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Organic Farming for Sustainable Agriculture in India

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Abstract

Indian agriculture is plagued by several problems; some are natural and some are manmade. One of them is soil degradation due to over use of chemical fertilizers.Organic agriculture can contribute to meaningful socio-economic and ecologically sustainable developmentwhich would definitelybe useful to overcome the manmade problems. Organic farming is one of the several approaches found to meet the objectives of sustainable agriculture. Ecological friendly Organic farming is the answer to the problems being faced by agriculture in India today. It will also keep agriculture more sustainable. This form of agriculture conserves our soil and water resources, protects our climate, improves agro-diversity, ensures biodiversity, meets the demand for food and safeguards livelihoods.Hence study has been undertaken to know the present status of organic farming in India. It tries to reveal challenges and issues in adopting organic farming in India on a large scale.

Key Words: Organic Farming, SustainableAgriculture, Organic Inputs, Productivity

Introduction

Indian soils have been used for growing crops over years, especially after Green Revolution without caring much for replenishing. This has led to depletion and exhaustion of soils resulting in their low productivity.The Green Revolution took shape in India during the early 1960s and with the introduction of modern chemical fertilizers; there was better management of the seeds, along with the introduction of new and modern techniques for farming. The food grain production in the country boosted up. However, this use of chemical fertilizers and pesticides became completely uncontrolled and started polluting the complete supply chain. Greed and minimal access to relevant information to the farmers have resulted in a scenario where there are areas in the country where newborns take birth with disabilities. Because of the heavy use of chemical fertilizers and pesticides, many areas of land reached a stage where they no longer produce anything.

As the consumers stood up and started embracing the non-poisons (organic) food, there came a need of supporting that demand authentically. Some areas are natively organic, but others that are large producers of cereals, pulses etc., have been farming with chemicals. Converting these into organic has many challenges.However, from a broader perspective, these challenges can be met with proper counter-measures and government policies.

Objectives of the Study

i. To recognize importance of the organic farming for sustainable agriculture in India.
ii. To analyze status of organic farming in India.
iii. To identify the challenges of organic farming in India.

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Research Methodology

The present research paper is purely based on the secondary data which is collected from various sources such as books, research articles, journals, reports and internet websites.

Sustainable agriculture

Sustainable agriculture is the practice of farming using principles of safeguarding ecology. Unlike organic agriculture, sustainable agriculture concentrates on theability of providing food for the long-term. As such, besides artificial fertilizers and pesticides, it also does not allow the use of agricultural machine running on non renewable resources. It focuses on finding the most energy-efficient andcost-effective methods of cultivation with renewable natural resources. For this reason, it also implements natural biological cycles and controls where ever it is possible (Dubey 2013).Organic agriculture is clearly defined as a production system that sustains the health of soils, ecosystems and people. It depends on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.

There has been lot debate in recent year about the feasibility of organic farming under Indian conditions.The most questions related to organic farming includes production potential, economic feasibility and possible environmental benefit like improved soil quality and health. However there were some farmerswho have been cultivating their land under organic farming conditions for the last 15 to 20 years andsome of them have been certified by APEDA accredited organic certifying agencies. It has been envisaged that scientific study of these farms may yield clue regarding the production potential, economic feasibility and likely benefit of organic farming in terms of improved soil fertility and quality which leads to sustainable agriculture.

Organic Farming

Organic Farming is defined as a production system which largely excludes or avoids the use offertilizers, pesticides, growth regulators etc. and relies mainly on organic sources to maintain soilhealth, supply plant nutrients and minimize insects,weeds and other pests. Organic farming is a far deeper concept that mere non-chemicalization. In real sense it refers to a comprehensive approach towards improvement of both health of underlying productivity of the soil and plant leading to the enrichment of the surrounding ecology; which is a prerequisite criterion for sustainable agriculture. According to international Federation of Agriculture Movement (IFOAM), “Organic agriculture is a production system that sustains the health of soils, ecosystems and people”. It was felt that organicfarming may solve all these problems and has been considered as one of the best options forprotecting/sustaining soil health, and is gaining lot of importance in present day agriculture.Organic farming is based on production standards which are environmentallysupportive and are socially,economically and ecologically sustainable. The major objectivity of organic farming resides on development of a self-sustainable farming system in harmony with nature which delivers ecologically and economically sustainable pure food with enrichment of surrounding biodiversity and its entire components. It isbelieved to play a pertinent role in safeguarding

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biodiversity, improving the soil health, and inclusive sustainable development of the farming community.

