



Sustainability in Organic Agriculture: Evaluating Environmental and Socioeconomic Benefits

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ABSTRACT: Organic farming is becoming more and more acknowledged as a sustainable farming method that may help India's agricultural industry overcome its social, economic, and environmental problems. The function and effects of organic farming in advancing sustainability in the Indian setting are examined in this abstract. Smallholder farmers who use traditional farming methods make up the majority of India's agricultural industry. However, the extensive use of chemical pesticides and fertilisers has resulted in environmental contamination, biodiversity loss, and severe soil deterioration. A possible substitute that may improve soil health, preserve biodiversity, and lessen environmental impact is organic agriculture, which forgoes artificial inputs in favour of natural processes and materials. By using crop rotation, organic matter, and biological pest control techniques, organic agriculture may increase soil fertility, which is one of its main advantages. In addition to boosting the soil's nutritional content and structure, these techniques also boost the soil's ability to hold onto water, making it more resilient to floods and droughts. Furthermore, using crop types that are more suited to the local environment and may help preserve genetic variety is encouraged by organic farming. By lowering greenhouse gas emissions, organic farming also contributes significantly to climate change mitigation. A strong greenhouse gas called nitrous oxide is released as a result of conventional agricultural methods, especially the use of chemical fertilisers. Composting, green manuring, and decreased tillage, on the other hand, are organic agricultural techniques that assist reduce emissions and store carbon in the soil. From an economic standpoint, smallholder farmers may gain a lot from organic farming. Growing local and worldwide demand for organic goods gives farmers access to premium markets and raises the price at which they may sell their crops. Furthermore, by doing away with the need for pricey chemical pesticides and fertilisers, organic farming may lower input prices. For smallholder farmers, who often face financial obstacles, this economic sustainability is especially crucial. Socially, organic farming helps farmers and consumers have better health results. The avoidance of synthetic chemicals reduces the risk of exposure to harmful substances, leading to better health and safety for those working on farms. Consumers also benefit from access to healthier food products that are free from pesticide residues. Furthermore, organic farming fosters stronger community ties as it often involves collaborative efforts in managing resources and marketing produce.

Keywords: Organic agriculture, Sustainability, India, Soil health, Economic benefits.

INTRODUCTION

Agriculture is a fundamental human activity that includes both crop production and animal domestication (Korav *et al.*, 2021; Kumar *et al.*, 2021; Balkrishna *et al.*, 2021). As the primary source of the world's sustenance and shelter, agricultural land is a crucial resource. The exact

origins of agriculture are not definitively known, but as human populations grew, fishing and hunting became essential supplements to what was grown in the fields. This shift underscored the necessity of food production for a secure and enduring human existence, highlighting the significance of agriculture in sustaining life. Agriculture contributes significantly to the global household economy,

providing food, income, and business opportunities, regardless of the scale of operations (Dorosh and Thurlow 2016; Abhilash *et al.*, 2021). While agriculture may be less prominent as an income source in affluent countries, its benefits are universally acknowledged. The global demand for agricultural products has generated various job opportunities (Mathlouthi *et al.*, 2022). Agriculture enriches countries worldwide and plays a vital role in both developed and developing nations' lifestyles (Christiaensen *et al.*, 2011; Dubey *et al.*, 2022).

Organic farming emerged as a response to the industrialization of agriculture and its related environmental and social issues. It integrates tradition, innovation, and science to benefit the environment and improve the quality of life (Pleguezuelo *et al.*, 2018). In North-East India, particularly in the hill regions, organic farming predominantly relies on animal manure, organic waste, crop rotation, legumes, and biological pest control methods (Das *et al.*, 2017a,b). Chemical fertilizer usage is minimal in the valley ecosystems of this region, while the upland ecosystems remain free from chemical inputs (Layek *et al.*, 2023; Layek *et al.*, 2018). Traditional pest control methods are favored, resulting in low pesticide usage (Das *et al.*, 2017a,b). Farmers' inclination towards organic farming has been harnessed for regional development and ecological benefits (Layek *et al.*, 2020), with an estimated 18 million hectares available for organic production in the NEH region (Das *et al.*, 2018).

