

Organic Farming and Sustainable Agriculture Development: Environmental and Economic Issues

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Abstract: *Agriculture sector is the backbone of Indian economy and employment sector. It provides food for more than 1000 millions of population and employment for more than 55% of the total population of the country. Its contribution in GDP and export is significant since independence. Present Indian conventional farming method was originated in the west which suffered the ill effect of chemical agriculture; can be shifted to organic farming. Organic farming is based on the similar principals underlying our traditional agriculture. Organic farming aims at the human welfare without any harm to the environment which is the foundation of human life itself. Sound environment, economic soundness and livelihood sustainability are three main features of sustainable agricultural development. This paper discusses the progress and the present status of the organic farming in country and environmental and the economic aspects of it in connection with farmer, consumer and economy. This study is based on the secondary data collected through different reports and articles published by government and non government institutions. Websites of different reputed organizations and institutions explored as well as journals and books are studied. Author analyzed the text and data; he also tried to give some suggestion for making organic farming a movement in India..*

Keywords: Organic farming, sustainable agriculture, environment, economic issue, SDGs, agriculture

I. INTRODUCTION

India faced acute shortage of food grains to meet the demand for food in the country after two and half decades of independence; created a great concern about this at that time. The system of our farming manner as based on the traditional knowledge and manner which was unable to provide required food to the increasing population of the country. In this situation our dependences increased on western countries and the politics of food aid practiced by them added to our determination to be self-sufficient in food production by modernizing agriculture.

India started the Green Revolution to fulfill our aspirations by changing India from a food importing to a food exporting nation. The Green Revolution was introduced in India in the 60th decade of the 20th century. The program involved using of advanced technologies in farming process such as: using modern machines (tractors, harvesters, reapers, threshers etc) and modern farm tools, using High Yielding Variety (HYV) seeds (genetics modified, hybrid seeds), extension of irrigation facilities (constructing hydro-electric projects, canals, bore wells, using electric motors and diesel engines instead of conventional methods of irrigation), increasing the use of chemical-fertilizers (Urea, DAP, CAN, SSP etc), introducing purely chemical base pesticides and insecticides, inviting and welcome foreign companies to establish chemical plants in India, enhance double-cropping system and changing the irrigation techniques from intensive to multiple irrigation because HYV and chemicals require more water. This *adopted conventional* farming process had helped India not only to produce enough food for own consumption but also generated surplus for exports. The food production increased from 72.3 MT in 1961 to 329.69 MT in 2022-23. India became self reliant in food grains which provided cheaper food to Indian population as well as the income of farmers increased to a notable level. But soon the chemical based farming cost increased that created new economic difficulties for small land holding famers (marginal farmers) and landless farm workers.

The achievements of Green Revolution were so expensive for the health of ecology, environment and well-being of the human being. People have realized that the Green Revolution with high input use has reached a plateau and is now

sustained with diminishing return of falling dividends apart from this several other negative effects – Polluted air-water-soil; diminishing the fertility power of the soil, poisoning of food with toxic pesticides, depletion of ground water, change the natural taste of food to chemical taste, use of chemicals badly affected the useful insects, microorganisms and predators; depletion of fossil fuel resources and increased imbalance in social and economic status of farmers with burden of financial and work load (H.B.Bablad, 2021). This adopted method of farming soon showed unsustainability and once again the need for an appropriate method suitable to our requirements is being felt.

Organic Farming

Organic farming is a method of agriculture which is nature friendly and keeps the soil healthy and fertile. Organic farming is actually a set of methods and inputs which protects nature. It protects soil life by avoiding the use of synthetic input in agriculture including-fertilizers, pesticides, hormones and pesticides thus abating chemical soil disturbance. Organic farming is a holistic approach which enhances the socio-economic status of marginal farmers too. Northbourne, originated the term “Organic” in his book “Look to the Land” published in 1940 (Northbourne, 2003) (Pooja Sahu, 2022) also defines Organic Farming as ‘an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity’.

The organic farming method is combination of modern technology and scientific knowledge with traditional nature friendly cultivation method. According to Food and Agriculture Organisation (FAO) Organic farming is a unique system of agriculture which manage and enhance the health of agro-ecosystem which includes biodiversity, nature sustainability and biological cycles of the soil and this is fulfilled by using on farm agronomic and natural substances in exclusion of all synthetic inputs (fao, 2022). Organic farming is a combination of different activities which protects biodiversity, ecosystems and people health by applying crop rotations, crop residues, crop cycle and using animal manures and off-farm organic waste with ensuring plant protection and maintains the health of soil. Organic farming creates potent and environmentally sound farming system that is resilient to temperature fluctuations and droughts. The financial need in organic farming is low compared with modern agriculture.

