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ORGANIC FARMING AND SMALL-SCALE FARMERS: MAIN OPPORTUNITIES AND CHALLENGES

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ABSTRACT

This study aims to understand how small-scale farmers in India see the value of organic farming. In recent years, organic farming has gained a lot of attention because of its potential benefits for human health and the environment. However, for organic farming to be widely accepted and supported, it's important to know what small-scale farmers think, as they form a big part of the agricultural community. One of the main concerns for food policymakers around the world is making sure there's enough food for a growing population. This study looks at the main strengths and challenges of the food production system used by small-scale farmers in developing countries, especially focusing on how it affects their living conditions, considering the growing interest in organic farming. The study found that the main benefits of organic farming include protecting the environment, making farming more adaptable to climate changes, increasing farmers' income, reducing the need for expensive outside inputs, improving social networks, and creating more job opportunities. Overall, the survey provides valuable insights into how small-scale farmers in India see the importance of organic farming. Policymakers, agricultural support organizations, and other relevant groups should use these findings to help create strategies that help small-scale farmers overcome challenges and encourage them to switch to organic farming methods. Also, improving food security is mostly about increasing people's ability to buy food. However, the main challenges in this food production system include lower crop yields compared to traditional farming, problems with managing soil nutrients, issues with getting certified and accessing markets, and the need for more education and research for small farmers. The study concludes that although organic farming may present some serious challenges for small-scale farmers, it can and should be seen as part of the solution to improving their quality of life.

Keywords: *population growth; organic farming; food security; food safety; sustainable livelihood; sustainable agriculture.*

INTRODUCTION

Organic farming is a way of growing crops and raising animals without using most man-made chemicals like fertilizers, pesticides, or genetically modified organisms. Instead, it uses things like compost, animal waste, and natural pest control methods. This approach helps keep the soil healthy, supports a variety of living things, and reduces pollution. Organic farming is often used by

small farmers and is different from large-scale farming that uses a lot of chemicals and grows only one type of crop[1].

The idea of organic farming came about because the use of synthetic chemicals caused harm to the environment. Organic farming tries to improve soil quality, protect biodiversity, cut down on greenhouse gas emissions, and help people prepare for natural disasters. Some of the methods used in organic farming include rotating crops, using cover crops, adding compost, and managing pests naturally. The goal of organic farming is to support a healthy environment, soil, and people[1].

According to the FAO, nearly one in nine people worldwide are not getting enough food.

In some parts of Africa, this number can be as high as one in four. Most of the hungry people live in poorer countries, with millions in Asia, Africa, and Latin America facing food shortages. Although these numbers have gone down a bit, especially in Latin America, there is still a lot of work to be done to solve the problem of hunger[1-2].

As the population grows, the need for food, animal feed, and fuel will also increase. People in developing countries are eating more meat and dairy, which puts more pressure on natural resources. By 2050, the demand for agricultural products is expected to rise by 1.1% every year as the world's population reaches 9 billion. Organic farming is a sustainable method that uses natural fertilizers made from plant and animal waste, and it helps protect the environment. Organic farming helps recycle animal waste, uses fewer pesticides, and reduces soil erosion and pollution of water[3].

However, it often produces less food than regular farming, and the cost of food can be higher. Overall, organic crops usually give about 25% less yield than conventionally grown crops, but this can vary based on the type of crop.Agriculture uses a large portion of the world's land and water[4].

The FAO says that 11% of the land and 70% of freshwater are used for farming. In poorer countries, people have less land to farm compared to wealthier nations. Many farmers in Africa and other parts of the world use a method called slash-and-burn, which leaves land fallow for a few years. But as the population grows, farmers are not leaving land fallow as much. This leads to soil degradation and erosion. Because of this, many farmers have to move to new areas to keep farming[5].

The amount of land available for farming per person has dropped from 0.38 hectares in 1970 to 0.2 hectares in 2013 and is expected to fall to about 0.15 hectares by 2050. In developing countries, the amount of arable land and water is decreasing, and this will become even worse in parts of Asia by 2050. Climate change is also a big challenge for farmers in developing regions. Small-scale farmers are especially at risk because they are more affected by weather changes[4].