Status of Indian organic farming in global context

Organic farming advocates against the application of chemical and genetically modified (GM) materials on farms except those approved by the United States Department of Agriculture (USDA) National Organic Standards Board (NOSB) which consists of a voluntary team of 15 advisors selected by the secretary of the United States of Agriculture. Globally, Organic farming has grown approximately by 20 % yearly as consumers and growers make healthier food choices and show more concern about the impacts of our actions on the environment. Organic farmingattempts to increase the level of food security and create a more sustainable environment for future generations. Nevertheless, Organic farming is not without its challenges.

The global survey on organic farming is currently carried out by the Research Institute of Organic Agriculture FiBL and published in February 2020. According to this latest FiBL survey the number of organic producers was reported to be around 2.8 million according to data from 186 countries (data as of the end of 2018).Over 90% of the producers are in Asia, Africa and Europe. India continues to be the country with the highest number of producers (1149371) followed by Uganda (210000) and Ethiopia (204000).

The market research company Ecovia Intelligence, estimates that the global market for organic food surpassed 100 billion US dollars for the first time in 2018. The United States is the leading market, followed by Germany and France.In 2018, many major markets continued to show double-digit growth, and the French organic market grew by more than15%. Danish and Swiss consumers spent the most on organic food (312 Euros per capita in 2018). Denmark had the highest organic market share with 11.5% of its total food market.

A total of 71.5 million hectares were organically managed at the end of 2018, representing a growth of 2.9 percent compared to 2017. Oceania (36.0 million hectares) has the largest organic agricultural area followed by Europe (15.6 million hectares) and Latin America (8 million hectares).

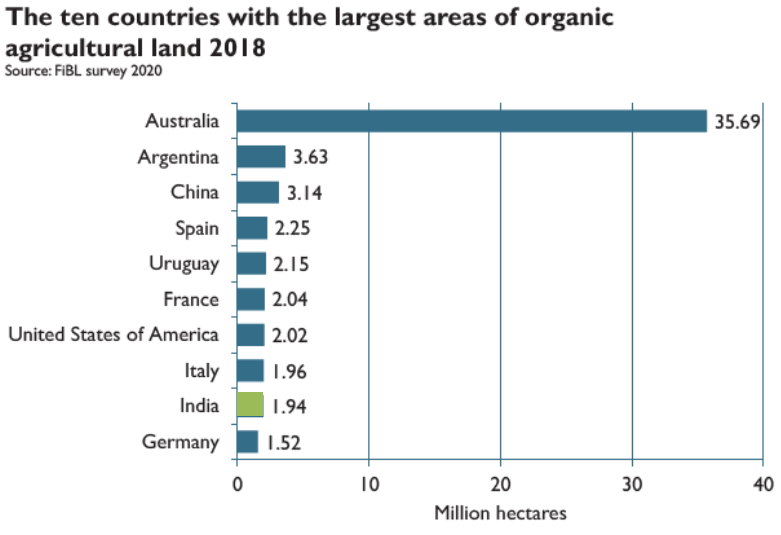

Fig 1Source: FiBL Survey 2020

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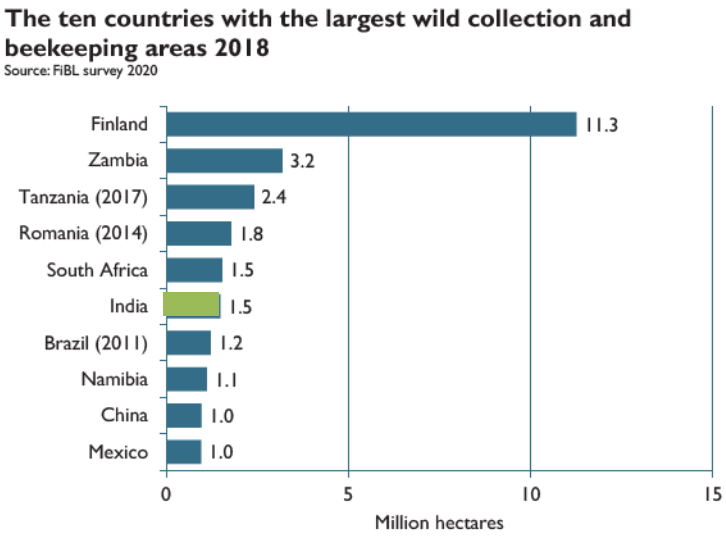

Fig 2 Source: FiBL Survey 2020

Globally, 1.5% of farmland is organic. However, many countries have far higher shares. The countries with the largest organic share of their total farmland are Liechtenstein (38.5%), Samoa (34.5%), and Austria (24.7%). In sixteen countries, 10% or more of all agricultural land is organic. India's share of organic land in total agricultural land is only 1.1%yet it ranks on 9th position in the countries with the largest areaof organic agricultural land and ranks on 6th position in the countries with the largest wild collection and beekeeping area.

