



Farmer Voice

supported by Bayer

2024 SUMMARY OF RESULTS

The Rationale

The world needs farmers to survive. That's the bottom line. Their work and the harvests that farmers produce are foundational to the global economy. Without farmers, there would be no food.

So as society, shouldn't we be listening to what they have to say?

This is why in 2023, Bayer set out to explore the sentiments of farmers and their thoughts around the challenges, opportunities and hopes for the future, commissioning the Farmer Voice survey across eight countries worldwide. The depth and value of insights motivated us to do it again this year. We tracked many of the themes that emerged in last year's study but sought to better understand how farmers are adapting their work in the face of rapid changes in weather and technology.

The voice of the farmer is an important one. With big challenges ahead we need to continue to listen and learn from them.



Farmer Voice Survey Methodology

- ✓ The Farmer Voice survey gathered insights from over 2,000 farmers across Australia, Brazil, China, Germany, India, Kenya, Ukraine, and the United States.
- ✓ Participants were randomly selected from each market, with the objective to obtain a representative sample covering accurately the diversity of crop farmer profiles. Each country is represented with an equal weight in the global results.
- ✓ In line with market research best practices, respondents were unaware that the survey was being conducted on Bayer's behalf so as to not bias their answers.
- ✓ The interviews were conducted between June and July 2024.
- ✓ The survey was commissioned by Bayer and independently conducted by Kynetec, a global leader in data, analytics and insights in agriculture, animal health and nutrition. The final report was produced in collaboration with Kekst CNC, a global strategic communications firm.



Key Findings

1.

Farming is a **challenging business** due to price and weather volatility and political pressures

2.

Farmers see **digital technologies** as a way to tackle challenges and improve their farms, but there are barriers to overcome

3.

Farmers harness **regenerative agriculture** practices to improve soil health and yields

4.

Farmers believe their work is **critical to society** and want to be heard and recognized for their contributions





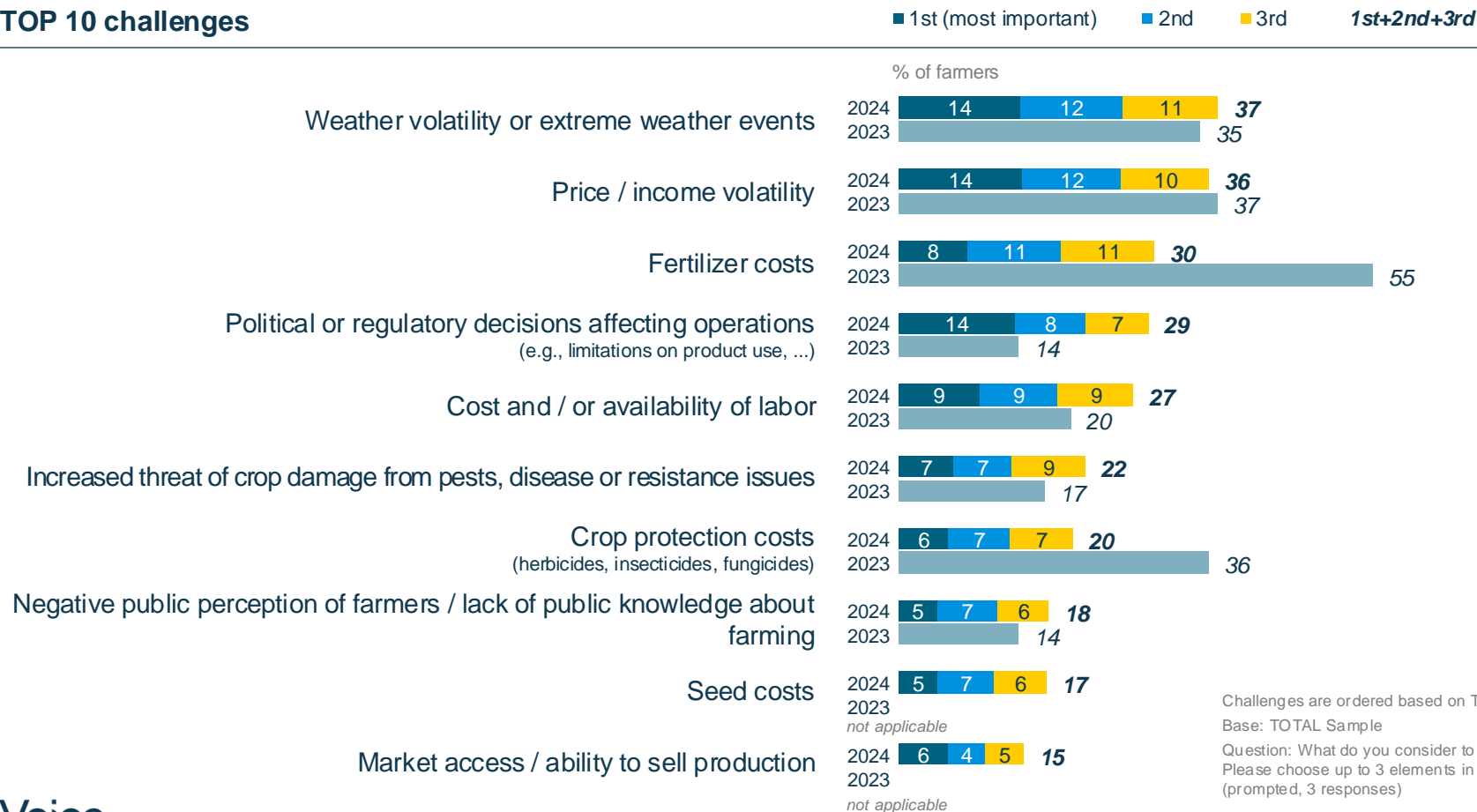
Farming is a challenging business due to price and weather volatility and political pressures