Africa is one of the places most vulnerable to climate change, and its main crops are expected to do worse in the future.In addition to farming issues, these regions may face food access problems. Studies show a link between climate change and social unrest, though more research is needed to confirm this. Maps from the global food policy report show that areas with weather-related disasters also have more civil conflict. For example, a drought could lead to water shortages and other resource issues, which can cause social problems. These are areas where food insecurity is already a big problem[3-5].

ENVIRONMENTAL FRIENDLY FARMING AND PRODUCTION

The oldest farming method in the world is organic farming. It's not just about growing land and making food; it also focuses on keeping and balancing the ecosystem. Before the Green Revolution, most people used organic farming. Until then, no chemicals like fertilizers and pesticides were used in farming. In India, about 74% of the economy depends on small farmers, who are being pushed to grow more food to meet the needs of the growing population and export demands[6]. To keep up with the food needs from the past forty years, farmers started using hybrid crops, wrong mixtures of pesticides and fertilizers, and other changes. This has caused the soil to lose its natural fertility and balance, leading to lower crop yields. The idea of returning to natural farming methods is now being used to restore higher yields and a balanced ecosystem. Organic farming is becoming more important worldwide[7]. However, it's hard to get accurate information because there's not much official data and the systems are often kept secret. Techniques like crop rotation, using natural fertilizers, companion planting, cover crops, intercropping, and minimal tilling are key parts of organic farming[1].

Health: The well-being and completeness of living systems are signs of good health.

Organic agriculture aims to protect and improve the health of all ecosystems and species, from soil microbes to humans, whether used for farming, processing, selling, or eating[1].

Fairness: The systems for producing, selling, and buying food should be open, fair, and take into account the real costs to people and the environment.

Ecology: Organic farming is based on the natural processes of the environment[1].

It emphasises recycling and maintaining ecological processes as the foundation of farming.

Care: Organic farming is a living system that responds to changes from inside and outside.

It also considers the health and well-being of people working in farming, along with management and technology choices. People choose organic food because they believe it is of better quality[3]. In the EU, having good quality is a key goal in the rules for organic farming and food. One challenge is figuring out what makes food quality and how to measure it. There’s a background

that helps to include quality definitions and evaluation methods into a framework that fits with the goals of organic farming and food production. Many factors determine the quality of organic food. Organic farming can improve the health of both farmers and consumers by reducing the harm from harmful chemicals. There are now more organic farms than before[1-4]. A framework for how organic farmers should behave (OFB) can help small-scale farmers to promote wilderness-based organic farming, which is an important part of global agriculture.

HISTORY

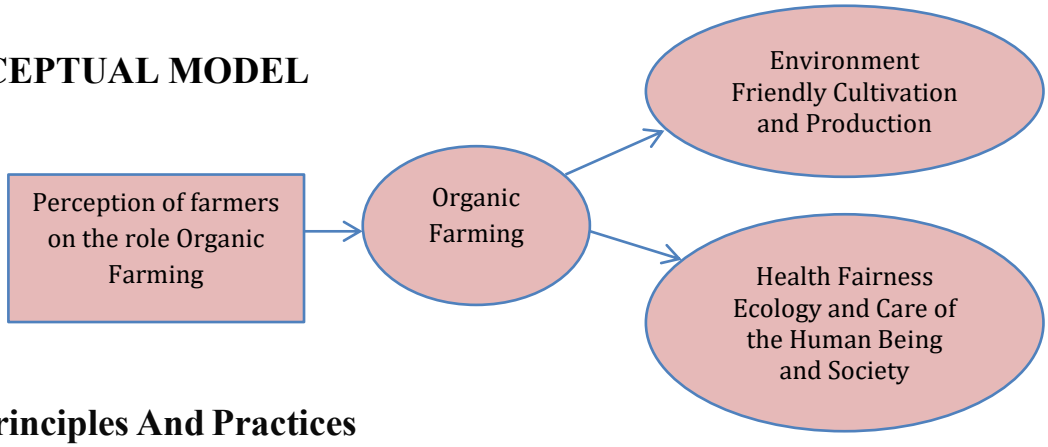
In the early 1900s, people like Sir Albert Howard, F.H. King, Rudolf Steiner, and others started thinking about organic farming. They believed that better farming could be done by using animal waste (often turned into compost), planting cover crops, rotating crops, and using natural ways to control pests. After working in India, Howard saw how traditional farming worked there and wanted to bring those ideas to the West[1]. People like J.I. Rodale and his son Robert helped spread these ideas by writing about organic farming in the 1940s and later. In the 1960s, Rachel Carson's book *Silent Spring* showed how harmful pesticides were to the environment, which made more people want to eat organic food. For thousands of years, farmers didn't use chemical products[4].