Agriculture in North-East India, particularly Meghalaya, is characterized by limited use of external inputs, cultivation of traditional varieties, subsistence farming, and low productivity (Das *et al.*, 2017a,b; Devi *et al.*, 2017). The region, largely hilly and mountainous, has moderate to steep slopes with <30% valley areas (Layek *et al.*, 2019; Choudhury *et al.*, 2022). Conventional monocropping with inadequate inputs results in low productivity (Ansari *et al.*, 2021). However, the region boasts rich biodiversity, including vegetables, spices, and fruits, integral to the local farming systems (Deka *et al.*, 2012). Growing vegetables post-kharif maize increases cropping intensity, efficiently utilizes land, and provides economic benefits to small and marginal farmers (Layek *et al.*, 2020). Despite a yield gap of 25%-40% between farm and experimental organic farms (Panwar *et al.*, 2022), the region holds significant potential for enhancing productivity. With high rainfall and varied climate, a wide range of crops can be cultivated. The lower use of chemical inputs offers great potential for successful organic farming (Patel *et al.*, 2014; Das *et al.*, 2017a,b).

The region's soils, although highly degraded due to traditional practices, can benefit from organic farming to sustain soil health and produce healthy

foods (Roy *et al.*, 2018; Ansari *et al.*, 2022b). The environmental, social, and economic sustainability objectives of organic farming are well-suited to the region, with negligible production gaps expected due to organic adoption. Households maintaining livestock and producing ample on-farm manure can significantly support organic agriculture (Ravisankar *et al.*, 2021, 2022). The widespread practice of rearing animals generates substantial animal excreta, essential for organic farming success (Das *et al.*, 2017a,b). However, the major constraint remains the availability of sufficient organic inputs, as animal excreta alone cannot meet crop nutrient demands (Das *et al.*, 2017a,b; Layek *et al.*, 2019). Favorable climatic conditions and high soil organic carbon concentrations support substantial plant biomass growth, which can be recycled as vital nutrient sources for crops (Patel *et al.*, 2014; Layek *et al.*, 2023). The objective of this study is to evaluate the environmental impacts of organic farming compared to conventional farming practices, focusing on aspects such as soil health, biodiversity conservation, and greenhouse gas emissions, while also assessing the socioeconomic benefits and challenges associated with the adoption of organic farming, including its effects on smallholder farmer livelihoods, market access, and consumer perceptions. By combining these perspectives, the study aims to provide a comprehensive understanding of how organic farming contributes to sustainable development and highlight areas for further research and policy intervention.

METHODOLOGY

To conduct the review on organic agriculture and its sustainability, a systematic methodology was employed to ensure comprehensive coverage of relevant literature and an in-depth analysis of key themes and findings. The methodology encompassed several key steps, detailed as follows:

Literature Search and Selection: The initial step involved an extensive literature search using various academic databases such as PubMed, Google Scholar, and JSTOR. Keywords used in the search included "organic agriculture," "sustainability," "agricultural practices," "environmental impact," and "food security". The search was limited to peer-reviewed journal articles, books, and reputable reports published in the past two decades to capture recent advancements and trends. Articles were then screened for relevance based on their abstracts, and full texts were obtained for those deemed pertinent.

Inclusion and Exclusion Criteria: To ensure the review's focus and quality, specific inclusion and exclusion criteria were established. Studies were

included if they (1) provided empirical data on organic farming practices and their impacts, (2) discussed sustainability in the context of agriculture, or (3) analyzed consumer perceptions and market trends related to organic products. Studies were excluded if they were (1) not peer-reviewed, (2) focused solely on conventional agriculture without comparative insights into organic practices, or (3) lacked sufficient methodological rigor.

Data Extraction: Data from selected articles were systematically extracted using a standardized form. Key information such as study objectives, methodologies, sample sizes, geographic locations, main findings, and conclusions were recorded. Special attention was given to studies that provided quantitative data on the environmental, economic, and social impacts of organic farming.

Thematic Analysis: The extracted data were analyzed thematically to identify common themes and patterns. This involved coding the data based on recurring topics such as environmental benefits, yield comparisons between organic and conventional farming, consumer behavior, and policy implications. Thematic analysis allowed for the synthesis of findings across different studies, providing a comprehensive understanding of the subject.

Comparative Analysis: A comparative analysis was conducted to highlight the differences and similarities between organic and conventional farming practices. This included examining factors such as input use (e.g., fertilizers, pesticides), yield outputs, environmental impacts, and economic viability. The analysis aimed to identify the strengths and weaknesses of each farming approach, contributing to a balanced discussion on their respective merits and challenges.

