	0.010 0.015 0.012 0.011	1.188 1.187 0.663 0.626
RAFNY002 FN024-04H USA [redacted], California 2004	Spinach Shasta Hybrid leaf	3 3 7 7	0.223 0.233 0.036 0.017	0.585 0.587 0.142 0.058	0.162 0.174 0.059 0.022	<0.01 <0.01 <0.01 <0.01	0.023 0.027 0.029 0.029	0.993 1.022 0.268 0.128

[a]DALT = Days after last treatment.

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Table 6.3.2.4-16. Results of residue trials conducted with BYI 08330 SC 240 in/on spinach in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY002 FN023-04H FN023-04H-B GLP yes 2004	Spinach Hybrid 424 leaf	3 3 7 7	0.845 0.953 0.401 0.369	0.088 0.104 0.030 0.021	<0.01 <0.01 <0.01 <0.01	<0.01 <0.01 <0.01 <0.01	1.385 1.577 0.726 0.646	0.443 0.511 0.287 0.249

a: DALT = Days after last treatment

IIA 6.3.2.5 Potato

Report:	**IIA 6.3.2.5, [redacted] and [redacted]; 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC – Magnitude of the Residue on Potato**
Report No &	**RAFNY028**
Document No	**M-277033-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

A total of 16-field trials were conducted to measure the magnitude of BYI08330 (cis-8-methoxy-3-oxo-2-(2,5-xylyl)-4-azaspiro[4.5]dec-1-enyl ethoxyformate; CAS No. 203313-25-1) residue in potatoes following two broadcast foliar applications of either BYI08330 150 OD or BYI08330 240 SC. All trials had one plot sprayed with BYI08330 150 OD; four of the trials had an additional bridging plot treated with BYI08330 240 SC. Each formulation was applied at a target rate of 0.078 lb ai/A/application (0.088 kg ai/ha/application); actual application rates ranged from 0.076 to 0.082 lb ai/A/application (0.086 to 0.092 kg ai/ha/application). The achieved total seasonal application rate ranged from 0.154 to 0.161 lb ai/A (0.173 to 0.180 kg ai/ha). The intervals between applications ranged from 5 to 7 days with the exception of trial FN249-05H which inadvertently had an application interval of 15 days. All applications were made using spray volumes ranging from 13 to 20 GPA (121 to 191 L/ha). All applications used Dyne-Amic (0.5% v/v) as a spray adjuvant. The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on potatoes are listed in Table 6.3.2.5-1.

In all trials, single control samples and duplicate treated samples were collected for all matrices. In the harvest trials, the representative commodity of potato tubers were harvested at normal maturity (growth stage BBCH 49). In the 14 potato harvest trials, tuber samples were collected at target 7 and 14-day PHI's, but only the target 7-day PHI was analyzed. In the two potato decline trials, tubers were collected from the treated plots at five intervals (± 1 day) of 3, 7, 10, 14, and 21 days.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-Glc were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC/MS/MS) using the stable isotopically labeled analytes as internal standards and the method of external standard quantitation. The individual analyte residues were converted to BYI08330 parent equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.01 ppm in potato tubers.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in potato are summarized in Table 6.3.2.5-2. The recoveries for all analytes ranged from 81% to 118%.

The residues found in potato are shown in Tables 6.3.2.5-3 and 6.3.2.5-4. The highest average field trial (HAFT) total BYI08330 residue in potato tubers treated with BYI08330 150 OD and harvested at a target PHI of 7 days was 0.43 ppm with a maximum residue of 0.44 ppm. The HAFT total BYI08330 residue in potato tubers treated with BYI08330 240 SC and harvested at a target PHI of 7 days was 0.12 ppm with a maximum residue of 0.12 ppm. The HAFT total BYI08330 residue in potato tubers declined with time at one location but not the other.

The total BYI08330 residues were similar in plots treated with BYI08330 150 OD when compared with the bridging plots treated with BYI08330 240 SC.

Table 6.3.2.5-1 Study Use Pattern for BYI08330 in/on Potato.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing[a]	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
Germansville, Pennsylvania Region 1	FN245-05H	2005	150 OD	Foliar	App: 1 50% of total final tuber mass reached	TRTDO	0.080 (0.089)	0	19 (176)	0.161 (0.180)	Dyne-Amic
					App: 2 60% of total final tuber mass reached		0.081 (0.091)	6	19 (178)		Dyne-Amic
[redacted], New York Region 1	FN246-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.077 (0.086)	0	18 (166)	0.156 (0.175)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.079 (0.089)	7	18 (171)		Dyne-Amic
[redacted], Georgia Region 2	FN247-05D	2005	150 OD	Foliar	App: 1 60% of total final tuber mass reached	TRTDO	0.078 (0.088)	0	18 (169)	0.157 (0.176)	Dyne-Amic
					App: 2 70% of total final tuber mass reached		0.078 (0.088)	7	18 (167)		Dyne-Amic
[redacted], Florida Region 2	FN248-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.080 (0.090)	0	13 (125)	0.159 (0.178)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.079 (0.088)	6	13 (121)		Dyne-Amic

Table 6.3.2.5-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing[a]	Plot Name	Rate (kg a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate (lb a.i./A (kg a.i./ha)	
[redacted], Kansas Region 5	FN249-05H	2005	150 OD	Foliar	App: 1 First berries visible shriveled*	TRTDO	0.081 (0.091)	0	15 (139)	0.161 (0.180)	Dyne-Amic
					App: 2 Berries in the 1. fructification shriveled*		0.080 (0.089)	15	15 (138)		Dyne-Amic
[redacted], Kansas Region 5	FN249-05H	2005	240 SC	Foliar	App: 1 First berries visible*	TRTDS	0.081 (0.091)	0	15 (139)	0.160 (0.180)	Dyne-Amic
					App: 2 Berries in the 1. fructification*		0.079 (0.089)	15	15 (138)		Dyne-Amic
[redacted], Illinois Region 5	FN250-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.080 (0.090)	0	16 (146)	0.160 (0.180)	Dyne-Amic
					App: 2 Skin set complete		0.080 (0.090)	5	16 (146)		Dyne-Amic
[redacted], Illinois Region 5	FN250-05H	2005	240 SC	Foliar	App: 1 70% of total final tuber mass reached	TRTDS	0.080 (0.090)	0	16 (146)	0.159 (0.179)	Dyne-Amic
					App: 2 Skin set complete		0.079 (0.089)	5	15 (143)		Dyne-Amic

Table 6.3.2.5-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing[a]	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Nebraska Region 5	FN251-05H	2005	150 OD	Foliar	App: 1 50% of total final tuber mass reached	TRTDO	0.079 (0.089)	0	14 (128)	0.158 (0.177)	Dyne-Amic
					App: 2 60% of total final tuber mass reached		0.079 (0.088)	5	14 (128)		Dyne-Amic
[redacted], Minnesota Region 5	FN252-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.082 (0.092)	0	17 (155)	0.159 (0.179)	Dyne-Amic
					App: 2 70% of total final tuber mass reached		0.077 (0.087)	5	17 (159)		Dyne-Amic
[redacted], Idaho Region 11	FN253-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.079 (0.089)	0	18 (170)	0.157 (0.176)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.078 (0.087)	7	18 (167)		Dyne-Amic
[redacted], California Region 10	FN254-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.079 (0.088)	0	20 (184)	0.157 (0.176)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.078 (0.088)	7	20 (186)		Dyne-Amic

Table 6.3.2.5-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing[a]	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Idaho Region 11	FN255-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.079 (0.088)	0	16 (150)	0.157 (0.176)	Dyne-Amic
					App: 2 70% of total final tuber mass reached		0.078 (0.088)	7	16 (146)		Dyne-Amic
[redacted], Idaho Region 11	FN255-05H	2005	240 SC	Foliar	App: 1 70% of total final tuber mass reached	TRTDS	0.079 (0.088)	0	16 (151)	0.159 (0.178)	Dyne-Amic
					App: 2 70% of total final tuber mass reached		0.080 (0.090)	7	16 (149)		Dyne-Amic
[redacted], Washington Region 11	FN256-05H	2005	150 OD	Foliar	App: 1 Maximum of total tuber mass reached	TRTDO	0.078 (0.087)	0	15 (137)	0.156 (0.175)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.078 (0.088)	7	15 (138)		Dyne-Amic
[redacted], Washington Region 11	FN256-05H	2005	240 SC	Foliar	App: 1 70% of total final tuber mass reached	TRTDS	0.078 (0.087)	0	15 (138)	0.157 (0.176)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.080 (0.089)	7	15 (139)		Dyne-Amic

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Table 6.3.2.5-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing[a]	Plot Name	Rate/Ib a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate/ lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Idaho Region 11	FN257-05D	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.078 (0.088)	0	17 (163)	0.157 (0.177)	Dyne-Amic
					App: 2 Maximum of total tuber mass reached		0.079 (0.089)	6	18 (169)		Dyne-Amic
[redacted], Oregon Region 11	FN258-05H	2005	150 OD	Foliar	App: 1 Maximum of total tuber mass reached	TRTDO	0.076 (0.086)	0	17 (157)	0.154 (0.173)	Dyne-Amic
					App: 2 Skin set complete		0.078 (0.087)	6	17 (160)		Dyne-Amic
[redacted], Washington Region 11	FN259-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.079 (0.089)	0	14 (134)	0.158 (0.177)	Dyne-Amic
					App: 2 Skin set complete		0.079 (0.088)	7	14 (134)		Dyne-Amic
[redacted], Idaho Region 11	FN260-05H	2005	150 OD	Foliar	App: 1 70% of total final tuber mass reached	TRTDO	0.080 (0.090)	0	20 (191)	0.158 (0.178)	Dyne-Amic
					App: 2 Maximum tuber mass / skin set int yet complete		0.078 (0.088)	6	20 (187)		Dyne-Amic

[a]Timing based on tuber maturity. Tuber size was estimated to be between 50% and 90% of total final tuber mass.

Table 6.3.2.5-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from potato.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)
Potato Tuber[ab]			
BYI08330	0.02	1	98
	0.05	1	84
	0.1	1	100
	1	1	98
BYI08330-enol	0.02	1	99
	0.05	1	84
	0.1	1	102
	1	1	97
BYI08330-ketohydroxy	0.02	1	84
	0.05	1	90
	0.1	1	110
	1	1	95
BYI08330-mono-hydroxy	0.02	1	103
	0.05	1	83
	0.1	1	111
	1	1	107
BYI08330-enol-glucoside	0.02	1	85
	0.05	1	81
	0.1	1	89
	1	1	118

[a] Method validation for potato tuber was conducted as part of Bayer Study RAFNY020. [redacted], C.A. 2006. BYI08330 150 OD - Magnitude of the Residue on Potato Processed Commodities. Bayer CropScience Report No. RAFNY020 (**see IIA 6.5.4.5**).

Table 6.3.2.5-3 Results of residue trials conducted with BYI 08330 OD 150 in/on potato in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY028 FN245-05H USA Germansville, Pennsylvania 2005	Potato tuber	7 7	<0.010 <0.010	0.362 0.327	0.035 0.040	<0.010 <0.010	<0.010 <0.010	0.405 0.374
RAFNY028 FN246-05H USA [redacted], New York 2005	Potato tuber	6 6	<0.010 <0.010	0.135 0.147	0.014 0.015	<0.010 <0.010	<0.010 <0.010	0.154 0.167
RAFNY028 FN247-05D USA [redacted], Georgia 2005	Potato tuber	3 3 7 7 10 10 14 14 20 20	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.156 0.226 0.151 0.219 0.150 0.175 0.173 0.149 0.121 0.133	0.028 0.042 0.031 0.036 0.032 0.029 0.026 0.028 0.023 0.023	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 0.012 <0.010	0.188 0.273 0.185 0.262 0.188 0.210 0.209 0.186 0.159 0.166
RAFNY028 FN248-05H USA [redacted], Florida 2005	Potato tuber	7 7	<0.010 <0.010	0.285 0.210	0.047 0.027	<0.010 <0.010	<0.010 <0.010	0.344 0.249

[a]DALT = Days after last treatment.

Table 6.3.2.5-3 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY028 FN249-05H FN249-05H-A USA [redacted], Kansas 2005	Potato tuber	7 7	<0.010 <0.010	0.120 0.146	0.019 0.015	<0.010 <0.010	<0.010 <0.010	0.199 0.169
RAFNY028 FN250-05H FN250-05H-A USA [redacted], Illinois 2005	Potato tuber	7 7	<0.010 <0.010	0.029 0.025	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.036 0.032
RAFNY028 FN251-05H USA [redacted], Nebraska 2005	Potato tuber	6 6	<0.010 <0.010	0.357 0.354	0.070 0.059	<0.010 <0.010	<0.010 <0.010	0.436 0.422
RAFNY028 FN252-05H USA [redacted], Minnesota 2005	Potato tuber	7 7	<0.010 <0.010	0.036 0.034	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.046 0.042
RAFNY028 FN253-05H USA [redacted], Idaho 2005	Potato tuber	7 7	<0.010 <0.010	0.043 0.050	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.053 0.084
RAFNY028 FN254-05H USA [redacted], California 2005	Potato tuber	7 7	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.015 0.015

[a]DALT = Days after last treatment.

Table 6.3.2.5-3 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY028 FN255-05H FN255-05H-A USA [redacted], Idaho 2005	Potato tuber	7 7	<0.010 <0.010	0.040 0.037	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.051 0.046
RAFNY028 FN256-05H FN256-05H-A USA [redacted], Washington 2005	Potato tuber	7 7	<0.010 <0.010	0.039 0.042	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.046 0.051
RAFNY028 FN257-05D USA [redacted], Idaho 2005	Potato tuber	3 3 6 6 8 8 13 13 20 20	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.056 0.068 0.086 0.077 0.058 0.079 0.040 0.086 0.102 0.089	<0.010 <0.010 <0.010 <0.010 <0.010 0.011 <0.010 0.011 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.064 0.078 0.099 0.088 0.067 0.094 0.047 0.105 0.115 0.102
RAFNY028 FN258-05H USA [redacted], Oregon 2005	Potato tuber	7 7	<0.010 <0.010	0.156 0.096	0.012 <0.010	<0.010 <0.010	<0.010 <0.010	0.173 0.110
RAFNY028 FN259-05H USA [redacted], Washington 2005	Potato tuber	7 7	<0.010 <0.010	0.069 0.081	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.080 0.092
RAFNY028 FN260-05H USA [redacted], Idaho 2005	Potato tuber	7 7	<0.010 <0.010	0.036 0.035	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.045 0.043

[a]DALT = Days after last treatment.

Table 6.3.2.5-4 Results of residue trials conducted with BYI 08330 240 SC in/on potato in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY028 FN249-05H FN249-05H-B USA [redacted], Kansas 2005	Potato tuber	7 7	<0.010 <0.010	0.092 0.098	0.014 0.011	<0.010 <0.010	<0.010 <0.010	0.113 0.117
RAFNY028 FN250-05H FN250-05H-B USA [redacted], Illinois 2005	Potato tuber	7 7	<0.010 <0.010	0.031 0.021	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.041 0.027
RAFNY028 FN255-05H FN255-05H-B USA [redacted], Idaho 2005	Potato tuber	7 7	<0.010 <0.010	0.039 0.043	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.048 0.049
RAFNY028 FN256-05H FN256-05H-B USA [redacted], Washington 2005	Potato tuber	7 7	<0.010 <0.010	0.020 0.024	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.027 0.031

[a]DALT = Days after last treatment.

IIA 6.3.2.6 Citrus

Report:	**IIA 6.3.2.6, [redacted]; 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC - Magnitude of the Residue on Citrus (Crop Group 10, Citrus Fruits; Includes Residue Reduction Samples).**
Report No & Document No	**RAFNY008** **M-277116-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

A total of 23 field trials were conducted to evaluate the magnitude of BYI08330 residues on orange, lemon, and grapefruit (whole fruit) following two airblast spray applications of either BYI08330 150 OD or BYI08330 240 SC to the treated plots at a target rate of 0.157 lb ai/A/application (0.176 kg ai/ha/application). All trials (orange, lemon, and grapefruit) had one plot that received concentrated spray (TDOC) applications of BYI08330 150 OD and an additional plot that received diluted spray (TDOD) applications of BYI08330 150 OD; at least one trial for each crop had an additional bridging plot that received concentrated spray (TDSC) applications of BYI08330 240 SC.

The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on orange, lemon, and grapefruit are listed in Tables 6.3.2.6-1 through 6.3.2.3-4.

Actual application rates ranged from 0.150 to 0.166 lb ai/A/application (0.168 to 0.187 kg ai/ha/application) for plots receiving a concentrated or diluted spray airblast treatment of BYI08330 150 OD or a concentrated spray airblast treatment of BYI08330 240 SC. The interval between applications ranged from 14 to 21 days. All spray mixtures included Dyne-Amic (0.25% v/v) as an adjuvant.

Total seasonal application rates (total of two applications) for all trials ranged from 0.306 to 0.321 lb ai/A (0.344 to 0.360 kg ai/ha) for plots receiving a concentrated or diluted spray airblast treatment of BYI08330 150 OD or a concentrated spray airblast treatment of BYI08330 240 SC. Spray volumes ranged from 40 to 70 GPA (375 to 653 L/ha) for plots receiving concentrated spray (TDOC) applications of BYI08330 150 OD, from 204 to 345 GPA (1906 to 3230 L/ha) for plots receiving diluted spray (TDOD) applications of BYI08330 150 OD, and from 50 to 66 GPA (470 to 617 L/ha) for plots receiving concentrated spray (TDSC) applications of BYI08330 240 SC. The applications were timed so that sampling would occur when the commodities were at commercial maturity ['ripe for picking' to 'ripe for consumption' (BBCH 83 to BBCH 89)].

In the harvest trials (11 orange, four lemon, and five grapefruit), the representative commodities of whole fruit (RAC) of orange, lemon, and grapefruit were harvested at a pre-harvest interval (PHI) of 1 day (the desired PHI). In the decline trials (one orange, one lemon, and one grapefruit), the representative commodities were collected at five intervals (±1 day) corresponding to PHIs of 0, 1, 7, 10, and 14 days. Additional orange samples were collected to determine the possible reduction of total BYI08330 residues from removing the peel from orange whole fruit.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-Glc were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC/MS/MS) using the stable isotopically labeled analytes as internal standards. The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.050 ppm in orange, lemon, and grapefruit matrices.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in orange, lemon, and grapefruit are summarized in Tables 6.3.2.6-4 through 6.3.2.6-6. Mean recoveries for all analytes ranged from 87% to 101% ±3.

The residues found in orange, lemon, and grapefruit are shown in Tables 6.3.2. 4-7 through 6.3.2.4-12.

For orange, the highest average field trial (HAFT) total BYI08330 residue was 0.31 ppm at commercial maturity at the desired label PHI of 1 day with a maximum residue of 0.32 ppm and occurred following concentrated spray applications of BYI08330 150 OD.

For lemon, the HAFT total BYI08330 residue was 0.32 ppm at commercial maturity at the desired label PHI of 1 day with a maximum residue of 0.32 ppm and occurred following concentrated spray applications of BYI08330 150 OD.

For grapefruit, the HAFT total BYI08330 residue was 0.17 ppm at commercial maturity at the desired label PHI of 1 day with a maximum residue of 0.18 ppm and occurred following concentrated spray applications of BYI08330 150 OD.

In general, total BYI08330 residue after concentrated spray applications was higher than total BYI08330 residue after dilute spray applications.

The total BYI08330 residue in the decline trial samples either decreased or remained relatively constant with time.

The total BYI08330 residue in the BYI08330 240 SC bridging plots was similar to or lower than residue in the BYI08330 150 OD plots for all matrices, except for one trial of oranges where the residue after treatment using 240 SC was slightly higher than treatment with 150 OD.

The HAFT and maximum total BYI08330 residues in the representative commodities of orange, lemon and grapefruit were within a factor of 5 of each other, and therefore, within the EPA guidelines for the establishment of a group tolerance for Crop Goup 10 (Citrus Fruits).

Table 6.3.2.6-1 Study Use Pattern for BYI08330 in/on Orange.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN161-05D	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.158 (0.177)	0	60 (562)	0.317 (0.356)	Dyne-Amic
					Fruit ripe for picking		0.159 (0.178)	20	61 (566)		Dyne-Amic
[redacted], Florida Region 3	FN161-05D	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.160 (0.180)	0	267 (2492)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for picking		0.151 (0.170)	20	271 (2537)		Dyne-Amic
[redacted], Florida Region 3	FN162-05H	2005	150 OD	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDOC	0.162 (0.182)	0	59 (556)	0.321 (0.360)	Dyne-Amic
					Fruit ripe for picking		0.159 (0.178)	21	60 (560)		Dyne-Amic
[redacted], Florida Region 3	FN162-05H	2005	150 OD	Airblast Dilute Spray	Beginning of fruit colouring (colour-break)	TDOD	0.156 (0.176)	0	258 (2411)	0.311 (0.349)	Dyne-Amic
					Fruit ripe for picking		0.155 (0.174)	21	271 (2533)		Dyne-Amic
[redacted], Florida Region 3	FN162-05H	2005	240 SC	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDSC	0.160 (0.179)	0	59 (547)	0.321 (0.360)	Dyne-Amic
					Fruit ripe for picking		0.161 (0.181)	21	60 (565)		Dyne-Amic

Table 6.3.2.6-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate (lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN163-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.155 (0.173)	0	60 (558)	0.310 (0.347)	Destiny
					Advanced ripening		0.155 (0.174)	21	60 (559)		Dyne-Amic
[redacted], Florida Region 3	FN163-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.155 (0.174)	0	223 (2082)	0.313 (0.352)	Destiny
					Advanced ripening		0.158 (0.178)	21	227 (2124)		Dyne-Amic
[redacted], Florida Region 3	FN163-05H	2005	240 SC	Airblast Concentrate Spray	Fruit ripe for picking	TDSC	0.155 (0.174)	0	60 (561)	0.312 (0.350)	Destiny
					Advanced ripening		0.156 (0.175)	21	60 (566)		Dyne-Amic
[redacted], Florida Region 3	FN164-05H	2005	150 OD	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDOC	0.157 (0.176)	0	45 (424)	0.313 (0.352)	Dyne-Amic
					Fruit ripe for picking		0.157 (0.176)	19	45 (424)		Dyne-Amic
[redacted], Florida Region 3	FN164-05H	2005	150 OD	Airblast Dilute Spray	Beginning of fruit colouring (colour-break)	TDOD	0.156 (0.176)	0	226 (2112)	0.311 (0.349)	Dyne-Amic
					Fruit ripe for picking		0.155 (0.174)	19	224 (2092)		Dyne-Amic

Table 6.3.2.6-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing	Plot Name	Rate lbs a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN165-05H	2005	150 OD	Airblast Concentrate Spray	Fruits about 90% of final size	TDOC	0.158 (0.177)	0	40 (378)	0.315 (0.353)	Dyne-Amic
					Beginning of fruit colouring (colour-break)		0.157 (0.176)	19	40 (375)		Dyne-Amic
[redacted], Florida Region 3	FN165-05H	2005	150 OD	Airblast Dilute Spray	Fruits about 90% of final size	TDOD	0.155 (0.174)	0	211 (1972)	0.312 (0.350)	Dyne-Amic
					Beginning of fruit colouring (colour-break)		0.155 (0.174)	19	208 (1949)		Dyne-Amic
[redacted], Florida Region 3	FN166-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.153 (0.171)	0	68 (633)	0.312 (0.351)	Dyne-Amic
					Advanced ripening		0.160 (0.179)	20	62 (578)		Dyne-Amic
[redacted], Florida Region 3	FN166-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.158 (0.178)	0	267 (2500)	0.321 (0.360)	Dyne-Amic
					Advanced ripening		0.163 (0.182)	20	247 (2308)		Dyne-Amic
[redacted], Florida Region 3	FN167-05H	2005	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.155 (0.174)	0	47 (436)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.176)	19	57 (529)		Dyne-Amic

Table 6.3.2.6-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume L/A-GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], Florida Region 3	FN167-05H	2005	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.157 (0.176)	0	204 (1906)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.155 (0.174)	19	222 (2073)		Dyne-Amic
[redacted], Florida Region 3	FN168-05H	2005	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.156 (0.175)	0	48 (446)	0.313 (0.352)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.176)	19	57 (530)		Dyne-Amic
[redacted], Florida Region 3	FN168-05H	2005	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.162 (0.182)	0	211 (1973)	0.320 (0.359)	Dyne-Amic
					Fruit ripe for consumption		0.158 (0.178)	19	223 (2090)		Dyne-Amic
[redacted], Texas Region 6	FN169-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.159 (0.178)	0	57 (536)	0.316 (0.355)	Dyne-Amic
					Fruit ripe for picking		0.157 (0.176)	19	58 (541)		Dyne-Amic
[redacted], Texas Region 6	FN169-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.159 (0.179)	0	287 (2686)	0.318 (0.357)	Dyne-Amic
					Fruit ripe for picking		0.159 (0.178)	19	291 (2717)		Dyne-Amic

Table 6.3.2.6-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN170-05H	2005	150 OD	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDOC	0.157 (0.176)	0	54 (502)	0.311 (0.349)	Dyne-Amic
					Fruit ripe for consumption		0.154 (0.173)	21	52 (484)		Dyne-Amic
[redacted], California Region 10	FN170-05H	2005	150 OD	Airblast Dilute Spray	Beginning of fruit colouring (colour-break)	TDOD	0.157 (0.176)	0	249 (2331)	0.308 (0.346)	Dyne-Amic
					Fruit ripe for consumption		0.151 (0.169)	21	251 (2347)		Dyne-Amic
[redacted], California Region 10	FN170-05H	2005	240 SC	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDSC	0.156 (0.176)	0	54 (503)	0.309 (0.347)	Dyne-Amic
					Fruit ripe for consumption		0.153 (0.171)	21	51 (476)		Dyne-Amic
[redacted], California Region 10	FN171-05H	2006	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.155 (0.174)	0	68 (633)	0.321 (0.360)	Dyne-Amic
					Fruit ripe for consumption		0.166 (0.187)	21	53 (494)		Dyne-Amic
[redacted], California Region 10	FN171-05H	2006	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.160 (0.180)	0	345 (3230)	0.318 (0.356)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.177)	21	243 (2273)		Dyne-Amic

Table 6.3.2.6-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume Per GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], California Region 10	FN172-05H	2005	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.153 (0.172)	0	65 (608)	0.308 (0.346)	Dyne-Amic
					Fruit ripe for consumption		0.155 (0.174)	14	65 (607)		Dyne-Amic
[redacted], California Region 10	FN172-05H	2005	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.154 (0.172)	0	242 (2261)	0.309 (0.347)	Dyne-Amic
					Fruit ripe for consumption		0.155 (0.174)	14	242 (2259)		Dyne-Amic

Table 6.3.2.6-2 Study Use Pattern for BYI08330 in/on Lemon.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lbs a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.f./A (kg a.f./ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN173-05H	2005	150 OD	Airblast Concentrate Spray	Fruits about 90% of final size	TDOC	0.158 (0.178)	0	63 (588)	0.317 (0.355)	Dyne-Amic
					Fruits about 90% of final size		0.158 (0.178)	19	61 (566)		Dyne-Amic
[redacted], Florida Region 3	FN173-05H	2005	150 OD	Airblast Dilute Spray	Fruits about 90% of final size	TDOD	0.159 (0.178)	0	219 (2049)	0.315 (0.354)	Dyne-Amic
					Fruits about 90% of final size		0.157 (0.176)	19	209 (1954)		Dyne-Amic
[redacted], California Region 10	FN174-05D	2006	150 OD	Airblast Concentrate Spray	Fruits about 90% of final size	TDOC	0.154 (0.172)	0	51 (481)	0.308 (0.345)	Dyne-Amic
					Fruit ripe for picking		0.154 (0.173)	21	52 (485)		Dyne-Amic
[redacted], California Region 10	FN174-05D	2006	150 OD	Airblast Dilute Spray	Fruits about 90% of final size	TDOD	0.155 (0.173)	0	296 (2768)	0.311 (0.349)	Dyne-Amic
					Fruit ripe for picking		0.156 (0.175)	21	300 (2801)		Dyne-Amic
[redacted], California Region 10	FN175-05H	2005	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.153 (0.172)	0	65 (609)	0.309 (0.347)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	14	65 (609)		Dyne-Amic

Table 6.3.2.6-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume L/ha (GPA (L/ha))	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], California Region 10	FN175-05H	2005	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.156 (0.175)	0	238 (2224)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	14	243 (2268)		Dyne-Amic
[redacted], California Region 10	FN175-05H	2005	240 SC	Airblast Concentrate Spray	Advanced ripening	TDSC	0.155 (0.174)	0	66 (617)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.176)	14	65 (612)		Dyne-Amic
[redacted], California Region 10	FN176-05H	2006	150 OD	Airblast Concentrate Spray	Fruit ripe for consumption	TDOC	0.159 (0.178)	0	58 (545)	0.316 (0.355)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.177)	18	57 (528)		Dyne-Amic
[redacted], California Region 10	FN176-05H	2006	150 OD	Airblast Dilute Spray	Fruit ripe for consumption	TDOD	0.159 (0.178)	0	256 (2393)	0.315 (0.354)	Dyne-Amic
					Fruit ripe for consumption		0.157 (0.176)	18	262 (2446)		Dyne-Amic
[redacted], California Region 10	FN177-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.161 (0.181)	0	70 (652)	0.314 (0.353)	Dyne-Amic
					Fruit ripe for consumption		0.153 (0.172)	21	68 (632)		Dyne-Amic

Table 6.3.2.6-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate: lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume: GPA (L/ha)	Total Rate: lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], California Region 10	FN177-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.150 (0.168)	0	227 (2125)	0.306 (0.344)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	21	240 (2241)		Dyne-Amic

Table 6.3.2.6-3 Study Use Pattern for BYI08330 in/on Grapefruit.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval and Restrictions (days)	Actual Spray Volume L/ha (GPA (L/ha))	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], Florida Region 3	FN178-05D	2005	150 OD	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDOC	0.157 (0.177)	0	46 (426)	0.315 (0.354)	Dyne-Amic
					Fruit ripe for picking		0.158 (0.177)	19	46 (427)		Dyne-Amic
[redacted], Florida Region 3	FN178-05D	2005	150 OD	Airblast Dilute Spray	Beginning of fruit colouring (colour-break)	TDOD	0.158 (0.177)	0	228 (2130)	0.315 (0.353)	Dyne-Amic
					Fruit ripe for picking		0.157 (0.176)	19	227 (2123)		Dyne-Amic
[redacted], Florida Region 3	FN179-05H	2005	150 OD	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDOC	0.156 (0.175)	0	50 (464)	0.317 (0.356)	Dyne-Amic
					Fruit ripe for picking		0.161 (0.181)	20	51 (473)		Dyne-Amic
[redacted], Florida Region 3	FN179-05H	2005	150 OD	Airblast Dilute Spray	Beginning of fruit colouring (colour-break)	TDOD	0.155 (0.174)	0	223 (2083)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for picking		0.157 (0.176)	20	225 (2104)		Dyne-Amic
[redacted], Florida Region 3	FN179-05H	2005	240 SC	Airblast Concentrate Spray	Beginning of fruit colouring (colour-break)	TDSC	0.156 (0.175)	0	50 (470)	0.314 (0.353)	Dyne-Amic
					Fruit ripe for picking		0.159 (0.178)	20	50 (471)		Dyne-Amic

Table 6.3.2.6-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume gal/A or GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvants
[redacted], Florida Region 3	FN180-05H	2005	150 OD	Airblast Concentrate Spray	Advanced ripening	TDOC	0.157 (0.176)	0	47 (441)	0.316 (0.354)	Dyne-Amic
					Fruit ripe for consumption		0.159 (0.178)	19	57 (536)		Dyne-Amic
[redacted], Florida Region 3	FN180-05H	2005	150 OD	Airblast Dilute Spray	Advanced ripening	TDOD	0.157 (0.176)	0	205 (1913)	0.313 (0.351)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	19	223 (2083)		Dyne-Amic
[redacted], Texas Region 6	FN181-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.158 (0.178)	0	62 (580)	0.315 (0.353)	Dyne-Amic
					Fruit ripe for picking		0.157 (0.176)	19	63 (585)		Dyne-Amic
[redacted], Texas Region 6	FN181-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.158 (0.177)	0	310 (2896)	0.317 (0.355)	Dyne-Amic
					Fruit ripe for picking		0.158 (0.178)	19	315 (2941)		Dyne-Amic
[redacted], Texas Region 6	FN181-05H	2005	240 SC	Airblast Concentrate Spray	Fruit ripe for picking	TDSC	0.159 (0.179)	0	62 (581)	0.317 (0.356)	Dyne-Amic
					Fruit ripe for picking		0.158 (0.177)	19	63 (589)		Dyne-Amic

Table 6.3.2.6-3 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate(s) lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate(s) lb a.i./A (kg a.i./ha)	Tank Mix/Adjuvant(s)
[redacted], California Region 10	FN182-05H	2006	150 OD	Airblast Concentrate Spray	Fruits about 90% of final size	TDOC	0.155 (0.174)	0	52 (485)	0.309 (0.347)	Dyne-Amic
					Fruit ripe for consumption		0.154 (0.173)	21	52 (484)		Dyne-Amic
[redacted], California Region 10	FN182-05H	2006	150 OD	Airblast Dilute Spray	Fruits about 90% of final size	TDOD	0.156 (0.175)	0	299 (2797)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	21	299 (2797)		Dyne-Amic
[redacted], California Region 10	FN183-05H	2005	150 OD	Airblast Concentrate Spray	Fruit ripe for picking	TDOC	0.158 (0.177)	0	68 (639)	0.312 (0.350)	Dyne-Amic
					Fruit ripe for consumption		0.154 (0.173)	21	68 (637)		Dyne-Amic
[redacted], California Region 10	FN183-05H	2005	150 OD	Airblast Dilute Spray	Fruit ripe for picking	TDOD	0.152 (0.171)	0	230 (2154)	0.308 (0.346)	Dyne-Amic
					Fruit ripe for consumption		0.156 (0.175)	21	242 (2259)		Dyne-Amic

Table 6.3.2.6-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Orange.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Oranges, Whole Fruit				
BYI08330	0.1	1	104	
	0.5	4	97, 95, 100, 97	97% ± 2
BYI08330-enol-glucoside	0.1	1	90	
	0.5	4	91, 95, 93, 93	93% ± 2
BYI08330-mono-hydroxy	0.1	1	105	
	0.5	4	100, 89, 94, 92	94% ± 5
BYI08330-enol	0.1	1	98	
	0.5	4	105, 94, 109, 96	101% ± 7
BYI08330-ketohydroxy	0.1	1	99	
	0.5	4	101, 98, 95, 98	98% ± 2

Table 6.3.2.6-5 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Lemon.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Lemons, Whole Fruit				
BYI08330	0.05	3	93, 93, 92	93% ± 1%
	0.5	1	100	
BYI08330-enol-glucoside	0.05	3	97, 100, 104	100% ± 4%
	0.5	1	95	
BYI08330-mono-hydroxy	0.05	3	90, 95, 90	92% ± 3%
	0.5	1	99	
BYI08330-enol	0.05	3	95, 89, 91	92% ± 3%
	0.5	1	95	
BYI080330-ketohydroxy	0.05	3	101, 92, 97	97% ± 5%
	0.5	1	98	

[a] Mean is not applicable for a sample with less than two recoveries; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.6-6 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Grapefruit.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Grapefruit, Whole Fruit				
BYI08330	0.05	3	97, 96, 96	96% ± 1
	0.5	2	96, 86	91%
BYI08330-enol-glucoside	0.05	3	91, 94, 93	93% ± 2
	0.5	2	90, 84	87%
BYI08330-mono-hydroxy	0.05	3	95, 96, 90	94% ± 3
	0.5	2	95, 88	92%
BYI08330-enol	0.05	3	96, 93, 88	92% ± 4
	0.5	2	97, 89	93%
BYI08330-ketohydroxy	0.05	3	94, 101, 88	94% ± 7
	0.5	2	93, 85	89%

[a] Mean is not applicable for a sample with less than two recoveries; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.6-7 Results of residue trials conducted with BYI 08330 OD 150 W in/on orange in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN161-05D FN161-05D-A USA [redacted], Florida 2005	Orange fruit	0	0.203	0.077	<0.050	<0.050	<0.050	0.322
		0	0.199	0.069	<0.050	<0.050	<0.050	0.309
		1	0.127	0.142	<0.050	<0.050	<0.050	0.314
		1	0.111	0.137	<0.050	<0.050	<0.050	0.291
		1	0.104	0.148	<0.050	<0.050	<0.050	0.301
		1	0.095	0.063	<0.050	<0.050	<0.050	0.216
		1	0.090	0.075	<0.050	<0.050	<0.050	0.223
		7	0.097	0.075	<0.050	<0.050	<0.050	0.234
		7	0.095	0.061	<0.050	<0.050	<0.050	0.210
		10	0.081	0.061	<0.050	<0.050	<0.050	0.186
		10	0.073	0.059	<0.050	<0.050	<0.050	0.179
		15	0.081	0.059	<0.050	<0.050	<0.050	0.196
		15	0.087	0.063	<0.050	<0.050	<0.050	0.205
	fruit without peel	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.065
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.062
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.068
	peel	1	0.241	0.351	0.106	<0.050	0.057	0.757
		1	0.218	0.323	0.100	<0.050	0.050	0.695
		1	0.222	0.308	0.092	<0.050	0.054	0.679
RAFNY008 FN161-05D FN161-05D-B USA [redacted], Florida 2005	Orange fruit	1	0.057	0.078	<0.050	<0.050	<0.050	0.174
		1	0.055	0.079	<0.050	<0.050	<0.050	0.181
RAFNY008 FN162-05H FN162-05H-A USA [redacted], Florida 2005	Orange fruit	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.089
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.083
RAFNY008 FN162-05H FN162-05H-B USA [redacted], Florida 2005	Orange fruit	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.072
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.074

[a]DALT = Days after last treatment.

Table 6.3.2.6-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN163-05H FN163-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	0.182 0.131	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.243 0.174
RAFNY008 FN163-05H FN163-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	0.094 0.109	<0.050 0.051	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.157 0.175
RAFNY008 FN164-05H FN164-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.079 0.070
RAFNY008 FN164-05H FN164-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.102 0.078
RAFNY008 FN165-05H FN165-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	0.133 0.151	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.226 0.240
RAFNY008 FN165-05H FN165-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	0.103 0.094	0.072 0.076	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.219 0.216

[a]DALT = Days after last treatment.

Table 6.3.2.6-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN166-05H FN166-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	0.117 0.138	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.148 0.188
RAFNY008 FN166-05H FN166-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	0.090 0.088	<0.050 0.052	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.158 0.161
RAFNY008 FN167-05H FN167-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	0.207 0.194	<0.050 <0.050	0.076 0.077	<0.050 <0.050	<0.050 <0.050	0.324 0.304
RAFNY008 FN167-05H FN167-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	0.109 0.105	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.217 0.195
RAFNY008 FN168-05H FN168-05H-A USA [redacted], Florida 2005	Orange fruit	1 1	0.175 0.174	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.250 0.258
RAFNY008 FN168-05H FN168-05H-B USA [redacted], Florida 2005	Orange fruit	1 1	0.135 0.156	0.062 0.069	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.257 0.271

[a]DALT = Days after last treatment.

Table 6.3.2.6-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN169-05H FN169-05H-A USA [redacted], Texas 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 0.066
RAFNY008 FN169-05H FN169-05H-B USA [redacted], Texas 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 0.071
RAFNY008 FN170-05H FN170-05H-A USA [redacted], California 2005	Orange fruit	1 1	0.083 0.119	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.121 0.174
RAFNY008 FN170-05H FN170-05H-B USA [redacted], California 2005	Orange fruit	1 1	<0.050 0.058	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.080 0.130

[a]DALT = Days after last treatment.

Table 6.3.2.6-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN171-05H FN171-05H-A USA [redacted], California 2006	Orange fruit	1 1	0.119 0.136	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.145 0.171
RAFNY008 FN171-05H FN171-05H-B USA [redacted], California 2006	Orange fruit	1 1	0.098 0.093	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.134 0.124
RAFNY008 FN172-05H FN172-05H-A USA [redacted], California 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
RAFNY008 FN172-05H FN172-05H-B USA [redacted], California 2005	Orange fruit	1 1	<0.050 0.053	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.083 0.096

[a]DALT = Days after last treatment.

Table 6.3.2.6-8 Results of residue trials conducted with BYI 08330 SC 240 in/on orange in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN162-05H FN162-05H-C USA [redacted], Florida 2005	Orange fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.066 0.078
RAFNY008 FN163-05H FN163-05H-C USA [redacted], Florida 2005	Orange fruit	1 1	0.213 0.103	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.259 0.210
RAFNY008 FN170-05H FN170-05H-C USA [redacted], California 2005	Orange fruit	1 1	0.105 0.108	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.143 0.153

[a]DALT = Days after last treatment.

Table 6.3.2.6-9 Results of residue trials conducted with BYI 08330 OD 150 W in/on lemon in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN173-05H FN173-05H-A USA [redacted], Florida 2005	Lemon fruit	1 1	0.080 0.077	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.137 0.123
RAFNY008 FN173-05H FN173-05H-B USA [redacted], Florida 2005	Lemon fruit	1 1	<0.050 <0.050	0.058 0.051	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.107 0.084
RAFNY008 FN174-05D FN174-05D-A USA [redacted], California 2006	Lemon fruit	0* 0 1 1 7 7 10 10 14 14	0.144 0.207 0.145 0.108 0.072 0.072 0.082 0.102 0.052 0.057	0.051 0.065 0.067 0.052 0.057 0.128 0.123 0.135 0.175 0.181	<0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050	<0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050	<0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050	0.210 0.288 0.231 0.174 0.144 0.230 0.229 0.269 0.259 0.267
RAFNY008 FN174-05D FN174-05D-B USA [redacted], California 2006	Lemon fruit	1 1	<0.050 <0.050	0.088 0.095	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.150 0.161

[a]DALT = Days after last treatment.

Table 6.3.2.6-9 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN175-05H FN175-05H-A GLP yes 2005	Lemon fruit	1 1	0.178 0.199	0.118 0.116	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.305 0.324
RAFNY008 FN175-05H FN175-05H-B GLP yes 2005	Lemon fruit	1 1	0.118 0.102	0.159 0.115	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.292 0.229
RAFNY008 FN176-05H FN176-05H-A GLP yes 2006	Lemon fruit	1 1	0.084 0.074	0.060 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.153 0.128
RAFNY008 FN176-05H FN176-05H-B GLP yes 2006	Lemon fruit	1 1	0.056 0.051	0.124 0.103	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.192 0.163
RAFNY008 FN177-05H FN177-05H-A GLP yes 2005	Lemon fruit	1 1	0.142 0.119	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.193 0.166
RAFNY008 FN177-05H FN177-05H-B GLP yes 2005	Lemon fruit	1 1	0.070 0.057	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.123 0.116

[a]DALT = Days after last treatment

Table 6.3.2.6-10 Results of residue trials conducted with BYI 08330 SC 240 in/on lemon in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN175-05H FN175-05H-C USA [redacted], California 2005	Lemon fruit	1 1	0.105 0.192	<0.050 0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.144 0.251

[a]DALT = Days after last treatment.

Table 6.3.2.6-11 Results of residue trials conducted with BYI 08330 OD 150 W in/on grapefruit in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol.	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN178-05D FN178-05D-A USA [redacted], Florida 2005	Grapefruit fruit	0*	0.056	<0.050	<0.050	<0.050	<0.050	0.082
		0	0.084	<0.050	<0.050	<0.050	<0.050	0.128
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.092
		1	0.050	<0.050	<0.050	<0.050	<0.050	0.090
		7	<0.050	<0.050	<0.050	<0.050	<0.050	0.087
		7	<0.050	<0.050	<0.050	<0.050	<0.050	0.100
		10	<0.050	<0.050	<0.050	<0.050	<0.050	0.090
		10	<0.050	<0.050	<0.050	<0.050	<0.050	0.086
		14	<0.050	<0.050	<0.050	<0.050	<0.050	0.077
		14	<0.050	<0.050	<0.050	<0.050	<0.050	0.075
RAFNY008 FN178-05D FN178-05D-B USA [redacted], Florida 2005	Grapefruit fruit	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.112
		1	<0.050	0.063	<0.050	<0.050	<0.050	0.131
		7	<0.050	<0.050	<0.050	<0.050	<0.050	0.129
		7	<0.050	<0.050	0.051	<0.050	<0.050	0.116
RAFNY008 FN179-05H FN179-05H-A USA [redacted], Florida 2005	Grapefruit fruit	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.085
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.113
RAFNY008 FN179-05H FN179-05H-B USA [redacted], Florida 2005	Grapefruit fruit	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.089
		1	<0.050	<0.050	<0.050	<0.050	<0.050	0.082

[a]DALT = Days after last treatment.

Table 6.3.2.6-11 (continued)

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN180-05H FN180-05H-A USA [redacted], Florida 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.072 0.073
RAFNY008 FN180-05H FN180-05H-B USA [redacted], Florida 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.073 0.087
RAFNY008 FN181-05H FN181-05H-A USA [redacted], Texas 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
RAFNY008 FN181-05H FN181-05H-B USA [redacted], Texas 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050
RAFNY008 FN182-05H FN182-05H-A USA [redacted], California 2006	Grapefruit fruit	1 1	0.151 0.138	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.177 0.161
RAFNY008 FN182-05H FN182-05H-B USA [redacted], California 2006	Grapefruit fruit	1 1	0.064 0.063	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.102 0.097

[a]DALT = Days after last treatment.

Table 6.3.2.6-11 (continued)

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN183-05H FN183-05H-A USA [redacted], California 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.083 <0.050
RAFNY008 FN183-05H FN183-05H-B USA [redacted], California 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 0.058

Table 6.3.2.6-12 Results of residue trials conducted with BYI 08330 SC 240 in/on grapefruit in North America

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY008 FN179-05H FN179-05H-C USA [redacted], Florida 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	0.094 0.085
RAFNY008 FN181-05H FN181-05H-C USA [redacted], Texas 2005	Grapefruit fruit	1 1	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050	<0.050 <0.050

[a]DALT = Days after last treatment.

IIA 6.3.2.7 Grapes

Report:	**IIA 6.3.2.7, [redacted]; 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC - Magnitude of the Residue in/on Grapes**
Report No &	**RAFNY011**
Document No	**M-277324-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

Field trials were conducted to evaluate the magnitude of BYI08330 residues in grapes following two broadcast foliar applications of either BYI08330 150 OD or BYI08330 240 SC.

Nine trials had one plot sprayed with BYI08330 150 OD and three trials had an additional plot treated with BYI08330 240 SC. Each formulation was applied at a target rate of 0.098 lb ai/A/application (0.110 kg ai/ha/application); actual application rates ranged from 0.097 to 0.101 lb ai/A/application (0.109 to 0.114 kg ai/ha/application). The interval between applications ranged from 28 to 30 days. Total seasonal application rates for all trials ranged from 0.195 to 0.203 lb ai/A (0.219 to 0.227 kg ai/ha). All applications were made using spray volumes of 49 to 70 GPA (458 to 654 L/ha) and Dyne-Amic (0.25% v/v) as an additive. The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on grapes are listed in Table 6.3.2.7-1.

In all trials, single control samples and duplicate treated samples were collected for all matrices. In the harvest and bridging trials, grapes were harvested at normal maturity. Sampling was performed at two pre-harvest intervals (PHIs); the first occurred at a desired 7-day PHI, with additional samples collected at a 14-day PHI. In the decline trial, the grapes were collected at five intervals corresponding to PHIs of 3, 7, 10, 14, and 21 days.

The total BYI08330 residue was quantitated by high pressure liquid chromatography-electrospray ionization/tandem mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. Method validation and concurrent recoveries were performed to demonstrate acceptable method performance. Individual analyte residues of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330-enol glucoside were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) for each analyte was 0.010 ppm in grapes.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in grapes are summarized in Table 6.3.2.7-2. Mean recoveries for all analytes ranged from 80% ±11 to 119%.

The residues found in grapes are shown in Tables 6.3.2.7.3 and 6.3.2.7-4. The highest average field trial (HAFT) total BYI08330 residue in grapes treated with BYI08330 150 OD and harvested at the desired PHI of 7-days was 1.021 ppm with a maximum residue of 1.2899 ppm. BYI08330 residue was similar in the BYI08330 240 SC bridging plots as compared with the plots treated with BYI08330 150 OD. Total BYI08330 residue tended to remain unchanged with time in grape samples from the decline trial.

Table 6.3.2.7-1.Study Use Pattern for BYI08330 in/on Grapes.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i /A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Pennsylvania	FN212-05H	2005	150 OD	Foliar	1 Appl: Majority of berries	TRTDO	0.099 (0.111)	0	69 (645)	0.199 (0.223)	Yes
					2 Appl: Softening of berries		0.110 (0.112)	29	70 (654)		
[redacted], New York	FN213-05H	2005	150 OD	Foliar	1 Appl: Beginning of	TRTDO	0.1 (0.113)	0	51 (474)	0.200 (0.225)	Yes
					2 Appl: Softening of berries		0.1 (0.112)	29	50 (470)		
[redacted], New York	FN213-05H	2005	150 OD	Foliar	1 Appl: Beginning of	TRTDS	0.102 (0.114)	0	51 (473)	0.203 (0.227)	Yes
					2 Appl: Softening of berries		0.101 (0.113)	29	50 (470)		
[redacted], California	FN214-05D	2005	150 OD	Foliar	1 Appl: Majority of berries	TRTDO	0.097 (0.109)	0	56 (521)	0.195 (0.219)	Yes
					2 Appl: Softening of berries		0.098 (0.110)	28	56 (524)		
[redacted], California	FN215-05H	2005	150 OD	Foliar	1 Appl: Berries brighting in	TRTDO	0.098 (0.110)	0	68 (634)	0.196 (0.220)	Yes
					2 Appl: Softening of berries		0.098 (0.110)	28	69 (642)		
[redacted], California	FN215-05H	2005	150 OD	Foliar	1 Appl: Berries brighting in	TRTDS	0.098 (0.110)	0	68 (632)	0.196 (0.220)	Yes
					2 Appl: Softening of berries		0.098 (0.110)	28	69 (642)		
[redacted], California	FN216-05H	2005	150 OD	Foliar	1 Appl: Berries pea-sized	TRTDO	0.098 (0.110)	0	61 (570)	0.197 (0.221)	Yes
					2 Appl: Softening of berries		0.099 (0.111)	28	59 (552)		

Table 6.3.2.7-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from grapes.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation
Grapes	BYI08330	0.010	8	87, 92, 120, 88, 116, 97, 90, 102	99 ± 13
		0.050	5	91, 97, 92, 95, 85	92 ± 4.6
		0.200	5	79, 80, 98, 70, 72	80 ± 11
		0.500	2	118, 119	119[a]
	BYI08330-enol-glucoside	0.010	8	117, 120, 116, 83, 119, 117, 88, 105	108 ± 15
		0.050	5	111, 113, 85, 93, 92	100 ± 12
		0.200	5	90, 94, 94, 75, 78	86 ± 9.1
		0.500	2	118, 120	119[a]
	BYI08330-enol	0.010	8	79, 78, 120, 113, 120, 96, 107, 95	101 ± 17
		0.050	5	104, 105, 112, 100, 105	105 ± 4.7
		0.200	5	90, 90, 117, 91, 85	95 ± 13
		0.500	2	118, 119	119[a]
	BYI08330-ketohydroxy	0.010	8	107, 119, 120, 116, 118, 110, 110, 117	115 ± 4.9
		0.050	5	120, 109, 120, 118, 105	114 ± 6.9
		0.200	5	98, 103, 120, 93, 92	101 ± 11
		0.500	2	110, 120	115[a]
	BYI08330-mono-hydroxy	0.010	8	99, 102, 107, 95, 112, 102, 85, 73	97 ± 13
		0.050	5	111, 103, 91, 90, 87	96 ± 10
		0.200	5	85, 89, 94, 78, 81	85 ± 6.3
		0.500	2	111, 114	113[a]

[a] The standard deviation was not calculated for < 3 samples.

Table 6.3.2.7-3 Residue Data from Field Trials Conducted with BYI08330 150 OD on Grapes in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY011 FN212-05H USA [redacted], Pennsylvania 2005	Table grape	7	0.094	0.106	0.013	0.011	0.095	0.320
		7	0.091	0.120	0.011	<0.010	0.089	0.312
		14	0.013	0.029	<0.010	<0.010	0.030	0.075
	berry, tablegrape	14	<0.010	0.019	<0.010	<0.010	0.023	0.053
RAFNY011 FN213-05H FN213-05H-A USA, [redacted], New York, 2005	Table grape	7	0.126	0.378	0.012	0.036	0.111	0.663
		7	0.174	0.404	0.019	0.046	0.144	0.787
		14	0.080	0.234	0.010	0.038	0.109	0.471
	berry, tablegrape	14	0.133	0.391	0.013	0.042	0.162	0.682
RAFNY011 FN214-05D USA [redacted], California 2005	Table grape	3	0.055	0.072	<0.010	<0.010	0.028	0.158
		3	0.074	0.078	<0.010	<0.010	0.032	0.189
		7	0.066	0.093	<0.010	<0.010	0.037	0.202
	berry, tablegrape	7	0.076	0.107	<0.010	<0.010	0.038	0.224
		10	0.073	0.095	<0.010	<0.010	0.025	0.198
		10	0.046	0.088	<0.010	<0.010	0.021	0.158
		14	0.102	0.163	<0.010	<0.010	0.057	0.331
		14	0.103	0.161	<0.010	<0.010	0.064	0.339
		21	0.062	0.100	<0.010	<0.010	0.058	0.228
		21	0.062	0.116	<0.010	<0.010	0.055	0.240
RAFNY011 FN215-05H FN215-05H-A USA [redacted], California, 2005	Table grape	7	0.133	0.044	0.020	<0.010	0.020	0.219
		7	0.189	0.048	0.016	<0.010	0.029	0.285
		14	0.136	0.054	0.014	<0.010	0.025	0.231
	berry, tablegrape	14	0.134	0.063	0.016	<0.010	0.025	0.239
RAFNY011 FN216-05H USA [redacted], California 2005	Table grape	7	0.062	0.077	<0.010	<0.010	0.080	0.230
		7	0.058	0.076	<0.010	<0.010	0.108	0.254
		14	0.029	0.043	<0.010	<0.010	0.058	0.136
	berry, tablegrape	14	0.037	0.055	<0.010	<0.010	0.107	0.207

[a]DALT = Days after last treatment

Table 6.3.2.7-3 (contd).

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY011 FN217-05H USA [redacted], California 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 13 13	0.035 0.041 0.034 0.042	0.018 0.016 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.038 0.032 0.060 0.038	0.102 0.096 0.123 0.098
RAFNY011 FN219-05H USA [redacted], California 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 14 14	0.156 0.203 0.194 0.181	0.174 0.175 0.295 0.197	0.011 0.013 0.028 0.020	<0.010 <0.010 <0.010 <0.010	0.089 0.099 0.137 0.102	0.433 0.492 0.647 0.502
RAFNY011 FN220-05H FN220-05H-A USA [redacted], California 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 14 14	0.114 0.199 0.203 0.087	0.079 0.082 0.113 0.063	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.036 0.035 0.059 0.036	0.236 0.323 0.386 0.194
RAFNY011 FN221-05H USA [redacted], California 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 14 14	0.149 0.180 0.332 0.369	0.116 0.151 0.243 0.256	0.033 0.024 0.040 0.045	<0.010 <0.010 <0.010 <0.010	0.083 0.106 0.144 0.163	0.373 0.463 0.767 0.841
RAFNY011 FN222-05H USA [redacted], Washington 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 14 14	0.494 0.299 0.246 0.216	0.503 0.344 0.347 0.369	0.206 0.120 0.115 0.090	<0.010 <0.010 <0.010 <0.010	0.077 0.074 0.074 0.088	1.290 0.752 0.791 0.772
RAFNY011 FN223-05H USA [redacted], Oregon 2005	Table grape Table grape berry, tablegrape berry, tablegrape	7 7 14 14	0.142 0.128 0.130 0.151	0.158 0.167 0.232 0.155	0.015 0.011 0.022 0.018	<0.010 <0.010 0.012 <0.010	0.053 0.048 0.084 0.064	0.369 0.361 0.481 0.394

[a]DALT = Days after last treatment

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Table 6.3.2.7-4 Residue Data from Field Trials Conducted with BYI08330 20 SC on Grapes in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY011 FN213-05H FN213-05H-B USA [redacted], New York 2005	Table grape berry, tablegrape	7 7 14 14	0.245 0.157 0.077 0.125	0.194 0.143 0.115 0.141	0.016 0.012 0.014 0.010	0.018 0.018 0.014 0.025	0.074 0.055 0.050 0.092	0.546 0.384 0.290 0.393
RAFNY011 FN215-05H FN215-05H-B USA [redacted], California 2005	Table grape berry, tablegrape	7 7 14 14	0.125 0.258 0.118 0.200	0.026 0.079 0.077 0.088	<0.010 0.027 0.019 0.022	<0.010 <0.010 <0.010 <0.010	0.016 0.042 0.022 0.025	0.177 0.409 0.238 0.338
RAFNY011 FN220-05H FN220-05H-B USA [redacted], California 2005	Table grape berry, tablegrape	7 7 14 14	0.092 0.089 0.052 0.068	0.136 0.084 0.121 0.119	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.060 0.041 0.052 0.066	0.298 0.232 0.234 0.262

[a]DALT = Days after last treatment

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IIA 6.3.2.8 Hops

Report:	**IIA 6.3.2.8, [redacted]; 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC - Magnitude of the Residue on Hops**
Report No &	**RAFNY022**
Document No	**M-277130-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

Three field trials were conducted to evaluate the magnitude of BYI08330 residues in/on hops dried cones following two foliar spray applications of either BYI08330 150 OD or BYI08330 240 SC to the treated plots at a target rate of 0.098 lb ai/A/application (0.110 kg ai/ha/application). BYI08330 150 OD is an oil dispersible (OD) formulation containing 150 g ai/L, and BYI08330 240 SC is a suspension concentrate (SC) formulation containing 240 g ai/L.

Actual application rates ranged from 0.096 to 0.100 lb ai/A/application (0.108 to 0.112 kg ai/ha/application); spray volumes ranged from 49 to 60 GPA (462 to 557 L/ha). The interval between applications ranged from 12 to 14 days. Total seasonal application rates for all trials ranged from 0.194 to 0.200 lb ai/A (0.218 to 0.224 kg ai/ha) for all plots.

Single control samples and duplicate treated samples of hops cones were harvested fully ripe for commercial harvest (BBCH 89) at preharvest intervals (PHIs) of 7 to 8 days and at 14 days, and the hops were dried to commercial dryness according to local practice.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-Glc were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC-MS/MS) using the stable isotopically labeled analytes as internal standards and the method of external standard quantitation. The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.100 ppm.

Freezer storage stability studies indicate that BYI08330 residues would have been stable in hops dried cones during frozen storage prior to analysis. The hops dried cones analyzed in this study were held in frozen storage for a maximum of 11 months (321 days) prior to extraction.

Findings:

The highest average field trial (HAFT) total BYI08330 residue in hops dried cones treated with BYI08330 150 OD and harvested at the desired PHI of 7 days was 5.40 ppm with a maximum residue of 5.73 ppm. Total BYI08330 residue was similar in samples harvested at the desired target 7-day PHI as compared with samples harvested at the 14-day PHI.

Total BYI08330 residue in the BYI08330 240 SC bridging plot was within the range of residues observed in plots treated with BYI08330 150 OD.

Table 6.3.2.8-1.Study Use Pattern for BYI08330 in/on Hops Dried Cones.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./Ha)	Tank Mix Adjuvants
[redacted], Idaho Region 11	FN229-05H	2005	150 OD	Foliar	70% of cones are compact	TRTDO	0.098 (0.110)	0	50 (466)	0.197 (0.221)	Dyne-Amic
					80% of cones are compact		0.099 (0.111)	14	50 (471)		
[redacted], Oregon Region 11	FN230-05H	2005	150 OD	Foliar	Cone dev. half way: all cones visible, cones soft	TRTDO	0.098 (0.110)	0	60 (557)	0.194 (0.218)	Dyne-Amic
					70% of cones are compact		0.096 (0.108)	12	59 (548)		
[redacted], Washington Region 11	FN231-05H	2005	150 OD	Foliar	30% of flowers open	TRTDO	0.100 (0.112)	0	51 (472)	0.198 (0.222)	Dyne-Amic
					70% of flowers open		0.098 (0.110)	14	49 (462)		
[redacted], Washington Region 11	FN231-05H	2005	240 SC	Foliar	30% of flowers open	TRTDS	0.101 (0.113)	0	50 (470)	0.200 (0.224)	Dyne-Amic
					70% of flowers open		0.099 (0.111)	14	49 (461)		

Table 6.3.2.8-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Hops Dried Cones.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation[a]
Hops, Dried Cones				
BYI08330	0.1	7	69, 71, 72, 74, 72, 78, 72	73 ± 3
	5	4	72, 73, 75, 109	82 ± 18
	8	1	71	
BYI08330-enol	0.1	7	81, 67, 76, 71, 78, 71, 76	74 ± 5
	5	4	71, 78, 81, 113	86 ± 19
	8	1	74	
BYI08330-ketohydroxy	0.1	7	59, 61, 63, 66, 64, 66, 56	62 ± 4
	5	4	73, 76, 72, 111	83 ± 19
	8	1	71	
BYI08330-mono-hydroxy	0.1	7	78, 75, 76, 78, 77, 70, 72	75 ± 3
	5	4	70, 80, 78, 115	86 ± 20
	8	1	73	
BYI08330-enol-glucoside	0.1	7	78, 66, 71, 72, 73, 70, 70	71 ± 4
	5	4	72, 76, 78, 108	84 ± 17
	8	1	74	

[a] Standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.8-3 Residue Data from Field Trials Conducted with BYI08330 150 OD on Hops in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY022 FN229-05H USA [redacted], Idaho 2005	Hop cone, dried	7 7 14 14	4.242 3.946 2.916 3.131	0.639 0.501 0.494 0.483	0.202 0.156 0.232 0.270	<0.10 <0.10 <0.10 <0.10	0.637 0.450 0.689 0.792	5.727 5.066 4.336 4.682
RAFNY022 FN230-05H USA [redacted], Oregon 2005	Hop cone, dried	8 8 14 14	4.083 3.676 3.634 3.554	0.744 0.705 0.684 0.515	0.220 0.206 0.298 0.196	<0.10 <0.10 <0.10 <0.10	0.663 0.488 0.652 0.594	5.716 5.082 5.275 4.866
RAFNY022 FN231-05H FN231-05H-A USA [redacted], Washington 2005	Hop cone, dried	7 7 14 14	1.590 1.430 1.806 1.623	0.236 0.451 0.377 0.344	<0.10 <0.10 <0.10 <0.10	<0.10 <0.10 <0.10 <0.10	0.138 0.355 0.395 0.404	1.977 2.295 2.656 2.435

[a]DALT = Days after last treatment

Table 6.3.2.8-4 Residue Data from Field Trials Conducted with BYI08330 240 SC on Hops in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg)					
			BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY022 FN231-05H FN231-05H-B USA [redacted], Washington 2005	Hop, cone, dried	7 7 14 14	2.447 2.800 2.332 2.175	0.327 0.928 0.329 0.271	<0.10 0.119 <0.10 0.113	<0.10 <0.10 <0.10 <0.10	0.175 0.565 0.332 0.284	2.984 4.418 3.068 2.848

[a]DALT = Days after last treatment

IIA 6.3.2.9 Pome Fruits

Report:	**IIA 6.3.2.9, [redacted]; 2006**
Title:	**BYI08330 150 OD and 240 SC – Magnitude of the Residue on Pome Fruit (Apple and Pear)**
Report No &	**RAFNY009**
Document No	**M-277124-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

A total of 18 field trials, 12 on apples and 6 on pears, were conducted to measure the magnitude of BYI08330 residue on pome fruit (Crop Group11) following applications with BYI08330 150 OD or BYI08330 240 SC.

In all trials, BYI08330 150 OD was applied three times as a foliar spray at target rates of 0.141 lb ai/A (0.158 kg ai/ha) for the first application and 0.125 lb ai/A (0.140 kg ai/ha) for the second and third applications, with a target 14-day application interval for a total of 0.391 lb ai/A (0.428 kg ai/ha). Total application rates ranged from 0.384 lb ai/A to 0.397 lb ai/A (0.431 kg ai/ha to 0.445 kg ai/ha) for apples and from 0.387 lb ai/A to 0.405 lb ai/A (0.435 kg ai/ha to 0.455 kg ai/ha) for pears. The applications were made in separate plots as either a dilute spray in a target spray volume of 200 to 400 gal/A/application or a concentrated spray in a target spray volume of 35 to 70 gal/A/application. The first application was made at times ranging from fruit being 60% of final size to beginning of ripening in the apple trials. The first application was made at times ranging from fruit being 10 mm in size to fruit being 60% of final size in the pear trials.

The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on apples and pears are listed in Tables 6.3.2.9-1 and 6.3.2.9-2.

In three apple trials and two pear trials, an additional plot was treated three times with BYI08330 240 SC as a foliar spray at target rates of 0.141 lb ai/A (0.158 kg ai/ha) for the first application and 0.125 lb ai/A (0.140 kg ai/ha) for the second and third applications, with a target 14-day application interval for a total of 0.391 lb ai/A (0.428 kg ai/ha). The applications were made as a concentrated spray in a target spray volume of 35 to 70 gal/A/application. BYI08330 240 SC is a soluble concentrate formulation containing 2 lb ai/gal (240 g ai/L) of BYI08330.

In all of the field trials, duplicate composite samples of the raw agricultural commodities (RACs) of apples and pears were collected 7 and 14 days following the final application (7- and 14-day pre-harvest interval, PHI). Additionally, in two of the trials (one apple and one pear), duplicate samples of fruit were collected at PHIs of 0-, 10-, and 21-days to determine the decline of total BYI08330 residue with time. A single composite sample of each RAC was collected from the control plot of each trial.

The total residue of BYI08330 (residues of parent and the metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside) was quantitated by liquid chromatography/mass spectrometry-mass spectrometry (lc/ms-ms) with an electrospray interface using isotopically labeled internal standards. The limit of quantitation (LOQ) was 0.01 ppm for each individual analyte in apples and pears.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in apples and pears are summarized in Table 6.3.2.9-3. Mean recoveries for all analytes ranged from 82% ±6 to 107% ±13.

The residues found in apples and pears are shown in Tables 6.3.2.9-4 through 6.3.2.9-7. The highest average BYI08330 total residue in pears was 0.364 ppm with a maximum residue of 0.403 ppm, and this occurred at the desired 7-day PHI following concentrated spray application. The highest average BYI08330 total residue in apples was 0.338 ppm with a maximum residue of 0.374 ppm, and this occurred at the desired 7-day PHI following dilute spray application.

The residues in the representative commodities were within a factor of 5 of each other and, therefore, within the EPA guidelines for establishment of a group tolerance for Crop Group 11 (Pome Fruit).

In general, total BYI08330 residue was found to decline from the 0-day PHI to the 21-day PHI in both apples and pears. No major differences were detected in BYI08330 residue between apples and pears. Concentrated and dilute spray applications resulted in similar residues and the 150 OD formulation appeared to give slightly higher residues than the 240 SC formulation.

Table 6.3.2.9-1 Study Use Pattern for BYI08330 150 OD and 240 SC on Apples Conducted in North America.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Application No./Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
Apple Trials											
[redacted], New York (Region 1)	FN184-05H	2005	150 OD	Foliar	1/ Beginning of Ripening	TDOC	0.140 (0.156)	0	63 (601)	0.387 (0.434)	Yes
					2/Beginning of Ripening		0.124 (0.138)	12	62 (592)		Yes
					3/Advanced Ripening		0.126 (0.140)	14	63 (603)		Yes
			150 OD	Foliar	1/Beginning of Ripening	TDOD	0.140 (0.157)	0	223 (2083)	0.389 (0.437)	Yes
					2/Beginning of Ripening		0.127 (0.142)	12	218 (2074)		Yes
					3/Advanced Ripening		0.127 (0.142)	14	219 (2085)		Yes
			240 SC	Foliar	1/Beginning of Ripening	TDSC	0.141 (0.158)	0	63 (601)	0.383 (0.430)	Yes
					2/Beginning of Ripening		0.122 (0.137)	12	64 (605)		Yes
					3/Advanced Ripening		0.121 (0.135)	14	63 (597)		Yes
[redacted], Pennsylvania (Region 1)	FN185-05H	2005	150 OD	Foliar	1/Fruit about 70% of final size	TDOC	0.143 (0.160)	0	61 (567)	0.395 (0.444)	Yes
					2/Fruit about 80% of final size		0.127 (0.142)	12	60 (568)		Yes
					3/Fruit about 90% of final size		0.127 (0.142)	13	60 (570)		Yes
			150 OD	Foliar	1/Fruit about 70% of final size	TDOD	0.141 (0.158)	0	258 (2416)	0.390 (0.438)	Yes
					2/Fruit about 80% of final size		0.127 (0.139)	12	253 (2405)		Yes
					3/Fruit about 90% of final size		0.127 (0.141)	13	257 (2444)		Yes
[redacted], Virginia (Region 1)	FN186-05H	2005	150 OD	Foliar	1/Fruit about 80% of final size	TDOC	0.140 (0.157)	0	80 (745)	0.384 (0.431)	Yes
					2/Fruit about 90% of final size		0.124 (0.139)	14	64 (611)		Yes
					3/Beginning of Ripening		0.120 (0.135)	15	62 (585)		Yes
			150 OD	Foliar	1/Fruit about 80% of final size	TDOD	0.143 (0.160)	0	305 (2853)	0.387 (0.434)	Yes
					2/Fruit about 90% of final size		0.125 (0.140)	14	242 (2299)		Yes
					3/Beginning of Ripening		0.119 (0.134)	15	232 (2202)		Yes

Table 6.3.2.9-1 (Continued)

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Application No./ Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Georgia (Region 2)	FN187-05H	2005	150 OD	Foliar	1/Fruit about 90% of final size	TDOC	0.138 (0.155)	0	53 (499)	0.387 (0.434)	Yes
					2/Advanced Ripening		0.125 (0.140)	14	64 (604)		Yes
					3/Fruit Ripe for Consumption		0.124 (0.139)	14	53 (504)		Yes
			150 OD	Foliar	1/Fruit about 90% of final size	TDOD	0.140 (0.157)	0	234 (2186)	0.388 (0.436)	Yes
					2/Advanced Ripening		0.125 (0.140)	14	233 (2212)		Yes
					3/Fruit Ripe for Consumption		0.124 (0.139)	14	208 (1976)		Yes
[redacted], Michigan (Region 5)	FN188-05HA	2005	150 OD	Foliar	1/Fruit about 90% of final size	TDOC	0.141 (0.158)	0	62 (579)	0.392 (0.440)	Yes
					2/Beginning of Ripening		0.126 (0.142)	12	64 (604)		Yes
					3/Advanced Ripening		0.125 (0.140)	13	64 (606)		Yes
			150 OD	Foliar	1/Fruit about 90% of final size	TDOD	0.142 (0.159)	0	252 (2354)	0.393 (0.441)	Yes
					2/Beginning of Ripening		0.126 (0.142)	12	256 (2430)		Yes
					3/Advanced Ripening		0.125 (0.140)	13	254 (2413)		Yes
			240 SC	Foliar	1/Fruit about 90% of final size	TDSC	0.141 (0.158)	0	62 (578)	0.393 (0.441)	Yes
					2/Beginning of Ripening		0.125 (0.142)	12	63 (600)		Yes
					3/Advanced Ripening		0.126 (0.141)	13	64 (609)		Yes
[redacted], Ontario (Region 5)	FN189-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.144 (0.161)	0	42 (393)	0.391 (0.439)	Yes
					2/Fruit about 70% of final size		0.123 (0.137)	13	39 (374)		Yes
					3/Beginning of Ripening		0.125 (0.140)	12	40 (380)		Yes
			150 OD	Foliar	1/Fruit about 60% of final size	TDOD	0.143 (0.160)	0	214 (2005)	0.392 (0.440)	Yes
					2/Fruit about 70% of final size		0.125 (0.140)	13	202 (1920)		Yes
					3/Beginning of Ripening		0.125 (0.140)	12	203 (1930)		Yes

Table 6.3.2.9-1 (Continued)

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Application No./ Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Utah (Region 9)	FN190-05H	2005	150 OD	Foliar	1/Beginning of Ripening	TDOC	0.141 (0.158)	0	48 (448)	0.393 (0.441)	Yes
					2/Advanced Ripening		0.127 (0.143)	14	47 (445)		Yes
					3/Advanced Ripening		0.125 (0.140)	14	50 (533)		Yes
			150 OD	Foliar	1/Beginning of Ripening	TDOD	0.140 (0.157)	0	218 (2037)	0.389 (0.437)	Yes
					2/Advanced Ripening		0.124 (0.139)	14	216 (2057)		Yes
					3/Advanced Ripening		0.126 (0.141)	14	201 (1908)		Yes
[redacted], California (Region 10)	FN191-05H	2005	150 OD	Foliar	1/Fruit about 90% of final size	TDOC	0.140 (0.157)	0	42 (392)	0.390 (0.438)	Yes
					2/Beginning of Ripening		0.124 (0.139)	12	42 (395)		Yes
					3/Advanced Ripening		0.126 (0.142)	14	42 (401)		Yes
			150 OD	Foliar	1/Fruit about 90% of final size	TDOD	0.140 (0.157)	0	217 (2026)	0.387 (0.434)	Yes
					2/Beginning of Ripening		0.124 (0.139)	12	216 (2052)		Yes
					3/Advanced Ripening		0.123 (0.138)	14	215 (2048)		Yes
[redacted], Idaho (Region 11)	FN192-05D	2005	150 OD	Foliar	1/Fruit about 80% of final size	TDOC	0.145 (0.162)	0	51 (480)	0.395 (0.444)	Yes
					2/Fruit about 90% of final size		0.126 (0.141)	14	51 (481)		Yes
					3/Advanced Ripening		0.126 (0.141)	14	49 (465)		Yes
			150 OD	Foliar	1/Fruit about 80% of final size	TDOD	0.145 (0.163)	0	206 (1930)	0.393 (0.443)	Yes
					2/Fruit about 90% of final size		0.125 (0.140)	14	198 (1879)		Yes
					3/Advanced Ripening		0.125 (0.140)	14	98 (1866)		Yes

Table 6.3.2.9-1 (Continued)

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Application No./ Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Oregon (Region 11)	FN193-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.141 (0.157)	0	64 (599)	0.396 (0.445)	Yes
					2/Fruit about 80% of final size		0.128 (0.144)	12	64 (607)		Yes
					3/Beginning of Ripening		0.128 (0.144)	14	64 (607)		Yes
			150 OD	Foliar	1/Fruit about 60% of final size	TDOD	0.144 (0.162)	0	230 (2153)	0.390 (0.438)	Yes
					2/Fruit about 80% of final size		0.123 (0.138)	12	230 (2186)		Yes
					3/Beginning of Ripening		0.123 (0.138)	14	229 (2178)		Yes
			240 SC	Foliar	1/Fruit about 60% of final size	TDSC	0.141 (0.158)	0	64 (599)	0.391 (0.439)	Yes
					2/Fruit about 80% of final size		0.126 (0.141)	12	64 (608)		Yes
					3/Beginning of Ripening		0.125 (0.140)	14	64 (606)		Yes
[redacted], Washington (Region 11)	FN194-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.142 (0.159)	0	65 (610)	0.392 (0.440)	Yes
					2/Fruit about 80% of final size		0.124 (0.139)	14	64 (607)		Yes
					3/Beginning of Ripening		0.126 (0.142)	14	63 (596)		Yes
			150 OD	Foliar	1/Fruit about 60% of final size	TDOD	0.143 (0.161)	0	300 (2808)	0.394 (0.442)	Yes
					2/Fruit about 80% of final size		0.126 (0.141)	14	296 (2812)		Yes
					3/Beginning of Ripening		0.125 (0.140)	14	295 (2807)		Yes
[redacted], [redacted], Oregon (Region 11)	FN195-05H	2005	150 OD	Foliar	1/Fruit about 80% of final size	TDOC	0.143 (0.161)	0	55 (512)	0.396 (0.445)	Yes
					2/Fruit about 90% of final size		0.127 (0.143)	13	53 (505)		Yes
					3/Beginning of Ripening		0.126 (0.141)	13	51 (483)		Yes
			150 OD	Foliar	1/Fruit about 80% of final size	TDOD	0.141 (0.158)	0	338 (3160)	0.384 (0.431)	Yes
					2/Fruit about 90% of final size		0.122 (0.137)	13	316 (3009)		Yes
					3/Beginning of Ripening		0.121 (0.136)	13	327 (3106)		Yes

Table 6.3.2.9-2 Study Use Pattern for BYI08330 150 OD and 240 SC on Pears Conducted in North America.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Application No./ Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Pennsylvania (Region 1)	FN196-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.145 (0.162)	0	67 (622)	0.396 (0.445)	Yes
					2/Fruit about 60% of final size		0.123 (0.138)	12	63 (600)		Yes
					3/Fruit about 80% of final size		0.129 (0.145)	14	66 (627)		Yes
			150 OD	Foliar	1/Fruit about 50% of final size	TDOD	0.149 (0.167)	0	318 (2975)	0.405 (0.455)	Yes
					2/Fruit about 60% of final size		0.129 (0.145)	12	316 (3005)		Yes
					3/Fruit about 80% of final size		0.127 (0.143)	14	310 (2946)		Yes
[redacted], California (Region 10)	FN197-05D	2005	150 OD	Foliar	1/Fruit about 10 mm in size	TDOC	0.142 (0.160)	0	49 (470)	0.398 (0.447)	Yes
					2/Fruit about 50% of final size		0.129 (0.145)	14	49 (470)		Yes
					3/Fruit about 80% of final size		0.126 (0.142)	14	50 (473)		Yes
			150 OD	Foliar	1/Fruit about 10 mm in size	TDOD	0.141 (0.158)	0	249 (2331)	0.392 (0.440)	Yes
					2/Fruit about 50% of final size		0.126 (0.142)	14	245 (2330)		Yes
					3/Fruit about 80% of final size		0.125 (0.140)	14	246 (2339)		Yes
[redacted], California (Region 10)	FN198-05H	2005	150 OD	Foliar	1/Fruit about 40 mm in size	TDOC	0.141 (0.157)	0	64 (599)	0.396 (0.445)	Yes
					2/Fruit about 60% of final size		0.126 (0.141)	14	36 (342)		Yes
					3/Beginning of Ripening		0.124 (0.139)	14	36 (338)		Yes
			150 OD	Foliar	1/Fruit about 40 mm in size	TDOD	0.139 (0.155)	0	230 (2153)	0.390 (0.438)	Yes
					2/Fruit about 60% of final size		0.124 (0.139)	14	205 (1954)		Yes
					3/Beginning of Ripening		0.124 (0.139)	14	204 (1943)		Yes
			240 SC	Foliar	1/Fruit about 40 mm in size	TDSC	0.141 (0.158)	0	64 (599)	0.391 (0.439)	Yes
					2/Fruit about 60% of final size		0.124 (0.139)	14	36 (342)		Yes
					3/Beginning of Ripening		0.124 (0.139)	14	36 (338)		Yes

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Table 6.3.2.9-2 (Continued)

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Application No./ Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Washington (Region 11)	FN199-05H	2005	150 OD	Foliar	1/Fruit about 50% of final size	TDOC	0.142 (0.159)	0	49 (467)	0.393 (0.441)	Yes
					2/Fruit about 60% of final size		0.126 (0.141)	12	49 (466)		Yes
					3/Fruit about 70% of final size		0.126 (0.141)	14	49 (467)		Yes
			150 OD	Foliar	1/Fruit about 50% of final size	TDOD	0.141 (0.158)	0	251 (2351)	0.390 (0.438)	Yes
					2/Fruit about 60% of final size		0.126 (0.141)	12	247 (2353)		Yes
					3/Fruit about 70% of final size		0.124 (0.139)	14	245 (2332)		Yes
			240 SC	Foliar	1/Fruit about 50% of final size	TDSC	0.142 (0.160)	0	49 (466)	0.395 (0.443)	Yes
					2/Fruit about 60% of final size		0.126 (0.142)	12	49 (466)		Yes
					3/Fruit about 70% of final size		0.126 (0.141)	14	49 (464)		Yes
[redacted], Oregon (Region 11)	FN200-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.143 (0.160)	0	57 (541)	0.393 (0.441)	Yes
					2/Fruit about 90% of final size		0.125 (0.140)	12	57 (544)		Yes
					3/Beginning of Ripening		0.126 (0.141)	14	54 (509)		Yes
			150 OD	Foliar	1/Fruit about 60% of final size	TDOD	0.138 (0.154)	0	209 (1952)	0.391 (0.439)	Yes
					2/Fruit about 90% of final size		0.127 (0.143)	12	203 (1929)		Yes
					3/Beginning of Ripening		0.126 (0.142)	14	201 (1912)		Yes
[redacted], Oregon (Region 11)	FN201-05H	2005	150 OD	Foliar	1/Fruit about 60% of final size	TDOC	0.141 (0.158)	0	54 (503)	0.387 (0.435)	Yes
					2/Fruit about 90% of final size		0.125 (0.140)	14	47 (450)		Yes
					3/Beginning of Ripening		0.122 (0.137)	12	52 (496)		Yes
			150 OD	Foliar	1/Fruit about 60% of final size	TDOD	0.143 (0.161)	0	265 (2478)	0.390 (0.438)	Yes
					2/Fruit about 90% of final size		0.123 (0.138)	14	256 (2437)		Yes
					3/Beginning of Ripening		0.124 (0.139)	12	297 (2828)		Yes

Table 6.3.2.9-3 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Pome Fruit.