Sustainable Development

Sustainable development is a broad concept defines to meet of the need of the present generation without compromising the necessities of resources for the future generations. It emphasis to preserves the energy and natural resources instead of spend them for the fulfillment of short term needs. Sustainable development stresses on achieve social and economic progress in a way which will not exhaust the finite resources but inherit a healthier green planet to future generation after meet our present needs. In this context the United Nations created 17 world development goals called the Sustainable Development Goals (SDGs). These are created in 2015 with the aim of ‘peace and prosperity for people and the planet, now and into the future’.¹

Agriculture is core sector to achieve SDG and without sustainable agriculture sector it is difficult to achieve the goal. Agriculture sector is mostly related to all 17 SDGs but it has close relation with these SDGs:

Goal 1-Poverty Alleviation- Growth in Organic Farming will be more effective in reducing poverty from country than any other way.

Goal 2-Zero Hunger- Organic farming has the potential to provide quality and rich nutrients food to whole population.

Goal 3-Good Health and well-being- Organic farming products are rich in nutrients can help to ensure healthy lives.

Goal 4-Education- Agricultural extension and development especially organic farming enables farmers to access the skill, tools and knowledge they need to thrive.

Goal 5-Gender Equality- women empowerment and gender equality can be achieved by sustainable agricultural development. Women are engaged in different activities of agriculture production.

Goal 6-Clean water and sanitation- Organic farming promotes water conservation, smart irrigation, reduce water wastage and water purification,

Goal 7-Energy –Future increasing demand of Energy can be meets by producing it from biofuels.

Goal 8-Economic growth and Employment-Agriculture is an engine of pro-poor economic growth in rural areas. Entrepreneurship across the rural and food sectors can generate employment and growth.

Goal 12-Sustainable consumption and production- increasing per capita consumption can be achieved.

Goal 13-Climate change- Organic farming is free from uses of chemical substances and it will be milestone to protect environment.

Goal 15-Ecosystem management- Organic farming has the additional cultivation potential to meet the increasing demand of food without loss of forests and habitats of creatures and vegetation.

II. REVIEW OF LITERATURE

Present agriculture system is a type of farming which uses high-yielding varieties of seeds, pesticides, chemical fertilizers, insecticides etc (Gomage, 2021). Organic farming system has the ability to increase current yield levels under rainfed farming systems, without any associated external costs to society. The farming system improves the quality of food, improves the health of soil and water; and also improves the economic condition of nation's rural areas (H.B.Bablad, 2021). Organic farming gives more stress to optimizing resources use and productivity rather than maximizing production through over exploitation of resources as well as higher premium prices exist for organic certified products in domestic and international markets (Manohari, 2021). In a study it is found that the demands of organic products are the fastest increasing in the India and world. Organic farming has the capacity of agricultural diversification and producing of healthy food without harming environment market. It also helps to increase household income (Pooja Sahu, 2022). There is a substantial increment is observed in organic based farmlands and it will continue to grow at higher rates with positive growth trend. It was 97 billion USD in 2017. USA is the world leader of organic product market, Germany on second position followed by France and China respectively. In term of organic product producers India is on the top position with highest number. In this circumstance policy makers should understand the economic impact and should design more sophisticated and people centric policies (Dhiman, 2020).

Objectives of the study

The main objectives of the study are-

- To find whether organic farming lead to the sustainable development.
- To access that organic farming is economical viable or not in India.
- Does the organic farming enhance the environmental health?
- Does the organic farming enhance the economic condition of the farmers?
- To find out the present organic farming status in India.

Significance of the Study

The study contributes to a growing literature that seeks to understand the impact of organic farming on environment and economic condition of the farmers. This paper also contributes to give new insight to researchers, policy makers and educators for further research.

III. RESEARCH METHODOLOGY

The study is an analytical study which is based mainly on the secondary data collected from different reports of government and non government institutions published in news papers, periodicals or separately. Websites of different reputed institutions explored. Researcher studied Journals, research books and proceedings of conferences and seminars.

Present Status of Organic Farming in India

India is rich of variety of agro climate conditions with inherited tradition of organic farming has potential to produce different varieties of organic products. As per the year 2024 report of the APEDA India is the 6th position in the term of use of land under organic farming. (Source: FIBL & IFOAM Year Book, 2023). (APEDA, 2024).

Area under organic farming

Area under Organic farming in India

As on 31 March 2023

Particular	Area in Hectare
Cultivable area	5391792.97
Wild harvest collection area	4780130.56
Total	10171923.53

Source: Calculated from APEDA reports

The APEDA report discloses that Madhya Pradesh has largest area under organic cultivation. Maharashtra is on second position followed by Gujarat and Rajasthan. (APEDA, 2024).

Production of organic products

India produces food and non-food agriculture products including oil seeds, sugar cane, pulses, cereals and millets, vegetables, fruits, tea, medicinal plants, cotton, fiber etc. according to APEDA reports Madhya Pradesh is a largest producer of these products. Maharashtra, Rajasthan and Karnataka are on second, third and fourth position. Total organic production was 2.9 MT in 2022-23. (APEDA, 2024)

Exports of organic products

India exports organic products to several countries including USA, EU, Canada, Australia Korea, Japan etc. the total quantity of exports was 312800.51 Million Tone which was approx 5525.18 Crore rupees (708.33 Million USD) (APEDA, 2024).

