

# Organic Farming: A Tool for Sustainable Agricultural Development A Review



**Saroj Singh Chahar**  
Assistant Professor,  
Deptt. of Botany,  
RBS College,  
Agra, U.P., India

## Abstract

The modern agricultural practices which used chemicals to boost food production to suffice the food demand of the increasing population made the ecology and environment suffer. The unsustainability thus created, forced the researchers and the administrators to look for alternatives. Organic farming has emerged as the solution to the problem of chemical agriculture. Sustainable agricultural development requires that agriculture meet the needs of the present without compromising the ability of future generations to meet their own needs. This study is taken to understand the concept of sustainable development and find its relationship with organic farming along with the benefits involved. We try to establish how organic farming may lead to sustainable agricultural development and the steps required to achieve it.

**Keywords:** Agriculture, Organic Farming, Sustainable, Ecologically.

## Introduction

Agriculture is the activity on the basis of which human civilization survives. It is the source of livelihood and a major instrument of economic development. Agriculture however also degrades and pollutes the environment, pollute and deplete freshwater resources, degrading soil fertility and contribute to climate change through the use of fertilizer and pesticide. It is important to see that the production methods involved depends on the natural resources that are degraded (Parrott, N., *et al.* 2006). This situation foresee dangerous future scenario. Moreover, agriculture is driving the earth system beyond the safe operating space for humanity (Rockström *et al.* 2009).

The food supply is also not sufficient as one in six people in developing countries do not have access to sufficient nutritious food (FAO 2010).

According to Hodge – “Agriculture has come to draw the inputs which it uses from more distant sources, both spatially and sectorally, to derive an increasing proportion of its energy supplies from non-renewable sources, to depend upon a more narrow genetic base and to have an increasing impact on the environment. This is particularly reflected in its heavy reliance on chemical fertilizers and pesticides, its dependence upon subsidies and price support and its external costs such as threats to other species, environmental pollution, habitat destruction and risks to human health and welfare” (Hodge, 1993, p. 3).

Two facets of the problem posed by prevailing agricultural system are:

1. It does not provide sustainable food security according to which each individual should have access to enough nutritious food and the production process should produce zero or minimum detrimental effect on the environment.
2. Statistical analysis shows that we will need food for nine billion people by the year 2050 (Foley *et al.* 2011). To achieve this amount of food production target, we need to increase the production by almost hundred percent.

To overcome the above-mentioned problems and the others concerned, we need to bring about major changes in the current agricultural system. Researchers around the world have suggested various alternative food systems. Studies have shown that among these, organic farming shows promise for sustainable agricultural development.

**What is Sustainable Development**

Gro Harlem Brundtland defines it as the mode of development that meets the need of the present without compromising the ability of future generations to meet their own needs.

*It is based on two important ideas:*

1. *the idea of needs, especially of the poor population of the world; and*
2. *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.*

Australia's National Strategy for Ecologically Sustainable Development (1992) defines ecologically sustainable development as: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

Sustainable development is a planned, cultural, economic, social, environmental and political change for the better. It is an effort by all responsible for the well-being of the masses, for the masses and by the masses. It is long termed and does not foul the air, poison the water, pollute and degrade land. Sustainable development can only be pursued if demographic developments are in harmony with the changing productive potential of the ecosystem.

Economic growth and development obviously involve changes in the physical ecosystem. Every ecosystem everywhere cannot be preserved intact. A forest may be depleted in one part of a watershed and extended somewhere else. If properly planned utilization of natural resource and its effects on ecology and environment have been considered, it's not a bad thing. If a balance in the rate of use and the rate of regeneration and natural growth is maintained, natural renewable resources like forests and others, might not be depleted.

On the other hand, use of non-renewable resources, like fossil fuels and minerals, reduces the stock available for future generations. But this does not mean that such resources should not be used. In general, the rate of depletion should consider the facts like how critical the resource is, minimizing depletion by use and development of technologies, and the availability of substitutes. Thus, land should not be degraded beyond reasonable recovery.

Development tends to simplify ecosystems and to reduce their diversity of species. And species, once extinct, are not renewable. The loss of plant and animal species can greatly limit the options of future generations; so sustainable development requires the conservation of plant and animal species. Sustainable development requires that the adverse impacts on the quality of air, water, land and other natural elements are minimized so as to sustain the ecosystem's overall integrity.

