

# Organic Farming vs. Conventional Farming: Sustainability and Productivity Comparison

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## Commentary

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## DESCRIPTION

The debate between organic farming and conventional farming has gained considerable attention in recent years, with sustainability and productivity being central points of discussion. Organic farming, which avoids synthetic chemicals and fertilizers, advocates for practices that enhance biodiversity, soil health, and ecological balance. In contrast, conventional farming often relies on the use of synthetic fertilizers, pesticides, and herbicides to maximize crop yields and control pests. While both systems have their strengths and limitations, in my opinion, organic farming holds significant potential for a more sustainable future, but the issue of productivity remains complex and context-dependent.

One of the primary reasons organic farming is often seen as more sustainable is its focus on environmental health. Organic practices aim to enhance soil fertility through crop rotation, composting, and the use of organic inputs, which help maintain soil structure and prevent degradation. This approach contrasts sharply with conventional farming, where the heavy use of chemical fertilizers can deplete the soil over time, leading to reduced fertility and increased reliance on external inputs. By promoting healthier soils, organic farming can help sustain long-term agricultural productivity, reduce erosion, and preserve water quality. Additionally, organic farming is often associated with a reduced environmental footprint because it avoids the use of synthetic pesticides and herbicides, which can contaminate water sources and harm non-target organisms, including beneficial insects like bees.

In terms of carbon sequestration, organic farming practices also tend to be more beneficial. Organic systems, particularly those that incorporate agroecological methods like agroforestry or cover cropping, have been shown to increase soil organic matter and improve carbon storage in the soil. By promoting biodiversity and enhancing soil microbial activity, organic farming helps mitigate the effects of climate change by storing carbon that would otherwise contribute to greenhouse gas emissions. Conventional farming, on the other hand, can contribute to the release of carbon dioxide through intensive tilling, the use of synthetic fertilizers, and the depletion of soil organic matter, which may exacerbate climate change.

However, when it comes to productivity, conventional farming generally outperforms organic farming in the short term, particularly in terms of yields. Conventional systems benefit from synthetic fertilizers and pesticides, which often result in higher crop outputs. These inputs allow farmers to manage large-scale production more efficiently, particularly for staple crops such as wheat, corn, and rice. For example, research has shown that conventional farming methods often produce higher yields compared to organic farming, especially in regions with challenging growing conditions, such as those with nutrient-poor soils or high pest pressures. As a result, conventional farming remains the dominant system for global food production, especially in areas where meeting food security demands is a priority.

Yet, this higher productivity comes at a cost. Conventional farming's reliance on chemical inputs not only damages the environment but also raises concerns over food safety. The use of synthetic pesticides and herbicides has been linked to health risks, such as pesticide residues on food, and may contribute to the decline of pollinators and other essential ecosystem services. Furthermore, the high energy inputs required for conventional farming such as fuel for machinery and the production of synthetic fertilizers contribute to the carbon footprint of these systems. In contrast, organic farming tends to have a lower energy footprint due to reduced reliance on chemical inputs and the use of more sustainable practices.

Both organic and conventional farming systems have their advantages and drawbacks. Organic farming is undoubtedly more sustainable in terms of environmental impact, soil health, and carbon sequestration, but it faces challenges related to productivity, scalability, and economic viability. Conventional farming, while more efficient in terms of yields and meeting immediate food demands, often comes with significant environmental and health costs. In my opinion, the future of agriculture may lie in finding a middle ground, where the sustainability of organic practices is integrated with the efficiency of conventional farming techniques. By combining the best elements of both systems—such as using organic practices for soil health and biodiversity alongside technological innovations to boost productivity it is possible to create a more sustainable and productive agricultural system that can meet the demands of a growing global population while protecting the environment.