Political and regulatory decisions have grown significantly as a top-3 challenge

Weather, price and income volatility remain leading near-term challenges, while fertilizer and crop protection costs have become less challenging

TOP 10 challenges



Challenges are ordered based on TOTAL 2024 % 1st+2nd+3rd important

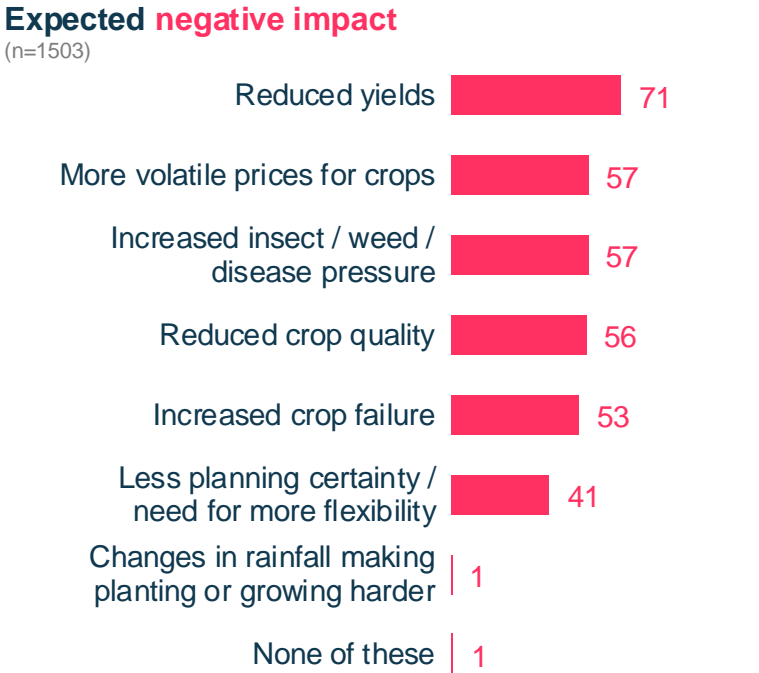
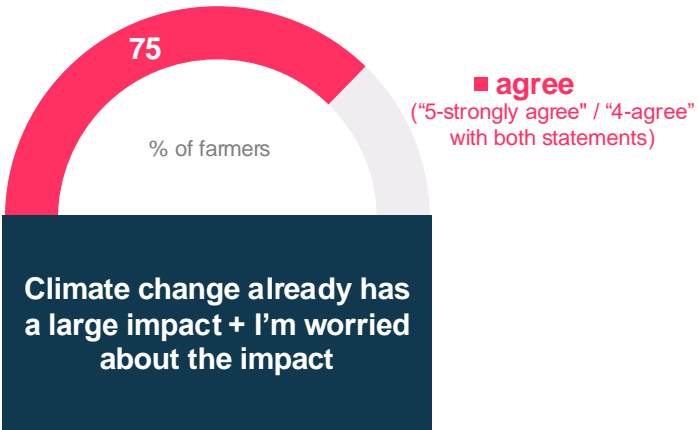
Base: TOTAL Sample

Question: What do you consider to be the 3 main challenges on your farm for the next 3 years? Please choose up to 3 elements in order of importance, starting with the most important. (prompted, 3 responses)



Three quarters of farmers are experiencing or are worried about climate change impacts

Many farmers have seen revenue loss due to weather events and expect climate change to negatively affect yields and quality, create more volatile prices for their crop, and increase insect, weed and disease pressures



Base: TOTAL Sample (n=2015); Questions:

- To what extent do you agree with the following statements? (prompted, 5-point scale)
- With changing weather patterns in future years, what negative impacts do you expect to see on your farm, if any? Any others? (prompted, multiple response)