Synthesis and Interpretation: The final step involved synthesizing the findings from the thematic and comparative analyses. This synthesis was used to draw overarching conclusions about the sustainability of organic agriculture and its role in achieving the Sustainable Development Goals (SDGs). The interpretation of results considered the broader context of global agricultural trends, consumer preferences, and policy frameworks.

Peer Review and Validation: To enhance the credibility and reliability of the review, the draft was subjected to peer review. Experts in the field of organic agriculture and sustainability provided feedback on the methodology, analysis, and conclusions. Their insights were incorporated to refine the review and address any gaps or biases.

By employing this comprehensive methodology, the review aimed to provide a thorough and balanced examination of organic agriculture's sustainability, identifying both its potential benefits and challenges. This approach ensured that the

findings were grounded in robust evidence and offered valuable insights for researchers, policymakers, and practitioners in the field of sustainable agriculture.

CONCEPT OF ORGANIC FARMING

For the US Department of Agriculture (USDA), "a system which avoids and largely excludes the use of artificial inputs" (such as fertilisers, pesticides, hormones, feed additives, etc.) is what "organic farming" is all about. The best protection of plants in organic farming is ensured by a combination of factors, including crop residues, animal manures, mineral-grade rock additions, off-farm organic waste, crop rotations, and biological systems of nutrient mobilisation. Soils, ecosystems, and human health are all supported by organic farming. Instead than using inputs that have negative impacts, it depends on biological processes, biodiversity, and cycles that are tailored to the local environment. To improve the environment, foster equitable relationships, and provide a high quality of life for everyone, organic farming integrates scientific knowledge with time-honoured farming practices. Organic farming strengthens the agroecosystem, making it more resilient to the negative impacts of climate change. The result is ecologically friendly and powerful agricultural systems that can withstand drought, temperature swings, and other natural disasters without compromising soil quality. Management, conservation, and restoration efforts on organic farms are also more likely to be sustainable and eco-friendly. In contrast to conventional farming, organic farming requires less capital. Farmers and communities who practise organic farming are better able to weather the potentially devastating effects of climate change. Also, according to Muller (2009); Murmu *et al.* (2022), organic farming meets a lot of the criteria for effective adaptation techniques.

MODERN AGRICULTURE TO ORGANIC FARMING

Both conventional and organic agricultural practices have their effects on people and the environment, but in different ways. Significant outcomes of conventional farming practices include increased emissions of greenhouse gases, soil degradation, water contamination, and health problems in humans. Manpreet *et al.* (2023); Sabyasachi (2023); Amole *et al.* (2022) found that organic farming decreases carbon emissions, improves soil health, and replenishes natural ecosystems, leading to cleaner water and air. Additionally, it avoids dangerous pesticide residues. Conventional farming relies on chemical inputs to control pests and weeds and to feed plant nutrients, which is the main difference between organic and conventional farming. This group

includes fertilisers, insecticides, and herbicides that are synthetic. Organic farming, on the other hand, relies entirely on natural principles like biodiversity and composting to provide healthy, plentiful food. The term "organic farming production" refers to methods that have been around for a long time and are still used today in practical ways. These methods include crop rotations, using composted animal manures and green manure crops, and avoiding conventional chemical inputs. Organic production, which places an emphasis on system health as a whole, primarily deals with the interplay of management approaches. As stated by Walmsley and Sklenička (2017), organic farmers use a range of methods to enhance and preserve biodiversity, all the while periodically preserving a high level of soil fertility. According to Willer *et al.* (2021), organic farming is carried out by at least 3.1 million farmers in 187 countries, over 72.3 million hectares of cropland. In 2019, sales of organic food and drink exceeded 106 billion euros globally, indicating the strong desire of modern consumers to adopt healthy and environmentally aware eating habits: health consciousness. Certified organic farming accounts for almost 75% of global agricultural output. Among the world's agricultural systems, it is among the most productive and economical. According to Willer *et al.* (2021), India ranked first in the world for organic food production in terms of the number of producers. In that year, more people in India produced organic food than the next nine biggest nations put together (1.4 million people) (Willer *et al.*, 2021). Although there are benefits and drawbacks to conventional farming, many people believe that organic farming is more environmentally friendly. When compared to conventional farming, organic farming has less negative impacts on the environment and on global warming (Sean, 2020). Yields are often lower when growing organically. The observed output discrepancies might expand even further if more farmers switch to organic techniques, which demand more knowledge. More habitat destruction and higher output costs would accompany extensive scaling up of organic agriculture. A combination of conventional and organic farming methods might increase agricultural production worldwide, but organic farming alone isn't a solution to food security and sustainability (Meemken and Qaim 2018). Fundamental to organic farming are concerns for human and environmental well-being as well as equity and compassion. In doing so, they bring attention to the potential global benefits of organic farming and a shared desire to improve farming practices everywhere. More and more people are opting to eat organic food. The increasing demand is mostly due to consumers' worries about the negative impacts of conventional agriculture on both