Matrix/Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries (%)[a]	Mean ± Std. Dev. (%)[a]
Apples				
BYI08330	**0.01**	**7**	**112, 96, 104, 113, 114, 110, 98**	**107 ± 7**
	0.50	**1**	**98**	**NA**
BYI08330-enol	**0.01**	**7**	**86, 89, 96, 70, 106, 88, 92**	**90 ± 11**
	0.50	**1**	**94**	**NA**
BYI08330-ketohydroxy	**0.01**	**7**	**112, 87, 120, 118, 88, 95, 106**	**104 ± 14**
	0.50	**1**	**104**	**NA**
BYI08330-mono-hydroxy	**0.01**	**7**	**105, 89, 105, 100, 86, 87, 91**	**95 ± 8**
	0.50	**1**	**98**	**NA**
BYI08330-enol-glucoside	**0.01**	**7**	**90, 95, 104, 81, 98, 80, 89**	**91 ± 9**
	0.50	**1**	**93**	**NA**
Pears				
BYI08330	**0.01**	**3**	**104, 98, 102**	**101 ± 3**
	0.50	**2**	**98, 100**	**99**
BYI08330-enol	**0.01**	**3**	**90, 100, 83**	**91 ± 9**
	0.50	**2**	**90, 88**	**89**
BYI08330-ketohydroxy	**0.01**	**3**	**114, 115, 92**	**107 ± 13**
	0.50	**2**	**100, 106**	**103**
BYI08330-mono-hydroxy	**0.01**	**3**	**88, 104, 92**	**95 ± 8**
	0.50	**2**	**95, 95**	**95**
BYI08330-enol-glucoside	**0.01**	**3**	**89, 80, 78**	**82 ± 6**
	0.50	**2**	**82, 88**	**85**

[a] Means were not calculated for single recoveries and standard deviations were not calculated for duplicate recoveries.

Table 6.3.2.9-4 Results from supervised residue trials conducted with three spray applications of BYI08330 150 OD to apple trees in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN184-05H FN184-05H-A USA [redacted], New York 2005	Apple fruit	7 7 14 14	0.012 0.016 0.032 0.021	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 0.014 0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.022 0.034 0.056 0.038
RAFNY009 FN184-05H FN184-05H-B USA [redacted], New York 2005	Apple fruit	7 7 14 14	0.021 0.021 0.022 0.022	0.011 0.012 0.013 0.013	0.016 0.020 0.026 0.022	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.052 0.058 0.067 0.064
RAFNY009 FN185-05H FN185-05H-A USA [redacted], Pennsylvania 2005	Apple fruit	7 7 14 14	0.084 0.114 0.078 0.095	0.012 0.017 0.010 0.016	0.016 0.020 0.021 0.022	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.115 0.157 0.122 0.139
RAFNY009 FN185-05H FN185-05H-B USA [redacted], Pennsylvania 2005	Apple fruit	7 7 14 14	0.070 0.064 0.040 0.044	0.018 0.019 0.013 0.013	0.026 0.024 0.022 0.023	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.122 0.115 0.084 0.091

[a]DALT = Days after last treatment

Table 6.3.2.9-4 (contd).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN186-05H FN186-05H-A USA [redacted], Virginia 2005	Apple fruit	7 7 14 14	0.049 0.051 0.034 0.021	0.020 0.021 0.015 <0.010	0.018 0.033 0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.090 0.109 0.063 0.042
RAFNY009 FN186-05H FN186-05H-B USA [redacted], Virginia 2005	Apple fruit	7 7 14 14	0.034 0.027 <0.010 0.027	0.012 <0.010 <0.010 0.012	0.065 0.082 0.056 0.055	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.114 0.121 0.087 0.097
RAFNY009 FN187-05H FN187-05H-A USA [redacted], Georgia 2005	Apple fruit	7 7 14 14	0.054 0.056 0.022 0.020	0.017 0.016 <0.010 <0.010	0.017 0.020 0.010 0.014	0.012 0.012 0.011 <0.010	<0.010 <0.010 <0.010 <0.010	0.103 0.105 0.060 0.054
RAFNY009 FN187-05H FN187-05H-B USA [redacted], Georgia 2005	Apple fruit	7 7 14 14	0.044 0.039 0.018 0.019	0.023 0.022 0.016 0.017	0.029 0.028 0.029 0.025	0.020 0.022 0.021 0.023	<0.010 <0.010 <0.010 <0.010	0.118 0.114 0.088 0.088
RAFNY009 FN188-05HA FN188-05HA-A USA [redacted], Michigan 2005	Apple fruit	7 7 14 14	0.041 0.031 0.031 0.023	<0.010 <0.010 <0.010 <0.010	0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.061 0.048 0.049 0.044
RAFNY009 FN188-05HA FN188-05HA-B USA [redacted], Michigan 2005	Apple fruit	7 7 14 14	0.022 0.025 0.018 0.018	0.011 <0.010 <0.010 0.011	<0.010 <0.010 0.013 0.017	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.043 0.046 0.044 0.048

[a] DALT = Days After Last Treatment

[a]DALT = Days after last treatment

Table 6.3.2.9-4 (contd).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN189-05H FN189-05H-A [redacted], Ontario 2005	Apple fruit	7 7 14 14	0.012 0.016 0.016 0.018	0.014 0.014 0.018 0.019	<0.010 <0.010 0.010 0.013	<0.010 <0.010 <0.010 0.011	<0.010 <0.010 <0.010 <0.010	0.037 0.041 0.058 0.064
RAFNY009 FN189-05H FN189-05H-B [redacted], Ontario 2005	Apple fruit	7 7 14 14	0.014 0.015 0.011 <0.010	0.022 0.023 0.017 0.019	0.017 0.013 0.012 0.012	0.011 0.012 0.012 0.012	<0.010 <0.010 <0.010 <0.010	0.067 0.066 0.055 0.058
RAFNY009 FN190-05H FN190-05H-A USA, [redacted], Utah 2005	Apple fruit	7 7 14 14	0.081 0.088 0.066 0.061	0.039 0.034 0.042 0.039	0.017 0.012 0.020 0.025	0.022 0.017 0.018 0.021	<0.010 <0.010 <0.010 <0.010	0.164 0.154 0.149 0.149
RAFNY009 FN190-05H FN190-05H-B USA [redacted], Utah 2005	Apple fruit	7 7 14 14	0.108 0.085 0.066 0.059	0.093 0.078 0.096 0.078	0.095 0.068 0.093 0.081	0.069 0.063 0.067 0.062	<0.010 <0.010 <0.010 <0.010	0.374 0.302 0.330 0.288
RAFNY009 FN191-05H FN191-05H-A USA [redacted], California 2005	Apple fruit	7 7 13 13	0.276 0.316 0.221 0.230	0.010 0.016 <0.010 <0.010	<0.010 0.011 <0.010 <0.010	0.014 0.016 0.019 0.012	<0.010 <0.010 <0.010 <0.010	0.311 0.364 0.262 0.259
RAFNY009 FN192-05H FN192-05H-A USA [redacted], Idaho 2005	Apple fruit	0 0 7 7 9 9 14 14 21 21	0.206 0.287 0.218 0.230 0.228 0.417 0.103 0.102 0.104 0.078	0.055 0.055 0.053 0.057 0.073 0.075 0.057 0.055 0.056 0.040	0.017 0.023 0.024 0.030 0.039 0.042 0.032 0.026 0.039 0.027	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.283 0.369 0.299 0.329 0.350 0.541 0.195 0.189 0.205 0.146

[a] DALT = Days after last treatment

Table 6.3.2.9-4 (contd).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN192-05H FN192-05H-B USA [redacted], Idaho 2005	Apple fruit	7 7 14 14	0.104 0.097 0.052 0.062	0.086 0.086 0.089 0.093	0.044 0.045 0.050 0.055	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.241 0.237 0.204 0.220
RAFNY009 FN193-05H FN193-05H-A USA [redacted], Oregon 2005	Apple fruit	7 7 14 14	0.026 0.027 0.015 0.022	0.028 0.028 0.020 0.022	0.019 0.018 0.025 0.024	0.011 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.086 0.085 0.070 0.081
RAFNY009 FN193-05H FN193-05H-B USA, [redacted], Oregon; 2005	Apple fruit	7 7 14 14	0.029 0.030 0.026 0.024	0.073 0.064 0.055 0.054	0.046 0.042 0.041 0.041	0.025 0.024 0.023 0.021	<0.010 <0.010 <0.010 <0.010	0.178 0.163 0.150 0.146
RAFNY009 FN194-05H FN194-05H-A USA [redacted], Washington 2005	Apple fruit	7 7 14 14	0.095 0.111 0.095 0.077	0.030 0.031 0.034 0.029	0.016 0.017 0.023 0.020	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.144 0.162 0.157 0.129
RAFNY009 FN194-05H FN194-05H-B USA [redacted] Washington; 2005	Apple fruit	7 7 14 14	0.039 0.052 0.026 0.033	0.035 0.037 0.027 0.030	0.022 0.024 0.024 0.022	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.099 0.115 0.080 0.092
RAFNY009 FN195-05H FN195-05H-B USA [redacted], Oregon; 2005	Apple fruit	7 7 14 14	0.057 0.038 0.031 0.029	0.023 0.014 0.023 0.018	0.015 0.011 0.017 0.015	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.103 0.069 0.078 0.069

[a]DALT = Days after last treatment

Table 6.3.2.9-5: Results from supervised residue trials conducted with three spray applications of BYI08330 240 SC to apple trees in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN184-05H FN184-05H-C USA [redacted], New York 2005	Apple fruit	7 7 14 14	0.022 0.023 0.018 0.017	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.032 0.033 0.030 0.029
RAFNY009 FN188-05HA FN188-05HA-C USA [redacted], Michigan 2005	Apple fruit	7 7 14 14	0.031 0.040 0.024 0.026	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.040 0.051 0.031 0.033
RAFNY009 FN193-05H FN193-05H-C USA [redacted], Oregon 2005	Apple fruit	7 7 14 14	0.082 0.084 0.064 0.106	0.027 0.026 0.019 0.023	0.014 0.014 0.018 0.025	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.131 0.133 0.109 0.163

[a]DALT = Days after last treatment

Table 6.3.2.9-6 Results from supervised residue trials conducted with three spray applications of BYI08330 150 OD to pear trees in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN196-05H FN196-05H-A USA [redacted], Pennsylvania 2005	Pear fruit	7 7 14 14	0.019 0.022 0.034 0.030	<0.010 <0.010 <0.010 <0.010	0.024 0.028 0.029 0.036	0.017 0.019 0.017 0.017	<0.010 <0.010 <0.010 <0.010	0.063 0.072 0.087 0.090
RAFNY009 FN196-05H FN196-05H-B USA [redacted], Pennsylvania 2005	Pear fruit	7 7 14 14	0.041 0.037 0.065 0.073	<0.010 <0.010 <0.010 0.011	0.037 0.036 0.040 0.047	0.022 0.022 0.020 0.020	<0.010 <0.010 <0.010 <0.010	0.108 0.104 0.135 0.152
RAFNY009 FN197-05H FN197-05H-A USA [redacted], California 2005	Pear fruit	0 0 7 7 10 10 14 14 21 21	0.177 0.151 0.142 0.088 0.099 0.095 0.060 0.093 0.074 0.101	0.171 0.127 0.148 0.119 0.147 0.167 0.123 0.145 0.097 0.114	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.015 0.012 0.018 0.012 0.020 0.022 0.023 0.023 0.027 0.027	0.372 0.297 0.317 0.224 0.275 0.292 0.213 0.268 0.206 0.250
RAFNY009 FN197-05H FN197-05H-B USA [redacted] California 2005	Pear fruit	7 7 14 14	0.098 0.121 0.084 0.079	0.170 0.195 0.148 0.137	0.012 0.016 0.013 0.013	<0.010 <0.010 <0.010 <0.010	0.026 0.031 0.031 0.030	0.309 0.364 0.278 0.261
RAFNY009 FN198-05H FN198-05H-A USA [redacted], California 2005	Pear fruit	7 7 14 14	0.108 0.164 0.114 0.101	<0.010 <0.010 <0.010 <0.010	0.015 0.020 0.015 0.014	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.130 0.197 0.133 0.123

[a]DALT = Days after last treatment

Table 6.3.2.9-6 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN198-05H FN198-05H-B USA [redacted], California 2005	Pear fruit	7 7 14 14	0.083 0.098 0.072 0.087	<0.010 <0.010 <0.010 <0.010	0.016 0.017 0.013 0.015	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.104 0.123 0.089 0.107
RAFNY009 FN199-05H FN199-05H-B USA [redacted], Washington 2005	Pear fruit	7 7 14 14	0.100 0.114 0.052 0.082	<0.010 <0.010 <0.010 <0.010	0.025 0.025 0.014 0.018	0.058 0.059 0.043 0.050	<0.010 <0.010 <0.010 <0.010	0.192 0.207 0.112 0.158
RAFNY009 FN200-05H FN200-05H-A USA [redacted], Oregon 2005	Pear fruit	7 7 14 14	0.146 0.143 0.124 0.124	<0.010 <0.010 <0.010 <0.010	0.029 0.024 0.016 0.023	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.185 0.176 0.148 0.156
RAFNY009 FN200-05H FN200-05H-B USA [redacted], Oregon 2005	Pear fruit	7 7 14 14	0.117 0.127 0.153 0.087	<0.010 <0.010 <0.010 <0.010	0.064 0.057 0.052 0.050	0.012 0.013 0.016 0.013	<0.010 <0.010 <0.010 <0.010	0.200 0.205 0.225 0.153
RAFNY009 FN201-05H FN201-05H-A USA [redacted], Oregon; 2005	Pear fruit	7 7 14 14	0.065 0.056 0.065 0.042	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 0.012 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.079 0.076 0.072 0.051
RAFNY009 FN201-05H FN201-05H-B USA [redacted], Oregon; 2005	Pear fruit	7 7 14 14	0.022 0.021 0.022 0.014	<0.010 <0.010 <0.010 <0.010	0.010 <0.010 <0.010 <0.010	0.011 0.015 0.011 <0.010	<0.010 <0.010 <0.010 <0.010	0.046 0.047 0.042 0.030

[a] DALT = Days after last treatment

Table 6.3.2.9-7 Results from supervised residue trials conducted with three spray applications of BYI08330 240 SC to pear trees in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY009 FN198-05H FN198-05H-C USA [redacted], California 2005	Pear fruit	7 7 14 14	0.097 0.111 0.084 0.095	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.109 0.124 0.098 0.109
RAFNY009 FN199-05H FN199-05H-C USA [redacted], Washington 2005	Pear fruit	7 7 14 14	0.213 0.194 0.162 0.141	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.016 0.013 0.022 0.011	<0.010 <0.010 <0.010 <0.010	0.247 0.226 0.199 0.161

[a]DALT = Days after last treatment

IIA 6.3.2.10 Stone Fruits

Report:	**IIA 6.3.2.10, [redacted] and [redacted] 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC - Magnitude of the Residue on Stone Fruit**
Report No & Document No	**RAFNY001** **M-277063-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP:	**Yes**

Test System:

A total of 21 field trials were conducted to measure the magnitude of BYI08330 residue in stone fruit following two airblast spray applications of either BYI08330 150 OD or BYI08330 240 SC to cherries, peaches, or plums. BYI08330 150 OD is an oil dispersible (OD) formulation containing 150 g ai/L, and BYI08330 240 SC is a suspension concentrate (SC) formulation containing 240 g ai/L.

Six trials were conducted on cherry (5 harvest and 1 decline), nine trials were conducted on peach (8 harvest and 1 decline), and six trials were conducted on plum (5 harvest and 1 decline). A control plot was included in each trial as well as two or three treated plots. Trials containing two treated plots received concentrated spray (TDOC) applications and diluted spray (TDOD) applications of BYI08330 150 OD. Trials containing three treated plots had an additional bridging plot that received concentrated spray (TDSC) applications of BYI08330 240 SC.

The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on cherry (sweet and sour), peach, and plum are listed in Tables 6.3.2.10-1 through 6.3.2.10-3.

Two airblast spray applications of BYI08330 150 OD or BYI08330 240 SC were made using ground-based equipment to the treated plots at target rates of 0.141 lb ai/A/application (158 g ai/ha/application) for the first application and 0.098 lb ai/A/application (110 g ai/ha/application) for the second application for a total target seasonal application rate of 0.239 lb ai/A (0.268 kg ai/ha). The achieved total seasonal rate ranged from 0.236 to 0.244 lb ai/A (0.265 to 0.274 kg ai/ha). The applications were timed so that the first sampling would occur at a 7-day preharvest interval (PHI) and target growth stages from fruit ripe for picking to fruit ripe for consumption (BBCH 87 to BBCH 89). All spray mixtures included Dyne-Amic (0.25% v/v) as an adjuvant. The interval between applications was 12 to 15 days.

In the harvest trials, duplicate composite samples of fruit were harvested from each treated plot at commercial maturity at pre-harvest intervals (PHIs) of 7- and 14-days after the last application. In the decline trials, the representative commodities were collected at five intervals corresponding to PHIs of 0-,

7-, 10-, 14-, and 21-days after the last application to monitor residue decline. A single composite sample was collected from the control plot of each trial at the desired 7-day PHI.

In addition, fresh fruit samples were taken from the control and the BYI08330 150 OD treated plot from one cherry and one peach field trial to generate samples for use in the dietary risk assessment for BYI08330. These samples were shipped on ice substitute by overnight carrier to the Bayer Research Park (BRP) where they were processed to washed, cooked, and dried cherries or peaches, then homogenized and stored frozen until analyzed.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside, were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in the stone fruit raw agricultural commodities (RACs).

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in cherry (sweet and sour), peach, and plum are summarized in Tables 6.3.2.10-4 through 6.3.2.10-6. Mean recoveries for all analytes ranged from 77% ±3 to 118%.

The residues found in head and leaf lettuce, celery, and spinach are shown in Tables 6.3.2.10-7 through 6.3.2.10-12.

For cherry fruit, the highest average field trial (HAFT) total BYI08330 residue was 2.05 ppm at commercial maturity and the desired label PHI of 7 days with a maximum residue of 2.12 ppm and occurred following a diluted spray treatment. For peach fruit, the highest average field trial (HAFT) total BYI08330 residue was 1.11 ppm at commercial maturity at the desired label PHI of 7 days and occurred following a diluted spray treatment. The maximum residue was 1.23 ppm and occurred following a concentrated spray treatment. For plum fruit, the highest average field trial (HAFT) total BYI08330 residue was 0.67 ppm at commercial maturity at the desired label PHI of 7 days with a maximum residue of 0.83 ppm and occurred following a diluted spray treatment.

In general, total BYI08330 residue in plots treated with BYI08330 150 OD was higher than or similar to the bridging plots treated with BYI08330 240 SC for cherries, peaches, and plums. In general, total BYI08330 residue was higher than or similar to samples harvested at the desired target 7-day PHI as compared with samples harvested at the 14-day PHI.

Total BYI08330 residue tended to decrease with time in cherry samples from the decline trial. No correlation between total BYI08330 residue and time could be drawn for peaches or plums in samples from the decline trial.

No correlation between total BYI08330 residue in the cherry RAC and the washed (processing factor = 1.1X) or cooked (processing factor = 1.0X) cherries could be determined. No concentration (processing factor < 1X) of total BYI08330 residue was found in washed peaches (processing factor = 0.4X) or in cooked peaches (processing factor = 0.2X). Total BYI08330 residue was found to increase in dried peaches (2.9X).

At the desired target 7-day PHI, the HAFT and maximum total BYI08330 residue in the representative commodities (cherries, peaches, and plums) were within a factor of 5 of each other and, therefore, within the EPA guidelines for the establishment of a group tolerance for Crop Group 12 (Stone Fruit).

Table 6.3.2.10-1 Study Use Pattern for BYI08330 in/on Cherry.

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted] New York Region 1	FN140-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.159)	0	65 (612)	0.241 (0.271)	Dyne-Amic
					2 App: 7		0.099 (0.111)	14	66 (615)		
[redacted] New York Region 1	FN140-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.139 (0.156)	0	224 (2095)	0.236 (0.265)	Dyne-Amic
					2 App: 7		0.098 (0.109)	14	221 (2070)		
[redacted] Ontario Region 5	FN141-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.159)	0	62 (583)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.099 (0.111)	12	60 (557)		
[redacted] Ontario Region 5	FN141-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.143 (0.160)	0	242 (2265)	0.241 (0.271)	Dyne-Amic
					2 App: 7		0.098 (0.110)	12	232 (2168)		
[redacted] Michigan Region 5	FN142-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.159)	0	59 (554)	0.239 (0.268)	Dyne-Amic
					2 App: 7		0.097 (0.109)	14	59 (548)		
[redacted] Michigan Region 5	FN142-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.157)	0	210 (1967)	0.238 (0.267)	Dyne-Amic
					2 App: 7		0.098 (0.110)	14	211 (1973)		
[redacted] California Region 10	FN143-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.143 (0.160)	0	39 (366)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.098 (0.110)	13	39 (365)		
[redacted] California Region 10	FN143-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.143 (0.160)	0	392 (3662)	0.243 (0.272)	Dyne-Amic
					2 App: 7		0.100 (0.112)	13	242 (2262)		

Table 6.3.2.10-1 (continued).

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] Washington Region 11	FN144-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.141 (0.158)	0	50 (464)	0.240 (0.269)	Dyne-Amic
					2 App: 7		0.099 (0.111)	14	50 (465)		
[redacted] Washington Region 11	FN144-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.141 (0.158)	0	249 (2325)	0.240 (0.269)	Dyne-Amic
					2 App: 7		0.099 (0.111)	14	250 (2337)		
[redacted] Washington Region 11	FN144-05H	2005	240 SC	Airblast Conc. Spray	1 App: 21	TDSC	0.143 (0.160)	0	50 (467)	0.243 (0.272)	Dyne-Amic
					2 App: 7		0.100 (0.112)	14	50 (465)		
[redacted] Oregon Region 11	FN145-05D	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.140 (0.157)	0	50 (466)	0.238 (0.266)	Dyne-Amic
					2 App: 7		0.098 (0.110)	15	44 (407)		
[redacted] Oregon Region 11	FN145-05D	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.157)	0	250 (2341)	0.239 (0.268)	Dyne-Amic
					2 App: 7		0.099 (0.111)	15	232 (2166)		

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Table 6.3.2.10-2 Study Use Pattern for BYI08330 in/on Peach.

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] New York Region 1	FN146-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.141 (0.158)	0	66 (615)	0.240 (0.269)	Dyne-Amic
					2 App: 7		0.099 (0.111)	13	65 (607)		
New York Region 1	FN146-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.143 (0.160)	0	224 (2091)	0.242 (0.271)	Dyne-Amic
					2 App: 7		0.099 (0.111)	13	224 (2097)		
Georgia Region 2	FN147-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.159)	0	42 (391)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.099 (0.111)	13	55 (518)		
Georgia Region 2	FN147-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.142 (0.159)	0	270 (2521)	0.240 (0.269)	Dyne-Amic
					2 App: 7		0.098 (0.110)	13	262 (2451)		
Georgia Region 2	FN147-05H	2005	240 SC	Airblast Conc. Spray	1 App: 21	TDSC	0.141 (0.158)	0	42 (390)	0.239 (0.268)	Dyne-Amic
					2 App: 7		0.098 (0.110)	13	55 (513)		
Georgia Region 2	FN148-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.144 (0.161)	0	60 (558)	0.242 (0.272)	Dyne-Amic
					2 App: 7		0.098 (0.110)	14	56 (526)		
Georgia Region 2	FN148-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.145 (0.163)	0	244 (2281)	0.242 (0.271)	Dyne-Amic
					2 App: 7		0.097 (0.108)	14	216 (2020)		
North Carolina Region 2	FN149-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.160)	0	46 (432)	0.242 (0.271)	Dyne-Amic
					2 App: 7		0.100 (0.112)	14	60 (558)		

Table 6.3.2.10-2 (continued).

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] North Carolina Region 2	FN149-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.156)	0	308 (2883)	0.238 (0.266)	Dyne-Amic
					2 App: 7		0.098 (0.110)	14	235 (2196)		
[redacted] Ontario Region 5	FN150-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.142 (0.159)	0	52 (490)	0.238 (0.267)	Dyne-Amic
					2 App: 7		0.096 (0.108)	13	46 (428)		
[redacted] Ontario Region 5	FN150-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.157)	0	283 (2650)	0.238 (0.267)	Dyne-Amic
					2 App: 7		0.098 (0.109)	13	255 (2384)		
[redacted] Texas Region 6	FN151-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.140 (0.157)	0	61 (567)	0.237 (0.266)	Dyne-Amic
					2 App: 7		0.097 (0.109)	14	62 (575)		
[redacted] Texas Region 6	FN151-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.139 (0.156)	0	258 (2415)	0.236 (0.265)	Dyne-Amic
					2 App: 7		0.097 (0.108)	14	254 (2372)		
[redacted] Texas Region 6	FN151-05H	2005	240 SC	Airblast Conc. Spray	1 App: 21	TDSC	0.143 (0.160)	0	61 (574)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.098 (0.110)	14	62 (581)		
[redacted] California Region 10	FN152-05D	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.140 (0.157)	0	41 (383)	0.239 (0.268)	Dyne-Amic
					2 App: 7		0.099 (0.111)	12	40 (372)		
[redacted] California Region 10	FN152-05D	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.157)	0	213 (1992)	0.238 (0.267)	Dyne-Amic
					2 App: 7		0.098 (0.110)	12	215 (2011)		

Table 6.3.2.10-2 (continued).

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] California Region 10	FN153-05HA	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.141 (0.158)	0	52 (488)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.100 (0.112)	14	54 (501)		
[redacted] California Region 10	FN153-05HA	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.140 (0.157)	0	300 (2803)	0.241 (0.270)	Dyne-Amic
					2 App: 7		0.100 (0.112)	14	307 (2866)		
[redacted] California Region 10	FN153-05HA	2005	240 SC	Airblast Conc. Spray	1 App: 21	TDSC	0.139 (0.156)	0	52 (488)	0.238 (0.267)	Dyne-Amic
					2 App: 7		0.099 (0.111)	14	53 (493)		
[redacted] California Region 10	FN154-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21	TDOC	0.141 (0.158)	0	50 (466)	0.240 (0.269)	Dyne-Amic
					2 App: 7		0.099 (0.110)	14	50 (467)		
[redacted] California Region 10	FN154-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21	TDOD	0.141 (0.158)	0	210 (1960)	0.239 (0.268)	Dyne-Amic
					2 App: 7		0.098 (0.110)	14	210 (1964)		

Table 6.3.2.10-3 Study Use Pattern for BYI08330 in/on Plum.

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application								
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted] Michigan Region 5	FN155-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.141 (0.158) 0.098 (0.110)	0 14	59 (556) 61 (568)	0.239 (0.268)	Dyne-Amic
[redacted] Michigan Region 5	FN155-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21 2 App: 7	TDOD	0.141 (0.158) 0.098 (0.110)	0 14	210 (1968) 217 (2032)	0.239 (0.268)	Dyne-Amic
[redacted] California Region 10	FN156-05D	2005	150 OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.144 (0.161) 0.095 (0.107)	0 13	54 (500) 51 (478)	0.239 (0.268)	Dyne-Amic
[redacted] California Region 10	FN156-05D	2005	150 OD	Airblast Dilute Spray	1 App: 21 2 App:	TDOD	0.139 (0.156) 0.097 (0.109)	0 13	298 (2789) 299 (2792)	0.236 (0.265)	Dyne-Amic
[redacted] California Region 10	FN157-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.142 (0.159) 0.099 (0.111)	0 14	61 (573) 61 (571)	0.241 (0.270)	Dyne-Amic
[redacted] California Region 10	FN157-05H	2005	150 OD	Airblast Dilute Spray	1 App: 21 2 App: 7	TDOD	0.141 (0.158) 0.097 (0.109)	0 14	225 (2100) 226 (2108)	0.238 (0.267)	Dyne-Amic
[redacted] California Region 10	FN157-05H	2005	240 SC	Airblast Concentrate Spray	1 App: 21 2 App: 7	TDSC	0.140 (0.157) 0.097 (0.109)	0 14	61 (572) 61 (571)	0.237 (0.266)	Dyne-Amic
[redacted] California Region 10	FN158-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.140 (0.157) 0.098 (0.110)	0 14	49 (459) 49 (460)	0.238 (0.266)	Dyne-Amic

Table 6.3.2.10-3 (continued).

Location (City, State, NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing[a] PHI (days)	Plot Name	Rate lb a.i./A (kg a.i./ha)	Reapplication Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted] California Region 10	FN158-05H	2005	150 OD	Airblast, Dilute Spray	1 App: 21 2 App: 7	TDOD	0.140 (0.157) 0.098 (0.109)	0 14	226 (2115) 222 (2078)	0.238 (0.266)	Dyne-Amic
[redacted] California Region 10	FN159-05H	2005	150 OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.147 (0.165) 0.095 (0.107)	0 14	73 (681) 58 (539)	0.243 (0.272)	Dyne-Amic
[redacted] California Region 10	FN159-05H	2005	150OD	Airblast Dilute Spray	1 App: 21 2 App: 7	TDOD	0.147 (0.165) 0.097 (0.109)	0 14	223 (2082) 241 (2253)	0.244 (0.274)	Dyne-Amic
[redacted] Oregon Region 12	FN160-05H	2005	150OD	Airblast Conc. Spray	1 App: 21 2 App: 7	TDOC	0.142 (0.159) 0.097 (0.109)	0 14	56 (527) 48 (446)	0.239 (0.268)	Dyne-Amic
[redacted] Oregon Region 12	FN160-05H	2005	150OD	Airblast Dilute Spray	1 App: 21 2 App: 7	TDOD	0.140 (0.158) 0.096 (0.108)	0 14	245 (2288) 264 (2466)	0.237 (0.266)	Dyne-Amic

Table 6.3.2.10-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy from Cherries.

Matrix/Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)[a]	Mean ± Std. Dev. (%)[a]
BYI08330	0.0100	10	91, 98, 116, 86, 101, 80, 120, 85, 92, 105	97 ± 13
	0.0500	6	96, 102, 93, 95, 111, 96	99 ± 6.7
	0.200	6	88, 86, 78, 84, 82, 103	87 ± 8.6
	2.50	2	84, 84	84
BYI08330-enol-glucoside	0.0100	10	110, 119, 111, 90, 109, 110, 100, 77, 109, 85	102 ± 14
	0.0500	6	116, 112, 83, 109, 107, 96	104 ± 12
	0.200	6	96, 97, 73, 73, 87, 90	86 ± 11
	2.50	2	83, 80	82
BYI08330-enol	0.0100	10	85, 79, 119, 81, 111, 119, 111, 112, 109, 120	105 ± 16
	0.0500	6	103, 100, 119, 115, 117, 119	112 ± 8.4
	0.200	6	85, 88, 118, 119, 116, 93	103 ± 16
	2.50	2	71, 76	74
BYI08330-ketohydroxy	0.0100	10	113, 109, 113, 106, 120, 113, 110, 92, 117, 81	107 ± 12
	0.0500	6	116, 116, 113, 119, 115, 110	115 ± 3.1
	0.200	6	102, 90, 106, 106, 106, 102	102 ± 6.2
	2.50	2	120, 113	117
BYI08330-mono-hydroxy	0.0100	10	90, 84, 115, 92, 104, 113, 119, 91, 92, 97	100 ± 12
	0.0500	6	109, 102, 117, 117, 93, 96	106 ± 10
	0.200	6	87, 91, 81, 88, 87, 95	88 ± 4.7
	2.50	2	82, 90	86

[a] Standard deviation is not applicable for a sample population with less than three recoveries.

Table 6.3.2.10-5 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy from Peaches.

Matrix/Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev. (%)[a]
BYI08330	0.0100	13	92, 97, 98, 91, 119, 98, 117, 116, 120, 95, 107, 120, 114	106 ± 12
	0.0500	8	102, 102, 95, 98, 70, 97, 108, 87	95 ± 12
	0.200	7	98, 89, 129, 100, 107, 117, 101	106 ± 13
	2.00	2	80, 82	81
BYI08330-enol-glucoside	0.0100	13	117, 119, 108, 108, 92, 72, 97, 103, 117, 78, 104, 95, 116	102 ± 15
	0.0500	8	111, 115, 107, 106, 77, 109, 75, 88	99 ± 16
	0.200	7	92, 93, 110, 105, 78, 71, 94	92 ± 14
	2.00	2	76, 84	80
BYI08330-enol	0.0100	13	75, 76, 95, 97, 111, 94, 108, 119, 118, 109, 109, 105, 110	103 ± 15
	0.0500	8	102, 120, 120, 119, 81, 111, 115, 110	110 ± 13
	0.200	7	93, 92, 128, 120, 121, 120, 95	110 ± 16
	2.00	2	90, 90	90
BYI08330-ketohydroxy	0.0100	13	87, 109, 98, 118, 119, 73, 110, 115, 114, 114, 108, 114, 74	104 ± 16
	0.0500	8	120, 120, 74, 120, 74, 107, 115, 109	105 ± 20
	0.200	7	106, 101, 108, 97, 107, 115, 92	104 ± 7.7
	2.00	2	99, 112	106
BYI08330-mono-hydroxy	0.0100	13	90, 85, 84, 114, 115, 79, 119, 81, 88, 88, 111, 73, 110	95 ± 16
	0.0500	8	103, 104, 93, 114, 73, 105, 114, 85	99 ± 14
	0.200	7	85, 78, 119, 103, 116, 113, 96	101 ± 16
	2.00	2	74, 89	82

[a] Standard deviation is not applicable for a sample population with less than three recoveries.

Table 6.3.2.10-6 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy from Plums.

Matrix/Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)[a]	Mean ± Std. Dev. (%)[a]
BYI08330	0.0100	7	100, 92, 92, 119, 109, 109, 109	104 ± 10
	0.0500	5	102, 105, 115, 118, 119	112 ± 7.8
	0.200	4	93, 91, 102, 115	100 ± 11
	0.500	2	94, 108	101
BYI08330-enol-glucoside	0.0100	7	120, 120, 78, 87, 93, 93, 95	98 ± 16
	0.0500	5	115, 114, 104, 83, 103	104 ± 13
	0.200	4	91, 101, 73, 97	91 ± 12
	0.500	2	91, 111	101
BYI08330-enol	0.0100	7	81, 85, 113, 119, 118, 111, 120	107 ± 17
	0.0500	5	102, 100, 114, 120, 112	110 ± 8.4
	0.200	4	84, 79, 92, 97	88 ± 8.0
	0.500	2	106, 111	109
BYI08330-ketohydroxy	0.0100	7	86, 93, 73, 119, 86, 108, 85	93 ± 16
	0.0500	5	116, 111, 92, 117, 121	111 ± 11
	0.200	4	114, 101, 97, 88	100 ± 11
	0.500	2	79, 84	82
BYI08330-mono-hydroxy	0.0100	7	86, 84, 76, 110, 107, 101, 96	94 ± 13
	0.0500	5	104, 113, 120, 118, 114	116 ± 3.0
	0.200	4	95, 96, 104, 112	102 ± 7.9
	0.500	2	95, 115	106

[a] Standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.10-7 Results of residue trials conducted with BYI 08330 150 OD in/on sweet and sour cherries in North America.

Study Trial No. Trial SubID GLP Year	Crop Variety	Residues							
		Portion analysed	DALT[a] (days)	BYI 08330 (mg/kg)	BYI 08330 cis-enol (mg/kg)	BYI 08330 cis-keto-hydroxy (mg/kg)	BYI 08330 mono-hydroxy (mg/kg)	BYI 08330 enol-glucoside (mg/kg)	Total Residue of BYI 08330 calc. (mg/kg)
RAFNY001 FN140-05H FN140-05H-A GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.056 0.075 <0.010 <0.010	1.026 0.876 0.682 0.455	0.036 0.045 0.049 0.085	0.219 0.301 0.275 0.487	0.271 0.264 0.345 0.401	1.608 1.502 1.353 1.435
RAFNY001 FN140-05H FN140-05H-B GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.017 <0.010 <0.010 <0.010	1.32 1.08 0.780 0.678	0.086 0.051 0.055 0.074	0.402 0.227 0.340 0.370	0.302 0.253 0.337 0.359	2.12 1.62 1.51 1.48
RAFNY001 FN141-05H FN141-05H-A GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.043 0.060 0.031 0.015	1.28 1.29 0.861 0.03	0.044 0.055 0.045 0.053	0.102 0.115 0.154 0.174	0.092 0.106 0.120 0.115	1.56 1.63 1.21 1.29
RAFNY001 FN141-05H FN141-05H-B GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.015 0.011 <0.010 0.010	1.13 1.08 0.573 0.659	0.053 0.060 0.052 0.091	0.117 0.127 0.194 0.272	0.100 0.085 0.137 0.211	1.42 1.36 0.961 1.24
RAFNY001 FN142-05H FN142-05H-A GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.016 0.022 0.011 0.027	1.38 1.61 1.38 1.50	0.062 0.065 0.065 0.073	0.223 0.218 0.201 0.265	0.231 0.205 0.275 0.321	1.92 2.12 1.94 2.18
RAFNY001 FN142-05H FN142-05H-B GLP yes 2005	Cherry, sour Mont Morency	fruit	7 7 14 14	0.012 0.012 <0.010 <0.010	1.22 1.23 0.676 0.738	0.100 0.096 0.055 0.059	0.332 0.356 0.236 0.231	0.368 0.362 0.266 0.236	2.03 2.06 1.24 1.27

[a]DALT = Days after last treatment

Table 6.3.2.10-7 (continued)

Study Trial No. Trial SubID GLP Year	Crop Variety	Residues							
		Portion analysed	DALT[a] (days)	BYI 08330 (mg/kg)	BYI 08330 cis-enol (mg/kg)	BYI 08330 cis-keto-hydroxy (mg/kg)	BYI 08330 mono-hydroxy (mg/kg)	BYI 08330 enol-glucoside (mg/kg)	Total Residue of BYI 08330 calc. (mg/kg)
RAFNY001 FN143-05H FN143-05H-A GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.078 0.089 0.07 0.067	0.434 0.592 0.508 0.592	0.031 0.037 0.04 0.04	0.011 0.022 0.029 0.024	<0.010 <0.010 <0.010 <0.010	0.556 0.740 0.648 0.725
RAFNY001 FN143-05H FN143-05H-B GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.035 0.012 0.016 0.058	0.529 0.17 0.247 0.383	0.02 0.02 0.015 0.034	<0.010 <0.010 0.023 0.023	<0.010 <0.010 <0.010 <0.010	0.588 0.206 0.302 0.499
RAFNY001 FN144-05H FN144-05H-A GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.062 0.035 0.056 0.068	0.868 0.846 0.838 0.818	0.051 0.035 0.051 0.045	0.110 0.090 0.179 0.189	0.038 0.030 0.051 0.056	1.129 1.037 1.174 1.178
RAFNY001 FN144-05H FN144-05H-B GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.014 0.015 0.013 0.014	1.22 1.29 0.96 1.08	0.052 0.069 0.052 0.091	0.147 0.197 0.185 0.246	0.044 0.063 0.077 0.098	1.48 1.64 1.29 1.53
RAFNY001 FN145-05H FN145-05H-A GLP yes 2005	Cherry, sweet Bing	fruit	0 0 7 7 10 10 14 14 21 21	0.992 0.997 0.026 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.803 0.811 0.832 0.251 0.095 0.052 0.055 0.092 0.05 0.04	0.043 0.044 0.059 0.011 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.073 0.077 0.127 0.036 0.03 <0.010 0.014 0.02 <0.010 <0.010	0.016 0.012 0.018 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.992 0.997 1.062 0.311 0.137 0.07 0.075 0.126 0.062 0.057
RAFNY001 FN145-05H FN145-05H-B GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.018 0.018 <0.010 <0.010	1.23 1.28 0.775 0.678	0.087 0.065 0.069 0.053	0.200 0.223 0.262 0.222	0.047 0.044 0.055 0.040	1.58 1.63 1.17 1.00

[a]DALT = Days after last treatment

Table 6.3.2.10-8 Results of residue trials conducted with BYI 08330 240 SC in/on sweet and sour cherries in North America.

Study Trial No. Trial SubID GLP Year	Crop Variety	Residues Portion analysed	Residues (mg/kg)						
			DALT[a] (days)	BYI 08330 (mg/kg)	BYI 08330 cis-enol (mg/kg)	BYI 08330 cis-keto-hydroxy (mg/kg)	BYI 08330 mono-hydroxy (mg/kg)	BYI 08330 enol-glucoside (mg/kg)	Total Residue of BYI 08330 calc. (mg/kg)
RAFNY001 FN144-05H FN144-05H-C GLP yes 2005	Cherry, sweet Bing	fruit	7 7 14 14	0.073 0.061 0.051 0.073	0.487 0.432 0.387 0.576	0.022 0.019 0.014 0.024	0.046 0.044 0.042 0.081	0.018 0.015 0.015 0.026	0.645 0.572 0.508 0.78

[a]DALT = Days after last treatment.

Table 6.3.2.10-9 Results of residue trials conducted with BYI 08330 150 OD in/on peach in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN146-05H FN146-05H-A USA [redacted], New York 2005	Peach, fruit Cresthaven	7 7 14 14	0.099 0.239 0.091 0.078	0.163 0.237 0.158 0.143	<0.010 0.012 <0.010 <0.010	0.022 0.034 0.048 0.028	<0.020 0.028 0.038 0.027	0.311 0.551 0.348 0.286
RAFNY001 FN146-05H FN146-05H-A USA [redacted], New York 2005	Peach, fruit Cresthaven	7 7 14 14	0.042 0.047 0.064 0.024	0.554 0.431 0.539 0.394	0.028 0.015 0.017 0.019	0.056 0.053 0.032 0.086	0.020 <0.020 <0.020 0.041	0.700 0.563 0.670 0.563
RAFNY001 FN147-05D FN147-05D-A USA [redacted], Georgia 2005	Peach, fruit Hawthorne	7 7 14 14	0.019 0.014 0.018 0.043	0.372 0.473 0.217 0.323	0.013 <0.010 <0.010 0.014	0.086 0.045 0.047 0.059	<0.020 <0.020 0.024 0.037	0.509 0.546 0.314 0.476
RAFNY001 FN147-05D FN147-05D-A USA [redacted], Georgia 2005	Peach, fruit Hawthorne	7 7 14 14	0.012 <0.010 <0.010 <0.010	0.320 0.261 <0.010 0.212	0.015 <0.010 <0.010 0.011	0.054 0.035 0.032 0.056	0.021 <0.020 0.025 0.030	0.422 0.316 0.194 0.319
RAFNY001 FN148-05H FN148-05H-A USA [redacted], Georgia 2005	Peach, fruit Redskin 10	7 7 14 14	<0.010 0.013 <0.010 <0.010	0.187 0.184 0.103 0.106	<0.010 <0.010 <0.010 <0.010	0.048 0.041 0.056 0.045	0.047 0.031 0.036 0.027	0.292 0.275 0.205 0.187
RAFNY001 FN148-05H FN148-05H-B USA [redacted], Georgia 2005	Peach, fruit Redskin 10	7 7 14 14	<0.010 0.013 <0.010 <0.010	0.375 0.362 0.230 0.192	<0.010 0.011 <0.010 <0.010	0.065 0.075 0.082 0.080	0.048 0.066 0.044 0.036	0.505 0.526 0.367 0.324

[a] DALT = Days after last treatment.

Table 6.3.2.10-9 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN149-05H FN149-05H-A USA Goldsboro, North Carolina 2005	Peach, fruit Norman	7 7 14 14	0.029 0.022 0.011 <0.010	0.385 0.242 0.108 0.137	0.015 0.012 <0.010 <0.010	0.083 0.053 0.052 0.057	0.033 <0.020 <0.020 0.030	0.545 0.336 0.190 0.237
RAFNY001 FN149-05H FN149-05H-B USA Goldsboro, North Carolina 2005	Peach, fruit Norman	7 7 14 14	0.028 0.045 0.014 0.014	0.499 0.507 0.145 0.186	0.022 0.034 0.013 <0.010	0.122 0.135 0.106 0.150	0.049 0.080 0.048 0.060	0.721 0.820 0.327 0.420
RAFNY001 FN150-05D FN150-05D-A USA Beamsville, Ontario 2005	Peach, fruit Canadian Harmony	7 7 14 14	0.010 0.013 <0.010 <0.010	0.327 0.310 0.116 0.268	<0.010 <0.010 <0.010 <0.010	0.016 0.027 <0.010 0.028	0.040 0.053 0.030 0.049	0.036 0.040 0.029 0.016
RAFNY001 FN150-05D FN150-05D-B USA Beamsville, Ontario 2005	Peach, fruit Canadian Harmony	7 7 14 14	<0.010 <0.010 <0.010 <0.010	0.305 0.521 0.277 0.086	0.016 0.025 0.015 <0.010	0.046 0.093 0.040 <0.010	0.037 0.041 0.039 0.049	0.085 0.072 0.081 0.032
RAFNY001 FN151-05H FN151-05H-A USA [redacted], Texas 2005	Peach, fruit Texas Royal	7 7 14 14	0.047 0.056 0.026 0.023	0.628 0.942 0.338 0.396	0.017 0.022 0.013 0.015	0.108 0.164 0.152 0.171	0.041 0.043 0.049 0.045	0.347 0.176 0.351 0.363
RAFNY001 FN151-05H FN151-05H-B USA [redacted], Texas 2005	Peach, fruit Texas Royal	7 7 14 14	0.056 0.038 0.014 0.019	0.742 0.841 0.487 0.425	0.032 0.025 0.016 0.020	0.160 0.168 0.198 0.214	0.085 0.070 0.055 0.056	0.567 0.518 0.726 0.299

[a]DALT = Days after last treatment.

Table 6.3.2.10-9 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg) DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN152-05H FN152-05H-B USA [redacted], California 2005	Peach, fruit OHenry	7 7 14 14	0.044 0.037 0.043 0.048	0.362 0.503 0.419 0.324	<0.010 <0.010 <0.010 <0.010	0.053 0.077 0.082 0.092	0.021 0.026 0.019 0.025	0.485 0.693 0.570 0.492
RAFNY001 FN153-05H FN153-05H-A USA Selma, California 2005	Peach, fruit Ryan Sun	7 7 14 14	0.161 0.113 0.065 0.164	0.280 0.229 0.088 0.137	<0.010 <0.010 <0.010 <0.010	0.057 0.054 0.034 0.043	0.026 <0.020 <0.020 <0.020	0.528 0.416 0.200 0.354
RAFNY001 FN153-05H FN153-05H-B USA Selma, California 2005	Peach, fruit Ryan Sun	7 7 14 14	0.052 0.069 0.035 0.047	0.366 0.516 0.292 0.229	<0.010 0.010 <0.010 <0.010	0.101 0.131 0.119 0.117	0.028 0.040 <0.020 0.021	0.552 0.767 0.473 0.416
RAFNY001 FN154-05H FN154-05H-A USA [redacted], California 2005	Peach, fruit Halfords	7 7 14 14	0.108 0.123 0.076 0.071	0.194 0.240 0.098 0.108	<0.010 <0.010 <0.010 <0.010	0.037 0.044 0.031 0.036	<0.020 <0.020 <0.020 <0.020	0.350 0.416 0.227 0.234
RAFNY001 FN154-05H FN154-05H-B USA [redacted], California 2005	Peach, fruit Halfords	7 7 14 14	0.091 0.093 0.096 0.059	0.350 0.586 0.369 0.273	<0.010 <0.010 0.012 0.011	0.038 0.064 0.073 0.077	<0.020 <0.020 0.021 0.023	0.496 0.771 0.571 0.442

[a]DALT = Days after last treatment.

Table 6.3.2.10-10 Results of residue trials conducted with BYI 08330 240 SC in/on peach in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN147-05 FN147-05H-C USA [redacted], Georgia 2005	Peach fruit	7 7 14 14	0.034 0.021 0.023 0.027	0.210 0.280 0.384 0.132	0.015 <0.010 0.014 <0.010	0.048 0.018 0.046 0.023	0.032 <0.020 0.022 <0.020	0.340 0.343 0.488 0.196
RAFNY001 FN151-05H FN151-05H-C USA [redacted], Texas 2005	Peach fruit	7 7 14 14	0.045 0.049 0.076 0.029	0.421 0.427 0.349 0.552	0.012 0.017 0.012 0.011	0.087 0.092 0.125 0.165	0.028 0.032 0.036 0.031	0.592 0.617 0.597 0.788
RAFNY001 FN153-05H FN153-05H-C USA Selma, California 2005	Peach fruit	7 7 14 14	0.275 0.490 0.092 0.124	0.178 0.233 0.069 0.088	<0.010 <0.010 <0.010 <0.010	0.039 0.052 0.029 0.023	0.026 0.024 <0.020 <0.020	0.520 0.802 0.209 0.246

[a]DALT = Days after last treatment.

Table 6.3.2.10-11 Results of residue trials conducted with BYI 08330 150 OD in/on plum in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN155-05H FN155-05H-A USA [redacted], Michigan 2005	Plum, fruit Stanley	7 7 14 14	<0.010 <0.010 0.047 0.076	0.116 0.248 0.260 0.169	<0.010 <0.010 <0.010 <0.010	0.048 0.057 0.099 0.069	0.019 0.023 0.041 0.029	0.188 0.335 0.450 0.346
RAFNY001 FN155-05H FN155-05H-B USA [redacted], Michigan 2005	Plum, fruit Stanley	7 7 14 14	<0.010 <0.010 0.030 0.035	0.582 0.349 0.466 0.382	0.021 0.019 0.019 0.017	0.164 0.103 0.193 0.143	0.065 0.042 0.067 0.058	0.834 0.515 0.774 0.634
RAFNY001 FN156-05D FN156-05D-A USA Selma, California 2005	Plum, fruit September Sun	0 0 7 7 10 10 14 14 21 21	0.017 0.036 0.027 0.038 <0.010 0.022 <0.010 <0.010 0.015 0.014	0.038 0.111 0.290 0.145 0.079 0.294 0.073 0.090 0.047 0.073	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	<0.010 0.011 0.036 0.015 0.017 0.071 0.021 0.018 0.025 0.040	<0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.087 0.164 0.361 0.202 0.106 0.399 0.104 0.123 0.094 0.137
RAFNY001 FN156-05D FN156-05D-B USA Selma, California 2005	Plum, fruit September Sun	7 7 14 14	<0.010 <0.010 <0.010 <0.010	0.211 0.189 0.144 0.092	<0.010 <0.010 <0.010 <0.010	0.037 0.036 0.067 0.036	<0.010 <0.010 <0.010 <0.010	0.260 0.234 0.223 0.143

[a]DALT = Days after last treatment.

Table 6.3.2.10-11 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN157-05H FN157-05H-A USA [redacted]o, California 2005	Plum, fruit French Prune	7 7 14 14	0.029 0.040 0.037 0.044	0.068 0.090 0.098 0.111	<0.010 <0.010 <0.010 <0.010	0.076 0.082 0.127 0.185	<0.010 <0.010 0.012 0.011	0.183 0.225 0.277 0.359
RAFNY001 FN157-05H FN157-05H-B USA [redacted]o, California 2005	Plum, fruit French Prune	7 7 14 14	0.026 0.029 0.029 0.030	0.046 0.046 0.062 0.076	<0.010 <0.010 <0.010 <0.010	0.062 0.074 0.120 0.113	<0.010 <0.010 <0.010 <0.010	0.140 0.156 0.220 0.229
RAFNY001 FN158-05H FN158-05H-A USA [redacted], California 2005	Plum, fruit Catalina	7 7 14 14	<0.010 <0.010 <0.010 <0.010	0.254 0.197 0.253 0.153	<0.010 <0.010 <0.010 <0.010	0.057 0.029 0.118 0.074	0.021 0.013 0.073 0.037	0.341 0.248 0.449 0.266
RAFNY001 FN158-05H FN158-05H-B USA [redacted], California 2005	Plum, fruit Catalina	7 7 14 14	<0.010 <0.010 <0.010 <0.010	0.073 0.086 0.057 0.039	<0.010 <0.010 <0.010 <0.010	0.014 0.015 0.019 0.013	<0.010 <0.010 0.010 <0.010	0.100 0.112 0.091 0.065

Table 6.3.2.10-11 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN159-05H FN159-05H-A USA [redacted], California 2005	Plum, fruit 92503 Golden Baby	0 0 7 7 10 10 14 14 21 21	0.010 <0.010 <0.010 <0.010	0.019 0.023 0.013 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	<0.010 <0.010 <0.010 <0.010	0.036 0.040 0.029 0.016
RAFNY001 FN159-05H FN159-05H-B USA [redacted], California 2005	Plum, fruit 92503 Golden Baby	7 7 14 14	<0.010 <0.010 <0.010 <0.010	0.056 0.048 0.036 0.020	<0.010 <0.010 <0.010 <0.010	0.020 0.013 0.011 <0.010	<0.010 <0.010 <0.010 <0.010	0.085 0.072 0.081 0.032
RAFNY001 FN160-05H FN160-05H-A USA Forest Grove, Oregon 2005	Plum, fruit Mory	7 7 14 14	0.028 0.018 0.023 0.032	0.169 0.081 0.162 0.136	<0.010 <0.010 <0.010 <0.010	0.132 0.067 0.148 0.175	0.015 <0.010 0.015 0.016	0.347 0.176 0.351 0.363
RAFNY001 FN160-05H FN160-05H-B USA Forest Grove, Oregon 2005	Plum, fruit Mory	7 7 14 14	0.021 0.024 0.021 <0.010	0.315 0.277 0.311 0.120	<0.010 <0.010 0.011 <0.010	0.200 0.190 0.343 0.146	0.024 0.024 0.041 0.021	0.567 0.518 0.726 0.299

[a]DALT = Days after last treatment.

Table 6.3.2.10-12 Results of residue trials conducted with BYI 08330 240 SC in/on plum in North America.

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY001 FN157-05H FN157-05H-C USA [redacted]o, California 2005	Plum, fruit French Prune	7 7 14 14	0.012 0.016 0.016 0.013	0.011 0.013 0.012 0.019	<0.010 <0.010 <0.010 <0.010	0.017 0.016 0.022 0.039	<0.010 <0.010 <0.010 <0.010	0.045 0.050 0.055 0.076

[a]DALT = Days after last treatment.

IIA 6.3.2.11 Tree Nuts

Report:	**IIA 6.3.2.11, [redacted]; 2006**
Title:	**BYI08330 150 OD and BYI08330 240 SC - Magnitude of the Residue on Tree Nuts (Crop Group 14)**
Report No &	**RAFNY010**
Document No	**M-277323-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1500, Crop Field Trials** **PMRA Ref.: DACO 7.4.1, Supervised Residue Trial Study** **DACO 7.4.2, Residue Decline Study**
GLP	**Yes**

Test System:

Field trials (ten) were conducted to evaluate the magnitude of BYI08330 residues in/on almonds and pecans following three airblast spray applications of either BYI08330 150 OD or BYI08330 240 SC to the treated plots. All trials had one plot that received concentrated spray applications of BYI08330 150 OD and an additional plot that received diluted spray applications of BYI08330 150 OD; at least one trial for each crop had an additional bridging plot that received concentrated spray applications of BYI08330 240 SC.

The residue trials conducted for this study and the use pattern for BYI08330 100 OD and BYI08330 240 SC on almonds and pecans are listed in Tables 6.3.2.11-1 and 6.3.2.11-2.

Three airblast spray applications of BYI08330 150 OD or BYI08330 240 SC were made to the treated plots at a target rate of 0.141 lb ai/A/application (0.159 kg ai/ha/application) for the first application and 0.098 lb ai/A/application (0.110 kg ai/ha/application) for the second and third applications. Actual rates ranged from 0.138 to 0.144 lb ai/A/application (0.155 to 0.162 kg ai/ha/application) for the first application and from 0.095 to 0.101 lb ai/A/ application (0.107 to 0.114 kg ai/ha/application) for the later applications. Total seasonal application rates for all trials ranged from 0.329 to 0.343 lb ai/A (0.369 to 0.385 kg ai/ha) for plots receiving a concentrated or diluted spray airblast treatment of BYI08330 150 OD or a concentrated spray airblast treatment of BYI08330 240 SC.

Application intervals ranged from 12 to 20 days. Spray volumes ranged from 36 to 68 GPA (337 to 634 L/ha) for plots receiving a concentrated spray and from 201 to 306 GPA (1883 to 2865 L/ha) for plots receiving a diluted spray. All spray mixtures included Dyne-Amic (0.25% v/v) as an adjuvant.

In the five almond field trials, duplicate composite samples of almonds (hulls and nutmeat with shells) were collected at commercial maturity (BBCH 89) at a pre-harvest interval (PHI) of of 6 to 7 days and from 12 to 14 days after the last application. Almond hulls were removed from the almond nut in the field and submitted as a separate sample. One of the almond field trials was a decline trial; in this trial, duplicate

composite samples of almonds were collected at PHIs of 0, 7, 10, 14, and 21 days (±1 day) following the final application to monitor residue decline. A single composite sample of almond hulls and almond nutmeat with shells was collected from the control plot of each trial.

In the five pecan field trials, duplicate composite samples of pecan nutmeat with shells were collected at commercial maturity (BBCH 89) at a PHI of of 6 to 7 days and from 12 to 14 days after the last application. Pecan shucks were removed from the nuts in the field and discarded. One of the pecan field trials was a decline trial; in this trial, duplicate composite samples of pecan (nutmeat with shells) were collected at PHIs of 0, 7, 10, 14, and 21 days (±1 day) following the final application to monitor residue decline. A single composite sample of pecan nutmeat with shells was collected from the control plot of each trial.

The residues of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside were quantitated by high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC-MS/MS) using the stable isotopically labeled analytes as internal standards and the method of external standard quantitation. The individual analyte residues were converted to BYI08330 molar equivalents and summed to give a total BYI08330 residue. The limit of quantitation (LOQ) for each analyte was 0.01 ppm in almond nutmeat and in pecan nutmeat, and 0.20 ppm in almond hulls.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in almond hulls and nutmeat and pecans are summarized in Tables 6.3.2.11-3 and 6.3.2.11-4. Mean recoveries for all analytes ranged from 72% ±5 to 106% ±10.

The residues found in head and leaf lettuce, celery, and spinach are shown in Tables 6.3.2.11-5 through 6.3.2.11-8.

For almond nutmeat, the highest average field trial (HAFT) total BYI08330 residue was 0.13 ppm at commercial maturity at the desired label PHI of 7 days with a maximum residue of 0.14 ppm and occurred following a concentrated spray application of BYI08330 150 OD.

For almond hulls, the HAFT total BYI08330 residue was 4.66 ppm at commercial maturity at the desired label PHI of 7 days and occurred following a diluted spray application of BYI08330 150 OD; a maximum residue of 4.98 ppm occurred following a concentrated spray treatment of BYI08330 240 SC. However, if residues in this sample were adjusted to 90% DM, the HAFT and maximum residue observed would have been 7.11 ppm and 10.4 ppm, respectively

For pecan nutmeat, the HAFT total BYI08330 residue was 0.28 ppm at commercial maturity at the desired label PHI of 7 days with a maximum residue of 0.28 ppm and occurred following a diluted spray application of BYI08330 150 OD.

The 14-day samples for the almond nutmeats, almond hulls and pecan nutmeats were never analyzed because Bayer CropScience will pursue a 7-day PHI in tree nuts.

No correlation between total BYI08330 residue and time could be drawn for almond nutmeat, almond hulls, or pecan nutmeat from the decline trials.

No correlation between total BYI08330 residue and application with the dilute or concentrate OD formulation spray applications could be drawn for almond nutmeat, almond hulls, or pecan nutmeat from trials.

The total BYI08330 residue in almond nutmeat and pecan nutmeat was significantly lower in the BYI08330 240 SC bridging plots as compared with the plots treated with BYI08330 150 OD. However, the mean total BYI08330 residue was similar in almond nutmeat and pecan nutmeat in the BYI08330 240 SC bridging plots as compared with the plots treated with BYI08330 150 OD. Total BYI08330 residue was similar in the almond hulls in the BYI08330 240 SC bridging plots as compared with the plots treated with BYI08330 150 OD.

The total BYI08330 residue in the representative commodities of almond nutmeat and pecan nutmeat were within a factor of 5 of each other and, therefore, within EPA guidelines for the establishment of a group tolerance for Crop Group 14 (Tree Nuts).

Table 6.3.2.11-1 Study Use Pattern for BYI08330 in/on Almonds.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume (GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], California Region 10	FN202-05D	2005	150 OD	Concentrate Spray (Airblast)	Beginning of fruit colouring	TDOC	0.141 (0.158)	0	42 (391)	0.337 (0.378)	Dyne-Amic
					Beginning of fruit colouring		0.098 (0.110)	12	42 (397)		
					Colouring advanced		0.098 (0.110)	14	42 (396)		
[redacted], California Region 10	FN202-05D	2005	150 OD	Dilute Spray (Airblast)	Beginning of fruit colouring	TDOD	0.141 (0.158)	0	217 (2030)	0.337 (0.378)	Dyne-Amic
					Beginning of fruit colouring		0.098 (0.110)	12	220 (2055)		
					Colouring advanced		0.098 (0.110)	14	220 (2057)		
[redacted], California Region 10	FN203-05H	2005	150 OD	Concentrate Spray (Airblast)	Fruit about 90% of final size	TDOC	0.138 (0.155)	0	51 (480)	0.329 (0.369)	Dyne-Amic
					Fruit about 90% of final size		0.095 (0.107)	14	51 (478)		
					Fruit about 90% of final size		0.096 (0.108)	14	52 (484)		
[redacted], California Region 10	FN203-05H	2005	150 OD	Dilute Spray (Airblast)	Fruit about 90% of final size	TDOD	0.143 (0.160)	0	304 (2843)	0.339 (0.380)	Dyne-Amic
					Fruit about 90% of final size		0.099 (0.111)	14	306 (2865)		
					Fruit about 90% of final size		0.097 (0.109)	14	299 (2796)		

Table 6.3.2.11-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate/Appl. /A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate, lb a.i./A (kg ai./ha)	
[redacted], California Region 10	FN203-05H	2005	240 SC	Concentrate Spray (Airblast)	Fruit about 90% of final size	TDSC	0.138 (0.155)	0	52 (482)	0.330 (0.370)	Dyne-Amic
					Fruit about 90% of final size		0.096 (0.107)	14	51 (478)		
					Fruit about 90% of final size		0.097 (0.108)	14	52 (484)		
[redacted], California Region 10	FN204-05H	2005	150 OD	Concentrate Spray (Airblast)	Fruit about 90% of final size	TDOC	0.141 (0.158)	0	68 (634)	0.337 (0.378)	Dyne-Amic
					Fruit about 90% of final size		0.098 (0.110)	14	67 (627)		
					Fruit ripe for picking		0.098 (0.110)	17	67 (627)		
[redacted] California Region 10	FN204-05H	2005	150 OD	Dilute Spray (Airblast)	Fruit about 90% of final size	TDOD	0.142 (0.159)	0	245 (2295)	0.338 (0.379)	Dyne-Amic
					Fruit about 90% of final size		0.098 (0.110)	14	247 (2305)		
					Fruit ripe for picking		0.098 (0.110)	17	247 (2309)		
[redacted] California Region 10	FN204-05H	2005	240 SC	Concentrate Spray (Airblast)	Fruit about 90% of final size	TDSC	0.143 (0.161)	0	68 (634)	0.336 (0.377)	Dyne-Amic
					Fruit about 90% of final size		0.096 (0.108)	14	67 (627)		
					Fruit ripe for picking		0.096 (0.108)	17	67 (626)		

Table 6.3.2.11-1 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval and (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], California Region 10	FN205-05H	2005	150 OD	Concentrate Spray (Airblast)	Colouring advanced	TDOC	0.144 (0.161)	0	48 (453)	0.339 (0.380)	Dyne-Amic
					Colouring advanced		0.097 (0.109)	14	46 (428)		
					Fruit ripe for picking		0.098 (0.110)	14	47 (437)		
[redacted], California Region 10	FN205-05H	2005	150 OD	Dilute Spray (Airblast)	Colouring advanced	TDOD	0.142 (0.159)	0	215 (2013)	0.337 (0.379)	Dyne-Amic
					Colouring advanced		0.097 (0.109)	14	212 (1983)		
					Fruit ripe for picking		0.098 (0.110)	14	218 (2039)		
[redacted], California Region 10	FN206-05H	2005	150 OD	Concentrate Spray (Airblast)	Fruit about 80% of final size	TDOC	0.143 (0.160)	0	58 (541)	0.342 (0.384)	Dyne-Amic
					Beginning of fruit colouring		0.100 (0.112)	15	55 (515)		
					Fruit ripe for consumption		0.099 (0.112)	14	56 (522)		
[redacted], California Region 10	FN206-05H	2005	150 OD	Dilute Spray (Airblast)	Fruit about 80% of final size	TDOD	0.144 (0.161)	0	226 (2116)	0.339 (0.380)	Dyne-Amic
					Beginning of fruit colouring		0.097 (0.109)	15	220 (2058)		
					Fruit ripe for consumption		0.098 (0.110)	14	239 (2232)		

Table 6.3.2.11-2 Study Use Pattern for BYI08330 in/on Pecan.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], Georgia Region 2	FN207-05H	2005	150 OD	Concentrate Spray (Airblast)	Beg. of ripening or fruit colouration	TDOC	0.143 (0.161)	0	42 (390)	0.343 (0.384)	Dyne-Amic
					Advanced ripening or fruit colouration		0.099 (0.111)	14	45 (420)		
					Fully ripe		0.100 (0.112)	13	36 (339)		
[redacted], Georgia Region 2	FN207-05H	2005	150 OD	Dilute Spray (Airblast)	Beg. of ripening or fruit colouration	TDOD	0.142 (0.160)	0	229 (2138)	0.339 (0.380)	Dyne-Amic
					Advanced ripening or fruit colouration		0.098 (0.110)	14	234 (2192)		
					Fully ripe		0.098 (0.110)	13	203 (1900)		
[redacted], Georgia Region 2	FN207-05H	2005	240 SC	Concentrate Spray (Airblast)	Beg. of ripening or fruit colouration	TDSC	0.140 (0.157)	0	41 (385)	0.341 (0.382)	Dyne-Amic
					Advanced ripening or fruit colouration		0.099 (0.111)	14	45 (418)		
					Fully ripe		0.101 (0.114)	13	36 (337)		

Table 6.3.2.11-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], Georgia Region 2	FN208-05H	2005	150 OD	Concentrate Spray (Airblast)	Nearly all fruits have reached final size	TDOC	0.141 (0.158)	0	59 (552)	0.338 (0.379)	Dyne-Amic
					Nearly all fruits have reached final size		0.099 (0.111)	13	60 (559)		
					Nearly all fruits have reached final size		0.098 (0.110)	14	62 (579)		
[redacted], Georgia Region 2	FN208-05H	2005	150 OD	Dilute Spray (Airblast)	Nearly all fruits have reached final size	TDOD	0.142 (0.160)	0	201 (1883)	0.340 (0.381)	Dyne-Amic
					Nearly all fruits have reached final size		0.099 (0.111)	13	205 (1920)		
					Nearly all fruits have reached final size		0.098 (0.110)	14	205 (1916)		
[redacted], Arkansas Region 4	FN209-05D	2005	150 OD	Concentrate Spray (Airblast)	Advanced ripening or fruit colouration	TDOC	0.142 (0.159)	0	56 (523)	0.338 (0.379)	Dyne-Amic
					Advanced ripening or fruit colouration		0.098 (0.110)	12	56 (524)		
					Advanced ripening or fruit colouration		0.098 (0.110)	12	56 (523)		

Table 6.3.2.11-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], Arkansas Region 4	FN209-05D	2005	150 OD	Dilute Spray (Airblast)	Advanced ripening or fruit colouration	TDOD	0.142 (0.159)	0	213 (1989)	0.338 (0.379)	Dyne-Amic
					Advanced ripening or fruit colouration		0.098 (0.110)	12	213 (1988)		
					Advanced ripening or fruit colouration		0.098 (0.110)	12	213 (1991)		
[redacted], Texas Region 6	FN210-05H	2005	150 OD	Concentrate Spray (Airblast)	30% fruits have final size/fruit 30% of final size	TDOD	0.143 (0.160)	0	63 (588)	0.340 (0.381)	Dyne-Amic
					60% fruits h.final size/fr.60% of final size		0.099 (0.111)	12	65 (606)		
					Nearly all fruits have reached final size		0.098 (0.110)	20	64 (600)		
[redacted], Texas Region 6	FN210-05H	2005	150 OD	Dilute Spray (Airblast)	30% fruits have final size/fruit 30% of final size	TDOD	0.144 (0.162)	0	207 (1932)	0.344 (0.386)	Dyne-Amic
					60% fruits h.final size/fr.60% of final size		0.099 (0.111)	12	215 (2006)		
					Nearly all fruits have reached final size		0.100 (0.113)	20	217 (2029)		

Table 6.3.2.11-2 (continued).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], Texas Region 8	FN211-05H	2005	150 OD	Concentrate Spray (Airblast)	Beg. of ripening or fruit colouration	TDOC	0.139 (0.156)	0	63 (590)	0.333 (0.378)	Dyne-Amic
					Advanced ripening or fruit colouration		0.098 (0.110)	12	57 (531)		
					Fruit begins to soften		0.093 (0.107)	12	60 (562)		
[redacted], Texas Region 8	FN211-05H	2005	150 OD	Dilute Spray (Airblast)	Beg. of ripening or fruit colouration	TDOD	0.139 (0.156)	0	237 (2217)	0.339 (0.381)	Dyne-Amic
					Advanced ripening or fruit colouration		0.099 (0.111)	12	216 (2017)		
					Fruit begins to soften		0.101 (0.113)	12	267 (2498)		

Table 6.3.2.11-3 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol, and BYI08330-ketohydroxy from Almond Nutmeat and Almond Hulls.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Almond Nutmeat				
BYI08330	0.05	1	100	
	0.1	3	104, 97, 116	106% ± 10
BYI08330-enol-glucoside	0.05	1	112	
	0.1	3	94, 101, 102	99% ± 4
BYI08330-mono-hydroxy	0.05	1	109	
	0.1	3	108, 93, 103	101% ± 8
BYI08330-enol	0.05	1	111	
	0.1	3	106, 96, 101	101% ± 5
BYI08330-ketohydroxy	0.05	1	119	
	0.1	3	97, 92, 110	100% ± 9
Almond Hulls				
BYI08330	0.2	7	101, 100, 106, 102, 105, 103, 98	102% ± 3
	3	2	98, 72	85%
	5	3	81, 70, 74	75% ± 6
	6	1	106	
BYI08330-enol-glucoside	0.2	7	94, 94, 93, 94, 95, 92, 98	94% ± 2
	3	2	93, 71	82%
	5	3	90, 83, 107	93% ± 12
	6	1	91	
BYI08330-mono-hydroxy	0.2	7	107, 102, 105, 109, 110, 101, 105	106% ± 3
	3	2	98, 76	87%
	5	3	82, 64, 74	73% ± 9
	6	1	99	
BYI08330-enol	0.2	7	95, 102, 102, 97, 102, 101, 100	100% ± 3
	3	2	100, 74	87%
	5	3	92, 85, 77	85% ± 8
	6	1	105	
BYI08330-ketohydroxy	0.2	7	104, 108, 102, 98, 86, 115, 108	103% ± 9
	3	2	99, 72	86%
	5	3	76, 66, 74	72% ± 5
	6	1	94	

[a] Mean is not applicable for a population of one; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.11-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol-glucoside, BYI08330-mono-hydroxy, BYI08330-enol and BYI08330-ketohydroxy from Pecans.

Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery ± Standard Deviation[a]
Pecan Nutmeat				
BYI08330	0.01	7	101, 80, 92, 103, 90, 81, 96	92% ± 9
	0.02	1	86	86% ± NA
	0.05	1	96	96% ± NA
	0.1	1	107	107% ± NA
	0.2	3	86, 96, 94	92% ± 5
BYI08330-enol-glucoside	0.01	7	104, 100, 130, 80, 99, 108, 111	105% ± 15
	0.02	1	72	72% ± NA
	0.05	1	64	64% ± NA
	0.1	1	75	75% ± NA
	0.2	3	98, 107, 118	108% ± 10
BYI08330-mono-hydroxy	0.01	7	117, 86, 82, 83, 76, 97, 86	90% ± 14
	0.02	1	94	94% ± NA
	0.05	1	90	90% ± NA
	0.1	1	106	106% ± NA
	0.2	3	94, 104, 117	105% ± 12
BYI08330-enol	0.01	7	83, 74, 90, 83, 71, 74, 80	79% ± 7
	0.02	1	91	91% ± NA
	0.05	1	89	89% ± NA
	0.1	1	94	94% ± NA
	0.2	3	86, 98, 99	94% ± 7
BYI08330-ketohydroxy	0.01	7	82, 73, 108, 85, 107, 102, 94	93% ± 13
	0.02	1	114	114% ± NA
	0.05	1	97	97% ± NA
	0.1	1	118	118% ± NA
	0.2	3	94, 102, 99	98% ± 4

[a] Mean is not applicable for a population of one; standard deviation is not applicable for a sample with less than three recoveries.

Table 6.3.2.11-5 Results of residue trials conducted with BYI 08330 OD 150 in/on almond in North America

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN202-05H FN202-05D-A USA [redacted], California 2005	Almond (Nut without shell)	0	0.014	<0.010	<0.010	<0.010	<0.010	0.023
		0	<0.010	<0.010	<0.010	<0.010	<0.010	0.014
		6	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		6	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
		10	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
		13	<0.010	0.020	<0.010	<0.010	<0.010	0.034
		13	<0.010	0.025	<0.010	<0.010	<0.010	0.048
		21	<0.010	0.019	<0.010	<0.010	<0.010	0.045
		21	<0.010	0.022	<0.010	<0.010	<0.010	0.045
	Almond (hull)	0	1.082	<0.20	<0.20	<0.20	<0.20	1.306
		0	1.394	<0.20	<0.20	<0.20	<0.20	1.657
		6	1.528	<0.20	<0.20	<0.20	<0.20	1.801
		6	3.336	0.579	0.429	0.407	<0.20	4.840
		10	2.737	0.240	<0.20	<0.20	<0.20	3.276
		10	2.078	<0.20	<0.20	<0.20	<0.20	2.553
		13	1.912	<0.20	<0.20	<0.20	<0.20	2.379
		13	1.480	<0.20	<0.20	<0.20	<0.20	1.822
		21	1.664	<0.20	<0.20	<0.20	<0.20	2.091
		21	2.255	0.201	<0.20	<0.20	<0.20	2.730
RAFNY010 FN202-05H FN202-05D-B USA [redacted], California 2005	Almond (Nut without shell)	6	<0.010	<0.010	<0.010	<0.010	<0.010	0.020
		6	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
		13	<0.010	0.079	<0.010	0.024	0.012	0.123
		13	<0.010	0.067	<0.010	0.022	<0.010	0.106
	Almond (hull)	6	3.075	0.546	0.436	0.312	<0.20	4.449
		6	1.540	<0.20	<0.20	<0.20	<0.20	1.825
		13	3.561	0.634	0.517	0.332	<0.20	5.113
		13	3.173	0.538	0.440	0.474	<0.20	4.713
RAFNY010 FN203-05H FN203-05H-A USA [redacted], California 2005	Almond (Nut without shell)	7	0.036	0.058	<0.010	0.016	0.018	0.130
		7	0.026	0.045	<0.010	0.014	<0.010	0.095
	Almond (hull)	7	2.885	0.314	<0.20	0.492	<0.20	3.925
		7	2.950	0.347	<0.20	0.476	<0.20	4.008

[a]DALT = Days after last treatment

Table 6.3.2.11-5 (continued)

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg) DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN203-05H FN203-05H-B USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.032 0.025	0.059 0.047	<0.010 <0.010	0.014 0.012	0.012 <0.010	0.118 0.095
	Almond (hull)	7 7	1.079 1.923	0.295 0.441	<0.20 <0.20	0.528 0.676	0.281 0.372	2.339 3.642
RAFNY010 FN204-05H FN204-05H-A USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.025 0.024	0.029 0.021	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.066 0.058
	Almond (hull)	7 7	0.603 0.461	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	0.842 0.671
RAFNY010 FN204-05H FN204-05H-B USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.025 0.029	0.028 0.021	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.069 0.061
	Almond (hull)	7 7	0.614 0.634	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	0.799 0.808

[a]DALT = Days after last treatment.

Table 6.3.2.11-5 (continued)

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg) DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN205-05H FN205-05H-A USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.017 0.021	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.034 0.035
	Almond (hull)	7 7	1.749 2.827	<0.20 0.366	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	1.984 3.310
RAFNY010 FN205-05H FN205-05H-B USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.017 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.040 0.031
	Almond (hull)	7 7	3.639 3.376	0.779 0.753	0.327 0.303	<0.20 <0.20	<0.20 <0.20	4.821 4.495
RAFNY010 FN206-05H FN206-05H-A USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.011 0.012	0.071 0.051	0.017 0.015	0.025 0.024	0.019 0.010	0.142 0.112
	Almond (hull)	7 7	1.759 1.419	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	1.990 1.625
RAFNY010 FN206-05H FN206-05H-B USA [redacted] California 2005	Almond (Nut without shell)	7 7	<0.010 <0.010	0.035 0.033	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.061 0.054
	Almond (hull)	7 7	1.197 0.708	0.225 <0.20	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	1.652 0.955

[a]DALT = Days after last treatment.

Table 6.3.2.11-6 Results of residue trials conducted with BYI 08330 SC 240 in/on almond in North America

Study Trial No. Trial SubID Country Year	Crop Portion analysed	DALT[a] (days)	Residues (mg/kg) BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN203-05H FN203-05H-C USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.028 0.033	0.015 0.020	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.053 0.065
	Almond (hull)	7 7	3.060 4.318	0.238 0.342	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	3.513 4.982
RAFNY010 FN204-05H FN204-05H-C USA [redacted], California 2005	Almond (Nut without shell)	7 7	0.028 0.023	0.012 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.047 0.037
	Almond (hull)	7 7	1.140 1.123	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	<0.20 <0.20	1.303 1.274

[a]DALT = Days after last treatment.

Table 6.3.2.11-7 Results of residue trials conducted with BYI 08330 OD 150 in/on pecan nut in North America

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN207-05H FN207-05H-A USA [redacted], Georgia 2005	Pecan nut (Nut without shell)	7 7	0.013 0.017	0.012 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.031 0.032
RAFNY010 FN207-05H FN207-05H-B USA [redacted], Georgia 2005	Pecan nut (Nut without shell)	7 7	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.024 0.027
RAFNY010 FN208-05H FN208-05H-A USA [redacted], Georgia 2005	Pecan nut (Nut without shell)	7 7	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.010 0.012
RAFNY010 FN208-05H FN208-05H-B USA [redacted], Georgia 2005	Pecan nut (Nut without shell)		<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.016 0.016

[a]DALT = Days after last treatment.

Table 6.3.2.11-7 (continued).

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN209-05H FN209-05H-A USA [redacted], Arkansas 2005	Pecan nut (Nut without shell)	0	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		0	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		10	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
		10	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
		14	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		14	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		21	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		21	<0.010	<0.010	<0.010	<0.010	<0.010	0.013
RAFNY010 FN209-05H FN209-05H-B USA [redacted], Arkansas 2005	Pecan nut (Nut without shell)	7	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		7	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		14	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
		14	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
RAFNY010 FN210-05H FN210-05H-A USA [redacted], Texas 2005	Pecan nut (Nut without shell)	7	<0.010	0.035	<0.010	<0.010	<0.010	0.049
		7	<0.010	0.032	<0.010	<0.010	<0.010	0.041
RAFNY010 FN210-05H FN210-05H-B USA [redacted], Texas 2005	Pecan nut (Nut without shell)	7	<0.010	0.122	<0.010	<0.010	<0.010	0.147
		7	<0.010	0.113	<0.010	0.011	<0.010	0.139
RAFNY010 FN211-05H FN211-05H-A USA [redacted], Texas 2005	Pecan nut (Nut without shell)	7	<0.010	0.132	<0.010	0.015	<0.010	0.153
		7	<0.010	0.189	0.017	0.027	<0.010	0.241
RAFNY010 FN211-05H FN211-05H-B USA [redacted], Texas 2005	Pecan nut (Nut without shell)	7	<0.010	0.232	0.014	0.031	<0.010	0.280
		7	<0.010	0.237	0.010	0.027	<0.010	0.278

[a]DALT = Days after last treatment.

Table 6.3.2.11-8 Results of residue trials conducted with BYI 08330 SC 240 in/on pecan nut in North America

Study Trial No. Trial SubID Country Year	Crop Portion analysed	Residues (mg/kg)						
		DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY010 FN207-05H FN207-05H-C USA [redacted], Georgia 2005	Pecan nut (Nut without shell)	7 7	0.012 0.036	<0.010 0.012	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	0.029 0.055

[a]DALT = Days after last treatment.

IIA 6.4 Livestock feeding studies

In Chapter 6.3.1 the residue behaviour of BYI08330 in 20 different target crops in Europe is described (No use in potatoes, residue data are reported as supportive information, only). Among these crops citrus (pomace), apple (pomace) and cabbage/kale have to be considered as feed item according to the EU-guideline 91/414/EEC, Appendix G, Livestock Feeding Studies, July 1996.

For calculation of the total residue of BYI08330 in citrus pomace the median residue (STMR) in orange and mandarin fruit is multiplied by the transfer factor determined for citrus pomace from orange juice processing studies. For detailed information on citrus processing see Point 6.6.3.
The STMR in citrus fruits obtained from 8 orange and 8 mandarin trials is 0.11 mg/kg (see IIA 6.3.1.1).
An average transfer factor of 1.05 was determined for the remainder after squeezing of oranges (sample designation "peel, washed") from 4 orange juice processing studies. From these results a median residue for citrus pomace (STMR-P) of 0.11 mg/kg is derived. A total residue of BYI08330 in cattle feed of 0.14 mg/kg for dairy cattle and 0.05 mg/kg for beef cattle was calculated (Table 6.4.2-1) according to the EU-guideline 91/414/EEC, Appendix G, Livestock Feeding Studies, July 1996.

Table 6.4-1: Estimation of the total residue of BYI08330 in cattle feed by consumption of residues of BYI08330 with citrus pomace

Livestock species	Intake dm		% dm	Intake fresh	STMR-P	Residue intake	Residue in feed
	% of feed	kg		kg	mg/kg	mg/animal/day	mg/kg feed
Dairy cattle, 550 kg bw, 20 kg dm feed/day	10	2.0	23	8.7	0.11	0.96	0.05
Beef cattle, 350 kg bw, 15 kg dm feed/day	30	4.5	23	19.6	0.11	2.16	0.14

dm = dry matter, bw = body weight, STMR-P = median residue in citrus pomace

Residues in apple pomace were estimated from residues in pome fruit multiplied by the transfer factor for apple pomace obtained from the apple juice processing studies. For detailed information on apple processing see Point IIA 6.6.3.
The STMR in apple fruit was calculated as 0.094 mg/kg (see IIA 6.3.1.3). For wet apple pomace an average transfer factor of 2.45 was determined from 4 apple juice processing studies. From these results a mean residue of 0.23 mg/kg in apple pomace (STMR-P) is calculated resulting in a total residue of BYI08330 in cattle feed of 0.10 mg/kg for dairy cattle and 0.30 mg/kg for beef cattle (Table 6.4.2-2). The calculation was performed according to the EU-guideline 91/414/EEC, Appendix G, Livestock Feeding Studies, July 1996.

Table 6.4-2: Estimation of the amount of the total residue of BYI08330 in cattle feed caused by consumption of residues with apple pomace

Livestock species	Intake dm		% dm	Intake fresh	STMR-P	Residue intake	Residue in feed
	% of feed	kg		kg	mg/kg	mg/animal/day	mg/kg feed
Dairy cattle, 550 kg bw, 20 kg dm feed/day	10	2.0	23	8.7	0.23	2.0	0.10
Beef cattle, 350 kg bw, 15 kg dm feed/day	30	4.5	23	19.6	0.23	4.5	0.30

dm = dry matter, bw = body weight,
STMR-P = median residue in apple pomace

The highest total residue of BYI08330 of 0.76 mg/kg in brassica vegetables was determined for leafy cabbage (IIA 6.3.1.17) and resulted in a total residue of BYI08330 of 1.9 mg/kg feed for dairy cattle, 1.4 mg/kg feed for beef cattle and 0.27 mg/kg feed for chicken (Table 6.4.2-3).

Table 6.4-3: Estimation of the total residue of BYI08330 in cattle feed caused by consumption of residues of BYI08330 with kale/cabbage

Livestock species	Intake dm		% dm	Intake fresh	HR	Residue intake	Residue in feed
	% of feed	kg		kg	mg/kg	mg/animal/day	mg/kg feed
Dairy cattle, 550 kg bw, 20 kg dm feed/day	35	7.0	14	50	0.76	38	1.9
Beef cattle, 350 kg bw, 15 kg dm feed/day	35	5.25	14	37.5	0.76	28.5	1.4
Chicken, 1.9 kg bw, 120 g/dm feed/day	5	6 g	14	42.86 g	0.76	0.0326	0.27

dm = dry matter, bw = body weight, HR = highest residue

All 3 relevant feed items (citrus pomace, apple pomace and kale) belong to feed group I. The residues of different feed within the same feed group are not added. Hence, a highest residue of 1.9 mg/kg in cattle feed and of 0.27 mg/kg in poultry feed was derived from residues in kale. According to the EU-guideline 91/414/EEC, Appendix G, Livestock Feeding Studies, July 1996, a residue in cattle of >0.1 mg/kg in feed could trigger a feeding study. However, extremely low transfer factors obtained from the goat and hen metabolism studies (see IIA 6.2.2 and 6.2.3) indicate that total residues of below 0.01 mg/kg are expected in animal organs, tissues, fat, eggs and milk, if feed containing a maximum total residue of BYI08330 of 1.9 and 0.27 mg/kg feed is fed to ruminants and poultry, resp. (Tables 6.4.2-4 and 6.4.2-5).

According to these results a poultry or cattle feeding study is not considered necessary for a European registration of BYI08330 in the envisaged target crops.

A cattle feeding study was conducted for registration in the US. In this study the parent compound, BYI08330, was administered to the animals. Main residues in plant materials are the parent compound and its enol metabolite. The animal metabolism studies (6.2.2 and 6.2.3) showed that in the animal BYI08330 is subsequently metabolised to BYI08330-enol which is further conjugated to BYI08330-enol-glucuronic acid. BYI08330-enol and BYI08330-enol-GA are main metabolites in milk, eggs and edible animal tissues, the parent compound was not found in animal matrices. As BYI08330 is degraded to BYI08330-enol in the animal the administatrion of BYI08330 to the animal covers both compounds, BYI08330 and the enol metabolite.

Table 6.4-4: Estimation of residues in livestock tissues, organs and milk based on results from the goat metabolism study and on the maximum residue of 1.9 mg/kg in cattle feed

Animal matrices	Total radioactive residue in goat matrices from metabolism study (mg/kg)	Transfer factor	Calculated total residue in ruminant matrices (mg/kg)
Milk	0.009	0.00012	0.00028
Muscle	0.011	0.00015	0.00029
Fat	0.003	0.00004	0.00008
Liver	0.050	0.00068	0.00129
Kidney	0.24	0.00252	0.00479
Total residue in feed (mg/kg)	73		1.9

Table 6.4-4: Estimation of residues in chicken tissues, organs and eggs based on results of the hen metabolism study and on the maximum residue of 0.27 mg/kg in poultry feed

Animal matrices	Total radioactive residue in hen matrices from metabolism study (mg/kg)	Transfer factor	Calculated total residue in poultry matrices (mg/kg)
Egg	0.015	0.00115	0.00031
Muscle	0.003	0.00023	0.00006
Fat	0.004	0.00031	0.00008
Liver	0.017	0.00131	0.00035
Total residue in feed (mg/kg)	13		0.27

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IIA 6.4.1 Poultry Feeding Study

Report:	**IIA 6.4.1, [redacted] 2006**
	BYI08330 – Request for Waiver of the Requirements for Poultry Feeding Study and Analytical Method for the Determination of BYI08330 Residues in Poultry
Title:	**Meat and Eggs**
Report No &	**RAFNP011**
Document No	**M-276816-01-1**
Guidelines:	**EPA: OPPTS 860.1480 – Meat/Milk/Poultry/Eggs**
	PMRA: DACO 7.5.1 – Livestock Feeding Study
GLP	**Not applicable. No poultry feeding study was required.**

The metabolic fate of [azaspirodecenyl-3-^{14}C] BYI08330 in poultry and the magnitude of the total BYI08330 residue in the target crops of grapes, hops, potatoes; vegetable crops (leafy brassicas, curcubit, and fruiting), fruits (citrus, pome, and stone), and tree nuts have been determined. The magnitude of the total BYI08330 residue in wheat planted as a rotational crop following the application of BYI08330 100 OD has also been determined.

None of the proposed target crops listed above is considered as a commodity for poultry feed. The total BYI08330 residue in the wheat grain from the BYI08330 limited field rotational crop study was less than the limit of quantitation (LOQ) of 0.02 ppm of the analytical residue method. The maximum theoretical dietary burden of the total BYI08330 residue in poultry feed estimated from the BYI08330 limited field rotational crop study is 0.016 ppm (Table 6.4.1-1).

A poultry metabolism study has been performed by administration of 14 consecutive daily oral doses of [azaspirodecenyl-3-^{14}C] BYI08330 at a dose rate of 1.01 mg ai/kg body weight/day corresponding to 12.86 mg ai/kg feed and a dose rate exaggeration of 804X the theoretical maximum dietary burden of BYI08330 residues in poultry feed (Table 6.4.1-1).

The residues found in the poultry matrices are presented in Table 6.4.1-2. BYI08330, its enol metabolite, and the enol-glucoside were the only residues found in the edible poultry matrices.

Based on the results from the poultry metabolism study and the maximum theoretical dietary burden of BYI08330 residues in poultry feed, the total BYI08330 residues to be expected in all poultry matrices would be far less than the LOQ (0.01 ppm) of any practical analytical method (Table 6.4.1-3). Therefore, a poultry feeding study to establish tolerances for BYI08330 residues in poultry meat and eggs should not be required. In the absence of a need to set tolerances, no analytical method should be required to measure BYI08330 residues on poultry meat and eggs

Table 6.4.1-1 Dose rate exaggeration used in the [azaspirodecenyl-3-^{14}C] BYI08330 poultry metabolism study.

Feed Item	% in Feed	Total BYI08330 Residue (ppm)[a]	Dietary Burden (ppm)	BYI08330 Poultry Metabolism Study	
				Dose Level (mg ai/kg feed)[b]	Dose Exaggeration
Wheat Grain	80	0.02	0.016	12.86	804

[a] The total BYI08330 residue from wheat grain samples from the limited field rotational crop study was less than the LOQ of 0.02 ppm. Therefore, the LOQ value was used to estimate the theoretical maximum dietary burden of BYI08330 in poultry feed.
[b] Data from the [azaspirodecenyl-3-^{14}C] BYI08330 poultry metabolism study.

Table 6.4.1-2. Distribution of residues in eggs, fat, liver, and muscle of laying hens following the oral administration of [azaspirodecenyl-3-^{14}C] BYI08330 at a dose rate of 1.01 mg ai/kg bw/day on 14 consecutive days.

		Eggs[a]		**Muscle**		**Fat**		**Liver**	
TRR [ppm]		0.015		0.003		0.004		0.017	
Peak ID	Report name BYI 08330-	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]	% of TRR	equiv. conc. [mg/kg]
Reg 1	BYI08330-enol-GA	6.9	0.001	4.2	< 0.001	n.a.[b]	n.a.[b]	15.1	0.003
Reg 2	unknown	4.7	0.001	6.9	< 0.001	n.a.[b]	n.a.[b]	3.6	0.001
Reg 3	BYI08330-enol	83.9	0.013	64.4	0.002	18.4	0.001	50.0	0.009
Reg 4	unknown[c]	n.a.[b]	n.a.[b]	n.a.[b]	n.a.[b]	56.5	0.002	n.a.[b]	n.a.[b]
Sum identified		**90.8**	**0.014**	**68.6**	**0.002**	**18.4**	**0.001**	**65.1**	**0.011**
Sum characterised		4.7	0.001	6.9	< 0.001	56.5	0.002	3.6	0.001
Balance for extract		95.5	0.014	75.6	0.002	74.9	0.003	68.6	0.012
Solids		4.5	0.001	24.4	0.001	25.1	0.001	30.0	0.005
Not analysed / loss		n.a.[b]	n.a.[b]	n.a.[b]	n.a.[b]	n.a.[b]	n.a.[b]	1.3	< 0.001
Total balance		**100.0**	**0.015**	**100.0**	**0.003**	**100.0**	**0.004**	**100.0**	**0.017**

[a] pool from day 2 to day 14
[b] n.a. = not detected
[c] presumably fatty acid conjugate of BYI 08330-enol or related metabolite.

Table 6.4.1-3 The total radioactive residues from the [azaspirodecenyl-3-^{14}C] BYI08330 poultry metabolism study extrapolated to 10X and 1X dose levels.

	Total Radioactive Residues		
Matrix	804X	10X	1X
Egg	0.015	0.00019	0.000019
Fat	0.003	0.00004	0.000004
Liver	0.017	0.00021	0.000021
Muscle	0.003	0.00004	0.000004

IIA 6.4.2 Cattle Feeding Study

Report:	**IIA 6.4.2, [redacted].; 2006**
Title:	**BYI08330 – Magnitude of the Residue in Lactating Cows**
Report No &	**RAFNX014**
Document No	**M-276834-01-1**
Guidelines:	**EPA: OPPTS 860.1480 – Meat/Milk/Poultry/Eggs**
	PMRA: DACO 7.5.1 – Livestock Feeding Study
GLP	**Yes**

The magnitude of the residue of BYI08330 has been studied in lactating dairy cows. Ten lactating Holstein dairy cows (*Bos taurus*; three cows/treatment group and one control cow) were dosed orally, *via* capsule, for 29 consecutive days with BYI08330 at target dose rates (based on feed dry weight) of either 0 mg/kg feed/day (control), 3.0 mg/kg feed/day, 9.0 mg/kg feed/day, or 30 mg/kg feed/day. These levels were based on field residue data and were approximately 1X, 3X and 10X the anticipated maximum dietary burden arising from the use of BYI08330 on apples, almonds, citrus, and potatoes.

Dose rates used in this study were based on feed consumption and residues found in the magnitude of the residue field trials with BYI08330. The estimated tolerances based on preliminary residue data found in cattle feed items obtained from field trials for BYI08330 are presented in Table 6.4.2-1. The estimated tolerances based on the final BYI08330 crop residue data are slightly lower for apple pomace and citrus dried fruit and slightly higher for potato processed waste.

The maximum dietary burden is expressed as ppm in feed (dry weight basis) for beef cattle and is based on a "realistic worst case" diet of 70% roughage and 30% grain/nutrient. The dietary burden for dairy cattle was calculated and determined to be lower than the calculated dietaryburden for beef cattle.

Table 6.4.2-1 The maximum total dietary burden of BYI08330 residues in beef diet.

Feed Item	Component	% of Diet	% Dry Matter	Estimated Tolerance (ppm)	Dietary Burden (ppm)
Almond Hulls	Roughage	10	90	10.00	1.11
Apple Wet Pomace	Roughage	40	40	1.00	1.00
Citrus Dried Pulp	Roughage	20	91	1.00	0.22
Potato Processed Waste	Nutrient	30	15	0.05	0.10
Total		100			**2.43**

The maximum dietary burden of BYI08330 for beef cattle was calculated to be 2.43 mg/kg feed (Table 6.4.2-1).

To ensure accountability of maximum residue levels, the dietary burden was rounded up to 3.0 mg/kg feed, and the cattle were given 29 consecutive daily oral doses of BYI08330 at the dose levels shown in Table 6.4.2-2.

Table 6.4.2-2 Dose levels used in the BYI08330 dairy cattle feeding study.

Dose Group	Target Dose (mg/kg feed)
1X Dose	3.0
3X Dose	9.0
10X Dose	30.0
Control	Placebo

Milk was collected twice daily during the dosing period. Milk samples from the 10X dose group were analyzed for BYI08330 residues on study days 0, 1, 3, 7, 10, 14, 17, 21, 24, 26, and 28. Additionally, a portion of the 26 day milk sample from the 10X dose group was separated into milk fat (cream) and whey (skim milk), and each was analyzed. On day 29, the animals were sacrificed and liver, kidney, composite muscle, and composite fat were collected for analysis.

The lactating goat metabolism study conducted using radiolabeled BYI08330 have shown that the parent compound BYI08330 and its metabolites BYI08330-enol and BYI08330-enol-glucuronide (hereinafter referred to as BYI08330-enol-GA) are the significant residues representing a total of 71% to 93% of the total radioactive residues in the goat matrices.

Residue data for BYI08330 in milk and tissue was obtained using the analytical method for determining BYI08330 residues in animal matrices with modifications. The total BYI08330 residue in tissue and milk samples was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC-MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance (Table 6.4.2-3).

The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, and BYI08330-enol-GA were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.005 ppm for each analyte in milk matrices and was 0.010 ppm for each analyte in the tissue matrices.

Findings:

The recoveries of BYI08330, BYI08330-enol, and BYI08330-enol-GA from milk, milk fat, whey, fat, kidney, liver, and muscle are summarized in Table 6.4.2-3. Mean recoveries for all analytes ranged from 80% ±8 to 116% ±13.

The total BYI08330 residues (sum of BYI08330, BYI08330-enol, and BYI08330-enol-GA residues) found in the milk and tissues are presented in Tables 6.4.2-4 through 6.4.2-6.

Total BYI08330 residue in the milk samples from the 10X feeding level were below the LOQ (<0.005 ppm) in all cows through study day 7 (Table 6.4.2-4). Total BYI08330 residue reached a plateau by the tenth day of dosing at slightly above the LOQ (max = 0.006 ppm) and remained relatively constant through study day 21 (Figure 6.4.2-1). By study day 24, total BYI08330 residue had returned to levels below the LOQ where it remained through the rest of the study. Since the total BYI08330 residue in the milk samples from the 10X feeding level were below or just at the LOQ, milk samples from the 1X and 3X feeding levels were not analyzed.

No concentration factors for total BYI08330 residue in whey or milk fat separated from whole milk could be determined since residues in all three matrices were < 0.005 ppm.

The highest total BYI08330 residues were found in the excretory organs of the kidney and liver. In kidney tissue, the maximum residues found were 0.437 ppm in the 10X group, 0.103 in the 3X dose

group, and 0.025 ppm in the 1X dose group (Tables 6.4.2-5 and 6.4.2-6). In liver tissue, the maximum residues found were 0.057 ppm in the 10X group, 0.018 in the 3X dose group, and < 0.010 ppm in the 1X dose group.

In muscle tissue, two of three animals in the 10X dose group had total BYI08330 residue above the LOQ. The maximum residue found was 0.016 ppm. No animals in the 1X or 3X dose group had residue above the LOQ in muscle tissue. In fat tissue, two of three animals in the 10X dose group had total BYI08330 residue above the LOQ. The maximum residue found was 0.038 ppm. Only one individual animal in the 3X dose group had total BYI08330 residue above the LOQ (0.017 ppm). No animal in the 1X dose group had residue above the LOQ in fat tissue.

BYI08330 residue in all tissues showed evidence of a dose response, although the coefficients of determination (R^2) were not high.

Table 6.4.2-3 Summary of Method Validation and Concurrent Recoveries of BYI08330 from Milk, Milk Fat, Whey, Fat, Kidney, Muscle, and Liver.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Milk	BYI08330	0.005	14	89, 98, 96, 88, 92, 92, 88, 99, 83, 96, 98, 103, 89, 75	92 ± 8
Milk	BYI08330-enol	0.005	14	92, 91, 97, 95, 107, 89, 95, 92, 97, 89, 87, 85, 114, 104	95 ± 8
Milk	BYI08330-enol-GA	0.005	14	86, 84, 88, 74, 82, 91, 81, 72, 69, 75, 71, 72, 79, 97	80 ± 8
Milk Fat	BYI08330	0.005	4	95, 102, 97, 71	91 ± 14
Milk Fat	BYI08330-enol	0.005	4	87, 91, 87, 108	93 ± 10
Milk Fat	BYI08330-enol-GA	0.005	4	72, 86, 72, 97	82 ± 12
Whey	BYI08330	0.005	4	101,100,98, 71	93 ± 14
Whey	BYI08330-enol	0.005	4	86, 86, 84, 104	90 ± 9
Whey	BYI08330-enol-GA	0.005	4	87, 98, 70, 87	86 ± 12
Fat	BYI08330	0.010	7	67, 67, 98, 101, 103, 95, 94	89 ± 16
Fat	BYI08330	0.050	3	71, 120, 77	89 ± 27
Fat	BYI08330-enol	0.010	7	62, 62, 86, 90, 92, 96, 94	83 ± 15
Fat	BYI08330-enol	0.050	3	96, 109, 96	100 ± 8
Fat	BYI08330-enol-GA	0.010	7	65, 66, 89, 100, 88, 79, 93	83 ± 13
Fat	BYI08330-enol-GA	0.050	3	92, 88, 87	89 ± 3

Table 6.4.2.-3 coninued

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Kidney	BYI08330	0.010	7	100, 94, 100, 99, 105, 100, 94	99 ± 4
Kidney	BYI08330	0.500	3	83, 90, 88	87 ± 4
Kidney	BYI08330-enol	0.010	7	108, 115, 110, 118, 117, 114, 113	114 ± 4
Kidney	BYI08330-enol	0.500	3	103, 100, 103	102 ± 2
Kidney	BYI08330-enol-GA	0.010	7	95, 79, 96, 101, 96, 91, 101	94 ± 8
Kidney	BYI08330-enol-GA	0.500	3	98, 96, 100	98 ± 2
Muscle	BYI08330	0.010	7	87, 85, 81, 94, 86, 87, 103	89 ± 7
Muscle	BYI08330	0.050	3	81, 79, 80	80 ± 1
Muscle	BYI08330-enol	0.010	7	104, 99, 100, 102, 100, 101, 120	104 ± 7
Muscle	BYI08330-enol	0.050	3	102, 106, 103	104 ± 2
Muscle	BYI08330-enol-GA	0.010	7	83, 104, 82, 77, 79, 90, 97	87 ± 10
Muscle	BYI08330-enol-GA	0.050	3	108, 108, 106	107 ± 1
Liver	BYI08330	0.010	7	98, 90, 101, 99, 95, 105, 100	98 ± 5
Liver	BYI08330	0.100	3	83, 81, 85	83 ± 2
Liver	BYI08330-enol	0.010	7	109, 111, 111, 108, 112, 145, 113	116 ± 13
Liver	BYI08330-enol	0.100	3	109, 110, 110	110 ± 1
Liver	BYI08330-enol-GA	0.010	7	94, 93, 87, 95, 83, 131, 91	96 ± 16
Liver	BYI08330-enol-GA	0.100	3	112, 109, 113	111 ± 2

Table 6.4.2-4 Residue Data in Milk, Milk Fat, and Whey from Ruminant Feeding Study with BYI08330.

Feeding Level (ppm dry feed)	Matrix	Study Day	Total BYI08330 Residues (ppm)[a]		
		Animal Number:	10	11	17
30 (10X)	Milk	0	<0.005	<0.005	<0.005
30 (10X)	Milk	1	<0.005	<0.005	<0.005
30 (10X)	Milk	3	<0.005	<0.005	<0.005
30 (10X)	Milk	7	<0.005	<0.005	<0.005
30 (10X)	Milk	10	0.005	0.006	<0.005
30 (10X)	Milk	14	0.005	<0.005	<0.005
30 (10X)	Milk	17	<0.005	0.005	<0.005
30 (10X)	Milk	21	0.005	0.005	<0.005
30 (10X)	Milk	24	<0.005	<0.005	<0.005
30 (10X)	Milk	26	<0.005	<0.005	<0.005
30 (10X)	Milk Fat	26	<0.005	<0.005	<0.005
30 (10X)	Whey	26	<0.005	<0.005	<0.005
30 (10X)	Milk	28	<0.005	<0.005	<0.005

[a]Sum of BYI08330, BYI08330-enol, and BYI08330-enol-GA residues.

Table 6.4.2-5 Residue Data in Fat, Kidney, Muscle, and Liver from Ruminant Feeding Study with BYI08330.

Dose Level (ppm dry feed)	Matrix	Study Day	Total BYI08330 Residues (ppm)[a]		
		Animal Number:	**10**	**11**	**17**
30 (10X)	Fat	29	0.037	<0.010	0.038
30 (10X)	Kidney	29	0.437	0.184	0.200
30 (10X)	Muscle	29	0.016	<0.010	0.011
30 (10X)	Liver	29	0.057	0.031	0.032
		Animal Number:	**6**	**8**	**15**
9 (3X)	Fat	29	<0.010	0.017	<0.010
9 (3X)	Kidney	29	0.051	0.103	0.070
9 (3X)	Muscle	29	<0.010	<0.010	<0.010
9 (3X)	Liver	29	0.013	0.018	0.016
		Animal Number:	**1**	**2**	**12**
3 (1X)	Fat	29	<0.010	<0.010	<0.010
3 (1X)	Kidney	29	0.025	0.021	0.021
3 (1X)	Muscle	29	<0.010	<0.010	<0.010
3 (1X)	Liver	29	<0.010	<0.010	<0.010

[a]Sum of BYI08330, BYI08330-enol, and BYI08330-enol-GA residues.

Table 6.4.2-6 Summary of Residue Data from Ruminant Feeding Study with BYI08330.

Matrix	Feeding Level (ppm)	Total BYI08330 Residues (ppm)[a]					
		n	Min	Max	Median	Mean	Std. Dev.
Milk	30 (10X)	30	<0.005	0.006	<0.005	<0.005	0.0013
Milk Fat	30 (10X)	3	<0.005	<0.005	<0.005	<0.005	0.0005
Whey	30 (10X)	3	<0.005	<0.005	<0.005	<0.005	0.0006
Fat	3.0 (1X)	3	<0.010	<0.010	<0.010	<0.010	0.0000
Fat	9.0 (3X)	3	<0.010	0.017	<0.010	0.0104	0.0060
Fat	30 (10X)	3	<0.010	0.038	0.037	0.274	0.018
Kidney	3.0 (1X)	3	0.021	0.025	0.021	0.023	0.0024
Kidney	9.0 (3X)	3	0.051	0.103	0.070	0.075	0.026
Kidney	30 (10X)	3	0.184	0.437	0.200	0.274	0.142
Muscle	3.0 (1X)	3	<0.010	<0.010	<0.010	<0.010	0.000
Muscle	9.0 (3X)	3	<0.010	<0.010	<0.010	<0.010	0.0015
Muscle	30 (10X)	3	<0.010	0.016	0.011	0.011	0.0047
Liver	3.0 (1X)	3	<0.010	<0.010	<0.010	<0.010	0.0018
Liver	9.0 (3X)	3	0.013	0.018	0.016	0.015	0.0026
Liver	30 (10X)	3	0.031	0.057	0.032	0.040	0.014

[a]Sum of BYI08330, BYI08330-enol, and BYI08330-enol-GA residues.

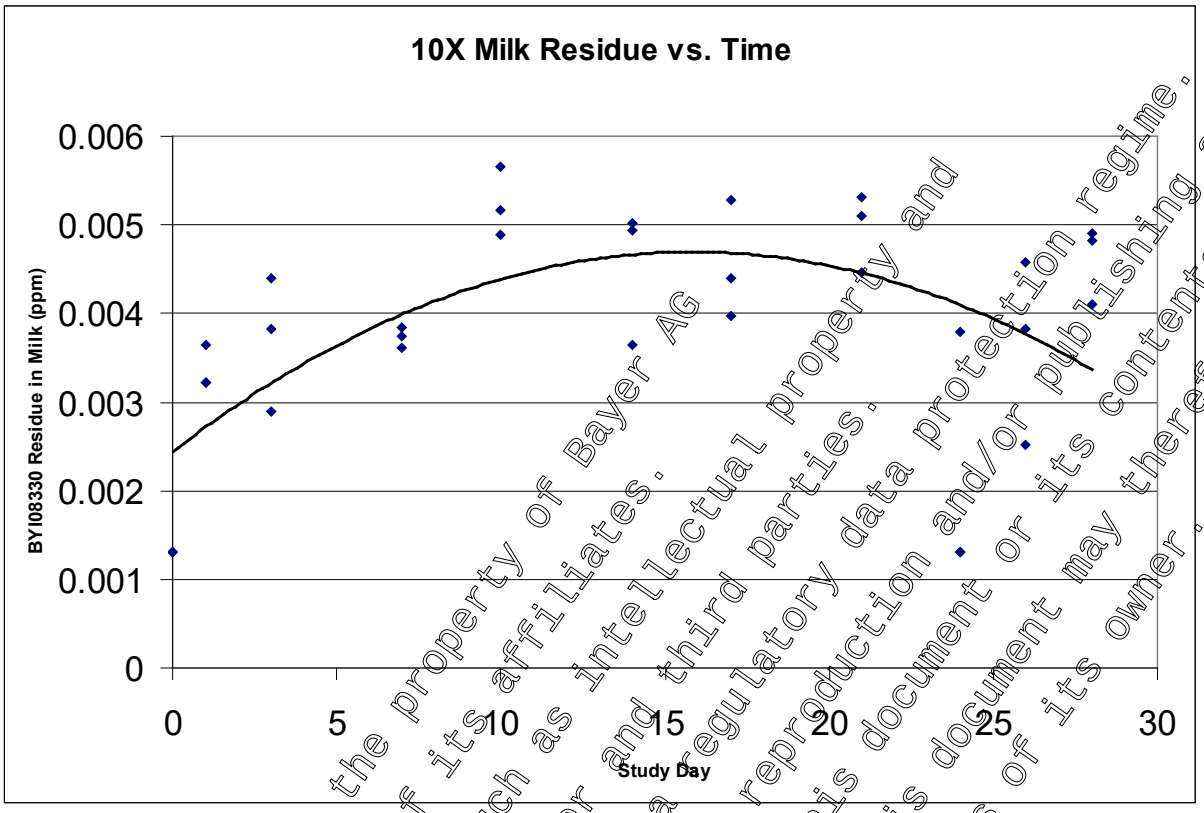


Figure 6.4.2-1 Total BYI08330 Residue in 10X Whole Milk as a Function of Time. NOTE: The absolute value of the total residue found was plotted, if the residue was < LOQ.

IIA 6.4.3 Pigs

No feeding study in pigs is required because metabolic pathways in the rat, in ruminants and in poultry are similar.

IIA 6.4.4 Fish

BYI08330 is not intended to be applied to fish and fish feed. A study on fish is not required by Directive 91/414/EEC and also not triggered by EPA Pesticide Assessment Guideline §165-4

IIA 6.5 Effects of industrial processing and/or household preparation on

IIA 6.5.1 The nature of residue

Report:	**KIIA 6.5.1/01, [redacted]; 2005, amended April 2006**
Title:	**BYI 08330: Aqueous hydrolysis under conditions of processing studies**
Report No &	**MEF-04/562**
Document No	**M-269158-02-1**
Guidelines:	**EU Council Directive 91/414/EEC as amended by Commission Directive 96/68/EC Section 6.5, Subsection 6.5.1. Guideline 7035/VI/95 Revision 5, Appendix E (July 1997)**
GLP	**yes**

Report:	**KIIA 6.5.1/02, [redacted]; 2006**
Title:	**BYI 08330-enol: Aqueous hydrolysis under conditions of processing studies**
Report No &	**MEF-05/227**
Document No	**M-267011-01-1**
Guidelines:	**EU Council Directive 91/414/EEC as amended by Commission Directive 96/68/EC Section 6.5, Subsection 6.5.1. Guideline 7035/VI/95 Revision 5, Appendix E (July 1997)**
GLP	**yes**

Report:	**KIIA 6.5.1/03, [redacted]; 2006**
Title:	**BYI 08330-enol-glucoside: Aqueous hydrolysis under conditions of processing studies**
Report No &	**MEF-05/274**
Document No	**M-266907-01-1**
Guidelines:	**EU Council Directive 91/414/EEC as amended by Commission Directive 96/68/EC Section 6.5, Subsection 6.5.1. Guideline 7035/VI/95 Revision 5, Appendix E (July 1997)**
GLP	**yes**

Report:	**KIIA 6.5.1/04, [redacted]; 2006**
Title:	**BYI 08330-keto-hydroxy: Aqueous hydrolysis under conditions of processing studies**
Report No &	**MEF-05/409**
Document No	**M-267024-01-1**
Guidelines:	**EU Council Directive 91/414/EEC as amended by Commission Directive 96/68/EC Section 6.5, Subsection 6.5.1. Guideline 7035/VI/95 Revision 5, Appendix E (July 1997)**
GLP	**yes**

Report:	**KIIA 6.5.1/05, [redacted]; 2006**
Title:	**BYI 08330-mono-hydroxy: Aqueous hydrolysis under conditions of processing studies**
Report No &	**MEF-05/418**
Document No	**M-267165-01-1**
Guidelines:	**EU Council Directive 91/414/EEC as amended by Commission Directive 96/68/EC Section 6.5, Subsection 6.5.1. Guideline 7035/VI/95 Revision 5, Appendix E (July 1997)**
GLP	**yes**

The behaviour of BYI 08330 and its four metabolites BYI08330-enol, BYI08330-enol-glucoside, BYI08330-ketohydroxy and BYI08330-monohydroxy in buffer solution under conditions of processing was studied. Two different concentrations of each analyte (0.2 and 1.0 mg/L) in buffer solution

containing less than 1 % acetonitrile were prepared and incubated at three representative sets of hydrolysis conditions:

Pasteurisation:	90 °C at pH 4 for 20 min
Baking, brewing, boiling:	100 °C at pH 5 for 60 min
Sterilisation:	120 °C at pH 6 for 20 min

At test termination material balances in all tests were in the range of 100-112% of the applied radioactivity indicating that no radioactivity dissipated from the test system.

BYI 08330 was demonstrated to be resistant to hydrolysis under conditions being representative for pasteurization. Under conditions representative for baking, boiling and brewing 15 % of BYI 08330 degraded to BYI08330-enol. Under conditions of sterilization the active substance was nearly completely hydrolysed to BYI08330-enol. BYI 08330-enol was detected as the only hydrolysis product.
BYI 08330-enol was shown to be resistant to hydrolysis under all test conditions.
BYI 08330-enol-glucoside was resistant to hydrolysis under conditions representative for pasteurisation. Under conditions representative for baking, brewing and boiling ca.10 % of the test substance was hydrolysed to BYI 08330-enol. Under conditions of sterilization ca. 40 % of the BYI 08330-enol-glucoside was hydrolysed to the enol metabolite.
BYI 08330-ketohydroxy was demonstrated to be resistant to hydrolysis under conditions of pasteurisation. Under conditions of baking, brewing and boiling a slight degradation to BYI 08330-MA-amide was found (5%). Under conditions of sterilisation BYI 08330-ketohydroxy was completely hydrolysed to BYI 08330-MA-amide.
BYI 08330-monohydroxy was shown to be resistant under all test conditions.

IIA 6.5.2 Distribution of the residue in peel/pulp

The distribution of the residues in peel and pulp was analysed for citrus and melon. Detailed information about distribution of residues in whole fruit, peel and pulp is given under Points IIA 6.3.1.1 and 6.3.2.6 (citrus) and IIA 6.3.1.13 and 6.3.2 (melon) US

IIA 6.5.3 Residue levels - balance studies on set of representative processes

Balance studies have been performed for production of fruit juices, marmalade, apple sauce, preserves, wine, raisins, cooked vegetables and beer and for lettuce preparation.

For these processing studies two heating processes, pasteurisation and boiling/brewing, have to be considered.

The aqueous hydrolysis studies (IIA 6.5.1) show that under conditions of pasteurisation all components, BYI08330, BYI08330-enol, -ketohydroxy, -monohydroxy and -enol-glucoside are stable.

Under conditions of brewing and boiling a partial hydrolysation of BYI 08330 to BYI 08330-enol (<10%) was observed in the aqueous hydrolysis study (IIA 6.5.1). The total amount of the conversion of enol-glucoside to enol, however, is considered negligible, because the enol-glucoside is present at low amounts in the raw agricultural commodities.
Morevoer under conditions of boiling and brewing a slight degradation of BYI 08330-ketohydroxy to BYI 08330-MA-amide (max. 5%) was observed in the aqueous hydrolysis study. The loss of ketohydroxy, however, can be considered as negligible due to the low amount of the ketohydroxy metabolite in the raw agricultural commodities.
BYI 08330-enol and BYI 08330-monohydroxy were shown to be stable under conditions of brewing and boiling.

According to these considerations method 00857 is suitable for determination of residues of BYI 08330 in processed commodities described under Points IIA 6.5.3.1 to 6.5.3.7.

IIA 6.5.3.1 Orange juice and marmalade

Report:	**KIIA 6.5.3.1/01, [redacted].; 2006**
Title:	**Determination of the residues of BYI 08330 in/on orange fruit and the processed fractions (pulp, peel, raw juice; pomace wet, washings, fruit washed, marmalade, peelwashed, fruit peeled, strain rest, peel dried, pomace dried) after spraying of BYI 08330 (100 OD) in the field in Italy, Portugal and Spain**
Report No &	**RA-3032/04, including samples from trials no. R 2004 0139/6, R 2004 0141/8, R 2004 0239/2, R 2004 0240/6**
Document No	**M-263630-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on processing of orange fruit to orange juice and orange marmalade were conducted to determine the transfer of BYI 08330 and its metabolites (BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside) from orange fruit into processed fractions.
For each process, juice and marmalade processing, 4 representative samples of orange fruits from each of 4 supervised residue trials were collected. The processing processes are described as flow charts in Figures 6.5.3.1-1 and 6.5.3.1-2

Method 00857 was applied for determination of residues of BYI 08330 in orange fruit, juice and marmalade and the by-products. Recovery findings in the different processed matrices were within guideline requirements (70-110%, RSD ≤20%). Recovery results are summarized in Table 6.5.3.1-1.

Findings:
The total residue of BYI08330 in orange fruit used for processing ranged between <0.055 mg/kg (LOQ) and 0.18 mg/kg. In orange juice from all 4 orange fruit samples a total residue of below the LOQ of 0.055 mg/kg was detected. In orange marmalade the total residue of BYI 08330 ranged between <0.055 and 0.067 mg/kg. The residue results for the different processed fractions are given in Table 6.5.3.1-2 and in the respective Tier I summaries. An average factor of 0.5 was calculated for the transfer of the total residue of BYI08330 from orange fruit into orange juice and orange marmalade. The transfer factors are summarized in Table 6.5.3.1-3. For the determination of the transfer factors residues of below the LOQ were assumed to be at the LOQ. No transfer factors could be calculated for processed commodities from two trials (R 2004 0139/6 and R 2004 0141/8), because the total residue of BYI08330 in orange fruit and in processed commodities was below the LOQ.

Figure 6.5.3.1-1: Flow chart describing processing of orange fruits to orange juice

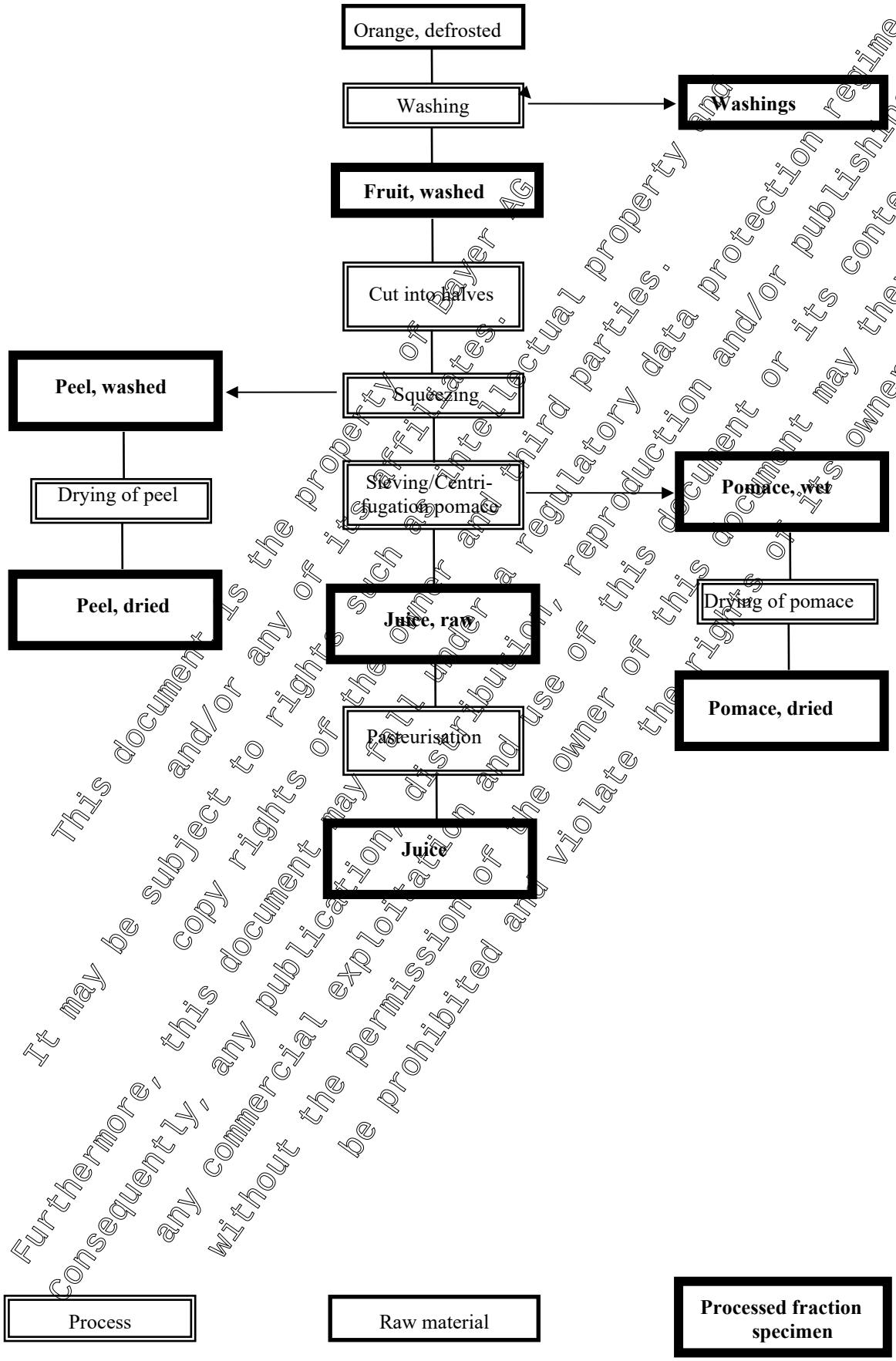


Figure 6.5.3.1-2: Flow chart describing processing of orange fruits to orange marmalade

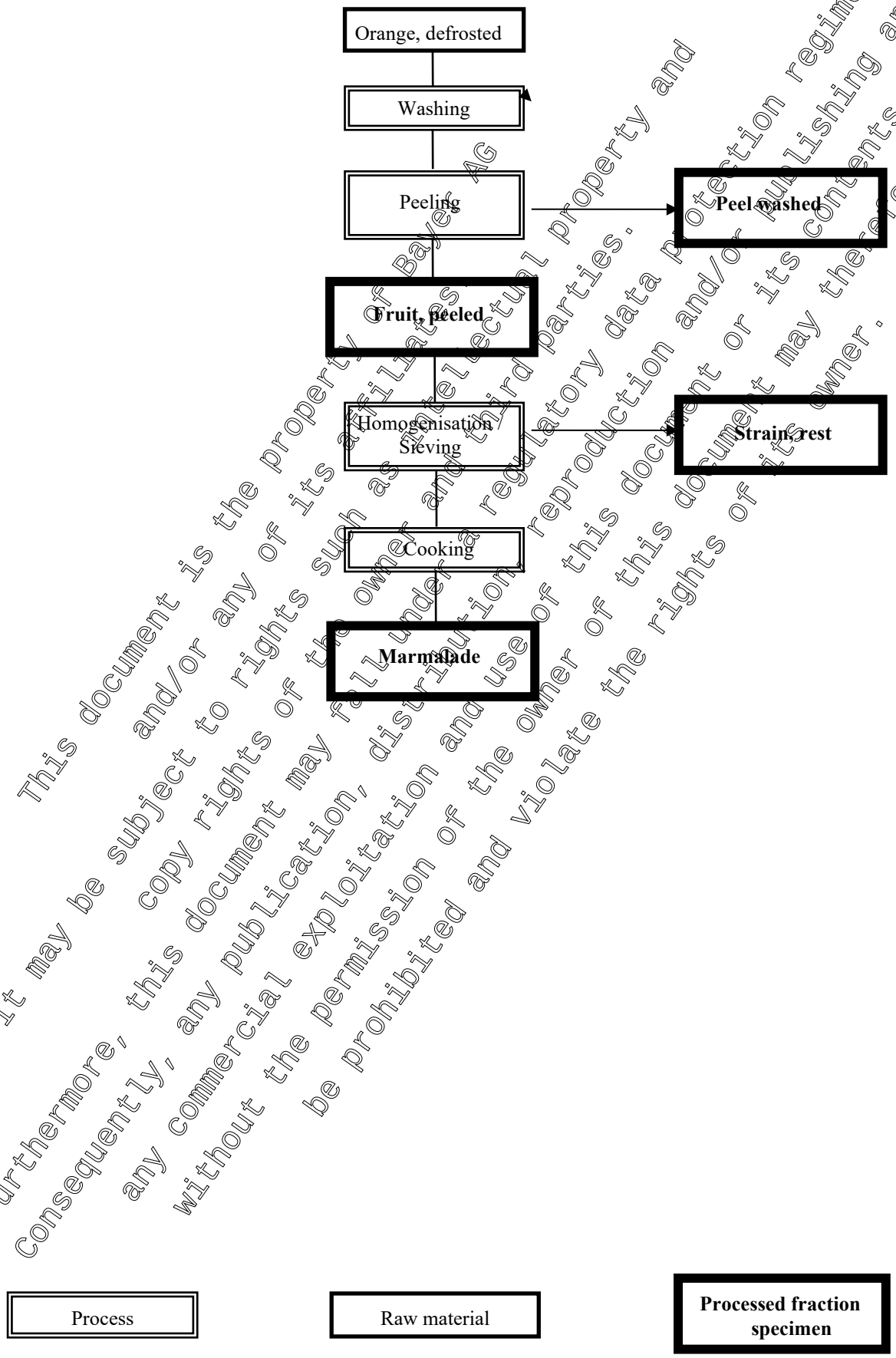


Table 6.5.3.1-1: Recovery results (concurrent recoveries) for determination of BYI 08330 and its metabolites in orange fruit and in processed commodities

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	a.s./metabolite	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2032/04 R 2004 0139 6 0139-04 R 2004 0141 8 0141-04 R 2004 0239 2 0239-04 R 2004 0240 6 0240-04 GLP yes 2004	Orange	Fruit, pulp, fruit washed, fruit peeled	BYI 08330	15	0.01	1.0	67	114	88	13.0
			BYI 08330-enol	15	0.01	1.0	62	99	86	9.9
			BYI 08330-keto-hydroxy	15	0.01	1.0	64	92	85	9.1
			BYI 08330 enol-glucoside	15	0.01	1.0	65	99	86	9.9
			BYI 08330 mono-hydroxy	15	0.01	1.0	60	94	85	10.3
		Peel, peel washed, peel dried	BYI 08330	16	0.01	1.0	61	106	83	12.5
			BYI 08330-enol	16	0.01	1.0	62	98	82	11.9
			BYI 08330-keto-hydroxy	16	0.01	1.0	62	105	82	12.1
			BYI 08330 enol-glucoside	16	0.01	1.0	70	103	83	11.0
			BYI 08330 mono-hydroxy	16	0.01	1.0	61	98	83	12.1
		Raw juice, juice washings	BYI 08330	8	0.01	1.0	71	98	83	9.8
			BYI 08330-enol	8	0.01	1.0	70	95	83	10.0
			BYI 08330-keto-hydroxy	8	0.01	1.0	63	97	83	12.4
			BYI 08330 enol-glucoside	8	0.01	1.0	60	94	79	13.5
			BYI 08330 mono-hydroxy	8	0.01	1.0	66	91	81	9.6
		Pomace, wet, strain rest, pomace dried	BYI 08330	8	0.01	1.0	66	91	81	9.8
			BYI 08330-enol	8	0.01	1.0	65	96	82	12.5
			BYI 08330-keto-hydroxy	8	0.01	1.0	62	92	81	11.4
			BYI 08330 enol-glucoside	8	0.01	1.0	67	95	83	11.3
			BYI 08330 mono-hydroxy	8	0.01	1.0	61	92	80	12.9
		Mar-malade	BYI 08330	8	0.01	1.0	83	99	90	5.7
			BYI 08330-enol	8	0.01	1.0	85	97	90	4.9
			BYI 08330-keto-hydroxy	8	0.01	1.0	81	96	88	6.1
			BYI 08330 enol-glucoside	8	0.01	1.0	79	98	90	7.2
			BYI 08330 mono-hydroxy	8	0.01	1.0	81	98	88	7.0

RSD = relative standard deviation

Table 6.5.3.1-2: Residues of BYI 08330 in orange fruit and in processed commodities from orange juice and orange marmalade processing studies.

Country	Crop		Residues (mg/kg) expressed as BYI 08330 equivalents					
Study No. Trial No.	Portion analysed	DALT (days)	BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Italy RA-2032/04 R 2004 0139/6	Fruit	14	0.02	0.012	0.012	< 0.012	< 0.008	< 0.055
Orange juice	Raw juice	14	0.01	< 0.012	0.012	< 0.012	< 0.008	< 0.055
	Juice	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Pomace, wet	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Washings	14	0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, washed	14	0.01	< 0.012	0.012	< 0.012	< 0.008	< 0.055
	Pomace, dried	14	0.01	0.014	0.013	< 0.012	< 0.008	< 0.055
	Peel, dried	14	0.02	0.16	0.097	< 0.012	< 0.008	0.27
	Peel, washed	14	0.02	0.018	0.019	< 0.012	< 0.008	0.057
Orange marmalade	Peel, washed	14	0.06	0.030	0.034	< 0.012	< 0.008	0.12
	Marmalade	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, peeled	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Strain rest	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
Italy RA-2032/04 R 2004 0141/8	Fruit	21	0.02	0.014	0.012	< 0.012	< 0.008	< 0.055
Orange juice	Raw juice	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Juice	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Pomace, wet	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Washings	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, washed	21	0.01	0.013	0.012	< 0.012	< 0.008	< 0.055
	Pomace, dried	21	< 0.01	0.016	0.012	< 0.012	< 0.008	< 0.055
	Peel, dried	21	0.03	0.094	0.042	< 0.012	0.012	0.18
	Peel, washed	21	0.01	0.024	0.013	< 0.012	0.008	0.059
Orange marmalade	Peel, washed	21	0.02	0.027	0.013	< 0.012	0.008	0.067
	Marmalade	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, peeled	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Strain rest	21	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055

DALT = days after last treatment

Table 6.5.3.1-2 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Portugal RA-2032/04 R 2004 0239/2	Fruit	14	0.04	0.041	0.013	< 0.012	0.008	0.099
Orange juice	Raw juice	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Juice	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Pomace, wet	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Washings	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, washed	14	0.02	0.036	0.013	< 0.012	0.008	0.073
	Pomace, dried	14	0.01	0.041	0.012	< 0.012	< 0.008	0.062
	Peel, dried	14	0.07	0.26	0.083	< 0.012	0.018	0.43
	Peel, washed	14	0.03	0.059	0.024	< 0.012	0.008	0.12
Orange marmalade	Peel, washed	14	0.04	0.080	0.031	< 0.012	0.008	0.16
	Marmalade	14	0.01	0.013	0.012	< 0.012	< 0.008	< 0.055
	Fruit, peeled	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Strain rest	14	< 0.01	< 0.012	< 0.012	< 0.012	< 0.008	< 0.055
Spain RA-2032/04 R 2004 0240/6	Fruit	21	0.08	0.078	0.012	< 0.012	0.016	0.18
Orange juice	Raw juice	21	0.01	0.030	< 0.012	< 0.012	0.008	< 0.055
	Juice	21	0.01	0.026	< 0.012	< 0.012	0.008	< 0.055
	Pomace, wet	21	0.01	0.041	< 0.012	< 0.012	0.008	0.059
	Washings	21	0.02	0.012	< 0.012	< 0.012	< 0.008	< 0.055
	Fruit, washed	21	0.04	0.062	0.012	< 0.012	0.017	0.13
	Pomace, dried	21	0.01	0.22	0.012	< 0.012	0.019	0.26
	Peel, dried	21	0.15	0.36	0.064	< 0.012	0.063	0.64
	Peel, washed	21	0.06	0.073	0.016	< 0.012	0.020	0.17
Orange marmalade	Peel, washed	21	0.14	0.11	0.034	< 0.012	0.046	0.33
	Marmalade	21	0.01	0.036	0.012	< 0.012	0.008	0.067
	Fruit, peeled	21	0.01	0.064	< 0.012	< 0.012	0.010	0.084
	Strain rest	21	0.01	0.054	< 0.012	< 0.012	0.008	0.072

DALT = days after last treatment

Table 6.5.3.1-3: Tranfer factors for residues in processed food commodities.

Processed product	Sample Material	Transfer Factors for Total Residue of BYI08330				
		R 2004 0139/6	R 2004 0141/8	R 2004 0239/2	R 2004 0240/6	mean
Orange juice	Washings	--	--	0.6	0.3	**0.5**
	Fruit, washed	--	--	0.7	0.7	**0.70**
	Raw juice	--	--	0.6	0.3	**0.5**
	Peel, washed	< 1.0*	< 1.1*	1.2	0.9	**1.1**
	Peel, dried	< 4.9*	< 3.3*	4.3	3.6	**4.0**
	Pomace, wet	--	--	0.6	0.3	**0.5**
	Pomace, dried	--	--	0.6	1.4	**1.0**
	Juice	--	--	0.6	0.3	**0.5**
Orange marmalade	Peel, washed	< 2.2*	< 1.2*	1.6	1.8	**1.7**
	Fruit, peeled			0.6	0.5	**0.6**
	Strain, rest	--	--	0.6	0.4	**0.5**
	Marmalade	--	--	0.6	0.4	**0.5**

* Residues in fruit were < LOQ, the LOQ of 0.055 mg/kg was assumed for the total residue in fruit;
-- no transfer factor was calculated because the total residue in orange fruit and in the processed commodity was < LOQ

IIA 6.5.3.2 Apple sauce and juice

Report:	**KIIA 6.5.3.2/01, [redacted].; 2005, amended 12.01.2006**
Title:	**Determination of the residues of BYI 08330 in/on apple fruit and the processed fractions (fruit washed, washings, strain rest, raw sauce, sauce, raw juice, juice, pomace dried) after spraying of BYI 08330 (100 OD) in the field in Germany and United Kingdom**
Report No & Document No	**RA-3135/04, including trials no. R 2004 0795/5, R 2004 0797/1 M-262624-02-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Report:	**KIIA 6.5.3.2/02, [redacted] 2006**
Title:	**Determination of the residues of BYI 08330 in/on apple fruit and the processed fractions (fruit washed, washings, strain rest, raw sauce, sauce, raw juice, juice, pomace dried) after spraying of BYI 08330 (100 OD) in the field in Italy and Spain**
Report No & Document No	**RA-3137/04, including trials no. R 2004 0805/6, R 2004 0807/2 M-264335-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on processing of apples to washed apples, apple sauce and apple juice were conducted to determine the transfer of BYI 08330 and its metabolites (BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside) from apple fruit into processed fractions. For each process, washing, sauce and juice production, 4 representative samples of apple fruits from each of 4 supervised residue trials were used. The processes are described as flow charts in Figures 6.5.3.2-1 to 6.5.3.2-3.

Method 00857 was used for determination of residues in apple fruit and processed commodities. Recovery results are within the acceptable range (70-110 %, RSD < 20%) as shown in Table 6.5.3.2-1.

Findings:
The total residue of BYI08330 in apple fruit was between <0.055 (LOQ) and 0.2 mg/kg. In apple sauce, the total residue ranged between <0.055 and 0.13 mg/kg and was between <0.055 and 0.078 mg/kg in apple juice. Average factors of 0.6 and 0.8 were calculated for the transfer of the total residue of BYI08330 from apple fruit into apple juice and apple sauce. The residues results are summarised in Table 6.5.3.2-2 and in the respective Tier I summaries. Transfer factors are given in Table 6.5.3.2-3.