Organic Farming in developing countries and emerging markets

More than 2.4 million organic producers from the countries on theDAC (Development Assistance Committee) list were counted (86 percent of all organic producers). Almost a quarter of the world's organic agricultural land, 17.3 million hectares, is located in countries listed on theDAC list.If wild collection and beekeeping areas are included, the total area is 37.4 millionhectares. Almost half of the agricultural land of the countries on the DAC list islocated in Latin American countries (almost 8 million hectares), with Asia (6.5 million)and Africa (2.0 million) in second and third place. The countries with the largestareasof organic agricultural land are Argentina, China, Uruguay, India, and Brazil, in thatorder. Not surprisingly, most of them are large countries.However, when it comes to organic agricultural land as a percentage of the total areaunder cultivation, the order is different. The countries on the DAC list with thehighest percentages of organic agricultural land are Samoa (34.5 percent), Sao Tomeand Principe (22.5 percent), and Timor-Leste (16.8 percent). Argentina, with by far thelargest area under organic cultivation (with 3.6 million hectares), is ranked fifteenthwhen the organic agricultural area is expressed as a share of the total agriculturalarea. The organic share of the total agricultural land of the top ten countries on theDAC list is comparable to that of many European countries; and they can beattributed in part to a high production potential for, and focus on, exports. Supportactivities may also play a role. However, out of all the countries on the DAC list, only26 percent of them have an organic share higher than one percent of the totalagricultural area. India's share is slightly more than one percent (1.1 percent).

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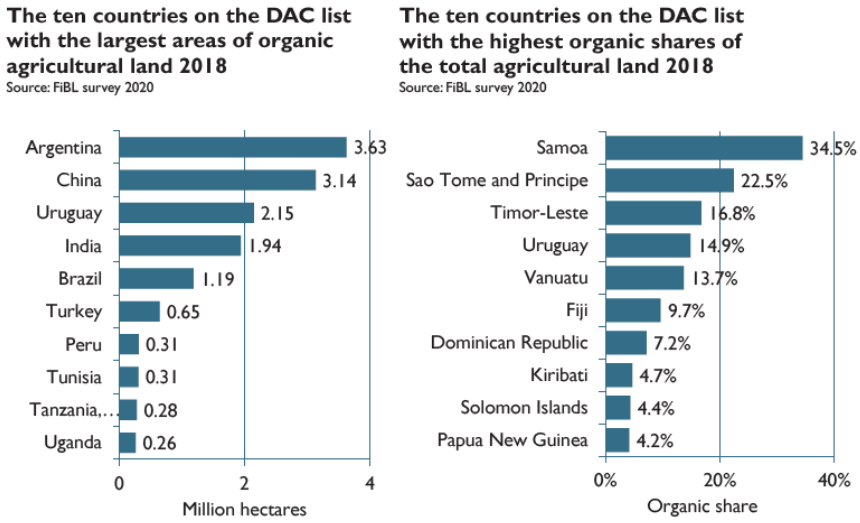

Fig 3Source: FiBL Survey 2020

Land use details were available for almost 80 percent of the agricultural land of thecountries on the DAC list; crop data is missing for some of the world's largestproducing countries (India and Brazil). Available statistics show that organicgrassland/grazing areas constitute over 34 percent of the organic agricultural land,organic arable land 27 percent, and organic permanent crops 18 percent. Exports playan important role, either for meat products (mainly from Argentina and Uruguay) orfor unprocessed permanent and arable crops. The most important organic exportcrops, such as cereals, coffee, oilseeds, textile crops (mainly cotton), nuts, coconuts,olives, cocoa, etc. For Africa, coffee and olives, for Asia, cereals and oilseeds, and forLatin America, coffee and cocoa are the most important crops.

Benefits/Need of organic farming

According the IFOAM (2009) organic agriculture has a significant role inaddressing two of the world's biggest and most urgent issues- (1) climate change(2) hygienic food security.

1. Conservation perspectives

Organic Farming practices are ecologically sustainable in terms of (i) soil fertility stability (ii)increased diversity of microbes, plants and animals (iii) increased carbon sequestration and (iv) reducedenergy dependence.

i. Stability of Soil Fertility

In conventional agriculture, fertility declines with crop harvest. For this reason, global fertilizer's useincreased from 27.4 Million tons (1959 60) to 143 million tons (1989-90) and likely to reach to 208.0million tons by the year 2020.Use of organic supplements is an effective way to reverse this trend.Organic supplements are easily colonized by micro-organisms that help to stabilize soil fertility viaimproving decomposition, nitrogen fixation and reducing the losses of nutrients. Additionally, green manures help in mobilizing nutrients, enhancing growth promoting substances, suppress soil-bornepathogens and support crops to out-compete weed and present soil erosion.

