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ORGANIC FARMING FOR HEALTHY INDIA IN 21ST CENTURY

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With the adverse effects of conventionally grown food products, awareness about nutritionally rich and safe food has gained popularity among the consumers. Organic farming has become as a suitable alternative for the production of high quality food products along with the safeguard of soil and environmental health. Among the various organic growers, India is a national which is conferred with indigenous skills and potentiality of growth in organic farming. With initiation of various government schemes in the recent past, India has become one of the largest organic grower country. Thus, organic farming has a great impact on the sustainable development of a nation like India.

Availability of safe and quality food for common population is a vital concern for all the policy makers across the globe. In the post green revolution era, the crop productivity has attained its peak and at present a declining trend has been found in crop production in India despite higher use of synthetic fertilizers and other agro-chemicals. Unbalanced use of chemical inputs has deteriorated the soil and ground water quality along with higher input requirement and recurrent disease and pest incidences. Also, indiscriminate use of synthetic agro-chemicals has led to the deteriorated soil ecosystems services, high content of chemicals in food web and serious health hazards to both human beings and animals. Therefore, there is need for an agricultural system with maintained resource quality and system productivity. Organic farming has emerged as an alternate agricultural production system which not only produces the safe and quality food for all but also maintain and enhance the ecosystem services by maintaining harmony with environment. Organic farming can handle many problems related to soil and environmental health as it relies on the sustainable soil-plant-ecological relationship (Barik, 2017).

According to the traditional approach organic farming is the use of on-farm inputs and stoppage of synthetic chemical fertilizers for crop production. But organic agriculture is far

deeper concept besides the non-chemicalization of farm. According to the recent researches in the field of organic farming, it is an inclusive accession for maintaining soil and plant productivity leading to the enrichment of the surrounding ecology. As per the definition as given by International Federation of Organic Agriculture Movement (IFOAM) “Organic agriculture is a production system that sustains the health of soils, ecosystems and people”. It confides on biodiversity, ecological processes and cycles fitting to local conditions, rather than use of inputs with harmful effects. The major objective of organic farming is to develop a self-sustainable agricultural production system in harmony with nature which provides healthy, economically and ecologically sustainable agricultural produces with endowment of enclosing biodiversity and its entire components. Organic farming basically relies on four principles i.e. Principle of health, care, ecology and fairness (fig. 1). Inspiration and enhancement of biological cycles in production system, reduction of all types of pollution and increase in long-term soil fertility, conservation of genetic diversity of food and production of high-quality food lies in the basic principles and practices of organic farming (Das *et al.*, 2020). Before commencement of pure organic farming, the farms are grown for 3 years without use of any synthetic fertilizers and other agro-chemicals along with lower contamination from adjacent farms.

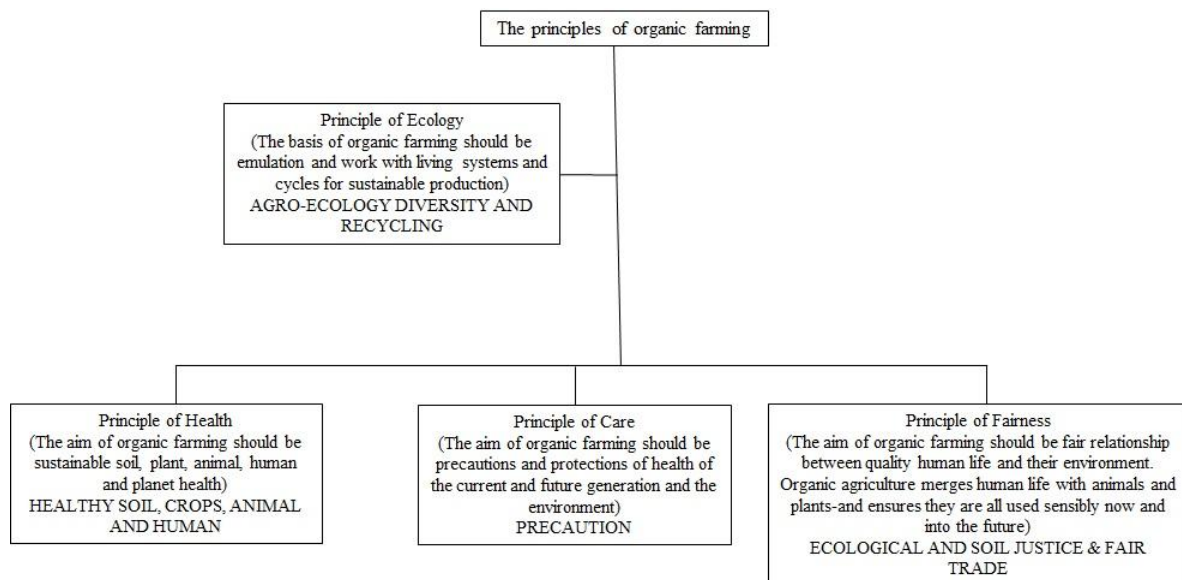


Fig. 1. Various principles of organic farming (Source: IFOAM, 1998; Das *et al.*, 2020)

Benefits of Organic Farming

Organic farming has emerged as a most suitable alternative in the recent past for sustainable agricultural production; as it not only provides the safe and healthy food to both growers and consumers but also provides a safeguard to the deteriorating soil and environmental health (Das *et al.*, 2020). Organic farming has several benefits; among them the major ones are as follows:

- Nutritional benefits and health safety
- Environmental impact
- Socioeconomic impact
- Organic agriculture and sustainable development

➤ *Nutritional benefits and health safety*

In the recent past, adverse impacts of synthetic fertilizers and other agro-chemicals have created the awareness about the demands of organic products among both growers and consumers because of higher nutritional value of organic products. Among the various agricultural products grown organically have higher nutritional value over the conventionally grown products especially the leafy vegetables, tubers and other vegetable which are consumed directly and grown organically have higher dry matter and nutritional level. Also, organically grown cereals have higher quality protein and better amino acid scores over the conventional products (Waniet *al.*, 2017). The study conducted by Numberget *al.* (2002) showed that the meat produced from organically feed cattle contained fourfold more linolenic acid and polyunsaturated fatty acids. Also, the milk produced from organic farms recorded higher carotenoids, vitamin E and polyunsaturated fatty acids.

