

Article Id
 AL04118

ROLE OF ORGANIC FARMING IN SUSTAINABLE AGRICULTURE

Email

¹Prathibha M.D. * and ²Lalit Krishan Meenapratibhaihr@gmail.com¹Indian Institute of Horticultural Research, Bengaluru, Karnataka-560089, India²Directorate of Rapeseed Mustard Research, Bharatpur, Rajasthan-321303, India

Modern agriculture systems are highly dependent on the use of synthetic and chemical inputs to increase crop yields. But excessive use of such synthetics and chemicals causes environmental pollution adding to health hazards. Further, the total amount of energy used in modern agriculture is also a concern, as many farm chemicals require energy-intensive production methods that depend heavily on fossil fuels. How can agriculture be less pollutive? More environmentally friendly? Less energy conservative? More sustainable? More nutritious and tastier? To answer this, over the past two decades, the farmer and consumers' attention has been drawn in the direction of organic farming or organic agriculture. Here in this article, we are explaining the organic farming role in sustainable agriculture.

Organic farming is a practice that comprises the cultivation of plants and animal rearing in natural conditions. This practice mainly uses biological materials, evading the use of synthetic substances (mainly fertilizers, pesticides, and herbicides) to maintain soil fertility and ecological balance, thereby reducing wastage and pollution. Organic farming began in the early twentieth century as a response to rapidly changing agricultural practices.

Organic farming: Goals, Principles, and Components

Organic farming is developed on understanding the ways of nature. It doesn't deplete the soil's nutrients nor humiliate it to meet the needs. The soil's living inhabitants are safe and nurtured. The normal microorganisms in the soil have not been harmed in any way. In organic farming, the soil is the main priority. The soil's health and composition are retained since it is considered to be the most essential medium. Thus, organic farming is a farming method that seeks to keep the soil breathing, preserve its good health, cultivate the ground,

and then raise the crops. This must be done in an environmentally friendly manner to maintain a pollution-free climate (Narayanan 2005). International Federation of Organic Agriculture Movements (IFOAM), defines the goal of organic farming as "Organic agriculture is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines the tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved".

Principles of Organic Farming

1. Principle of Health: Sustaining and enhancing the health of soil, thereby plants, animals, and humans.
2. Principle of Fairness: Building relationships to ensure fairness about the familiar environment and life processes
3. Principle of Ecological balance: Moving along with the ecological balance and cycles in nature.
4. Principle of Care: Managing resources/inputs prudently and responsibly to protect the health and welfare of the environment along with present and future generations.

Components of Organic Farming

1. Crop rotation: It's a systematic rearrangement for the growing crops in a regular sequence on the same piece of land over some time.
2. Crop residue: Utilization of residue from the economical and non-economical parts of the previous crop for various purposes such as animal fed, mulch, recycling nutrients, etc.,
3. Manure: The primary effect of organic manure correlates to the release of humic substances and decomposition of biological products affecting favorable growth and yield of a crop.
4. Waste: Broad range of substances such as sewage, and sludge mainly from domestic and industries. They contain heavy metals along with other harmful substances that can cause a hazard to crops, animals, and human beings. The waste is used after effective treatment and proper decomposition.

5. Bio-fertilizers: The key factors here are microorganisms, with several roles to play in many processes such as increasing water-absorbing units, mobilizing nutritive elements in available forms through a biological process.
6. Bio-pesticide: Natural plant products that have biological activity against insects, nematodes, fungi, and other organisms affecting crop growth and yield.
7. Vermicompost: Organic manure produced by the action of earthworms that live in soil, consume biomass and excrete it in digested form. The average nutrient composition of vermicompost is higher than the farmyard manure.

Organic Farming: Current Status in India

India has over 835,000 certified organic producers, accounting for nearly 30% of all organic producers worldwide. However, India accounts for only 2.59 percent of the overall area under certified organic farming, with 1.5 million hectares (57.8 million hectares) (FiBL-IFOAM report 2017). China and India have around 80 % of the total organic cultivable area in Asia. According to WHO, the current global organic food market value is around \$37 billion. Of this, herbal plants and medicines account for a \$14 billion market is for herbal plants and medicines, which is expected to attain \$5 trillion by the year 2050. Organic farms are environmentally friendly and more profitable, as fewer chemicals are used and hence chemical residue are less. Organic farming has several environmental benefits and produces nutritious food (Pant and Mishra, 2013), and long-term organic farming can provide comparable yields or even outperform conventional methods.

The organizations working in the organic food business have to increase awareness among farmers and customers on the importance of organic farming. Sikkim is the first state in India with 75,000 ha of land under organic cultivation as a 100 % organic state. It is also estimated that by 2030, Meghalaya, a northeast state of India, will also transfer 200,000 hectares of land into organic cultivation. Over 100,000 farmers in Kerala have signed a petition endorsing organic farming (NPOF 2015-16). Under the National Mission for Sustainable Agriculture, the Indian Government is promoting organic farming through a variety of programmes (NMSA). The Government has implemented Paramparagat Krishi Vikas Yojna (PKVY) and Organic Value-Added Development. State governments under these schemes provide financial support to a cluster of 20 ha of land under organic farming, with the state governments. During a three-year transition period, the Government has

allocated approximately \$730 per hectare of land. In addition, the Indian Government announced investments of \$15 million and \$44 million, respectively, for organic market growth and the participatory guarantee scheme (PGS)(Frick and Bonn 2015).