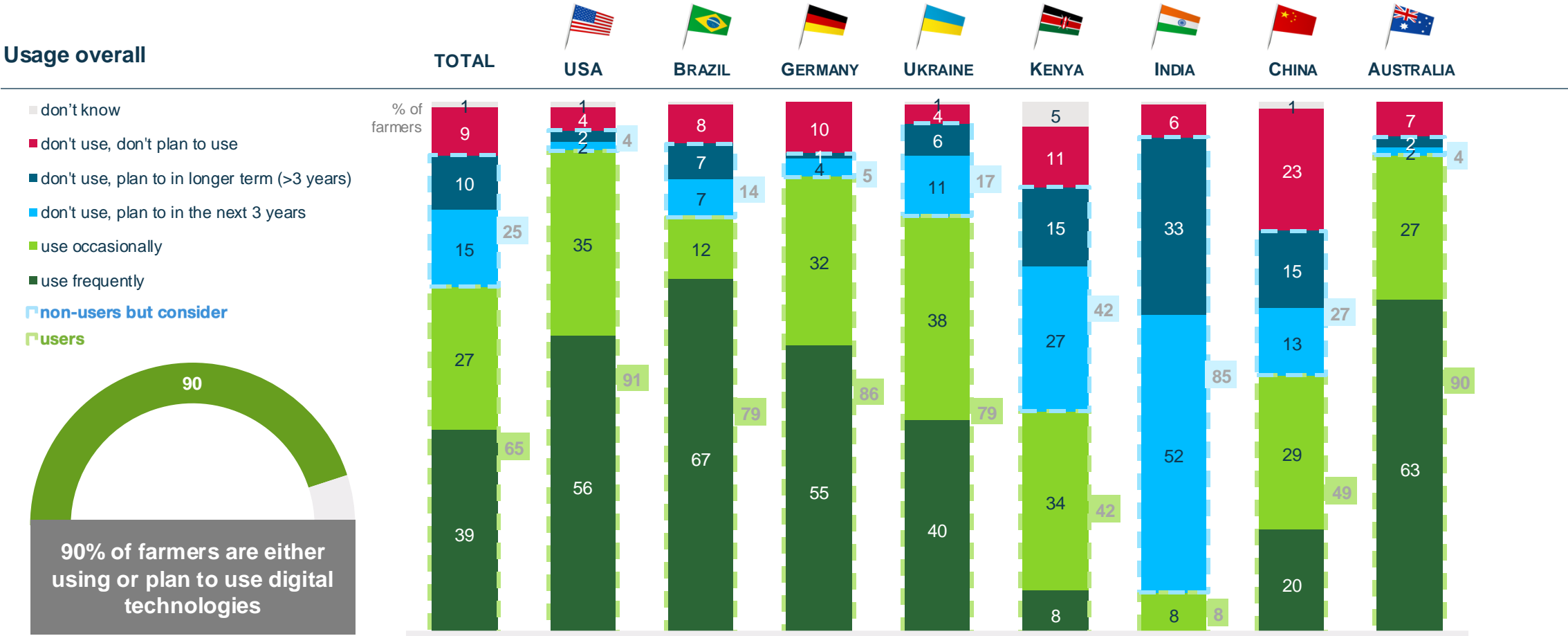


Farmers see digital technologies as a way to tackle challenges and improve their farms, but there are barriers to overcome



There is a clear digital divide between developed and smallholder-shaped agriculture economies

In markets where uptake is low, farmers are still planning to use digital tech



90% of farmers are either using or plan to use digital technologies

Base: TOTAL Sample by country

Question: For the rest of the discussion, please consider that by digital technologies in agriculture we mean a broad range of tools that digitally collect, store, analyze, and share electronic data and/or information, all aimed at optimizing crop production, resource management, and overall farm efficiency or promoting sustainability. Typical examples include GPS/autosteer, sensors, satellite imagery, farm management software, drones, etc. Based on this definition, when it comes to the use of digital technologies on your farming operation, which of the following statements suits you best? (prompted, single response)

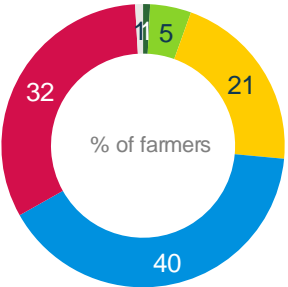


Three out of four farmers have little knowledge of AI, but two thirds want to learn more

When it comes to specific AI applications, over half have heard of imagery tools and sprayers as AI applications but have never used them

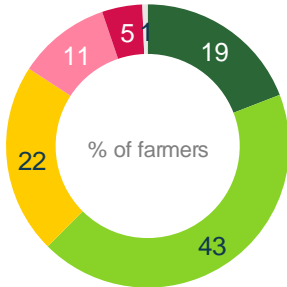
Level of knowledge of AI in agriculture

- 5-profound knowledge
- 4-good knowledge
- 3-moderate knowledge
- 2-basic knowledge
- 1-no knowledge at all
- don't know



Interest in knowing more about potential applications of AI in agriculture

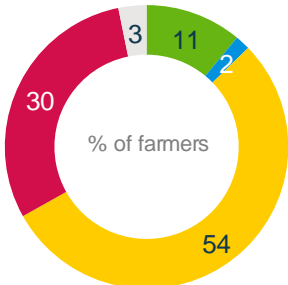
- 5-extremely interested
- 4-rather interested
- 3-neutral
- 2-rather uninterested
- 1-completely uninterested
- don't know



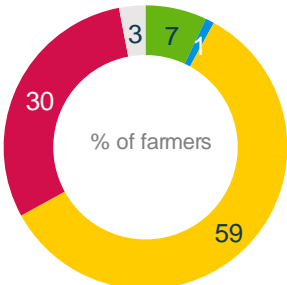
Awareness / use of AI applications in agriculture

- use it
- have used it but stopped
- heard of it but never used it
- never heard of it
- don't know / unsure

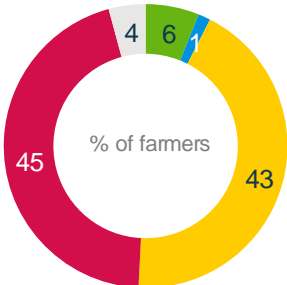
Imagery tools that automatically recognize certain weeds, diseases or pests



Sprayers that recognize weeds and apply an herbicide automatically only on them



Chatbots that provide automated recommendations for the use and timing of application of inputs like seeds, fertilizers, crop protection products or irrigation