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ii. Biodiversity conservation

As organic farm practices are largely intrinsic and enhance food resources, habitat heterogeneity (management of field margins and non-crop habitats),prey-predation relationships and reduce toxicinfluences (prohibited use of chemical pesticides/inorganic fertilizers) are expected to supportspecies vulnerable to otherwise conventional farm practices.

iii. Carbon sequestration

Compared to the carbon stored in a forest, the Social Organic Carbon in agricultural soils caneffectively benefit food production and improve agricultural sustainability. An increase of 1 ton of soil carbon pool of degraded cropland may increase crop yield by about 10 to 20 kg/ha of maize, 20 to40kg/ha of wheat, and 05 to 1 kg/ha of cowpeas indicating a strong link between Carbon sequestration and crop production.

iv. Reduced energy dependence

Fossil fuel energy inputs is required in form machinery, transport, production of synthetic fertilizer andpesticides etc. synthetic fertilizers used in conventional systems, are produced employing fossil fuelenergy whereas cattle manure, legumes, etc, with very low energy needs, are used in organic practices.

2. Economic sustainability

The conventional mode of agriculture, which works on the principle of diminishing return, may causelong-term economic risks in influencing the overall balance of trade compared to its sustainablecounterpart.

i. Export Potential: Organic products have huge Export potential

ii. Employment: The organic farming system, being lobar intensive can help to overcome rural unemployment

iii. Cost-benefits: Study by the Central Institute for Catton Research. Nagpur indicated that the cost ofcultivation was about 21% lower than that those under conventional Farming.

Challenges before organic farming in India

The Indian government has been undertaking measures to promote organic farming with the aim to improve soil fertility and help to double the farmers' incomes by the year 2022. The Prime Minister had visited Sikkim—which is India's first organic state—and encouraged other states to replicate the "Sikkim model". Some of the policy initiatives to promote organic farming and exports include development of an organic regulation for exports by the Agricultural and Processed Food Products Export Development Authority (APEDA).Removal of quantitative restriction on organic food exports, providing subsidies to farmers under the ParamparagatKrishiVikasYojana (PKVY) in partnership with the state governments, and other schemes such as the Mission Organic Value Chain Development for North Eastern Region. Despite these initiatives the organic farming is facing many challenges in India. Theyare as follows:

1. Underdeveloped supply chain

According ICRIER study 2017; Small and tribal belts find it difficult to access the market. There is a shortage of pack houses and refrigerated vehicles, which leads to spoilage.

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Organic products have to be stored separately from conventional products to avoid cross-contamination and the existing supply chain does not often provide that facility. Government is supporting organic product marketing through fairs and exhibitions; it does not give farmers a steady market. In a number of cases, the middlemen take away most of the profits and farmers are not able to earn a premium price. Direct linkages to processors and retailers could have helped farmers to get a better price, but farmers lack the right linkages and hence have to depend on middlemen and mandis.

2. Low productivity during the transition from

Organic farming is yet to taste success. Problems are evident even in Sikkim, which was recognised as the country's first organic state in 2018. A survey by Delhi-based Centre for Science and Environment shows that the state's transition to organic farming is yet to become a true success. The survey found that the phasing out of chemicals in Sikkim was not complemented by a simultaneous increase in availability of and access to organic manure. Farmers also complained of low productivity during the transition from conventional chemical farming to organic farming. Pest attack on organic crops is another reason cited by the farmers for low productivity and demanded education and training to deal with it. The problem of pest attacks increased after the conversion to organic farming, but the state is yet to maintain data on this, which is needed for plant disease management. According to the Indian Council of Agricultural Research, productivity on an average dips by 6.7 percent in the first year. The government needs to have a plan in place to support farmers during the transition. The report on Doubling of Farmers' Income by Ashok Dalwai committee, too, echoes the concern of the farmers who claim up to 30 per cent drop in yields when embracing organic. It takes about a decade to attain pre-conversion yield levels, according to the committee report.

