

Organic Farming

The Way Forward

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Abstract

The development and intensification of contemporary agriculture pose one of the greatest threats to global biodiversity today. Many people increasingly view supposedly "sustainable" farming practices, such as organic farming, as a viable solution to the ongoing loss of biodiversity. The projected global agricultural expansion over the next fifty years presents an unprecedented danger to biodiversity worldwide. According to a UN estimation from 2003, the Earth's population will reach about 9 billion. Organic farming is considered more environmentally friendly because it does not use external inputs like pesticides or mineral fertilizers. Although transitioning to organic farming typically results in lower crop yields, proponents emphasize its sustainability, particularly due to

the improvement in soil quality associated with organic matter. Some research indicates that organic farming can generate 22.0% higher net profits for farmers compared to conventional farming, despite a 9.2% reduction in crop output. This increased profitability is primarily due to the availability of premium prices (20–40%) for certified organic products and an 11.7% decrease in production costs. Furthermore, organic farming systems generally show an improvement in the physical, chemical, and biological properties of the soil, as well as enhanced macro- and micronutrient availability, indicating better soil health and sustainable crop production.

Keywords: Organic farming, sustainable agriculture, soil health, and productivity.

Introduction

Organic farming is an agricultural process that relies on biological fertilizers and pest control derived from animal or plant waste. It was

developed as a response to the environmental damage caused by chemical pesticides and synthetic fertilizers. Essentially, organic

farming is a modern agricultural system that seeks to repair, maintain, and enhance ecological balance using environmentally friendly methods. Organic farming employs techniques such as crop rotation, the use of crop residues, animal manures, legumes, organic farm waste, and bio fertilizers. It largely avoids synthetic fertilizers, pesticides, growth regulators, and food additives. This system promotes agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity.

Research has shown that organic farming can produce higher yields compared to conventional systems. Additionally, organic farms often exhibit improved soil health, including higher nitrogen mineralization potential and greater microbial population diversity. Enhanced soil health in organic systems typically leads to lower incidences of pests and diseases. The principles of organic

History of organic farming

The term "organic farming" was coined by British Agronomist Lord Northbourne in his book "Look to the Land," written in 1939 and published in 1940. He described a holistic, ecologically balanced approach to farming, envisioning "The Farm as an Organism." Around the same time in Japan, microbiologist Masanobu Fukuoka developed and practiced a model of "No-Till" organic farming from 1940, which he advocated for over thirty years. This method is now known as natural farming or Fukuoka Farming. The modern concept of organic agriculture began in the early 20th century, initially in Europe and later in the United States. This movement emerged in response to increasing soil erosion, depletion, lack of crop diversity, and declining food quality. Concurrently, the mechanization of agriculture evolved rapidly, significantly boosting crop yields and making farming more affordable. Thus, the modern organic movement and industrialized agriculture began simultaneously.

British botanist Sir Albert Howard, often regarded as the father of modern organic

farming emphasize generating necessary plant nutrients within the farm and using local resources for crop protection, minimizing the use of external inputs. The goal is to build and maintain 'living' soil, which supports soil fertility and overall ecosystem health. Organic farming involves practices such as green manuring, composting, vermicomposting, and the use of bio-fertilizers and bio-pesticides. By focusing on soil health, organic farming systems can sustain themselves with minimal maintenance costs and reduced reliance on external inputs. This approach not only supports sustainable agricultural practices but also revitalizes rural economies and communities. While there are no universal regulations for organic production, the general guidelines prohibit synthetic inputs and emphasize long-term soil management and ecological sustainability.

agriculture, played a pivotal role in documenting traditional Indian farming practices in Pusa, Bihar, which he deemed superior to conventional agricultural science. He detailed his experiences in his book "The Agricultural Testament" and later published "The Soil and Health: A Study of Organic Agriculture" in 1947, the first book to explicitly title itself with "organic agriculture."