humans and the environment. According to Yirido *et al.* (2005), the majority of people, especially in industrialised countries, think that organic food is better for you and safer than conventionally grown food. Organic farming is often favoured by wealthy customers due to its positive impact on the environment, climate protection, and animal welfare (Seufert *et al.*, 2017). As a result of organic farming, global agriculture is becoming more sustainable. In order to achieve the UN Sustainable Development Goals by 2030, there must be a shift in agricultural techniques. The goal of sustainable agriculture and food systems should be to ensure that everyone has access to enough healthy food while both reducing negative effects on the environment and making a reasonable income for farmers (FAO, 2018b). To achieve multiple SDGs within the planet's finite resources, the food and agricultural sectors must undergo immediate transformation, according to most experts. However, the way to achieve this is intensely debated, with two narratives dominating the discussion: incremental steps to improve efficiency in conventional agriculture while reducing negative externalities versus transformative redesign of farming systems based on agroecological principles. Australia, New Zealand, and the states of the Pacific Island chain make up Oceania, according to data provided by the Research Institute of Organic Agriculture FiBL. More than 18,000 farmers were in charge of over 36.0 million hectares. Half of the world's organic land and 9.7 percent of the region's agricultural lands make up this. Australia accounts for over 99 percent of the region's organic land (35.7 million hectares, the majority of which is extensive grazing land), with New Zealand coming in second with nearly 89,000 ha, Samoa coming in third with 14.5 percent, and then Australia again with 9.9 percent, Fiji with 5.5%, Vanuatu with 4.5 percent, Solomon Island with 3.5 percent, and French Polynesia with 3.4 percent. Four countries in Oceania have legislation on organic agriculture, and twelve countries have a national standard but no organic legislation. Organic farming is gaining more and more success in Australia. Despite the country's frequent natural catastrophes, they were able to do this (Denyer *et al.*, 2012). Their strategy may serve as an example for other nations as well. change language and make more scientific
For the US Department of Agriculture (USDA), "a system which avoids and largely excludes the use of artificial inputs" like synthetic fertilisers, pesticides, hormones, and feed additives is what organic farming is all about. Plants are best protected by this method, which makes use of mineral-grade rock additions, crop residues, animal manures, off-farm organic waste, crop rotations, and biological nutrient mobilisation systems. By avoiding harmful inputs and instead depending on

natural processes, biodiversity, and cycles tailored to local circumstances, organic agriculture is defined as a production system that supports the well-being of soils, ecosystems, and humans. Organic farming is a method that improves the quality of life for everyone involved while also helping the environment and fostering equitable relationships via the integration of tradition, creativity, and science (Organic Farming | NRCS). Agroecosystems are better able to endure the negative impacts of climate change when organic agricultural practices are used. It produces ecologically safe agricultural systems that can withstand extreme weather, drought, and soil erosion. Organic farming also encourages restoration efforts, conservation methods, and sustainable management. In terms of capital requirements, conventional farming is more expensive than organic farming. It satisfies several criteria for effective adaptation techniques and aids communities and farmers in adjusting to the susceptible impacts of climate change (Muller, 2009; Murmu *et al.*, 2022).