Figure 6.5.3.2-1: Flow chart of the processing of apples into apples washed and washing water (washings)

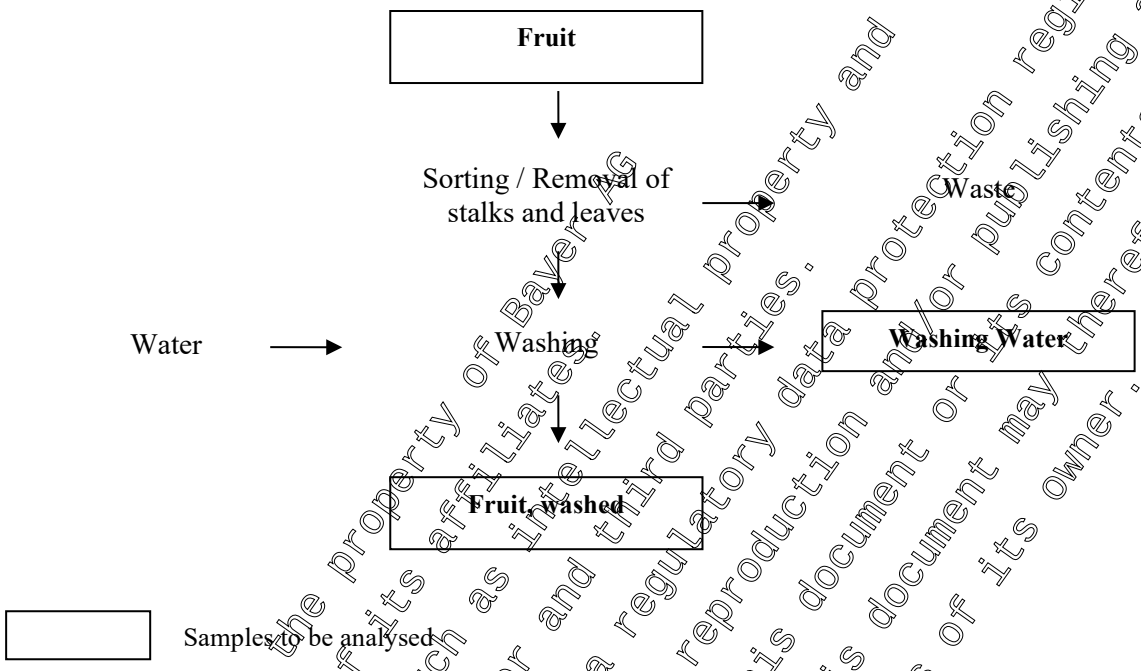


Figure 6.5.3.2-2: Flow chart of the processing of apples into raw stewed fruit (raw sauce), sauce and pomace wet (strain rest)

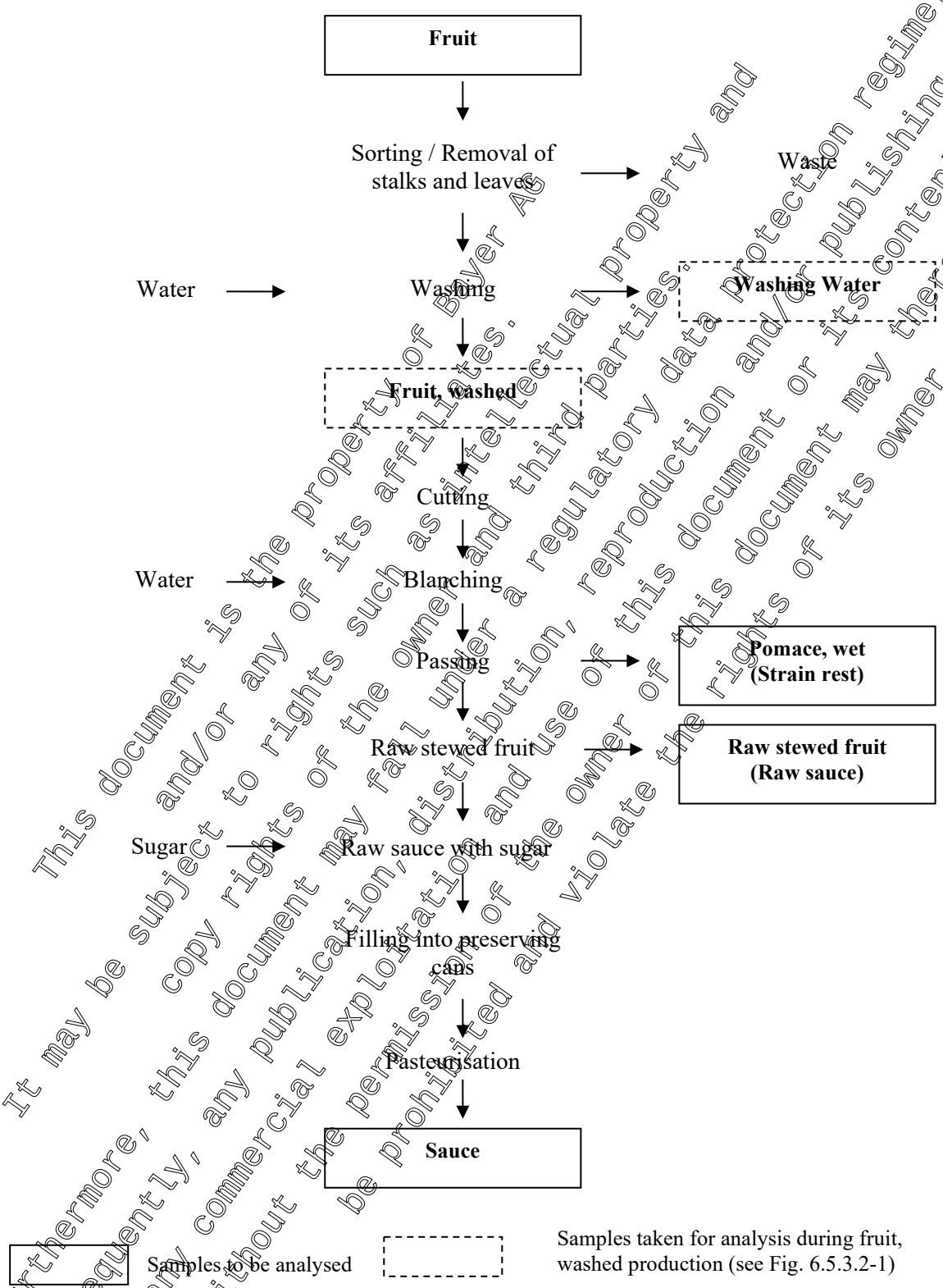


Figure 6.5.3.2-3: Flow chart of the processing of apples into raw juice, juice and pomace dried

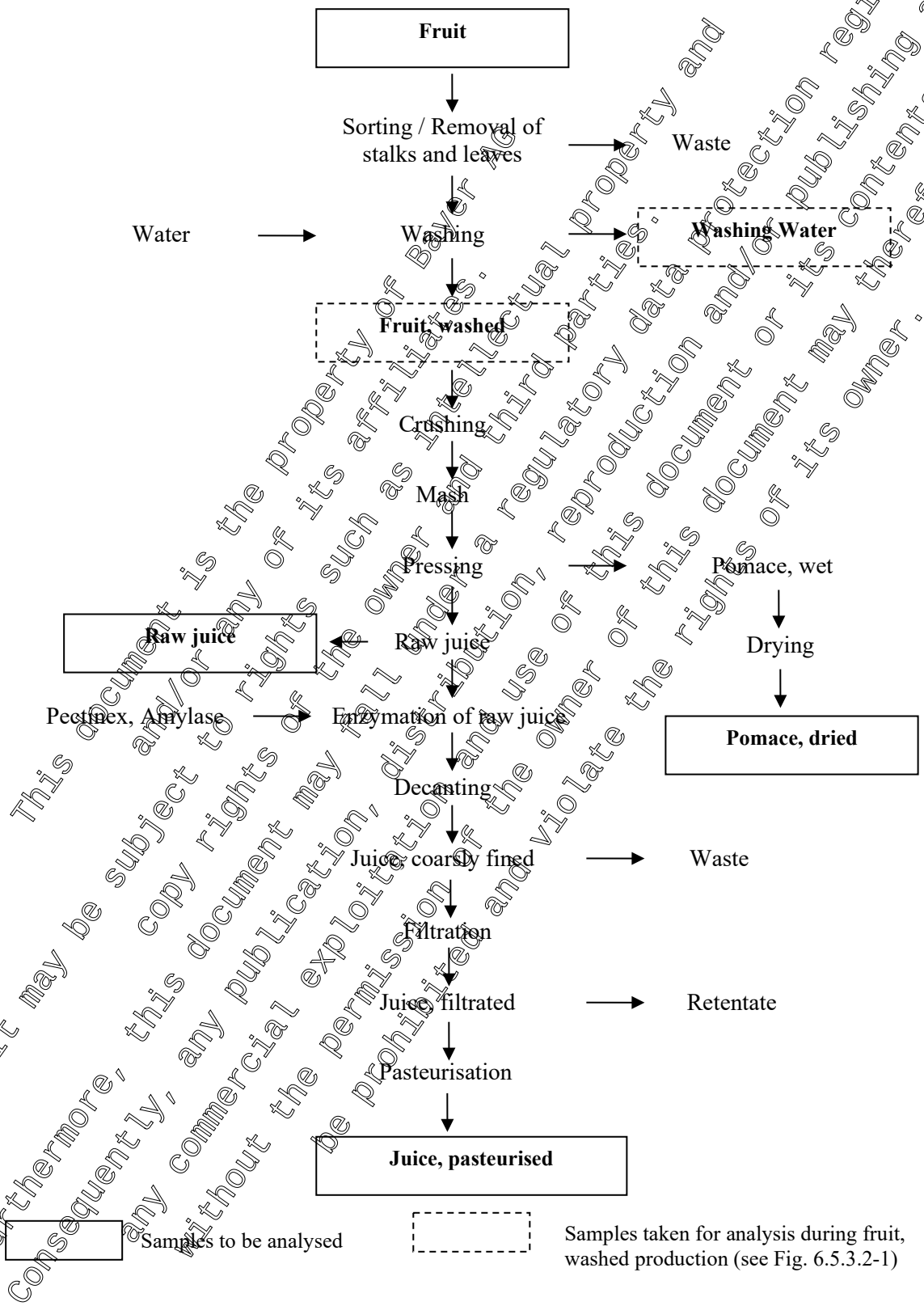


Table 6.5.3.2-1: Recovery results (concurrent recoveries) for BYI 08330 and its metabolites in apple fruit and processed commodities

Study No. / GLP Year	Crop	Portion analysed	a.s./metabolite	n	Fortification level (mg/kg) Min	Fortification level (mg/kg) Max	Recovery (%) Min	Recovery (%) Max	Recovery (%) Mean	Recovery (%) RSD
RA-2135/04 RA-2137/04 GLP yes 2004	Apple	Fruit, fruit washed, washings, juice, raw juice	BYI 08330	27	0.01	1.0	80	113	97	8.1
			BYI 08330-enol	27	0.01	1.0	79	104	92	7.0
			BYI 08330-keto-hydroxy	27	0.01	1.0	77	106	97	7.6
			BYI 08330 enol-glucoside	27	0.01	1.0	83	111	96	8.3
			BYI 08330 mono-hydroxy	27	0.01	1.0	81	103	92	7.2
		Strain rest, pomace dried	BYI 08330	6	0.01	1.0	91	111	102	8.1
			BYI 08330-enol	6	0.01	1.0	94	103	98	3.7
			BYI 08330-keto-hydroxy	6	0.01	1.0	94	112	103	6.9
			BYI 08330 enol-glucoside	6	0.01	1.0	96	117	107	8.6
			BYI 08330 mono-hydroxy	6	0.01	1.0	94	103	98	3.6
		Raw sauce, sauce	BYI 08330	6	0.01	1.0	78	106	94	11.6
			BYI 08330-enol	6	0.01	1.0	80	99	90	7.8
			BYI 08330-keto-hydroxy	6	0.01	1.0	80	109	97	10.9
			BYI 08330 enol-glucoside	6	0.01	1.0	89	111	100	7.7
			BYI 08330 mono-hydroxy	6	0.01	1.0	82	100	93	6.4

RSD = relative standard deviation

Table 6.5.3.2-2: Residues of BYI 08330 in processed commodities from apple sauce and apple juice processing studies

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Germany RA-2135/04 R 2004 0795/5	Fruit	21	0.01	0.012	0.012	0.012	<0.008	0.055
	Fruit washed	21	0.02	0.012	0.016	0.012	0.008	0.064
	Washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Apple sauce							
	Strain rest	21	0.05	0.029	0.025	0.012	0.008	0.13
	Raw sauce	21	0.01	<0.018	0.017	0.012	0.008	0.066
	Sauce	21	0.01	0.016	0.013	0.012	<0.008	<0.055
	Apple juice							
	Raw juice	21	<0.01	0.012	0.012	0.012	0.008	<0.055
	Juice	21	<0.01	0.012	0.012	0.012	0.008	<0.055
	Pomace, dried	21	0.16	0.092	0.077	0.013	0.008	0.35
United Kingdom RA-2135/04 R 2004 0797/1	Fruit	21	0.04	0.034	0.021	<0.012	<0.008	0.096
	Fruit, washed	21	0.02	0.020	0.012	<0.012	<0.008	<0.055
	Washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Apple sauce							
	strain rest	21	0.12	0.055	0.026	<0.012	<0.008	0.20
	raw sauce	21	0.03	0.044	0.021	<0.012	<0.008	0.098
	sauce	21	0.02	0.039	0.017	<0.012	<0.008	0.075
	Apple juice							
	raw juice	21	0.02	0.024	0.016	<0.012	<0.008	0.058
	Juice	21	0.01	0.019	0.013	<0.012	<0.008	<0.055
	Pomace, dried	21	0.31	0.22	0.094	0.012	0.008	0.65

DALT = days after last treatment

Table 6.5.3.2-2 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Italy RA-2137/04 R 2004 0805 6	fruit	21	0.04	0.014	0.012	<0.012	<0.008	0.063
	fruit, washed	21	0.02	0.012	0.012	<0.012	<0.008	0.055
	washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Apple sauce							
	strain rest	21	0.06	0.041	0.012	<0.012	<0.008	0.11
	raw sauce	21	0.01	0.021	0.012	<0.012	<0.008	<0.055
	sauce	21	0.01	0.022	0.012	<0.012	<0.008	<0.055
	Apple juice							
	raw juice	21	0.02	0.012	0.012	<0.012	<0.008	<0.055
	juice	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	pomace, dried	21	0.12	0.11	0.042	0.012	<0.008	0.28
Spain RA-2137/04 R 2004 0807 2	fruit	20	0.10	0.015	0.041	0.028	0.008	0.20
	fruit, washed	20	0.06	0.077	0.032	0.021	0.008	0.20
	washings	20	0.02	0.020	0.012	<0.012	<0.008	<0.055
	Apple sauce							
	strain rest	20	0.27	0.34	0.057	0.025	0.008	0.70
	raw sauce	20	0.06	0.070	0.038	0.024	0.008	0.20
	sauce	20	0.04	0.043	0.032	0.020	<0.008	0.13
	Apple juice							
	raw juice	20	0.03	0.042	0.027	0.022	0.008	0.13
	juice	20	0.01	0.012	0.024	0.023	0.008	0.078
	pomace, dried	20	0.41	0.50	0.20	0.089	0.008	1.2

DALT = days after last treatment

Table 6.5.3.2-3: Tranfer factors for residues in apple processed commodities.

Process	Sample Material	Transfer Factors for Total Residue of BYI08330				
		R 2004 0795/5	R 2004 0797/1	R 2004 0805/6	R 2004 0807/2	Mean
Washing of apples	Fruit, washed	1.2*	0.6	0.9	1.0	**0.9**
	Washings	--	0.6	0.9	0.3	**0.6**
Apple sauce processing	Strain rest (pomace wet)	2.4*	2.1	2.7	3.6	**2.5**
	Raw sauce (raw stewed fruit)	1.2*	1.0	0.9	1.0	**1.0**
	Sauce	--	0.8	0.9	0.7	**0.8**
Apple juice processing	Raw juice	--	0.6	0.9	0.7	**0.8**
	Juice, pasteurised	--	0.6	0.9	0.4	**0.6**
	Pomace, dried	6.4	6.8	4.4	6.2	**6.0**

* residues in apple fruit of <LOQ were set at the LOQ of 0.055 mg/kg;
---no transfer factor calculated because residues in processed commodities were below LOQ

IIA 6.5.3.3 Cherry fruit preserve

Report:	**KIIA 6.5.3.3/01, [redacted].; 2005**
Title:	**Determination of the residues of BYI 08330 in/on sweet cherry fruit and the processed fractions (fruit washed, washings, fruit depitted, preserve) and sour cherry fruit and the processed fractions (fruit washed, washings, fruit depitted, preserve) after spraying of BYI 08330 (100 OD) in the field in Northern France and Germany**
Report No &	**RA-3119/04, including trials no. R 2004 0718/1, R 2004 0720/3, R 2004 0721/1, R 2004 0723/8**
Document No	**M-263882-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on processing of cherry fruit to washed fruit, depitted fruit and preserve were conducted to determine the transfer of BYI 08330 and its metabolites (BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside) from cherry fruit into processed fractions. Four representative samples of cherries were collected from each of 4 supervised residue trials. The procedure for processing of cherry fruit to washed fruit, depitted fruit and preserve is described as flow charts in Figures 6.5.3.3-1 to 6.5.3.3-2.

The analytical method 00857 was used for determination of BYI 08330 residues in processed commodities. Recovery results were within the acceptable range (70-110 %, RSD $\leq$ 20%) as shown in Table 6.5.3.3-1.

Findings:
The total residue of BYI08330 in cherry fruit used for the processing studies was between 0.28 and 0.93 mg/kg. In washed fruit the total residue ranged from 0.25 to 0.83 mg/kg and in preserve from 0.13 to 0.43 mg/kg. An average factor of 0.5 was calculated for the transfer of the total residue of BYI08330 from cherry fruit into cherry preserve. The residues results determined in the different processed commodities are given in Table 6.5.3.3-2 and in the respective Tier I summaries. Transfer factors for the total residue of BYI08330 in processed commodities are given in Table 6.5.3.3-3.

Figure 6.5.3.3-1: Flow Chart of the processing of cherry fruits into washed fruit and washing water

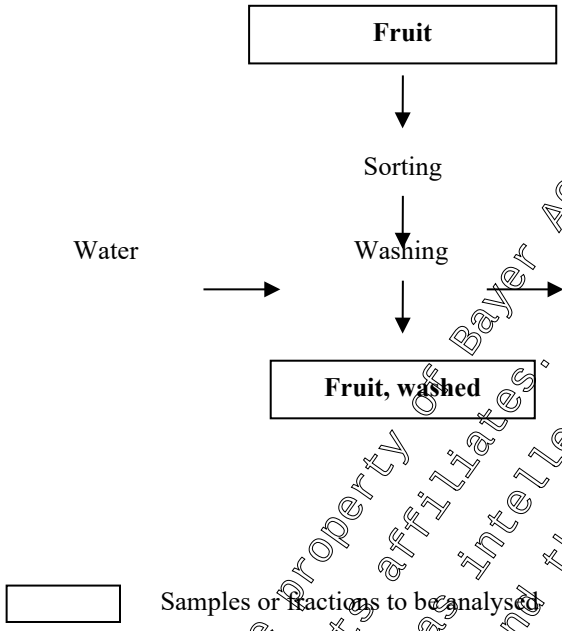


Figure 6.5.3.3-2: Flow chart of the processing of cherry fruits into depitted fruit and preserve

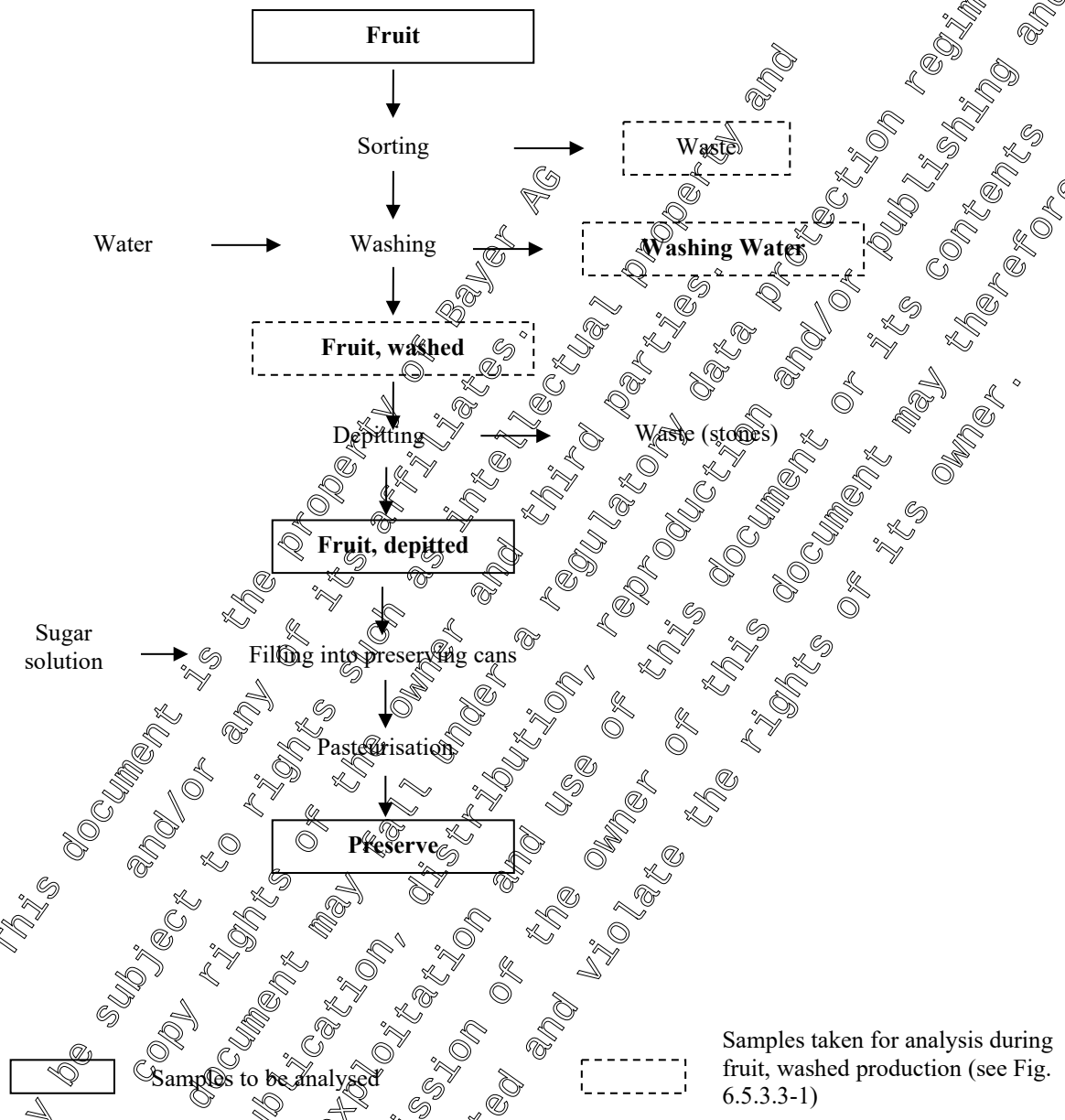


Table 6.5.3.3-1: Recovery results for BYI 08330 and its metabolites in cherry fruit and processed commodities

Study Trial No. GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Max	Recovery (%) Min	Max	Mean	RSD
RA-2119/04 R 2004 0720/3 R 2004 0723/8 GLP yes 2004	Cherry sour	Fruit, fruit washed, washings, fruit depitted	BYI 08330	12	0.01	1.0	86	103	93	5.6
			BYI 08330 cis-enol	12	0.01	1.0	79	114	92	13.1
			BYI 08330 cis-keto-hydroxy	12	0.01	1.0	85	108	95	6.5
			BYI 08330 enol-glucoside	12	0.01	1.0	83	99	93	4.6
			BYI 08330 mono-hydroxy	12	0.01	1.0	86	103	94	5.2
		Preserve	BYI 08330	2	0.01	1.0	91	94	93	
			BYI 08330 cis-enol	2	0.01	1.0	96	98	97	
			BYI 08330 cis-keto-hydroxy	2	0.01	1.0	88	98	93	
			BYI 08330 enol-glucoside	2	0.01	1.0	90	94	92	
			BYI 08330 mono-hydroxy	2	0.01	1.0	87	96	92	
RA-2119/04 R 2004 0718/1 R 2004 0721/1 GLP yes 2004	Cherry sweet	Fruit, fruit washed, washings, fruit depitted	BYI 08330	12	0.01	1.0	86	98	92	4.6
			BYI 08330 cis-enol	12	0.01	1.0	79	114	91	12.5
			BYI 08330 cis-keto-hydroxy	12	0.01	1.0	85	108	94	6.9
			BYI 08330 enol-glucoside	12	0.01	1.0	83	99	93	4.8
			BYI 08330 mono-hydroxy	12	0.01	1.0	86	103	93	5.3
		Preserve	BYI 08330	2	0.01	1.0	85	87	86	
			BYI 08330 cis-enol	2	0.01	1.0	83	88	86	
			BYI 08330 cis-keto-hydroxy	2	0.01	1.0	86	90	88	
			BYI 08330 enol-glucoside	2	0.01	1.0	91	94	93	
			BYI 08330 mono-hydroxy	2	0.01	1.0	88	88	88	

RSD = relative standard deviation

Table 6.5.3.3-2: Residues of BYI 08330 in sweet and sour cherry fruit and processed commodities

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Germany	Fruit	21	0.01	0.21	0.033	0.021	0.011	0.28
RA-2119/04	Fruit, washed	21	0.01	0.17	0.036	0.021	0.011	0.25
R2004 0720/3	Washings	21	<0.01	0.012	<0.012	<0.012	<0.008	<0.055
	fruit, depitted	21	0.01	0.20	0.029	0.029	0.015	0.28
	Preserve	21	0.01	0.087	0.013	0.012	0.008	0.13
Germany	Fruit	21	0.01	0.21	0.012	0.040	0.023	0.29
RA-2119/04	Fruit, washed	21	<0.01	0.21	0.019	0.041	0.023	0.29
R2004 0723/8	Washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	fruit, depitted	21	<0.01	0.18	0.012	0.037	0.018	0.25
	Preserve	21	0.01	0.10	0.012	0.019	0.009	0.14
France	Fruit	21	0.01	0.32	0.11	0.12	0.023	0.57
RA-2119/04	Fruit, washed	21	0.01	0.30	0.13	0.12	0.022	0.59
R2004 0718/1	Washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Fruit, depitted	21	0.01	0.29	0.077	0.12	0.020	0.51
	Preserve	21	0.01	0.19	0.044	0.068	0.012	0.33
France	Fruit	21	0.02	0.58	0.072	0.17	0.097	0.93
RA-2119/04	Fruit, washed	21	0.01	0.51	0.093	0.14	0.076	0.83
R2004 0721/1	Washings	21	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Fruit, depitted	21	0.01	0.43	0.050	0.11	0.058	0.65
	Preserve	21	0.01	0.28	0.032	0.068	0.034	0.43

DALT = days after last application

Table 6.5.3.3-3: Tranfer factors for residues in cherry processed commodities.

Sample Material	Transfer Factors for Total Residue of BYI08330				
	R 2004 0721/1	R 2004 0723/8	R 2004 0718/1	R 2004 0720/3	Mean
Fruit, washed	0.9	1.0	1.0	0.9	**1.0**
Washing water	0.1*	0.2*	0.1*	0.2*	**0.2**
Fruit, depitted	0.7	0.9	0.9	1.0	**0.9**
Preserve	0.5	0.5	0.6	0.5	**0.5**

* Residues < LOQ were set to the LOQ of 0.055 mg/kg

IIA 6.5.3.4 Raisins and wine

Report:	**KIIA 6.5.3.4/01, [redacted] 2006, amended 21.08.2006**
Title:	**Determination of the residues of BYI 08330 in the processed fractions of grape, bunch of grapes for processing (raisin waste, washings, raisin) after spraying of BYI 08330 (150 OD) in the field in Spain and Italy**
Report No & Document No	**RA-3034/05, including trials no. R 2005 0157/9, R 2005 0158/7** **M-271371-02-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.5.3.4/02, [redacted]; 2006**
Title:	**Determination of the residues of BYI 08330 in/on grape (bunch of grapes) and processed fractions (pomace grape, must, wine) after spraying of BYI 08330 (100 OD) in the field in Germany**
Report No & Document No	**RA-3048/04, including trials no. R 2004 0192/2, R 2004 0193/0** **M-264728-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**
Report:	**KIIA 6.5.3.4/03, [redacted]; 2006, amended 06.03.2006**
Title:	**Determination of the residues of BYI 08330 in/on grape bunch of grapes and the processed fractions (pomace grape, must, wine) after spraying of BYI 08330 (100 OD) in the field in Italy**
Report No & Document No	**RA-3049/04, including trials no. R 2004 0196/5, R 2004 0197/3** **M-263874-02-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on processing of grapes to raisins and wine were conducted to determine the transfer of BYI 08330 and its metabolites (BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside) from bunch of grapes into processed fractions.

For processing of bunch of grapes to raisins two separate samples of grapes were collected from each of two trials. Bunches of grapes were de-stemmed before drying. Berries and stakes/stems were dried at 60-65 °C to water content of about 10-14%. After drying berries were washed in water. The process is described in detail in Figure 6.5.3.4-1.
Wine was produced from 2 samples of red grapes and two samples of white grapes obtained from 4 different trials. The production of wine is described in Figure 6.5.3.4-2.

Method 00857 was used to determine residues of BYI08330 in bunch of grapes, raisins, raisin waste and washing water and in grape pomace, must and wine. Recovery findings in grapes and in processed

commodities were within guideline requirements (70-110%, RSD <20%). The recovery results are summarised in Tables 6.5.3.4-1 and 6.5.3.4-2.

Findings:
The total residue of BYI08330 in bunch of grapes used for raisin productions was 0.16 and 0.45 mg/kg, respectively. In raisins, the total residue of BYI08330 ranged between 0.23 and 1.6 mg/kg.
Residue results are given in Table 6.5.3.4-3. An average factor of 2.7 was calculated for the transfer of total residue of BYI08330 from bunch of grapes into raisins. The transfer factors for the total residue of BYI08330 in raisins and processed by-products are summarised in Table 6.5.3.4-5.
In bunch of grapes used for wine production the total residue of BYI08330 was between 0.21 and 0.54 mg/kg. The total residue of BYI 08330 in wine was 0.12 – 0.24 mg/kg. An average factor of 0.6 was calculated for the transfer of the total residue of BYI08330 from bunch of grapes into wine. The transfer factors for the total residue of BYI 08330 in wine and the processed by-products are summarised in Table 6.5.3.4-6.

Figure 6.5.3.4-1: Flow chart of the processing of bunches of grapes to raisins.

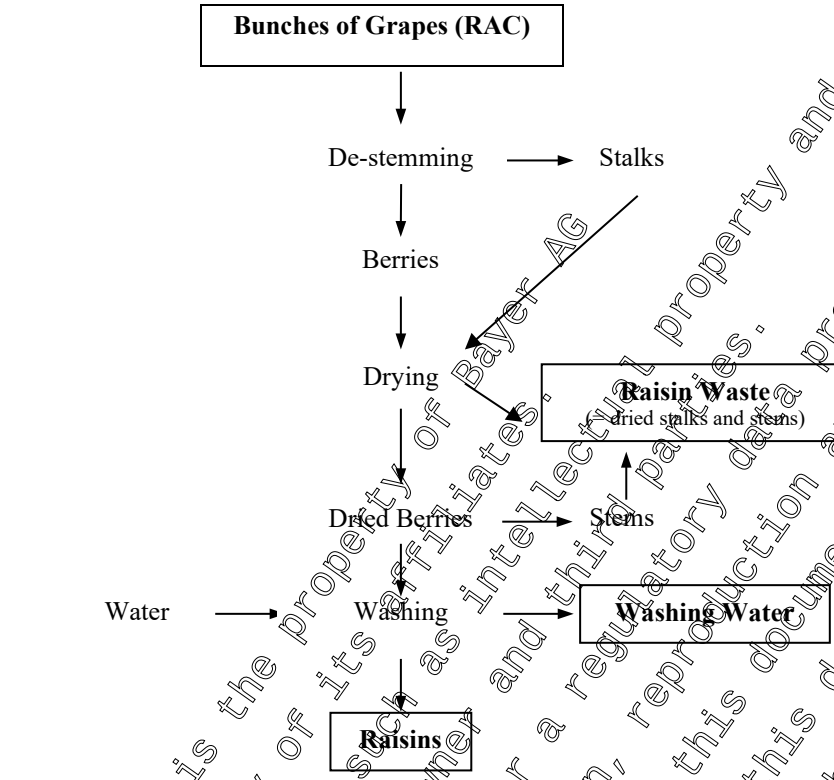


Figure 6.5.3.4-2: Flow chart of the processing pr bunch of grapes to wine.

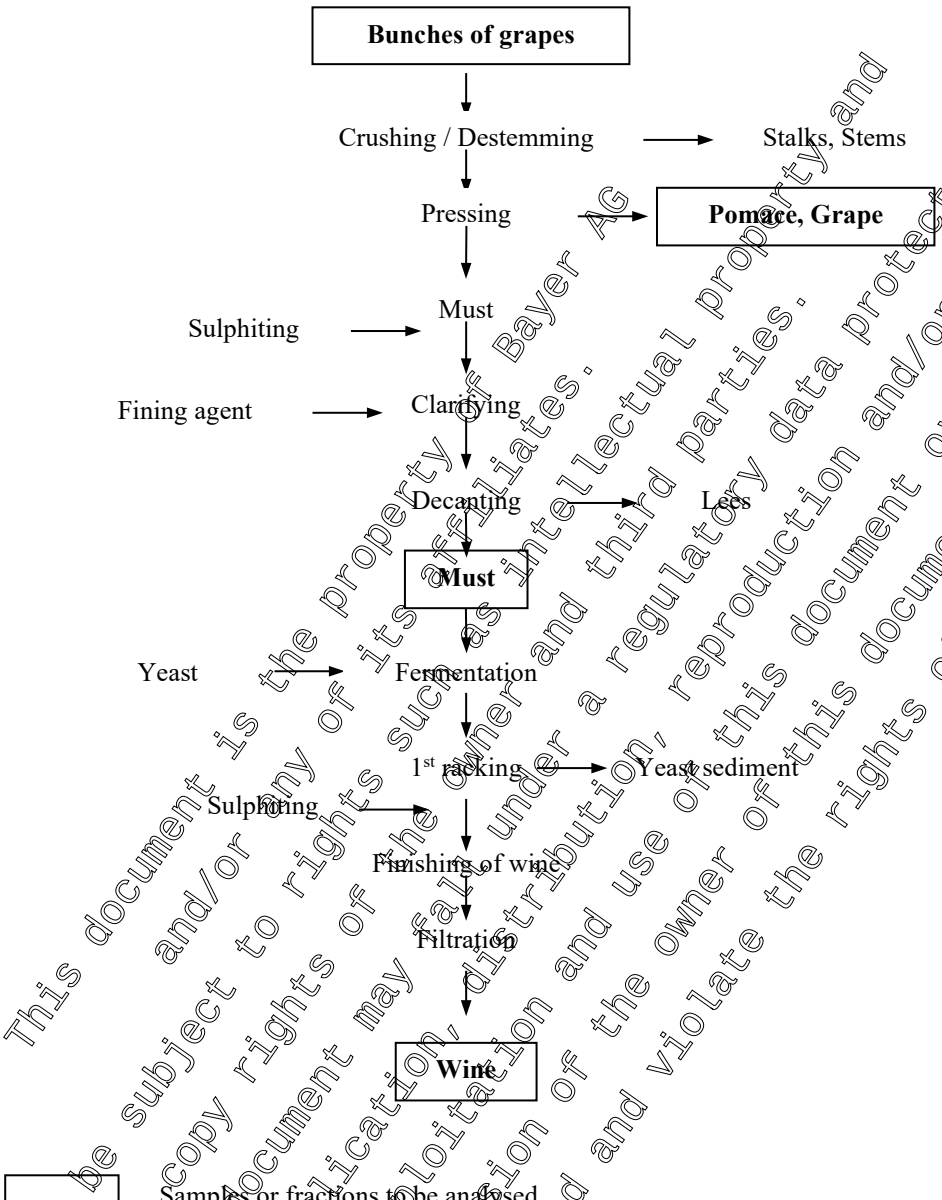


Table 6.5.3.4-1: Recovery results for BYI 08330 and its metabolites in grapes and in processed materials of raisin production

Study Trial No. GLP Year	Crop	Portion analysed	analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2034/05 R 2005 0157/9 R 2005 0158/7 GLP yes 2005	Grape	Bunch of grapes	BYI 08330	3	0.01	1	96	109	102	6.4
			BYI 08330 cis-enol	3	0.01	1	88	99	94	5.9
			BYI 08330 cis-keto-hydroxy	3	0.01	1	93	97	96	2.4
			BYI 08330 enol-glucoside	3	0.01	1	83	97	89	8.3
			BYI 08330 mono-hydroxy	3	0.01	1	90	92	91	1.3
		Raisin waste	BYI 08330	6	0.01	1.0	81	106	94	11.5
			BYI 08330 cis-enol	6	0.01	1.0	87	92	90	2.2
			BYI 08330 cis-keto-hydroxy	6	0.01	1.0	86	96	90	4.0
			BYI 08330 enol-glucoside	6	0.01	1.0	56	67	61	7.4
			BYI 08330 mono-hydroxy	6	0.01	1.0	86	91	89	2.3
		Washings	BYI 08330	6	0.01	1.0	79	110	98	14.1
			BYI 08330 cis-enol	6	0.01	1.0	85	98	95	5.2
			BYI 08330 cis-keto-hydroxy	6	0.01	1.0	83	102	94	8.1
			BYI 08330 enol-glucoside	6	0.01	1.0	82	99	95	7.0
			BYI 08330 mono-hydroxy	6	0.01	1.0	83	102	96	6.8
		Raisin	BYI 08330	6	0.01	1.0	85	111	97	12.4
			BYI 08330 cis-enol	6	0.01	1.0	94	98	96	1.5
			BYI 08330 cis-keto-hydroxy	6	0.01	1.0	85	98	93	5.9
			BYI 08330 enol-glucoside	6	0.01	1.0	62	71	66	5.2
			BYI 08330 mono-hydroxy	6	0.01	1.0	84	95	92	4.9

RSD = relative standard deviation

Table 6.5.3.4-2: Recovery results (concurrent recoveries) for BYI08330 and its metabolites in bunch of grapes and processed materials of wine production

Study Trial No. GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Fortification level (mg/kg) Max	Recovery (%) Min	Recovery (%) Max	Recovery (%) Mean	Recovery (%) RSD
RA-2048/04 R 2004 0192/2 R 2004 0193/0 RA-2049/04 R 2004 0196/5 R 2004 0197/3 GLP yes 2004	Grape	Bunch of grapes	BYI 08330	29	0.01	1.0	60	104	90	9.6
			BYI 08330 cis-enol	29	0.01	1.0	63	111	93	10.0
			BYI 08330 cis-keto-hydroxy	29	0.01	1.0	66	107	94	8.9
			BYI 08330 enol-glucoside	29	0.01	1.0	69	108	94	8.4
			BYI 08330 mono-hydroxy	29	0.01	1.0	63	108	92	9.0
		Pomace, grape	BYI 08330	8	0.01	1.0	87	100	92	5.2
			BYI 08330 cis-enol	8	0.01	1.0	90	103	95	5.0
			BYI 08330 cis-keto-hydroxy	8	0.01	1.0	86	102	94	5.3
			BYI 08330 enol-glucoside	8	0.01	1.0	78	94	88	8.0
			BYI 08330 mono-hydroxy	8	0.01	1.0	88	95	91	2.7
		Must	BYI 08330	10	0.01	1.0	84	104	94	6.2
			BYI 08330 cis-enol	10	0.01	1.0	80	102	96	6.6
			BYI 08330 cis-keto-hydroxy	10	0.01	1.0	81	104	95	7.3
			BYI 08330 enol-glucoside	10	0.01	1.0	85	101	92	4.5
			BYI 08330 mono-hydroxy	10	0.01	1.0	87	101	92	4.4
		Wine	BYI 08330	8	0.01	1.0	85	101	94	5.1
			BYI 08330 cis-enol	8	0.01	1.0	94	100	97	2.1
			BYI 08330 cis-keto-hydroxy	8	0.01	1.0	84	99	93	5.5
			BYI 08330 enol-glucoside	8	0.01	1.0	90	96	92	2.0
			BYI 08330 mono-hydroxy	8	0.01	1.0	86	99	94	4.1

RSD = relative standard deviation

Table 6.5.3.4-3: Residues of BYI 08330 in processed commodities obtained during processing of bunch of grapes to raisin

Country Study No. Trial No. Sample	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Spain RA-2034/05 R 2005 0157/9	Bunch of grapes	7	0.09	0.03	0.02	<0.01	0.02	0.16
Sample TA	Raisin waste	7	0.07	0.24	0.087	<0.012	0.052	0.48
	Washings	7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Raisin	7	<0.01	0.17	0.020	<0.012	0.032	0.23
Sample TB	Raisin waste	7	0.14	0.26	0.12	<0.012	0.063	0.63
	Washings	7	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Raisin	7	0.02	0.17	0.021	<0.012	0.045	0.25
Italy RA-2034/05 R 2005 0158/7	Bunch of grapes		0.11	0.22	0.028	0.014	0.082	0.45
Sample TA	Raisin waste	7	0.44	0.57	0.21	<0.012	0.18	1.5
	Washings	7	0.02	0.029	<0.012	<0.012	0.032	0.089
	Raisin	7	0.25	0.86	0.11	0.055	0.34	1.6
Sample TB	Raisin waste	7	0.54	0.39	0.27	<0.012	0.17	1.5
	Washings	7	0.02	0.016	<0.012	<0.012	0.016	0.062
	Raisin	7	0.21	0.69	0.085	0.043	0.33	1.4

DALT = days after last application; TA and TB are two different samples from one trial

Table 6.5.3.4-4: Residues of BYI 08330 and metabolites in processed commodities of wine production.

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Germany RA-2048/04 R 2004 0192 2	Bunch of grapes	7	0.15	0.073	<0.012	<0.012	0.024	0.25
	Pomace	7	0.25	0.17	0.012	0.012	0.039	0.48
	Must	7	0.10	0.064	0.012	<0.012	0.023	0.20
	Wine	7	0.01	0.13	0.012	<0.012	0.018	0.17
Germany RA-2048/04 R 2004 0193 0	Bunch of grapes	7	0.15	0.036	0.012	<0.012	0.011	0.21
	Pomace	7	0.21	0.092	0.021	<0.012	0.028	0.36
	Must	7	0.05	0.021	0.012	<0.012	0.008	0.091
	Wine	7	0.06	0.11	0.013	<0.012	0.008	0.19
Italy RA-2049/04 R 2004 0196 5	Bunch of grapes	7	0.15	0.17	0.095	0.012	0.11	0.54
	Pomace	7	0.25	0.3	0.24	0.020	0.12	0.95
	Must	7	0.10	0.054	0.077	<0.012	0.056	0.29
	Wine	7	0.03	0.090	0.06	<0.012	0.048	0.24
Italy RA-2049/04 R 2004 0197 3	Bunch of grapes	7	0.20	0.045	0.045	<0.012	0.026	0.32
	Pomace	7	0.44	0.077	0.056	<0.012	0.024	0.60
	Must	7	0.11	0.034	0.031	<0.012	0.020	0.20
	Wine	7	0.04	0.048	0.017	<0.012	0.013	0.12

DALT = days after last application

Table 6.5.3.4-5: Tranfer factors for the total residue of BYI082330 in processed commodities of raisin production

Sample material	Transfer factors for the total residue of BYI08330				
	R 2005 0157/9		R 2005 0158/7		
	Sample TA	Sample TB	Sample TA	Sample TB	Mean
Raisin waste	3.2	4.1	3.6	3.3	**3.6**
Washings	0.3	0.3	0.2	0.1	**0.2**
Raisin	1.7	1.8	4.0	3.3	**2.7**

Table 6.5.3.4-6: Tranfer factors for the total residue of BYI08330 in processed commodities of wine production

Sample material	Transfer factors for the total residue of BYI08330				
	R 2004 0192/2	R 2004 0193/0	R 2004 0196/5	R 2004 0197/3	Mean
Pomace	1.9	1.7	1.8	1.9	**1.8**
Must	0.8	0.4	0.5	0.6	**0.6**
Wine	0.7	0.9	0.4	0.4	**0.6**

IIA 6.5.3.5 Tomato juice, preserve and puree

Report:	**KIIA 6.5.3.5/01, [redacted], [redacted]; 2006**
Title:	**Determination of the residues of BYI 08330 in/on tomato fruit and the processed fractions (washings, fruit peeled, raw juice, juice, strain rest, preserve, puree, fruit washed, raw puree, peel washed, peeling water) after spraying of BYI 08330 (100 OD) in the greenhouse in Greece, Spain and Italy**
Report No &	**RA-3140/04, including trials no. R 2004 0827/7, R 2004 0828/5, R 2004 0829/3, R 2004 0830/7**
Document No	**M-263490-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on processing of tomato fruit to juice, preserve and puree were conducted to determine the transfer of BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside from tomato fruit into processed fractions.
Processing was performed simulating the industrial processes at a laboratory scale. The procedure is described in Figure 6.5.3.5-1 to 6.5.3.5-3. Four tomato samples were collected from 4 different greenhouse trials.
Method 00857 was used to determine residues of BYI08330 tomato fruit and processed commodities. Recovery findings in tomato fruit and in processed commodities were within guideline requirements (70-110%, RSD <20%). The recovery results are summarised in Table 6.5.3.5-1.

Findings:
The total residue of BYI08330 in tomato fruit was between 0.2 and 0.5 mg/kg. The total residue in juice ranged between 0.13 and 0.3 mg/kg, in preserve between 0.1 and 0.35 mg/kg, and in puree between 0.13 and 0.59 mg/kg. Average factors of 0.6, 0.5 and 0.8 were calculated for the transfer of the total residue of BYI08330 from tomato fruit into juice, preserve and puree. The residue results are summarised in Table 6.5.3.5-2 and in the respective Tier I summaries. Transfer factors are given in Table 6.5.3.5-3.

Figure 6.5.3.5-1: Flow chart for the preparation of washed tomato fruit, washing water, raw juice and juice

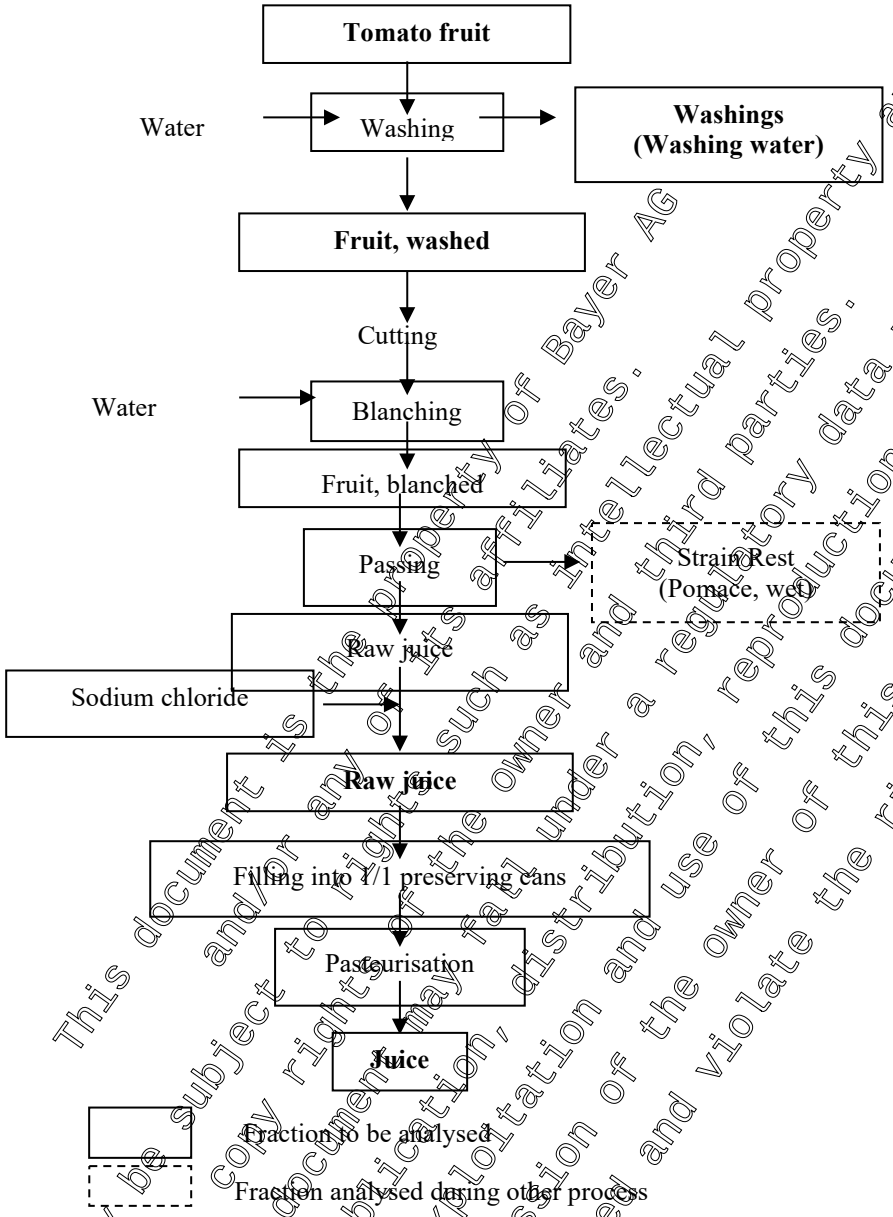
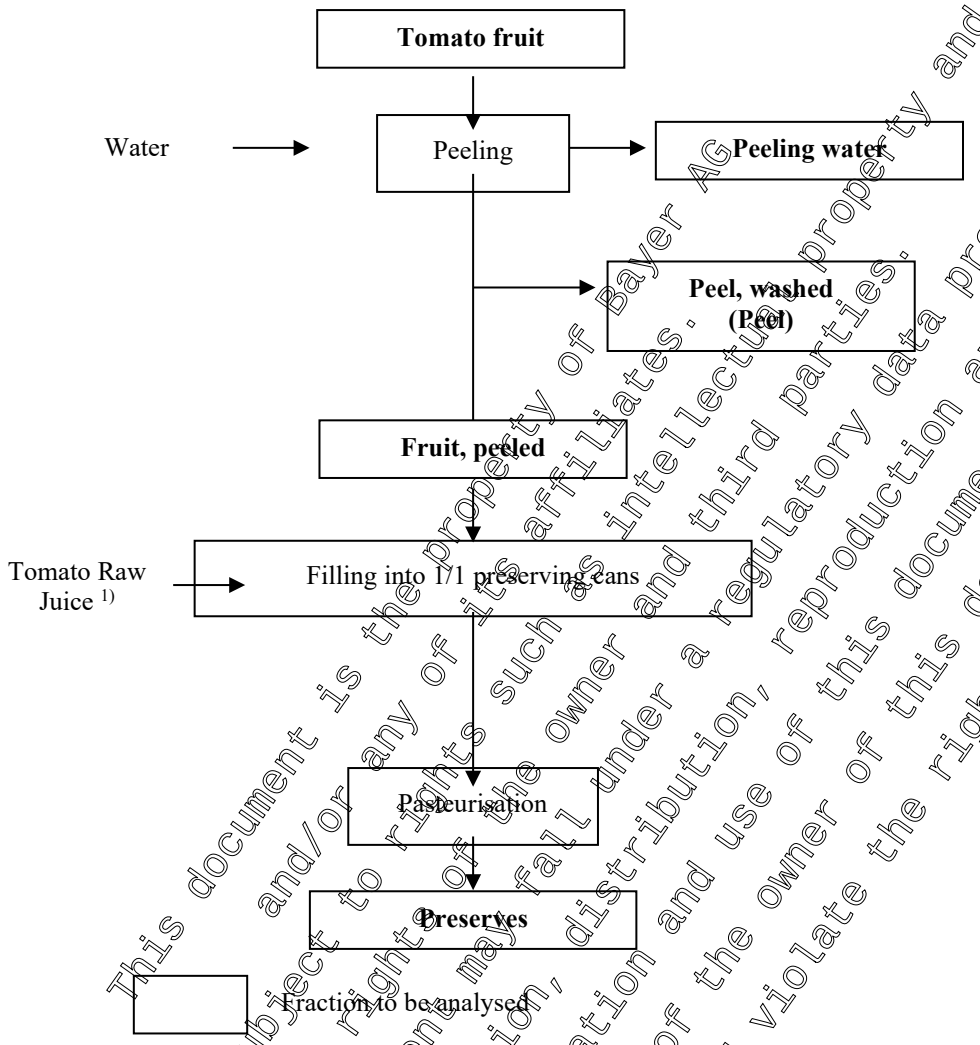


Figure 6.5.3.5-2:Flow chart for the preparation of peeled tomato fruit, peel, peeling water and preserve



1) : Raw juice was obtained during juice processing, see Figure 6.5.3.5-1

Figure 6.5.3.5-3: Flow chart and material balance for the preparation of wet pomace, raw puree and puree

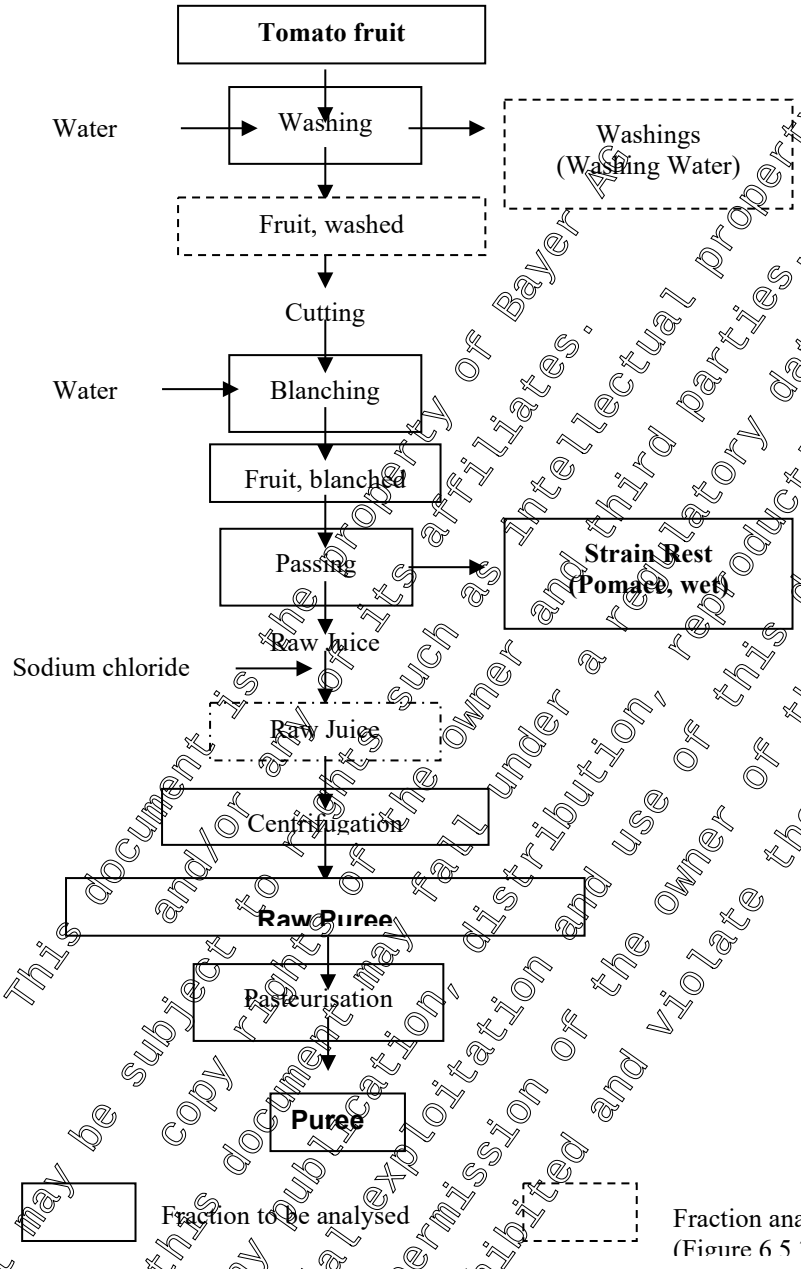


Table 6.5.3.5-1: Recovery results (concurrent recoveries) for BYI 08330 and its metabolites in tomato fruit and processed commodities

Study GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Max	Recovery (%) Min	Max	Mean	RSD
RA-2140/04 GLP yes 2004	Tomato	Fruit, fruit peeled, peel washed, fruit washed	BYI 08330	30	0.01	2.0	75	102	90	7.8
			BYI 08330 cis-enol	30	0.01	2.0	71	112	93	12.5
			BYI 08330 cis-keto-hydroxy	30	0.01	2.0	81	110	93	6.6
			BYI 08330 enol-glucoside	30	0.01	2.0	84	115	97	7.4
			BYI 08330 mono-hydroxy	30	0.01	2.0	79	106	93	7.1
		Washings, raw juice, Juice, peeling water	BYI 08330	12	0.01	1.0	84	114	92	9.8
			BYI 08330 cis-enol	12	0.01	1.0	81	115	91	11.3
			BYI 08330 cis-keto-hydroxy	12	0.01	1.0	91	115	99	6.3
			BYI 08330 enol-glucoside	12	0.01	1.0	89	128	100	10.3
			BYI 08330 mono-hydroxy	12	0.01	1.0	87	123	97	9.2
		Strain rest, preserve, puree, raw puree,	BYI 08330	12	0.01	1.0	76	104	89	8.8
			BYI 08330 cis-enol	12	0.01	1.0	75	98	87	10.6
			BYI 08330 cis-keto-hydroxy	12	0.01	1.0	83	107	94	7.2
			BYI 08330 enol-glucoside	12	0.01	1.0	81	104	94	8.6
			BYI 08330 mono-hydroxy	12	0.01	1.0	81	105	93	7.7

RSD = relative standard deviation

Table 6.5.3.5-2: Residues of BYI 08330 in tomato fruit and processed commodities from tomatoes processing studies (juice, preserve, puree).

Country Study No. Trial No. Processing study	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Greece RA-2140/04 R 2004 0827/7	Fruit	3	0.06	0.39	0.021	<0.012	0.031	0.50
Juice	Washings	3	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Fruit washed	3	0.01	0.29	0.014	<0.012	0.018	0.33
	Raw juice	3	<0.01	0.29	0.012	<0.012	0.022	0.32
	Juice	3	<0.01	0.27	0.013	<0.012	0.018	0.30
Preserve	Fruit, peeled	3	<0.01	0.30	0.012	<0.012	0.030	0.34
	Peel washed	3	0.04	0.30	0.032	<0.012	0.008	0.38
	Peeling water	3	0.01	0.066	0.012	<0.012	0.008	0.096
	Preserve	3	<0.01	0.31	0.012	<0.012	0.028	0.35
Puree	Strain rest	3	<0.01	0.62	0.027	<0.012	0.025	0.67
	Puree	3	<0.01	0.55	0.022	<0.012	0.019	0.59
	Raw puree	3	<0.01	0.57	0.022	<0.012	0.022	0.61
Spain RA-2140/04 R 2004 0828/5	Fruit	3	0.09	0.10	0.012	<0.012	0.043	0.25
Juice	Washings	3	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Fruit, washed	3	0.05	0.090	0.012	<0.012	0.030	0.19
	Raw juice	3	0.02	0.098	0.012	<0.012	0.028	0.16
	Juice	3	0.01	0.10	0.012	<0.012	0.022	0.14
Preserve	Fruit, peeled	3	<0.01	0.058	<0.012	<0.012	0.028	0.086
	Peel washed	3	0.75	0.17	0.034	<0.012	0.021	1.0
	Peeling water	3	0.02	0.012	<0.012	<0.012	0.008	<0.055
	Preserve	3	0.01	0.072	<0.012	<0.012	0.021	0.10
Puree	Strain rest	3	0.10	0.23	0.012	<0.012	0.027	0.36
	Puree	3	0.01	0.18	0.012	<0.012	0.026	0.23
	Raw puree	3	0.04	0.15	0.012	<0.012	0.030	0.23

DALT = days after last application

Table 6.5.3.5-2 continued

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Spain RA-2140/04 R 2004 0829/3	Fruit	3	0.15	0.11	0.012	<0.012	0.052	0.32
Juice	Washings	3	0.02	0.021	<0.012	<0.012	<0.008	<0.055
	Fruit, washed	3	0.04	0.091	0.012	<0.012	0.064	0.21
	Raw juice	3	0.01	0.12	0.012	<0.012	0.033	0.17
	Juice	3	<0.01	0.11	0.012	<0.012	0.028	0.15
Preserve	Fruit, peeled	3	<0.01	0.050	<0.012	<0.012	0.029	0.079
	peel washed	3	0.18	0.044	0.012	<0.012	0.010	0.24
	Peeling water	3	0.04	0.012	0.012	<0.012	0.008	0.061
	Preserve	3	<0.01	0.075	<0.012	<0.012	0.028	0.10
Pyree	Strain rest	3	0.02	0.23	0.012	<0.012	0.029	0.29
	Puree	3	<0.01	0.13	0.012	<0.012	0.023	0.17
	Raw puree	3	0.01	0.12	0.012	<0.012	0.026	0.17
Italy RA-2140/04 R 2004 0830/7	Fruit	3	0.07	0.093	0.012	<0.012	0.028	0.20
Juice	Washings	3	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Fruit, washed	3	0.02	0.063	0.012	<0.012	0.018	0.11
	Raw juice	3	0.01	0.096	0.012	<0.012	0.022	0.14
	Juice	3	<0.01	0.10	0.012	<0.012	0.018	0.13
Preserve	Fruit, peeled	3	0.01	0.057	<0.012	<0.012	0.023	0.090
	Peel washed	3	0.22	0.084	0.031	<0.012	0.008	0.34
	Preserve	3	<0.01	0.092	0.012	<0.012	0.021	0.13
	Peeling water	3	0.01	0.012	<0.012	<0.012	<0.008	<0.055
puree	Strain rest	3	0.02	0.20	0.012	<0.012	0.018	0.25
	Puree	3	0.01	0.10	0.012	<0.012	0.012	0.13
	Raw puree	3	0.01	0.14	0.012	<0.012	0.019	0.18

DALT = days after last treatment

Table 6.5.3.5-3: Transfer factors for the total residue of BYI 08330 in tomato juice, preserve and puree and processed by-products

Sample Material	Transfer factors for the total residue of BYI 08330				
	R 2004 0827/7	R 2004 0828/5	R 2004 0829/3	R 2004 0830/7	Mean
Juice production					
Fruit, washed	0.7	0.8	0.7	0.6	**0.7**
Washings	0.1*	0.2*	0.2*	0.3*	**0.2**
Raw juice	0.6	0.6	0.5	0.7	**0.6**
Juice	0.6	0.6	0.5	0.7	**0.6**
Preserve production					
Fruit, peeled	0.7	0.3	0.2	0.5	**0.4**
Peel, washed (Peel)	0.8	4.0	0.8	1.7	**1.8**
Peeling water	0.2	0.2*	0.2	0.3*	**0.2**
Preserve	0.7	0.4	0.5	0.7	**0.5**
Puree production					
Strain rest (Pomace, wet)	1.3	1.4	0.9	1.3	**1.2**
Puree	1.2	0.9	0.5	0.7	**0.8**
Raw puree	1.2	0.9	0.5	0.9	**0.9**

* For calculation of the transfer factor the residue in the processed fraction was set at LOQ.

IIA 6.5.3.6 Cooked and canned beans

Report:	**KIIA 6.5.3.6/01, [redacted]; 2006**
Title:	**Determination of the residues of BYI 08330 in/on climbing French bean (beans with pod) and the processed fractions (washings, cooking water, bean cooked, bean washed) after spraying of BYI 08330 (100 OD) in the greenhouse in Italy, Germany and southern France**
Report No &	**RA-3042/04, including trials no. R 2004 0172/8, R 2004 0173/6, R 2004 0174/4, R 2004 0175/2**
Document No	**M-263683-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Balance studies on washing and cooking of beans were performed to determine the fate of BYI 08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside during cooking. The processing was done using household practices. The procedure is described in Figure 6.5.3.6-1. Four bean samples were collected from 4 greenhouse trials.

Method 00857 was used to determine residues of BYI08330 in beans, washed beans, cooked beans and in washing and cooking water. Recoveries in all matrices were within guideline requirements (70-110%, RSD <20%). The recovery results are summarised in Table 6.5.3.6-1.

Findings:
The total residue of BYI08330 in beans with pod was between 0.11 and 0.57 mg/kg. The total residue in washed beans ranged between 0.076 and 0.47 mg/kg and in cooked beans between 0.07 and 0.31 mg/kg. Average factors of 0.7 and 0.5 were calculated for the transfer of the total residue of BYI08330 from beans with pod into washed and cooked beans, respectively. The results are summarised in Table 6.5.3.6-2 and in the respective Tier I summaries. Transfer factors are given in Table 6.5.3.6-3.

Figure 6.5.3.6-1: Flow chart for processing of climbing French beans to cooked beans.

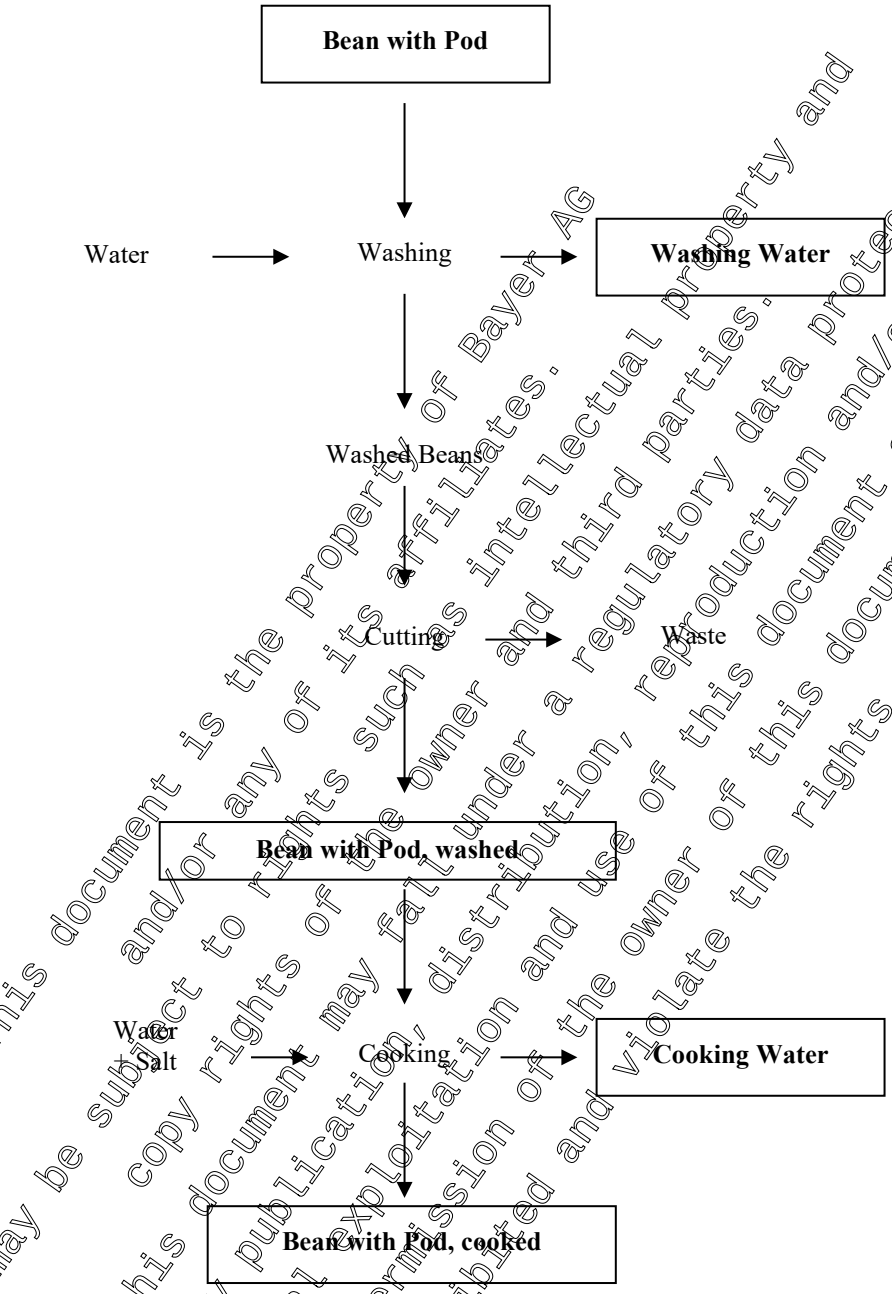


Table 6.5.3.6-1: Recovery results (concurrent recoveries) for BYI 08330 and its metabolites in climbing French beans and processed materials

Study Trial No. / GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg) Min	Fortification level (mg/kg) Max	Recovery (%) Min	Recovery (%) Max	Recovery (%) Mean	Recovery (%) RSD
RA-2042/04 R 2004 0172/8 R 2004 0173/6 R 2004 0174/4 R 2004 0175/2 GLP yes 2004	Bean, climbing French	Bean with pod,	BYI 08330	19	0.01	2.0	83	99	92	5.4
		bean, cooked,	BYI 08330 cis-enol	19	0.01	2.0	76	99	88	6.6
		bean with pod, washed	BYI 08330 cis-keto-hydroxy	19	0.01	2.00	83	101	94	4.7
			BYI 08330 enol-glucoside	19	0.01	2.0	81	110	96	9.8
			BYI 08330 mono-hydroxy	19	0.01	2.0	84	101	94	4.9
		Washings, cooking water	BYI 08330	6	0.01	1.0	87	99	92	5.4
			BYI 08330 cis-enol	6	0.01	1.0	71	98	86	12.5
			BYI 08330 cis-keto-hydroxy	6	0.01	1.0	86	103	94	7.5
			BYI 08330 enol-glucoside	6	0.01	1.0	85	114	99	11.1
			BYI 08330 mono-hydroxy	6	0.01	1.0	91	106	95	6.0

RSD = relative standard deviation

Table 6.5.3.6-2: Residues of BYI 08330 in climbing French bean and processed commodities.

Country Study No. Trial No.	Crop Portion analysed	DALT (days)	Residues (mg/kg) expressed as BYI 08330 equivalents BYI 08330	BYI 08330 enol	BYI 08330 keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total residue calc.
Italy RA-2042/04 R 2004 0172/8	Bean, climbing French Bean with pod	14	0.06	0.12	0.081	0.012	0.030	0.31
	Washings	14	<0.01	0.023	<0.012	<0.012	<0.008	<0.055
	Cooking water	14	<0.01	0.061	0.012	<0.012	0.008	0.081
	Bean, cooked	14	<0.01	0.076	0.012	<0.012	0.010	0.097
	Bean with pod, washed	14	0.04	0.12	0.046	0.012	0.022	0.23
Italy RA-2042/04 R 2004 0173/6	Bean, climbing French Bean with pod	14	0.01	0.066	0.020	0.012	0.008	0.11
	Washings	14	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Cooking water	14	<0.01	0.029	0.012	<0.012	0.008	<0.055
	Bean, cooked	14	<0.01	0.052	0.012	<0.012	0.008	0.071
	Bean with pod, washed	14	0.01	0.069	0.038	<0.012	0.008	0.076
Germany RA-2042/04 R 2004 0174/4	Bean, climbing French Bean with pod	14	0.13	0.29	0.099	0.012	0.035	0.57
	Washings	14	0.01	0.044	0.012	<0.012	<0.008	0.066
	Cooking water	14	<0.01	0.13	0.014	<0.012	0.009	0.14
	Bean, cooked	14	<0.01	0.24	0.025	<0.012	0.015	0.28
	Bean with pod, washed	14	0.06	0.24	0.079	0.012	0.027	0.42
France RA-2042/04 R 2004 0175/2	Bean, climbing French bean with pod	14	0.15	0.26	0.099	0.012	0.043	0.57
	Washings	14	0.01	0.036	0.012	<0.012	<0.008	0.058
	Cooking water	14	<0.01	0.15	0.018	0.012	0.012	0.19
	Bean, cooked	14	<0.01	0.25	0.029	0.012	0.020	0.31
	Bean with pod, washed	14	0.10	0.23	0.089	0.012	0.037	0.47

DALT = days after last application

Table 6.5.3.6-3: **Transfer factors for the total residue of BYI 08330 in bean processed commodities**

Sample Material	Trial No.	Transfer factors for the total residue of BYI08330
Bean with pod, washed	R 2004 0172/8	0.7
	R 2004 0173/6	0.7
	R 2004 0174/4	0.7
	R 2004 0175/2	0.8
	Mean	**0.7**
Washings (washing water)	R 2004 0172/8	0.2*
	R 2004 0173/6	0.5*
	R 2004 0174/4	0.1
	R 2004 0175/2	0.1
	Mean	**0.2**
Bean with pod, cooked	R 2004 0172/8	0.3
	R 2004 0173/6	0.6
	R 2004 0174/4	0.5
	R 2004 0175/2	0.5
	Mean	**0.5**
Cooking water	R 2004 0172/8	0.3
	R 2004 0173/6	0.5*
	R 2004 0174/4	0.2
	R 2004 0175/2	0.3
	Mean	**0.3**

*: For calculation of the transfer factors, residues below the LOQ were set at the LOQ.

Report:	**KIIA 6.5.3.6/02, [redacted], [redacted], 2011**
Title:	**Comparative determination of residues of spirotetramat and its metabolites, in/on bean, climbing French before and after sterilisation of grown residues of spirotetramat and its metabolites after spraying BYI08330 OD 150 in the field**
Report No & Document No	**MR-10/136** **M-400548-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991,**
GLP	**yes**

Test system:

The aqueous hydrolysis study (KIIA 6.5.1/04) showed that under the conditions of sterilisation (heating for 20 min to 121 °C) BYI08330-ketohydroxy dissolved in buffer solution pH 6 degrades to BYI08330-MA-amide. During canning beans are exposed to temperatures of 121°C. For the group of weak acid vegetables, which include beans, an F_0 value of above 4 is recommended for heat sterilisation (≥121°C). The F_0 value is defined as the period (min) at which the inner part of the vegetable can is exposed to 121°C. The aim of this study was to examine, if naturally grown BYI08330-ketohydroxy residues in beans degrade to BYI08330-MA-amide under conditions representative for canning of beans.
Samples of French climbing beans collected after four spray applications with spirotetramat (BYI08330) OD150 were analysed for residues of spirotetramat before and after sterilisation. Portions of 50 - 100 g of cuttered bean samples from supervised field residue trials containing naturally grown residues of spirotetramat were filled in polypropylen bags and placed in an autoclave. Sterilisation was performed according to the conditions representative for canning of beans: 121°C, F_0 value 4.68. Residues of BYI08330 (spirotetramat), BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohyddroxy, BYI08330-enol-glucoside, and BYI08330-MA-amide were analysed according to the HPLC-MS/MS method 00857/M006 and M007.

Findings:

Concurrent recoveries for spirotetramat and its metabolites in beans were within guideline requirements (70-120%, RSD ≤20%). The recovery data are summarised in Table 6.5.3.6-6.

Residues of spirotetramat and its metabolites in beans before and after sterilisation are summarised in Tables 6.5.3.6-4 and 6.5.3.6-5. The results show that residues of BYI08330 are completely degraded to BYI08330-enol. Residues of BYI08330-ketohydroxy, BYI08330-enol-glucoside were stable during the sterilisation process. BYI08330-monohydroxy was not found before or after sterilisation. Only traces of BYI08330-MA-amide were found in some samples before and after sterilisation.

Conclusion:

It can be concluded that residues of BYI08330 ketohydroxy in beans are stable under conditions representative for canning of beans. The study confirmed, the proposed residue definition for spirotetramat including BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside covers the relevant residue of spirotetramat in canned beans.

Table 6.5.3.6-4: Residues of spirotetramat (BYI08330) and its metabolites in/on French climbing bean (pod) **before** sterilisation

Sample Designation	Residues expressed as spirotetramat (BYI 08330) [mg/kg]						
	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 enol-glucoside	BYI 08330 mono-hydroxy	BYI 08330 MA-amide	Total residue calculated
08-2143-01-0012R BOSC T	<0.01	0.026	0.117	<0.01	<0.01	<0.01	0.18
08-2143-02-0008R BOSC T	0.033	0.105	0.197	0.033	<0.01	<0.01	0.39
08-2143-03-0012R BOSC T	0.153	0.259	0.194	0.030	<0.01	<0.01	0.66
08-2143-04-0008R BOSC T	0.232	0.174	0.190	0.017	<0.01	0.010	0.63

Table 6.5.3.6-5: Residues of spirotetramat (BYI 08330) and its metabolites in/on French climbing bean (pod) **after** sterilisation

Sample Designation	Residues expressed as spirotetramat (BYI 08330) [mg/kg]						
	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 enol-glucoside	BYI 08330 mono-hydroxy	BYI 08330 MA-amide	Total residue calculated
08-2143-01-0012R BOSC T	<0.01	0.059	0.121	<0.01	<0.01	0.012	0.22
08-2143-02-0008R BOSC T	<0.01	0.149	0.200	0.029	<0.01	<0.01	0.41
08-2143-03-0012R BOSC T	<0.01	0.400	0.218	0.025	<0.01	<0.01	0.67
08-2143-04-0008R BOSC T	<0.01	0.397	0.189	0.021	<0.01	0.022	0.65

Table 6.5.3.6-6: Concurrent recoveries for spirotetramat and its metabolites in grean beans with pods

Study Sample No. GLP Year	Crop	Portion analysed	Analyte	n	Fortification level* (mg/kg) Min	Recovery (%) Min	Max	Mean	RSD
P 672 10 4719 08-2143-01-0012R BOSCT 08-2143-02-0012R BOSCT 08-2143-03-0012R BOSCT 08-2143-04-0012R BOSCT	Bean, climbing French	Bean with pod	BYI 08330	2	0.01	72	79	76	
				2	0.25	91	94	93	
					overall			84	12.3
			BYI 08330 cis-enol	2	0.01	102	100	101	
				2	0.25	101	104	103	
				3	0.5	94		94	
					overall			100	3.8
			BYI 08330 cis-keto-hydroxy	2	0.01	107	100	104	
				2	0.25	94	103	99	
					overall			101	5.4
			BYI 08330 monohydroxy	2	0.01	92	92	92	
				2	0.25	84	95	95	
					overall			93	1.6
			BYI 08330 enol-glucoside	2	0.01	91	86	89	
				2	0.25	95	103	99	
					overall			94	7.7
			BYI08330 MA-amide	2	0.01	105	110	108	
				2	0.25	101	102	102	
					overall			105	3.9

* Fortification levels for metabolites are expressed as BYI08330 equivalents

IIA 6.5.3.7 Beer

Report:	**KIIA 6.5.3.7/01, [redacted]., [redacted]; 2006**
Title:	**Determination of the residues of BYI 08330 in/on hop cone green for processing and the processed fractions (cone kiln-dried, beer, hops draff, brewer´s yeast, brewer´s malt)after spraying of BYI08330 (OG100) in the field in northern France and Germany**
Report No &	**RA-3036/04, including trials no. R 2004 0148/5, R 2004 0149/3, R 2004 0150/7, R 2004 0151/5**
Document No	**M-265067-01-1**
Guidelines:	**EU Council Directive 91/414/EEC of July15, 1991, Annex II, part A, section 6 and Annex III, part A, section 8: Residues in or on treated products, food and feed**
GLP	**yes**

Test system:
Beer brewing balance studies were performed to determine the transfer of BYI08330 and its metabolites, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, from kiln-dried hop cones into processed commodities. The processing procedure is described in Figure 6.5.3.7-1. Four hop samples were collected from 4 different trials and processed seperately.
Method 00857 was used to determine residues of BYI08330 in hop cones, beer, hops draff, brewers yeast and brewer´s malt. Recoveries in all matrices were within guideline requirements (70-110%, RSD <20%). The recovery results are summarised in Table 6.5.3.76-1.

Findings:
The total residue of BYI08330 in kiln-dried cones ranged between 1.5 and 4.2 mg/kg. The total residue in beer samples was below the LOQ of 0.055 mg/kg from each of four processing studies. The results are summarised in Table 6.5.3.7-2 or in the respective Tier I summaries. For calculation of the transfer factors for the total residue in processed commodities total residues of below the LOQ, were set to the respective LOQ of 0.055 mg/kg (beer, brewer´s yeast) or 0.55 mg/kg (hops draff). An average factor of below 0.02 was calculated for the transfer of the total residue of BYI08330 from dried hop cones into beer. The average factor for the transfer of the total residue into hops draff is below 0.24 and into Brewers yeast is below 0.04. Transfer factors are given in Table 6.5.3.7-3.

Figure 6.5.3.7-1: Flow chart decribing processing of hops (dried cones) into beer.