**Organic Farming and Sustainable Agriculture**

A sustainable farming system should provide food alongside other ecosystem services such as water flow and water quality regulation, climate regulation and biodiversity preservation (Foley *et al.* 2005). Ikerd (1993) defines a sustainable agriculture

as "capable of maintaining its productivity and usefulness to society over a long run. It must be environmentally sound, resource conserving, economically viable, commercially competitive, and socially supportive". Many others have defined it in their own way but the basic concept has remained the same. Organic farming has come up as a means to achieve the concept of sustainable agriculture.

Similarly, many definitions have been given by scientists throughout the world. Mannion (1995) defines it as a holistic view of agriculture that aims to reflect the profound interrelationship that exists between farm biota, its production and the overall environment. According to Scofield (1986), organic farming does not simply refer to the use of living materials, but emphasizes the concept of wholeness implying the systematic connection or coordination of parts in one world. Lampkin (1994) states that the aim of organic farming is to create integrated, humane, environmentally and economically sustainable production systems, which maximize reliance on farm-derived renewable resources and the management of ecological and biological processes and interactions, so as to provide acceptable levels of crop, livestock and human nutrition, protection from pests and disease, and an appropriate return to the human and other resources.

Organic agriculture was developed as a farming system that is specifically aimed at producing food in a more environmentally friendly way. Organic agriculture focuses on conservation of biodiversity (e.g. native flora and fauna), maintaining and improving soil fertility, use of production techniques that are area specific and avoids chemical inputs.

Experiments have shown that the methods used in organic farming for raising the variety of crops helps to restore and stabilize the ecosystem. It reduces drought sensitivity, risk of yield failure, increases food security and stabilizes returns. It uses the natural conditions of the area to its advantage instead of degrading it. Methods used in organic farming are based on traditional, indigenous knowledge and modern research. Not only these methods are beneficial to ecology and environment, but have also helped in the increase of production in case of traditional farming systems. The production has also increased in case of high input farming systems, but only after a period of time. Studies have shown that there is a decline in yield when the farming system is converted from synthetic to organic. This happens because of the time taken by the damaged ecosystem to recover after the organic farming practices are implemented. Once the ecosystem has recovered, significant increase in yield has been recorded. The development of yield also depends upon the intensity of the use of synthetic elements during conventional farming system not undermining other parameters like localized biological factors and natural resources and the capability of the farmer. The productivity of organic system changes through the following phases – while transition from conventional to organic management system and while complete shift to systems approach.

Organic farming has helped not only in producing more crops but also achieve better quality and sustainable yields. It has also resulted in higher yields and incomes. Organic farming practices involve environment friendly methods and since it give more yields, it also improve the social and economic status of farmers.

In the countries where chemical fertilizers and other synthetic inputs are costly and labour is cheap, farmers resorting to organic farming have achieved higher returns. Pest damage has been reduced and soil quality has improved. Multi-cropping, crop rotations, organic manures and pesticides, and minimum tillage are the methods employed for the purpose. Natural plant nutrients from green manures, farmyard manures, composts and plant residues build organic content in the soil. It is reported that soil under organic farming conditions had lower bulk density, higher water holding capacity, higher microbial biomass carbon and nitrogen and higher soil respiration activities compared to the conventional farms (Sharma, 2003).

Organic farming can contribute significantly to improving the livelihood of smallholders, as it generates higher incomes and involves less risk. Farmers can take up measures which help them in capacity building, in production, processing and marketing, in manpower and in their family.

#### **Problems and Constraints in Implementation**

In a country like India, implementation of organic farming practices is a herculean task. Merely making regulations will not serve the purpose. To reap the benefits of this concept, the government needs to take firm decisions with a will to succeed.