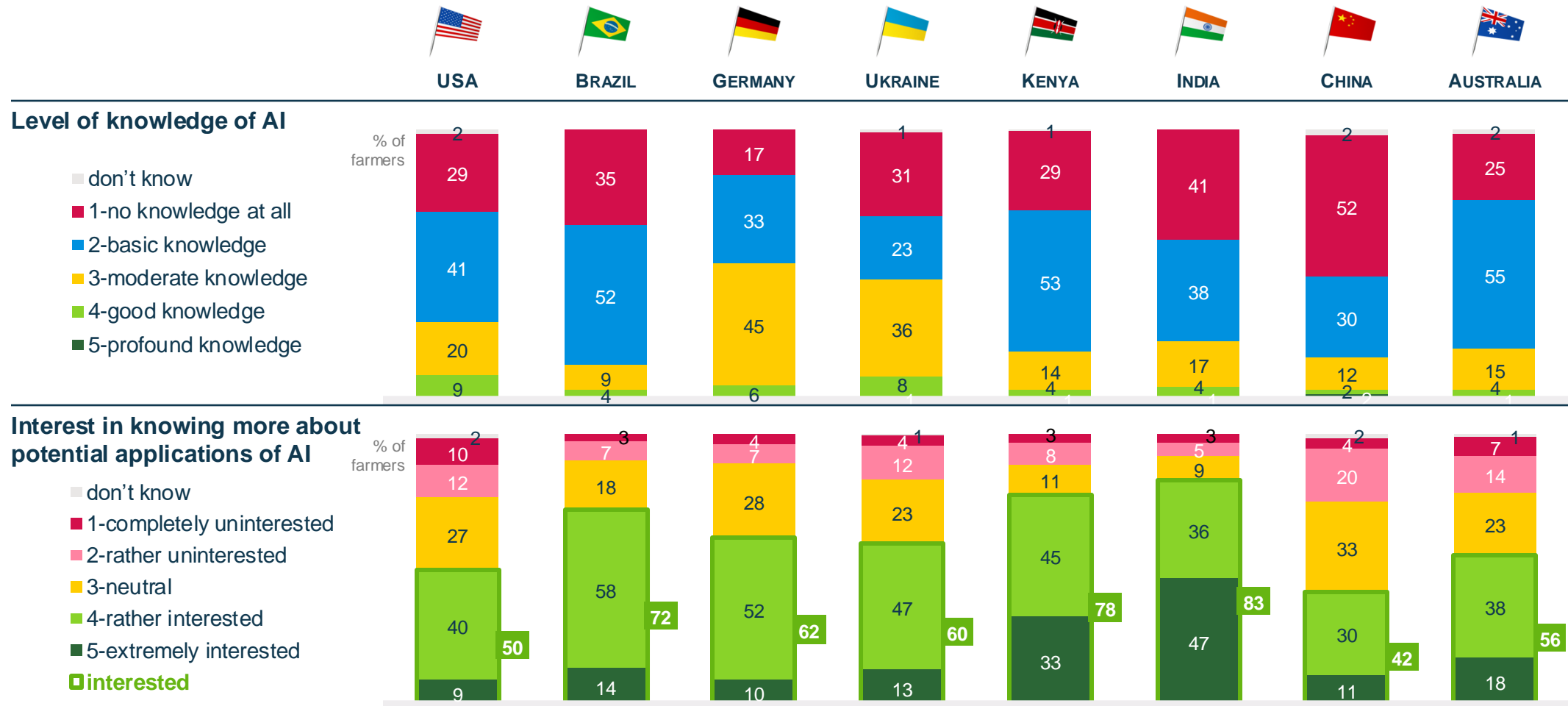
Base: TOTAL Sample (n=2015); Questions:

- You might have heard about the development of Artificial Intelligence (AI). In the context of agriculture, about Artificial Intelligence and its practical applications, would you say you have ...? (prompted, 5-point scale)
- How much of an interest do you have in knowing more about the potential applications of artificial intelligence / AI on your farm? (prompted, 5-point scale)
- There are currently several applications of AI in agriculture. For each of the following ones, can you please indicate whether...? (prompted, single response)



