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### Effectiveness, Prospects and Constraints of Organic Farming in India: A critical Assessment

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#### ABSTRACT

The present study explores the effectiveness, prospects and constraints of organic farming in India with a major focus on scope for profitability and sustainability of organic farming. An attempt has also been made to examine an overview of organic farming, both in terms of area and crops in India. Organic farming in India is a viable option as well as to overcome the critical issues such as; increase in the cost of production, decrease in agricultural productivity, rural unemployment and various environmental issues. It is one of the important ways to promote sustainable agriculture. The main objective behind the organic farming is to promote sustainability of natural resources and minimizing the use of chemical fertilizer, insecticides and pesticides. Lack of market place for the produced crop and low yield from the farm are the major constraints of organic farming. It is suggested that Indian farmers should adopt organic farming at a large scale for the welfare of the society as whole.

#### 1. Introduction

Agriculture is the backbone of Indian economy. After independence, to produce sufficient quantity of food grain to the citizens of our country was the major challenge. Moreover, well-established irrigation network went to Pakistan. Later, rice-producing area near Burma went to East Pakistan. No doubt, modernization of crops showed the path of progress and improvements but at the cost of environment and human health. The massive use of chemicals and powerful pesticides in food production has compelled government, scientist, environmentalist, and economists to look for an alternative that relies more on biological inputs rather than chemicals fertilizers (Sharma, 2005). India attained food grain self-sufficiency by the end of the 1970s. To increase the agricultural production green revolution has promoted the use of modern technologies, high yielding varieties of seed, chemical fertilizers, pesticides etc. As a result of these measures there was a decrease in fertility of soil, increase in cost of production and adverse effect on environment and society as a whole.

To overcome these negative effects various alternatives are available but Organic agriculture can be a viable option as it indicates a return to traditional and eco-friendly practices in agriculture sector (Haring *et.al.*, 2001).

In ancient India, almost entire farming system was based on organic farming. Though over the period of time, inorganic ways of agriculture practice became more popular as compare to organic farming. According to FAO, "organic farming is a complete production management system which encourages and improves agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes to the use of labour intensive techniques and local available resources. It prohibits all types synthetic inputs, genetically modified organism and strives for sustainability. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationship and a good quality of life for all involved. It is considered as an economically viable, sustainable and environmental friendly technique of agricultural production. According to the latest FiBL survey

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on certified organic agriculture worldwide, organic farming is carried out in 181 countries with nearly 50.9 million hectares land, constituting only one percent of the total agricultural land of the countries practicing organic farming. As per the National Programme of Organic Production, "Organic agriculture is a system of farm design and management to create eco system, which can achieve sustainable productivity without the use of artificial external inputs such as chemicals, fertilizers and pesticides" "Essentially, it is a farming system which supports and strengthens biological processes without recourse to inorganic remedies such as chemicals or genetically modified organisms" (Reddy, 2010).

India being a highly populated country, agriculture and food security is the most important concern for the coming century. Food production has increased in our country overtime but at the cost of nature and environment. Before the advent of green revolution almost all the agricultural output in India was organic by default. But situation has been changed during sixties as a result of green revolution. No doubt green revolution has made India self-sufficient in food grain but soil fertility has been reduced by the use of fertilizers and other plant protection materials. Now things are changing and farmers relies the harmful effect of chemicals in agriculture. So more farmers are now moving towards organic farming, which can also provide a solution to climate change. Farmers can have less expense and more profit in case of organic farming as compare to inorganic farming.

The countries with the most organic agricultural land are Australia (22.7 million ha) followed by Argentina, and the United States. Out of 2.4 million organic producers, 35 percent are from Asia. Country-wise maximum producers are from India (5,85,200) followed by Ethiopia and Mexico. From 2014 to 2015 6.5-million-hectare land is added within a year and within India the organic cultivable land is increased by 64 percent (FiBL, 2017). A rapid development is seen in organic agriculture worldwide. Increasing awareness has caused shifts in consumer's taste, which has further led to increase in demand of organic products all over the world Vadiya and Sikka, 1992).

## 2. Review of Related Literature

Thakur and Sharma, 2005 recommend organic farming system, as an alternative to conventional farming system because it lowers the cost of production, required fewer resources and provide more agricultural production. Das, 2007 in his study on towards a smoother transition to organic farming stated that both farmers as well as buyers are accepting slowly organic farming.