The effects on humans and the environment of conventional and organic agricultural methods are distinct. Greenhouse gas emissions, soil degradation, water contamination, and health problems in humans are all results of conventional farming practices. On the flip side, organic farming helps to lessen our impact on the environment by restoring natural ecosystems, which in turn leads to cleaner water and air while reducing the risk of harmful pesticide residues. Conventional farming relies on chemical interventions, such as synthetic herbicides, fertilisers, insecticides, and pesticides, to control weeds and pests and to feed plant nutrients. This is the main difference between conventional and organic farming. Conversely, organic farming produces an abundance of nutritious food by adhering strictly to natural principles like composting and biodiversity. Crop rotations, composted animal manures, and green manure crops are some of the time-tested practices that are now used in economically viable ways. In organic production, the interplay of management techniques is crucial to the well-being of the system as a whole. Organic farmers use a range of methods to enhance and preserve biodiversity, all the while preserving the soil's high fertility (Walmsley and Sklenička 2017).

Organic farming is carried out by 3.1 million farmers on 72.3 million hectares of land in 187 countries throughout the world (Willer *et al.*, 2021). Sales of organic food and drink exceeded 106 billion euros globally in 2019, demonstrating the strong desire of modern consumers for sustainable and healthful eating practices. Claimed organic farming accounts for about 75% of global agricultural output, making it a highly productive and economically viable agrarian system.

According to Willer *et al.* (2020), there were 1.4 million organic food producers in India in 2019, which was more than the combined number of producers in the top ten nations. There are pros and cons to organic farming, but in general, it's better for the environment than conventional methods. In terms of environmental and climate change impacts, it is less polluting (Sean, 2020), however it typically delivers lower yields. The observed output gaps may worsen as a result of the increased need for specialist knowledge if more farmers switch to organic methods. More habitat destruction and higher product costs might result from organic farming's widespread expansion. Hence, organic farming alone could not solve the world's food and agricultural problems in the long run, but a mix of organic and conventional methods might increase agricultural production worldwide (Meemken and Qaim 2018).

The tenets of organic farming include concern for one's health, the environment, equity, and compassion. All throughout the globe, people are striving to improve farming methods, and these ideas show how organic agriculture is making a difference. Consumers' worries about conventional farming's negative impacts on people and the planet are fuelling the organic food industry's meteoric rise. According to Yiridoe *et al.* (2005), the majority of consumers, especially in industrialised countries, see organic food as being safer and healthier compared to conventionally produced food. Rich people tend to think that organic farming is better for the planet, the climate, and the animals (Seufert *et al.*, 2017).

In order to achieve the SDGs set forth by the UN by 2030, agricultural practices will have to alter. Producing enough healthy food in a way that doesn't deplete natural resources while also allowing farmers to make a livable wage is the goal of sustainable agriculture and food systems (FAO, 2018b). There is an immediate need for change, and discussions on how to do this have centred on whether to take small, gradual efforts to increase efficiency in conventional agriculture or to radically rethink agricultural systems in accordance with agroecological principles.

Research from the Research Institute of Organic Agriculture (FiBL) indicates that there are more than 18,000 farmers overseeing almost 36.0 million hectares of organic farming in the Oceania area, which encompasses the Pacific Island nations, New Zealand, and Australia. This amounts to half of the organic land on Earth and 9.7 percent of the arable land in the area. With 35.7 million hectares, Australia accounts for more than 99 percent of this organic land, but New Zealand and Samoa also have substantial portions. Oceania is home to four nations with organic farming laws and twelve with national standards but no such laws. Lessons may be learnt from Australia's organic agricultural

success story, which has persisted despite several catastrophes (Denyer *et al.*, 2012). Sustainable agriculture, or organic farming, avoids many of the social and environmental problems that plague conventional farming. Sustainable development and food security might benefit from its rising profile and widespread use. A combination of organic and conventional methods is necessary to overcome obstacles including reduced yields, the need for specialised knowledge, and the risk of habitat loss. This strategy has the potential to increase agricultural production worldwide and bolster the 2030 Sustainable Development Goals set by the UN.

Sustainable development and organic farming.

Sustainable development in the long run relies on agriculture, especially for small-scale farmers in poor nations. It is critical to include these farmers in the transformation of agrifood systems if we are to attain the Sustainable Development Goals (SDGs) by 2030. Objective 2 of the 2030 Agenda for Sustainable Development is to eradicate hunger; agriculture plays a crucial role in this objective. On the other hand, agriculture helps with each of the other SDGs in its own way. In response to a growing number of hungry people, the first Green Revolution facilitated the transfer of agricultural technology, including fertilisers and pesticides, to developing nations. Although they were not generally accepted, early sustainable agricultural practices were put into place at this period (Pingali, 2012). While chemical inputs increased yields worldwide, worries about the health and environmental implications of chemically intensive farming led to the rise of contemporary organic farming. A greater understanding of the dangers of using chemical fertilisers and pesticides in farming led to the rise of organic farming practices in the 1970s. Sustainable agriculture is emphasised in UN Sustainable Development strategies like the Zero Hunger Challenge. All children under the age of two must not be stunted; all people must have access to sufficient food throughout the year; all food systems must be sustainable; all smallholder productivity and income must be increased by 100%; and all food must not be wasted or lost.