Indian and Kenyan farmers are most interested to learn more about AI

Moderate knowledge about AI is highest in Germany and Ukraine



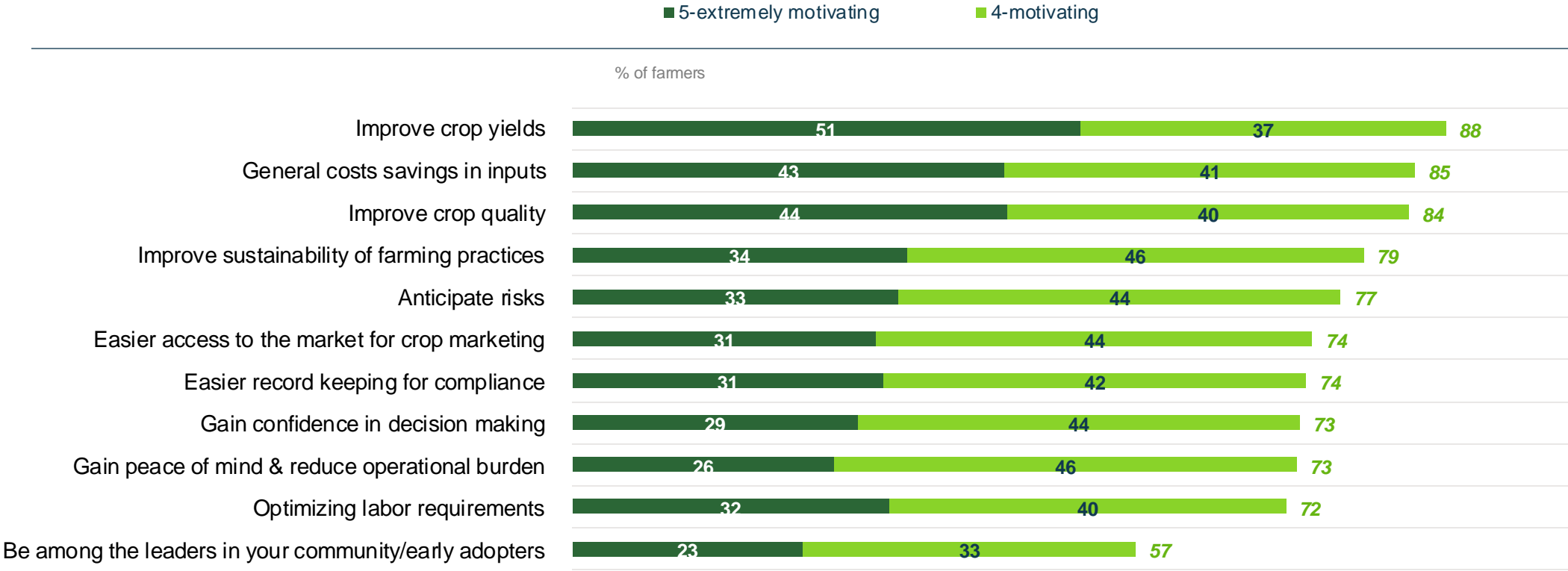
Base: TOTAL Sample by country; Questions:

- You might have heard about the development of Artificial Intelligence (AI). In the context of agriculture, about Artificial Intelligence and its practical applications, would you say you have ...? (prompted, 5-point scale)
- How much of an interest do you have in knowing more about the potential applications of artificial intelligence / AI on your farm? (prompted, 5-point scale)



Improving on-farm production and cost savings are driving digital adoption

Principal factors driving digital adoption are economic, but sustainability is important, too





*Farmers harness
regenerative agriculture
practices to improve soil
health and yields*

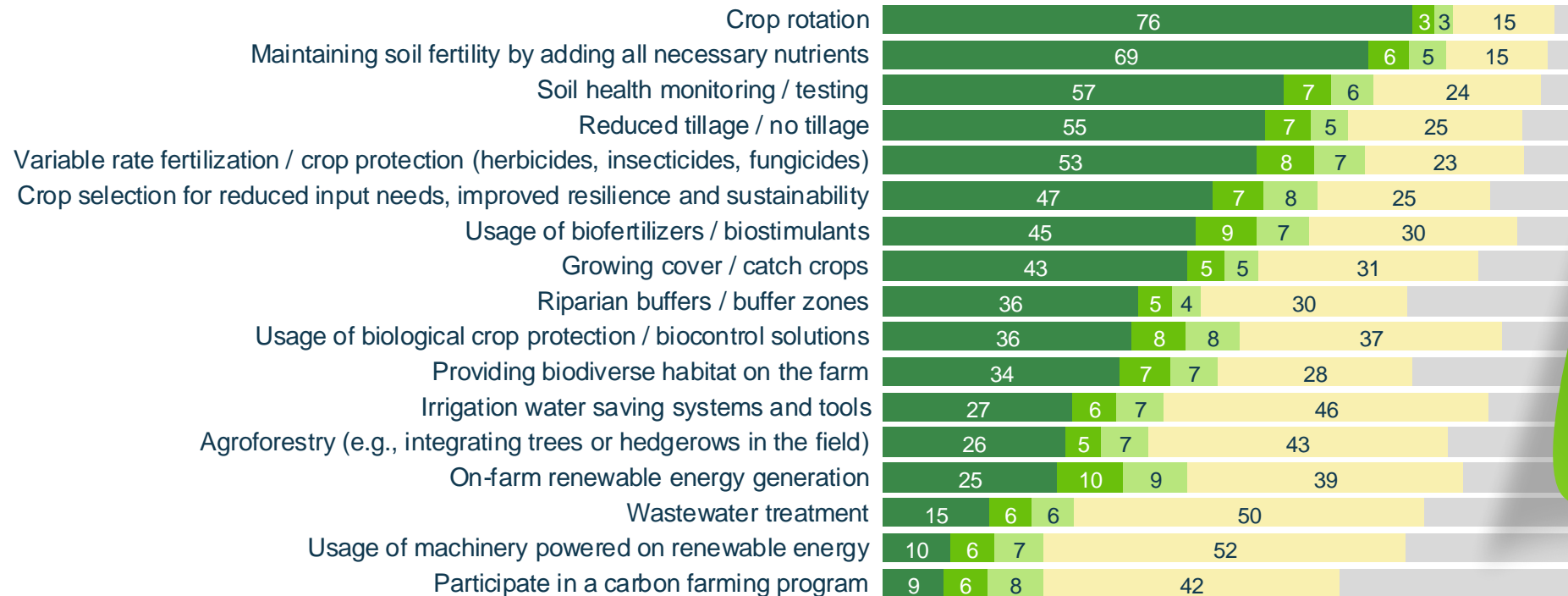


Farmers use an average of nearly 7 out of 17 common regenerative agriculture practices