Key Challenges in Organic Farming

1. **Low crop yield during conversion:** Over the conversion cycle of three years, organic production efficiency is smaller than traditional methods, and there is no premium price for the produce.
2. **Inadequate Quality standards:** The majority of organic farmers struggle to achieve the desired output in organic cultivation owed to a lack of knowledge, and hence face difficulties in maintaining a continuous demand.
3. **Policy support:** Organic cultivation necessitates government help. Though several schemes are helping to produce an environment for organic farming in India, since agriculture is a state issue, each state's Government must make firm decisions to encourage organic farming in their respective states.
4. **Inadequate Agriculture Marketing Infrastructure:** Product spoilage is caused by an insufficient marketing structure, cold storage, and manufacturing facilities.
5. **Inadequate market research:** In India, there is a lack of funding in terms of market study and market-oriented training programs for organic farming.
6. **Limited availability for organic food products in India:**The lack of organic food items on the market is also posing a serious challenge to the Indian organic food industry's development. In India, there are only a few grocery stores that stock and distribute organic foods.

Strategies in the Promotion and Branding of Organic Farming in India

1. **Crop Planning and diversity:**If farmers want to sell their products, they must grow a variety of crops. They must therefore stagger manufacturing such that a consistent and diverse supply is available over time.
2. **Marketing:** The importance of publicity cannot be overstated. Direct selling models, in which a manufacturer sells their products directly to customers, have a remedy.

3. Technological uses: New technological initiatives by research institutions like the use of waste decomposers, crop residues, the biomass of shrubs and trees, vermicomposting for nutrient management, wastewater treatment, bio-agent, and predators for pest and disease management, and conservation methods are needed to be informed among stakeholders.
4. Promotion of high-value crops: In the conversion stage or at the beginning of organic farming (three years in most cases), the lower crop yield can be rewarded with a high value crops such as medicinal and aromatic crops, superfoods like millets, exotic vegetables, etc.,
5. Contract farming: Organic farming needs strict quality control in the crop growth phase and storage conditions. Contract farming can emerge as an alternate way to de-risk agriculture at various stages of the value chain. This can create a win-win situation for both parties.
6. Linking farmers to Processors and Exporters: Need to find the gap between consumers' and farmers' capacity and fill the gap through skilled training, infrastructure facilities, and technology.
7. Collectivization of Farmers: The collectivization of organic farming producers (especially small and marginal farmers) into producers' organizations is emerging as amore effective way to address challenges such as access to technologies, credit, investments, knowledge support, input, and market linkages.
8. Upgrading of Input-based enterprises: Organic-based input initiatives play a crucial role to create momentum in the conversion to organic farming. Hence input based initiatives at the local level should be encouraged.
9. Agripreneurs to provide market: Special emphasis on e-commerce platform-based Agristartups, agribusiness incubators, special incentives, and capacity building among organic farming practising farmers to meet the expectations of consumers.
10. Widespread extension activities: Farmers should be aware of the certification process and procedure, its practices with market linkages/FPOs. During promotion organic farming, extension functionaries should ensure the availability of required inputs. Hence, there is a need to develop a widespread capacity building of extension functionaries.

Summary/ Conclusion

People around the globe are becoming health-conscious, looking for food grown organically. Our farmers' lives and livelihoods will be secured as a result of such a campaign. Besides health, organic farming is the best way to nurture the land and rebuild the soil by switching to our conventional agricultural practices, which are free of toxins, pesticides, and fertilizers. Organic farming is a viable substitute production technique for farmers, but there are many challenges. Being open to various organic approaches to tackling manufacturing difficulties is one key to success. Determine the root of the problem and consider measures to avoid or mitigate the long-term issue rather than a quick remedy. Though organic farming has numerous advantages, the transition from traditional to organic farming is initially difficult. However, in the end, the producer achieves financial stability, the buyer enjoys nutritious pleasures, and nature is returned to its abundant condition.

References

- A.K. Pant, K. Kumar and G.C. Mishra. (2013). "Statistical review: worldwide use of organic farming practices" in Popular Kheti vol 1, 2013, pp. 1-4.
- Frick and Bonn. (2015) "The world of organic agriculture" in FiBL and IFOAM.
[http://www.organic-world.net/yearbook/yearbook 2015.html](http://www.organic-world.net/yearbook/yearbook%2015.html).
- [http://www.ifoam.bio/en/organic -landmarks/principles-organic agriculture](http://www.ifoam.bio/en/organic-landmarks/principles-organic-agriculture)
- Narayanan.(2005). Organic farming in India, relevance, problems and constraints, NABARD, Occasional paper 38