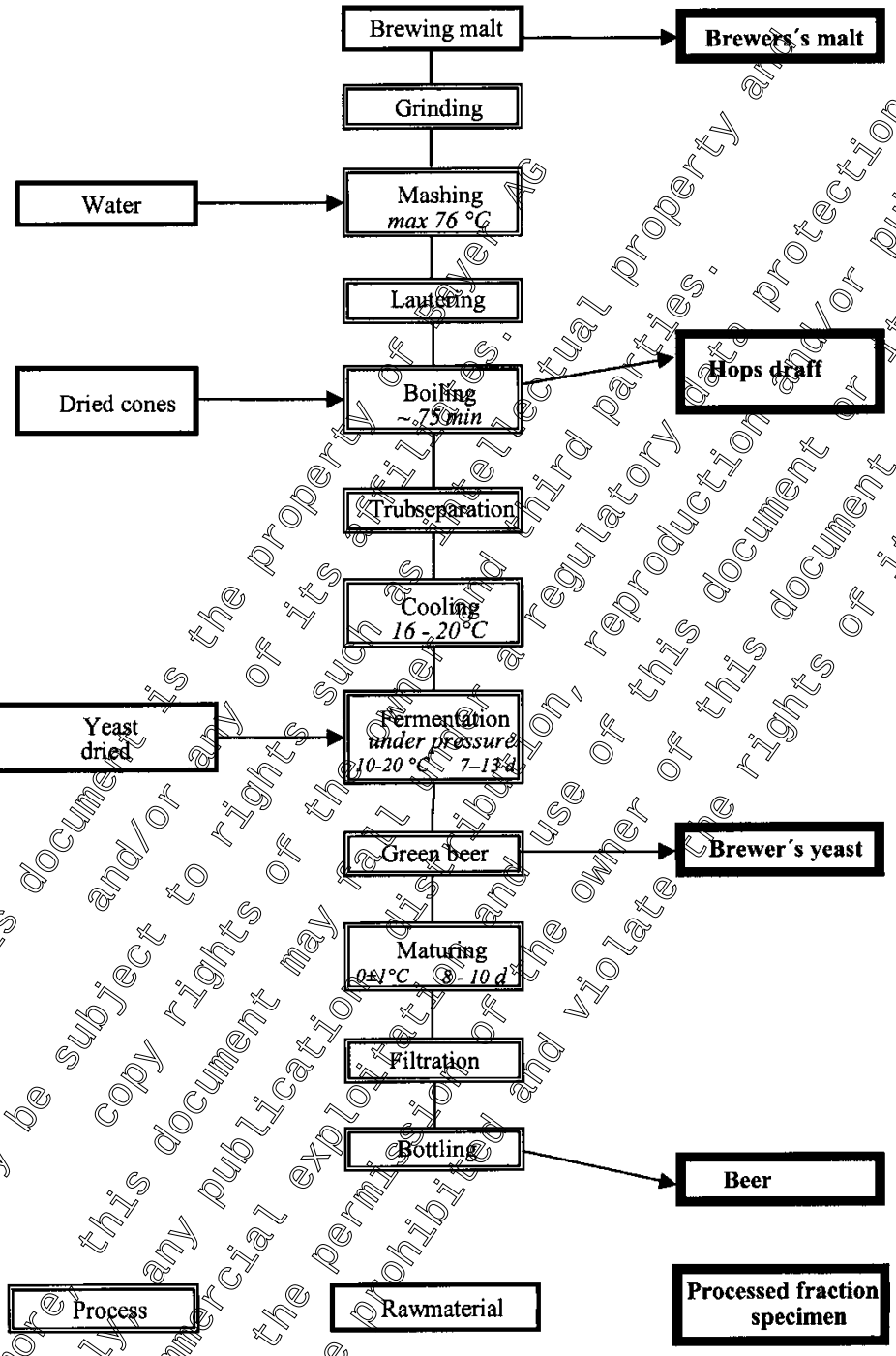


Table 6.5.3.7-1: Recovery results (concurrent recoveries) for BYI 08330 and its metabolites in dried hop cones and processed commodities

Study Trial No. Trial SubID GLP Year	Crop	Portion analysed	Analyte	n	Fortification level (mg/kg)		Recovery (%)			
					Min	Max	Min	Max	Mean	RSD
RA-2036/04 R 2004 0148/5 R 2004 0149/3 R2004 0150/7 R 2004 0151/5 GLP yes 2004	Hop	Cone, kiln-dried	BYI 08330	11	0.1	5.0	72	104	86	12.4
			BYI 08330 cis-enol	11	0.1	5.0	73	99	85	10.8
			BYI 08330 cis-keto-hydroxy	11	0.1	5.0	74	99	84	8.8
			BYI 08330 enol-glucoside	11	0.1	5.0	63	93	80	11.6
			BYI 08330 mono-hydroxy	11	0.1	5.0	72	94	82	7.9
		Beer	BYI 08330	4	0.01	5.0	86	120	102	13.7
			BYI 08330 cis-enol	4	0.01	5.0	97	110	105	5.5
			BYI 08330 cis-keto-hydroxy	4	0.01	5.0	87	109	101	9.9
			BYI 08330 enol-glucoside	4	0.01	5.0	86	109	98	9.6
			BYI 08330 mono-hydroxy	4	0.01	5.0	89	104	99	7.0
		Hops draff	BYI 08330	11	0.1	5.0	72	104	86	12.4
			BYI 08330 cis-enol	11	0.1	5.0	73	99	85	10.8
			BYI 08330 cis-keto-hydroxy	11	0.1	5.0	74	99	84	8.8
			BYI 08330 enol-glucoside	11	0.1	5.0	63	93	80	11.6
			BYI 08330 mono-hydroxy	11	0.1	5.0	72	94	82	7.9
		Brewer's yeast	BYI 08330	8	0.01	5.0	84	101	93	6.1
			BYI 08330 cis-enol	8	0.01	5.0	86	110	95	8.2
			BYI 08330 cis-keto-hydroxy	8	0.01	5.0	87	102	98	7.2
			BYI 08330 enol-glucoside	8	0.01	5.0	87	103	95	5.7
			BYI 08330 mono-hydroxy	8	0.01	5.0	81	102	93	8.4
		Brewer's malt	BYI 08330	7	0.01	5.0	84	96	93	4.7
			BYI 08330 cis-enol	7	0.01	5.0	89	100	95	3.4
			BYI 08330 cis-keto-hydroxy	7	0.01	5.0	84	101	95	5.9
			BYI 08330 enol-glucoside	7	0.01	5.0	81	95	91	5.6
			BYI 08330 mono-hydroxy	7	0.01	5.0	85	96	92	4.4

RSD = relative standard deviation

Table 6.5.3.7-2: Residues of BYI 08330 in dried hop cones and in processed commodities

Country Study No. Trial No.	Portion analysed	DALT	Residues [mg/kg] in parent equivalents					
			BYI 08330	BYI 08330-enol	BYI 08330-keto-hydroxy	BYI 08330-mono-hydroxy	BYI 08330-enol-Glc	Total Res. of BYI 08330 calc.
France RA-2036/04 R 2004 0148/5	Cone, kiln-dried	14	0.63	0.18	0.30	<0.12	0.41	1.5
	Beer	14	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
	Hops draff	14	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
	Brewer's yeast	14	<0.01	0.017	0.012	<0.012	<0.008	<0.055
	Brewer's malt	14	<0.01	<0.012	<0.012	<0.012	<0.008	<0.055
Germany RA-2036/04 R 2004 0149/3	Cone, kiln-dried	14	0.56	0.25	0.39	<0.12	0.50	1.7
	Beer	14	<0.01	0.016	0.012	<0.012	0.008	<0.055
	Hops draff	14	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
	Brewer's yeast	14	<0.01	0.076	0.014	<0.012	0.008	0.098
Germany RA-2036/04 R 2004 0150/7	Cone, kiln-dried	14	1.1	0.75	0.75	<0.12	1.3	3.9
	Beer	14	<0.01	0.016	0.012	<0.012	0.008	<0.055
	Hops draff	14	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
	Brewer's yeast	14	<0.01	0.062	0.012	<0.012	0.008	0.082
France RA-2036/04 R 2004 0151/5	Cone, kiln-dried	15	2.6	0.32	0.72	<0.12	0.58	4.2
	Beer	15	<0.01	0.023	0.012	<0.012	0.008	<0.055
	Hops draff	15	<0.1	<0.12	<0.12	<0.12	<0.08	<0.55
	Brewer's yeast	15	<0.01	0.067	0.012	<0.012	0.008	0.087

DALT = days after last treatment

Table 6.5.3.7-3: Transfer factors for the total residue of BYI08330 into processed commodities related to kiln-dried cones

Sample Material	Transfer factors for the total residue of BYI 08330				
	R 2004 0148/5	R 2004 0149/3	R 2004 0150/7	R 2004 0151/5	Mean
Beer	<0.04*	<0.03*	<0.01*	<0.01*	**<0.02**
Hops draff	<0.36*.	<0.32*	<0.14*	<0.13*	**<0.24**
Brewer's yeast	<0.04*.	0.06	0.02	0.02	**<0.04**

*Residues in processed RAC were below LOQ. For calculation of the transfer factor the residues in the processed RAC were set at the LOQ of 0.055 mg/kg (brewer`s yeast, beer) or 0.55 mg/kg (hops draff).

IIA 6.5.4 Residue levels - follow-up studies: concentration or dilution factors

IIA 6.5.4.1 Apple Processing Study from North America

Report:	**IIA 6.5.4.1, [redacted] 2006**
Title:	**BYI08330 150 OD: Magnitude of the Residue on Apple Processed Commodities**
Report No & Document No	**RAFNY014** **M-276832-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed** **PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

An apple processing trial was conducted to measure the magnitude of BYI08330 residue in apples and apple processed commodities following exaggerated rate treatment of apples with BYI08330 150 OD.

Three airblast applications were made to apple trees in the treated plot using equipment customarily used to apply pesticides in this manner to apples. The first application was made when the apples were about 60% of final size (BBCH 76), with a 14-day interval between the two succeeding applications. The first test substance application was applied at a target rate of 0.705 lb ai/A/application (790 g ai/ha/application) in a target spray volume of 35-70 GPA (327-655 L/ha). The second and third test substance applications were applied at a target rate of 0.625 lb ai/A/application (701 g ai/ha/application) in target spray volumes of 35-70 GPA (Table 6.5.4.1-1). The achieved total seasonal rate was 1.96 lb ai/A (2194 g ai/ha). This rate is equivalent to five times (5X) the total maximum proposed label rate for a single growing season.

One control and one treated bulk apple samples were collected at a 7-day pre-harvest interval (PHI) and hand delivered on the same day to the processing faciltiy. Prior to processing, random sub-samples of the control and treated bulk apple samples were collected for analysis, and the remainder of the apple samples were used to generate the required processed commodities of apple wet pomace and juice. In addition, samples of washed fruit, peeled fruit, applesauce, and dried fruit were generated for use in the dietary risk assessment for BYI08330. Processing was performed using procedures which simulated commercial processing practices. The resultant apple samples and processed commodities were analyzed to determine total BYI08330 residue.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization / tandem mass spectrometry (LC-MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside, were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in the apple raw agricultural commodity (RAC) and each processed commodity.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed apple commodities are summarized in Tables 6.5.4.1-2 through 6.5.4.-8. Mean recoveries for all analytes ranged from 71% ±1 to 120% ±6.

The total BYI08330 residues found in unprocessed apples, wet pomace, juice, washed apples, peeled fruit, apple sauce, and dried fruit are shown in Table 6.5.4.1-9. The calculated processing factors are listed in Table 6.5.4.1-10. The total BYI08330 residue was found to concentrate in apple wet pomace (1.9X). No concentration (<1X) of the total BYI08330 residue was found in apple juice (0.4X).

In the additional samples generated for dietary risk assessment, no concentration (≤1X)of total BYI08330 residue was found in washed fruit (0.6X), peeled fruit (0.2X), applesauce (0.1X), or dried fruit (1X).

Table 6.5.4.1-1 Study Use Pattern for BYI08330 on Apples.

Location: City, State, NAFTA Region	Trial No.	Year	End-Use Product	Application							Tank Mix Adjuvant
				Method	Timing[a]	Plot Name	Rate lb ai/A (kg ai/ha)	RTI[b] (days)	Spray Volume GPA (L/ha)	Total Rate lb ai/A (kg ai/ha)	
[redacted], Washington Region 11	FN224-05P	2005	150 OD	Airblast	Fruit 60% of final size		0.707 (0.793)	0	65.2 (610)		None
				Airblast	Fruit 80% of final size	TRT 5X	0.625 (0.701)	14	64.8 (606)	1.96 (2.194)	
				Airblast	Beginning of ripening		0.624 (0.700)	14	63.9 (597)		

[a] Timing = First Application occurred 35 days prior to harvest

[b] RTI = Retreatment Interval.

Table 6.5.4.1-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside in/on Apples.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Fresh Fruit	BYI08330	0.01	7	82, 101, 99, 86, 94, 91, 71	89 ± 10
		0.05	3	88, 93, 91	91 ± 3
		0.10	3	98, 97, 97	97 ± 1
		0.50	2	95, 97	96[a]
		0.60	3	97, 95, 99	97 ± 2
Fresh Fruit	BYI08330-enol	0.01	7	112, 114, 126, 118, 126, 118, 125	120 ± 6
		0.05	3	118, 118, 112	116 ± 3
		0.10	3	105, 98, 103	102 ± 4
		0.50	2	119, 116	118[a]
		0.60	3	97, 101, 97	98 ± 2
Fresh Fruit	BYI08330-ketohydroxy	0.01	7	99, 109, 81, 85, 107, 71, 101	93 ± 14
		0.05	3	85, 97, 95	92 ± 6
		0.10	3	104, 99, 104	102 ± 3
		0.50	2	91, 93	92[a]
		0.60	3	101, 98, 102	100 ± 2
Fresh Fruit	BYI08330-mono-hydroxy	0.01	7	109, 94, 96, 103, 114, 106, 105	104 ± 7
		0.05	3	91, 88, 92	90 ± 2
		0.10	3	103, 98, 99	100 ± 3
		0.50	2	91, 92	92[a]
		0.60	3	99, 96, 99	98 ± 2
Fresh Fruit	BYI08330-enol-glucoside	0.01	7	105, 99, 102, 109, 108, 105, 113	106 ± 5
		0.05	3	100, 104, 100	101 ± 2
		0.10	3	74, 71, 71	72 ± 2
		0.50	2	97, 99	98[a]
		0.60	3	71, 72, 70	71 ± 1

[a]Standard deviation is not applicable when n ≤ 2.

Table 6.5.4.1-3 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside in Apple Wet Pomace.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Wet Pomace	BYI08330	0.01	3	97, 85, 103	95 ± 9
		0.10	3	93, 89, 105	96 ± 8
		1.20	3	104, 99, 99	101 ± 3
Wet Pomace	BYI08330-enol	0.01	3	94, 101, 98	98 ± 4
		0.10	3	94, 87, 105	95 ± 9
		1.20	3	101, 96, 97	98 ± 3
Wet Pomace	BYI08330-ketohydroxy	0.01	3	71, 72, 86	76 ± 8
		0.10	3	90, 88, 88	89 ± 1
		1.20	3	96, 97, 99	97 ± 2
Wet Pomace	BYI08330-mono-hydroxy	0.01	3	95, 89, 88	91 ± 4
		0.10	3	94, 82, 100	92 ± 9
		1.20	3	97, 94, 99	97 ± 3
Wet Pomace	BYI08330-enol-glucoside	0.01	3	96, 90, 102	96 ± 6
		0.10	3	91, 92, 101	95 ± 6
		1.20	3	103, 87, 96	95 ± 8

Table 6.5.4.1-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside in Apple Juice.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Juice	BYI08330	0.01	7	103, 91, 99, 110, 86, 90, 92	96 ± 8
		0.15	3	97, 105, 96	99 ± 5
Juice	BYI08330-enol	0.01	7	99, 104, 101, 114, 102, 100, 101	103 ± 5
		0.15	3	102, 105, 100	102 ± 3
Juice	BYI08330-ketohydroxy	0.01	7	92, 114, 67, 78, 114, 106, 115	98 ± 19
		0.15	3	103, 100, 101	101 ± 2
Juice	BYI08330-mono-hydroxy	0.01	7	97, 88, 104, 99, 92, 103, 98	97 ± 6
		0.15	3	94, 101, 99	98 ± 4
Juice	BYI08330-enol-glucoside	0.01	7	98, 100, 92, 88, 109, 80, 103	96 ± 10
		0.15	3	77, 75, 77	76 ± 1

Table 6.5.4.1-5 Summary of Concurrent Recoveries of BYI08330 (parent), BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside on Apple Washed Fruit.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Washed Fruit	BYI08330	0.01	3	111, 103, 95	103 ± 8
		0.10	3	101, 102, 97	100 ± 3
		0.5	3	97, 103, 99	100 ± 3
Washed Fruit	BYI08330-enol	0.01	3	92, 98, 104	98 ± 6
		0.10	3	99, 96, 99	98 ± 2
		0.5	3	97, 98, 97	97 ± 1
Washed Fruit	BYI08330-ketohydroxy	0.01	3	77, 115, 115	102 ± 22
		0.10	3	110, 106, 108	108 ± 2
		0.5	3	100, 97, 100	99 ± 2
Washed Fruit	BYI08330-mono-hydroxy	0.01	3	100, 106, 106	104 ± 3
Washed Fruit	BYI08330-enol-glucoside	0.01	3	100, 101, 119	107 ± 11

Table 6.5.4.1-6 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside on Apple Peeled Fruit.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Peeled Fruit	BYI08330	0.01	3	84, 92, 85	86 ± 6
		0.10	3	105, 98, 96	100 ± 5
Peeled Fruit	BYI08330-enol	0.01	3	94, 91, 89	91 ± 3
		0.10	3	95, 96, 94	95 ± 1
Peeled Fruit	BYI08330-ketohydroxy	0.01	3	114, 96, 78	96 ± 18
		0.10	3	99, 102, 103	101 ± 2
Peeled Fruit	BYI08330-mono-hydroxy	0.01	3	95, 101, 96	97 ± 3
		0.10	3	95, 102, 96	98 ± 4
Peeled Fruit	BYI08330-enol-glucoside	0.01	3	100, 84, 106	97 ± 10
		0.10	3	78, 80, 72	77 ± 4

Table 6.5.4.1-7 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside on Applesauce.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Applesauce	BYI08330	0.01	3	75, 91, 79	82 ± 8
		0.05	3	94, 104, 96	98 ± 5
Applesauce	BYI08330-enol	0.01	3	99, 99, 79	92 ± 12
		0.05	3	89, 93, 92	91 ± 2
Applesauce	BYI08330-ketohydroxy	0.01	3	98, 75, 89	87 ± 12
		0.05	3	97, 100, 97	98 ± 2
Applesauce	BYI08330-mono-hydroxy	0.01	3	111, 95, 99	102 ± 8
		0.05	3	97, 106, 88	97 ± 9
Applesauce	BYI08330-enol-glucoside	0.01	3	79, 72, 83	78 ± 6
		0.05	3	83, 92, 89	88 ± 5

Table 6.5.4.1-8 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside on Apple Dried Fruit.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Dried Fruit	BYI08330	0.01	3	90, 83, 96	90 ± 7
		0.40	3	93, 88, 99	93 ± 6
Dried Fruit	BYI08330-enol	0.01	3	75, 81, 78	78 ± 3
		0.40	3	100, 98, 94	97 ± 3
Dried Fruit	BYI08330-ketohydroxy	0.01	3	90, 111, 106	102 ± 11
		0.40	3	99, 99, 97	98 ± 1
Dried Fruit	BYI08330-mono-hydroxy	0.01	3	89, 92, 89	90 ± 2
		0.40	3	98, 96, 98	97 ± 1
Dried Fruit	BYI08330-enol-glucoside	0.01	3	71, 82, 72	75 ± 6
		0.40	3	78, 83, 82	81 ± 3

Table 6.5.4.1-9 Results of residue trials conducted with BYI 08330 OD 150 in/on Apple in North America.

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY014 FN224-05P USA [redacted], Washington 2005	Apple	7	0.589	0.160	0.043	0.013	<0.010	0.811
		7	0.366	0.164	0.043	0.013	<0.010	0.591
	fruit	7	0.401	0.166	0.044	0.011	<0.010	0.628
	whole fruit, washed	7	0.312	0.068	0.056	<0.010	<0.010	0.450
		7	0.193	0.081	0.057	0.012	<0.010	0.348
		7	0.200	0.080	0.055	0.011	<0.010	0.352
	fruit without peel	7	0.013	0.065	0.035	<0.010	<0.010	0.124
		7	0.013	0.067	0.037	<0.010	<0.010	0.130
		7	0.014	0.066	0.044	<0.010	<0.010	0.136
	pomace, wet	7	0.965	0.208	0.089	<0.014	<0.010	1.281
		7	1.008	0.211	0.084	0.015	<0.010	1.324
		7	0.984	0.215	0.073	0.015	<0.010	1.293
	juice	7	0.092	0.119	0.038	0.011	<0.010	0.269
		7	0.102	0.115	0.033	0.014	<0.010	0.270
		7	0.093	0.110	0.048	0.014	<0.010	0.269
	sauce	7	<0.010	0.045	0.015	<0.010	<0.010	0.070
		7	<0.010	0.045	0.014	<0.010	<0.010	0.068
		7	<0.010	0.045	0.014	<0.010	<0.010	0.068
	fruit, dried	7	<0.010	0.419	0.158	0.046	0.015	0.647
		7	<0.010	0.437	0.170	0.054	0.016	0.685
		7	<0.010	0.468	0.164	0.051	0.017	0.708

[a]DALT = Days after last treatment.

Table 6.5.4.1-10 Processsing factors for apple processed commodities following the application of BYI08330 150 OD and commercial processing.

RAC	Processed Commodity	Total Rate lb ai/A (kg ai/ha)	Total BYI08330 Residue (ppm)	Processing Factor[a]
Apple	NA[b]	1.96 (2.194)	0.81 0.59 0.63 Avg: 0.68	NA
	Wet Pomace		1.28 1.32 1.29 Avg: 1.30	1.9 X
	Juice		0.27 0.27 0.27 Avg: 0.27	< 1.0 (0.4 X)
	Washed Fruit		0.45 0.38 0.35 Avg: 0.38	< 1.0 (0.6 X)
	Peeled Fruit		0.12 0.13 0.14 Avg: 0.13	< 1.0 (0.2 X)
	Applesauce		0.07 0.07 0.07 Avg: 0.07	< 1.0 (0.1X)
	Dried Fruit		0.65 0.68 0.71 Avg: 0.68	= 1.0 (1 X)

[a] Processing factor = Average residue in processed sample / residue in unprocessed sample

[b] NA = Not applicable.

IIA 6.5.4.2 Citrus Processing Studies from North America.

Report:	**IIA 6.5.4.2.1, [redacted] 2006**
Title:	**BYI08330 150 OD – Magnitude of the Residue on Citrus Processed Commodities**
Report No & Document No	**RAFNY016** **M-277028-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed** **PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

An orange processing trial was conducted to measure the magnitude of residue on oranges and orange processed commodities. Two foliar applications of BYI-08330 150 OD were made to oranges at a target rate of 0.785 lb ai/A/application (0.880 kg ai/ha/application) with 19 to 21 days between applications and a target preharvest interval (PHI) of 1-day (Table 6.5.4.2.1-1). Actual application rates ranged from 0.756 to 0.783 lb ai/A/application (0.848 to 0.878 kg ai/ha/application). The total amount of BYI08330 applied was 1.54 lb ai/A (1.726 kg ai/ha), equivalent to 80 fl oz formulated product/acre which represents a five-fold (5X) exaggeration of the maximum recommended label use rate.

A single control and treated bulk sample of oranges were collected at BBCH 83(fruit ripe for picking (fruit has not yet developed variety specific coloration), to BBCH 89 (fruit ripe for consumption) at a 1-day target PHI. Prior to processing, random sub-samples of the control and treated bulk orange samples were collected for analysis, and the remainder of the orange samples were used to generate the required processed commodities of dried pulp, oil, and juice. Processing was performed using procedures which simulated commercial processing practices. The resultant orange RAC samples and orange processed commodities were analyzed to determine total BYI08330 residue. Difficulties in generating the orange oil processed commodity were encountered during processing which resulted in decreased amounts of orange oil sample available for analysis.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (lc-ms/ms) using isotopically labeled internal standards. Method validation and concurrent recoveries were performed to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent), BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.05 ppm for each analyte in oranges and the processed commodities of oranges.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed citrus commodities are summarized in Table 6.5.4.2.1-2. Mean recoveries for all analytes ranged from 77% ±3 to 118%.

The total BYI08330 residues found in unprocessed oranges, dried pulp, oil, and juice are shown in Table 6.5.4.2.1-3. The calculated processing factors are listed in Table 6.5.4.2.1-4. The total BYI08330 residue on orange RAC and orange processed commodities treated at 5X the recommended application rate was 0.53 ppm for orange RAC, 0.71 ppm for dried pulp, 8.30 ppm for orange oil, and <0.05 ppm for orange juice.

Concentration (16X) of the total BYI08330 residue was observed in the processed commodity of orange oil. A slight concentration of total BYI08830 residue was observed in orange dried pulp (1.3X) and no concentration (<1X) of total BYI08330 residue was observed in orange juice (0.08X).

Table 6.5.4.2.1-1 Study Use Pattern for BYI08330 150 OD on Oranges.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							Tank Mix Adjuvants[a]
				Method	Timing	Plot Name	Rate lb a.i./A (g a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (g a.i./ha)	
[redacted], California Region 10	FN226-05P	2005	150 OD	Foliar	1 Appl: Beginning of fruit colouring (colour-break)	TRTD 3X	0.469 (0.526)	0	54 (505)	0.923 (1.035)	Yes
					2 Appl: Fruit ripe for consumption		0.454 (0.509)	21	51 (479)		
			150 OD	Foliar	1 Appl: Beginning of fruit colouring (colour-break)	TRTD 5X	0.783 (0.878)	0	54 (504)	1.539 (1.726)	Yes
					2 Appl: Fruit ripe for consumption		0.756 (0.848)	21	51 (474)		

[a] An additive of Dyne-Amic 0.5% (v/v) was used in the tank mix

Table 6.5.4.2.1-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-mono-hydroxy, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-enol-glucoside in/on Oranges and Orange Processed Commodities.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation
Orange whole fruit (RAC)	BYI08330	0.05	7	112, 103, 115, 80, 82, 105, 92	98 ± 14
		0.2	2	97, 99	98[a]
		0.5	3	94, 94, 95	94 ± 1
	BYI08330-mono-hydroxy	0.05	7	96, 92, 94, 91, 94, 98, 100	95 ± 3
		0.2	2	102, 94	98[a]
		0.5	3	95, 92, 99	95 ± 4
	BYI08330-enol	0.05	7	95, 99, 95, 98, 99, 102, 102	99 ± 3
		0.2	2	99, 99	99[a]
		0.5	3	100, 101, 104	102 ± 2
	BYI08330-ketohydroxy	0.05	7	98, 98, 100, 93, 100, 100, 105	99 ± 4
		0.2	2	99, 95	97[a]
		0.5	3	99, 102, 96	99 ± 3
	BYI08330-enol-glucoside	0.05	7	86, 89, 89, 90, 96, 85, 96	90 ± 4
		0.2	2	107, 102	105[a]
		0.5	3	92, 96, 99	96 ± 4
Orange dried pulp	BYI08330	0.05	3	79, 71, 103	84 ± 17
		0.5	3	97, 100, 100	99 ± 2
	mono-hydroxy	0.05	3	88, 98, 95	94 ± 5
		0.5	3	91, 84, 86	87 ± 4
	BYI08330-enol	0.05	3	84, 83, 80	82 ± 2
		0.5	3	111, 112, 108	110 ± 2
	BYI08330-ketohydroxy	0.05	3	115, 109, 98	107 ± 9
		0.5	3	93, 93, 90	92 ± 2
	BYI08330-enol-glucoside	0.05	3	119, 93, 91	101 ± 16
		0.5	3	73, 99, 90	87 ± 13
Orange juice	BYI08330	0.05	3	97, 110, 90	99 ± 10
	BYI08330-mono-hydroxy	0.05	3	97, 95, 103	98 ± 4
	BYI08330-enol	0.05	3	98, 95, 97	97 ± 2
	BYI08330-ketohydroxy	0.05	3	103, 100, 102	102 ± 2
	BYI08330-enol-glucoside	0.05	3	96, 114, 95	102 ± 11

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Table 6.5.4.2.1-2 (continued)

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation[a]
Orange oil	BYI08330	0.05	3	98, 88, 120	102 ± 16
		0.5	1	100	100[a]
		10	3	107, 102, 104	104 ± 3
	BYI08330-mono-hydroxy	0.05	3	105, 101, 119	108 ± 9
		0.5	1	106	106[a]
		10	3	103, 110, 116	110 ± 7
	BYI08330-enol	0.05	3	120, 116, 118	118 ± 2
		0.5	1	120	120[a]
		10	3	108, 105, 111	108 ± 3
	BYI08330-ketohydroxy	0.05	3	104, 111, 110	108 ± 4
		0.5	1	108	108[a]
		10	3	104, 104, 111	106 ± 4
	BYI08330-enol-glucoside	0.05	3	114, 110, 97	107 ± 9
		0.5	1	104	104[a]
		10	3	92, 110, 118	107 ± 13

[a] Standard deviation is not calculated for a sample with less than three recoveries.

Table 6.5.4.2.1-3 Results of residue trials conducted with BYI 08330 OD 150 in/on Orange in North America

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY016 FN226-05P USA [redacted], California 2005	Orange fruit	1 1 1	0.389 0.373 0.386	0.115 0.106 0.114	0.026 0.027 0.028	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	0.536 0.512 0.535
	Pulp, dry	1 1 1	<0.010 <0.010 <0.010	0.583 0.573 0.589	0.084 0.079 0.084	<0.010 <0.010 <0.010	0.024 0.019 0.024	0.715 0.694 0.720
	oil	1 1 1	8.207 7.052 7.674	0.516 0.538 0.538	0.118 0.124 0.116	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	8.848 7.720 8.334
	juice	1 1 1	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010

Table 6.5.4.2.1-4 Processsing factors for orange processed commodities following the application of BYI08330 150 OD and commercial processing.

RAC	Processed Commodity	Total Rate (lb a.i./A (kg a.i./ha))	PHI (days)	Total BYI08330 Residue (ppm)	Total BYI08330 Processing Factor[a]
Orange, Whole Fruit	NA	1.539 (1.726)	1	0.536 0.512 0.535 Avg. 0.527	NA
	Orange Juice		1	<0.05 <0.05 <0.05 Avg. <0.05	<1X[b]
	Orange Dried Pulp[c]		1	0.715 0.694 0.720 Avg. 0.709	1.3X
	Orange Oil		1	8.85 7.72 8.33 Avg. 8.30	16X

[a] Processing Factor = Average residue in processed sample / residue in unprocessed sample.
[b] The calculated processing factor was 0.04X.
[c] Percent dry matter determination of orange dried pulp was 95%.

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Report:	**IIA 6.5.4.2.2, [redacted].; 2006**
Title:	**BYI08330 100 OD - Reduction of the Residue in Grapefruit from Commercial Washing, Waxing, and Packing Procedures**
Report No &	**RAFNY042**
Document No	**M-277675-01-1**
Guidelines:	**None**
GLP	**yes**

Test System

A study was conducted to evaluate the reduction of BYI08330 residue in grapefruit following commercial washing and waxing procedures. A single foliar spray application of BYI08330 100 OD was made to grapefruit trees 7 days before fruit harvest at a target rate of 0.314 lb ai/acre (352 g ai/ha, 2X the maximum labeled use rate; Table 6.5.4.2.2-1), with the spray adjuvant Dyne-amic at a rate of 0.25% (v/v).

Grapefruit was collected from both the treated plot and the control plot at a 7-day preharvest interval (PHI) and the samples were washed and waxed following typical commercial citrus processing practices. Triplicate samples from the treated plot and a single sample from the control plot were collected before and after the washing and waxing process.

The total residue of BYI08330 (residues of parent and the metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside) was quantitated by liquid chromatography/mass spectrometry-mass spectrometry (lc/ms-ms) with an electrospray interface using isotopically labeled internal standards. The limit of quantitation (LOQ) was 0.01 ppm for each individual analyte in grapefruit.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed citrus commodities are summarized in Table 6.5.4.2.2-2. Mean recoveries for all analytes ranged from 91% ±1 to 112% ±4.

The total BYI08330 residues found in unprocessed oranges, dried pulp, oil, and juice are shown in Table 6.5.4.2.2-3. The calculated processing factors are listed in Table 6.5.4.2.2-4.

A residue processing factor of 0.45X (55% reduction of residues) was determined from samples collected before and after the washing and waxing process.

Table 6.5.4.2.2-1 Study use pattern for BYI08330 100 OD on grapefruit.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	Tank Mix Adjuvants
[redacted], FL Region 3	FN330-05P	2005	100 OD	Airblast	7-days Preharvest	TD2X	0.314 (0.352)	NA	122 (1165)	0.314 (0.352)	Dyne-Amic

Table 6.5.4.2.2-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside in/on Grapefruit.

Matrix/Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev. [a]
Unwashed Grapefruit				
BYI08330	**0.01**	**7**	**83,103,105,117,107,89,99**	**100±11**
	0.05	**3**	**97,92,97**	**95±3**
	0.10	**1**	**101**	**101[b]**
	0.20	**2**	**94,107**	**100[b]**
BYI08330-enol	**0.01**	**7**	**99,118,107,117,111,104,107**	**109±7**
	0.05	**3**	**102,106,107**	**105±3**
	0.10	**1**	**114**	**114[b]**
	0.20	**2**	**106,104**	**105[b]**
BYI08330-ketohydroxy	**0.01**	**7**	**105,97,99,99,97,98,98**	**99±3**
	0.05	**3**	**88,90,87**	**89±2**
	0.10	**1**	**101**	**101[b]**
	0.20	**2**	**97,98**	**97[b]**
BYI08330-mono-hydroxy	**0.01**	**7**	**95,106,100,103,100,98,103**	**101±4**
	0.05	**3**	**94,98,102**	**98±4**
	0.10	**1**	**98**	**98[b]**
	0.20	**2**	**103,101**	**102[b]**
BYI08330-enol-glucoside	**0.01**	**7**	**97,96,102,90,84,105,90**	**95±8**
	0.05	**3**	**104,103,105**	**104±1**
	0.10	**1**	**101**	**101[b]**
	0.20	**2**	**107,112**	**109[b]**

Table 6.5.4.2.2-2 (Continued).

Matrix/Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Washed and Waxed Grapefruit				
BYI08330	**0.01**	**3**	**95,109,95**	**100±8**
	0.05	**3**	**103,103,104**	**103±1**
BYI08330-enol	**0.01**	**3**	**117,110,110**	**112±4**
	0.05	**3**	**101,101,94**	**99±4**
BYI08330-ketohydroxy	**0.01**	**3**	**109,92,94**	**99±9**
	0.05	**3**	**104,103,92**	**100±7**
BYI08330-mono-hydroxy	**0.01**	**3**	**92,101,89**	**94±6**
	0.05	**3**	**98,97,101**	**98±2**
BYI08330-enol-glucoside	**0.01**	**3**	**106,84,96**	**95±11**
	0.05	**3**	**92,90,91**	**91±1**

[a] No standard deviation was determined as there were <3 replicates in the data set.

Table 6.5.4.2.2-3 Results of residue trials conducted with BYI 08330 OD 150 in/on grapefruit in North America

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY042 FN330-05P FN330-05P USA [redacted], California 2005	Grapefruit (fruit)	7	<0.010	0.041	<0.010	<0.010	<0.010	0.053
		7	<0.010	0.049	<0.010	<0.010	<0.010	0.069
		7	<0.010	0.039	<0.010	<0.010	<0.010	0.052
	Grapefruit (whole fruit, washed waxed)	7	<0.010	0.026	<0.010	<0.010	<0.010	0.031
		7	<0.010	0.017	<0.010	<0.010	<0.010	0.022
		7	<0.010	0.019	<0.010	<0.010	<0.010	0.026

Table 6.5.4.2.2-4 Processsing factors for grapefruit following the application of BYI08330 150 OD and industrial washing and waxing process.

Location (City, State)	Trial Number	Year	Region	Plot Name	Crop/Variety	Commodity	BYI08330 Total Rate Lb ai/A (kg ai/ha)	PHI (pre-harvest interval)	BYI 08330 Total Residue (ppm)
[redacted], FL	FN330-05P	2005	3	TD2X	Grapefruit /White	Unwashed Grapefruit	0.314 (0.352)	7 Days	0.053 0.069 0.052 Avg = 0.058
[redacted], FL	FN330-05P	2005	3	TD2X	Grapefruit /White	Washed and Waxed Grapefruit	0.314 (0.352)	7 Days	0.031 0.022 0.026 Avg = 0.026

IIA 6.5.4.3 Grape Processing Study from North America.

Report:	**IIA 6.5.4.3, [redacted].; 2006**
Title:	**BYI08330 150 OD – Magnitude of the Residue in/on Grapes Processed Commodities**
Report No &	**RAFNY015**
Document No	**M-277287-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed** **PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

A grape processing trial was conducted to measure the magnitude of BYI08330 [*cis*-8-methoxy-3-oxo-2-(2,5-xylyl)-4-azaspiro[4.5]dec-1-enyl ethoxyformate] residue in grapes and grape processed commodities following exaggerated rate treatment of grapes with BYI08330 150 OD. The test substance, BYI08330 150 OD, is an oil dispersible formulation nominally containing 1.25 lb BYI08330 ai per gallon (150 g ai/L).

Two airblast applications of BYI 08330 150 OD were made to grapes at a target rate of 0.491 lb ai/A (550 g ai/ha) at a 28 to 30 day interval to allow a target PHI of 5 to 7 days. The average total seasonal rate was 0.489 lb ai/A (0.548 g ai/ha) for the treated plots (Table 6.5.4.3-1). Spray volumes ranged from 55.87 GPA (522.6 L/ha) to 56.54 GPA (528.9 L/ha). Each application was made with Dyne-Amic adjuvant (0.25% v/v) at a target concentrated spray volume of 35 to 70 gal/A (GPA). The treatment rate is equivalent to 50 fl oz formulated product/acre which represents a five-fold (5X) proposed label use rate.

A single control and a treated bulk sample of grapes were collected at the fully ripe fruit stage (BBCH 89) (6-day target preharvest interval (PHI). Prior to processing, random subsamples of the control and treated bulk grape samples were collected for analysis, and the remainder of the grape samples were used to generate the required processed commodities of raisins and juice. In addition, samples of washed grapes and grape jelly were generated for use in the dietary risk assessment for BYI 08330. Processing was performed using procedures which simulated commercial processing practices. The resultant grape samples and processed commodities were analyzed to determine total BYI08330 150 OD residue.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. Method validation and concurrent recoveries were performed to demonstrate acceptable method performance. Individual analyte residues of BYI08330, BYI08330-enol, and BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330-enol glucoside were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in grapes and the processed commodities of grapes.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed grape samples are summarized in Tables 6.5.4.3-2. Mean recoveries for all analytes ranged from 74% ±15 to 118% ±3.

The total BYI08330 residues found in unprocessed grapes, raisins, juice, washed grapes, and grape jelly are shown in Table 6.5.4.3-3. The calculated processing factors are listed in Table 6.5.4.3-4.

The total BYI08330 residue on grapes and grape processed commodities treated at 5X the recommended application rate was 1.28 ppm for grapes (RAC), 0.77 ppm for washed grapes, 3.35 ppm for raisins, 0.84 ppm for grape juice, and 0.35 ppm for grape jelly.

Following the exaggerated (5X) use of BYI08330 150 OD on grapes and subsequent processing of grapes into the required commodities, the total BYI08330 residue was found to concentrate in raisins (2.62X). No concentration (<1X) of total BYI08330 residue was observed in grape juice (0.66X).

Table 6.5.4.3-1 Study Use Pattern for BYI08330 Processsing Study on Plums

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application						Tank Mix Adjuvants
				Method	Timing	Plot Name	Rate lb a.i./A (g a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	
[redacted] CA Region 10	FN225-05P	2005	150 OD	Foliar Airblast	7/19/2005[a]	Berries Touching[b]	TRT5X	55.87 (522.6)	0.487 (0.546)	Dyne-Amic
					8/16/2005[a]	Berries Softening[c]	TRT5X	56.54 (528.9)	0.491 (0.550)	Dyne-Amic

[a]Appl. Date = 7/19/2005 and 8/16/205 occurred 34 and 6 days prior to harvest, respectively.
[b]Majority of berries touching (BBCH 79).
[c]Softening of berries (BBCH 85).

Table 6.5.4.3-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-mono-hydroxy, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-enol-glucoside on Grapes and Processed Commodities.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.[a]
Grape (RAC)	BYI08330	0.01	7	120, 108, 120, 89, 96, 112, 86	104 ± 14
		0.05	3	101, 92, 102	98 ± 6
		0.20	2	100, 106	103
		1.00	3	99, 98, 98	98 ± 1
	BYI08330-mono-hydroxy	0.01	7	100, 103, 104, 95, 99, 107, 97	101 ± 4
		0.05	3	97, 94, 99	97 ± 3
		0.20	2	97, 98	98
		1.00	3	101, 98, 100	100 ± 2
	BYI08330-enol	0.01	7	119, 109, 95, 103, 105, 116, 97	106 ± 9
		0.05	3	112, 108, 105	108 ± 4
		0.20	2	109, 112	111
		1.00	3	109, 111, 113	111 ± 2
	BYI08330-ketohydroxy	0.01	7	84, 93, 97, 84, 92, 89, 87	89 ± 5
		0.05	3	96, 100, 102	99 ± 3
		0.20	2	105, 107	106
		1.00	3	95, 96, 93	95 ± 2
	BYI08330-enol-glucoside	0.01	7	110, 94, 96, 100, 103, 94, 104	100 ± 6
		0.05	3	99, 94, 102	98 ± 4
		0.20	2	100, 101	101
		1.00	3	102, 102, 103	102 ± 1

[a] Standard deviation is not applicable for a sample with < 3 recoveries.

Table 6.5.4.3-2 (continued).

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Washed Grapes	BYI08330	0.01	4	93, 89, 110, 97	97 ± 9
		0.50	3	99, 98, 96	98 ± 2
	BYI08330-mono-hydroxy	0.01	4	94, 88, 91, 88	90 ± 3
		0.50	3	100, 96, 98	98 ± 2
	BYI08330-enol	0.01	4	111, 83, 92, 83	92 ± 13
		0.50	3	113, 104, 109	109 ± 5
	BYI08330-ketohydroxy	0.01	4	80, 92, 94, 103	92 ± 9
		0.50	3	95, 95, 98	96 ± 2
	BYI08330-enol-glucoside	0.01	4	113, 84, 97, 91	96 ± 12
		0.50	3	102, 96, 101	100 ± 3
Raisins	BYI08330	0.01	6	88, 83, 95, 105, 88, 101	94 ± 9
		0.05	3	92, 97, 97	95 ± 3
		3.00	3	103, 99, 95	99 ± 4
	BYI08330-mono-hydroxy	0.01	6	96, 89, 96, 102, 80, 75	90 ± 10
		0.05	3	96, 96, 94	95 ± 1
		3.00	3	98, 96, 95	96 ± 2
	BYI08330-enol	0.01	6	74, 71, 75, 94, 88, 87	82 ± 9
		0.05	3	99, 95, 98	97 ± 2
		3.00	3	102, 105, 102	103 ± 2
	BYI08330-ketohydroxy	0.01	6	97, 82, 90, 120, 105, 112	101 ± 14
		0.05	3	84, 92, 82	86 ± 5
		3.00	3	88, 89, 93	90 ± 3
	BYI08330-enol-glucoside	0.01	3	85, 57, 79	74 ± 15
		0.05	3	83, 79, 76	79 ± 4
		3.00	3	82, 81, 80	81 ± 1

Table 6.5.4.3-2 (continued).

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Grape Juice	BYI08330	0.01	4	106, 113, 99, 114	108 ± 7
		0.50	3	100, 100, 101	100 ± 1
	BYI08330-mono-hydroxy	0.01	4	99, 103, 102, 86	98 ± 8
		0.50	3	96, 102, 103	100 ± 4
	BYI08330-enol	0.01	4	103, 101, 92, 112	102 ± 8
		0.50	3	109, 115, 114	113 ± 3
	BYI08330-ketohydroxy	0.01	4	92, 100, 97, 79	92 ± 9
		0.50	3	98, 102, 100	100 ± 2
	BYI08330-enol-glucoside	0.01	4	95, 89, 89, 93	92 ± 3
		0.50	3	99, 102, 103	101 ± 2
Grape Jelly	BYI08330	0.01	4	109, 118, 109, 119	114 ± 5
		0.50	3	100, 99, 97	99 ± 2
	BYI08330-mono-hydroxy	0.01	4	101, 111, 98, 98	102 ± 6
		0.50	3	101, 101, 100	101 ± 1
	BYI08330-enol	0.01	4	103, 99, 96, 99	99 ± 3
		0.50	3	122, 116, 117	118 ± 3
	BYI08330-ketohydroxy	0.01	4	76, 117, 104, 116	103 ± 19
		0.50	3	105, 98, 105	103 ± 4
	BYI08330-enol-glucoside	0.01	4	100, 99, 104, 96	100 ± 3
		0.50	3	100, 102, 101	101 ± 1

Table 6.5.4.3-3 Results of residue trials conducted with BYI 08330 OD 150 in/on grape in North America.

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY015 FN225-05P USA [redacted], California 2005	Table grape	6	0.587	0.494	0.018	<0.010	0.182	1.284
		6	0.600	0.482	0.020	<0.010	0.184	1.290
	berry	6	0.590	0.480	0.019	<0.010	0.173	1.265
	berry, washed	6	0.104	0.455	0.013	<0.010	0.188	0.764
		6	0.100	0.476	0.013	<0.010	0.193	0.786
		6	0.105	0.441	0.013	<0.010	0.190	0.753
	raisin	6	0.363	2.268	0.091	0.012	0.594	3.328
		6	0.340	2.271	0.097	0.012	0.584	3.305
		6	0.371	2.339	0.100	0.013	0.598	3.421
	juice	6	0.172	0.448	0.013	<0.010	0.190	0.826
		6	0.171	0.479	0.015	<0.010	0.193	0.862
		6	0.167	0.465	0.014	<0.010	0.192	0.841
	jelly	6	0.048	0.222	<0.010	<0.010	0.069	0.345
		6	0.049	0.230	<0.010	<0.010	0.076	0.361
		6	0.047	0.219	<0.010	<0.010	0.069	0.341

Table 6.5.4.3-4 Processsing factors for grape processed commodities following the application of BYI08330 150 OD and commercial processing.

RAC	Processed Commodity	Total Rate lb ai/A (kg ai/ha)	Total BYI08330 Residue (ppm)	Processing Factor[a]
Fresh Grapes	NA[b]	0.491 (0.550)	1.284 1.290 1.265 Avg: 1.280	NA
	Washed Grapes		0.764 0.786 0.755 Avg: 0.768	<1.0 (0.60 X)
	Raisins		3.328 3.305 3.421 Avg: 3.351	2.62 X
	Juice		0.826 0.862 0.841 Avg: 0.843	<1.0 (0.66 X)
	Jelly		0.345 0.361 0.341 Avg: 0.349	<1.0 (0.27 X)

[a] Processing factor = $\frac{\text{Average residue in processed sample}}{\text{residue in unprocessed sample}}$

[b] NA = Not Applicable.

IIA 6.5.4.4 Plum Processing Study from North America.

Report:	**IIA 6.5.4.4, [redacted].; 2006**
Title:	**BYI08330 150 OD: Magnitude of the Residue on Plum Processed Commodities**
Report No & Document No	**RAFNY018 M-276380-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

A plum processing trial was conducted to measure the magnitude of BYI08330 residue in plums and plum processed commodities following exaggerated rate treatment of plums with BYI08330 150 OD. The test substance, BYI08330 150 OD, is an oil dispersible formulation nominally containing 1.25 lb BYI08330 ai per gallon (150 g ai/L).

Three airblast applications were made to plum trees in the treated plot using equipment customarily used to apply pesticides in this manner to plums. The first application was made when the plums were at the beginning of fruit coloring stage (BBCH 81), with a 14 day interval between the two succeeding applications. The first test substance application was applied at a target rate of 0.705 lb ai/A/application (790 g ai/ha/application) in a target spray volume of 35-70 GPA (327-655 L/ha). The second and third test substance applications were applied at a target rate of 0.491 lb ai/A/application (550 g ai/ha/application) in target spray volumes of 35-70 GPA (Table 6.5.4.4-1). The achieved total seasonal rate was 1.69 lb ai/A (1891 g ai/ha). This rate is equivalent to five times (5X) the total maximum proposed label rate for a single growing season.

One control and one treated bulk plum samples were collected at a 7-day pre-harvest interval (PHI) and shipped on the same day by overnight carrier under ambient conditions to the processing faciltiy. Prior to processing, random sub-samples of the control and treated bulk plum samples were collected for analysis, and the remainder of the plum samples were used to generate the required processed commodities of prunes. In addition, samples of washed plum fruit were generated for use in the dietary risk assessment for BYI08330. Processing was performed using procedures which simulated commercial processing practices. The resultant plum samples and processed commodities were analyzed to determine total BYI08330 residue.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization / tandem mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside, were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in the plum raw agricultural commodity (RAC) and each processed commodity.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed plum samples are summarized in Tables 6.5.4.4-2 through 6.5.4.4-4. Mean recoveries for all analytes ranged from 77% ±3 to 118% ±1.

The total BYI08330 residues found in unprocessed plums, prune, and washed plums are shown in Table 6.5.4.4-5. The calculated processing factors are listed in Table 6.5.4.4-6.

The average total BYI08330 residue in plum RAC was 1.83 ppm. The average total BYI08330 residue for the required processed commodity of prunes was 3.94 ppm. The average total BYI08330 residue data for the additional risk assessment sample of washed plum fruit was 1.72 ppm.

The total BYI08330 residue was found to concentrate in prunes (2.2X). In the additional sample generated for dietary risk assessment, no concentration (1X) of total BYI08330 residue was found in washed plum fruit (0.9X).

Table 6.5.4.4-1 Study Use Pattern for BYI08330 on Plums.

Tank Mix Adjuvant	Trial No.	Year	End-Use Product	Application							Tank Mix Adjuvants
				Method	Timing[a]	Plot Name	Rate lb ai/A (kg ai/ha)	RTI[b] (days)	Spray Volume GPA (L/ha)	Total Rate lb ai/A (kg ai/ha)	
[redacted], California Region 14	FN227-05P	2005	150 OD	Airblast	Beginning of fruit coloring	TRT 5X	0.704 (0.790)	0	49.8 (466)	1.69 (1.892)	Dyne-Amic
				Airblast	Coloring Advanced		0.492 (0.551)	14	50.0 (467)		
				Airblast	Coloring Advanced		0.492 (0.551)	14	49.8 (466)		

[a] Timing = First Application occurred 35 days prior to harvest

[b] RTI = Retreatment Interval

Table 6.5.4.4-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Plum RAC.

Matrix	Analyte	Fortification Level(ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev. [a]
Fresh Fruit	BYI08330	0.01	7	96, 92, 101, 99, 80, 105, 95	95 ± 8
		0.05	3	92, 94, 86	91 ± 4
		0.50	2	99, 92	96
		2.0	3	98, 100, 97	98 ± 2
	BYI08330-enol	0.01	7	130, 112, 106, 112, 117, 96, 113	112 ± 10
		0.05	3	115, 110, 110	112 ± 3
		0.50	2	108, 105	107
		2.0	3	94, 96, 95	95 ± 1
	BYI08330-ketohydroxy	0.01	7	108, 77, 90, 97, 85, 117, 95	96 ± 14
		0.05	3	100, 87, 92	93 ± 7
		0.50	2	96, 86	92
		2.0	3	98, 94, 98	97 ± 2
	BYI08330-mono-hydroxy	0.01	7	108, 94, 91, 95, 104, 96, 101	98 ± 6
		0.05	3	97, 92, 92	94 ± 3
		0.50	2	92, 92	92
		2.0	3	97, 97, 99	98 ± 1
	BYI08330-enol-glucoside	0.01	7	116, 100, 103, 101, 95, 103, 89	101 ± 8
		0.05	3	101, 90, 96	96 ± 6
		0.50	2	93, 94	94
		2.0	3	86, 85, 88	86 ± 2

[a] Not applicable. Standard deviation is not applicable when n = 2.

Table 6.5.4.4-3 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Prunes.

Matrix	Analyte	Fortification Level(Ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Prunes	BYI08330	0.01	3	89, 87, 85	87 ± 2
		2.00	3	78, 75, 78	77 ± 2
		3.00	3	97, 97, 100	98 ± 2
	BYI08330-enol	0.01	3	93, 84, 84	87 ± 5
		2.00	3	78, 76, 78	77 ± 1
		3.00	3	96, 98, 98	97 ± 1
	BYI08330-ketohydroxy	0.01	3	113, 75, 102	97 ± 20
		2.00	3	76, 76, 74	75 ± 1
		3.00	3	99, 98, 101	99 ± 2
	BYI08330-mono-hydroxy	0.01	3	85, 100, 83	89 ± 9
		2.00	3	87, 84, 85	85 ± 2
		3.00	3	96, 99, 95	97 ± 2
	BYI08330-enol-glucoside	0.01	3	86, 79, 77	81 ± 5
		2.00	3	75, 77, 80	77 ± 3
		3.00	3	84, 85, 84	84 ± 1

Table 6.5.4.4-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Washed Plums.

Matrix	Analyte	Fortification Level(Ppm)	Sample Size (n)	Recoveries	Mean ± Std. Dev.
Washed Plums	BYI08330	0.01	3	104, 95, 89	96 ± 8
		0.20	3	95, 102, 96	98 ± 4
	BYI08330-enol	0.01	3	117, 118, 119	118 ± 1
		0.20	3	119, 116, 114	116 ± 3
	BYI08330-ketohydroxy	0.01	3	101, 91, 90	94 ± 6
		0.20	3	91, 101, 87	93 ± 7
	BYI08330-mono-hydroxy	0.01	3	93, 84, 107	95 ± 12
		0.20	3	95, 95, 91	94 ± 2
	BYI08330-enol-glucoside	0.01	3	101, 97, 96	98 ± 3
		0.20	3	98, 97, 97	97 ± 1

Table 6.5.4.4-5 Results of residue trials conducted with BYI 08330 OD 150 in/on plum in North America

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY018 FN227-05P USA	Plum	7 7 7	0.110 0.117 0.120	0.215 0.242 0.226	0.031 0.034 0.028	1.257 1.274 1.269	0.176 0.194 0.188	1.788 1.860 1.831
[redacted] California 2005	whole fruit, washed	7 7 7	0.088 0.054 0.054	0.292 0.305 0.295	0.021 0.024 0.026	1.140 1.193 1.133	0.201 0.203 0.200	1.742 1.709 1.709
	fruit, dried	7 7 7	0.046 0.043 0.035	0.646 0.687 0.586	0.087 0.080 0.080	2.811 2.994 2.538	0.399 0.429 0.365	3.990 4.232 3.604

Table 6.5.4.4-6 Processsing factors for plum processed commodities following the application of BYI08330 150 OD and commercial processing

RAC	Processed Commodity	Total Rate lb ai/A (kg ai/ha)	Total BYI08330 Residue (ppm)	Processing Factor[a]
Plum	NA[b]	1.69 (1.892)	1.79 1.86 1.83 Avg: 1.83	NA
	Prunes		3.99 4.23 3.60 Avg: 3.94	2.2 X
	Washed Fruit		1.74 1.71 1.71 Avg: 1.72	<1.0 (0.9 X)

[a] Processing factor = Average residue in processed sample / residue in unprocessed sample

[b] NA = Not applicable.

IIA 6.5.4.5 Potato Processing Study from North America.

Report:	**IIA 6.5.4.5, [redacted].; 2006**
Title:	**BYI08330 150 OD – Magnitude of the Residue on Potato Processed Commodities**
Report No &	**RAFNY020**
Document No	**M-276828-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed** **PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

A potato processing trial was conducted to measure the magnitude of BYI08330 residue on potatoes and potato processed commodities. Two foliar applications of BYI-08330 150 OD were made to potatoes at a target rate of 0.393 lb ai/A (0.440 kg ai/ha) with 7 days between applications and a target preharvest interval (PHI) of 7-days. The test substance, BYI-08330 150 OD is an oil dispersable formulation nominally containing 1.25 lb BYI08330 ai/gal (150 g ai/l). Each application was made at a target concentrated spray volume of 5 to 20 gal/A (GPA). The treatment rate is equivalent to 40.2 fl oz formulated product/acre which represents a five-fold (5X) exaggeration of the maximum recommended label use rate (Table 6.5.4.5-1).

A single control and treated bulk sample of potatoes were collected at (BBCH 49 maximum tuber size and skin set complete) at a 7-day (PHI). Prior to processing, random sub-samples of the control and treated bulk potato samples were collected for analysis, and the remainder of the potato samples were used to generate the required processed commodities of wet peel, chips, and granules. In addition, samples of washed potatoes, cooked potatoes, and potato tuber without peel were generated for use in the dietary risk assessment for BYI08330. Potato processing was performed using procedures which simulated commercial processing practices. The resultant potato samples and processed commodities were analyzed to determine total BYI08330 residue.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (lc-ms/ms) using isotopically labeled internal standards. Method validation and concurrent recoveries were performed to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent), BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.01 ppm for each analyte in potatoes and the processed commodities of potatoes.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed potato samples are summarized in Table 6.5.4.5-2. Mean recoveries for all analytes ranged from 73% ±1 to 119% ±1.

The total BYI08330 residues found in unprocessed potato, wet peel, chips, granules, and washed potatoes, cooked potatoes, and peeled potato are shown in Table 6.5.4.5-3. The calculated processing factors are listed in Table 6.5.4.5-4.

The total BYI08330 residue on potato and potato processed commodities treated at 5X the recommended application rate was 0.03 ppm for the potato tuber RAC, 0.03 for wet peel, 0.04 ppm for chips, washed potatoes, cooked potatoes, and peeled potato tuber, and 0.18 ppm for potato flakes.

Concentration (6X) of the total BYI08330 residue was observed in the required processed commodity of potato flakes. A slight concentration of total BYI08330 residue was observed in potato chips (1.3X) and no concentration of total BYI08330 residue was observed in potato wet peel (1X).

Table 6.5.4.5-1 Study Use Pattern for BYI08330 150 OD on Potatoes.

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application						Tank Mix Adjuvants[a]
				Method	Timing	Plot Name	Rate lb a.i./A (kg a.i./ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb a.i./A (kg a.i./ha)	
[redacted], Minnesota Region 5	FN228-05P	2005	150 OD	Broadcast	1 Appl: 70% of total final tuber mass reached	TRTD	0.413 (0.468)	0	16.8 (157)	0.809 (0.907)	Yes
					2 Appl: 70% of total final tuber mass reached		0.391 (0.439)	7	17.2 (161)		

[a] An additive of Dyne-Amic 0.5% (v/v) was used in the tank mix

Table 6.5.4.5-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-mono-hydroxy, BYI08330-enol, BYI08330-ketohydroxy, and BYI08330-enol-glucoside from Potatoes and Potato Processed Commodities.

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation [a]
Tubers (RAC)	BYI08330	0.01	7	94, 101, 101, 90, 104, 84, 104	97 ± 8
		0.05	3	96, 85, 96	92 ± 6
		0.20	2	98, 101	100
	BYI08330-mono-hydroxy	0.01	7	100, 98, 103, 99, 105, 90, 104	100 ± 5
		0.05	3	97, 92, 95	95 ± 3
		0.20	2	96, 98	97
	BYI08330-enol	0.01	7	101, 98, 102, 98, 101, 87, 100	98 ± 5
		0.05	3	96, 96, 100	97 ± 2
		0.20	2	105, 103	104
	BYI08330-ketohydroxy	0.01	7	79, 73, 93, 71, 71, 81, 85	79 ± 8
		0.05	3	90, 80, 93	88 ± 7
		0.20	2	92, 89	91
	BYI08330-enol-glucoside	0.01	7	104, 103, 118, 108, 115, 103, 102	108 ± 6
		0.05	3	97, 95, 95	96 ± 1
		0.20	2	98, 99	99
Washed Tubers	BYI08330	0.01	3	92, 76, 83	84 ± 8
		0.20	3	91, 100, 89	93 ± 6
	BYI08330-mono-hydroxy	0.01	3	95, 95, 94	95 ± 1
		0.20	3	94, 98, 95	96 ± 2
	BYI08330-enol	0.01	3	116, 116, 120	117 ± 2
		0.20	3	101, 104, 102	102 ± 2
	BYI08330-ketohydroxy	0.01	3	74, 72, 72	73 ± 1
		0.20	3	89, 87, 88	88 ± 1
	BYI08330-enol-glucoside	0.01	3	112, 96, 111	106 ± 9
		0.20	3	95, 98, 99	97 ± 2
Peeled Potato Tubers	BYI08330	0.01	3	112, 97, 91	100 ± 11
		0.20	3	97, 94, 86	92 ± 6
	BYI08330-mono-hydroxy	0.01	3	98, 91, 82	90 ± 8
		0.20	3	100, 96, 91	96 ± 5
	BYI08330-enol	0.01	3	108, 108, 109	108 ± 1
		0.20	3	102, 100, 92	98 ± 5
	BYI08330-ketohydroxy	0.01	3	90, 84, 70	81 ± 10
		0.20	3	87, 91, 81	86 ± 5
	BYI08330-enol-glucoside	0.01	3	83, 97, 80	87 ± 9
		0.20	3	96, 98, 97	97 ± 1

Table 6.5.4.5-2 (continued).

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation[a]
Potato Wet Peels	BYI08330	0.01	3	85, 75, 85	82 ± 6
		0.20	3	99, 98, 99	99 ± 1
	BYI08330-mono-hydroxy	0.01	3	88, 88, 90	89 ± 1
		0.20	3	101, 95, 95	97 ± 3
	BYI08330-enol	0.01	3	119, 118, 119	119 ± 1
		0.20	3	102, 102, 101	102 ± 1
	BYI08330-ketohydroxy	0.01	3	86, 98, 102	95 ± 8
		0.20	3	100, 100, 91	97 ± 5
	BYI08330-enol-glucoside	0.01	3	93, 93, 85	90 ± 5
		0.20	3	100, 102, 95	99 ± 4
Potato Chips	BYI08330	0.01	3	96, 94, 89	93 ± 4
		0.20	3	104, 99, 96	100 ± 4
	BYI08330-mono-hydroxy	0.01	3	92, 100, 98	97 ± 4
		0.20	3	100, 97, 98	98 ± 2
	BYI08330-enol	0.01	3	108, 109, 108	108 ± 1
		0.20	3	107, 103, 105	105 ± 2
	BYI08330-ketohydroxy	0.01	3	100, 102, 87	96 ± 8
		0.20	3	107, 93, 99	100 ± 7
	BYI08330-enol-glucoside	0.01	3	105, 95, 85	95 ± 10
		0.20	3	106, 98, 101	102 ± 4
Potato Flakes	BYI08330	0.01	3	89, 98, 88	92 ± 6
		0.20	3	94, 96, 93	94 ± 2
	BYI08330-mono-hydroxy	0.01	3	87, 83, 86	85 ± 2
		0.20	3	95, 97, 95	96 ± 1
	BYI08330-enol	0.01	3	109, 107, 101	106 ± 4
		0.20	3	102, 96, 95	98 ± 4
	BYI08330-ketohydroxy	0.01	3	87, 97, 96	93 ± 6
		0.20	3	94, 94, 106	98 ± 7
	BYI08330-enol-glucoside	0.01	3	83, 72, 77	77 ± 6
		0.20	3	92, 97, 90	93 ± 4

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Table 6.5.4.5-2 (continued).

Matrix	Analyte	Fortification Level (ppm)	Sample Size (n)	Recoveries (%)	Mean Recovery (%) ± Standard Deviation[a]
Cooked Tubers	BYI08330	0.01	3	102, 86, 94	94 ± 8
		0.20	3	98, 101, 97	99 ± 2
	BYI08330-mono-hydroxy	0.01	3	88, 101, 98	96 ±
		0.20	3	101, 101, 101	101 ± 0
	BYI08330-enol	0.01	3	108, 110, 101	106 ± 5
		0.20	3	113, 108, 104	108 ± 5
	BYI08330-ketohydroxy	0.01	3	85, 100, 94	93 ± 8
		0.20	3	103, 100, 95	99 ± 4
	BYI08330-enol-glucoside	0.01	3	102, 104, 99	102 ± 3
		0.20	3	104, 99, 98	100 ± 3

[a] Standard deviation is not calculated for a sample with less than three recoveries.

Table 6.5.4.5-3 Results of residue trials conducted with BYI 08330 OD 150 in/on potato in North America

Study Trial No. Trial SubID	Crop		Residues (mg/kg)					
Country Year	Portion analysed	DALT[a] (days)	BYI 08330	BYI 08330 cis-enol	BYI 08330 cis-keto-hydroxy	BYI 08330 mono-hydroxy	BYI 08330 enol-glucoside	Total Residue of BYI 08330 calc.
RAFNY020 FN228-05P USA [redacted], Minnesota 2005	Potato	7	<0.010	0.023	<0.010	<0.010	<0.010	0.027
		7	<0.010	0.023	<0.010	<0.010	<0.010	0.028
	tuber	7	<0.010	0.021	<0.010	<0.010	<0.010	0.026
	tuber, washed	7	<0.010	0.034	<0.010	<0.010	<0.010	0.039
		7	<0.010	0.034	<0.010	<0.010	<0.010	0.039
		7	<0.010	0.036	<0.010	<0.010	<0.010	0.041
	tuber, peeled	7	<0.010	0.029	<0.010	<0.010	<0.010	0.034
		7	<0.010	0.032	<0.010	<0.010	<0.010	0.037
		7	<0.010	0.032	<0.010	<0.010	<0.010	0.037
	peel	7	<0.010	0.021	<0.010	<0.010	<0.010	0.026
		7	<0.010	0.021	<0.010	<0.010	<0.010	0.026
		7	<0.010	0.019	<0.010	<0.010	<0.010	0.024
	chips	7	<0.010	0.034	<0.010	<0.010	<0.010	0.039
		7	<0.010	0.034	<0.010	<0.010	<0.010	0.039
		7	<0.010	0.038	<0.010	<0.010	<0.010	0.043
	flakes	7	<0.010	0.175	<0.010	<0.010	<0.010	0.180
		7	<0.010	0.174	<0.010	<0.010	<0.010	0.180
		7	<0.010	0.186	<0.010	<0.010	<0.010	0.191
	tuber, cooked	7	<0.010	0.039	<0.010	<0.010	<0.010	0.044
		7	<0.010	0.040	<0.010	<0.010	<0.010	0.044
		7	<0.010	0.040	<0.010	<0.010	<0.010	0.045

[a]DALT = Days after last treatment.

Table 6.5.4.5-4 Processsing factors for potato processed commodities following the application of BYI08330 150 OD and commercial processing.

RAC	Processed Commodity	Total Rate lb a.i./A (kg a.i./ha)	PHI (days)	Total BYI08330 Residue (ppm)	Total BYI08330 Processing Factor[a]
Potato Tuber	NA	0.804 (905)	7	0.029 0.029 0.026 Avg. 0.03	NA
	Washed Potatoes			0.040 0.040 0.042 Avg. 0.04	1.3X
	Peeled Potato Tuber			0.034 0.038 0.037 Avg. 0.04	1.3X
	Cooked Potatoes			0.044 0.045 0.045 Avg. 0.04	1.3X
	Potato Wet Peel[b]			0.026 0.026 0.024 Avg. 0.03	1X
	Potato Chips			0.039 0.040 0.043 Avg. 0.04	1.3X
	Potato Flakes			0.182 0.180 0.192 Avg. 0.18	6X

[a] Processing Factor = Average residue in processed sample/residue in unprocessed sample.
[b] Percent dry matter determination of potato wet peel (processed potato waste) was 14%.

IIA 6.5.4.6 Tomato Processing Study from North America.

Report:	**IIA 6.5.4.6, [redacted] 2006**
Title:	**BYI08330 100 OD – Magnitude of the Residue on Tomato Processed Commodities**
Report No & Document No	**RAFNY013 M-277034-01-1**
Guidelines:	**EPA Reference: OPPTS 860.1520, Processed Food/Feed PMRA Reference: DACO 7.4.5, Processed Food/Feed**
GLP	**Yes**

Test System

A tomato processing trial was conducted to measure the magnitude of BYI08330 [cis-8-methoxy-3-oxo-2-(2,5-xylyl)-4-azaspiro[4.5]dec-1-enyl ethoxyformate] residue in tomatoes and tomato processed commodities following exaggerated rate applications of BYI08330 100 OD to tomatoes. The test substance, BYI08330 100 OD, is an oil dispersible formulation nominally containing 0.83 lb BYI08330 ai per gallon (100 g ai/L).

Two broadcast foliar applications were made to tomato plants in the treated plot using ground-based equipment customarily used to apply pesticides in this manner to tomatoes. The first application was made when 20% of the tomatoes showed typical full ripe color (BBCH 82), with a 7-day interval between the two applications. The two applications were applied at a target rate of 0.393 lb ai/A/application (440 g ai/ha/application) in a target spray volume of 5-20 GPA (47-187 L/ha). This rate is equivalent to five times (5X) the total maximum proposed label rate for a single growing season (Table 6.5.4.6-1).

One control and one treated bulk tomato sample were collected at a 3-day pre-harvest interval (PHI) and hand delivered on the same day to the processing faciltiy. Prior to processing, random sub-samples of the control and treated bulk tomato samples were collected for analysis, and the remainder of the tomato samples were used to generate the required processed commodities of puree, paste, and juice. In addition, samples of washed tomatoes, cooked (hot crushed) tomatoes, canned tomatoes, and dried tomatoes were generated for use in the dietary risk assessment for BYI08330. Processing was performed using procedures which simulated commercial processing practices. The resultant tomato samples and processed commodities were analyzed to determine total BYI08330 residue.

The total BYI08330 residue was quantitated by high performance liquid chromatography-electrospray ionization/tandem mass spectrometry (LC-MS/MS) using isotopically labeled internal standards. Method validation was performed prior to sample analysis and concurrent recoveries were performed during sample analysis to demonstrate acceptable method performance. The individual analyte residues of BYI08330 (parent) and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy and BYI08330-enol-glucoside, were summed to give a total BYI08330 residue in parent equivalents. The limit of quantitation (LOQ) was 0.010 ppm for each analyte in the tomato raw agricultural commodity (RAC) and each processed commodity.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in unprocessed and processed tomato samples are summarized in Table 6.5.4.6-2 through 6.5.4.6-5. Mean recoveries for all analytes ranged from 72% to 119.

The total BYI08330 residues found in unprocessed tomato puree, paste, juice, washed tomatoes, cooked (hot crushed) tomatoes, canned tomatoes, and dried tomatoes are shown in Table 6.5.4.6-6. The calculated processing factors are listed in Table 6.5.4.6-7.

The average total BYI08330 residue in tomato RAC was 0.89 ppm. The average total BYI08330 residue for the required processed commodities was 6.66 ppm in tomato paste, 3.13 ppm in tomato puree, and 0.80 ppm in tomato juice. The average total BYI08330 residue data for the additional risk assessment samples was 0.57 ppm in washed tomatoes, 0.54 ppm in cooked (hot crushed) tomatoes, 1.00 ppm in canned tomatoes, and 10.7 ppm in dried tomatoes.

The total BYI08330 residue was found to concentrate in tomato paste (7.5X) and in tomato puree (3.5X). No concentration (<1X) of the total BYI08330 residue was found in tomato juice (0.9X). In the additional samples generated for dietary risk assessment, the total BYI08330 residue was found to concentrate in canned tomatoes (1.1X) and dried tomatoes (12.0X). No concentration (≤1X) of total BYI08330 residue was found in the washed tomatoes (0.6X) or cooked (hot crushed) tomatoes (0.6X).

Demonstrated freezer stability in tomato fruit and tomato puree is representative of the freezer stability of BYI08330 residues to be expected for the tomatoes and the tomato processed commodities from this study.

Table 6.5.4.6-1 Study Use Pattern for BYI08330 on Tomatoes.

Location: City, State, NAFTA Region	Trial No.	Year	End-Use Product	Application							Tank Mix Adjuvant
				Method	Timing (Days Before Harvest)[a]	Plot Name	Rate lb ai/A (kg ai/ha)	RTI[b] (days)	Spray Volume GPA (L/ha)	Total Rate lb ai/A (kg ai/ha)	
[redacted]; California Region 10	FN083-04P	2004	100 OD	Foliar	App 1: 10-days App 2: 3-days	5X	0.397 (0.445) 0.400 (0.449)	0 7	18.4 (172) 18.9 (177)	0.797 (0.894)	Dyne-Amic

[a] Timing = First Application occurred 10 days prior to harvest

[b] RTI = Retreatment Interval

Table 6.5.4.6-2 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside fromTomatoes.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean ± Std Dev[a]
Tomatoes	BYI08330	0.01	5	90, 96, 75, 110, 119	98 ± 17
		0.05	4	96, 105, 71, 88	91 ± 14
		0.20	3	81, 81, 103	88 ± 13
		0.50	2	100, 101	101
	BYI08330-enol	0.01	5	82, 80, 79, 89, 102	86 ± 10
		0.05	4	107, 102, 82, 99	98 ± 11
		0.20	3	80, 90, 75	82 ± 8
		0.50	2	83, 89	86
	BYI08330-ketohydroxy	0.01	5	92, 101, 79, 83, 116	94 ± 15
		0.05	4	117, 103, 81, 74	94 ± 20
		0.20	3	105, 94, 79	93 ± 13
		0.50	2	109, 111	110
	BYI08330-mono-hydroxy	0.01	5	102, 93, 71, 103, 71	88 ± 16
		0.05	4	105, 102, 70, 82	90 ± 17
		0.20	3	85, 84, 101	90 ± 10
		0.50	2	117, 94	106
	BYI08330-enol-glucoside	0.01	5	118, 116, 77, 101, 117	106 ± 18
		0.05	4	111, 114, 80, 93	100 ± 16
		0.20	2	94, 96, 104	98 ± 5
		0.50	2	96, 113	105

[a]Standard deviation is not applicable when n ≤ 2.

Table 6.5.4.6-3 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Tomato Paste.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean
Tomato Paste	BYI08330	0.01	2	96, 97	97
		0.05	2	104, 102	103
		0.20	2	89, 83	86
		5.00	2	102, 100	101
	BYI08330-enol	0.01	2	78, 82	80
		0.05	2	102, 101	102
		0.20	2	84, 94	89
		5.00	2	87, 87	87
	BYI08330-ketohydroxy	0.01	2	108, 102	105
		0.05	2	120, 118	119
		0.20	2	103, 99	101
		5.00	2	116, 111	114
	BYI08330-mono-hydroxy	0.01	2	95, 83	89
		0.05	2	106, 112	109
		0.20	2	90, 97	94
		5.00	2	101, 92	97
	BYI08330-enol-glucoside	0.01	2	117, 119	118
		0.05	2	115, 119	117
		0.20	2	92, 97	95
		5.00	2	99, 113	106

Table 6.5.4.6-4 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Tomato Juice.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean
Tomato Juice	BYI08330	0.01	2	98, 102	100
		0.05	2	100, 96	98
		0.20	2	84, 91	88
		0.60	2	102, 115	109
	BYI08330-enol	0.01	2	85, 92	89
		0.05	2	95, 102	99
		0.20	2	95, 87	91
		0.60	2	86, 90	88
	BYI08330-ketohydroxy	0.01	2	102, 104	103
		0.05	2	116, 119	118
		0.20	2	107, 95	101
		0.60	2	103, 111	107
	BYI08330-mono-hydroxy	0.01	2	89, 88	89
		0.05	2	105, 102	104
		0.20	2	92, 85	89
		0.60	2	99, 106	103
	BYI08330-enol-glucoside	0.01	2	116, 117	117
		0.05	2	114, 110	112
		0.20	2	91, 95	93
		0.60	2	94, 117	106

Table 6.5.4.6-5 Summary of Concurrent Recoveries of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside from Dried Tomatoes.