Among the plants, organically grown plants have higher iron, magnesium, calcium, potassium and phosphorus content. Also, the organically grown agricultural products have no pesticides residues.

➤ *Environmental impacts*

Various studies conducted across the globe have revealed the protective role of organic farming in environmental conservation. Reduced/no use of external synthetic fertilizers and other agro-chemicals in organic farming provides a better safeguard for soil, water, local terrestrial and aquatic wildlife along with the environment. In addition to this, the organic farms maintain the higher level of biodiversity due to use of organic inputs and crop rotation.

Organic farming maintains the higher level of soil physico-chemical and biological properties because of high amount of organic matter, enzymatic activity, biomass, high water holding capacity and percolation and less soil erosion (Hansen *et al.*, 2001).

➤ ***Socioeconomic impacts***

The higher labour requirement in the organic farming produces more income generation and employment as compared to conventional farming. Though the higher cost of organic certification, high cost of field manpower and organic inputs (10-40% higher) and lack of subsidies on organic inputs in India resulted in higher cost of cultivation under organic farming, but at the same time the premium prices of the organic products (25-70% higher than conventional products) and increasing demands of organic products results in the positive sides of the organic farming. In the recent time, most of the organic inputs are produced at the farm level, which is beneficial for the organic growers for reducing the cost of cultivation (Mukherjee *et al.*, 2018).

➤ ***Organic agriculture and sustainable development***

The concept of organic farming integrates three crucial goals- soil and environmental health, social and economic equity and economic profitability. Organic farming approach for sustainable development basically relies on:

- ✓ Long-term maintenance of agro-ecosystem and natural landscape.
- ✓ Balanced use of natural resources and reduction in overexploitation and pollution of these natural resources.
- ✓ Increased use of renewable energy sources and minimized use of non-renewable energy sources.
- ✓ Long-term maintenance of soil and environmental health.
- ✓ Provision of safe, secure and healthy working environment at organic farms.
- ✓ Scientific use of indigenous and traditional technology for better production of organic farms.

Organic farming is a balanced strategy for rural employment, food security, conservation of natural resources, poverty alleviation, sound infrastructure and adoption of an export-oriented production system (Soumya, 2015).

Present Status and Future of Organic Farming in India

Among the 172 organic growers' countries across the globe, India holds a unique position. Among all the countries, in 2020-21; India has highest number of organic growers (1599010). Table 1 contains the details about the organic sector involvement in India during 2020-21.

Table 1. The status of organic operators in India during year 2020-21.

S.No.	Particulars	Operators (Nos.)
1.	Individual farm producers	3495
2.	ICS Groups	4781
3.	Total Processors	1703
4.	Total Traders	745
5.	Wild operators	71 (Total collectors 8724)
6.	Total operators	10795
7.	Total farmers	1599010

Source: Organic Agriculture statistics APEDA (2020-21)

At the same time; in terms of area and production; the total area under organic production during 2020-21 was 4339184.93 ha and the production was 3496800.34 MT. Table 2 contains the details about the sector wise contribution under organic farming in India during 2020-21.

Table 2. Details about the area and production under organic farming in India during 2020-21.

	Area (ha)
Cultivated area (organic + in-conversion)	2657889.33
Wild harvest collection area	1681295.61
Total area (cultivated + wild harvest)	4339184.93
Production (MT)	
Farm production	3468991.98
Wild harvest production	27808.36
Total production	3496800.34

Source: Organic Agriculture statistics APEDA (2020-21)

Indian exports of organic agriculture reached 1040.95 million USD during the year 2020-21 with total export quantity of 888179.68 MT (APEDA, 2021). Among the exported products, the largest contribution was from the processed organic food products (405383.99 MT) followed by oil seeds (100815.43 MT); cereals and millets (48677.64 MT); spices and condiments (8053.30 MT) and tea (6210.89 MT). The major countries in which Indian

organic products were exported during 2020-21 are as follows: USA > European Union > Canada > Great Britain > Korea Republic > Israel > Switzerland etc.

Future of Organic Farming in India

India's domestic market of organic farming is growing at very rapid pace with initiation of many Govt. schemes to help the organic growers. These Govt. schemes like ParamparagatKrishiVikasYojana (PKVY); RashtriyaKrishiVikasYojana (RKVY); Mission Organic Value Chain Development for North Eastern Region (MOVCDNER); National Programme for organic production (NPOP); National Mission on Oilseeds and Oil Palm (NMOOP); National Food Security Mission (NFSM) etc. have successfully helped in development of domestic organic markets in various states of India. Demands of more and more scientific technologies and packages and practices of organic farming in India and their implementation in farmers' field will ensure economically sound and viable organic agriculture in near future (Barik, 2017).

Conclusion

Increasing health and environmental awareness has created tremendous popularity of organic farming among the growers and consumers in the recent past. The higher nutritional value of organic produce ensures the safe food from farm to plate. Along with the safe food, organic farming also provides the safeguard to both soil and environmental health. In the countries like India organic farming has huge potential and the market of organic farming in India is growing at a very rapid speed. Thus, promotion of organic farming in India can build an ecologically, nutritionally and economically healthy nation in the near future.

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