Crop rotation, soil fertility, soil health monitoring, and reduced tillage are the most commonly used regenerative practices

Regenerative agricultural practices

■ Current users
 ■ Potential users - short term (next 3 years)
 ■ Potential users - long term (>3 years)
 ■ Non-users aware of
 ■ Unaware



On average around 7 practices currently used

 91% use at least one regenerative agricultural practice

Base: TOTAL Sample (n=2015)

Question: Please consider the following agricultural practices. For each of the practices, please indicate whether you ...? (prompted, single response)



Farmers in Brazil and Germany use the most regenerative practices so far



Average number of practices used



TOP practices used

- 1. Crop rotation
- 2. Maintaining soil fertility
- 3. Reduced / no till
- 4. Variable rate applications
- 5. Soil health monitoring / testing
- 6. Grow low input, resilient & sustainable crops
- 7. Cover / catch crops

- 1. Riparian buffers / buffer zones
- 2. Maintaining soil fertility
- 3. Soil health monitoring / testing
- 4. Usage of biofertilizers / biostimulants
- 5. Cover / catch crops
- 6. Usage of biocontrol solutions
- 7. Reduced / no till
- 8. Variable rate applications
- 9. Grow low input, resilient & sustainable crops
- 10. Crop rotation

- 1. Crop rotation
- 2. Maintaining soil fertility
- 3. Soil health monitoring / testing
- 4. Providing biodiverse habitat on the farm
- 5. Reduced / no till
- 6. Cover / catch crops
- 7. On-farm renewable energy generation
- 8. Grow low input, resilient & sustainable crops
- 9. Usage of biofertilizers / biostimulants

- 1. Crop rotation
- 2. Maintaining soil fertility
- 3. Usage of biofertilizers / biostimulants
- 4. Variable rate applications
- 5. Grow low input, resilient & sustainable crops
- 6. Soil health monitoring / testing

- 1. Crop rotation
- 2. Maintaining soil fertility
- 3. Cover / catch crops
- 4. Variable rate applications
- 5. Grow low input, resilient & sustainable crops
- 6. Agroforestry

- 1. Crop rotation
- 2. Soil health monitoring / testing
- 3. Variable rate applications
- 4. Maintaining soil fertility

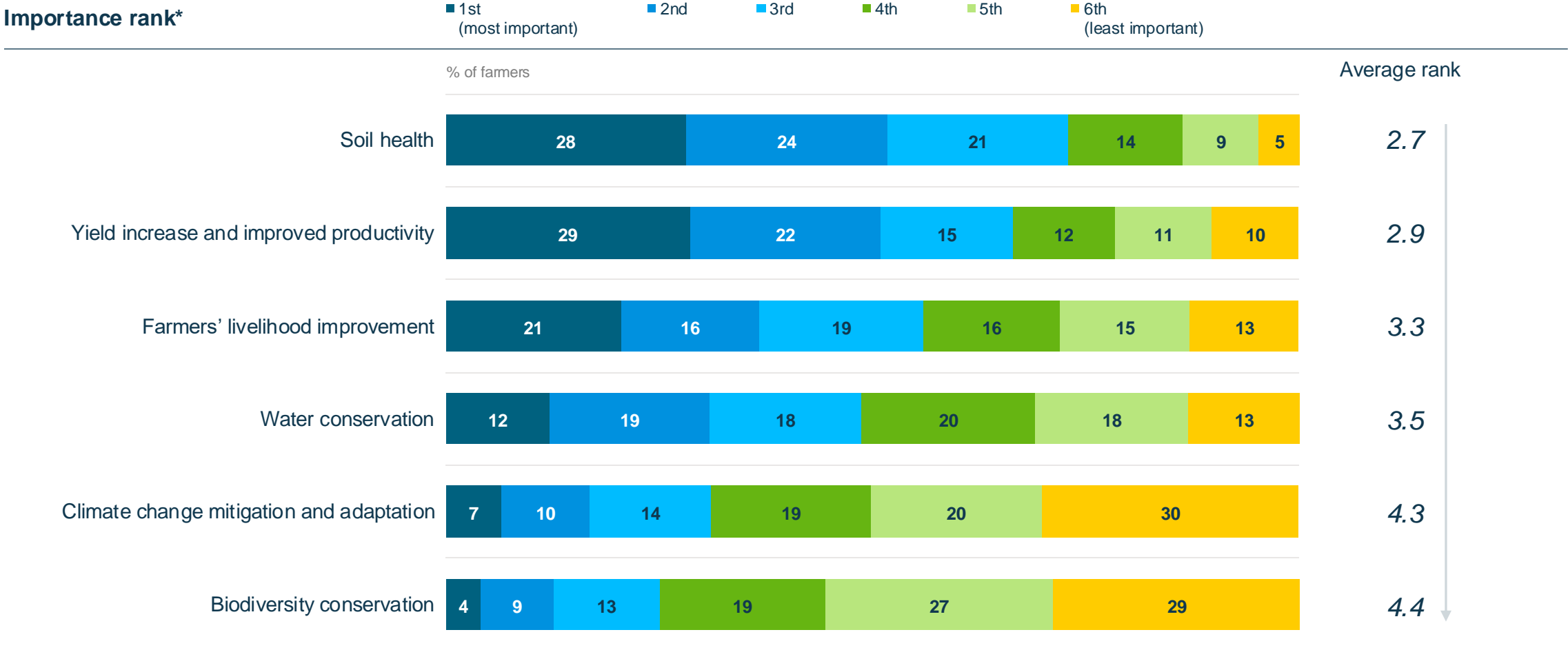
- 1. Crop rotation
- 2. Maintaining soil fertility
- 3. Usage of biofertilizers / biostimulants
- 4. Irrigation water saving systems and tools