3. **Unavailability of sufficient organic Input**

Shortage of good quality organic inputs is also one of the important hurdles, which increases the risk of loss of yield. The available organic fertilizers are much below the required quantity, and there are a number of fake players in the market too. Similarly, there is a shortage of good quality organic seeds. Some inputs companies have taken initiatives to go for third-party certification. However, there is need for a policy on input standardisation. Further, different varieties of crops are grown in different regions of the country, and they are faced with different issues related to pest infestation and soil quality. Hence, there is a need for more crop-specific and region-specific research and development (R&D) on organic inputs. Nearly 98 per cent farmers in Rajasthan are aware of ecological hazards of conventional chemical-based farming, but fear of decline in production and unavailability of organic inputs in the market discourage them from switching to organic farming, says a 2015 study conducted by the Consumer Unity and Trust Society.

4. Lack of Proper Policy

The biggest challenge is the lack of an organic policy for the domestic market and imports. Without regulation on labelling standard for organic production and logo, it is not possible to differentiate an organic product from a conventional product.This has led to fraudulent practices and genuine players are not getting the premium.While the absence of a policy makes it difficult to punish fraudulent players, the government cannot enforce punishment on the basis of a voluntary certification process. Therefore the certification

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process should be mandatory and the government should help farmers under PGS India to get the mandatory certification once their land is converted to organic. Government subsidises farmers under the Participatory Guarantee System (PGS) for India, which is a self-certification process supported through the PKVY scheme but these farmers are not allowed to export. In fact, the APEDA has made it mandatory to have a third-party certification for exports. This is despite the fact that globally more than 100 countries, mostly developing countries, recognise the PGS. Unless farmers under PGS India are allowed to export, they cannot earn the premium price. Therefore, ideally, farmers should have the right to decide where they want to sell the product—domestic market and/or export market—and the government policy should support the same.

Further, a majority of the government budget and subsidies are targeted towards chemical-based inputs and, in many states, less than 2% of the budget is allocated to organic farming. A number of countries, such as the United Kingdom, have carefully designed subsidies to compensate for the yield loss during the conversion period. However, in India, there is no such subsidy.Similarly in recent Union budget 2020-21, the subsidy on fertilizers has been reduced by Rs 9,534 crore — Rs 83,434 crore to Rs 73,900 crore. This has been done ostensibly to discourage the use of chemical fertilizers and promote organic ones. But there is no corresponding rise in subsidy of organic fertilizers. “Its plain ignorance if the government thinks organic farming does not require fertilizer,” says Devinder Sharma, a Chandigarh-based agriculture and trade policy analyst.

5. Expensive organic produce discourages customers, affects sales

According to the ASSOCHAM report of 2018; post-harvest handling of relatively small quantities of organic foods also results in higher costs because of the mandatory segregation of organic and conventional produce, especially for processing and transportation. “Specialised farmer training costs, processing and inventory holding costs (without chemical additives), and increased packaging, logistics and distribution costs (due to low volumes), contribute to the high price of organic food products,” says the report. Rs 1,200–1,500 per month is the additional expenditure if a consumer switches to organic food, says ASSOCHAM study.

6. Multiple certification systems

Even as farmers are struggling to find a better market, the existing certification systems for organic food are making things difficult for them. The certification systems are not only cumbersome and time-consuming, but also expensive. It is important to eliminate confusion over multiple certification systems and multiple ministries regulating organic production and sales.

7. Social acceptance

Social acceptance of organic farming is one of the hurdles. The number of small and marginal agricultural land holdings (below two hectares) constituted 86.21%(agriculture Census 2015-16) of the total land holding in the country. The majority of small farm holders depend on government Incentives and are striving for a profit margin in the indigenous market. Therefore, small farm holders in our country are apprehensive towards adopting organic farming.As organic products are too expensive in comparison with inorganic

products and also in the absence of regulation on labelling standards; it isdifficult to recognizeorganic products. Therefore acceptance from consumer's side also becomes difficult.

Conclusion

Lack of proper knowledge transfer has been a limiting factor towards large scale organic conversion andreduction in chemical load under conventional farming practice.Poor policy measures, insufficient financial support, unavailability of inputsin market, rising input costs, fear of decline in production, and multiple certification system affects growth of organic farming in the country. Besides this, majority of agro-research does not prioritize/focus on dissemination of research outcome at farmer's level. There are limitations like availability of practical guidelines, communication gap with small and marginal farmers and lack of comprehensive approach for integration of technological know-how, better marketing options, etc. which led to lesser farmer's participation in large scale demonstration. The Indian Council of Agricultural Research (ICAR) and the National Project on Organic Farming (NPOF) should play dynamic role in promoting organic farming not simply as a source of export revenue but as an alternative model for sustainable agricultural development. Challenges faced during organic farming can be overcome with a smart strategy, scientific planning, responsible public activity and government support.

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