



With demand for organic food on the rise, consumer sentiment might push toward reducing fertilizer and pesticide use. (UBS)

# Food: Are security and health in conflict?

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**Global production of primary crop commodities reached 9.5 billion metric tons in 2021, a 54% increase since 2000 (FAO). This growth has been driven by intensified farming activities, including increased use of irrigation, pesticides, fertilizers, and enhanced production technologies.**

Despite this increase, food security challenges are expected to worsen. We see three drivers of continued innovation in the space, presenting the complexity of competing goals:

1. Growing demand for food, driven by increases in both population and economic growth
2. Changing weather patterns owing to climate change
3. Increased demand for fresh and organic food.

First, according to the World Bank, the world will need to produce approximately 70% more food to feed an estimated 9 billion people by 2050, and there is a strong correlation between GDP growth and calorie consumption. As emerging market countries—including the least developed countries—grow, pressure on additional agricultural output increases.

Second, as we have discussed in prior reports, this challenge is compounded by surging agricultural commodity prices and changes in environmental patterns. For instance, in February 2024, cocoa prices globally hit a record high, as crops in West Africa were affected by dry weather, while in July 2023 rice prices in Asia reached their highest levels in more than two years owing to concerns about dry weather. In India, late and particularly heavy monsoon rains damaged the country's rice crop, causing it to halt exports of some categories of rice. The relationship goes both ways, as agriculture is the fourth-largest contributor to global emissions.

Third, consumer preferences for fresh food, as discussed in the GLP-1 section of this report, as well as for organic food produced without synthetically manufactured pesticides, are on the rise as consumers become more health conscious and environmentally aware.

These three drivers are somewhat in conflict, presenting near-term challenges. The sheer need to maximize food supply while minimizing environmental impact points to the need to increase crop yields. Additional demand for fresh, not processed, food also implies the need for increased yield, as we discuss in depth in the [Agricultural yield–Update](#) report. Technologies like precision agriculture for better soil management, weather forecasting and “plant by plant” application of the right fertilizer could increase productivity, and for some crops this has happened already. Yet historically, the toxicity to the environment of fertilizers and pesticides has not been adequately considered.

With demand for organic food on the rise, consumer sentiment might push toward reducing fertilizer and pesticide use. And some regulators are going in this direction, with the EU’s “farm-to-fork” initiative requiring 25% of EU farming land to apply organic methods, as well as the reduction of chemical pesticides by 50% by 2030. However, it is not entirely clear that organic methods are better for the environment, and they might be challenging in the near term to the goal of feeding more people healthy food. A meta-analysis of 164 published life-cycle analyses found that organic agricultural methods for growing cereals and vegetables were worse in terms of land use, energy use and potential of polluting water bodies than conventional methods (Clark & Tilman, 2017).

We believe it will take some time for these challenges to be resolved, with regulators guiding markets in different ways. Regenerative agriculture methods have the potential to conserve biodiversity while resulting in higher yields, yet these methods are not yet tried at scale. Until that's done, precision agriculture with an increased focus on environmental sustainability to meet consumer and regulatory environmental expectations will remain the most likely interim solution.

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Original report: [Obesity drugs, agriculture, and proxy season wrap-up, 6 August 2024.](#)

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