Science Policy Outreach Task Force at Northwestern University

OVERVIEW OF ORGANIC FARMING AND OUTLOOK

SPOTlight: Compared to conventional farming, organic farming is more profitable, delivers nutritious foods with no pesticide residues, is environmentally friendly, and is vital for proper ecosystem functioning; however, it produces lower crop yields.

What is organic farming?

- Organic farming is the production of livestock, crops, and other products without using steroids and antibiotics, genetically modified organisms, or synthetically-derived fertilizers and pesticides.[1,2]
- Prior to the development of modern-day fertilizers and pesticides, organic farming was the dominant farming practice of the world.[1]
- Organic farming has grown in popularity due to public perception of increased environmental and health benefits.[2,3,4,5]

What are the health impacts of organic farming?

- There are four times more pesticides remaining in conventional crops than in organic crops.[6]
- Exposure to certain pesticides from direct handling or from residues on food can result in chronic diseases such as cancer, diabetes, respiratory and neurological disorders, and reproductive issues.[6,7]
- Organic products have higher contents of antioxidants, vitamin C, and omega-3 compared to conventional products.[4,6]

What are the economic impacts of organic farming?

- In a 40-year study across 5 continents, organic farming was found to be 22-35% more profitable than conventional farming.[4]
- Due to large subsidies for conventional farming, organic farming remains more costly for consumers.[3]
- While income may potentially increase for organic farmers, the transition to organic farming requires an expensive certification process and requires 7-13% higher labor costs compared to conventional farming.[4]
- In most circumstances, organic farming results in 8-25% lower crop yields than conventional farming.[3,4]

What are the environmental impacts of organic farming?

- A study in the UK determined organic farming was 75% less costly than conventional farming when considering the monetary value of their environmental impacts.[4]
- Another study in New Zealand quantified the monetary value of three ecosystem services (biological pest control, soil formation, and mineralization of plant nutrients) provided by agriculture and found organic farming to be about 60% more profitable.[4]
- Organic farming sequesters more carbon from the atmosphere and has lower carbon and methane gas emissions compared to conventional farming.[8,9]
- Overall, a transition to organic farming improves soil quality, enhances biodiversity, lowers risk of ground and surface water pollution by pesticides, and prevents nutrition depletion in soil making it more efficient and sustainable than conventional farming.[3,4,10]

What is the current status and perception of organic farming?

- Organic farming has been shown to improve economic development for farmers, increase social interaction between farmers and consumers, and result in greater cooperation among farmers.[4]
- Organic farmers benefit from lower unemployment, rural emigration, and pesticide-related health risks.[2,7]
- Some farmers face infrastructure and economic barriers, such as certification costs and access to markets, insurance, and loans. Economic incentives and technical advice are crucial to enhance adoption of organic farming practices.[3,5]
- An interview conducted with 20 organic farmers in Illinois found that the farmers feel that political and educational structures, such as the Illinois Department of Agriculture, the USDA organic division agents, and the University of Illinois' Extension Program, encourage chemical intensive production and do not support organic farming practices.[5]

References and additional resources:

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