- 1. Crop rotation
- 2. Reduced / no till
- 3. Soil health monitoring / testing
- 4. Maintaining soil fertility
- 5. Grow low input, resilient & sustainable crops
- 6. Providing biodiverse habitat on the farm
- 7. Variable rate applications



Farmers harness regenerative agriculture practices to improve soil health and yields

Farmers' livelihood improvement is also an important goal to consider



TOTAL Sample (n=2015)
 Question: Please rank these areas from most important to least important to you, with "1" being the most important area, and "6" being the least important. (prompted, single response)



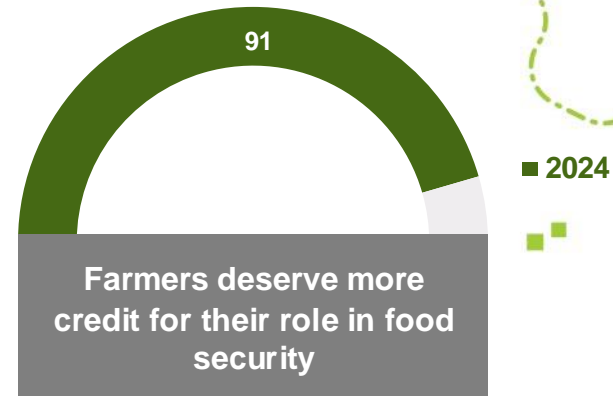
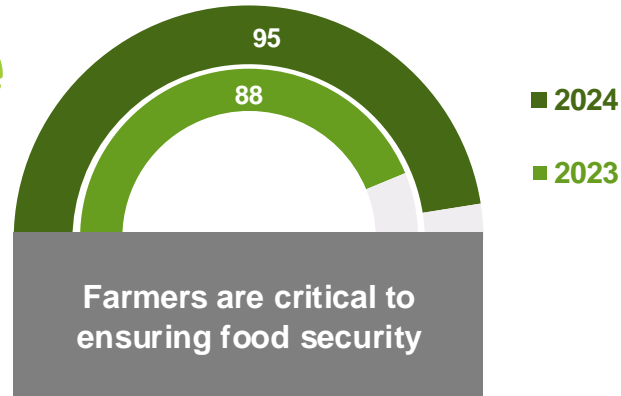


Farmers believe their work is critical to society and want to be heard and recognized for their contributions



Farmers believe they are critical to ensuring food security and deserve more credit for their work

Nine out of ten farmers consider farming to be a valuable career

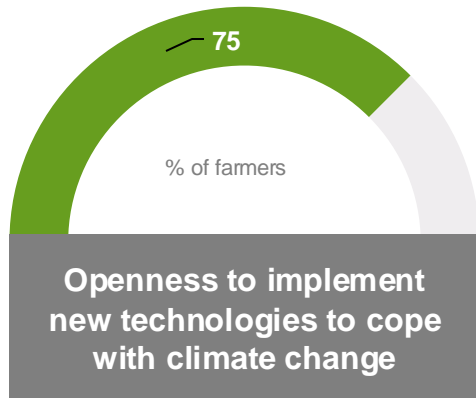


TOTAL Sample (n=2015)