The first man-made fertilizers were made in the middle of the 1800s. These fertilizers were cheap, strong, and easy to carry in big amounts. The 1940s became known as the "pesticide era" because of the rise in chemical pesticides. These methods helped crops grow quickly, but they also had bad long-term effects like compacted soil, erosion, and less fertile land. Also, poisonous chemicals ended up in food, which worried people[5].

In the late 1800s and early 1900s, scientists started looking for ways to fix these problems while keeping high crop yields. Albert Howard, who helped start the organic movement, and his wife Gabrielle, a botanist, founded the Institute of Plant Industry in 1921 to improve traditional farming in India. They worked on crop rotations, techniques to stop erosion, and using compost and manure in a planned way, building on what Indian farmers had been doing. They also brought better ways of caring for animals and using tools from their scientific training[6].

When Albert Howard returned to Britain in the early 1930s, he started promoting organic farming as a system. In 1924, Rudolf Steiner gave eight lectures on farming, talking about how the moon, planets, non-physical beings, and natural forces affected crops. These lectures were asked for by farmers who noticed their soil was getting worse and their crops and animals weren't as healthy anymore because of chemical fertilizers. The lectures were published in 1924 and the first English version came out in 1928 as the Agriculture Course[5-7].

CONCEPTUAL MODEL



Key Principles And Practices

- **Soil fertility:** Organic farming uses methods like rotating crops, planting cover crops such as clover, adding compost, and using animal manure to improve soil health instead of synthetic fertilizers[8].
- **Controlling pests and weeds:** Instead of chemical herbicides and pesticides, organic farming uses natural methods like encouraging helpful insects and manually removing weeds.
- **Biodiversity:** By avoiding harmful chemicals, organic farming supports a more balanced ecosystem and allows for a greater variety of plants[1].
- **Animal welfare:** Organic farming follows stricter rules to ensure animals are treated kindly, have good living conditions, and are fed natural food[7].
- **No GMOs:** Organic farming does not use genetically modified organisms.
- **Holistic system:** This approach looks at the entire system, aiming to improve soil quality, support ecosystems, and promote overall health.

RATIONALE OF THE STUDY

Petroleum-based pesticides and fertilizers already pollute the environment, which is the main reason people support organic farming. We need to take care of the soil and nature, go back to healthy farming methods, and bring balance back to the environment. To protect the natural world today, when pollution is very high, we need to reduce it and use control methods[8]. Nature must be protected because India has a lot of different types of nature and farming, and it produces most of the food needed to feed its growing population. Organic farming can help meet the food needs of an increasing population by giving better crop yields. Organic farming is a very important practice that should be used to keep the country healthy and reduce diseases and problems that come from chemicals used in food production. Using energy and other natural resources like light, water, soil, and both renewable and non-renewable resources responsibly is important in organic farming. It

also helps protect biodiversity, animal welfare, and keeps the ecosystem balanced. It also makes the soil more nutritious and improves water quality[6-9].

IMPLICATIONS AND LIMITATIONS

- **Positive Perception:** Small-scale farmers might feel good about organic farming because they see it as helpful for keeping the environment clean, making the soil healthier, and protecting different types of plants and animals[6].
- **Economic Viability:** Some farmers might worry about whether organic farming is a good way to make money because it can cost more to produce and give less in output.
- The study might help understand what makes farmers think about whether organic farming is profitable[1-6].
- **Benefits for the Environment:** The study might show that farmers know organic farming helps the environment by using less harmful chemicals, making the soil more fertile, and using water more wisely.
- **Market Demand:** The findings could show that farmers notice more people want to buy organic products, which might mean they can sell their goods for more money and have better chances in the market[1].
- **Obstacles and Challenges:** The study might point out the difficulties small-scale farmers face when trying to switch to organic farming, like not having enough knowledge about the methods, not being able to get the right materials, and going through the process to get certified[1].

