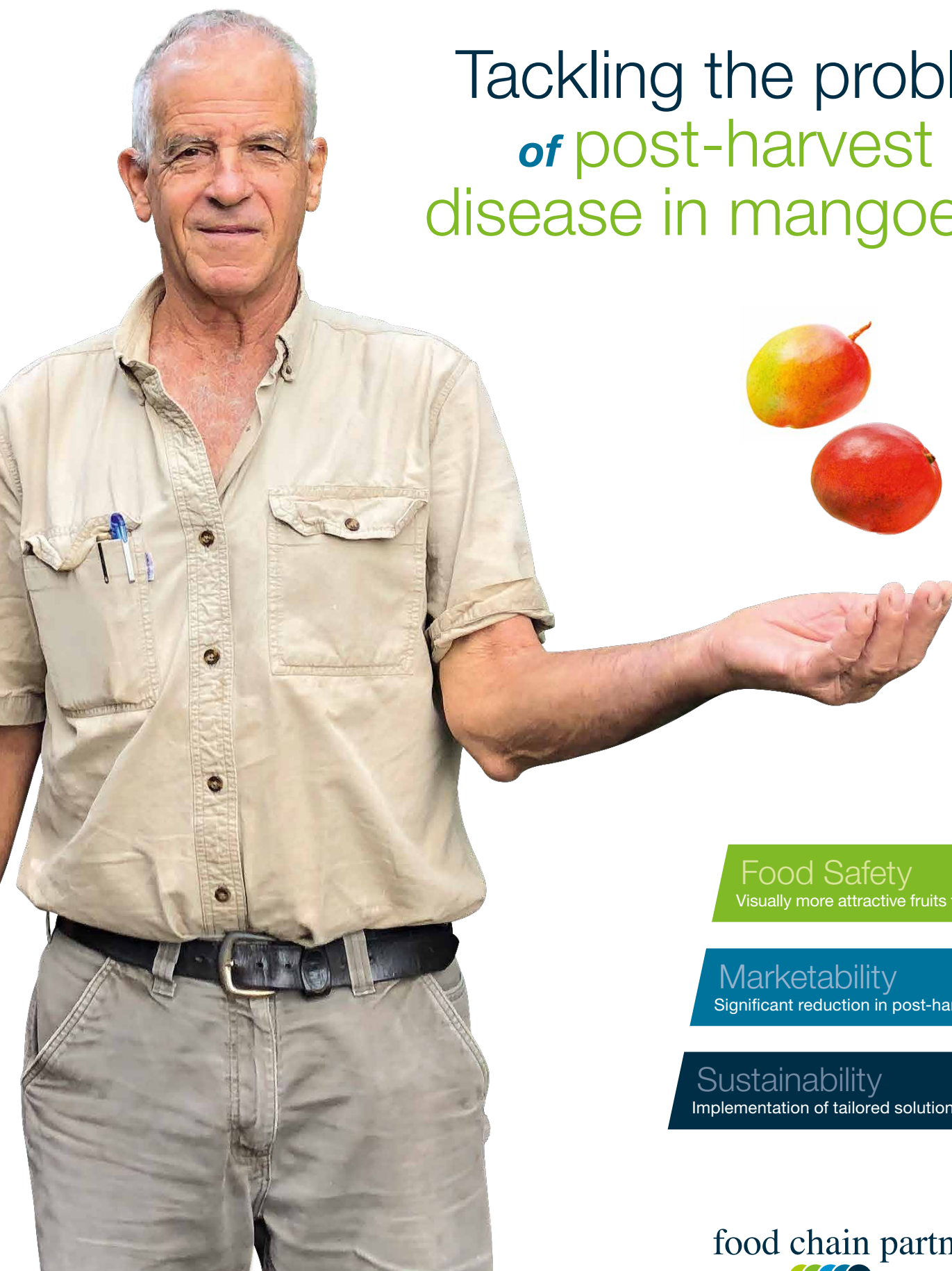




Tackling the problem *of* post-harvest disease in mangoes



Food Safety

Visually more attractive fruits for consumers

Marketability

Significant reduction in post-harvest losses

Sustainability

Implementation of tailored solutions

food chain partnership



What was *the market situation?*

In Israel, mangoes, are cultivated on approximately 2,000–2,250 hectares. The scope of the orchards are increasing by 100–125 hectares per year. The average yield is 25–30 tons per hectare (the world's highest). Israel's mango industry is mainly based on the varieties Omer, Tali, Shelly, Maya, Kent, Keitt, and King David. 50–60% of the crop is exported, mainly to the EU.*

During storage, stem-end rot (SER) may develop, which reduces the quality of the fruit and can result in up to 40% of the fresh produce being lost. Bakker Barendrecht, a fruit and veg distributor and importer of Israeli mangoes, contacted Bayer for assistance in tackling the problem that mangoes coming from Israel were very quickly developing a post-harvest disease both in storage and on the shelf.