In Germany, Austrian philosopher Rudolf Steiner introduced biodynamic farming in 1924, which was likely the first comprehensive system of organic farming. Steiner's approach emphasized the farmer's role in balancing the interactions between animals, plants, and soil. He posited that healthy animals depend on healthy plants, which in turn rely on healthy soil, and vice versa. Steiner's system was based on his philosophy of anthroposophy rather than scientific principles. To advance his farming methods, Steiner founded an international research group called the Agricultural Experimental Circle of Anthroposophical Farmers and Gardeners of the General Anthroposophical Society.

Principles of Organic Farming

The International Federation of Organic Agriculture Movements (IFOAM) outlines four fundamental principles that underpin organic farming: Health, Ecology, Fairness, and Care.

1. **Health:** Organic farming should enhance soil health, thereby supporting the well-being of plants, animals, humans, and the planet as a whole.
2. **Ecology:** Organic farming should uphold and sustain natural cycles and living systems.
3. **Fairness:** It should foster robust relationships that promote fairness in environmental stewardship, social justice, and fair trade.
4. **Care:** Organic farming should be practiced responsibly, with consideration for the environment and future generations.

Types of Organic farming

Pure Organic Farming: This approach exclusively uses organic manures and bio-pesticides, completely avoiding inorganic chemicals and synthetic pesticides.

Integrated Organic Farming Systems:

Unlike pure organic farming, integrated organic farming systems embrace available technologies to increase efficiency and food production while adhering to organic principles. These systems avoid substantial amounts of chemicals and synthetic pesticides, remaining within organic guidelines.

Integrated Organic Farming: This method combines various techniques to meet both ecological and economic goals, including integrated pest management and nutrient management strategies.

Advantages of organic farming

- It helps to maintain environment health by reducing the level of pollution.
- It reduces human and animal health hazards by reducing the level of residues in the product.
- It helps in keeping agricultural production at a sustainable level.

- It reduces the cost of agricultural production and also improves the soil health.
- It ensures optimum utilization of natural resources for short-term benefit and helps in conserving them for future generation.
- It not only saves energy for both animal and machine, but also reduces risk of crop failure.
- It improves the soil physical properties such as granulation, good tilth, good aeration, easy root penetration and improves water-holding capacity and reduces erosion. It improves the soil's chemical properties such as supply and retention of soil nutrients, reduces nutrient loss into water bodies and environment and promotes favourable chemical reactions.

Disadvantages of organic farming

- One of the most serious problems with organic farming is a lack of proper infrastructure and marketing.
- Less production: When compared to chemical products, organic farming produces fewer items in the first few years. As a result, farmers are having difficulty supporting large-scale production.
- Organic products are more sensitive to faults and have a shorter shelf life than chemical items.
- Limited production: In organic farming, off-season crops are limited and have fewer alternatives.

Government initiatives to promote organic farming in India

- National Project on Organic Farming (NPOF)
- ICAR contribution in promoting organic farming
- National Horticulture Mission (NHM)
- Rashtriya Krishi Vikas Yojna (RKVY)
- Network Project on Organic farming of ICAR
- APEDA (Agriculture and Processed Food Development Export Authority)

- Participatory Organic Guarantee System for Certification in India (PGS-India)
- Organic farming policy 2005
- NPOP (National Program for Organic Production)
- Paramparagat Krishi Vikas Yojna (PKVY)
- National Mission for Sustainable Agriculture (NMSA)
- UOCB (Uttarakhand organic commodity Board)
- Organic Agriculture Act (2019)
- Uttarakhand State Organic Agency (USOCA)

Conclusion

In conclusion, organic farming is a crucial agricultural method that promotes sustainability, environmental protection, and the production of healthy food. By prioritizing soil health, biodiversity preservation, and the avoidance of synthetic inputs, organic farmers contribute to a stronger and more balanced ecosystem. The benefits of organic farming include reduced chemical exposure, improved soil quality, enhanced nutrition, and better

animal welfare. Nonetheless, organic farming faces challenges such as pest and disease management, nutrient and weed control, and market access. With innovative solutions and support, these challenges can be addressed, allowing organic farming to thrive and play a significant role in developing a more resilient and sustainable food system for future generations.