Matrix	Analyte	Fortification Level (Ppm)	Sample Size (n)	Recoveries	Mean
Dried Tomatoes	BYI08330	0.01	2	99, 100	100
		0.05	2	107, 105	106
		0.20	2	85, 85	85
		7.00	2	92, 95	94
	BYI08330-enol	0.01	2	79, 83	81
		0.05	2	99, 104	102
		0.20	2	88, 87	88
		7.00	2	70, 74	72
	BYI08330-ketohydroxy	0.01	2	102, 109	106
		0.05	2	117, 118	118
		0.20	2	104, 100	102
		7.00	2	96, 98	97
	BYI08330-mono-hydroxy	0.01	2	98, 94	96
		0.05	2	112, 104	108
		0.20	2	84, 92	88
		7.00	2	86, 86	86
	BYI08330-enol-glucoside	0.01	2	119, 118	119
		0.05	2	110, 105	108
		0.20	2	92, 91	92
		7.00	2	86, 103	95

Table 6.5.4.6-6 Results of residue trials conducted with BYI 08330 OD 100 in/on tomato in North America.

Study Trial No. Trial SubID	Crop	Residues (mg/kg)						
Country Year	**Portion analysed**	**DALT[a] (days)**	**BYI 08330**	**BYI 08330 cis-enol**	**BYI 08330 cis-keto-hydroxy**	**BYI 08330 mono-hydroxy**	**BYI 08330 enol-glucoside**	**Total Residue of BYI 08330 calc.**
RAFNY013 FN083-04P USA [redacted], California 2004	Tomato fruit	3 3 3	0.164 0.183 0.287	0.600 0.642 0.663	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	0.029 0.052 0.038	0.796 0.880 0.991
	whole fruit, washed	3 3 3	0.073 0.063 0.050	0.498 0.403 0.477	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	<0.010 0.038 0.038	0.576 0.568 0.569
	paste	3 3 3	<0.010 0.014 0.017	8.198 5.600 4.227	<0.010 <0.010 0.021	<0.010 <0.010 <0.010	0.344 0.372 0.463	8.548 5.998 5.429
	puree	3 3 3	0.058 0.041 0.049	3.854 2.502 2.236	<0.010 <0.010 0.011	<0.010 <0.010 <0.010	0.207 0.208 0.217	4.122 2.757 2.515
	fruit, cooked	3 3 3	<0.010 0.028 0.022	0.306 0.601 0.523	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	0.030 0.051 0.049	0.341 0.684 0.598
	juice	3 3 3	<0.010 <0.010 <0.010	0.974 0.662 0.631	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	0.034 0.045 0.040	1.013 0.712 0.676
	preserve	3 3 3	<0.010 <0.010 <0.010	0.970 0.881 0.999	<0.010 <0.010 <0.010	<0.010 <0.010 <0.010	0.038 0.055 0.053	1.013 0.942 1.059
	fruit, dried	3 3 3	0.440 0.350 0.427	11.685 8.313 7.758	0.128 0.090 0.099	<0.010 <0.010 <0.010	0.857 0.873 1.065	13.113 9.629 9.352

[a]DALT = Days after last treatment.

Table 6.5.4.6-7 Processsing factors for tomato processed commodities following the application of BYI08330 150 OD and commercial processing.

RAC	Processed Commodity	Total Rate lb ai/A (kg ai/ha)	Total BYI08330 Residue (ppm)	Processing Factor[a]
Tomato (RAC)	NA[b]	0.797 (0.894)	0.80 0.88 0.99 Avg: 0.89	NA
	Washed Tomatoes		0.38 0.57 0.57 Avg: 0.57	<1.0 (0.6 X)
	Paste		8.55 6.00 5.43 Avg: 6.66	7.5 X
	Puree		4.12 2.76 2.51 Avg: 3.13	3.5 X
	Cooked (Hot Crushed)		0.34 0.68 0.60 Avg: 0.54	<1.0 (0.6 X)
	Juice		1.01 0.71 0.68 Avg: 0.80	< 1.0 (0.9 X)
	Canned Tomatoes		1.01 0.94 1.06 Avg: 1.00	1.1 X
	Dried Tomatoes		13.11 9.63 9.35 Avg: 10.70	12.0 X

[a] Processing factor = Average residue in processed sample / residue in unprocessed sample

[b] NA = Not applicable.

IIA 6.6 Residues in succeeding crops

IIA 6.6.1 Theoretical consideration of the nature and level of the residue

The nature and level of residues in succeeding crops (confined rotational crops, field rotational crops) is influenced by the amount of active ingredient applied to soil, by the degradation behaviour in soil, and by the uptake of parent compound and soil metabolites by the roots. Parent compound and soil metabolites can be additionally metabolised by plants, especially oxidation reactions and formation of conjugates are often observed.

The aerobic degradation of BYI08330 in soil was investigated in a laboratory study (Report No. MEF-04/169), and a supportive outdoor study (Report No. MEF-06/041). The compound is very fast degraded in soil and thoroughly metabolized via three routes each starting with a hydrolytic cleavage of the BYI08330 carbonate ester to the primary metabolite BYI08330-enol. The major modification of the enol occurs via oxidation at the benzylic carbon position leading to BYI08330-ketohydroxy, which can be opened hydrolytically to BYI08330-MA-amide ("ring-opened BYI08330-ketohydroxy), and finally mineralized (presumably via the mandelic and benzoic acid derivatives) to CO_2. Only two major degradates were detected in the supportive outdoor study, BYI08330-ketohydroxy (max. 25.3% AR, DAT-14) and BYI08330-enol (max. 7.8% AR, DAT-7).
Since the parent compound BYI08330 and the primary metabolite BYI08330-enol are degraded quickly, the major soil metabolite BYI08330-ketohydroxy is the most relevant soil residue for possible uptake into succeeding crops. For BYI08330-ketohydroxy, mean DT_{50} values of ca. 8 days and mean DT_{90} of ca. 27.0 days were calculated for the four soils investigated in the laboratory degradation study (Report No. MEF-05/157).
From the soil metabolism data, a significant uptake of BYI08330 related soil residues into succeeding crops can not be excluded, at least not for a short plant back interval of 30 days.
Therefore, the metabolism of BYI08330 was investigated in rotational crops (spring wheat, Swiss chard and turnips) following soil application of azaspirodecenyl-3-^{14}C radiolabelled active ingredient. The application rate (406 g a.s./ha) corresponded to the anticipated maximum seasonal application rate in crops that can be rotated at the time of the study start.

IIA 6.6.2 Metabolism and distribution studies on representative crops

The metabolism of BYI08330 after spray application onto bare soil was investigated in three different crops – spring wheat, Swiss chard, and turnips. These crops can be regarded as representatives for the European crop groups cereals (spring wheat), leaf vegetables and fresh herbs (Swiss chard) and root and tuber vegetables (turnips). They are examples for the European crop categories cereals (spring wheat), leafy crops (Swiss chard), and root vegetables (turnips).
US crop groups mentioned in guideline OPTTS 860.1850 and covered by these three crops are small grains (wheat), leafy vegetables (Swiss chard), and root and tuber vegetables (turnips).

Confined rotational crops

Report:	**KIIA 6.6.2/01, [redacted]; [redacted]; 2006**
Title:	**Metabolism of [Azaspirodecenyl-3-^{14}C]BYI08330 in Confined Rotational Crops**
Report No & Document No	**MEF-05/288** **M-269589-02-2**
Guidelines:	**US EPA Residue Chemistry Test Guideline OPPTS 860.1850: Confined Accumulation in Rotational Crops**
GLP	**Yes**
Testing Laboratory and dates	**Bayer CropScience AG, Development, Metabolism / Environmental Fate, [redacted], Germany** **Experimental work: 2003-03-17 – 2004-12-16; Study completion date: 2006-03-22**

Executive Summary

The metabolism of the insecticide BYI08330 was investigated in the rotational crops wheat, Swiss chard and turnips from three consecutive rotations. [Azospirodecenyl-3-^{14}C]BYI08330 was applied uniformly to the soil of a planting container (approx. 1 m²) by spray application (day 0). The application rate amounted to 406 g a.i./ha based on the highest recommended annual field rate. Crops of the first, second and third rotation were sown at day 30, day 135 and day 260, respectively.

Immature samples investigated were wheat forage and hay (soft dough stage). Wheat straw and grain, Swiss chard, turnip leaves and roots were harvested at maturity.

The highest TRR was observed in wheat straw from the first rotation amounting to 0.998 mg a.i. equiv./kg. The TRRs for all RACs are shown in the following table.

TRR [mg/kg]	wheat forage	wheat hay	wheat straw	wheat grain	Swiss chard	turnip leaves	turnip roots
first rotation	0.024	0.384	0.998	0.026	0.078	0.123	0.021
second rotation	0.021	0.038	0.097	0.010	0.012	0.015	0.003
third rotation	0.009	0.014	0.036	0.002	0.006	0.008	0.002

Comparing the results of all three rotations, a significant decline of the radioactive residues was observed in all RACs. Only wheat hay and wheat straw showed residues above 0.01 mg a.i. equiv./kg in the third

rotation. The lowest residues were detected in the edible matrices wheat grain and turnip roots, followed by Swiss chard.

The major amount of the radioactivity was extracted conventionally using acetonitrile/water and acetonitrile as solvents, except for the samples of wheat grain. In the first rotation 83 to 97% of the TRR, and in the second rotation 72 to 93% of the TRR was extracted that way (grain excluded). In the third rotation, only wheat straw and wheat hay were extracted releasing 81% and 87% of the TRR.

For wheat grain (first and second rotation) and wheat straw (first rotation), exhaustive extractions of solids1 followed the conventional extraction steps.

For grain, the solids were treated with the enzyme diastase to cleave the starch matrix and to release bound or physically encapsulated radioactivity. Additional 45% of the TRR was solubilised that way.

The exhaustive extraction of the solids of wheat straw was performed by means of microwave assistance: The solids were extracted twice with a solvent mixture of acetonitrile/water at 120 °C. Additional 4% of the TRR were released. Thus, none of the unextractable residues exceeded 0.05 mg a.i. equiv./kg.

The radioactivity in the extracts of all RACs obtained after conventional extraction was partitioned with dichloromethane yielding a dichloromethane phase and an aqueous phase. The phases were analysed (if the TRR exceeded 0.01 mg a.i. equiv./kg) and the metabolites were quantified by HPLC. Identification of metabolites was performed by spectroscopic methods (HPLC-MS/MS, FT-MS and ^{1}H-NMR spectroscopy) or by HPLC and TLC co-chromatography using authentic reference compounds.

In total, between 20% and 81% of the TRR could be identified. Higher residues in the phases were associated with high identification rates, and vice versa. Non identified residues were characterized by the extraction and partition procedure and for higher residues also by the chromatographic behaviour of the single compounds in the reversed phase HPLC system used for metabolic profiling. The total rate of identification and characterisation amounted between 72% and 97% of the TRR.

Even higher identification rates were obtained after acidic hydrolysis of the conventional extracts of the RACs. Due to the acidic treatment, the numerous conjugates were cleaved. Hence all major and minor conjugates, which were present in the original phases, partly in such low concentrations that identification was not possible, were transformed into a few known aglyca. For wheat straw, identification of all compounds detected was possible after hydrolysis (i.e., the identification rate increased from 72% to 100% of the radioactivity in extracts). Similar benefit was gained for all other matrices of wheat and for Swiss chard.

The metabolic degradation of BYI08330 in rotational crops was based on the soil metabolites BYI08330-ketohydroxy and BYI08330-enol. No BYI08330 was detected in soil 30 days after application of the active ingredient onto the bare soil. At this time, the predominant residue in soil was BYI08330-ketohydroxy. Smaller amounts of the precursor metabolite BYI08330-enol were also detected.

BYI08330-ketohydroxy was detected in all plant matrices of the first rotation, with exception of wheat grain (which showed high unextractable residues using conventional extraction procedures). Two major metabolic routes in rotational crops started with this soil metabolite. Either demethylation of the cyclohexyl ring was observed or hydroxylation of one methyl group of the phenyl ring.

Another metabolic route started with the addition of water to the tetramic acid ring of BYI08330-enol resulting in the formation of BYI08330-di-hydroxy, followed by the demethylation of this metabolite. Additionally, hydroxylation of one methyl group of the xylene ring of BYI08330-enol to BYI08330-enol-alcohol as an intermediate was supposed. Following demethylation of the methoxy group in the

cyclohexyl ring led to metabolite BYI08330-desmethyl-enol-alcohol, which was detected in all matrices.

Most of the metabolites were conjugated fast. Glucosides and/or glucosyl malonic acid conjugates were detected for BYI08330-enol, BYI08330-desmethyl-di-hydroxy, BYI08330-desmethyl-ketohydroxy and BYI08330-ketohydroxy-alcohol. The percentage of conjugates increased from the first to the third rotation.

Predominant metabolites (> 10% of the TRR) in the first rotation were:

- BYI08330-ketohydroxy (detected in all plant matrices, except for wheat grain)
- BYI08330-desmethyl-ketohydroxy-Glc (at least one of the two identified isomers was detected in all plant matrices, except for turnip roots)
- BYI08330-desmethyl-ketohydroxy-Glc-MA (detected in all matrices of wheat)
- BYI08330-desmethyl-di-hydroxy-Glc (detected in all plant matrices, except for turnip roots)

Predominant metabolites (> 10% of the TRR) in the second rotation were:

- BYI08330-ketohydroxy (detected in wheat straw and Swiss chard)
- BYI08330-di-hydroxy (detected in wheat straw and Swiss chard)
- BYI08330-desmethyl-di-hydroxy-Glc (detected in all plant matrices, which were analysed by HPLC)
- BYI08330-desmethyl-di-hydroxy-Glc-MA (detected in all plant matrices, which were analysed by HPLC)

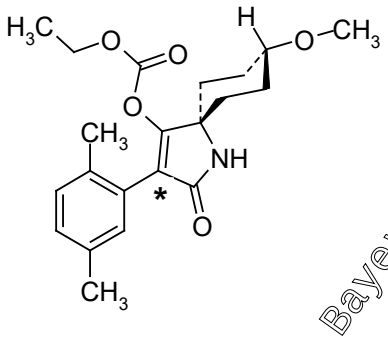
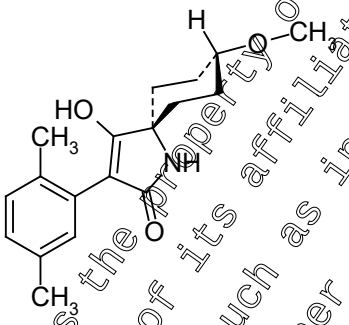
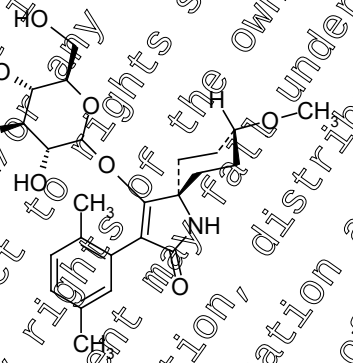
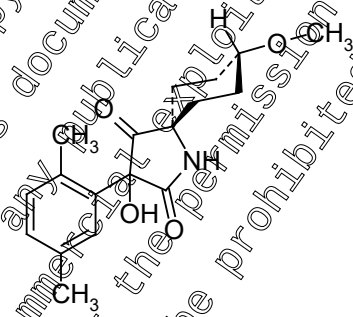
The predominant metabolite (> 10% of the TRR) in the third rotation was:

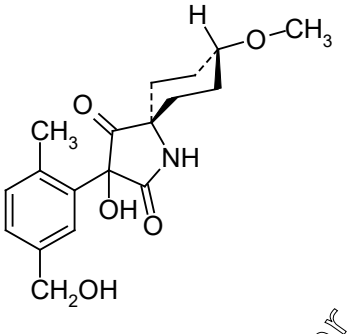
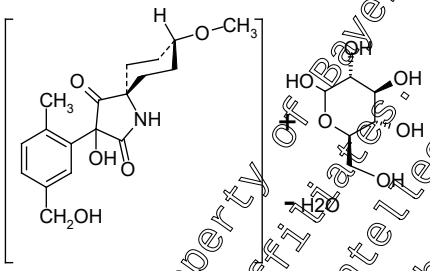
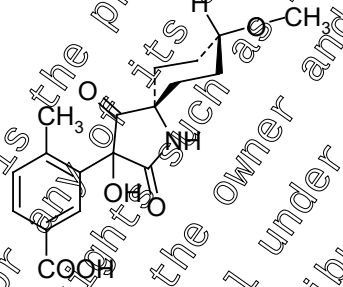
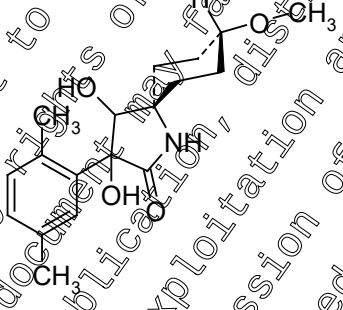
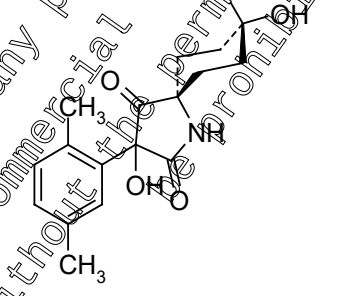
- BYI08330-di-hydroxy (detected in wheat straw)

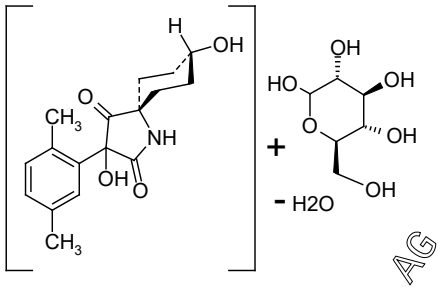
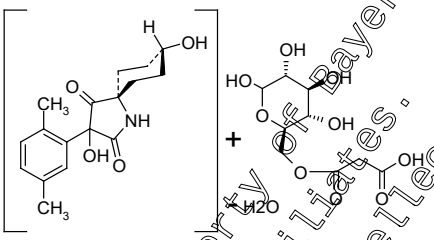
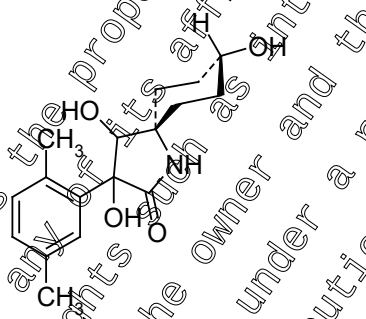
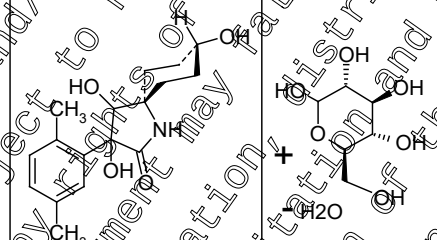
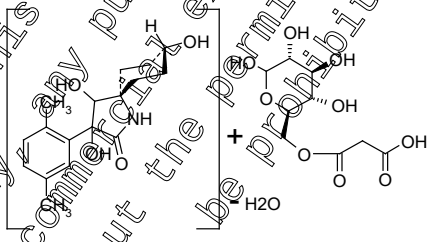
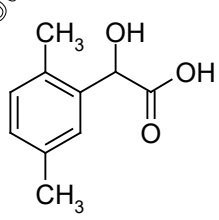
The metabolites identified in rotational crops are summarized in following table.

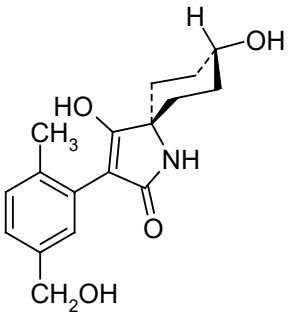
Based on the results of this study, the metabolic pathway of [azaspirodecenyl-3-^{14}C]BYI08330 in rotational crops shown in Figure6.6.2.1 was proposed.

Metabolites identified in confined rotational crops

Report Name	Chemical Structure	IUPAC Name
active substance: BYI08330 not detected in the study		3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate * = [azaspirodecenyl-3-^{14}C] label
BYI08330-enol		(5s,8s)-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one
BYI08330-enol-Glc		(5s,8s)-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl D-glucopyranoside
BYI08330-ketohydroxy		(5s,8s)-3-(2,5-dimethylphenyl)-3-hydroxy-8-methoxy-1-azaspiro[4.5]decane-2,4-dione

Report Name	Chemical Structure	IUPAC Name
BYI08330-ketohydroxy-alcohol		(5s,8s)-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]decane-2,4-dione
BYI08330-ketohydroxy-alcohol-Glc		Glucoside of (5s,8s)-3-hydroxy-3-[5-(hydroxymethyl)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]decane-2,4-dione
BYI08330-ketohydroxy-carboxylic acid		3-[(5s,8s)-3-hydroxy-8-methoxy-2,4-dioxo-1-azaspiro[4.5]dec-3-yl]-4-methylbenzoic acid detected after acidic hydrolysis of extracts
BYI08330-di-hydroxy		(5s,8s)-3-(2,5-dimethylphenyl)-3,4-dihydroxy-8-methoxy-1-azaspiro[4.5]decan-2-one
BYI08330-desmethyl-ketohydroxy		(5s,8s)-3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione

Report Name	Chemical Structure	IUPAC Name
BYI08330-desmethyl-ketohydroxy-Glc		Glucosides of (5s,8s)-3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione two isomers (1 and 2) detected
BYI08330-desmethyl-ketohydroxy-Glc-MA		Glucosyl-malonic acid conjugate of (5s,8s)-3-(2,5-dimethylphenyl)-3,8-dihydroxy-1-azaspiro[4.5]decane-2,4-dione two isomers (1 and 2) detected
BYI08330-desmethyl-di-hydroxy		(5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one
BYI08330-desmethyl-di-hydroxy-Glc		Glucoside of (5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one
BYI08330-desmethyl-di-hydroxy-Glc-MA		Glucosyl-malonic acid conjugate of (5s,8s)-3-(2,5-dimethylphenyl)-3,4,8-trihydroxy-1-azaspiro[4.5]decan-2-one
BYI08330-mandelic acid		(2,5-dimethylphenyl) (hydroxy)acetic acid detected after acidic hydrolysis of extracts

Report Name	Chemical Structure	IUPAC Name
BYI08330-desmethyl-enol-alcohol		(5s,8s)-4-hydroxy-3-[5-(hydroxy)-2-methylphenyl]-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one

I. Material and Methods

A. Materials

1. Test Material: spirotetramate (BYI08330), [azaspirodecenyl-3-^{14}C]-labelled
Specific radioactivity: 3.71 MBq/mg (100.2 µCi/mg)
Radiochemical purity: > 99 % (certified, HPLC and TLC)
CAS #: 203313-25-1 (CAS # of unlabelled spirotetramate)
IUPAC Name cis-3-(2,5-dimethylphenyl)-8-methoxy-2-oxo-1-azaspiro[4.5]dec-3-en-4-yl ethyl carbonate

2. Plants: Species: Spring wheat *(var.* Thasos) representative for small grain, Swiss chard (*var.* Lucullus) representative for leafy vegetable, turnips *(var.* Rondo) representative for root vegetable.
Irrigation and fertilization were done as required for plant growth. Spring wheat was treated with Gaucho and Landor as a seed treatment and later sprayed with Opus Top. Swiss chard and turnips were treated with Aatiram as a seed treatment. Turnips were later sprayed with Bayfidan.

B. Study design

1. Experimental conditions:
A solution of [azaspirodecenyl-3-^{14}C]BYI08330 in acetonitrile/water was applied uniformly to the soil of a planting container (area 1 m²) by spray application (day 0). Details of the testing environment and the soil are given in the table below.

Testing Environment and location	Soil characteristics						
	Type	% Sand	% Silt	% Clay	%OM	pH	CEC
[redacted], Germany Plant container, 1 m²; 1st Rotation: Vegetation area (outdoor hall) natural temperature and sunlight conditions. Roof closed in case of rain. 2nd + 3rd Rotation: greenhouse	Sandy loam	60.7	26.3	13.0	1.36%	6.4 ($CaCl_2$) 7.3 (water)	5.9 meq/100 g

The application rate corresponded to 406 g a.s./ha and was based on the anticipated maximum seasonal application rate of 400 g/ha in crops that can be rotated. Crops of the first, second and third rotation were sown at day 30, day 135 and day 260, respectively. The application, the ageing period of 30 days and the cultivation of the first crop were performed in the vegetation area. The vegetation area allows plant growth under natural sunlight and temperatures; however a glass roof was automatically closed at the beginning of rainfall or at bad weather conditions. A metal net construction around the facility kept

animals and birds out. For the second and third rotation, the plants were grown in the greenhouse. If necessary, the soil was watered in order to maintain adequate moisture contents during the ageing period. The plants were irrigated by pouring to maintain optimal growing conditions.

2. Sampling and storage:

Wheat forage: One row of wheat plants was cut at each sampling time (64, 171, 312 days after application). The forage was cut in pieces before homogenisation with liquid nitrogen using a Polytron homogeniser. The homogenised sample material was used for extraction, immediately after homogenisation. Residual sample material was stored at approx. –18°C.

Wheat hay: From one row of wheat plants hay was sampled at the late milk stage (97, 216, 352 days after application). The sample material was dried at room temperature for four days, cut in pieces, and homogenised as described for forage. An aliquot of the homogenised sample was used for extraction immediately after homogenisation. Residual sample material was stored at approx. –18°C.

Wheat grain and straw: Grain and straw of a rotation were harvested together (134, 260, 400 days after application). The wheat plants were cut shortly above the soil surface. The seeds were collected manually yielding the grain sample. The remaining ears and chaffs were combined with the straw.

Grain and straw samples were homogenised as described for forage. An aliquot of straw and an aliquot of grain were extracted directly after homogenisation. The residual sample materials were stored in aliquots at approx. –18° C for further extractions.

Swiss chard: Swiss chard of each rotation was harvested at maturity (78, 184, 322 days after application). Only the leaves were used, the roots remained in the soil. The leaves were chopped and homogenised as described for forage. The homogenised sample was stored in aliquots at approx. -18°C.

Turnip leaves and roots: The turnips of each rotation were harvested at maturity (98, 205, 329 days after application). Leaves and roots were separated. The roots were cleaned with paper towels to remove any adhering soil. Then, they were chopped with a knife and a slicer before homogenisation with liquid nitrogen. The leaves were cut up with scissors before homogenisation. The homogenisation was performed as described for forage. An aliquot of each homogenised sample material was extracted immediately; all other aliquots were stored at approx. 18°C for optional additional extractions.

3. Analytical procedures:

Extraction: An aliquot of the homogenized sample material (50 g) of wheat forage, wheat hay, wheat grain, Swiss chard, turnip leaves, and turnip roots was extracted twice with acetonitrile/water (80/20, v/v; approx. 200 mL) and once with acetonitrile (approx. 200 mL) using a Polytron homogeniser. After each extraction step, the suspension was filtered by suction. The solid residues were washed with approx. 50 mL of the solvent used. The extracts were combined and aliquots of the combined extract were measured for radioactivity by LSC. The solids were air-dried and aliquots of the homogenised solids were combusted and measured for radioactivity by LSC. The radioactivity of the combined extract and of the solids 1 was used for the calculation of the TRR.

For wheat grain, an exhaustive extraction of solids1 followed the conventional extraction steps of the first extraction. The solids were treated with the enzyme diastase to cleave the starch matrix and to release bound or physically encapsulated radioactivity. 20 g of the solids were stirred with the enzyme suspension for 10 days at room temperature. The suspension was filtered by suction and the remaining solids were treated with the same volume of enzyme suspension for another 19 days at room temperature. The two filtrates were combined and the radioactivity was measured by LSC. The combined filtrates were partitioned three times with dichloromethane.

An aliquot of the homogenized wheat straw sample was mixed with approx. 200 mL of water and the sample was left to soak for 1 hour. 200 mL of acetonitrile was added and the sample was extracted using a Polytron homogeniser. The extraction was repeated twice using acetonitrile/water (80/20, v/v, approx. 400 mL for each extraction). After each extraction step, the suspension was filtered by suction. The solid residues were washed with small amounts of acetonitrile/water (50/50; v/v or 80/20; v/v respectively). A last extraction step with approx. 350 mL of acetonitrile followed. Aliquots of the extracts were measured for radioactivity by LSC before combining the extracts. An aliquot of the combined extract was also measured for radioactivity by LSC. The solids were air-dried and aliquots of the homogenised solids were combusted and measured for radioactivity by LSC. The radioactivity of the combined extract and of the solids was used for the calculation of the TRR.
For further analysis, the combined acetonitrile/water extract was concentrated to the aqueous remainder using a rotary evaporator. This sample was used for partition with dichloromethane.
An exhaustive extraction of the solids (solids 1) was performed using microwave instrument. 7.5 g of the solids were extracted twice with acetonitrile/water (50/50, v/v) at a temperature of 120 °C (5 min: heating to 120°C, 15 min: 120 °C, then cooling down to room temperature). The extracts were combined and measured for radioactivity by LSC. The solids were air-dried and aliquots of the homogenised solids were combusted and measured for radioactivity by LSC.

Distribution of radioactivity (partitioning): For further analysis, half of the volume of the combined acetonitrile/water extract (or the whole volume in the case of wheat forage and wheat grain, respectively) was concentrated to the aqueous remainder using a rotary evaporator. The concentrated sample was partitioned with dichloromethane (3 x approx. 100 mL) yielding an organic and an aqueous phase. The phases were measured for radioactivity by LSC, concentrated and analysed by HPLC.

Radioactivity measurement
Solid samples were combusted prior to radioactivity determination and the formed $^{14}CO_2$ absorbed in an alkaline trapping solvent. The determination of radioactivity in liquid samples was conducted on sub-samples (3 replicates) by liquid scintillation counting (LSC), with up to 20 min counting time until reaching a 2-σ error of 0.7 %. Quenching effects were automatically corrected using an external standard and quenching library. The instrument background of approximately 11 - 24 dpm was subtracted automatically.

Metabolite analysis
For quantification of metabolites, the prepared extracts were subjected to HPLC using a reversed phase column (C18) and the eluting solvents water/formic acid = 99 : 1 (v/v) and acetonitrile/water/formic acid = 97 : 2 : 1 (v/v/v) in the gradient mode (method BYI08330_4). Detection was performed by a UV (254 nm) and a radioisotope detector with a glass scintillator. In order to check the completeness of the elution for the HPLC profile, samples of the organic and aqueous phases of all RACs were injected, re-collected, and radioassayed by LSC. The recoveries were between 97.9 and 103.2 % of the injected radioactivity. The LOQs for all matrices were ≤ 0.001 mg equ./kg. A preliminary alternative HPLC method for metabolic profiling (method BYI 1) used the eluting solvents water/formic acid 99 : 1 (v/v) and acetonitrile with a different RP 18 column and a steeper gradient profile.
Identification of metabolites was achieved by HPLC and TLC co-chromatography with radiolabelled and non-labelled reference compounds and by spectroscopy (LC-MS/MS and partially also ^{1}H-NMR) of isolated and purified metabolite fractions.

One-dimensional and two dimensional TLC on silica 60 F254 (normal phase) plates was used as the second method for co-chromatographic identification of metabolites.

The three following one dimensional TLC solvent systems were used. The plates were developed over a distance of ca. 15-16 cm.

Solvent system 1 Dichloromethane/methanol/ammonia solution 25 % (90/10/1 v/v/v),
Solvent system 2 Trichloromethane/methanol/formic acetic acid/water (65/25/4/4 v/v/v/v),
Solvent system 3 ethyl acetate/isopropanol/water (65/23/12 v/v/v)

Two-dimensional TLC:

The plate was developed over a distance of ca. 10 – 12 with solvent system 1, dried and then developed with solvent system 3 in the orthogonal direction.

For the TLC confirmation of metabolites, extracts of isolated metabolites were applied individually and overlapped with each other on the TLC-plates. Co-chromatographic correspondence was assessed either by visual inspection of the plate under UV light at 254 nm and its associated radioluminogram or by analysis of the radioluminogram only, in cases where radioactive reference items were used.

Most of the spectroscopic and co-chromatographic identification was conducted with the organic and aqueous phase of wheat straw from the 1st rotation. These phases were fractionated with the HPLC profiling method and the purified fractions of major metabolites were subjected to spectroscopic investigation. Metabolites in the other RACs were assigned by comparison of the metabolic profiles with those from wheat straw.

In addition to co-chromatography and spectroscopic methods, some isolated conjugates were characterized by hydrolytic cleavage followed by co-chromatographic identification of the aglycone.

Enzymatic hydrolysis with ß-glucosidase was performed with the aqueous phase from wheat straw of the 1st rotation to prove the presence of glucose as the endocon of conjugates.

Furthermore, the acetonitrile/water extracts of wheat hay, wheat straw, wheat grain, Swiss chard, turnip leaves, and turnip roots were subjected to hydrolysis with boiling hydrochloric acid. The hydrolysis products were identified by co-chromatography and LC-MS/MS analysis of isolated and purified fractions from the hydrolyzed extracts of wheat straw and turnip leaves.

II. Results and Discussion

A. Total Radioactive Residues (TRRs)

The total radioactive residues (TRRs) in rotational crops, expressed as mg/kg parent compound equivalents, are shown in Table 6.6.2-1. The highest total radioactive residues (TRRs) were detected for all RACS in the first rotation. A significant decline of the TRR values from the first to the second and third rotation was observed for all crops. The maximum TRR (0.998 mg/kg) was observed in wheat straw of the first rotation. The TRR in straw decreased constantly from the first to the second rotation (0.097 mg/kg) and to the third rotation (0.036 mg/kg). A similar decline of TRR values was found for all other RACs. Only wheat hay and wheat straw showed residues above 0.01 mg a.i. equiv./kg in the third rotation. In all rotations, the lowest residues were detected in the edible matrices wheat grain and turnip roots, followed by Swiss chard.

B. Extraction, Characterization, and Identification of Residues

1. Extraction and distribution of residues in rotational crops

A main portion of the TRR was extracted conventionally using acetonitrile/water. Only for grain, this portion was significantly lower. In the first rotation between 82.6% and 97.1% (grain: 50.1%), in the second rotation between 71.6% and 92.5% (grain: 21.2%) and in the third rotation 80.8% (wheat hay) and 87.3% (wheat straw) of the TRR were extracted with acetonitrile/water.
Exhaustive extraction steps were conducted for wheat grain (first and second rotation) and for wheat straw (first rotation).
The solids of grains after the conventional extraction were treated with the enzyme diastase to cleave the starch matrix and to release additional radioactivity. After diastase treatment, a total of 94.6% and 88.0% of the TRR was extracted and only 0.001 mg a.i. equiv./kg remained unextracted in the solids 2 of grain (first and second rotation).
The solids 1 from wheat straw of the first rotation were extracted with water/acetonitrile using microwave conditions at increased temperature. The exhaustive extraction released additional 4.3% of the TRR, leaving 3.6% of the TRR (0.036 mg a.i. equiv./kg) unextracted in the solids 2.
The radioactivity of the combined acetonitrile/water extracts after conventional extraction was partitioned into a dichloromethane and an aqueous phase to facilitate the identification and characterisation of the metabolites according to their polarity. The portion of the radioactivity that was partitioned into the dichloromethane phase varied depending on the RAC and accounted between 5.9% and 45.8% of the TRR.

2. Storage stability of residues

The extraction of the RACs used for the quantification of metabolites was performed directly after harvest or latest 13 days after harvest. All sample materials which were not extracted immediately were stored at ≤ -18 °C until additional extractions became necessary.
First metabolic profiles of all RACs were measured in maximum 18 days after harvest. The profiles of the 1st rotation were recorded for all RACs - except for wheat straw and grain - using a preliminary HPLC method (method BYI 1). Since this method separated the compounds not very well, a new HPLC method (method BYI08330_4) was developed for metabolic profiling. The metabolite profiles of all RACs using this optimized HPLC method were determined within 84 days in maximum (period from harvest to analysis). Both HPLC methods were reversed phase methods using C18 columns and acidified water and acetonitrile as eluents; the major difference was the form of the gradient. The retention order of the compounds was identical for both methods but method BYI08330_4 provided a better resolution due to the smoother gradient.
Since supportive experiments for identification purposes were performed within larger time periods, additional storage experiments were carried out with stored extracts and RACs from the 1st rotation.
Stored extracts, which were used for metabolite profiling were reanalysed at the end of the experimental phase of the study to show the stability of the metabolites in the extracts during storage at ≤ -18 °C. The stability of the metabolites in the extracts was demonstrated for a storage time of approx. 11 months in all RACs of the first rotation.
Additionally, new extractions of all stored RACs of the 1st rotation (except for wheat hay, since no more sample material was left) were performed. The chromatograms of the new extracts were compared to the metabolite profiles established at the beginning of the study. The stability of the metabolites in the stored samples was proven for time intervals of at least 11 months of storage.

3. Identification of metabolites:

Most of the identification work of metabolites was performed with the organic and the aqueous phase of wheat straw from the 1st rotation since this sample exhibited by far the highest residues.
A total of 5 compounds were identified in the dichloromethane phase of wheat straw of the 1st rotation: BYI08330-di-hydroxy was the major compound and accounted for 0.057 mg a.i. equiv./kg (5.7% of the TRR). It was identified by HPLC-MS/MS analysis after isolation and several clean-up steps. An unambiguous assignment of the structure was achieved by TLC co-chromatography of the isolated compound with an authentic reference compound. The metabolites BYI08330-ketohydroxy and BYI08330-desmethyl-ketohydroxy were identified by HPLC and TLC co-chromatography with authentic reference compounds. The minor metabolite BYI08330-ketohydroxy-alcohol was identified by HPLC co-chromatography. An additional minor metabolite was assigned to BYI08330-desmethyl-enol-alcohol by HPLC comparison and TLC comparison.
In the dichloromethane phase of straw, of the 1st rotation, all metabolites identified accounted for 12.2% of the TRR (0.122 mg a.i. equiv./kg). The compounds which could not be identified (2.6% of the TRR or 0.025 mg a.i. equiv./kg) were at least characterised by their polarity (behaviour during partitioning with dichloromethane) and their retention times in HPLC. None of the characterised compounds exceeded 1% of the TRR or 0.01 mg a.i. equiv./kg.
The same metabolites were identified in the other RACs and the other rotations by comparison of HPLC profiles. Only in wheat grain of the 1st rotation, BYI-08330-enol was detected as an additional metabolite in the dichloromethane phase at a trace level of 0.001 ppm (2.9% of TRR). A total of 13 unknown compounds was detected in the organic phases of the different RACs from all rotations. None of the unknowns in the organic phases exceeded a residue level of 0.006 ppm.

In the aqueous phase of straw from the 1st rotation, a total of 10 metabolites was identified. The major metabolites were isolated by HPLC fractionation, purified and identified by HPLC-MS. Minor metabolites were identified by co-chromatography with authentic reference compounds.
The majority of the identified metabolites were conjugates of metabolites detected in the dichloromethane phase:
Two conjugates of BYI08330-desmethyl-di-hydroxy were detected in the aqueous phase of wheat straw: BYI08330-desmethyl-di-hydroxy-Glc (0.116 mg a.i. equiv./kg, corresponding to 11.6% of the TRR), the main metabolite of the aqueous phase and BYI08330-desmethyl-di-hydroxy-Glc-MA (0.060 mg a.i. equiv./kg, corresponding to 6.0% of the TRR), the corresponding glycosyl-malonic acid conjugate. BYI08330-desmethyl-di-hydroxy-Glc was identified by HPLC-MS/MS, FT-MS and ^{1}H-NMR. The assignment of BYI08330-desmethyl-di-hydroxy-Glc-MA was performed by HPLC-MS/MS and confirmed by FT-MS.
The aglycon BYI08330-desmethyl-di-hydroxy, identified by HPLC-MS/MS in the hydrolysed acetonitrile/water extract, was assigned to a minor compound by comparison of the HPLC profiles.
Two isomeric glycosyl-malonic acid conjugates and two isomeric glycosides of BYI08330-desmethyl-ketohydroxy were also detected. The earlier eluting isomer of BYI08330-desmethyl-ketohydroxy-Glc-MA accounted for 0.088 mg a.i. equiv./kg (8.8% of the TRR) and was the second major metabolite in the aqueous phase. The second isomer accounted for 0.038 mg a.i. equiv./kg (3.8% of the TRR). Both glycosyl-malonic acid conjugates were identified by HPLC-MS/MS and the structure assignments were confirmed by FT-MS. The two isomers of BYI08330-desmethyl-ketohydroxy-Glc accounted for 0.087 mg a.i. equiv./kg and for 0.044 mg a.i. equiv./kg (8.7% of the TRR, isomer 1 and 4.4% of the TRR, isomer 2). The metabolites were also identified by HPLC-MS/MS and the structure assignments were additionally confirmed by FT-MS.

BYI08330-ketohydroxy-alcohol-Glc was also present in the aqueous phase, as well as the corresponding aglycon BYI08330-ketohydroxy-alcohol, which was also detected in the dichloromethane phase. BYI08330-ketohydroxy-alcohol-Glc accounted for 0.050 mg a.i. equiv./kg (5.0% of the TRR) and was identified by HPLC-MS/MS. Confirmation of the structure assignment was performed by FT-MS. BYI08330-ketohydroxy-alcohol, as minor metabolite, was identified by comparing the HPLC profiles of the aqueous and the dichloromethane phase. The minor metabolite BYI08330-enol-Glc (0.025 mg a.i. equiv./kg, corresponding to 2.5% of the TRR) was identified by HPLC co-chromatography.
Eight of the ten metabolites identified in the aqueous phase of straw from the 1st rotation were conjugated with a hexose. Most probably these conjugates were glucosides, since monosaccharide conjugation of xenobiotics involving carbohydrate moieties other than glucose are extremely rare. To confirm this assumption, an aliquot of the aqueous phase was treated with ß-glucosidase. BYI 8330-desmethyl-di-hydroxy-Glc and one isomer of BYI08330-desmethyl-ketohydroxy-Glc were cleaved completely under the conditions chosen. Hence, the endocon was assigned unambiguously to glucose. As a consequence, the corresponding malonic acid conjugates are most probably glucosyl malonic acid conjugates, even if they were not cleaved completely in the experiment. No enzymatic cleavage was observed for the glycoside of BYI08330-enol. This fact was well known from the corresponding target plant studies. In the study with lettuce, the conjugate was isolated and the endocon was identified unambiguously as glucose by ^{1}H-NMR spectroscopy. Based on these results, it was concluded that glucose was the endocon in all conjugates identified.
In total, 54.4% of the TRR (0.543 mg a.i. equiv./kg) was identified in the aqueous phase of straw from the 1st rotation, and 23.0% of the TRR (0.229 mg a.i. equiv./kg) was characterized. None of the characterised compounds exceeded 5% of the TRR, or 0.05 mg a.i. equiv./kg respectively.
The same metabolites were identified in the other RACs and the other rotations by comparison of HPLC profiles. A total of 41 unknown compounds was detected in the aqueous phases of the different RACs from all rotations. Five of these unknowns were also found in the organic phase. None of the unknowns in the aqueous phase exceeded a residue level of 0.03 ppm.

Since 0.079 mg a.i. equiv./kg (7.9% of the TRR) remained unextractable in solids 1 of wheat straw (1st rotation) after conventional extraction, aliquot of the solids was extracted using microwave conditions at increased temperature. Additional 4.3% of the TRR (0.043 mg a.i. equiv./kg) was released by the exhaustive extraction. Three metabolites, namely BYI 08330-desmethyl-di-hydroxy-Glc, BYI 08330-enol-Glc and BYI 08330-ketohydroxy-alcohol-Glc were identified in this extract by comparing the metabolite pattern of the microwave extract with that of the aqueous phase.

A summary of the distribution of residues including the TRR levels and percentage of metabolites in the different extracts and phases of all RACS is presented in Table 6.2.2-2 for the 1st rotation, Table 6.2.2-3 for the 2nd rotation, and Table 6.2.2-4 for the 3rd rotation. Summaries for the identified residues only are given in Table 6.2.2-5 for the 1st rotation, Table 6.2.2-6 for the 2nd rotation, and Table 6.2.2-7 for the 3rd rotation.

To get further information about the unidentified compounds of the dichloromethane phase (unidentified: 2.6% of the TRR) and the aqueous phase (unidentified: 23.0% of the TRR) of wheat straw, an acetonitrile/water extract of this RAC before partition was treated with boiling hydrochloric acid. As expected, unknown conjugates were cleaved and a reduced number of compounds resulted. The

transformation products were isolated by HPLC fractionation and submitted each to several clean-up steps before identification by HPLC-MS/MS and/or by TLC- and HPLC co-chromatography.
The following compounds were identified and used as reference compounds in the further course of the study:

- BYI 08330-desmethyl-di-hydroxy
- BYI 08330-mandelic acid (new compound, not identified in organic or aqueous phase)
- BYI 08330-desmethyl-enol-alcohol
- BYI 08330-di-hydroxy
- BYI 08330-ketohydroxy-alcohol
- BYI 08330-desmethyl-ketohydroxy
- BYI 08330-ketohydroxy

A comparison of the origin acetonitrile/water extract and the hydrolysed phase showed that the number of compounds was reduced significantly to seven main compounds due to the acidic treatment. Most of the identified transformation products were corresponding aglyca to the conjugates identified in the aqueous and the dichloromethane phase. But moreover, all minor compounds which were present in the original phases in such low concentrations that identification was not possible, were transformed into one of the seven identified compounds by acidic treatment.

Since the acidic treatment of the acetonitrile/water extract of wheat straw led to a simplified metabolite pattern, the acetonitrile/water extracts of wheat hay, wheat grain, Swiss chard, and of turnip leaves and roots were hydrolysed as well. Recovery experiments excluded that a major part of the radioactivity got lost during the acidic treatment. Between 91% and 103% of the applied radioactivity was recovered after the hydrolysis experiment.
For the matrices of wheat and for Swiss chard a clear benefit was gained by the acidic treatment: Simplified metabolite pattern - consisting of known compounds - resulted. Two additional hydrolysis products were identified in the hydrolysed extract of turnip leaves: BYI 08330-ketohydroxy-carboxylic acid, which was also detected in the outdoor soil degradation study and BYI 08330-ketohydroxy-alcohol, which was also identified in the hydrolysate of wheat straw. The metabolites were identified by HPLC-MS/MS and FT-MS analysis after isolation and purification. The assignment of BYI 08330-ketohydroxy-alcohol was additionally confirmed by ^{1}H-NMR.
The identification rate was always higher after acidic treatment, with the exception of the sample of turnip roots, which was characterised by a low residue level, anyway.
Under the hydrolysis conditions chosen, glucosides and glucosyl-malonic acid conjugates were cleaved and the well-known phase I metabolites BYI 08330-desmethyl-di-hydroxy, BYI 08330-di-hydroxy, BYI 08330-ketohydroxy-alcohol, BYI 08330-desmethyl-ketohydroxy, BYI 08330-ketohydroxy, and BYI 08330-enol were formed. BYI 08330-desmethyl-enol-alcohol had been identified in the organic phase of several RACs at a level <3% of the TRR. Significantly higher proportions of this compound were detected in some RACs after acidic hydrolysis. New compounds detected after hydrolysis were BYI 08330-ketohydroxy-carboxylic acid and BYI 08330-mandelic acid.
Additional hydrolysis experiments with the isolated conjugates of wheat straw confirmed the cleavage of the conjugates under the conditions chosen and showed that no unexpected transformation of the compounds took place. Hence it was concluded that BYI 08330-desmethyl-enol-alcohol, BYI 08330-ketohydroxy-carboxylic acid and BYI 08330-mandelic acid were most probably conjugated before the acidic treatment.

A summary of the composition of extracts from the RACs of the 1st rotation after acidic hydrolysis is presented in Table 6.2.2-9.

4. Proposed metabolic pathway:

In order to form the metabolites detected, BYI 08330 underwent the following biotransformation steps:
In soil, the ethyl carbonate group of the parent compound BYI 08330 was hydrolysed easily and the tetramic acid moiety of the resulting BYI 08330-enol was oxidised to form BYI 08330-ketohydroxy. Hence, 30 days after application of the soil, no more parent compound was detected, only small amounts of BYI 08330-enol (approx. 5% of the extracted radioactivity) and high amounts of BYI 08330-ketohydroxy (approx. 66% of the extracted radioactivity) were present.
Thus, the main compound taken up by the plants was BYI 08330-ketohydroxy, which became also obvious in the metabolites detected. One major metabolic route in plants started with the demethylation of BYI 08330-ketohydroxy to form BYI 08330-desmethyl-ketohydroxy. Subsequent conjugation resulted in two isomeric glucosides and two isomeric glucosyl malonic acid conjugates.
Hydroxylation of one methyl group of the xylene ring in BYI 08330-ketohydroxy was also detected. BYI 08330-ketohydroxy-alcohol was formed, which was also detected as glucoside.
Uptake of the soil metabolite BYI 08330-enol was concluded, since it was detected in wheat grain and conjugated as glucosides in wheat hay and wheat straw. Additionally two further metabolic routes in plants started with this metabolite. Addition of water to BYI 08330-enol to the double bond of the tetramic acid ring resulted in metabolite BYI 08330-di-hydroxy. Following demethylation of the methoxy group of the cyclohexyl ring resulted in BYI 08330-desmethyl-dihydroxy. Partly, conjugation followed: A glucoside and a malonic acid conjugate were identified.
The second metabolic route started with the hydroxylation of one methyl group of the xylene ring in BYI 08330-enol forming the postulated metabolite BYI 08330-enol-alcohol, which was subjected to demethylation. Metabolite BYI 08330-desmethyl-enol-alcohol resulted. Following oxidation of the tetramic acid moiety showed an additional way to form BYI 08330-ketohydroxy-alcohol.
Cleavage of the azaspiro ring of BYI 08330 was not of any importance. BYI 08330-mandelic acid, the only hint for molecular cleavage, was only detected in the extracts of the hydrolysis experiments. The low concentration of the compound in all RACs (< 0.05 mg a.i. equiv./kg) showed the minor relevance.
Comparison of the metabolites detected in all three rotations showed that all phase I metabolites of BYI 08330 were conjugated fast. Even in the RACs of the first rotation, the phase II metabolites preponderate. The only exception was turnip roots, in which a high concentration of BYI 08330-ketohydroxy was still detected after the second rotation.
The proposed metabolic pathway of [azaspirodecenyl-3-UL-^{14}C]BYI08330 in confined rotational crops is shown Figure 6.6.2-1.

III. Conclusions

The metabolism of BYI08330 was investigated in rotational crops (spring wheat, Swiss chard and turnips) following soil application of [azaspirodecenyl-3-^{14}C radiolabelled active ingredient. The application rate corresponded to 406 g a.s./ha.
A significant decline of residues from the first to the third rotation was observed for all RACs. The highest TRR was detected in wheat straw from the first rotation. The TRR declined significantly from the first (0.998 mg a.i. equiv./kg) to the second (0.097 mg a.i. equiv./kg) and to the third rotation (0.036 mg a.i. equiv./kg). In forage, the TRR decreased from 0.024 to 0.009 mg a.i. equiv./kg, in wheat hay from 0.384 to 0.014 mg a.i. equiv./kg, in wheat grain from 0.026 to 0.002 mg a.i. equiv./kg, in Swiss

chard from 0.078 to 0.006 mg a.i. equiv./kg, in turnip leaves from 0.123 to 0.008 mg a.i. equiv./kg and in turnip roots from 0.021 to 0.002 mg a.i. equiv./kg. Wheat hay and straw were the only RACs in the third rotation with residues above 0.010 mg a.i. equiv./kg.

A total of 72% to 97% of the TRR was extracted using acetonitrile/water and acetonitrile as solvents, except for grain. Wheat grain was extracted insufficiently by conventional extraction: Only between 21% and 50% of the TRR was released. Subsequent treatment with a diastase suspension released additional 45% to 67% of the radioactivity resulting in extraction efficiencies of 95% and 88%.
In total, the radioactive residue of the remaining solids after conventional and exhaustive extraction ranged between 0.001 mg a.i. equiv./kg and 0.036 mg a.i. equiv./kg.

As results of identification it was observed that:

- BYI08330 was thoroughly metabolized in rotational crops and 15 metabolites could be identified. No parent compound was detected in any of the raw agricultural commodities.
- The metabolic degradation in plants was based on the soil metabolites BYI 08330-enol and BYI 08330-ketohydroxy.
- Two metabolic routes started from metabolite BYI 08330-ketohydroxy: Either demethylation of the methoxy group in the cyclohexyl ring was observed or hydroxylation of one methyl group of the xylene ring.
- Another metabolic route started with the addition of water to the tetramic acid moiety of BYI 08330-enol. The formation of BYI 08330-di-hydroxy resulted, which was followed by demethylation of the metabolite.
- Most of the metabolites were conjugated fast. Glucosides and/or glucosyl malonic acid conjugates were detected for BYI 08330-enol, BYI 08330-desmethyl-di-hydroxy, BYI 08330-desmethyl-ketohydroxy and BYI 08330-ketohydroxy-alcohol.
  Conjugates represented a major part of the TRR in all RACs.

Simplified metabolite pattern resulted for most RACs after acidic treatment of the conventionally obtained extracts (combined acetonitrile/water extract). The numerous conjugates detected in the aqueous phase were cleaved and a few known aglyca resulted. Hence, higher identification rates were obtained. For wheat straw, even identification of all compounds was possible after the treatment (i.e., the identification rate increased from 72% to 100% of the radioactivity in the extracts). Similar benefit was gained for all other matrices of wheat and for Swiss chard.

Table 6.6.2-1 Total radioactive residues (TRRs) in rotational crops grown in soil treated with [azaspirodecenyl-3-^{14}C] BYI08330. Values are expressed as mg/kg parent compound equivalents.

	wheat				Swiss	Turnips	
	forage	hay	straw	grain	chard	leaves	roots
first rotation	0.024	0.384	0.998	0.026	0.078	0.123	0.021
second rotation	0.021	0.038	0.097	0.010	0.012	0.015	0.003
third rotation	0.009	0.014	0.036	0.002	0.006	0.008	0.002

Table 6.6.2-2 Amount of metabolites in rotational crops of the 1st rotation (30 days plant back interval)
Values are expressed as mg/kg parent compound equivalents and as % of TRR.

TRR	wheat forage 0.024 ppm		wheat hay 0.384 ppm		wheat straw 0.998 ppm		wheat grain 0.026 ppm		Swiss chard 0.078 ppm		turnip leaves 0.123 ppm		turnip roots 0.021 ppm	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
Organosoluble	**41.7**	**0.010**	**16.8**	**0.065**	**14.7**	**0.147**	**6.6**	**0.002**	**31.6**	**0.025**	**5.9**	**0.007**	**44.2**	**0.009**
desmethyl-enol-alcohol	1.6	<0.001	0.8	0.003	0.5	0.005	0.5	<0.001	2.2	0.002	0.8	<0.001	2.8	0.001
di-hydroxy	5.0	0.001	5.3	0.020	5.7	0.057	2.0	0.001	8.1	0.006	1.5	0.002	7.7	0.002
ketohydroxy-alcohol	nd	nd	0.9	0.004	0.7	0.007	0.8	<0.001	1.6	0.001	1.2	0.001	nd	nd
desmethyl-ketohydroxy	2.3	0.001	0.6	0.002	2.2	0.022	nd	nd	0.9	0.001	0.3	<0.001	4.2	0.001
ketohydroxy	31.4	0.008	8.4	0.032	3.4	0.031	nd	nd	17.4	0.014	2.6	0.003	29.5	0.006
enol	nd	nd	nd	nd	nd	nd	2.9	0.001	nd	nd	nd	nd	nd	nd
U20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U1	nd	nd	nd	nd	0.2	0.002	nd	nd	nd	nd	nd	nd	nd	nd
U2	nd	nd	0.5	0.002	0.5	0.005	nd	nd	1.1	0.001	nd	nd	nd	nd
U3	nd	nd	nd	nd	0.2	0.002	nd	nd	nd	nd	nd	nd	nd	nd
U4	nd	nd	nd	nd	0.4	0.004	nd	nd	0.2	<0.001	nd	nd	nd	nd
U5	nd	nd	0.1	0.001	0.1	0.001	nd	nd	nd	nd	nd	nd	nd	nd
U6	nd	nd	nd	nd	0.1	0.001	nd	nd	nd	nd	nd	nd	nd	nd
U7	nd	nd	nd	nd	0.3	0.003	nd	nd	nd	nd	nd	nd	nd	nd
U8	nd	nd	nd	nd	0.3	0.003	nd	nd	nd	nd	nd	nd	nd	nd
U9	nd	nd	0.2	0.001	0.2	0.002	nd	nd	nd	nd	nd	nd	nd	nd
U10	1.4	<0.001	nd	nd	0.2	0.002	nd	nd	nd	nd	nd	nd	nd	nd
U11	nd	nd	nd	nd	nd	nd	0.5	<0.001	nd	nd	nd	nd	nd	nd
U27	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Aqueous soluble	**45.0**	**0.011**	**76.8**	**0.295**	**77.4**	**0.772**	**43.5**	**0.012**	**59.7**	**0.046**	**91.2**	**0.112**	**38.5**	**0.008**
desmethyl-di-hydroxy-Glc	2.6	0.001	6.9	0.027	11.6	0.116	4.5	0.001	3.8	0.003	4.3	0.005	**nd**	**nd**
enol-Glc	nd	nd	1.3	0.005	2.5	0.025	nd	nd	nd	nd	nd	nd	**nd**	**nd**
desmethyl-di-hydroxy	nd	nd	1.2	0.005	2.5	0.025	2.3	0.001	nd	nd	1.9	0.002	**nd**	**nd**
desmethyl-di-hydroxy-Glc-MA	nd	nd	4.0	0.015	6.0	0.060	1.3	<0.001	5.3	0.004	3.7	0.005	6.0	0.001
ketohydroxy-alcohol-Glc	2.7	0.001	4.7	0.018	5.0	0.050	1.4	<0.001	nd	nd	5.3	0.007	nd	nd
desmethyl-ketohydroxy-Glc (I1)	nd	nd	10.6	0.041	8.7	0.087	0.7	<0.001	15.2	0.012	5.2	0.006	2.8	0.001
desmethyl-ketohydroxy-Glc (I2)	31.7	0.008	7.2	0.028	4.4	0.044	0.8	<0.001	9.2	0.007	nd	nd	nd	nd
ketohydroxy-alcohol	nd	nd	6.0	0.023	1.1	0.011	nd	nd	nd	nd	5.6	0.007	nd	nd
desmethyl-ketohydroxy-Glc-MA (I1)	1.8	<0.001	11.5	0.044	8.8	0.088	1.5	<0.001	nd	nd	nd	nd	nd	nd
desmethyl-ketohydroxy-Glc-MA (I2)*	2.2	0.001	4.0	0.016	3.8	0.038	1.4	<0.001	nd	nd	4.8	0.006	3.5	0.001

nd = not detected
- = extract not produced or not analysed
U.. = unknown metabolites (compounds characterised by their HPLC retention time))

Table continued on next page

Table 6.6.2-2 Amount of metabolites in rotational crops of the 1st rotation (30 days plant back interval) Values are expressed as mg/kg parent compound equivalents and as % of TRR. - continued

Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
U12	nd	nd	0.4	0.002	0.3	0.003	3.4	0.001	1.9	0.001	nd	nd	15.3	0.003
U42	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U13	nd	nd	1.2	0.004	1.7	0.017	4.2	0.001	nd	nd	6.4	0.008	nd	nd
U14	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	6.0	0.007	nd	nd
U15	nd	nd	1.4	0.005	1.9	0.019	2.2	0.001	nd	nd	3.1	0.004	nd	nd
U16	nd	nd	0.9	0.003	1.6	0.016	3.0	0.001	1.7	0.001	nd	nd	nd	nd
U41	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U17	nd	nd	0.5	0.002	0.9	0.009	nd	nd	nd	nd	3.5	0.004	nd	nd
U18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	3.5	0.004	nd	nd
U47	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U19	nd	nd	nd	nd	nd	nd	3.4	0.001	2.5	0.002	3.6	0.004	nd	nd
U20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	4.2	0.005	5.1	0.001
U21	nd	nd	0.9	0.004	1.4	0.014	1.3	<0.001	nd	nd	nd	nd	1.5	<0.001
U43	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U2	1.8	<0.001	3.6	0.014	3.0	0.030	1.0	<0.001	5.8	0.005	2.3	0.003	nd	nd
U22	nd	nd	1.2	0.005	2.1	0.021	2.1	0.001	nd	nd	nd	nd	nd	nd
U4	nd	nd	1.6	0.006	2.1	0.021	0.9	<0.001	4.0	0.003	nd	nd	nd	nd
U23	nd	nd	nd	nd	nd	nd	1.4	<0.001	1.1	0.001	2.0	0.003	nd	nd
U24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.4	0.002	nd	nd
U25	0.9	<0.001	2.7	0.010	2.1	0.021	1.5	<0.001	nd	nd	nd	nd	nd	nd
U26	nd	nd	0.9	0.003	1.6	0.016	nd	nd	1.7	0.001	nd	nd	nd	nd
U27	nd	nd	nd	nd	nd	nd	nd	nd	1.5	0.001	10.3	0.013	nd	nd
U49	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U5	nd	nd	nd	nd	0.5	0.005	nd	nd	nd	nd	nd	nd	nd	nd
U28	nd	nd	nd	nd	nd	nd	0.7	<0.001	nd	nd	nd	nd	nd	nd
U44	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U29	nd	nd	0.6	0.002	nd	nd	nd	nd	2.6	0.002	nd	nd	nd	nd
U30	nd	nd	nd	nd	nd	nd	1.5	<0.001	nd	nd	nd	nd	nd	nd
U31	nd	nd	1.4	0.005	2.2	0.022	1.4	<0.001	nd	nd	3.3	0.004	4.2	0.001
U32	nd	nd	nd	nd	nd	nd	0.9	<0.001	1.2	0.001	nd	nd	nd	nd
U45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U33	nd	nd	0.7	0.003	0.6	0.006	nd	nd	nd	nd	nd	nd	nd	nd
U34	nd	nd	nd	nd	nd	nd	nd	nd	2.0	0.002	3.7	0.005	nd	nd
U35	nd	nd	nd	nd	nd	nd	0.7	<0.001	nd	nd	1.5	0.002	nd	nd
U36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.9	0.002	nd	nd
U37	1.2	<0.001	nd	nd	nd	nd	nd	nd	nd	nd	1.4	0.002	nd	nd
U38	nd	nd	0.8	0.003	1.0	0.010	nd	nd	nd	nd	1.4	0.002	nd	nd
U39	nd	nd	0.7	0.003	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
U40	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7	0.001	nd	nd
Conventional extract	**86.7**	**0.021**	**93.6**	**0.360**	**92.1**	**0.919**	**50.1**	**0.013**	**91.3**	**0.071**	**97.1**	**0.120**	**82.6**	**0.017**
Microwave extract	-	-	-	-	**4.3**	**0.043**	-	-	-	-	-	-	-	-
desmethyl-di-hydroxy-Glc			-	-	1.1	0.011	-	-	-	-	-	-	-	-
enol-Glc			-	-	1.7	0.017	-	-	-	-	-	-	-	-
ketohydroxy-alcohol-Glc	-	-		-	0.8	0.008	-	-	-	-	-	-	-	-
U10	-	-	-	-	0.8	0.008	-	-	-	-	-	-	-	-
Extracted by diastase		-	-	-	-	-	**44.5**	**0.012**	-	-	-	-	-	-
Total identified	**81.3**	**0.020**	**73.5**	**0.282**	**70.1**	**0.700**	**20.0**	**0.005**	**63.7**	**0.050**	**36.7**	**0.045**	**56.5**	**0.012**
Charact. by HPLC	5.3	0.001	20.1	0.077	26.3	0.262	30.1	0.008	27.5	0.021	60.4	0.074	26.1	0.006
Charact. by partitioning	-	-	-	-	-	-	44.5	0.012	-	-	-	-	-	-
Total extractable	**86.7**	**0.021**	**93.6**	**0.360**	**96.4**	**0.962**	**94.6**	**0.025**	**91.3**	**0.071**	**97.1**	**0.120**	**82.6**	**0.017**
Unextractable (PES)	**13.3**	**0.003**	**6.4**	**0.025**	**3.6**	**0.036**	**5.4**	**0.001**	**8.7**	**0.007**	**2.9**	**0.004**	**17.4**	**0.004**
Accountability	**100.0**	**0.024**	**100.0**	**0.384**	**100.0**	**0.998**	**100.0**	**0.026**	**100.0**	**0.078**	**100.0**	**0.123**	**100.0**	**0.021**

Table 6.6.2-3 Amount of metabolites in rotational crops of the 2nd rotation (135 days plant back interval)
Values are expressed as mg/kg parent compound equivalents and as % of TRR.

TRR	wheat forage 0.038 ppm		wheat hay 0.021 ppm		wheat straw 0.097 ppm		wheat grain 0.010 ppm		Swiss chard 0.012 ppm		turnip leaves 0.015 ppm		turnip roots 0.003 ppm	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
Organosoluble	**19.2**	**0.004**	**8.7**	**0.003**	**26.1**	**0.025**	**5.6**	**0.001**	**45.8**	**0.006**	**13.7**	**0.002**	**18.6**	**0.001**
desmethyl-enol-alcohol	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
di-hydroxy	-	-	-	-	10.6	0.010	-	-	16.8	0.002	-	-	-	-
ketohydroxy-alcohol	-	-	-	-	nd	nd	-	-	3.8	<0.001	-	-	-	-
desmethyl-ketohydroxy	-	-	-	-	1.8	0.002	-	-	2.3	<0.001	-	-	-	-
ketohydroxy	-	-	-	-	7.1	0.007	-	-	14.9	0.002	-	-	-	-
enol	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U20	-	-	-	-	nd	nd	-	-	5.4	0.001	-	-	-	-
U1	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U2	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U3	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U4	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U5	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U6	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U7	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U8	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U9	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U10	-	-	-	-	nd	nd	-	-	nd	nd	-	-	-	-
U11	-	-	-	-	6.6	0.006	-	-	nd	nd	-	-	-	-
U27	-	-	-	-	nd	nd	-	-	2.6	<0.001	-	-	-	-
Aqueous soluble	**73.4**	**0.016**	**76.1**	**0.029**	**61.9**	**0.060**	**15.6**	**0.002**	**38.2**	**0.005**	**72.0**	**0.011**	**53.0**	**0.002**
desmethyl-di-hydroxy-Glc	18.3	0.004	14.0	0.005	9.2	0.009	-	-	4.5	0.001	5.5	0.001	-	-
enol-Glc	nd	nd	1.7	0.001	1.9	0.002	-	-	nd	nd	nd	nd	-	-
desmethyl-di-hydroxy	nd	nd	nd	nd	2.9	0.003	-	-	nd	nd	nd	nd	-	-
desmethyl-di-hydroxy-Glc-MA	9.1	0.002	11.5	0.004	5.8	0.006	-	-	3.5	<0.001	4.3	0.001	-	-
ketohydroxy-alcohol-Glc	-	-	3.2	0.001	1.3	0.001	-	-	nd	nd	2.6	<0.001	-	-
desmethyl-ketohydroxy-Glc (I1)	8.7	0.002	6.5	0.002	7.3	0.007	-	-	6.2	0.001	5.5	0.001	-	-
desmethyl-ketohydroxy-Glc (I2)	5.6	0.001	3.2	0.001	2.7	0.003	-	-	5.9	0.001	nd	nd	-	-
ketohydroxy-alcohol	nd	nd	nd	nd	nd	nd	-	-	nd	nd	4.6	0.001	-	-
desmethyl-ketohydroxy-Glc-MA (I1)	8.0	0.002	5.4	0.002	5.6	0.005	-	-	nd	nd	nd	nd	-	-
desmethyl-ketohydroxy-Glc-MA (I2)*	2.5	0.001	nd	nd	2.0	0.002	-	-	nd	nd	3.5	0.001	-	-

nd = not detected
- = extract not produced or not analysed
U.. = unknown metabolites (compounds characterised by their HPLC retention time))

Table continued on next page

Table 6.6.2-3 Amount of metabolites in rotational crops of the 2nd rotation (135 days plant back interval) Values are expressed as mg/kg parent compound equivalents and as % of TRR. -continued

Metabolite Fraction (BYI08330-)	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg	%TRR	mg/kg
U12	nd	nd	6.0	0.002	1.9	0.002	-	-	2.6	<0.001	5.7	0.001	-	-
U42	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U13	nd	nd	nd	nd	2.6	0.002	-	-	0.9	<0.001	9.8	0.001	-	-
U14	nd	nd	3.8	0.001	nd	nd	-	-	2.2	<0.001	nd	nd	-	-
U15	2.4	0.001	2.1	0.001	2.2	0.002	-	-	nd	nd	nd	nd	-	-
U16	3.4	0.001	1.7	0.001	2.1	0.002	-	-	2.3	<0.001	nd	nd	-	-
U41	0.7	<0.001	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U17	nd	nd	nd	nd	0.8	0.001	-	-	1.8	<0.001	4.1	0.001	-	-
U18	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U47	nd	nd	nd	nd	nd	nd	-	-	2.7	<0.001	nd	nd	-	-
U19	nd	nd	3.2	0.001	nd	nd	-	-	nd	nd	6.4	0.001	-	-
U20	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U21	3.7	0.001	nd	nd	1.7	0.002	-	-	nd	nd	1.1	<0.001	-	-
U43	nd	nd	5.4	0.002	nd	nd	-	-	nd	nd	nd	nd	-	-
U46	nd	nd	nd	nd	nd	nd	-	-	2.1	<0.001	nd	nd	-	-
U2	3.5	0.001	nd	nd	3.7	0.004	-	-	1.6	<0.001	2.9	<0.001	-	-
U22	3.0	0.001	3.7	0.001	1.4	0.001	-	-	2.1	<0.001	nd	nd	-	-
U4	nd	nd	nd	nd	1.6	0.002	-	-	nd	nd	nd	nd	-	-
U23	nd	nd	nd	nd	1.1	0.001	-	-	nd	nd	4.7	0.001	-	-
U24	nd	nd	2.5	0.001	nd	nd	-	-	nd	nd	1.7	<0.001	-	-
U25	nd	nd	nd	nd	1.7	0.002	-	-	nd	nd	1.3	<0.001	-	-
U26	nd	nd	nd	nd	nd	nd	-	-	nd	nd	6.0	0.001	-	-
U27	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U49	nd	nd	nd	nd	nd	nd	-	-	nd	nd	0.1	<0.001	-	-
U5	1.5	<0.001	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U28	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U44	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U29	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U30	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U31	2.9	0.001	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U32	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U45	nd	nd	nd	nd	2.4	0.002	-	-	nd	nd	nd	nd	-	-
U48	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U33	nd	nd	2.3	0.001	nd	nd	-	-	nd	nd	2.2	<0.001	-	-
U34	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U35	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U36	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U37	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U38	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U39	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
U40	nd	nd	nd	nd	nd	nd	-	-	nd	nd	nd	nd	-	-
Conventional extract							**21.2**	**0.002**	-	-	-	-	-	-
Microwave extract	-	-	-	-	-	-	-	-	-	-	-	-	-	-
desmethyl-di-hydroxy-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
enol-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ketohydroxy-alcohol-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extracted by diastase		-	-	-	-	-	**66.8**	**0.007**	-	-	-	-	-	-
Total identified	**52.2**	**0.011**	**45.5**	**0.017**	**58.3**	**0.056**	-	-	**57.8**	**0.007**	**26.0**	**0.004**	-	-
Charact. by HPLC	41.1	0.004	30.6	0.012	29.7	0.029	-	-	26.2	0.003	46.0	0.007	-	-
Charact. by partitioning	19.2	0.004	8.7	0.003	-	-	21.2	0.002	-	-	13.7	0.002	71.6	0.002
Total extractable	**92.5**	**0.020**	**84.8**	**0.032**	**88.0**	**0.085**	**88.0**	**0.009**	**84.0**	**0.010**	**85.7**	**0.013**	**71.6**	**0.002**
Unextractable (PES)	**7.5**	**0.002**	**15.2**	**0.006**	**12.0**	**0.012**	**12.0**	**0.001**	**16.0**	**0.002**	**14.3**	**0.002**	**28.4**	**0.001**
Accountability	**100.0**	**0.021**	**100.0**	**0.038**	**100.0**	**0.097**	**100.0**	**0.010**	**100.0**	**0.012**	**100.0**	**0.015**	**100.0**	**0.003**

Table 6.6.2-4 Amount of metabolites in rotational crops of the 3rd rotation (260 days plant back interval) Values are expressed as mg/kg parent compound equivalents and as % of TRR.

