

Organic is only one ingredient in recipe for sustainable food future

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Credit: University of British Columbia

Many people choose organic thinking it's better for humans and the planet, but a new UBC study published in *Science Advances* finds that might not always be the case.

"Organic is often proposed a holy grail solution to current environmental and food scarcity problems, but we found that the costs and benefits will vary heavily depending on the context," said Verena Seufert, a researcher at the Institute for Resources, Environment and Sustainability (IRES).

In their study, Seufert and her co-author Navin Ramankutty, Canada Research Chair in Global Environmental Change and Food Security at UBC, analyzed organic crop farming across 17 criteria such as yield, impact on climate change, farmer livelihood and consumer health.

It is the first study to systematically review the scientific literature on the environmental and socioeconomic performance of organic farming, not only assessing where previous studies agree and disagree, but also identifying the conditions leading to good or bad performance of organic agriculture.

Take two factors that are top of mind for many consumers: synthetic pesticide use and nutritional benefits of organic. Seufert and Ramankutty argue that in countries like Canada where pesticide regulations are stringent and diets are rich in micronutrients, the health benefits of choosing organic may be marginal.

"But in a developing country where pesticide use is not carefully regulated and people are micronutrient deficient, we think that the benefits for consumer and farm worker health may be much higher," said Ramankutty, professor at IRES and the Liu Institute for Global Issues at UBC.

Another important measure of the sustainability of farming systems is the yield of a crop. To date, most studies have compared the costs and benefits of organic and conventional farms of the same size, which does not account for differences in yield.

Previous research has shown that on average, the yield of an organic crop is 19 to 25 per cent lower than under conventional management, and Seufert and Ramankutty find that many of the environmental benefits of organic agriculture diminish once lower yields are accounted for.

"While an organic farm may be better for things like biodiversity, farmers will need more land to grow the same amount of food," said Seufert. "And land conversion for agriculture is the leading contributor to habitat loss and [climate change](#)."

While their findings suggest that organic alone cannot create a sustainable food future, they conclude that it still has an important role to play. Organic is one way that consumers have control over and knowledge of how their food is produced since it is the only farming system regulated in law.

"We need to stop thinking of organic and conventional agriculture as two ends of the spectrum. Instead, consumers should demand better practices for both so that we can achieve the world's [food](#) needs in a sustainable way," said Seufert.

More information: "Many shades of gray—The context-dependent performance of organic agriculture," *Science Advances* (2017). [DOI: 10.1126/sciadv.1602638](https://doi.org/10.1126/sciadv.1602638)

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