Organic agriculture, often known as regenerative farming, is one of the sustainability movements that is growing quickly. The idea behind this is to lessen or do away with the need for synthetic fertilisers, increase crop yields, promote biodiversity, decrease water use, and sequester carbon in the soil. Crop rotation, mulching to increase soil health, nitrogen-fixing cover crops, and integrated pest management (IPM) programs are some of the good aspects of organic farming. Soil samples direct the use of synthetic and organic fertilisers, while no-till or reduced-tillage techniques lessen soil compaction. To maximise

crop yields while avoiding water loss, erosion, and salinisation, it is recommended to use organic fertilisers instead of synthetic ones and to build effective irrigation systems (Salim *et al.*, 2020; Merah *et al.*, 2021). Soil erosion and biodiversity conservation are both averted by these strategies, which also make use of mulch and ground cover while limiting the usage of pesticides. There are many positive effects on human and environmental health from the growing organic agricultural industry. Organic food costs more, but consumers are prepared to spend more for the peace of mind they get from knowing their food was not raised in a factory. Organic food sales have increased and resource conservation has occurred as a result of the eco-friendly movement's dedication to sustainability.

CONCLUSIONS

For the sake of future generations' health, the planet, and agricultural output as a whole, organic farming is a viable alternative to traditional farming practices. The methods used for fertilisation and pest management are the main differentiators between organic and conventional farming. In contrast to conventional farming's use of synthetic fertilisers, pesticides, and herbicides, organic farming follows time-tested, natural practices like composting and biodiversity. According to the research, organic farming leads to cleaner air and water by restoring natural ecosystems, improving soil health, and drastically reducing emissions of greenhouse gases. Additionally, it keeps food free of harmful pesticide residues, which means it's safer and healthier to eat. Organic agricultural practices, such as crop rotation and composting, improve system health and maintain high soil fertility. At least 3.1 million farmers in 187 nations are using organic methods to cultivate 72.3 million hectares of land. Sales of organic food and drink reached over 106 billion euros in 2019, showing that consumers are more interested in adopting more health-conscious and environmentally concerned eating habits. Organic farming is known for being more sustainable and reducing pollution, even if it produces lower yields than conventional farming. Problems, such as habitat loss and increased production costs, may arise from the broad use of organic methods.

In 2019, India's 1.4 million organic food producers made it the biggest producer of organic foods in the world, thanks to the country's booming organic agricultural industry. Organic agriculture has the ability to enhance agricultural methods globally and has a beneficial influence on global agriculture due to its adherence to the ideals of health, environment, justice, and care. More and more people are looking for organic food options because they are worried about the impact of conventional farming on people's health and the

environment. This has brought attention to the need of sustainable agricultural practices. Agricultural techniques should minimise environmental effect, supply enough nutritious food, and allow farmers to earn a fair living if we are to reach the United Nations Sustainable Development Goals by 2030. One viable option for reaching these objectives is organic farming, which prioritises long-term viability. Australia and the rest of Oceania are leading the way in organic farming because to their growing body of legislation and the vast amounts of land that are farmed in an organic manner. Although there are many advantages to organic farming, there are also many obstacles, such as a shortage of trained farmers, insufficient facilities for marketing and certification, and restricted availability of organic supplies. Government agencies, NGOs, and the commercial sector must work together to assist farmers in making the switch to organic techniques in order to overcome these obstacles. To sum up, organic farming is a practical and long-term solution to food production that enhances society, the economy, and the environment. Organic farming has the potential to greatly improve the sustainability and resilience of the agricultural system by increasing soil health, preserving biodiversity, reducing the impact of climate change, and offering better food alternatives. However, in order for organic agriculture to be widely adopted and succeed, it is essential to remove current obstacles and create a supportive atmosphere.

Conflict of interest: Nil

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