TRR	wheat forage 0.009 ppm		wheat hay 0.014 ppm		wheat straw 0.036 ppm		wheat grain 0.002 ppm		Swiss chard 0.006 ppm		turnip leaves 0.008 ppm		turnip roots 0.002 ppm	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
Organosoluble	-	-	**7.8**	**0.001**	**23.4**	**0.008**	**10.4**	**<0.001**	-	-	-	-	-	-
desmethyl-enol-alcohol	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
di-hydroxy	-	-	-	-	18.1	0.006	-	-	-	-	-	-	-	-
ketohydroxy-alcohol	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
desmethyl-ketohydroxy	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
ketohydroxy	-	-	-	-	5.3	0.002	-	-	-	-	-	-	-	-
enol	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U20	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U1	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U2	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U3	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U4	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U5	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U6	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U7	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U8	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U9	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U10	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U11	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
U27	-	-	-	-	nd	nd	-	-	-	-	-	-	-	-
Aqueous soluble	-	-	**73.0**	**0.010**	**63.9**	**0.023**	**99**	**<0.001**	-	-	-	-	-	-
desmethyl-di-hydroxy-Glc	-	-	5.4	0.001	5.6	0.002	-	-	-	-	-	-	-	-
enol-Glc	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
desmethyl-di-hydroxy	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
desmethyl-di-hydroxy-Glc-MA	-	-	9.7	0.001	4.4	0.002	-	-	-	-	-	-	-	-
ketohydroxy-alcohol-Glc	-	-	nd	nd	4.9	0.002	-	-	-	-	-	-	-	-
desmethyl-ketohydroxy-Glc (I1)	-	-	6.5	0.001	7.8	0.003	-	-	-	-	-	-	-	-
desmethyl-ketohydroxy-Glc (I2)	-	-	2.8	<0.001	4.8	0.002	-	-	-	-	-	-	-	-
ketohydroxy-alcohol	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
desmethyl-ketohydroxy-Glc-MA (I1)	-	-	4.2	0.001	7.3	0.003	-	-	-	-	-	-	-	-
desmethyl-ketohydroxy-Glc-MA (I2)*	-	-	nd	nd	7.6	0.003	-	-	-	-	-	-	-	-

nd = not detected
- = extract not produced or not analysed
U.. = unknown metabolites (compounds characterised by their HPLC retention time))

Table continued on next page

Table 6.6.2-4 Amount of metabolites in rotational crops of the 3rd rotation (260 days plant back interval) Values are expressed as mg/kg parent compound equivalents and as % of TRR. -continued

Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
U12	-	-	9.9	0.001	6.1	0.002	-	-	-	-	-	-	-	-
U42	-	-	1.7	<0.001	nd	nd	-	-	-	-	-	-	-	-
U13	-	-	4.1	0.001	1.7	0.001	-	-	-	-	-	-	-	-
U14	-	-	1.8	<0.001	nd	nd	-	-	-	-	-	-	-	-
U15	-	-	1.6	<0.001	nd	nd	-	-	-	-	-	-	-	-
U16	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U41	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U17	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U18	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U47	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U19	-	-	1.5	<0.001	nd	nd	-	-	-	-	-	-	-	-
U20	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U21	-	-	5.1	0.001	3.3	0.001	-	-	-	-	-	-	-	-
U43	-	-	3.1	<0.001	2.4	0.001	-	-	-	-	-	-	-	-
U46	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U2	-	-	nd	nd	2.2	0.001	-	-	-	-	-	-	-	-
U22	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U4	-	-	2.7	<0.001	1.2	<0.001	-	-	-	-	-	-	-	-
U23	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U24	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U25	-	-	3.6	<0.001	1.9	0.001	-	-	-	-	-	-	-	-
U26	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U27	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U49	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U5	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U28	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U44	-	-	1.7	<0.001	nd	nd	-	-	-	-	-	-	-	-
U29	-	-	5.4	0.001	nd	nd	-	-	-	-	-	-	-	-
U30	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U31	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U32	-	-	2.3	<0.001	nd	nd	-	-	-	-	-	-	-	-
U45	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U48	-	-	nd	nd	2.6	0.001	-	-	-	-	-	-	-	-
U33	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U34	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U35	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U36	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U37	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U38	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U39	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
U40	-	-	nd	nd	nd	nd	-	-	-	-	-	-	-	-
Conventional extract	-	-	**80.8**	**0.011**	**87.3**	**0.031**	**20.3**	**0.001**	-	-	-	-	-	-
Microwave extract	-	-	-	-	-	-	-	-	-	-	-	-	-	-
desmethyl-di-hydroxy-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
enol-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ketohydroxy-alcohol-Glc	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extracted by diastase	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total identified	-	-	**28.7**	**0.004**	**65.9**	**0.024**	-	-	-	-	-	-	-	-
Charact. by HPLC	-	-	44.4	0.006	21.3	0.008	-	-	-	-	-	-	-	-
Charact. by partitioning	-	-	7.8	0.001	-	-	20.3	0.001	-	-	-	-	-	-
Total extractable	-	-	**80.8**	**0.011**	**87.3**	**0.031**	**20.3**	**0.001**	-	-	-	-	-	-
Unextractable (PES)	-	-	**19.2**	**0.003**	**12.7**	**0.005**	**79.7**	**0.002**	-	-	-	-	-	-
Accountability	**100.0**	**0.009**	**100.0**	**0.014**	**100.0**	**0.036**	**100.0**	**0.002**	**100.0**	**0.006**	**100.0**	**0.008**	**100.0**	**0.002**

Table 6.6.2-5 Summary of extraction and identification in rotational crops of the 1st rotation (30 days plant back interval)

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	**0.024 ppm**		**0.384 ppm**		**0.998 ppm**		**0.026 ppm**		**0.078 ppm**		**0.123 ppm**		**0.021 ppm**	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
desmethyl-di-hydroxy-Glc	2.6	0.001	6.9	0.027	12.7	0.127	4.5	0.001	3.8	0.003	4.3	0.005	<LOD	<LOD
enol-Glc	<LOD	<LOD	1.3	0.005	4.1	0.041	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
desmethyl-di-hydroxy	<LOD	<LOD	1.2	0.005	2.5	0.025	2.3	0.001	<LOD	<LOD	1.9	0.002	<LOD	<LOD
desmethyl-di-hydroxy-Glc-MA	<LOD	<LOD	4.0	0.015	6.0	0.060	1.3	<0.001	5.3	0.004	3.7	0.005	6.0	0.001
ketohydroxy-alcohol-Glc	2.7	0.001	4.7	0.018	5.8	0.058	1.4	<0.001	<LOD	<LOD	5.3	0.007	<LOD	<LOD
desmethyl-ketohydroxy-Glc (I1)	<LOD	<LOD	10.6	0.041	8.7	0.087	0.8	<0.001	15.2	0.012	<LOD	<LOD	<LOD	<LOD
desmethyl-ketohydroxy-Glc (2)	31.7	0.008	7.2	0.028	4.4	0.044	0.8	<0.001	9.2	0.007	5.2	0.006	<LOD	<LOD
desmethyl-enol-alcohol	1.6	<0.001	0.8	0.003	0.5	0.005	0.5	<0.001	2.2	0.002	0.3	<0.001	2.8	0.001
di-hydroxy	5.0	0.001	5.3	0.020	5.7	0.057	2.0	0.001	8.1	0.006	1.5	0.002	4.7	0.002
ketohydroxy-alcohol	<LOD	<LOD	6.9	0.027	1.8	0.018	0.8	<0.001	1.6	0.001	6.8	0.008	<LOD	<LOD
desmethyl-ketohydroxy-Glc-MA (I1)	1.8	<0.001	11.5	0.044	8.8	0.088	1.5	<0.001	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
desmethyl-ketohydroxy-Glc-MA (I2)	2.2	0.001	4.0	0.016	3.8	0.038	1.4	<0.001	<LOD	<LOD	4.8	0.006	<LOD	<LOD
desmethyl-ketohydroxy	2.3	0.001	0.6	0.002	2.2	0.022	<LOD	<LOD	0.9	0.001	0.3	<0.001	4.2	0.001
Ketohydroxy	31.4	0.008	8.4	0.032	3.1	0.031	<LOD	<LOD	17.4	0.014	2.6	0.003	29.5	0.006
Enol	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	2.9	0.001	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
desmethyl-di-hydroxy-Glc	2.6	0.001	6.9	0.027	12.7	0.127	4.5	0.001	3.8	0.003	4.3	0.005	<LOD	<LOD
Total identified	**81.3**	**0.020**	**73.5**	**0.282**	**70.1**	**0.700**	**20.1**	**0.005**	**63.7**	**0.050**	**36.7**	**0.045**	**50.1**	**0.011**
Total characterized	5.3	0.001	20.1	0.077	26.3	0.262	30.0	0.008	27.5	0.021	60.4	0.074	32.5	0.007
Total extractable (conventional)	**86.7**	**0.021**	**93.6**	**0.360**	**92.1**	**0.919**	**50.1**	**0.013**	**91.3**	**0.071**	**97.1**	**0.120**	**82.6**	**0.017**
Total bound (solids 1)	13.3	0.003	6.39	0.025	7.9	0.079	49.9	0.013	8.7	0.007	2.9	0.004	17.4	0.004
Total extractable (exhaustive)					4.3	0.043	44.5	0.012						
Total bound (solids 2)					3.6	0.036	5.4	0.001						
Accountability	**100.0**	**0.024**	**100.0**	**0.384**	**100.0**	**0.998**	**100.0**	**0.026**	**100.0**	**0.078**	**100.0**	**0.123**	**100.0**	**0.021**

Table 6.6.2-6 Summary of extraction and identification in rotational crops of the 2nd rotation (135 days plant back interval)

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	**0.021 ppm**		**0.038 ppm**		**0.097 ppm**		**0.010 ppm**		**0.012 ppm**		**0.015 ppm**		**0.003 ppm**	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
desmethyl-di-hydroxy-Glc	18.3	0.004	14.0	0.005	9.2	0.009			4.5	0.001	5.5	0.001		
enol-Glc	<LOD	<LOD	1.7	0.001	1.9	0.002			<LOD	<LOD	<LOD	<LOD		
desmethyl-di-hydroxy	<LOD	<LOD	<LOD	<LOD	2.9	0.003			<LOD	<LOD	<LOD	<LOD		
desmethyl-di-hydroxy-Glc-MA	9.1	0.002	11.5	0.004	5.8	0.006			3.5	<0.001	4.3	0.001		
ketohydroxy-alcohol-Glc	<LOD	<LOD	3.2	0.001	1.3	0.001			<LOD	<LOD	2.6	<0.001		
desmethyl-ketohydroxy-Glc (I1)	8.7	0.002	6.5	0.002	7.3	0.007			6.2	0.001	<LOD	<LOD		
desmethyl-ketohydroxy-Glc (2)	5.6	0.001	3.2	0.001	2.7	0.003			5.9	0.001	5.5	0.001		
desmethyl-enol-alcohol	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD			<LOD	<LOD	<LOD	<LOD		
di-hydroxy	<LOD	<LOD	<LOD	<LOD	10.6	0.010			16.6	0.002	<LOD	<LOD		
ketohydroxy-alcohol	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD			3.8	<0.001	4.6	0.001		
desmethyl-ketohydroxy-Glc-MA (I1)	8.0	0.002	5.4	0.002	5.6	0.005			<LOD	<LOD	<LOD	<LOD		
desmethyl-ketohydroxy-Glc-MA (I2)	2.5	0.001	<LOD	<LOD	2.0	0.002			<LOD	<LOD	<LOD	<LOD		
desmethyl-ketohydroxy	<LOD	<LOD	<LOD	<LOD	1.8	0.002			2.3	<0.001	3.5	0.001		
ketohydroxy	<LOD	<LOD	<LOD	<LOD	7.1	0.007			14.9	0.002	<LOD	<LOD		
enol	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD			<LOD	<LOD	<LOD	<LOD		
desmethyl-di-hydroxy-Glc	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD			<LOD	<LOD	<LOD	<LOD		
Total identified	**52.2**	**0.012**	**45.5**	**0.017**	**58.3**	**0.056**			**57.8**	**0.007**	**26.0**	**0.004**		
Total characterized	*40.3	*0.009	*39.2	*0.015	29.7	0.029			26.2	0.003	*59.7	*0.009		
Total extractable (conventional)	**92.5**	**0.021**	**84.8**	**0.032**	**88.0**	**0.085**	**21.2**	**0.002**	**84.0**	**0.010**	**85.7**	**0.013**	**71.6**	**0.002**
Total bound (solids 1)	7.5	0.002	15.2	0.006	12.0	0.012	78.8	0.008	16.0	0.002	14.3	0.002	28.4	0.001
Total extractable (exhaustive)							66.8	0.007						
Total bound (solids 2)							12.0	0.001						
Accountability	**100.0**	**0.021**	**100.0**	**0.038**	**100.0**	**0.097**	**100.0**	**0.010**	**100.0**	**0.012**	**100.0**	**0.015**	**100.0**	**0.003**

Turnip roots were not extracted due to TRR <0.01 ppm
Wheat grain extracts were not analysed due to TRR <0.01 ppm

* only the aqueous phase was analysed by HPLC (residue level >0.005 mg/kg); the compounds in the dichloromethane phase were characterized due to their behaviour during partitioning

Table 6.6.2-7 Summary of extraction and identification in rotational crops of the 3rd rotation (260 days plant back interval)

	wheat forage		wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	**0.009 ppm**		**0.014 ppm**		**0.036 ppm**		**0.002 ppm**		**0.006 ppm**		**0.008 ppm**		**0.002 ppm**	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
desmethyl-di-hydroxy-Glc			5.4	0.001	5.6	0.002								
enol-Glc			<LOD	<LOD	<LOD	<LOD								
desmethyl-di-hydroxy			<LOD	<LOD	<LOD	<LOD								
desmethyl-di-hydroxy-Glc-MA			9.7	0.001	4.4	0.002								
ketohydroxy-alcohol-Glc			<LOD	<LOD	4.9	0.002								
desmethyl-ketohydroxy-Glc (I1)			6.5	0.001	7.8	0.003								
desmethyl-ketohydroxy-Glc (2)			2.8	<0.001	4.8	0.002								
desmethyl-enol-alcohol			<LOD	<LOD	<LOD	<LOD								
di-hydroxy			<LOD	<LOD	18.1	0.006								
ketohydroxy-alcohol			<LOD	<LOD	<LOD	<LOD								
desmethyl-ketohydroxy-Glc-MA (I1)			4.2	0.001	7.3	0.003								
desmethyl-ketohydroxy-Glc-MA (I2)			<LOD	<LOD	7.6	0.003								
desmethyl-ketohydroxy			<LOD	<LOD	<LOD	<LOD								
ketohydroxy			<LOD	<LOD	5.3	0.002								
enol			<LOD	<LOD	<LOD	<LOD								
desmethyl-di-hydroxy-Glc			<LOD	<LOD	<LOD	<LOD								
Total identified			**28.7**	**0.004**	**65.9**	**0.024**								
Total characterized			*52.2	*0.007	21.3	0.008								
Total extractable (conventional)			**80.8**	**0.011**	**87.3**	**0.031**								
Total bound (solids 1)			19.2	0.003	12.7	0.005								
Total extractable (exhaustive)														
Total bound (solids 2)														
Accountability	**100.0**	**0.009**	**100.0**	**0.014**	**100.0**	**0.036**	**100.0**	**0.002**	**100.0**	**0.006**	**100.0**	**0.008**	**100.0**	**0.002**

Wheat hay, wheat grain, Swiss chard, turnip leaves and turnip roots not extracted due to TRR <0.01 ppm

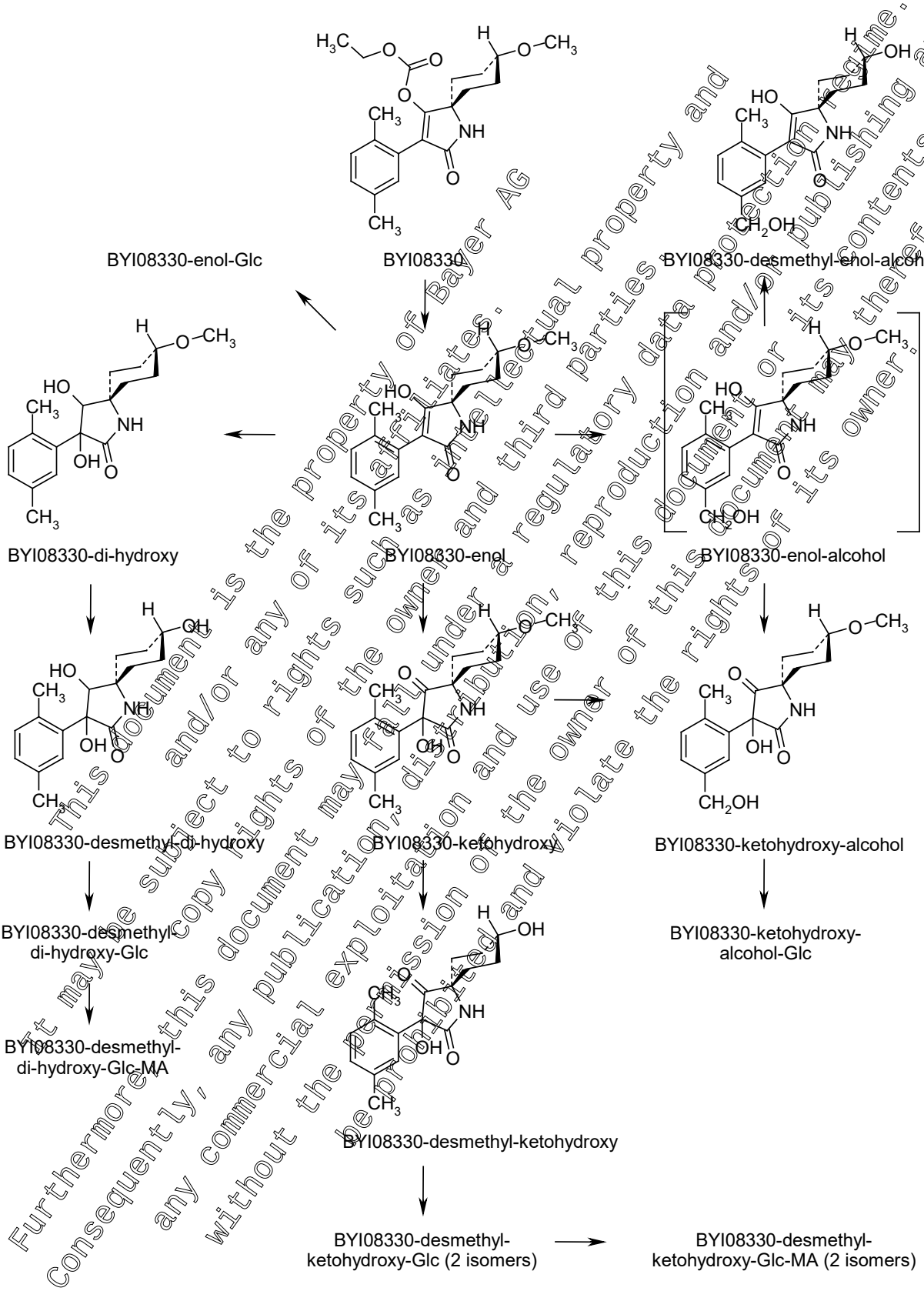
* only the aqueous phase was analysed by HPLC (residue level >0.005 mg/kg); the compounds in the dichloromethane phase were characterized due to their behaviour during partitioning

Table 6.6.2-8 Summary of identification and characterization of radioactive residues in rotational crops matrices of the 1st rotation after treatment with hydrochloric acid (30 days plant back interval)

	wheat hay		wheat straw		wheat grain		Swiss chard		turnip leaves		turnip roots	
TRR	**0.384 ppm**		**1.054 ppm**		**0.026 ppm**		**0.078 ppm**		**0.123 ppm**		**0.021 ppm**	
Metabolite Fraction (BYI08330-)	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm	%TRR	ppm
desmethyl-di-hydroxy	14.1	0.054	25.5	0.269	8.9	0.002	7.7	0.006	4.2	0.005	<LOD	<LOD
mandelic acid	3.7	0.014	4.3	0.046	<LOD	<LOD	5.2	0.004	1.9	0.002	<LOD	<LOD
desmethyl-enol-alcohol	9.2	0.035	7.6	0.080	<LOD	<LOD	14.7	0.011	2.6	0.003	<LOD	<LOD
di-hydroxy	5.6	0.022	7.1	0.075	2.8	0.001	11.0	0.009	23.2	0.029	6.8	0.001
ketohydroxy-alcohol	16.3	0.062	13.4	0.142	4.0	0.001	5.8	0.005	4.5	0.006	<LOD	<LOD
desmethyl-ketohydroxy	27.0	0.104	30.4	0.320	3.5	0.001	20.7	0.016	<LOD	<LOD	5.7	0.001
ketohydroxy	6.1	0.024	5.3	0.056	<LOD	<LOD	20.0	0.016	1.7	0.002	22.5	0.005
enol	<LOD	<LOD	<LOD	<LOD	1.3	<0.001	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
ketohydroxy-carboxylic acid	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	9.7	0.012	<LOD	<LOD
total identified	**81.9**	**0.315**	**93.7**	**0.987**	**20.4**	**0.005**	**85.1**	**0.066**	**47.8**	**0.059**	**35.0**	**0.007**
total characterized	11.7	0.045	-	-	29.7	0.008	6.1	0.005	49.3	0.061	42.8	0.009
total extractable (conventional)	**93.6**	**0.360**	**93.7**	**0.987**	**50.1**	**0.013**	**91.3**	**0.071**	**97.1**	**0.120**	**77.9**	**0.017**
total bound (solids 1)	6.4	0.025	6.3	0.067	49.9	0.013	8.7	0.007	2.9	0.004	22.1	0.005

A new extraction was conducted for wheat straw to produce an extract for hydrolyis.
The sample extracted had a TRR value of 1.054 ppm which was slightly different from the sample used for metabolic profiling (TRR 0.998 ppm).

Figure 6.6.2-1 Proposed metabolic pathway of [azaspirodecenyl-3-^{14}C]BYI08330 in rotational crops



IIA 6.6.3 Field trials in representative crops.

Report:	**IIA 6.6.3/1, [redacted]; 2006**
Title:	**BYI08330 100 OD – Magnitude of the Residue in Field Rotational Crops (Limited)**
Report No &	**RAFNY019;**
Document No.	**M-277284-01-1**
Guidelines:	**EPA Ref.: OPPTS 860.1900, Field Accumulation in Rotational Crops** **PMRA Ref.: DACO 7.4.4, Field Accumulation in Rotational Crops**
GLP	**Yes**

Test System:

Field rotational crop trials were conducted to measure the magnitude of BYI08330 residues in field crops at a 30-day plant-back interval (PBI) following the use of BYI08330 100 OD on a target crop. BYI08330 100 OD is an oil dispersible formulation containing 100 g ai/liter. Each trial contained a control and a treated plot. Two foliar broadcast spray applications of BYI08330 100 OD were made 5-7 days apart to a cover crop (leafy, brassica, or fruiting vegetables) in the treated plot. Applications were made at a target rate of 0.078 lb ai/A/application or 88 g ai/ha/application (actual rates ranged from 0.076 to 0.082 lb ai/A/application or 85.24 to 91.38 g ai/ha/application) in target spray volumes ranging from 5 to 20 gal/acre or 47 to 187 liters/ha (actual volume ranged from 13 to 19 gal/acre or 126 to 178 liters/ha). The total application rate was equivalent to the BYI08330 treatment rate for vegetable crops (0.078 lb ai/A/application) which is the highest BYI08330 label rate for a target crop that will be followed by a rotational crop. The residue trials conducted for this study and the use pattern for BYI08330 100 OD are listed in Table 6.6.3-1.

Representative rotational crops were planted at each of three locations. The crops and their associated raw agricultural commodities (RACs) were mustard greens (leaves) to represent leafy vegetables; turnips (tops and roots) to represent root crops; and wheat (forage, hay, grain, and straw) to represent cereal grains. All RACs were harvested at normal maturity. Samples collected at the first two sites were analyzed for BYI08330 analyte residues. Samples collected at the third site were not analyzed since successful crops were obtained from the other two locations. Trials from the third site were initiated only to insure enough samples to comply with guideline requirements in the event of a crop failure.

From the control plot of each trial, a single composite sample of each of the appropriate RACs was collected. From the treated plot of each trial, duplicate composite samples of each of the appropriate RACs were collected.

BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, and their glucosides and BYI08330-ketohydroxy are the significant residues in rotational crops following the use of BYI08330 on target crops. BYI08330 and BYI08330-ketohydroxy residues in wheat, mustard greens, and turnips were obtained using the analytical method for determining BYI08330 residues in target crops with modifications. The residues of BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, and their glucosides (measured as BYI08330-ketohydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, and BYI08330-desmethyl-di-

hydroxy) were obtained using the analytical residue method for determining BYI08330 residues in rotational crops with modifications.

Quantitation of BYI08330 analyte residues (BYI08330, BYI08330-ketohydroxy, BYI08330-ketoydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, and BYI08330-desmethyl-di-hydroxy) was based on the daughter ion transitions of the analytes and their respective internal standard analogs. Samples were analyzed using high pressure liquid chromatography triple stage quadropole mass spectrometry (LC/MS/MS) using isotopically labeled internal standards. The relative responses of the analytes in the samples were compared to the relative responses of the analytes in the standards. Method validation and concurrent recoveries were performed to demonstrate acceptable method performance. The limit of quantitation (LOQ) was 0.01 ppm for BYI08330 and BYI08330-ketohydroxy and 0.02 ppm for BYI08330-ketoydroxy-alcohol, BYI08330-desmethyl-ketohydroxy, and BYI08330-desmethyl-di-hydroxy in all matrices.

Findings:

The recovery data for BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-mono-hydroxy, and BYI08330-enol-glucoside residue in wheat forage, hay, straw, and grain, turnip tops and roots, and mustard greens are summarized in Table 6.6.3-2. Mean recoveries for all analytes ranged from 72% ±11 to 100% ±8.

The residues found in wheat forage, hay, straw, and grain, turnip tops and roots, and mustard greens are shown in Tables Tables 6.6.3-3 and 6.6.3-4.

All individual BYI08330 analyte residues were less than the LOQ (0.01 ppm for BYI08330 and BYI08330-ketohydroxy and 0.02 ppm for BYI08330-desmethyl-ketohydroxy, BYI08330-demethyl-di-hydroxy, and BYI08330-ketohydroxy-alcohol) in all rotational crop matrices (mustard greens, turnips, and wheat) from a 30-day PBI. These data support an 'immediate' or 30-day PBI for all rotational crops following the use of BYI08330 100 OD on a target crop.

Table 6.6.3-1 Study use pattern for BYI08330 100 OD (application to a cover crop followed by a rotational crop).

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing[a]	Plot Name	Rate lb ai/A (g ai/ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb ai/A (g ai/ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN084-04R (Mustard greens)	2004	100 OD	Broadcast	1 Appl – fruit have reached typical size 2 Appl – 80% fruit ripe	TRTD	0.082 (91.4) 0.077 (85.9)	0 16	16 (148) 16 (145)	0.159 (177.3)	No
[redacted], Illinois Region 5	FN085-04R (Mustard greens)	2004	100 OD	Broadcast	1 Appl - NA 2 Appl - NA	TRTD	0. 081 (91.2) 0.078 (87.0)	0 13	14 (129) 13 (124)	0.159 (178.2)	Yes
[redacted], California Region 10	FN086-04R (Mustard greens)	2004	100 OD	Broadcast	1 Appl – 9 or more leaves unfolded 2 Appl – 9 or more leaves unfolded	TRTD	0.078 (87.6) 0.079 (88.1)	0 5	18 (171) 18 (173)	0.157 (175.7)	No
[redacted], Florida Region 3	FN087-04R (Turnips)	2004	100 OD	Broadcast	1 Appl – Fruit have reached typical size 2 Appl – Fruit have reached typical size	TRTD	0.080 (90.2) 0.078 (87.4)	0 7	16 (146) 16 (148)	0.158 (177.6)	No
[redacted], Illinois Region 5	FN088-04R (Turnips)	2004	100 OD	Broadcast	1 Appl – NA 2 Appl - NA	TRTD	0.080 (89.3) 0.080 (89.9)	0 7	13 (126) 14 (128)	0.160 (179.2)	Yes
[redacted], California Region 10	FN089-04R (Turnips)	2004	100 OD	Broadcast	1 Appl – 9 or more true leaves unfolded 2 Appl – 9 or more true leaves unfolded	TRTD	0.078 (88.0) 0.079 (88.2)	0 5	18 (172) 18 (173)	0.157 (176.2)	No

Table 6.6.3-1 (continued)

Location (City, State, and NAFTA Region)	Trial Number	Year	End-use Product (Formulation)	Application							
				Method	Timing [a]	Plot Name	Rate lb ai/A (g ai/ha)	Retreatment Interval (days)	Actual Spray Volume GPA (L/ha)	Total Rate lb ai/A (g ai/ha)	Tank Mix Adjuvants
[redacted], Florida Region 3	FN090-04R (Wheat)	2004	100 OD	Broadcast	1 Appl – Dry seed (caryopsis) 2 Appl - NA	TRTD	0.077 (86.7) 0.076 (85.3)	0 14	15 (142) 14 (135)	0.153 (172.0)	No
[redacted], Illinois Region 5	FN091-04R (Wheat)	2004	100 OD	Broadcast	1 Appl - NA 2 Appl - NA	TRTD	0.081 (91.0) 0.080 (89.4)	0 6	14 (133) 14 (132)	0.161 (180.4)	Yes
[redacted], California Region 10	FM092-04R (Wheat)	2004	100 OD	Broadcast	1 Appl – 9 or more leaves unfolded 2 Appl – 9 or more leaves unfolded	TRTD	0.078 (86.9) 0.078 (87.0)	0 5	19 (178) 19 (178)	0.156 (173.9)	No

[a] Timing = The applications were made to a target crop and was timed to allow plant back of the rotational crops 29 to 35 days following the last application. NA = Not available.

Table 6.6.3-2 Summary of recoveries of BYI08330 analytes from rotational crops.

Matrix	Analyte	Spike Level (ppm)[a]	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Mustard Greens	BYI08330	0.01	7	81, 78, 82, 74, 72, 72, 78	77 ± 4
	BYI08830-ketohydroxy	0.01	7	89, 68, 64, 72, 71, 74, 73	73 ± 8
	BYI08330-desmethyl-ketohydroxy	0.02	7	77, 99, 82, 94, 120, 91, 92	92 ± 14
	BYI08330-desmethyl-di-hydroxy	0.02	7	91, 86, 84, 101,92, 98, 112	95 ± 10
	BYI08830-ketohydroxy-alcohol	0.02	7	88, 96, 89, 78, 92, 106, 97	92 ± 9
Turnip Tops	BYI08330	0.01	7	87, 75, 89, 88, 93, 82, 98	87 ± 7
	BYI08830-ketohydroxy	0.01	7	83, 87, 68, 72, 78, 86, 75	78 ± 7
	BYI08330-desmethyl-ketohydroxy	0.02	7	97, 104, 82, 105, 75, 94, 82	91 ± 12
	BYI08330-desmethyl-di-hydroxy	0.02	7	82, 85, 101, 97, 83, 94, 75	88 ± 9
	BYI08830-ketohydroxy-alcohol	0.02	7	93, 82, 89, 98, 75, 87, 84	87 ± 8
Turnip Roots	BYI08330	0.01	7	70, 79, 80, 78, 79, 80, 83	78 ± 4
	BYI08830-ketohydroxy	0.01	7	65, 89, 68, 68, 73, 81, 79	75 ± 9
	BYI08330-desmethyl-ketohydroxy	0.02	7	82, 83, 93, 75, 76, 89, 75	82 ± 7
	BYI08330-desmethyl-di-hydroxy	0.02	7	66, 91, 111, 109, 98, 103, 78	94 ± 17
	BYI08830-ketohydroxy-alcohol	0.02	7	89, 95, 85, 96, 96, 94, 95	93 ± 4

Table 6.6.3-2 (continued).

Matrix	Analyte	Fortification Level (ppm)[a]	Sample Size (n)	Recoveries (%)	Mean ± Std. Dev.
Wheat Forage	BYI08330	0.01	7	61, 67, 68, 86, 61, 85, 78	72 ± 11
	BYI08830-ketohydroxy	0.01	7	78, 68, 71, 67, 82, 73, 69	72 ± 7
	BYI08330-desmethyl-ketohydroxy	0.02	7	89, 88, 85, 94, 76, 83, 83	85 ± 6
	BYI08330-desmethyl-di-hydroxy	0.02	7	72, 83, 80, 100, 81, 93, 100	87 ± 11
	BYI08830-ketohydroxy-alcohol	0.02	7	79, 68, 87, 87, 79, 77, 79	79 ± 6
Wheat Hay	BYI08330	0.01	7	94, 85, 82, 87, 86, 94, 87	88 ± 4
	BYI08830-ketohydroxy	0.01	7	88, 67, 96, 80, 74, 78, 99	83 ± 12
	BYI08330-desmethyl-ketohydroxy	0.02	7	91, 93, 87, 96, 90, 88, 91	91 ± 3
	BYI08330-desmethyl-di-hydroxy	0.02	7	102, 75, 106, 96, 72, 88, 83	89 ± 13
	BYI08830-ketohydroxy-alcohol	0.02	7	89, 72, 83, 81, 90, 87, 76	80 ± 10
Wheat Grain	BYI08330	0.01	7	69, 83, 83, 80, 83, 74, 70	78 ± 7
	BYI08830-ketohydroxy	0.01	7	71, 82, 82, 71, 90, 90, 89	81 ± 9
	BYI08330-desmethyl-ketohydroxy	0.02	7	93, 90, 98, 100, 101, 108, 113	100 ± 8
	BYI08330-desmethyl-di-hydroxy	0.02	7	83, 86, 98, 79, 84, 84, 96	87 ± 7
	BYI08830-ketohydroxy-alcohol	0.02	7	81, 85, 84, 85, 81, 111, 76	86 ± 11
Wheat Straw	BYI08330	0.01	7	71, 83, 74, 75, 84, 76, 81	78 ± 5
	BYI08830-ketohydroxy	0.01	7	68, 79, 68, 82, 69, 70, 77	73 ± 6
	BYI08330-desmethyl-ketohydroxy	0.02	7	94, 84, 85, 103, 81, 94, 85	89 ± 8
	BYI08330-desmethyl-di-hydroxy	0.02	7	86, 97, 92, 92, 82, 86, 92	90 ± 5
	BYI08830-ketohydroxy-alcohol	0.02	7	78, 74, 81, 111, 93, 95, 106	91 ± 14

Table 6.6.3-3. Residue data from rotational crop field trials conducted with BYI08330 100 OD.

Location (City, State)	Trial Number	Year	Region	Crop / Variety	Commodity	% Dry Matter	Total Rate lb ai./A (kg a.i./ha)[a]	Harvest DAP (days)[b]	PBI (days)[c]	BYI08330 Residue (ppm)	BYI08830-ketohydroxy Residue (ppm)	BYI08330-desmethyl-dihydroxy Residue (ppm)	BYI08830-desmethyl-ketohydroxy Residue (ppm)	BYI08830-ketohydroxy-alcohol Residue (ppm)
[redacted], Florida	FN084-04R	2004	3	Mustard greens / Giant Southern Curled	Greens (leaves)	NR[d]	0.159 (177.3)	34	34	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN085-04R	2004	5	Mustard greens / Green Wave	Greens (leaves)	NR[d]	0.159 (178.2)	46	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Florida	FN087-04R	2004	3	Turnip / Purple Top White Globe	Tops (leaves)	10	0.158 (177.6)	48	34	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN088-04R	2004	5	Turnip / Purple Top White Globe	Tops (leaves)	12	0.160 (179.2)	59	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020

Table 6.6.3-3 (continued)

Location (City, State)	Trial Number	Year	Region	Crop / Variety	Commodity	% Dry Matter	Total Rate, lb a.i./A (kg a.i./ha)	Harvest DAP (days)	EBI (days) [c]	BYI08330 Residue (ppm)	BYI08330-ketohydroxy Residue (ppm)	BYI08330-desmethyl-di-hydroxy Residue (ppm)	BYI08330-desmethyl-ketohydroxy Residue (ppm)	BYI08830-ketohydroxy-alcohol Residue (ppm)
[redacted], Florida	FN087-04R	2004	3	Turnip / Purple Top White Globe	Roots	8	0.158 (177.6)	48	34	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN088-04R	2004	5	Turnip / Purple Top White Globe	Roots	13	0.160 (179.2)	59	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Florida	FN090-04R	2004	3	Wheat, winter / Coker 9152	Forage	20	0.153 (172.0)	94	35	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN091-04R	2004	5	Wheat, winter / IL94-1653	Forage	16	0.161 (180.4)	185	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020

Table 6.6.3-3 (continued)

Location (City, State)	Trial Number	Year	Region	Crop / Variety	Commodity	% Dry Matter	Total Rate lb a.i./A (kg a.i./ha)[a]	Harvest DAT (days)[b]	PBI (days)	BYI08330 Residue (ppm)	BYI08330-ketohydroxy Residue (ppm)	BYI08330-desmethyl-di-hydroxy Residue (ppm)	BYI08330-desmethyl-ketohydroxy Residue (ppm)	BYI08330-ketohydroxy alcohol Residue (ppm)
[redacted], Florida	FN090-04R	2004	3	Wheat, winter / Coker 9152	Hay	87	0.153 (172.0)	154	25	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN091-04R	2004	5	Wheat, winter / IL94-1653	Hay	68	0.161 (180.4)	222	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Florida	FN090-04R	2004	3	Wheat, winter / Coker 9152	Grain	82	0.153 (172.0)	191	38	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN091-04R	2004	5	Wheat, winter / IL94-1653	Grain	71	0.161 (180.4)	257	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020

Table 6.6.3-3 (continued)

Location (City, State)	Trial Number	Year	Region	Crop / Variety	Commodity	% Dry Matter	Total Rate lb a.i./A (kg a.i./ha)[a]	Harvest DAP (days)[b]	PBI (days)[c]	BYI08330 Residue (ppm)	BYI08330-ketohydroxy Residue (ppm)	BYI08330-desmethyl-dihydroxy Residue (ppm)	BYI08330-desmethyl-ketohydroxy Residue (ppm)	BYI08330-ketohydroxy-alcohol Residue (ppm)
[redacted], Florida	FN090-04R	2004	3	Wheat, winter / Coker 9152	Straw	64	0.153 (172.0)	191	35	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020
[redacted], Illinois	FN091-04R	2004	5	Wheat, winter / IL94-1653	Straw	57	0.161 (180.4)	257	29	<0.010 <0.010 Avg. = <0.010	<0.010 <0.010 Avg. = <0.010	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020	<0.020 <0.020 Avg. = <0.020

[a] Two foliar applications of BYI08330 100 OD were made at a target rate of 0.078 lb ai/A/application (88 g ai/ha/application) at 5 to 7 day interval between applications, using concentrated spray volumes ranging from 5 to 20 gal/acre (47 to 187 liters/ha).
[b] DAP = Days after planting.
[c] PBI = Plant-back interval.
[d] NR = Not required.

Table 6.6.3-4 Summary of residue data from rotational crops grown after treatment of a target crop with BYI08330 100 OD.

Commodity	Residue Component	Application Rate lb a.i./A (kg a.i./ha)	Residue Levels (ppm) [a]							
			PBI (days)	n	Min	Max	HAFT [b]	Median	Mean	Std. Dev.
Mustard Greens	BYI08330	0.159-0.159 (177.3-178.2)	29-34	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
Turnip Tops	BYI08330	0.158-0.160 (177.6-179.2)	29-34	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
Turnip Roots	BYI08330	0.158-0.160 (177.6-179.2)	29-34	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000

Table 6.6.3-4 (continued).

Commodity	Residue Component	Application Rate lb a.i./A (kg a.i./ha)	PBI (days)	Residue Levels (ppm) [a]						
				n	Min	Max	HAFT [b]	Median	Mean	Std. Dev.
Wheat Forage	BYI08330	0.153-0.161 (172.0-180.4)	29-35	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
Wheat Hay	BYI08330	0.153-0.161 (172.0-180.4)	29-35	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
Wheat Grain	BYI08330	0.153-0.161 (172.0-180.4)	29-35	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000

Table 6.6.3-4 (continued).

Commodity	Residue Component	Application Rate lb a.i./A (kg a.i./ha)	PBI[b] (days)	Residue Levels (ppm)[a]						
				n	Min	Max	HAFT[c]	Median	Mean	Std. Dev.
Wheat Straw	BYI08330	0.153-0.161 (172.0-180.4)	29-35	4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Ketohydroxy			4	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
	Desmethyl-ketohydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Desmethyl-di-hydroxy			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000
	Ketohydroxy-alcohol			4	<0.02	<0.02	<0.02	<0.02	<0.02	0.000

[a] Any BYI08330 or BYI08330-ketohydroxy residue measured to be less than the limit of quantitation (LOQ) was reported as <0.01 ppm. Any BYI08330-desmethyl-ketohydroxy, BYI08330-desmethyl-di-hydroxy, or BYI08330-ketohydroxy-alcohol residue measured to be less than the LOQ was reported as <0.02 ppm. All measured values were actually less than the limit of detection (LOD) for each analyte.

[b] PBI = Plant-back interval

[c] HAFT = Highest average field trial residue.

IIA 6.7 Proposed residue definition and maximum residue levels

IIA 6.7.1 Proposed residue definition

For **BYI08330 target plants** the proposed residue definition for the **dietary risk assessment** is the sum of BYI08330 and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as BYI08330, which is defined as the total residue of BYI08330.

The proposed residue definition for **MRL-setting and enforcement** in BYI08330 target crops is BYI08330 plus BYI08330-enol, expressed as BYI08330. The non-inclusion of BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside is based on the enormous technical advantage concerning the analytical methods, on the low toxicity of these compounds and on their low residues in most edible commodities. In addition, the calculated MRL are essentially the same whether one includes only parent and enol or total residues.

A reduction in the technical effort for European enforcement laboratories is to be expected, if only the two main compounds, BYI08330 and BYI08330-enol, are included in the relevant residue for enforcement. BYI08330 and BYI08330-enol are much more sensitive to the analytical method than the ketohydroxy, the monohydroxy and the enol-glucoside metabolites. Due to this fact a higher dilution factor can be chosen for analysis of the extracts reducing the influence of the matrix on the chromatographic system and the ionization process of the MS/MS-system. Hence, besides general savings by dealing with only 2 instead of 5 compounds (reduced number of samples for measurement and evaluation) an additional advantage of increasing the sensitivity of the method will result..

The toxicological characterization of the three BYI08330 metabolites, ketohydroxy, monohydroxy and enol-glucoside, which are not included in the relevant residue for enforcement, shows that an additional toxicological impact of these compounds is not expected. BYI08330-ketohydroxy and –monohydroxy were subjected to acute toxicity (oral rat) and genotoxicity (bacterial reverse mutation) testing. No acute toxicity at the highest dose rats of 2000 mg/kg (LD50 in the rat was >2000 mg/kg) and no evidence of mutagenity was found (see IIA 5.8). Moreover, in the rat metabolism study (see IIA 6.2) BYI08330-ketohydroxy was identified as the second prominent metabolite (beside the enol) in liver and kidneys of rats and has therefore been co-tested in the toxicity studies with BYI 08330.
With BYI08330-enol-glucoside a single low dose toxicokinetic study in rats was preformed. It was shown that the glucoside bond of the enol-glucoside is cleaved resulting in BYI08330-enol as the major metabolite and key intermediate in the metabolic pathway (see IIA 6.2). These results imply that the metabolism of BYI08330-enol-glucoside follows the same metabolic pathways as the one of the aglycone BYI08330-enol and the parent compound BYI08330. Hence the toxicology of BYI08330-enol-glucoside is covered by the toxicological studies conducted with the parent compound.

The results from supervised residue trials show that the potential consumer exposure of residues of BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside is very low (clearly below 1 µg/kg bw/day, see Table 6.7.1-1)). Therefore, chronic toxicity testing of these metabolites was not considered necessary. The estimation of the consumer intake was conducted for the ketohydroxy metabolite, which was the quantitatively most relevant residue of the three metabolites in edible commodities from supervised residue trials. BYI08330-ketohydroxy residues were evaluated from residue trials in the US and in Europe. The STMR was determined for each crop and region. The highest

value for each crop was used for the intake estimations. The uptake of BYI08330-ketohydroxy residues was calculated for the European population (cluster diets B, E, F) and for the US and Canadian population (cluster diet M) using consumption data the GEMS/food consumption cluster diets (June 2006). The results are summarized in Table 6.7.1-1.
Due to their very low potential uptake by the consumer residues of BYI08330-ketohydroxy, –monohydroxy and enol-glucoside in edible parts of the target crops are not expected to have an additional impact on the health of the consumer, neither by short term, nor by long term intake.

Results from metabolism studies and from supervised residue trials show that BYI08330 and/or BYI08330-enol are the most prominent residues in BYI08330 target crops. Residues of parent-plus-enol cover an average of 70 % or more of the total residue. One exception is stone fruit from EU residue trials. In stone fruit, residues of parent plus enol account for an average of about 50 % of the total residue. The remaining 50% was accounted for by increased levels of the monohydroxy metabolite (peach, plum, cherry), ketohydroxy metabolite (cherry) or enol-glucoside metabolite (apricot) in addition to parent and enol. The other exception are brassica vegetables from US residue trials. Especially in flowering brassica (broccoli and cauliflower) BYI08330 and BYI08330-enol cover in average about 50 % of the total residue.In these crops higher levels of BYI08330-ketohydroxy were found.
Considering the low toxicological relevance of BYI08330-ketohydroxy, –monohydroxy and -enol-glucoside, including 70 % of the total residue of BYI08330 in most crops and 50 % in stone fruit and brassica vegetables is considered sufficient. Residues of parent-plus-enol determined in samples from residue trials in Europe and the USA collected at the envisaged PHI are given in mg/kg and % of total residue for each trial in Tables 6.7.1-3 to 6.7.1-33. A summary of these results is given in Table 6.7.1-2.

When considering the technical advantage of the analytical method, the low toxicological relevance and low consumer intake of the metabolites BYI08330-ketohydroxy, –monohydroxy and enol-glucoside and the lack of impact on the calculated MRLs, the proposed residue definition, sum of BYI08330 plus enol, for MRL setting and enforcement of BYI08330 target crops is justified.

In the meantime (status September, 2011) a harmonised EU and NAFTA residue definition for residues of spirotetramat in plant matrices has been derived for dietary risk assessment and for enforcement: "Sum of spirotetramat (BYI08330) and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330 enol-glucoside, expressed as spirotetramat".
JMPR has agreed on this residue definition for dietary risk assessment, and followed the BCS proposal for a simplified residue definition for enforcement: "Sum of spirotetramat (BYI08330) and BYI08330-enol, expressed as spirotetramat".

A residue definition for **rotational crops** was derived from results of the confined rotational crop study (IIA 6.6). For Europe a residue definition for succeeding crops is not needed, because results from the confined rotational crop studies show that no residues are to be expected in edible parts of the rotated crops even after a plant back interval 30 days.

For the US, a residue definition for succeeding crops was proposed based on the results of the confined rotational crop study. The relevant residues include BYI08330, BYI08330-ketohydroxy, and 3 further metabolites, BYI08330-ketohydroxy-alcolhol, BYI08330-desmethyl-ketohydroxy and BYI08330-desmethyl-dihydroxy obtained after hydrolysis of their conjugates. In crops collected from limited rotational field trials conducted in the US no residues were found in succeeding crops. Hence, residues

in succeeding crops are not considered for dietary risk assessment and no MRLs are proposed for residues in succeeding crops.

For **animal matrices** the residue definition sum of BYI08330, BYI08330-enol and BYI08330-enol-glucuronide, expressed as BYI08330 equivalents is proposed for **dietary risk assessment**.

For **enforcement** of residues of BYI08330 in animal matrices and for MRL setting **BYI08330-enol** is proposed as relevant residue. The proposal is based on the results of livestock metabolism studies (IIA 6.2). BYI08330-enol was the most prominent residue appearing for more than 40-56% of the total residue (TR) in milk, 72% in muscle, 60% in fat, 36% in liver and 78 % in kidney. BYI08330-enol-glucuronide was found at lower amounts (15-24 % of the total residue in milk, 0% in muscle, 19% in fat, 33 % in liver and 14 % in kidney). BYI08330 was not found in animal matrices. The results of the cattle feeding study support the results from the metabolism study. BYI08330 was not found, BYI08330-enol was the major metabolite. The BYI08330-enol-glucuronide was not found in fat, muscle and milk even at the 10x dose level, and represented only an average of 22% of the total residue in liver and 25% in kidney from cows fed with the 10x dose.

In the meantime (status September 2011) a harmonised EU and NAFTA residue definition for residues of spirotetramat in animal matrices has been derived for dietary risk assessment "sum of spirotetramat (BYI08330) and its 2 metabolites BYI08330-enol, and BYI08330 enol-glucuronide, expressed as spirotetramat". For enforcement the harmonised EU and NAFTA residue definition is "sum of spirotetramat and BYI08330-enol, eyxpressed as spirotetramat".
JMPR has agreed on the residue definition for dietary risk assessment and followed the BCS proposal for a simplified residue definition for enforcement: "BYI08330-enol".

Table 6.7.1-1: Consumer exposure of residues of BYI08330-ketohydroxy based on GEMS/Food cluster diets B, E, F, M

Commodities	BYI08330-ketohydroxy		Diet B	Diet E	Diet F	Diet M
	EU residue trials STMR* (mg/kg)	US residue trials STMR* (mg/kg)	Residue intake (µg/kg bw/day)	Residue intake (µg/kg bw/day)	Residue intake (µg/kg bw/day)	Residue intake (µg/kg bw/day)
POTATOES	---	**0.015**	0.04	0.06	0.05	0.04
BEANS, GREEN	**0.09**	---	0.02	0.00	0.00	0.00
TREE NUTS	---	**<0.01**	0.00	0.00	0.00	0.00
HOPS, DRY	<**0.48**	0.09	0.00	0.00	0.00	0.00
ONION, BULB	**<0.01**	---	0.01	0.00	0.00	0.01
MELONS, EXCEPT WATERMELON	**0.012**	<0.01	0.01	0.00	0.00	0.00
CUCUMBERS AND GHERKINS	**0.013**	<0.01	0.01	0.00	0.00	0.00
GHERKIN	**0.013**	<0.01	0.00	0.00	0.00	0.00
EGG PLANT	**0.012**	<0.01	0.00	0.00	0.00	0.00
PEPPERS, SWEET	0.017	**0.054**	0.01	0.00	0.00	0.00
TOMATO	**0.012**	<0.01	0.04	0.01	0.01	0.02
LETTUCE, HEAD	**0.083**	0.08	0.03	0.02	0.02	0.04
BRUSSELS SPROUTS	**0.03**	---	0.0000	0.0007	0.0009	0.00
CABBAGE, SAVOY	0.015	**0.48**	0.0936	0.0256	0.1200	0.05
CHINESE CABBAGE (TYPE PAK-CHOI)	**0.083**	---	0.0036	0.0001	0.0026	0.00
CHINESE CABBAGE (TYPE PE-TSAI)	**0.083**	---	0.0036	0.0000	0.0026	0.00
KALE	**0.083**	---	0.0000	0.0008	0.0026	0.00
KOHLRABI	**0.026**		0.0000	0.0053	0.0008	0.00
FLOWERHEAD BRASSICAS	0.089	**0.18**	0.0333	0.0231	0.0120	0.02
GRAPES	**0.021**	<0.01	0.0428	0.0358	0.0147	0.02
STRAWBERRIES	0.012	---	0.0010	0.0010	0.0008	0.00
CITRUS FRUITS	0.013	**<0.05**	0.0781	0.0417	0.0566	0.13
POME FRUITS	0.015	**0.018**	0.0252	0.0185	0.0139	0.01
APRICOTS	**0.018**	0.02	0.0019	0.0006	0.0002	0.00
CHERRIES (INC. SOUR)	**0.07**	0.049	0.0079	0.0042	0.0005	0.00
PLUMS (INC. PRUNES)	**0.012**	<0.01	0.0012	0.0014	0.0005	0.00
PEACHES	**0.018**	0.013	0.0076	0.0025	0.0010	0.00
WATERMELON	0.012	<0.01	0.0093	0.0010	0.0013	0.00
WINE	**<0.01**	<0.01	0.0154	0.0138	0.0051	0.01
Total intake (µg/kgbw/day)			**0.4818**	**0.2771**	**0.3320**	**0.38**

*The ketohydroxy residues used for the evaluation are marked in bold

Table 6.7.1-2: Residues of parent-plus-enol in raw agricultural commodities from the different BYI08330 target crops sampled at the envisaged PHIs. Residue are given in % of the total residue of BYI08330

Crop	Residues of parent-plus-enol in % of the total residue of BYI08330			
	EU Range of results from different trials	Mean	US Range of results from different trials	Mean
Citrus	68-88	78	53-97	83
Lettuce	71-96	86	47-91	81
Pome fruit	52-100	73	33-92	76
Peach/apricot	29-70	51	68-89	80
Plum	28-72	49	49-89	69
Cherry	39-79	57	61-94	76
Grape	45-91	69	56-85	75
Strawberry	75-95	87	---	---
Onion	76-118	108	-	---
Tomato	59-90	74	77-96	90
Pepper	78-94	88	59-83	74
Cucumber	40-87 (only one trial with a total residue >LOQ)	None*	28**-71	47
Melon	40-108 (only one trial with a total residue >LOQ)	None*	51-93	82
Flowering brassica	47-93	67	16-87	51
Brussels sprouts	49-87	70	-	-
Head cabbage	48-100	74	33-87	73
Leafy brassica	62-83	76	8**-90	76
Kohlrabi	89-93	89	---	---
Beans	(35) 58-74	67 (63)	---	---
Hops	61-89	72	85-88	86
Potato	-	-	65-90	86
Pecan (nutmeat)	-	-	26-83	80
Almond (nutmeat)		-	43-83	71

*no evaluation possible due to low overall residues,
**low percentages obtained with very low total residues

Table 6.7.1-3: Residues of BYI08330, enol and the total residue of BYI08330 in citrus fruit from European residue trials collected at the PHI of 14 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0139/6	orange	0.02	0.012	0.032	<0.055	58
R 2004 0141/8	orange	0.02	0.017	0.037	<0.055	67
R 2004 0239/2	orange	0.04	0.041	0.081	0.099	82
R 2004 0240/6	orange	0.1	0.09	0.19	0.22	86
R 2005 0046/7	orange	0.01	0.015	0.025	<0.055	45
R 2005 0047/5	orange	0.01	0.012	0.022	<0.055	40
R 2005 0048/3	orange	0.05	0.039	0.089	0.11	81
R 2005 0049/1	orange	0.03	0.015	0.045	<0.055	82
R 2004 0142/6	mandarin	0.04	0.075	0.085	0.12	71
R 2004 0143/4	mandarin	0.01	0.15	0.16	0.19	84
R 2004 0237/6	mandarin	0.09	0.15	0.24	0.32	75
R 2004 0238/4	mandarin	0.01	0.066	0.076	0.11	69
R 2005 0041/6	mandarin	0.01	0.059	0.069	0.089	78
R 2005 0042/4	mandarin	0.07	0.16	0.23	0.26	88
R 2005 0043/2	mandarin	0.1	0.033	0.133	0.17	78
R 2005 0044/0	mandarin	0.12	0.057	0.177	0.22	80
R 2005 0045/9	mandarin	0.04	0.069	0.109	0.16	68

Table 6.7.1-4: Residues of BYI08330, enol and the total residue of BYI08330 in lettuce from European residue trials collected at the PHI of 7 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2005 1026/8	lettuce head	1.3	0.35	1.65	1.8	92
R 2005 1028/4	lettuce head	1.5	0.23	1.73	1.9	91
R 2005 1029/2	lettuce head	0.85	0.41	1.26	1.4	90
R 2005 1030/6	lettuce head	0.05	0.056	0.106	0.15	71
R 2005 1023/3	lettuce loose leaf	0.7	0.26	0.96	1.0	96
R 2005 1024/1	lettuce loose leaf	0.19	0.078	0.268	0.38	71
R 2005 1027/6	lettuce loose leaf	0.17	0.12	0.29	0.36	81
R 2005 1031/4	lettuce loose leaf	1.6	0.58	2.18	2.3	95

Table 6.7.1-5: Residues of BYI08330, enol and the total residue of BYI08330 in pome fruit from European residue trials collected at the PHI of 21 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2004 0795/5	Apple	0.02	0.012	0.032	0.061	52
R 2004 0797/1	Apple	0.04	0.034	0.074	0.096	77
R 2005 0083/1	Apple	0.03	0.034	0.064	<0.055	58
R 2005 0086/6	Apple	0.03	0.021	0.051	0.09	69
R 2005 1018/7	Apple	0.07	0.052	0.122	0.08	80
R 2004 0809/9	Apple	0.02	0.012	0.032	0.094	54
R 2004 0811/0	Apple	0.02	0.012	0.032	0.15	81
R 2004 0805/6	Apple	0.05	0.013	0.063	0.055	68
R 2004 0807/2	Apple	0.1	0.015	0.115	<0.055	58
R 2005 0088/2	Apple	0.04	0.022	0.062	0.063	100
R 2005 0089/0	Apple	0.08	0.012	0.092	0.2	58
R 2004 0800/5	Apple	0.01	0.012	0.022	0.072	86
R 2004 0802/1	Apple	0.09	0.012	0.102	0.13	71
R 2004 0796/3	Pear	0.02	0.012	0.032	<0.055	40
R 2004 0799/8	Pear	0.05	0.012	0.062	0.13	78
R 2005 0085/8	Pear	0.05	0.012	0.062	0.094	66
R 2005 0087/4	Pear	0.1	0.012	0.112	0.16	70
R 2004 0810/2	Pear	0.14	0.033	0.173	0.25	69
R 2004 0812/9	Pear	0.07	0.012	0.082	0.1	82
R 2004 0806/4	Pear	0.1	0.012	0.112	0.13	86
R 2004 0808/0	Pear	0.14	0.033	0.173	0.25	69
R 2005 0090/4	Pear	0.02	0.012	0.032	0.055	58
R 2005 0091/2	Pear	0.02	0.012	0.032	<0.055	58
R 2004 0801/3	Pear	0.09	0.012	0.102	0.12	85
R 2004 0804/4	Pear	0.01	0.012	0.022	<0.055	40

Table 6.7.1-6: Residues of BYI08330, enol and the total residue of BYI08330 in peach and apricots from European residue trials collected at the PHI of 21 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg			Total residue (TR)	BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol		
R 2004 0785/8	Peach	0.07	0.15	0.22	0.32	69
R 2005 0061/0	Peach	0.06	0.25	0.31	0.44	70
R 2004 0787/4	Peach	0.04	0.19	0.23	0.35	66
R 2004 0789/0	Peach	0.03	0.071	0.10	0.17	59
R 2005 0063/7	Peach	0.09	0.093	0.18	0.31	59
R 2005 0065/3	Peach	0.02	0.054	0.07	0.11	67
R 2004 0786/6	Apricot	0.14	0.095	0.24	0.5	47
R 2005 0059/9	Apricot	0.04	0.29	0.33	0.69	48
R 2005 0060/2	Apricot	0.07	0.13	0.20	0.53	38
R 2004 0788/2	Apricot	0.07	0.14	0.21	0.67	31
R 2004 0790/4	Apricot	0.02	0.13	0.15	0.28	54
R 2005 0062/9	Apricot	0.09	0.16	0.25	0.68	37
R 2005 0064/5	Apricot	0.05	0.063	0.11	0.24	47
R 2005 0066/1	Apricot	0.02	0.061	0.08	0.28	29

Table 6.7.1-7: Residues of BYI08330, enol and the total residue of BYI08330 in plums from European residue trials collected at the PHI of 21 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg			Total residue (TR)	BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol		
R 2004 0774/2	Plum	0.04	0.29	0.33	0.84	39
R 2004 0775/0	Plum	0.01	0.034	0.04	0.16	28
R 2004 0776/9	Plum	0.06	0.26	0.32	0.58	55
R 2004 0777/7	Plum	0.09	0.13	0.22	0.45	49
R 2005 0050/0	Plum	0.04	0.19	0.23	0.35	66
R 2005 0051/3	Plum	0.04	0.11	0.15	0.42	36
R 2005 0052/1	Plum	0.02	0.043	0.06	0.19	33
R 2005 0054/8	Plum	0.02	0.043	0.06	0.12	53
R 2004 0778/5	Plum	0.06	0.16	0.22	0.49	45
R 2004 0779/3	Plum	0.03	0.09	0.12	0.18	67
R 2005 0055/6	Plum	0.08	0.088	0.17	0.39	43
R 2005 0058/0	Plum	0.05	0.044	0.09	0.13	72

Table 6.7.1-8: Residues of BYI08330, enol and the total residue of BYI08330 in cherries from European residue trials collected at the PHI of 21 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg			Total residue (TR)	BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol		
R 2004 0718/1	Cherry, sweet	0.01	0.32	0.33	0.57	58
R 2004 0720/3	Cherry, sour	0.01	0.21	0.22	0.28	79
R 2004 0723/8	Cherry, sour	0.01	0.21	0.22	0.29	76
R 2005 0072/6	Cherry, sour	<0.01	0.15	0.16	0.24	67
R 2006 0004/9	Cherry, sour	0.02	0.15	0.17	0.43	40
R 2004 0721/1	Cherry, sweet	0.02	0.58	0.6	0.93	65
R 2005 0068/8	Cherry, sweet	0.02	0.36	0.38	0.83	46
R 2005 0071/8	Cherry, sweet	0.01	0.23	0.24	0.52	46
R 2004 0716/5	Cherry, sweet	0.01	0.38	0.39	0.63	62
R 2004 0717/3	Cherry, sweet	0.05	0.5	0.55	1.0	55
R 2005 0073/4	Cherry, sweet	0.01	0.35	0.36	0.67	54
R 2005 0074/2	Cherry, sweet	0.06	0.22	0.28	0.72	39

Table 6.7.1-9: Residues of BYI08330, enol and the total residue of BYI08330 in grape (berries) from European residue trials collected at the PHI of 14 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg			Total residue (TR)	BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol		
R 2005 0157/9	Grape	0.07	0.03	0.1	0.16	63
R 2004 0197/3	Grape	0.06	0.035	0.095	0.17	56
R 2005 0161/7	Grape	0.16	0.012	0.172	0.19	91
R 2004 0203/1	Grape	0.15	0.022	0.172	0.21	82
R 2004 0198/1	Grape	0.08	0.11	0.19	0.25	76
R 2004 0202/3	Grape	0.13	0.055	0.185	0.28	66
R 2005 0162/5	Grape	0.07	0.15	0.22	0.35	63
R 2004 0196/5	Grape	0.12	0.092	0.212	0.47	45
R 2005 0158/7	Grape	0.16	0.21	0.37	0.57	65
R 2004 0201/5	Grape	0.47	0.047	0.517	0.63	82

Table 6.7.1-10: Residues of BYI08330, enol and the total residue of BYI08330 in strawberries from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2004 0726/2	Strawberry	0.01	0.24	0.25	0.27	93
R 2004 0765/3	Strawberry	0.01	0.14	0.15	0.20	75
R 2004 0766/1	Strawberry	0.03	0.16	0.19	0.25	76
R 2004 0768/8	Strawberry	0.01	0.27	0.28	0.33	85
R 2004 0769/6	Strawberry	0.05	0.21	0.26	0.28	93
R 2004 0771/8	Strawberry	0.04	0.16	0.2	0.22	91
R 2004 0772/6	Strawberry	0.08	0.17	0.25	0.27	93
R 2004 0773/4	Strawberry	0.02	0.25	0.27	0.30	90
R 2004 0725/4	Strawberry	0.02	0.08	0.1	0.12	83
R 2004 0762/9	Strawberry	0.01	0.11	0.12	0.14	86
R 2004 0763/7	Strawberry	0.02	0.09	0.11	0.13	85
R 2004 0764/5	Strawberry	0.02	0.061	0.081	0.10	81
R 2004 0724/6	Strawberry	0.01	0.14	0.15	0.17	88
R 2004 0759/9	Strawberry	0.01	0.12	0.13	0.15	87
R 2004 0760/2	Strawberry	0.02	0.2	0.22	0.24	92
R 2004 0761/0	Strawberry	0.07	0.11	0.18	0.19	95

Table 6.7.1-11: Residues of BYI08330, enol and the total residue of BYI08330 in onion (bulb) from European residue trials collected at the PHI of 14 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0858/7	Onion	<0.01	0.021	0.031	<0.055	56
R 2004 0859/5	Onion	<0.01	0.081	0.091	0.081	112
R 2004 0860/9	Onion	<0.01	0.056	0.066	0.056	118
R 2004 0861/7	Onion	<0.01	0.13	0.14	0.13	108
R 2005 0225/7	Onion	<0.01	0.034	0.044	<0.055	80
R 2005 0226/5	Onion	0.02	0.037	0.057	0.075	76
R 2005 0227/3	Onion	<0.01	0.1	0.11	0.11	100
R 2005 0228/1	Onion	<0.01	<0.012	0.022	<0.055	40
R 2004 0854/4	Onion	<0.01	0.16	0.17	0.16	106
R 2004 0855/2	Onion	<0.01	0.055	0.065	<0.055	118
R 2004 0856/0	Onion	0.01	0.067	0.077	0.067	115
R 2004 0857/9	Onion	<0.01	0.071	0.081	0.071	114
R 2005 0212/5	Onion	<0.01	0.12	0.13	0.12	108
R 2005 0214/1	Onion	<0.01	<0.012	0.022	<0.055	40
R 2005 0216/8	Onion	<0.01	0.042	0.052	<0.055	95
R 2005 0217/6	Onion	<0.01	0.05	0.06	<0.055	109

Table 6.7.1-12: Residues of BYI08330, enol and the total residue of BYI08330 in tomato fruit from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0823/4	Tomato	0.11	0.17	0.28	0.43	65
R 2004 0824/2	Tomato	0.16	0.16	0.32	0.43	74
R 2004 0825/0	Tomato	0.25	0.21	0.46	0.72	64
R 2004 0826/9	Tomato	0.25	0.23	0.48	0.66	73
R 2004 0827/7	Tomato	0.06	0.39	0.45	0.50	90
R 2004 0828/5	Tomato	0.09	0.099	0.189	0.28	68
R 2004 0829/3	Tomato	0.15	0.11	0.26	0.32	81
R 2004 0830/1	Tomato	0.07	0.093	0.163	0.20	82
R 2004 8498	Tomato	0.04	0.088	0.128	0.18	71
R 2004 850/1	Tomato	0.04	0.061	0.101	0.13	78
R 2004 852/8	Tomato	0.02	0.045	0.065	0.11	59
R 2004 8536	Tomato	0.03	0.13	0.16	0.20	80

Table 6.7.1-13: Residues of BYI08330, enol and the total residue of BYI08330 in pepper fruit from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2004 0791/6	pepper, sweet	0.06	0.36	0.42	0.46	91
R 2004 0792/0	pepper, sweet	0.12	0.37	0.49	0.56	88
R 2004 0793/9	pepper, sweet	0.12	0.15	0.27	0.30	90
R 2004 0794/7	pepper, sweet	0.04	0.21	0.25	0.27	93
R 2004 0113/2	pepper, sweet	0.04	0.46	0.5	0.55	91
R 2004 0114/0	pepper, sweet	0.04	0.46	0.5	0.58	86
R 2004 0115/9	pepper, sweet	0.05	0.31	0.36	0.41	88
R 2004 0116/7	pepper, sweet	0.04	0.26	0.3	0.33	91
R 2004 0117/5	pepper, sweet	0.13	0.34	0.47	0.54	87
R 2004 0118/3	pepper, sweet	0.05	0.35	0.4	0.46	87
R 2004 0119/1	pepper, sweet	0.03	0.2	0.23	0.25	92
R 2004 0120/5	pepper, sweet	0.03	0.43	0.46	0.53	87
R 2004 0121/3	pepper, sweet	0.14	0.54	0.68	0.81	84
R 2004 0122/1	pepper, sweet	0.01	0.21	0.22	0.25	88
R 2004 0124/8	pepper, sweet	<0.01	0.16	0.17	0.18	94
R 2004 0125/6	pepper, sweet	0.02	0.29	0.31	0.34	91
R 2005 0200/1	pepper, sweet	0.01	0.092	0.102	0.13	78
R 2005 0202/8	pepper, sweet	0.01	0.13	0.14	0.16	88
R 2005 0707/0	pepper, sweet	0.01	0.069	0.079	0.10	79
R 2004 0708/9	pepper, sweet	0.02	0.12	0.14	0.16	88

Table 6.7.1-14: Residues of BYI08330, enol and the total residue of BYI08330 in cucumber fruit from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2004 0130/2	cucumber-	0.02	<0.012	0.032	<0.055	58
R 2004 0131/0	cucumber-	0.01	<0.012	<0.022	<0.055	40
R 2004 0132/9	cucumber-	0.02	<0.012	0.032	<0.055	58
R 2004 0133/7	cucumber-	0.02	<0.012	0.032	<0.055	58
R 2004 0134/5	cucumber-	0.03	<0.012	0.042	<0.055	76
R 2004 0135/3	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2004 0136/1	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2004 0138/8	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2004 0126/4	cucumber-	0.02	<0.012	0.032	<0.055	58
R 2004 0128/0	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2004 0129/9	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2005 0239/7	cucumber-	0.02	<0.012	0.032	<0.055	58
R 2005 0240/0	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2005 0241/9	cucumber-	<0.01	<0.012	<0.022	<0.055	40
R 2005 0715/1	cucumber-	0.06	0.027	0.087	0.1	87

Table 6.7.1-15: Residues of BYI08330, enol and the total residue of BYI08330 in melon fruit from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0836/6	Melon	0.01	<0.012	<0.022	<0.055	40
R 2004 0837/4	Melon	<0.01	<0.012	<0.022	<0.055	40
R 2004 0838/2	Melon	0.01	0.014	0.024	<0.055	44
R 2004 0839/0	Melon	0.01	<0.012	<0.022	<0.055	40
R 2004 0840/4	Melon	0.01	<0.012	<0.022	<0.055	40
R 2004 0841/2	Melon	<0.01	<0.012	<0.022	<0.055	40
R 2004 0881/1	Melon	0.01	0.019	0.029	<0.055	53
R 2004 0883/8	Melon	<0.01	<0.012	<0.022	<0.055	40
R 2004 0842/0	Melon	0.04	<0.012	0.052	<0.055	95
R 2004 0843/9	Melon	<0.01	<0.012	<0.022	<0.055	40
R 2004 0844/7	Melon	0.02	0.036	0.056	<0.055	102
R 2004 0845/5	Melon	0.01	<0.012	<0.022	<0.055	40
R 2005 0230/3	Melon	<0.01	<0.012	<0.022	0.071	31
R 2005 0231/1	Melon	<0.01	0.014	0.024	<0.055	44
R 2005 0233/8	Melon	<0.01	0.017	0.027	<0.055	49
R 2005 0234/6	Melon	<0.01	<0.012	<0.022	<0.055	40
R 2005 0717/8	Melon	<0.01	<0.012	<0.022	<0.055	40

Table 6.7.1-16: Residues of BYI08330, enol and the total residue of BYI08330 in flowering brassica from European residue trials collected at the PHI of 7 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0108/6	Broccoli	0.09	0.28	0.37	0.5	74
R 2004 0111/6	Broccoli	0.02	0.31	0.33	0.42	79
R 2004 0105/1	Broccoli	0.07	0.2	0.27	0.57	47
R 2005 0363/6	Broccoli	0.19	0.24	0.43	0.63	68
R 2005 0364/4	Broccoli	0.03	0.12	0.15	0.23	65
R 2005 1017/9	Broccoli	0.01	0.18	0.19	0.3	63
R 2005 0360/4	Broccoli	0.06	0.099	0.159	0.21	76
R 2004 0109/4	Cauliflower	<0.01	0.055	0.065	0.4	16
R 2004 0110/8	Cauliflower	<0.01	0.14	0.15	0.22	68
R 2004 0112/4	Cauliflower	<0.01	0.077	0.087	0.17	51
R 2005 0365/2	Cauliflower	<0.01	0.15	0.16	0.18	89
R 2005 1047/0	Cauliflower	<0.01	0.12	0.13	0.14	93
R 2005 0362/8	Cauliflower	<0.01	0.084	0.094	0.11	85

Table 6.7.1-17: Residues of BYI08330, enol and the total residue of BYI08330 in Brussels sprouts from European residue trials collected at the PHI of 7 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0160/4	Brussels sprouts	0.01	0.051	0.061	0.086	71
R 2004 0161/2	Brussels sprouts	0.01	0.041	0.051	0.067	76
R 2004 0162/0	Brussels sprouts	<0.01	0.069	0.079	0.1	79
R 2004 0163/9	Brussels sprouts	<0.01	0.13	0.14	0.19	74
R 2005 0369/5	Brussels sprouts	0.01	0.036	0.046	0.093	49
R 2005 0370/9	Brussels sprouts	0.01	0.041	0.051	0.082	62
R 2005 0371/7	Brussels sprouts	0.02	0.071	0.091	0.14	65
R 2005 0372/5	Brussels sprouts	0.02	0.059	0.079	0.091	87

Table 6.7.1-18: Residues of BYI08330, enol and the total residue of BYI08330 in head cabbage from European residue trials collected at the PHI of 7 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0156/6	Red cabbage	0.01	0.06	0.07	0.084	83
R 2005 0352/0	Red cabbage	0.01	0.019	0.029	<0.055	53
R 2005 0353/9	Red cabbage	<0.01	0.095	0.105	0.11	95
R 2004 0157/4	Savoy cabbage	0.01	0.017	0.027	0.08	34
R 2005 0356/3	Savoy cabbage	0.09	0.12	0.21	0.31	68
R 2005 0357/1	Savoy cabbage	0.01	0.015	0.025	<0.055	45
R 2005 0359/8	Savoy cabbage	0.24	0.12	0.36	0.47	77
R 2004 0152/8	White cabbage	0.01	0.037	0.047	0.077	61
R 2005 0354/7	White cabbage	<0.01	0.052	0.062	0.13	48
R 2005 0355/5	White cabbage	<0.01	0.035	0.045	0.057	79
R 2004 0158/2	Red cabbage	<0.01	0.19	0.2	0.2	100
R 2005 0350/4	Red cabbage	<0.01	0.025	0.035	<0.055	64
R 2004 0159/0	White cabbage	<0.01	0.065	0.075	0.077	97
R 2005 0351/2	White cabbage	<0.01	0.022	0.032	<0.055	58

Table 6.7.1-19: Residues of BYI08330, enol and the total residue of BYI08330 in leafy brassica from European residue trials collected at the PHI of 3 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2005 0709/7	Chinese cab.	<0.01	0.19	0.2	0.26	77
R 2005 0710/0	Chinese cab.	<0.01	0.13	0.14	0.17	82
R 2004 0166/3	Chinese kale	0.11	0.28	0.39	0.54	72
R 2004 0167/1	Chinese kale	0.08	0.38	0.46	0.61	75
R 2004 0164/7	Kale, curly	0.2	0.29	0.49	0.6	82
R 2004 0165/5	Kale, curly	0.07	0.053	0.123	0.2	62
R 2005 0367/9	Kale, curly	0.09	0.092	0.182	0.23	79
R 2005 0368/7	Kale, curly	0.03	0.16	0.19	0.23	83

Table 6.7.1-20: Residues of BYI08330, enol and the total residue of BYI08330 in kohlrabi from European residue trials collected at the PHI of 7 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	BYI08330 + enol (% TR)
R 2004 0169/8	Kohlrabi	0.01	0.52	0.53	0.66	80
R 2004 0170/1	Kohlrabi	<0.01	0.49	0.5	0.54	93
R 2005 0373/3	Kohlrabi	0.01	0.22	0.23	0.25	92
R 2005 0374/1	Kohlrabi	0.01	0.16	0.17	0.19	89

Table 6.7.1-21: Residues of BYI08330, enol and the total residue of BYI08330 in climbing French beans from European residue trials collected at the PHI of 14 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0172/8	Climbing French bean	0.06	0.12	0.18	0.31	58
R 2004 0173/6	Climbing French bean	0.01	0.066	0.076	0.11	69
R 2004 0174/4	Climbing French bean	0.13	0.29	0.42	0.57	74
R 2004 0175/2	Climbing French bean	0.15	0.26	0.41	0.57	72
R 2004 0176/0	Climbing French bean	0.01	0.015	0.025	0.071	35
R 2004 0177/9	Climbing French bean	0.01	0.09	0.1	0.16	63
R 2004 0178/7	Climbing French bean	0.13	0.29	0.42	0.63	67
R 2004 0179/5	Climbing French bean	0.04	0.23	0.27	0.39	69

Table 6.7.1-22: Residues of BYI08330, enol and the total residue of BYI08330 in kiln-dried hop cones from European residue trials collected at the PHI of 14 days

Trial no	Crop	Residues in mg BYI08330 equivalents/kg				BYI08330 + enol (% TR)
		BYI08330	Enol	BYI08330+enol	Total residue (TR)	
R 2004 0148/5	Hops	1.6	0.48	2.08	2.6	80
R 2004 0149/3	Hops	0.84	<0.48	1.32	<2.2	60
R 2004 0150/7	Hops	0.56	1.24	1.8	2.9	62
R 2004 0151/5	Hops	0.56	<0.48	1.04	<2.2	47
R 2005 0550/1	Hops	1.5	0.19	1.69	1.9	89
R 2005 0551/5	Hops	0.83	0.23	1.06	1.6	66
R 2005 0552/3	Hops	1.5	0.32	1.82	3.0	61
R 2005 0553/1	Hops	0.61	0.12	0.73	1.0	73