The biggest constraint is the lack of knowledge and awareness amongst the poor farmers. Government organizations and other institutes shall have to take up training programs and practice-oriented research to disseminate the ideas of organic farming. There is also a need to assure premium price for the organic products, at least during the initial phase. It was found that the farmers of organic wheat in Rajasthan got lower prices than those of the conventional wheat (Rao, 2003). Proper infrastructure is a compulsory feature for development of any sort. In recent times, state and central government has started to address this problem but still a lot needs to be done. Other constraints like certification, access to market and lack of organization also need to be addressed. The whole system should be developed in a way that may promote participatory learning processes. Only then the population involved will be able to contribute to sustainable development.

#### **Conclusion**

Organic farming has emerged as an answer to the conventional agricultural practices. It might prove to be a means to provide sustainable food security to the people of the world. It has paved the way for sustainable agricultural development. While sustaining soil and ecosystem health organic farming also promises high productivity. Because of the benefits involved, use of organic farming has seen tremendous rise not only in the developed countries but also in India. Indian government has taken steps

to promote its application establishing NSOP (National Standards for Organic Production) and certification agencies but more steps are required. The policy makers will have to develop a system which may contribute to sustainable agricultural development. The policies framed should help organic farmer cooperatives in capacity building. Development of domestic organic market must be the priority. The policy should aim at development of markets and their integration. The private agencies along with their government counterparts shall have to support and promote research on organic farming. Internationally, the UNO, the governments and various international environmental agencies should start programs for reaching the masses with awareness modules, strengthening the educational bodies for concentrated research and initiating programs for extracting and using indigenous knowledge concerning organic farming and sustainable development.

Therefore, it is important to design action plans to bring about positive and lasting changes in the scene. For this, all factors, major and minor, need to be kept in mind. It has become apparent that new approaches are needed which involve larger areas, consider the cultural diversity, provide opportunities for co-management involving indigenous communities, and thus contribute to the emergence of sustainable societies. To achieve these goals, the development and conservation research and policy communities will need to re-evaluate and coordinate their priorities and strategies.

#### **References**

- El-Hage Scialabba, N. and C. Hattam (eds.) (2002): Organic agriculture, environment and food security.- FAO, Rome.*
- Foley, J. A., et al. (2005). Global consequences of land use. Science 309(5734): 570-574.*
- FAO (2010). The State of Food Insecurity in the World 2010. Addressing food insecurity in protracted crises. Rome, Food and Agriculture Organization (FAO).*
- Foley, J. A., et al. (2011). Solutions for a cultivated planet. Nature 478(7369): 337-342.*
- Hodge, I., 1993. Sustainability: putting principles into practice. An application to agricultural systems. Paper presented to 'Rural Economy and Society Study Group', Royal Holloway College, December 1993.*
- Ikerd, J., 1993. Two related but distinctly different concepts: organic farming and sustainable agriculture. Small Farm Today 10 (1), 30-31*
- Lampkin, N., 1994. Organic Farming: sustainable agriculture in practice. The Economics of Organic Farming. An International Perspective. CABI, Oxford.*
- Mannion, A. M., 1995. Agriculture and environmental change. Temporal and spatial dimensions. Wiley, Sussex.*
- Parrott N. and T. Marsden (2002): The real green revolution. Organic and agroecological farming in the South.- Department of City, and Regional Planning, Cardiff University.*
- Parrott, N., et al. (2006). Certified and non-certified organic farming in the developing world.*

- Global Development of Organic Agriculture: Challenges and Prospects. Wallingford, Oxfordshire, UK, CAB International: 153-179.*
- Rao, PS, 2003, *Marketing of Organic Produce of Wheat), in Rajasamand District of Rajasthan, Indian Journal of Agriculture Marketing, Conference Number Special.*
- Rockström, J., et al. (2009). *A safe operating space for humanity. Nature 461(7263): 472-475.*
- Scofield, A., 1986. *Organic farming - the origin of the name. Biological Agriculture and Horticulture. 4, 1-5.*
- Stolze, M.; Pierr, A.; Häring, A. and S. Dabbert (2000): *The environmental impacts of organic farming in Europe.- Organic farming in Europe: Economics and Policy, Volume 6. University of Hohenheim, Germany.*
- Sharma, PD, 2003, *Prospects of Organic Farming in India, in Proceedings of National Seminar on Organic Products and Their Future Prospects, Sher-e-Kashmir University of Agricultural Sciences and Technology, Srinagar, pp 21-29.*