*(Credits to Cliff Love, mango consultant, Israel MOA Field Extension Services)





Challenges:

- Gap in current post-harvest protocol for prevention of post-harvest diseases
- Strong pressure from the food value chain to decrease residue levels
- Bayer innovative mango solution not yet available in Israel



Solutions:

- Optimization of pre-harvest crop protection spray program to prevent the development of fungal infections on the flowers (powdery mildew and latent fungi) that otherwise develop on mangoes during post-harvest/storage
- Use of biological products in combination with chemical products applied well before harvest time
- Applied for Global MRL for Fluopyram in mangoes



Benefits:

- Good efficacy of biological product Serenade® ASO in controlling powdery mildew and prevention of post-harvest diseases – now the preferred product for mango growers in Israel
- No residues when using Serenade® ASO, + 30 % higher yields

“The strict food safety demands from the retailer Albert Heijn meant that at UMS, as one of their leading suppliers of fresh produce from Israel, we were constantly adjusting the dosage of post-harvest treatments for mangoes to a point that started to put shelf-life at high risk. The combined efforts of Bakker, UMS and Bayer, and several tests with the growers accompanied by Volcani Institute researchers resulted in a new improved protocol and substances to overcome the limitations and to preserve cleaner fruit for customers.”

Raz Gelbart, UMS



UMS 

Aitan

Bakker





What were *the challenges?*

The first challenge was to define the exact nature of the post-harvest disease: Anthracnose, Alternaria, or stem-end rot (complex of a few fungi). Mangoes were being treated for post-harvest diseases at the packing houses using a locally developed (at Volcani research institute) protocol, which is now threatened with an EU ban. However, since mangoes are, relatively speaking, a minor crop, the stakeholders' resources were limited and input from Bayer was required, in particular with a view to developing a customized solution featuring Serenade® and Luna® Tranquility. An additional challenge came from the food chain with the demand for reducing residue levels.

In several publications it was reported that most of the pathogenic fungi penetrate during the flowering stage and colonize the stem, stay latent (do not cause any visible symptoms) up to ripening, and cause stem-end rot. Last but not least, the project had a high degree of complexity because of the many stakeholders involved, e.g. growers, the export company UMS, the import company Bakker Barendrecht, traders, the Volcani Research Institute (Dr. Noam Alkan), and food chain managers from companies in EU member states.

What was *the solution?*

The initial solution was 1–2 spray applications of Serenade® ASO during the flowering period to treat powdery mildew and prevent post-harvest diseases. The final spray application occurred at least a week before harvest. An additional solution is currently under

development: spraying Luna® Tranquility in alternation with Serenade® ASO at the flowering stage and dipping the fruit in Serenade® ASO post-harvest, to achieve better shelf life and control both powdery mildew and stem-end rot.



“It is fascinating to be part of a project like this, involving so many different players. Throughout the year, we had several meetings to coordinate and agree on the plan. The excellent communication, common targets, and cooperation made this project a huge success. We even ended up generating new knowledge for Bayer as an extra added value.”

Yasmin Sagiv, Field Marketing Manager, Bayer Israel



What did *we achieve?*

Spraying the mangoes with Serenade® ASO during flowering prevented powdery mildew and significantly reduced or delayed post-harvest disease development from latent pathogens. Additionally, the use of Serenade® ASO to prevent these two diseases increased yields by 30–50% compared to the standard treatment for powdery mildew. This last phenomenon is currently being researched at the Volcani Center by Dr. Noam Alkan.

About Food Chain Partnership

Consumers are becoming increasingly conscious of the need for healthy nutrition. Food Chain Partnerships help to supply consumers with high-quality fresh produce, which forms the basis of a healthy diet. But such partnerships can only succeed if they involve every player in the food chain – from the farmer and processor to the exporter or importer and retailer. The Crop Science Division of Bayer has the global experience and cutting-edge expertise to create a successful partnership at every level.



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