Table 6.7.1-23: Residues of BYI08330 + enol and the total residue of BYI08330 in citrus fruit from USA residue trials collected at the PHI of 1 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	orange	0.1348	0.1778	76
2	orange	0.1614	0.2195	74
3	orange	0.1727	0.2175	79
4	orange	0.1915	0.2330	82
5	orange	0.1563	0.2060	76
6	orange	0.2318	0.3142	74
7	orange	0.2110	0.2641	80
8	orange	0.2081	0.2541	82
9	orange	0.0827	0.1047	79
10	orange	0.1269	0.1472	86
11	orange	0.1305	0.1477	88
12	orange	0.1195	0.1286	93
13	orange	0.1492	0.1583	94
14	orange	0.0809	0.0899	90
15	orange	0.0314	0.0404	78
16	grapefruit	0.0773	0.1211	64
17	grapefruit	0.0616	0.0910	68
18	grapefruit	0.0458	0.0858	53
19	grapefruit	0.0577	0.0988	58
20	grapefruit	0.0481	0.0895	54
21	grapefruit	0.0628	0.0796	79
22	grapefruit	0.0597	0.0727	82
23	grapefruit	0.0297	0.0387	77
24	grapefruit	0.0233	0.0324	72
25	grapefruit	0.0233	0.0324	72
26	grapefruit	0.0904	0.0994	91
27	grapefruit	0.1601	0.1692	95
28	grapefruit	0.0384	0.0506	76
29	grapefruit	0.0494	0.0640	77
30	lemon	0.0846	0.0953	89
31	lemon	0.1164	0.1301	89
32	lemon	0.1348	0.1553	87
33	lemon	0.1859	0.2021	92
34	lemon	0.2464	0.2608	94
35	lemon	0.3056	0.3147	97
36	lemon	0.1887	0.1977	95
37	lemon	0.1664	0.1772	94
38	lemon	0.1316	0.1407	94
39	lemon	0.1101	0.1191	92
40	lemon	0.1705	0.1796	95

Table 6.7.1-24: Residues of BYI08330 + enol and the total residue of BYI08330 in pome fruit from USA residue trials collected at the PHI of 7 days

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	apple	0.0333	0.0333	74
2	apple	0.0552	0.0552	58
3	apple	0.0279	0.0279	66
4	apple	0.1185	0.1185	72
5	apple	0.1361	0.1361	84
6	apple	0.1176	0.1176	35
7	apple	0.0995	0.0995	71
8	apple	0.1164	0.1164	55
9	apple	0.1040	0.1040	69
10	apple	0.0456	0.0456	84
11	apple	0.0443	0.0443	76
12	apple	0.0543	0.0543	78
13	apple	0.0662	0.0662	56
14	apple	0.0389	0.0389	73
15	apple	0.3378	0.3378	54
16	apple	0.1588	0.1588	76
17	apple	0.2080	0.2080	74
18	apple	0.3375	0.3575	92
19	apple	0.2392	0.2392	78
20	apple	0.3139	0.3139	90
21	apple	0.1319	0.1319	83
22	apple	0.1705	0.1705	57
23	apple	0.0853	0.0856	64
24	apple	0.1073	0.1073	76
25	apple	0.1532	0.1532	87
26	apple	0.0860	0.0860	77
27	apple	0.0724	0.0724	89
28	pear	0.1062	0.0333	44
29	pear	0.0676	0.0640	33
30	pear	0.3365	0.0953	87
31	pear	0.2707	0.1301	92
32	pear	0.1436	0.1553	82
33	pear	0.1637	0.2021	86
34	pear	0.1161	0.2608	92
35	pear	0.1996	0.3147	58
36	pear	0.3640	0.1977	83
37	pear	0.2365	0.1772	89
38	pear	0.2024	0.1407	63
39	pear	0.1801	0.1191	82
40	pear	0.0467	0.1796	50
41	pear	0.0776	0.1796	81

Table 6.7.1-25: Residues of BYI08330 + enol and the total residue of BYI08330 in stone fruit from USA residue trials collected at the PHI of 7 days

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	peach	0.5374	0.6315	85
2	peach	0.3691	0.4307	86
3	peach	0.2999	0.3688	81
4	peach	0.4388	0.5277	83
5	peach	0.2726	0.3411	80
6	peach	0.3795	0.5158	74
7	peach	0.1938	0.2833	68
8	peach	0.5391	0.7705	70
9	peach	0.3389	0.4404	77
10	peach	0.4205	0.5496	77
11	peach	0.3299	0.4028	82
12	peach	0.8389	1.1091	76
13	peach	0.8366	1.0342	81
14	peach	0.4706	0.6048	78
15	peach	0.4928	0.5889	84
16	peach	0.2368	0.3249	73
17	peach	0.5012	0.6599	76
18	peach	0.3921	0.4716	83
19	peach	0.5883	0.6610	89
20	peach	0.5599	0.6333	88
21	peach	0.3325	0.3829	87
22	plum	0.4671	0.6744	69
23	plum	0.1839	0.2604	71
24	plum	0.2044	0.2470	83
25	plum	0.2493	0.2813	89
26	plum	0.1135	0.2029	56
27	plum	0.0728	0.1481	49
28	plum	0.0258	0.0476	54
29	plum	0.2309	0.2944	78
30	plum	0.0828	0.1063	78
31	plum	0.0576	0.0788	73
32	plum	0.0304	0.0379	80
33	plum	0.3183	0.5425	59
34	plum	0.1481	0.2614	57
35	cherry	1.2104	1.8708	65
36	cherry	1.0173	1.5547	65
37	cherry	1.1173	1.3877	81
38	cherry	1.3360	1.5927	84
39	cherry	1.2389	2.0453	61

Table 6.7.1-25 continued

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
40	cherry	1.5160	2.0173	75
41	cherry	0.3727	0.3970	94
42	cherry	0.5963	0.6482	92
43	cherry	1.2702	1.5564	82
44	cherry	0.9057	1.0830	84
45	cherry	0.5271	0.6088	87
46	cherry	1.2724	1.6056	79
47	cherry	0.5583	0.6864	81

Table 6.7.1-26: Residues of BYI08330 + enol and the total residue of BYI08330 in tree nuts from USA residue trials collected at the PHI of 7 days

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	almonds	0.0079	0.0150	53
2	almonds	0.0054	0.0125	43
3	almonds	0.0812	0.1068	76
4	almonds	0.0824	0.1123	73
5	almonds	0.0478	0.0593	81
6	almonds	0.0520	0.0654	80
7	almonds	0.0495	0.0620	80
8	almonds	0.0351	0.0421	83
9	almonds	0.0200	0.0355	56
10	almonds	0.0215	0.0345	62
11	almonds	0.0418	0.0572	73
12	almonds	0.0721	0.1270	57
13	pecans	0.0183	0.0254	72
14	pecans	0.0244	0.0315	78
15	pecans	0.0351	0.0421	83
16	pecans	0.0088	0.0159	56
17	pecans	0.0029	0.0111	26
18	pecans	0.0029	0.0100	29
19	pecans	0.0054	0.0125	43
20	pecans	0.1191	0.1430	83
21	pecans	0.0360	0.0446	81
22	pecans	0.2359	0.2790	85
23	pecans	0.1617	0.1970	82

Table 6.7.1-27: Residues of BYI08330 + enol and the total residue of BYI08330 in leafy vegetables from USA residue trials collected at the PHI of 3 days

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	head lettuce	0.6340	0.7432	85
2	head lettuce	0.1403	0.2970	47
3	head lettuce	0.1088	0.2192	50
4	head lettuce	0.1558	0.2182	71
5	head lettuce	0.5942	0.7000	85
6	head lettuce	0.7961	0.9489	84
7	head lettuce	0.5727	0.8079	71
8	head lettuce	0.5901	0.8126	73
9	leaf lettuce	0.5118	0.6994	73
10	leaf lettuce	0.5486	1.0027	55
11	leaf lettuce	0.1076	0.1873	57
12	leaf lettuce	0.1276	0.2099	61
13	leaf lettuce	0.8476	1.0360	82
14	leaf lettuce	1.4307	1.5953	90
15	leaf lettuce	0.6547	0.7194	91
16	spinach	0.6861	0.9376	73
17	spinach	0.1197	0.2116	57
18	spinach	1.3297	1.4953	89
19	spinach	2.7193	3.0620	89
20	spinach	1.1113	1.1874	94
21	spinach	0.6037	0.6446	94
22	spinach	0.8133	1.0075	81
23	celery	0.2694	0.3606	75
24	celery	0.4411	0.7329	60
25	celery	0.2898	0.4563	63
26	celery	0.2260	0.3600	63
27	celery	0.2848	0.3969	72
28	celery	1.8989	2.1857	87
29	celery	0.4330	0.6202	70
30	celery	2.3279	2.5257	92

Table 6.7.1-28: Residues of BYI08330 + enol and the total residue of BYI08330 in Brassica leafy vegetables from USA residue trials collected at the PHI of 1 days

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as % TR
1	broccoli	0.1682	0.3389	50
2	broccoli	0.1483	0.2910	51
3	broccoli	0.1682	0.3836	44
4	broccoli	0.0518	0.0842	61
5	cabbage	0.8390	0.9679	87
6	cabbage	0.0111	0.0307	36
7	cabbage	0.0087	0.0260	34
8	cabbage	0.4796	0.6352	76
9	cabbage	0.0733	0.1938	38
10	cabbage	0.2416	0.4105	59
11	cabbage	0.0869	0.1060	82
12	cauliflower	0.1002	0.3142	32
13	cauliflower	0.0574	0.2316	25
14	cauliflower	0.1993	0.4027	49
15	cauliflower	0.0629	0.3923	16
16	mustard greens	1.2614	1.7023	74
17	mustard greens	4.8370	5.3489	90
18	mustard greens	3.8482	4.8485	79
19	mustard greens	0.0640	0.7840	8
20	mustard greens	0.5889	0.8178	72
21	mustard greens	0.6069	0.8139	75
22	mustard greens	1.1070	1.6643	67
23	mustard greens	2.5686	3.3695	76
24	mustard greens	3.2775	4.3897	75
25	mustard greens	2.9920	4.2371	71

Table 6.7.1-29: Residues of BYI08330 + enol and the total residue of BYI08330 in fruiting vegetables from USA residue trials collected at the PHI of 1 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as % TR
1	tomato	0.0842	0.1024	82
2	tomato	0.0705	0.0821	86
3	tomato	0.0433	0.0524	83
4	tomato	0.1566	0.1789	88
5	tomato	0.0412	0.0514	80
6	tomato	0.0266	0.0346	77
7	tomato	0.1642	0.1732	95
8	tomato	0.1088	0.1175	93
9	tomato	0.1820	0.1983	92
10	tomato	0.1458	0.1597	91
11	tomato	0.1116	0.1176	95
12	tomato	0.1350	0.1410	96
13	tomato	0.0819	0.0912	90
14	tomato	0.1246	0.1377	90
15	tomato	0.0951	0.1074	89
16	bell peppers	0.0995	0.1511	66
17	bell peppers	0.1315	0.2226	59
18	bell peppers	0.1572	0.2662	59
19	bell peppers	0.3198	0.4643	69
20	bell peppers	0.2413	0.2995	81
21	bell peppers	0.5381	0.6476	83
22	bell peppers	0.2037	0.2480	82
23	bell peppers	0.1971	0.2482	79
24	chilli peppers	1.0636	1.2246	87
25	chilli peppers	0.4794	0.5491	87
26	chilli peppers	0.5682	0.6137	93
27	chilli peppers	0.3993	0.4455	90

Table 6.7.1-30: Residues of BYI08330 + enol and the total residue of BYI08330 in cucurbit vegetables from USA residue trials collected at the PHI of 1 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as % TR
1	cucumber	0.0032	0.0090	35
2	cucumber	0.0032	0.0085	37
3	cucumber	0.0044	0.0124	35
4	cucumber	0.0032	0.0104	30
5	cucumber	0.0058	0.0112	52
6	cucumber	0.0071	0.0255	28
7	cucumber	0.0062	0.0219	28
8	cucumber	0.0402	0.0564	71
9	muskmelon	0.0147	0.0287	51
10	muskmelon	0.0109	0.0162	67
11	muskmelon	0.0677	0.0795	85
12	muskmelon	0.0439	0.0493	89
13	muskmelon	0.0205	0.0264	78
14	muskmelon	0.0213	0.0271	78
15	muskmelon	0.0831	0.0889	93
16	muskmelon	0.0083	0.0142	59
17	summer squash	0.0673	0.1488	45
18	summer squash	0.0050	0.0208	24
19	summer squash	0.0133	0.0477	28
20	summer squash	0.0077	0.0272	28
21	summer squash	0.0043	0.0175	25
22	summer squash	0.0915	0.1060	86

Table 6.7.1-31: Residues of BYI08330 + enol and the total residue of BYI08330 in potatoes from USA residue trials collected at the PHI of 7 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as % TR
1	potato	0.3462	0.3891	89
2	potato	0.1425	0.1604	89
3	potato	0.1863	0.2238	83
4	potato	0.2492	0.2962	84
5	potato	0.1592	0.1841	87
6	potato	0.0965	0.1152	84
7	potato	0.0282	0.0336	84
8	potato	0.0275	0.0342	80
9	potato	0.3568	0.4286	83
10	potato	0.0363	0.0440	83
11	potato	0.0582	0.0682	85
12	potato	0.0098	0.0150	65
13	potato	0.0400	0.0488	82
14	potato	0.0422	0.0487	87
15	potato	0.0417	0.0485	86
16	potato	0.0234	0.0287	81
17	potato	0.0832	0.0935	89
18	potato	0.1276	0.1412	90
19	potato	0.0766	0.0859	89
20	potato	0.0372	0.0437	85

Table 6.7.1-32: Residues of BYI08330 + enol and the total residue of BYI08330 in hops from USA residue trials collected at the PHI of 7 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as %TR
1	hops	4.6642	5.3965	86
2	hops	4.6042	5.3991	85
3	hops	1.8537	2.1359	87
4	hops	3.2511	3.7008	88

Table 6.7.1-33: Residues of BYI08330 + enol and the total residue of BYI08330 in grapes from USA residue trials collected at the PHI of 7 day

Trial	Crop	BYI08330 + enol (% TR)		
		BYI08330+enol	Total residue (TR)	BYI08330+enol as % TR
1	grapes	0.2058	0.3160	65
2	grapes	0.5412	0.7252	75
3	grapes	0.3693	0.4649	79
4	grapes	0.1708	0.2130	80
5	grapes	0.2069	0.2520	82
6	grapes	0.2441	0.2926	83
7	grapes	0.1362	0.2420	56
8	grapes	0.0551	0.0987	56
9	grapes	0.2561	0.3871	66
10	grapes	0.3543	0.4624	77
11	grapes	0.2370	0.2796	85
12	grapes	0.2052	0.2651	77
13	grapes	0.2979	0.4178	71
14	grapes	0.7749	1.0210	76
15	grapes	0.2971	0.3651	81

IIA 6.7.2 Proposed maximum residue levels (MRLs) and justification

The calculation of maximum residue levels (MRLs) or tolerances for plant commodities is based on the proposed residue definition for MRL-setting and enforcement purposes, which is BYI08330 plus the enol metabolite expressed as BYI08330. The relevant residue data are compiled in Chapter IIA 6.7.1, Tables 6.7.1.4 – 6.7.1.

The results from European residue trials, i.e. the residue of BYI08330 plus BYI08330-enol at the respective PHIs, were evaluated according to EU method I (based on a normal distribution of residue data) and EU method 2 (distribution free) as described in EU Guidance Document 7039/VI/95, Appendix I of directive 91/414EEC. From these evaluations European MRLs were derived and adapted to the given European MRL classes. The resulting values are called EU-MRLs. In addition to the evaluation according to the European methods, European residue data were evaluated according to the NAFTA Guidance Document for Setting Pesticide Tolerances Based on Field Trial Data (Regulatory Proposal – PRO2005-04). The results from the evaluation of European residue data according to the EU methods I and II and according to NAFTA methods are summarized in Table 6.7.2-1

Results from US residue trials, i.e. the residue of BYI08330 plus BYI08330-enol at the respective PHIs, were evaluated according to the NAFTA Guidance Document for Setting Pesticide Tolerances Based on Field Trial Data (Regulatory Proposal – PRO2005-04). The MRL drived from these evaluations is called US MRL. In addition, US residue data were evaluated according to EU methods I and II. The results obtained after the evaluation of the US residue data according to NAFTA and EU methods are summarized in Table 6.7.2-2

The MRLs obtained from European residue data after evaluation using the European models (called EU MRLs) are compared to the MRLs obtained from US residue data using the NAFTA model (called US-MRLs) (see table 6.7.2-3).

Similar MRLs for Europe and the US were obtained for citrus, lettuce, pome fruit, grape, pepper and tomatoes. In these crops residues from field trials were similar. Only slightly different MRLs were derived due to the different calculation models used in Europe and in NAFTA. For these crops a common MRL is proposed for NAFTA and Europe according to the highest value derived.

In other crops, stone fruit, cucurbits, brassica and hops, different residue results were obtained from EU and US residue trials resulting in generally higher US MRLs compared to the European MRLs. This is due to differences in the GAPs or due to the fact that US MRLs are set on crop groups. The MRLs for US crop groups are calculated using results from residue trials in different crops of this crop group, while European MRLs are set for individual crops.

In stone fruit, a US tolerance of 1.7 mg/kg was derived as group tolerance from residue results in peaches, plums and cherries. European MRLs calculated from European residue data for the individual stone fruits are 0.5 mg/kg for the peach group, 0.5 mg/kg for plums and 1 mg/kg for cherries and are, hence, clearly below the US tolerances. To avoid barriers in trade, European import tolerances are required for stone fruit imported from US to Europe. European import tolerances are calculated from US residue data in peach, plum and cherry. Based on EU-method I and II and with respect to European MRL classes import tolerances of 2 mg/kg for peaches, 1 mg/kg for plums and 3 mg/kg for cherries are

derived. To be consistent with the US MRLs a European import tolerance of 2 mg/kg is proposed for peaches, plums and cherries. The calculated tolerances for cherries were 2.33 mg/kg (EU-method I) and 2.08 mg/kg (EU-method II) and were slightly higher than the proposed harmonized tolerance. With respect to the only slightly higher values and to the residue values from US field trials of between 0.4 and 1.3 mg/kg an import tolerance of 2 mg/kg is justified.

A similar situation was found in cucurbits. A US group tolerance of 0.2 mg/kg was calculated from residues in cucumber, melon and squash. The European MRLs obtained from European residue data are 0.1 mg/kg for cucumber, and 0.05 mg/kg for melon. There is no European use in squash. To avoid trade barriers a European import tolerance for cucumbers, melons and squash imported from the US to Europe is required. Therefore, US residue data in cucumber, melon and squash are evaluated according to the European calculation models resulting in a tolerance of 0.05 mg/kg for cucumber and 0.2 mg/kg for melon and squash. To be consistent with the US tolerances a European import tolerance of 0.2 mg/kg is proposed for cucumbers, melons and squash.

For head and stem brassica a US tolerance of 2.5 mg/kg based on results from US residue trials in broccoli, cauliflower and head cabbage was calculated. European MRLs derived from European residue data are 1 mg/kg for flowering brassica (cauliflower and broccoli), 0.5 mg/kg for head brassica, 0.2 mg/kg for Brussels sprouts, and 2 mg/kg for kohlrabi. To avoid trade barriers an import tolerance is required. Using the European calculation models an import tolerance of 0.5 mg/kg for flowering brassica and of 2.0 mg/kg for head cabbage calculated from US residue data.

In hops, residues in dried cones from US trials were higher than residues in hop cones from European trials due to differences in the GAPs resulting in a US MRL of 10 mg/kg and an EU MRL of 5 mg/kg. To avoid trade barriers an import tolerance for dried hop cones imported from the US to Europe is required. The evaluation of the US residue data using the European calculation models resulted in an import tolerance of 10 mg/kg for dried hop cones.

No European registration of BYI08330 for the use in potatoes and tree nuts is envisaged. To avoid trade barriers for treated potatoes and tree nuts from US to Europe a European tolerance is required. The evaluation of US residue data using the European models resulted in tolerances of 1 mg/kg for potatoes and in 0.5 mg/kg for tree nuts. These values correspond well with the proposed US tolerances.

In the United States, no registration of BYI08330 for use in strawberries and onions is envisaged. To avoid trade barriers a US tolerance for the imported crops is required. The evaluation of European residue data using the NAFTA models resulted in a tolerance of 0.43 mg/kg for strawberries and 0.27 mg/kg for onions. Both results agree well with the proposed rounded European MRLs of 0.5 and 0.3 mg/kg.

A summary of the US and EU MRLs of import tolerances for plant commodities calculated from US or European residue data is given in Tables 6.7.2-3 to 6.7.2-5. From these data harmonized MRLs are proposed, which cover the need of both sites, Europe and the US, and facilitates the trade flow from US to Europe and vice versa. The finally proposed harmonized MRLs are included in Table 6.7.2-3.

For processed commodities no MRLs are set in Europe. The proposed US tolerances (Table 6.7.2-4) for processed commodities were calculated from residues in the raw agricultural commodities (RACs) multiplied by the processing factor obtained from US industrial processing studies.

For **animal commodities,** no US tolerances are proposed for milk, as residues found in the feeding studies were below the LOQ of the analytical method, even after feeding the animals with the 10x dose. Tolerances at the LOQ of 0.01 mg/kg are proposed for those commodities, in which no residues were found after feeding the 1x dose, and residues were found after feeding the 10x dose. Only for meat by-products other than liver a MRL of 0.02 mg/kg is proposed, because low residues of BYI08330-enol were found in the kidney of the cattle from the feeding study at the 1x dose level.
According to EU guidelines no MRLs were proposed for Europe, because residues in animal commodities are expected to be very low and a feeding study was not triggered. However, to avoid trade barriers for imports of meat of by-products from US to Europe harmonized tolerances are proposed at the level of the US tolerances (Table 6.7.2-5).

In the meantime (status September, 2011) various European t-MRLs have been set in Annex III of EC Regulation 396/2005. The current European MRLs are summarised in Table 6.7.2-6. It has to be mentioned that especially the MRLs for animal matrices are transferred Codex MRLs. When transfering the Codex MRLs the different residue definitions have not been considered. The LOQ for animal tissues, for example, should read 0.02 mg/kg instead of 0.01 mg/kg and for milk 0.01 mg/kg instead of 0.005 mg/kg.

Table 6.7.2-1: Results from MRL calculations in plant commodities according to EU methods I and II and NAFTA methods based on European residue data

USA Crop/Crop Group	Crop	Results from EU method I (mg/kg)	Results from EU method II (mg/kg)	EU MRL According to MRL classes (mg/kg)	Results from NAFTA methods (mg/kg)
Citrus	Crop group	0.28	0.34	**0.5**	0.49
Leafy Vegetables	Crop group	---	---	---	---
	Lettuce, head and leaf	3.53	3.42	**5**	9.24
Pome Fruit	Crop group	0.17	0.21	**0.3**	0.26
Stone Fruit	Crop group	---	---	---	---
	Peach/apricot/ nectarine	0.39	0.47	**0.5**	0.52
	Plum	0.43	0.46	**0.5**	0.66
	Cherry	0.71	0.78	**1**	0.80
Grape	Grape, wine and table grape	0.83	0.99	**1**	0.94
Strawberry	strawberry	0.35	0.5	**0.5**	0.43
Bulb Vegetables	Onion	0.18	0.21	**0.3**	0.27
Fruiting Vegetables	Crop group	---	---	---	---
	Tomato	0.65	0.84	**1**	0.95
	Pepper	0.71	0.94	**1**	1.11
Cucurbits	Crop Group	---	---	---	
	Cucumber	0.07	0.05	**0.1**	0.08
	Melon	0.05	0.05	**0.05**	0.06
	Squash	---	---	---	---
Brassica - Head and Stem	Crop group	---	---	---	---
	Broccoli/ Cauliflower	0.51	0.60	**1**	0.65
	Head Cabbage	0.35	0.27	**0.5**	0.38
	Brussels sprouts	0.17	0.18	**0.2**	0.17
	Kohlrabi	1.3	1.05	**2**	1.19
Leafy Brassica	Crop Group (representative crop: kale)	0.75	0.89	**1**	0.84
Legume Vegetables	Beans/peas with pod	0.76	0.84	**1**	1.8
Potato		---	---	---	---
Tree Nuts	Crop Group	---	---	---	---
Hops	Hop (dried cones)	2.95	3.63	**5**	3.63

Table 6.7.2-2: Results from MRL calculations for plant commodities according to EU methods I and II and NAFTA methods based on US residue data

USA Crop/Crop Group	Crop	Results from NAFTA methods (mg/kg)	Results from EU method I (mg/kg)	Results from EU method II (mg/kg)
Citrus	Crop group	**0.45**	0.3	0.35
Leafy Vegetables	Crop group	**4**	2.5	1.7
	Lettuce, head and leaf	See crop group	See crop group	See crop group
Pome Fruit	Crop group	**0.45**	0.3	0.3
Stone Fruit	Crop group	**1.7**	1.4	1.2
	Peach/apricot/ nectarine	**---**	---	---
	Plum	**---**	---	---
	Cherry	**---**	---	---
Grape	Grape, wine and table grape	**1.1**	0.8	0.8
Strawberry	strawberry	**---**		---
Bulb Vegetables	Onion	**---**		
Fruiting Vegetables	Crop group	**1.1**	0.8	0.5
	Tomato	**---**		---
	Pepper	**---**		---
Cucurbits	Crop Group	**0.2**	0.1	0.09
	Cucumber	(0.05)	(0.05)	(0.02)
	Melon	(0.2)	(0.15)	(0.15)
	Squash	(0.15)	(0.2)	(0.15)
Brassica - Head and Stem	Crop group	**2.5**	0.8	0.4
	Broccoli/ Cauliflower	(0.35)	(0.34)	(0.36)
	Head Cabbage	(1.92)	(1.46)	(1.14)
	Brussels sprouts	**---**	---	---
	Kohlrabi	**---**	---	---
Leafy Brassica	Crop group (representative crop: mustard green)	**16**	7	7
Legume Vegetables	Beans/peas with pod	**---**	---	---
Potato		**0.7**	0.53	0.67
Tree Nuts	Crop Group	**0.5**	0.2	0.15
Hops	Hop (dried cones)	**10**	11	10

Values in brackets are the calculated MRLs from residue data of single crops, where a MRL for the whole crop group is proüposed.

Table 6.7.2-3: European and US MRLs and import tolerances (mg/kg) for BYI08330 target crops and the proposal for harmonized MRLs

USA Crop/Crop Group	Crop	EU MRL calculated from EU residue data with EU models	US MRL calculated from US residue data with NAFTA models	EU import tolerance calculated from US residue data with EU models	US import tolerance calculated from EU residue data with NAFTA models	Harmonised MRL/ tolerance
Citrus	Crop group	0.5	0.45	---	---	**0.5**
Leafy Vegetables	Crop group US	---	4	---	---	**5**
	Lettuce, head and leaf	5	---	---	---	**5**
Pome Fruit	Crop group	0.3	0.45	---	---	**0.5**
Stone Fruit	Crop group US	---	1.7	---	---	**2**
	Peach/apricot/ nectarine	0.5	---	2	---	**2**
	Plum	0.5	---	2	---	**2**
	Cherry	1	---	3	---	**2**
Grape	Grape, wine and table grape	1	1.1	---	---	**1**
Strawberry	strawberry	0.5	No data	---	0.43	**0.5**
Bulb Vegetables	Onion	0.3	No data	---	0.27	**0.3**
Fruiting Vegetables	Crop group US	---	1.1	---	---	**1**
	Tomato	1	---	---	---	**1**
	Pepper	1	---	---	---	**1**
Cucurbits	Crop Group US	---	0.2	---	---	**0.2**
	Cucumber	0.1	---	0.05	---	**0.2**
	Melon	0.05	---	0.2	---	**0.2**
	Squash	No data	---	0.2	---	**0.2**
Brassica - Head and Stem	Crop group US	---	2.5	---	---	**3**
	Broccoli/ Cauliflower	1		0.5	---	**3**
	Head Cabbage	0.5	---	2	---	**3**
	Brussels sprouts	**0.2**	No data	---	---	---
	Kohlrabi	**2**	No data	---	---	---
Leafy Brassica	Crop Group	**1**	**16**	---	---	---
Legume Vegetables	Beans/peas with pod		No data	---	---	**1**
Potato		No data	0.7	1	---	**1**
Tree Nuts	Crop Group	No data	0.5	0.5	---	**0.5**
Hops	Hop (dried cones)		10	10	---	**10**

Proposed MRLs are given in bold numbers; --- = no value calculated/proposed;

Table 6.7.2-4: Proposed US tolerances on processed commodities

Crop	Processed Commodity	RAC HAFT (BE)[1]	Processing Factor	Residue[2]	RAC Tolerance (ppm)	Commodity Tolerance (ppm)
Citrus	**juice**	0.2318	0.08	0.019	0.500	NR
	orange oil	0.2318	16	3.709	0.500	**4**
	dry pulp	0.2318	1.3	0.301	0.500	NR
Apple	**juice**	0.3091	0.4	0.124	0.450	NR
	wet pomace	0.3091	1.9	0.587	0.450	**0.6**
Potato	**culls**	0.3586	1	0.359	0.700	NR
	processed waste	0.3586	1	0.359	0.700	NR
	flakes	0.3586	6	2.152	0.700	**2.5**
	chips	0.3586	1.3	0.466	0.700	NR
Grapes	**juice**	0.7749	0.66	0.511	1.000	NR
	raisins	0.7749	2.62	2.030	1.000	**2.5**
Plum	**prunes**	0.4671	2.2	1.028	1.700	NR
Tomato	**juice**	0.182	0.9	0.164	1.000	NR
	paste	0.182	7.5	1.365	1.000	NR
	puree	0.182	3.5	0.637	1.000	NR
	dried	0.182	12	2.184	1.000	**2.5**

[1] HAFT for combined residues of BYI08330 and BYI08330-enol, the residues included in the tolerance expression
[2] Potential (calculated) residues of BYI08330 and BYI08330-enol in processed commodity based on RAC residues and processing facto
NR = not relevant

Table 6.7.2-5: Proposed US MRLs, EU import tolerances and harmonized MRLs (mg/kg) for animal commodities

Commodity	EU MRL	US MRL	EU import tolerance	Harmonised MRL/tolerance
Cattle meat	None	0.01	0.01	**0.01**
Cattle fat	None	0.01	0.01	**0.01**
Cattle liver	None	0.01	0.01	**0.01**
Cattle meat by-products except liver	None	0.02	0.02	**0.02**
Goat meat	None	0.01	0.01	**0.01**
Goat fat	None	0.01	0.01	**0.01**
Goat liver	None	0.01	0.01	**0.01**

Goat meat by-products, except liver	None	0.02	0.02	**0.02**
Hog meat	None	0.01	0.01	**0.01**
Hog fat	None	0.01	0.01	**0.01**
Hog liver	None	0.01	0.01	**0.01**
Hog meat by-products, except liver		0.02	0.02	**0.02**
Sheep meat	None	0.01	0.01	**0.01**
Sheep fat	None	0.01	0.01	**0.01**
Sheep liver	None	0.01	0.01	**0.01**
Sheep meat by-products, except liver	None	0.02	0.02	**0.02**
Horse meat	None	0.01	0.01	**0.01**
Horse fat	None	0.01	0.01	**0.01**
Horse liver	None	0.01	0.01	**0.01**
Horse meat by-products, except liver	None	0.02	0.02	**0.02**

Table 6.7.2-6 EU MRLs for spirotetramat in plant and animal matrices (status September, 2011). The current EU residue definiton in plant matrices is spirotetramat and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, expressed as spirotetramat. The current EU residue definition in animal matrices is spirotetramat and BYI08330-enol, expressed as spirotetramat.

Code number	Groups and examples of individual products to which the MRLs apply	MRL (mg/kg)
100000	1. FRUIT FRESH OR FROZEN; NUTS	
110000	(i) Citrus fruit	1
120000	(ii) Tree nuts (shelled or unshelled)	0,5
130000	(iii) Pome fruit	1
140000	(iv) Stone fruit	3
150000	(v) Berries & small fruit	
151000	(a) Table and wine grapes	2
151010	Table grapes	2
151020	Wine grapes	2
161990	Others	0,1*
162000	(b) Inedible peel, small	
162010	Kiwi	0,3
162020	Lychee (litchi) (Pulasan, rambutan (hairy litchi), **mangosteen**)	15
63000	(c) Inedible peel, large	
163010	Avocados	0,7
163030	Mangoes	0,2
163040	Papaya	0,4
200000	2. VEGETABLES FRESH OR FROZEN	
211000	(a) Potatoes	0,8
220020	Onions (Silverskin onions)	0,3
231010	Tomatoes (Cherry tomatoes, **tree tomato,** ***Physalis*****, gojiberry, wolfberry (*Lycium barbarum and L. chinense*))	2
231020	Peppers (Chilli peppers)	2
231030	Aubergines (egg plants) (Pepino)	2
231040	Okra, lady's fingers	1
231990	Others	1
232000	(b) Cucurbits - edible peel	0,2
233000	(c) Cucurbits-inedible peel	0,2

Code number	Groups and examples of individual products to which the MRLs apply	MRL (mg/kg)
240000	(iv) Brassica vegetables	
241000	(a) Flowering brassica	7
242000	(b) Head brassica	
242010	Brussels sprouts	0,3
242020	Head cabbage (Pointed head cabbage, red cabbage, savoy cabbage, white cabbage)	2
242990	Others	0,1*
243000	(c) Leafy brassica	7
244000	(d) Kohlrabi	2
250000	(v) Leaf vegetables & fresh herbs	
251000	(a) Lettuce and other salad plants including Brassicacea	7
252000	(b) Spinach & similar (leaves)	7
253000	(c) Vine leaves (grape leaves)	0,1*
254000	(d) Water cress	7
260000	(vi) Legume vegetables (fresh)	
260010	Beans (with pods) (Green bean (french beans, snap beans), scarlet runner bean, sliciing bean, yardlong beans)	1,5
260020	Beans (without pods) (Broad beans, Flageolets, jack bean, lima bean, cowpea)	0,7
260030	Peas (with pods) (Mangetout (sugar peas, snow peas))	1,5
270000	(vii) Stem vegetables (fresh)	
270030	Celery	4
300000	3. PULSES, DRY	
300010	Beans (Broad beans, navy beans, flageolets, jack beans, lima beans, field beans, cowpeas)	1,5
300030	Peas (Chickpeas, field peas, chickling vetch)	1,5
400000	4. OILSEEDS AND OILFRUITS	
401000	(i) Oilseeds	
401070	Soya bean	3
401090	Cotton seed	0,3
700000	7. HOPS (dried) , including hop pellets and unconcentrated powder	15

Code number	Groups and examples of individual products to which the MRLs apply	MRL (mg/kg)
1000000	10. PRODUCTS OF ANIMAL ORIGIN-TERRESTRIAL ANIMALS	
1010000	(i) Meat, preparations of meat, offals, blood, animal fats fresh chilled or frozen, salted, in brine, dried or smoked or processed as flours or meals other processed products such as sausages and food preparations based on these	
1011000	(a) Swine	
1011010	Meat	0,01*
1011020	Fat free of lean meat	0,01*
1011030	Liver	0,03
1011040	Kidney	0,03
1011050	Edible offal	0,03
1011990	Others	0,01*
1012000	(b) Bovine	
1012010	Meat	0,01*
1012020	Fat	0,01*
1012030	Liver	0,03
1012040	Kidney	0,03
1012050	Edible offal	0,03
1012990	Others	0,01*
1013000	(c) Sheep	
1013010	Meat	0,01*
1013020	Fat	0,01*
1013030	Liver	0,03
1013040	Kidney	0,03
1013050	Edible offal	0,03
1013990	Others	0,01*
1014000	(d) Goat	
1014010	Meat	0,01*
1014020	Fat	0,01*
1014030	Liver	0,03
1014040	Kidney	0,03
1014050	Edible offal	0,03
1014990	Others	0,01*

Code number	Groups and examples of individual products to which the MRLs apply	MRL (mg/kg)
1015000	(e) Horses, asses, mules or hinnies	
1015010	Meat	0,01*
1015020	Fat	0,01*
1015030	Liver	0,03
1015040	Kidney	0,03
1015050	Edible offal	0,03
1015990	Others	0,01*
1016000	(f) Poultry -chicken, geese, duck, turkey and Guinea fowl-, ostrich, pigeon	0,01*
1017000	(g) Other farm animals (Rabbit, Kangaroo)	
1017010	Meat	0,01*
1017020	Fat	0,01*
1017030	Liver	0,03
1017040	Kidney	0,03
1017050	Edible offal	0,03
1017990	Others	0,01*
1020000	(ii) Milk and cream, not concentrated, nor containing added sugar or sweetening matter, butter and other fats derived from milk, cheese and curd	0,005*
1020010	Cattle	0,005*
1020020	Sheep	0,005*
1020030	Goat	0,005*
1020040	Horse	0,005*
1020990	Others	0,005*
1030000	(iii) Birds' eggs, fresh preserved or cooked Shelled eggs and egg yolks fresh, dried, cooked by steaming or boiling in water, moulded, frozen or otherwise preserved whether or not containing added sugar or sweetening matter	0,01*
1040000	(iv) Honey (Royal jelly, pollen)	0,01*
1050000	(v) Amphibians and reptiles (Frog legs, crocodiles)	0,01*
1060000	(vi) Snails	0,01*
1070000	(vii) Other terrestrial animal products	0,01*

IIA 6.8 Proposed pre-harvest intervals, re-entry or withholding periods

IIA 6.8.1 Pre-harvest interval (in days) for each relevant crop

The proposed pre-harvest intervals are given in Document D1, Intented uses supported in the EU and and in the NAFTA-zone and summareise in Table 6.8.1-1.

Table 6.8.1.1: Preharvest intervals for BYI target crops in Europe and the USA

Europe		USA	
Crop	**PHI (days)**	**Crop**	**PHIdays**
Citrus	14	Citrus	1
Lettuce	7	Pome fruit	7
Pome fruit	21	Stone fruit	7
Stone fruit	21	Tree nuts	7
Grapes	7	Leafy vegetables	3
Strawberries	3	Brassica vegetables	1
onions	7	Fruiting vegetables	1
Fruiting vegetables/cucurbits	3	Cucurbits	1
Flowering brassica	3	Potatoes	7
Brussels sprouts	3	Grapes	7
Head cabbage	3		
Leafy brassica	3		
Kohlrabi	3		
Beans	14		
Hops	14		

IIA 6.8.2 Re-entry period (in days) for livestock, to areas to be grazed

No re-enty or withholding periods are proposed.

IIA 6.8.3 Re-entry period for man to crops, buildings or spaces treated

Not applicable

IIA 6.8.4 Withholding period (in days) for animals feedingstuffs

Not applicable.

IIA 6.8.5 Waiting period between last application and sowing or planting

Not applicable

IIA 6.8.6 Waiting period between application and handling treated products

Not applicable, as residues do not present any risk.

IIA 6.8.7 Waiting period before sowing/planting succeeding crops

Not applicable, as no residues are expected in succeeding crops.

IIA 6.9 Estimation of exposure through diet and other means

The sum of BYI08330 and its metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330-enol-glucoside, expressed as BYI08330 equivalents is the proposed residue definition for dietary risk assessment in Europe and the USA.

The long-term intake through diet is compared to the proposed ADI value of 0.137 mg/kg, which was derived from long-term toxicity (IIA Point 5).
The short term intake (acute risk) is related to the ARfD of 1 mg/kg as proposed from results of acute toxicity studies in IIA Point 5.

The dietary risk assessment for **Europe** is based on the harmonized proposed MRLs in edible commodities. The MRLs are based on residues of BYI08330 plus BYI08330-enol. MRL calculations conducted with the total residue of BYI08330, however, would lead to the same MRLs. Hence, risk assessments conducted with the MRLs can be considered as worst case estimations. The European TMDI and the NESTI calculations are reported in IIA 6.9.1 and 6.9.3.

The **US dietary risk assessment** is based on the highest total residue of BYI08330 (HAFT) for each crop.
Acute exposure. The aRfD and the acute population adjusted dose (aPAD) are the same as no additional FQPA safety factor was applied. The aPAD used to calculate the acute dietary risk is 1.0 mg/kg body weight/day.
Chronic exposure estimates for BYI08330 were based on a chronic reference dose (cRfD) of 0.132 mg/kg body weight/day. This cRfD is based on a no observed adverse effect level (NOAEL) of 13.2 mg/kg body weight/day from the chronic rat toxicity study for BYI08330, applying an uncertainty factor of 100 to account for interspecies extrapolation (10X) and intraspecies variation (10X). No additional FQPA safety factor was applied; therefore, the cRfD and the chronic population adjusted dose (cPAD) are the same. The cPAD used to calculate the chronic dietary risk is 0.132 mg/kg body weight/day.

cPAD = 13.2 (mg/kg bw/day)/100 = 0.132 mg/kg bw/day

Assessments were conducted to evaluate the potential risks due to acute and chronic dietary exposure of the entire U.S. population and selected population subgroups to residues of BYI08330. These analyses cover the proposed use of BYI08330 on tuberous and corm vegetables (crop group 1C), leafy vegetables (crop group 4), brassica leafy vegetables (crop group 5), fruiting vegetables (crop group 8), cucurbit vegetables (crop group 9), citrus fruits (crop group 10), pome fruits (crop group 11), stone fruits (crop group 12), tree nuts (crop group 14), grapes, and hops as well as potential exposure from strawberries and bulb onions imported into the United States. Potential exposure from drinking water is also included in these assessments. Potential concentrations of BYI08330 residues in drinking water were determined using PRZM/EXAMS. These conservative surface water estimates were added to the

potential exposure from food. By adding drinking water estimates to DEEM-FCID the aggregate dietary (food plus drinking water) exposure and the resulting risk from BYI08330 was determined. The acute and chronic assessments were conducted using Exponent Inc.'s DEEM-FCID™ software. Consumption data used in this program were taken from USDA's CSFII, 1994-1996, 1998.

Aggregate acute and chronic dietary (food plus drinking water) assessments were conducted which included residue contributions, based on total BYI08330 crop residues (BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy, and BYI08330-enol-glucoside), from food products made from tuberous and corm vegetables (crop group 1C), leafy vegetables (crop group 4), brassica leafy vegetables (crop group 5), fruiting vegetables (crop group 8), cucurbit vegetables (crop group 9), citrus fruits (crop group 10), pome fruits (crop group 11), stone fruits (crop group 12), tree nuts (crop group 14), grapes, hops, and imported strawberries and bulb onions. Potential exposure to BYI08330 residues through drinking water was also included. The BYI08330 aggregate acute dietary analysis indicated that the most highly exposed population subgroup was children (1-2 yrs) with an exposure equal to 8.1% of the acute population adjusted dose (aPAD) at the 99.9th percentile. Acute exposure of the overall U.S. population was 3.3% of the aPAD. The BYI08330 aggregate chronic dietary analysis indicated that chronic exposure to BYI08330 residues is very low with the overall U.S. population and all population subgroups having exposure less than 1% of the cPAD.

These acute and chronic aggregate dietary exposure estimates are well below EPA's level of concern for the overall U.S. population as well as various population subgroups.

IIA 6.9.1 TMDI calculations

The TMDI was calculated according to WHO model based on GEMS/Food Consumption Cluster Diets (June 2006) and according to PSD's Ten Consumer Model based on consumption data given in a spreadsheet which can be obtained from the PSD Website. The risk assessment methodology is described in the Manual on the Submission and Evaluation of Pesticide Residue Data, 2002.

For the TMDI calculation according to both models, the proposed harmonized MRLs for individual crops or crop groups were used for a worst case calculation of residue intakes by the different population groups.

The exhaustion of the ADI calculated according to both models was very low. The ADI exhaustion calculated according to the GEMS/Food Consumption Cluster model based on the three different European Cluster diets ranged between 7 and 12 %. The calculation according to the PSD model ranged between 5 and 18% for the different consumer groups.

From these worst case calculations it can be concluded that the possible residues of BYI08330 following the recommended European uses of BYI08330 in the different crops and residues in imported crops do not impose a chronic risk to the consumer.

No consumer risk was identified by EFSA based the long term consumption of residues at the level of the European MRLs (Table 6.7.2-5) using the PRIMO Model.

Table 6.9.1-1: TMDI calculation according to the WHO Model based on GEMS/Food Consumption Cluster Diets - June 2006

Commodities	Residue level [mg/kg]	Cluster diet B		Cluster diet E		Cluster diet F	
		Food intake [g]	Residue intake [% ADI]	Food intake [g]	Residue intake [% ADI]	Food intake [g]	Residue intake [% ADI]
POTATOES	1.00	160.8	2.03	230.1	2.91	204.7	2.58
TREE NUTS	0.50	13.2	0.08	4.0	0.03	4.7	0.03
HOPS, DRY	2.20	0.1	0.00	0.3	0.01	0.1	0.00
ONION, BULB	0.30	49.5	0.19	23.2	0.09	14.6	0.06
CUCURBITS	0.20	107.5	0.27	25.3	0.06	23.2	0.06
EGG PLANT	1.00	17.5	0.22	0.8	0.01	0.4	0.01
PEPPERS	1.00	29.9	0.38	6.2	0.08	4.0	0.05
TOMATO	1.00	185.0	2.34	31.6	0.40	40.9	0.52
LETTUCE, HEAD	5.00	23.8	1.50	11.9	0.75	18.0	1.14
BRUSSELS SPROUTS	0.20	0.1	0.00	1.5	0.00	1.9	0.00
CABBAGE, SAVOY	3.00	11.7	0.44	3.2	0.12	15.0	0.57
CHINESE CABBAGE (TYPE PAK-CHOI)	1.00	2.6	0.03	0.1	0.00	1.9	0.02
CHINESE CABBAGE (TYPE PE-TSAI)	1.00	2.6	0.03	0.0	0.00	1.9	0.02
KALE	1.00	0.0	0.00	0.6	0.01	1.9	0.02
KOHLRABI	2.00	0.1	0.00	12.3	0.31	1.9	0.05
FLOWERHEAD BRASSICAS	3.00	11.1	0.42	7.7	0.29	4.0	0.15
YOUNG BEAN	1.00	0.0	0.00	0.0	0.00	0.1	0.00
GARDEN PEA (PODS)	1.00	0.9	0.01	9.7	0.12	2.0	0.03
GRAPES	1.00	128.5	1.62	107.5	1.36	44.0	0.56
STRAWBERRIES	0.50	5.0	0.03	5.2	0.03	4.1	0.03
CITRUS FRUITS	0.50	93.7	0.59	50.0	0.32	67.9	0.43
CITRUS JUICE	0.25	1.5	0.00	1.1	0.00	0.5	0.00
POME FRUITS	0.50	84.2	0.53	61.7	0.39	46.2	0.29
STONE FRUITS	2.00	44.8	1.13	27.7	0.70	10.0	0.25
WATERMELON	0.20	43.1	0.11	4.4	0.01	6.0	0.02
* WINE	0.60	76.8	0.58	68.8	0.52	25.6	0.19
MEAT(MAMMALIAN)	0.01	110.6	0.01	90.1	0.01	131.4	0.02
EDIBLE OFFAL (MAMMALIAN)	0.02	14.3	0.00	11.8	0.00	7.6	0.00
POULTRY MEAT	0.01	58.6	0.01	60.9	0.01	27.3	0.00
POULTRY, EDIBLE OFFAL OF	0.02	0.4	0.00	0.6	0.00	0.2	0.00
FAT, MAMMALIAN	0.01	10.0	0.00	11.8	0.00	3.7	0.00
CHICKEN FAT	0.01	0.1	0.00	0.4	0.00	0.1	0.00
TOTAL DIET - TMDI		**2781.2**	**12.00**	**1943.9**	**8.54**	**1681.9**	**7.10**

Table 6.9.1-2: TMDI calculation according to the PSD Ten Consumer Model

			COMMODITY INTAKES (mg/kg bw/day)

Commodity	MRL (mg/kg)	P	ADULT	INFANT	TODDLER	4-6 YEARS	7-10 YEARS
Citrus fruit	0.5		0.00196	0.00536	0.00834	0.00585	0.00466
Tree nuts	0.5		0.00022	0.00030	0.00050	0.00034	0.00029
Pome fruit	0.5		0.00147	0.00491	0.00758	0.00487	0.00392
Apricots	2		0.00074	0.00269	0.00206	0.00125	0.00083
Peaches	2		0.00273	0.00269	0.00628	0.00315	0.00235
Plums	2		0.00183	0.00097	0.00430	0.00271	0.00158
Cherries	3		0.00141	0.00428	0.00314	0.00452	0.00166
Table grapes	1		0.00132	0.00166	0.00470	0.00216	0.00259
Wine grapes	1		0.00984	0.00122	0.00089	0.00091	0.00032
Wine	1	0.6	0.00362	0.00045	0.00033	0.00033	0.00012
Strawberries	0.5		0.00030	0.00096	0.00100	0.00067	0.00045
Onions	0.3		0.00016	0.00034	0.00034	0.00028	0.00024
Tomatoes	1		0.00138	0.00183	0.00263	0.00192	0.00184
Peppers	1		0.00034	L/C	0.00081	0.00041	0.00068
Aubergines	1		0.00032	L/C	0.00153	0.00076	0.00027
Cucumbers	0.2		0.00008	0.00004	0.00048	0.00031	0.00021
Courgettes	0.2		0.00008	0.00030	0.00047	0.00026	0.00016
Melons	0.2		0.00049	0.00061	0.00105	0.00071	0.00061
Broccoli	3		0.00194	0.00345	0.00513	0.00366	0.00314
Cauliflower	3		0.00261	0.00945	0.00652	0.00502	0.00256
Brussels sprouts	0.2		0.00012	0.00047	0.00036	0.00029	0.00015
Head cabbage	3		0.00163	0.00528	0.00511	0.00379	0.00224
Chinese cabbage	1		0.00050	L/C	L/C	L/C	L/C
Kohl Rabi	2		L/C	L/C	L/C	L/C	L/C
Lettuce	5		0.00310	0.00178	0.00428	0.00344	0.00362
Beans with pods	1		0.00053	0.00121	0.00192	0.00132	0.00067
Peas with pods	1		0.00028	L/C	0.00047	0.00126	0.00023
Potatoes	0.5		0.00325	0.01114	0.00920	0.00826	0.00702
Hops (dried 0.25% of beer)	10		0.00062	L/C	L/C	L/C	L/C
Meat fat	0.01		0.00000	0.00000	0.00001	0.00000	0.00000
Meat excl. poultry & offal	0.01		0.00002	0.00004	0.00004	0.00003	0.00003
Kidney, all types	0.02		0.00001	0.00001	0.00003	0.00001	0.00000
Liver, all types	0.01		0.00000	0.00002	0.00002	0.00000	0.00000
Offal, other types	0.02		0.00001	0.00003	0.00004	0.00002	0.00002
TMDI (mg/kg bw/day)			**0.01736**	**0.02378**	**0.02088**	**0.01769**	**0.01446**
TMDI (% ADI)			**13%**	**18%**	**16%**	**13%**	**11%**

0.000000 corresponds to <0.000005 mg/kg bw/day (any value ≥0.000005 is rounded to 0.00001)
L/C Low consumption (<0.1 g/day) or low number of consumers (<4)

Table 6.9.1-2 continued

Commodity	MRL (mg/kg)	P	COMMODITY INTAKES (mg/kg bw/day) 11-14 YEARS	15-18 YEARS	VEGETA-RIAN	ELDERLY (OWN H.)	ELDERLY (RESID.)
Citrus fruit	0.5		0.00378	0.00326	0.00251	0.00183	0.00162
Tree nuts	0.5		0.00023	0.00014	0.00026	0.00014	0.00004
Pome fruit	0.5		0.00205	0.00176	0.00189	0.00131	0.00081
Apricots	2		0.00074	0.00045	0.00151	0.00087	0.00074
Peaches	2		0.00153	0.00090	0.00187	0.00187	0.00087
Plums	2		0.00058	0.00050	0.00139	0.00131	0.00042
Cherries	3		0.00214	0.00177	0.00157	0.00106	0.00024
Table grapes	1		0.00110	0.00063	0.00204	0.00133	0.00046
Wine grapes	1		0.00101	0.00353	0.00972	0.00665	0.00146
Wine	1	0.6	0.00037	0.00130	0.00358	0.00245	0.00054
Strawberries	0.5		0.00034	0.00025	0.00048	0.00051	0.00026
Onions	0.3		0.00022	0.00015	0.00022	0.00016	0.00009
Tomatoes	1		0.00108	0.00133	0.00177	0.00145	0.00134
Peppers	1		0.00032	0.00029	0.00061	0.00057	0.00019
Aubergines	1		0.00053	0.00038	0.00062	0.00041	L/C
Cucumbers	0.2		0.00010	0.00009	0.00011	0.00009	0.00004
Courgettes	0.2		0.00008	0.00008	0.00011	0.00010	0.00009
Melons	0.2		0.00043	0.00055	0.00051	0.00060	0.00020
Broccoli	3		0.00216	0.00189	0.00205	0.00287	0.00104
Cauliflower	3		0.00223	0.00256	0.00366	0.00340	0.00200
Brussels sprouts	0.2		0.00019	0.00013	0.00016	0.00019	0.00009
Head cabbage	3		0.00215	0.00159	0.00227	0.00347	0.00221
Chinese cabbage	1		L/C	L/C	0.00050	0.00035	L/C
Kohl Rabi	2		L/C	L/C	L/C	L/C	L/C
Lettuce	5		0.00202	0.00221	0.00352	0.00268	0.00137
Beans with pods	1		0.00036	0.00070	0.00040	0.00072	0.00031
Peas with pods	2		0.00029	0.00017	0.00025	0.00051	L/C
Potatoes	1		0.00534	0.00455	0.00354	0.00328	0.00318
Hops (dried 0.25% of beer)	80		0.00046	0.00055	0.00052	0.00062	0.00047
Meat fat	0.01		0.00000	0.00000	0.00000	0.00000	0.00000
Meat excl. poultry & offal	0.02		0.00002	0.00002	0.00000	0.00002	0.00002
Kidney, all types	0.02		0.00000	0.00001	L/C	0.00001	0.00001
Liver, all types	0.01		0.00001	0.00000	L/C	0.00001	0.00000
Offal, other types	0.02		0.00002	0.00001	0.00000	0.00002	0.00001
TMDI (mg/kg bw/day)			**0.01094**	**0.01042**	**0.01843**	**0.01365**	**0.00701**
TMDI (% ADI)			**8%**	**8%**	**14%**	**10%**	**5%**

0.00000 corresponds to <0.000005 mg/kg bw/day (any value ≥0.000005 is rounded to 0.00001);
L/C Low consumption (<0.1 g/day) or low number of consumers (<4)

IIA 6.9.2 NEDI calculations

The TMDI calculations show that residues at the level of the proposed MRLs do not impose a chronic risk to the consumer. Therefore a refined risk assessment using the STMR instead of the MRL and considering processing factors is not considered necessary.

IIA 6.9.3 NESTI calculations

NESTI calculations were conducted according to PSD´s acute intake guidance based on intake data of 10 consumer groups. The risk assessment methodology is described in the Manual on the Submission and Evaluation of Pesticide Residue Data, 2002. The proposed harmonized MRLs were used instead of the highest residue for the NESTI calculations, representing a worst case situation. The results were compared to the ARfD of 1.0 mg/kg bw/day, proposed in Chapter IIA 5). The acute intake results (NESTI expressed as mg/kg bw/days and the % of ARfD) for the 3 consumer groups with the highest intake for each commodity are summarised in Table 6.9.3-1.
The so-calculated acute intake (NESTI) of BYI08330 residues did not exceed 18 % of the ARfD. Hence, residues of BYI08330 in edible commodities do not impose an acute risk to the consumer.

No consumer risk was identified by EFSA based the short term consumption of residues at the level of the European MRLs (Table 6.7.2-5) using the PRIMO Model.

Table 6.9.3-1: Results from NESTI calculations for the 3 consumer groups with the highest intakes

Commodity	MRL	P	Consumer group 1			Consumer group 2			Consumer group 3		
				NESTI	% ARfD		NESTI	% ARfD		NESTI	% ARfD
Grapefruit	0.50		toddler	0.03916	3.9	4-6 year old child	0.02913	2.9	7-10 year old child	0.02769	2.8
Lemons	0.50		infant	0.00966	1.0	toddler	0.00430	0.4	4-6 year old child	0.00262	0.3
Limes	0.50		toddler	0.01007	1.0	4-6 year old child	0.00415	0.4	7-10 year old child	0.00390	0.4
Mandarins	0.50		toddler	0.02782	2.8	4-6 year old child	0.01903	1.9	7-10 year old child	0.01430	1.4
Oranges	0.50		infant	0.06631	6.6	toddler	0.04970	5.0	4-6 year old child	0.03588	3.6
Almonds	0.50		infant	0.00101	0.1	4-6 year old child	0.00049	0.0	toddler	0.00030	0.0
Brazil nuts	0.50		4-6 year old child	0.00043	0.0	adult	0.00034	0.0	vegetarian	0.00031	0.0
Cashew nuts	0.50		toddler	0.00086	0.1	4-6 year old child	0.00061	0.1	adult	0.00050	0.0
Chestnuts	0.50		4-6 year old child	0.00210	0.2	vegetarian	0.00091	0.1	adult	0.00051	0.1
Coconuts	0.50		vegetarian	0.00086	0.1	4-6 year old child	0.00053	0.1	11-14 y. old child	0.00041	0.0
Hazelnuts	0.50		toddler	0.00030	0.0	4-6 year old child	0.00022	0.0	vegetarian	0.00020	0.0
Pecan nuts	0.50		7-10 y. old child	0.00114	0.1	11-14 y. old child	0.00027	0.0	Elderly ownhome	0.00018	0.0
Pistachios	0.50		adult	0.00134	0.1	toddler	0.00110	0.1	7-10 year old child	0.00086	0.1
Walnuts	0.50		toddler	0.00076	0.1	15-18 y. old child	0.00034	0.0	vegetarian	0.00034	0.0
Apples	0.50		infant	0.04898	4.9	toddler	0.03602	3.6	4-6 year old child	0.02787	2.8
Pears	0.50		toddler	0.03830	3.8	infant	0.03621	3.6	4-6 year old child	0.02715	2.7
Apricots	2.00		infant	0.03862	3.9	toddler	0.03822	3.8	4-6 year old child	0.03155	3.2
Peaches	2.00		toddler	0.11008	11.0	4-6 year old child	0.07677	7.7	infant	0.06887	6.9
Plums	2.00		toddler	0.05912	5.9	4-6 year old child	0.04425	4.4	infant	0.04329	4.3
Cherries	3.00		4-6 year old child	0.01626	1.6	11-14 y. old child	0.01496	1.5	toddler	0.01332	1.3
Onions	0.30		infant	0.00676	0.7	4-6 year old child	0.00576	0.6	7-10 year old child	0.00542	0.5
canned/bottled Potatoes	1.00		infant	0.09172	9.2	toddler	0.05986	6.0	4-6 year old child	0.05689	5.7
Potato chips	1.00		toddler	0.09124	9.1	4-6 year old child	0.07620	7.6	infant	0.06879	6.9
dried (instant) Potatoes	1.00	0.0	infant	0.02090	2.1	toddler	0.01270	1.3	11-14 y. old child	0.01216	1.2
boiled Potatoes	1.00		infant	0.14692	14.7	toddler	0.08738	8.7	4-6 year old child	0.07604	7.6
Potatoes	1.00		infant	0.15376	15.4	toddler	0.10632	10.6	4-6 year old child	0.08009	8.0
jacket Potatoes	1.00		toddler	0.10374	10.4	4-6 year old child	0.07698	7.7	7-10 year old child	0.05286	5.3

MRL = proposed harmonised MRL in mg/kg, P = processing factor

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Table 6.9.3 continued

Commodity	MRL	P	Consumer group 1			Consumer group 2			Consumer group 3		
				NESTI	% ARfD		NESTI	% ARfD		NESTI	% ARfD
Wine	1.00	0.6	adult	0.00873	0.9	vegetarian	0.00787	0.8	15.18 y. old child	0.00698	0.7
Wine grapes	1.00		adult	0.02372	2.4	vegetarian	0.02138	2.1	15.18 y. old child	0.01895	1.9
Table grapes	1.00		toddler	0.06103	6.1	4-6 year old child	0.05041	5.0	7-10 year old child	0.04639	4.6
Strawberries	0.50		4-6 year old child	0.00347	0.3	toddler	0.00245	0.2	7-10 year old child	0.00242	0.2
Tomatoes	1.00		infant	0.04828	4.8	toddler	0.04141	4.1	4-6 year old child	0.03109	3.1
Peppers	1.00		7-10 y. old child	0.01642	1.6	vegetarian	0.01634	1.6	toddler	0.01632	1.6
Aubergines	1.00		4-6 year old child	0.02500	2.5	toddler	0.02148	2.1	vegetarian	0.01772	1.8
Cucumbers	0.20		toddler	0.00390	0.4	4-6 year old child	0.00470	0.5	7-10 year old child	0.00354	0.4
Courgettes	0.20		toddler	0.00930	0.9	4-6 year old child	0.00800	0.8	infant	0.00634	0.6
Melons	0.20		4-6 year old child	0.01662	1.7	7-10 year old child	0.01463	1.5	infant	0.01460	1.5
Broccoli	3.00		4-6 year old child	0.07405	7.4	7-10 year old child	0.06728	6.7	toddler	0.06279	6.3
Cauliflower	3.00		infant	0.17379	17.4	4-6 year old child	0.10434	10.4	toddler	0.09941	9.9
Brussels sprouts	3.00		infant	0.02190	2.2	4-6 year old child	0.02106	2.1	toddler	0.01394	1.4
Head cabbage	3.00		infant	0.12914	12.9	4-6 year old child	0.09644	9.6	toddler	0.07634	7.6
Chinese cabbage	1.00		15-18 y. old child	0.02531	2.5	7-10 year old child	0.02223	2.2	adult	0.01545	1.5
Kohl Rabi	2.00		11-14 y. old child	0.02680	2.7		0.00000	0.0		0.00000	0.0
Lettuce	5.00		4-6 year old child	0.08902	8.9	7-10 year old child	0.06723	6.7	infant	0.06322	6.3
Beans with pods	1.00		infant	0.00501	0.5	toddler	0.00500	0.5	4-6 year old child	0.00374	0.4
Peas with pods	1.00		4-6 year old child	0.00345	0.3	toddler	0.00224	0.2	adult	0.00162	0.2
Hops (dried 0.25% of beer)	10.0		vegetarian	0.00183	0.2	adult	0.00170	0.2	15-18 y. old child	0.00160	0.2
Meat fat	0.01		infant	0.00002	0.0	4-6 year old child	0.00002	0.0	toddler	0.00002	0.0
Meat excl. poultry & offal	0.01		infant	0.00012	0.0	toddler	0.00010	0.0	4-6 year old child	0.00009	0.0
All types of kidney	0.02		toddler	0.00008	0.0	4-6 year old child	0.00005	0.0	infant	0.00005	0.0
All types of liver	0.01		infant	0.00008	0.0	toddler	0.00007	0.0	11-14 y. old child	0.00004	0.0
Other types of offal	0.02		infant	0.00015	0.0	toddler	0.00014	0.0	4-6 year old child	0.00011	0.0

MRL = proposed harmonised MRL in mg/kg, P = processing factor

IIA 6.10 Other/special studies

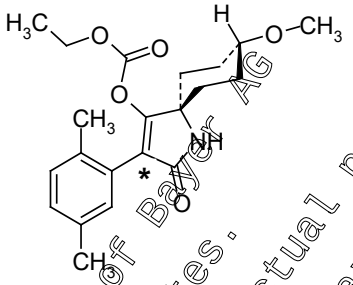
No further "other/special" studies have been considered to be necessary or triggered.

IIA 6.11 Summary and evaluation of residue behaviour and reasonable grounds

Plant metabolism

Target crops

The metabolism of BYI08330 was investigated in apple, cotton, lettuce, and potato with the azaspirodecenyl-3-^{14}C label.



BYI08330 was applied to the plants by spraying. Unchanged parent compound was the major residue in apple fruits and leaves, cotton lint, lettuce, and potato leaves. BYI08330-enol was the most prominent compound in cotton seeds and potato tubers. Significant percentages (> 10% of TRR) of BYI08330-enol-glc, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy were detected in at least one RAC of the metabolism studies.

The structures and chemical names of the active substance and of all metabolites are summarised in the list of metabolites which is a part of the Annex II dossier. This list gives an overview on metabolites and where they were identified (e.g. in sprayed target crops, confined rotational crops, rat, goat, laying hen or environmental fate studies). Individual quantifications of BYI08330 and of metabolites are given in tables in section 6.2.1.

The parent compound BYI08330 and the metabolites BYI08330-enol, BYI08330-enol-glc, BYI08330-ketohydroxy, and BYI08330-mono-hydroxy are proposed as relevant residue for dietary risk assessment and were included in the plant residue method.

Succeeding crops (confined rotational crops)

The metabolism of BYI08330 was also investigated in confined rotational crops (spring wheat, Swiss chard and turnips) using the same radiolabel as for the target plant metabolism studies. The metabolism in rotational crops was investigated following spray application of BYI08330 onto bare soil (day 0) with an application rate of 406 g/ha. Crops of the first, second and third rotation were sown at day 30, day 135 and day 260, respectively. Representative immature and mature plant samples were analysed. The Total Radioactive Residues (TRRs) were highest in wheat straw of the first rotation(0.998 mg/kg) followed by wheat hay (0.384 mg/kg), turnip leaves (0.123 mg/kg), Swiss chard (0.078 mg/kg), wheat grain (0.026 mg/kg), wheat forage (0.024 mg/kg), and turnip roots (0.021 mg/kg). A significant decline of TRRs from the first to the third rotation was observed in all RACs. Only wheat hay and wheat straw showed residues > 0.01 mg a.i. equiv/kg in the third rotation. The lowest residues were generally detected in the edible matrices wheat grain and turnip roots, followed by Swiss chard.

Parent compound could not be detected in any sample. Significant metabolites (> 10% of the TRR) in the first and second rotation were: BYI08330-ketohydroxy, BYI08330-desmethyl-ketohydroxy-Glc (two isomers), BYI08330-desmethyl-ketohydroxy-Glc-MA (two isomers), BYI08330-desmethyl-di-hydroxy-Glc,BYI08330-desmethyl-di-hydroxy-Glc-MA, and BYI08330-di-hydroxy. Other identified metabolites were of minor importance.

Since a major part of the residues were represented by conjugates, plant extracts were subjected to acidic hydrolysis to cleave the conjugates and to simplify the metabolic profiles for analysis of residues. BYI08330-desmethyl-di-hydroxy, BYI08330-ketohydroxy-alcohol, and BYI08330-desmethyl-ketohydroxy were identified as the major constituents of the residues after hydrolysis.

The residue analytical method for rotated crops quantified the parent compound BYI08330 and the metabolite BYI08330-ketohydroxy by direct analysis of extracts. The compounds BYI08330-desmethyl-di-hydroxy, BYI08330-ketohydroxy-alcohol, and BYI08330-desmethyl-ketohydroxy were determined after acidic hydrolysis.

Animal metabolism

The metabolism of BYI08330 was investigated in the rat (described in section 3 point 5), laying hen and goat using the same radiolabel as for the plant metabolism studies.
Laying hens were dosed for 14 consecutive days with 1.01 mg a.i./kg bw (12.86 ppm in the diet) and sacrificed 24 hours after the last administration. A plateau level of residues in the eggs was reached after ca. 7 days. TRR values in eggs and edible materials were very low in the range of 0.003 to 0.017 mg/kg. Despite the very low TRR values, high rates for extraction and identification were achieved.
No parent compound could be detected in any sample. BYI08330-enol was the predominant component of the residues in eggs, muscle, and liver accounting for 50 – 84 % of the total radioactive residue in these materials. The most prominent metabolite (57% of TRR) detected in fat at a very low absolute level of 0.002 mg/kg was characterised as a conjugate. BYI08330-enol-GA was a significant metabolite in liver and was included in the animal residue method. Individual quantifications of BYI08330 related residues are given in tables in section 6.2.2 (poultry).

The nature of residues in milk and foodstuff originating from ruminants was investigated with a lactating goat. The goat was dosed for four consecutive days with 2.22 mg a.i./kg bw (73.03 ppm in the diet) and sacrificed 24 hours after the last administration.
A plateau level of residues in milk was reached within the study period. TRR values in milk and edible materials were low in the range of 0.003 to 0.184 mg/kg. Despite the very low TRR values, high rates for extraction and identification were achieved.
No parent compound could be detected in any sample. In milk, muscle, fat, and kidney, BYI08330-enol was the predominant component of the residues accounting for 49 – 78 % of the total radioactive residue. BYI08330-enol-GA was the predominant compound in liver (37 % of TRR) and was also detected in relevant portions in milk (24 % of TRR), fat (19 % of TRR), and kidney (14 % of TRR). Other metabolites were only detected at low levels (< 10 % of TRR) in foodstuff originating from ruminants. Individual quantifications of BYI08330 related residues are given in tables in section 6.2.3 (goat).

Parent compound BYI08330 as well as the metabolites BYI08330-enol and BYI08330-enol-GA are proposed as relevant residue for dietary risk assessment and were included in the animal residue method.

Supervised residue trials were conducted in Europe and the USA to support the use of BYI08330 as a spray application in citrus, lettuce, pome fruit, stone fruit, grapes, strawberries, brassica vegetables, fruiting vegetables and cucurbits, beans, onions and hops in Europe and in citrus, leafy vegetables, pome

fruit, stone fruit, tree nuts, grapes, fruiting vegetables and cucurbits, brassica vegetables, potatoes and hops in the USA.

The **deep freezer storage stability** of BYI08330, BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside was investigated in tomato fruit and paste, potato tuber, climbing French beans, lettuce, almond nutmeat, orange juice and prunes. The storage period was 5 months for orange juice and prunes, 12 months for tomato paste and 18 month for all other commodities. The total residue of BYI08330 (the sum of BYI08330 and its 4 metabolites) and BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside were the stable during deep freezer storage for the tested periods in all matrices. Residues of BYI08330-enol were stable in tomato fruit and paste and in almond nutmeat. In beans, lettuce and potato tuber a small part of the BYI08330 (9-27 %) was degraded to BYI08330-ketohydroxy during storage at -18°C for 18 months.

As **relevant residue in plants for enforcement and MRL setting** the sum of BYI08330 and BYI08330-enol expressed as BYI08330 was proposed by BCS. In the meantime (status September 2011) a harmonised European and NAFTA residue definition for enforcement of plant matrices has been derived: “Sum of spirotetramat (BYI08330) and its 4 metabolites BYI08330-enol, BYI08330-ketohydroxy, BYI08330-monohydroxy and BYI08330-enol-glucoside, espressed as spirotetramat MRLs had been proposed by BCS (KIIA Table 7.6.2-1 - 6.7.2-4) for the intended target crops, considering the uses in Europe and in the USA. Several MRLs for plant commodities have been published in Annex III of EC Regulation 396/2005. Table 6.7.2-6 reflects the status of September, 2011.

A cattle feeding study showed that residues in animal commodities are very low. As **relevant residue for enforcement and MRL setting in animal matrices** BCS had proposed BYI08330-enol. MRLs at the LOQ of the analytical method have been proposed for animal commodities, in which no residues were found in the feeding study in animals from the 10x overdose group. Only for kidney a MRL of 0.02 mg/kg was proposed. The proposed MRLs are summarized in Table 6.7.2-5. In the meantime a harmonised residue definition in EU and NAFTA for spirotetramat in animal matrices has been derived: “Sum of spirotetramat and BYI08330-enol, expressed as spirotetramat”. MRLs for animal commodities have been published in Annex III of EC Regulation 396/2005. Table 6.7.2-6 reflects the status of September, 2011.

Results of the confined **rotational crop** study showed that no residues of the individual compounds are to be expected in edible parts of field crops. No field rotational crop studies were deemed necessary according to European Guidelines.
Residues in the feed items, wheat hay and straw, exceeded 10% of the TRR. Therefore limited rotational crops studies in the field were conducted in the USA. In these trials all individual BYI08330 analyte residues were less than the LOQ. The results support an ‘immediate’ or 30-day plant back interval for all rotational crops in the USA following the use of BYI08330 on a target crop.

An acute reference dose (ARfD) of 1 mg/kg and an acceptable daily intake (ADI) of 0.132 mg/kg was derived for BYI08330 from results of acute and chronic toxicity testing.
The calculation of the theortical maximum daily intake (TMDI) was perormed according to the GEMS/Food Consumption Cluster Diet (2006) and the PSD Ten Consumer Model (2006), using residues levels in the different crops at the proposed MRLs. Depending on the model used and on the

consumer group the estimated worst case intake of residues of BYI08330 ranged between 5 and 18 % of the ADI.
The national estimated short term intake (NESTI) was calculated according to PSD´s acute intake guidance based on intake data of 10 consumer groups using residue levels at the respective MRLs. The potential intake of BYI08330 residues did not exceed 18 % of the ARfD for any crop and consumer group.

No acute or chronic dietary risk for residues of spirotetramat at the level of the existing MRLs was identified by EFSA using the PRIMO model.

For the US, assessments were conducted to evaluate the potential risks due to acute and chronic dietary exposure of the entire U.S. population and selected population subgroups to residues of BYI08330.
By adding drinking water estimates based on PRZM/EXAMS calculations to DEEM-FCID the aggregate dietary (food plus drinking water) exposure and the resulting risk from BYI08330 was determined. The acute and chronic assessments were conducted using Exponent Inc.'s DEEM-FCID™ software. Consumption data used in this program were taken from USDA's CSFII, 1994-1996, 1998.
The BYI08330 aggregate acute dietary analysis indicated that the most highly exposed population subgroup was children (1-2 yrs) with an exposure equal to 8.1% of the acute population adjusted dose (aPAD) at the 99.9th percentile. Acute exposure of the overall U.S. population was 3.3% of the aPAD.
The BYI08330 aggregate chronic dietary analysis indicated that chronic exposure to BYI08330 residues is very low with the overall U.S. population and all population subgroups having exposure less than 1% of the cPAD.

Hence, residues of BYI08330 in edible commodities are not expected to impose an acute or chronic risk to the consumer.

IIA 6.11.2 Reasonable grounds in support of the petition

Bayer CropScience is requesting registration of BYI08330 on pome fruit, stone fruit, citrus, grapes, hops, potatoes, cucurbit vegetables and melons, fruiting vegetables and leafy vegetables (non-brassica and brassica) in the USA and on citrus, lettuce, pome fruit, stone fruit, grapes, strawberries, brassica vegetables, fruiting vegetables and cucurbits, beans, onions and hops in Europe. To support this registration Bayer CropScience has evaluated the risk associated with registration on these crops. The hazard of the compound was assessed by the conduct of toxicology studies with BYI08330 (acute, short-term and chronic) as well as selected toxicology studies with significant metabolite. Exposure to BYI08330 residues was evaluated by the conduct of plant and animal metabolism studies to define the residues of concern followed by the conduct of residue and feeding studies to define the magnitude of residue in food and feed items.

Acute and chronic dietary exposure assessments have shown that total human dietary exposure to BYI08330 consumes only a small portion of the acute and chronic reference doses even when considering infants and children. Occupational exposure assessments have shown acceptable Margins of Exposure for all use practices.

Therefore, there is reasonable certainty that no harm will result from the use of BYI08330 when it is used according to the label. Adequate MRLs have been proposed for all food and feed items and Bayer CropScience requests establishment of these MRLs.