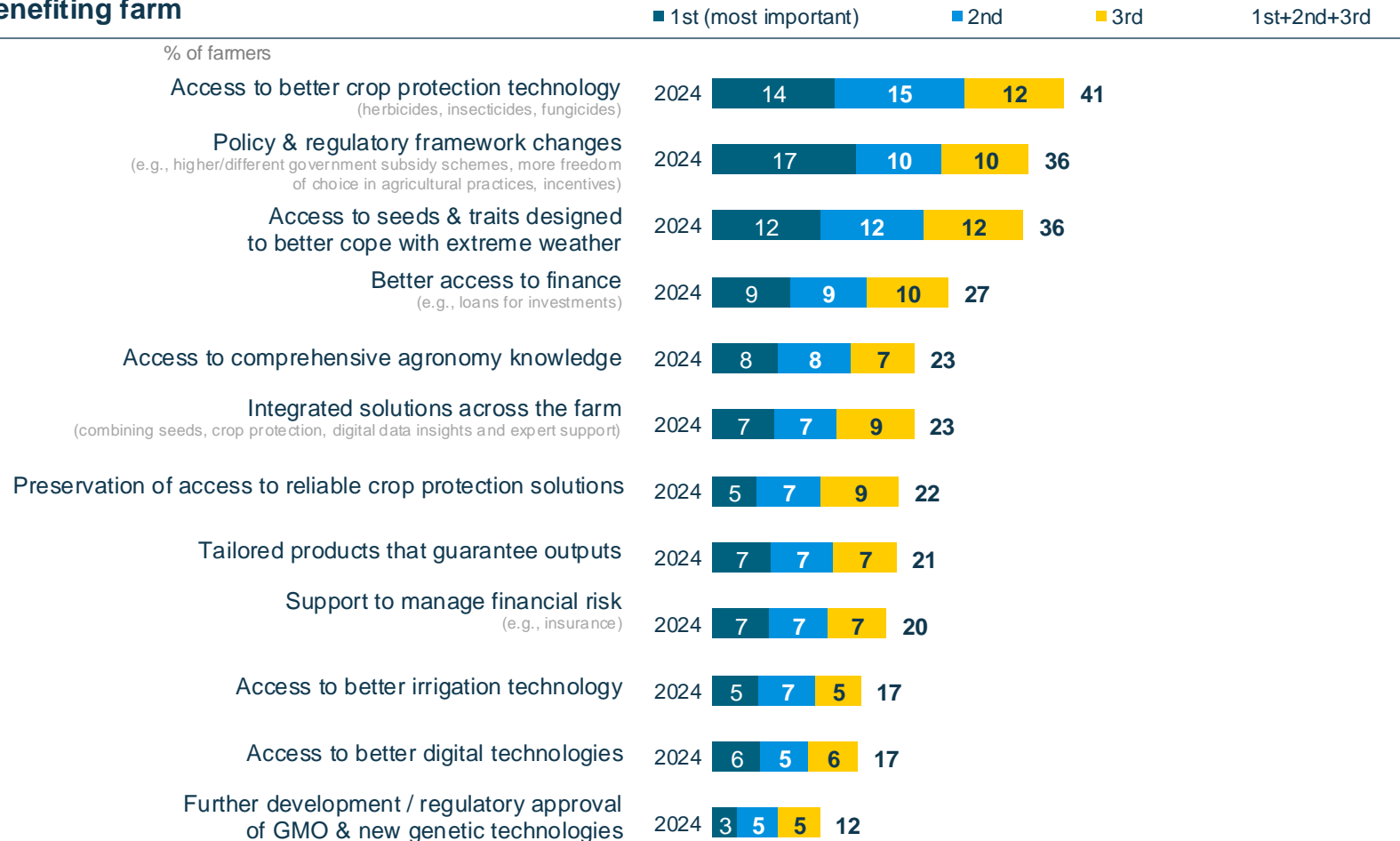
Question: To what extent do you agree with the following statements? (prompted, 5-point scale)

Farmers want access to new solutions and tools, and a more favorable policy environment

Policy and regulatory framework changes are most frequently cited as the most important factor to benefit farms



Factors benefiting farm



TOTAL Sample (2024: n=2015 / 2023: n=809); Questions:

- To what extent do you agree with the following statements? (prompted, 5-point scale)
- Looking into the future, which of these factors, if any, would most benefit your farm? Choose up to 3 in order of importance, number one being the most important. (prompted, 3 responses)





"Our country is an agriculture-based country. The land is like our mother. If we cultivate the land, we will make our country a better place."

/// A FARMER'S VOICE IN INDIA



"Most farmers are trying to practice good stewardship when it comes to saving the earth, but at the same time he also has to make a profit."

/// A FARMER'S VOICE IN USA



"Farming is love, and food is life."

/// A FARMER'S VOICE IN GERMANY

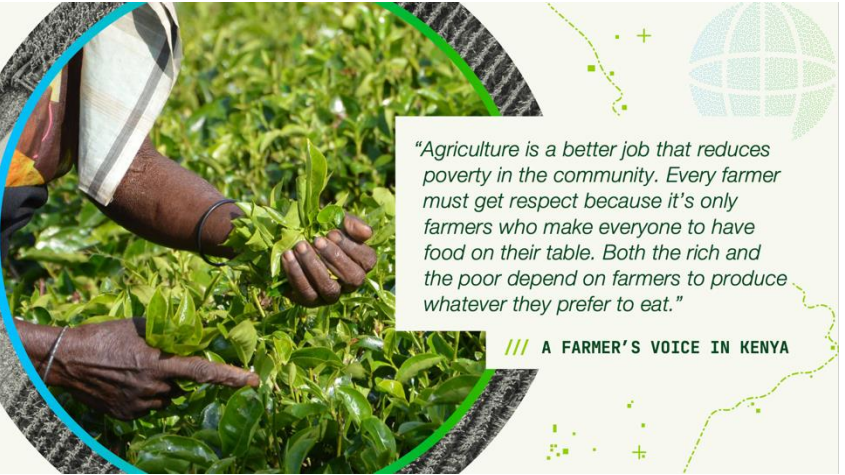


"Agriculture is hard, tiring and dirty, with low income and high investment costs."

/// A FARMER'S VOICE IN CHINA



Farmer Voice
supported by Bayer



"Agriculture is a better job that reduces poverty in the community. Every farmer must get respect because it's only farmers who make everyone to have food on their table. Both the rich and the poor depend on farmers to produce whatever they prefer to eat."

/// A FARMER'S VOICE IN KENYA



"What needs to be paid attention to today is to preserve natural resources, soil, water and air. Because today our intensive technologies are harming the environment. We have to preserve the environment for our children and grandchildren."

/// A FARMER'S VOICE IN UKRAINE



"Appreciate where your food comes from. It's not easy to do what we do and [to support] the effort that comes with it."

/// A FARMER'S VOICE IN AUSTRALIA



"It is from the field that all the food that sustains human beings comes. It is not from inside the refrigerator that food comes. The seed has to be planted and the rain and the sun have to appear so that it finally reaches the mouths of human beings. Agriculture should be given more importance because without it no one survives."

/// A FARMER'S VOICE IN BRAZIL



Farmer Voice

supported by Bayer

Read more at

go.bayer.com/FarmerVoice