Environmental issues in Organic farming development

Sustainable development is a complex concept which allows human being to get development goal it also allows human to left rich natural resources and ecosystem for the future generations. There are three main components of sustainable agriculture which includes rich environment; socio-economic equity and economic profitability. Agriculture is mainly depends on the natural resources and conservation of these resources is critical for the agricultural sector which ensures long term sustainability. Continuous and excess use of chemical fertilizers, pesticides and insecticides turned the natural soil into poisonous soil which transfers the harmful substances to the food and non-food products. This much chemical is sufficient to harm the human health and wealth. Another side the excess use of chemical affects the environment for a long time. The wide spread use of chemicals concentrates in grass and food of animals and enters into animal's body which has been found in the flesh and milk of dairy cows. Ultimately it creates the serious health problem to people use this toxic food. Chemicals make the soil unfertile and cease the soil fertility and growth of useful pest.

Organic farming not only deals with these problems but also a safer and healthy way of agriculture which uses environment friendly inputs like cow dung, plants and waste agro materials which are rich in nutrients required for complete growth of the plants. It promotes the microbial activities that increase soil health. Organic farming avoids all kind of practices which damages agro ecosystem thus organic farming is an effective way of farming to get proper yield without harming environment and fabrication of nature. This environment friendly approach realizes the concept of sustainable development.

Economic issues in organic farming

The increasing demand of the organic products arise a question before us that is: do organic farming generate higher profits?

Conventional farming is highly input-intensive which requires chemical fertilizers, insecticides and pesticides all these items are costly due to increasing demand and high manufacturing costs. Genetically modified seeds price are increasing year by year because of increasing demand. All these factors make the conventional farming product costly results the decreasing farm profitability. Although Some studies have reported that the production of organic farming per area is less in comparison to conventional farming however the premium prices of organic products makes the

business of profit to small and marginal farmers too (Qiao & Martin, 2018). Apart from this the increasing quality of soil, vegetation, rich biodiversity and organic matter compensate for the losses due to lower yields.

Organic farming use local resources, livestock, organic fertilizers, low energy use, low water consumption, reduces soil loss etc which helps to decrease the cost of agricultural production and also decreases the dependencies on others. The premium prices of organic products make the sound economic condition of the farmers. The Government of India has been promoting organic farming under the Paramparaat Krishi Vikas Yojan (PKVY) since 2015. Under this scheme organic clusters have been formed across India. In this scheme farmers are trained to gather the knowledge and skill about organic farming for taking challenge to shift from conventional farming to organic farming. Clusters are financially supported to effectively operate organic farming and processing units of organic food. Government also helps in labeling and marketing of the organic products.

IV. FINDINGS

The main findings of the study are:

- Organic farming is a traditional method of agriculture which is nature friendly and was commonly used in all over the country before Green Revolution.
- Organic farming is environment friendly process of farming which leads to sustainable development and helps to achieve SDGs.
- Organic farming requires less financial need in comparison to conventional farming because it uses household bio waste, animal dung and plants.
- Organic farming enhances the environmental health of the earth by purifying and strengthening soil, water, air and other substances of nature.
- In present scenario the organic farming is not economical profitable to farmers in comparison to conventional farming because the productivity per unit land is fewer than conventional farming.
- India is leading nation in production and export of organic food products.

V. SUGGESTIONS

- Government agencies working in promotion of organic farming should increase their reach with in all states and all crops.
- Organic food processing units should be promoted in rural areas. Training and financial support should be provided by the government.
- A separate category of organic food should be formed and its Minimum Support Price (MSP) should be declared to promote organic farming.
- Educational institutes, news agencies, NGOs etc should spread the awareness about the benefits of organic food.

VI. CONCLUSION

Organic farming is more environmental friendly than conventional farming and it has emerges as an alternative system of farming which not only address the quality and sustainability concerns but also ensures profitable livelihood option for rural community of the country. Organic farming maintains the environmental, human and animal health. The increasing awareness and benefits of organic farming expanding the demand of Organic farming products day by day but Organic farming is not much economic beneficial to farmers because of low productivity per unit of land as well as there are insufficient state of subsidies to promote organic farming. In this situation government should develop strong institutional framework and mechanisms to help and support the farmers who are struggling to sustain in this sector as well as government should promote rural youngsters to establish organic food processing units under different schemes of entrepreneurship like ‘Vocal for Local’, ‘One District One Product’, ‘Startup India’ etc. in rural India.

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ⁱ United Nations (2017) Resolution adopted by the General Assembly on 6 July 2017, work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development.

Abbreviations

APEDA-	Agricultural and Processed Food Products Export Development Authority
DAP -	Di-Ammonium Phosphate
FAO-	Food and Agriculture Organization
FIBL -	Gorschungsinstitut fur biologischen Landbau (A research institute of Organic Agriculture)
GDP-	Gross Domestic Product
HYV-	High Yielding Varieties
IFOAM-	International Federation of Organic Agriculture Movements
CAN-	Calcium Ammonium Nitrate
NGO-	Non Government Organisation
NPOP-	National Programme for Organic Production
PKVY-	Paramparagat Krishi Vikas yojna
SDG-	Sustainable Development Goal
SSP-	Single Superphosphate