LIMITATIONS

Small-scale farmers often find it hard to get access to resources needed for organic farming, such as certified organic seeds, organic fertilizers, and techniques for managing pests. They might also lack the training or knowledge required to practice organic farming properly. Organic farming needs special skills in sustainable practices, composting, crop rotation, and using natural ways to control pests[6-8]. Moving from traditional farming to organic farming takes time, usually three years, during which farmers must follow organic methods but can't yet sell their products as certified organic. Even though organic food usually sells for more money, small-scale farmers may struggle to get into organic markets. Organic farming also usually requires more work and effort compared to regular farming[8].

OPPORTUNITIES

- E**nvironmental benefits:** Organic farming helps improve the health of the soil by using methods like composting and rotating crops. It also boosts biodiversity and helps protect water by not using harmful chemicals[7].

- **Health and nutrition:** Foods grown organically have less chemical residue and may have more nutrients, which makes them better for people to eat and reduces chemical exposure for farmers.
- **Increased income potential:** By cutting down on costs for synthetic fertilizers and pesticides, farmers can make more money[6].
- Organic products often sell for more money than regular ones.
- **Growing demand:** More people are becoming aware of the benefits of organic food and are choosing to buy it, which is increasing the demand for these products[6].
- **Development of rural areas:** Organic farming can create jobs not just in farming but also in areas like selling, transporting, and preparing organic products[6].

CHALLENGES

- **Lower yields:** When farmers first switch to organic methods, they may get less crop from each area of land, which can be hard to manage[8].
- **Higher costs and labour:** Organic farming often needs more work and can cost more upfront for things like organic fertilizers, pest control, and certification.
- **Market access and competition:** Even though more people want organic products, the market is still small, and it can be hard to find buyers who pay fairly[6].
- Competition is getting worse, especially in international markets.
- **Costs of certification:** Getting and keeping organic certification can be costly and take a lot of time, which can be a financial burden for farmers[6-8].
- Compared to regular farming, there may not be enough support systems for storing, handling, and shipping organic goods, which makes things more expensive and harder.
- **Gaps in knowledge and awareness:** Some farmers may not know much about organic farming, and without enough government help and research, it can be hard for them to adopt or improve these practices[6-9].

MAJOR BARRIERS FACED BY SMALL-SCALE GROWERS

Even though small-scale farming has many benefits, there are several challenges that need to be addressed to make it both profitable and sustainable. These challenges are not unique to the United States; small-scale farmers around the world, including in countries like India, Ukraine, the United Kingdom, and some African and Asian nations, face similar problems[10]. Even though farmers in developing countries may have specific issues like a lack of land and water, it's still useful to understand the common challenges that small-scale farmers face globally, as many are dealing with similar or even the same problems. There are many different challenges in small-scale farming worldwide[6-9]. Some of these include economic issues, difficulties in selling their products, high labor costs, limited access to resources and technology, reduced production levels,

the effects of climate change, lack of education, and poor infrastructure. Based on our review of available information, here are the main categories of challenges that small-scale growers face[6].

CONCLUSIONS

Small-scale farms are very important for growing fresh food in developed countries like the USA. In many developing countries, small-scale farming is the main way people get their food. Small-scale farmers haven't had much access to modern farming technologies. A good way to manage their farms can help improve the soil, which in turn makes crops better and more plentiful. Organic farming is one option. In a way, organic farming is a type of agriculture that gives consumers food that is healthy, tasty, and reliable, while also taking care of the environment and its natural systems. Organic products are good for the environment and also offer health benefits to people. Organic farming has become popular because it produces safer and healthier food. This article talked about the importance of small-scale farming, listed some technologies that can be used in small-scale farming, and showed how these technologies can help. Automating irrigation on small farms can help increase productivity and solve the problem of not having enough workers for manual tasks. Organic farming helps a country's people be healthier, the environment to be better, and the economy to grow. Since India is currently the biggest producer of organic food in the world, supporting organic farming there can help create a country that is healthier, more eco-friendly, and more nutritious. Encourage people to build the best possible relationship between humans and the environment.

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