The study highlights the problems faced by organic farmers such as conversion period, lower prices, certification process etc. Reddy, 2010 conducted a study on organic farming's status, problems, future prospects and potential in the semi-arid dry land areas. The study concluded that lack of premium prices, lack of storage facility, low government support etc., are the main reasons for non-conversion of organic farming. Tashi and Wangchuk, 2015 have studied a comparison between organic and conventional farming on the basis of soil properties, rice grain yield and cost benefit return within low, mid and high agro ecological zones. Study concluded that in all the agro economic zones, no statistically significant distinction is seen in grain yields between organic and conventional rice farms. Charyulu and Dwivedi, 2010 in their study economics and efficiency of organic farming vis-à-vis conventional farming in India, focused on cost-benefit analysis of organic farming. Wheat, paddy, sugarcane and cotton crops were taken into consideration. A mixed response is seen where unit cost of production is less in Punjab and Gujarat for cotton on the other hand it is less for sugarcane in Maharashtra and U.P. Subsidies, research, marketing initiatives might encourage farmers to opt for organic farming. Pandey and Ashima, 2012 have studied the status, opportunities, constraints and carbon sequestration potentials of organic farming in India. According to them a shift is seen towards organic farming as people are getting aware regarding health, environment and sustainability issues. Study concluded that organic farming could be a good source of employment as it involves more labour. Soumya, K., 2015 has conducted a study on organic farming: an effective way to promote sustainable agriculture development in India and highlighted the need of sustainable agriculture in present day scenario. Study concludes that organic farming can be a viable option to overcome the issues such as declining productivity in agricultural sector, rural unemployment, environmental concerns due to use of chemical fertilizers and pesticides. Mukherjee, 2017 in his study from local to global- Indian organic produce an overview. IOSR Journal of Business and Management focused to explore strength and weakness of organic industry. SWOT and TOWS matrix used to reach the final goal of the study.

From the above literature, it can be concluded that organic farming is an agricultural system, which avoids the use of chemicals fertilizers, pesticides, and insecticides and based on local resources available in the area. It is not a new concept but has been in practice since ancient times in India but now it is becoming popular day by day in our country. These studies revealed that organic farming gives various benefits to the farmers in terms of enhance the fertility of soil, reduce the cost of cultivation, increase the net returns from agriculture by giving sustainable yield and conserves water. It also reduces

the dependency of the farmers on external factors of production such as; chemical fertilizers, pesticides and other plant protection materials.

### 3. Research Methodology

The present study is based on secondary sources of data, which have been collected from the various published sources such as; Research Journal, books, government reports, India Stat, National Programme of Organic Production (NPOP), Agricultural Processed Food Products and Export Development Authority (APEDA), etc. Percentage change has been calculated at the World level as well as the State level in terms of area under organic farming.

### 4. World Organic Farming: An overview

According to latest FiBL survey on organic agriculture worldwide, the organic farming increased substantially. The number of organic producers and organic sales are also continuously increasing. There are almost three million organic farmers worldwide. India ranks number one with 835200 producers, followed by Uganda(210352) and Mexico (210,000). Australia has largest organic agricultural area (about 35.6 million hectares), followed by Argentina (3.4 million hectares) and China (3 million hectares). Globally, 1.4 percent of the farmland is organic (India stat, 2019).

Table 1 presents countries with the highest share of organic agricultural land in world. It can be seen from the table that Australia ranks first and India ranks on 9<sup>th</sup> position in countries with the highest share of organic farming in the world. It can also be seen from the table that there is an increasing trend in almost all the countries in terms of organic agricultural land since the 2011 to 2017. This table also depicts the percentages of agricultural land 2017 over 2011. It can be also being seen that there is a highest ratio of percentage in Australia and lowest in United Kingdom.

### 5. Organic Farming in India: An Overview

The conventional farming system in India was characterized mainly by small and marginal farmers, producing food and basic animal products for their families and fulfills the local needs (Deshmukh and Barbar, 2015). Sir Albert Howard who is known as father of modern organic farming observed that the methods of cultivation used by Indian farmers were more superior than used by other countries of the World. Since last about two decades both the area and market share under organic farming is continuously increasing in India. It has a huge potential in this area because of favourable agro-climatic conditions, cheap labour force, traditional farming practices and wide export market potential. Widespread international demand for Indian organic products from different agro climatic regions, the size of the domestic market and

above all the long tradition of environment friendly farming and living offers India prodigious prospective in future (NPOF, 2015-16).

As per 2018 data, India's rank in terms of world's organic land is ninth and in terms of total number of producers it ranks first. Its total organic certified area is 1780000 million hectares. Among all the state, Madhya Pradesh has covered highest area under organic farming followed by Rajasthan, Maharashtra and Uttar Pradesh. Sikkim has whole cultivable area under organic certification. India's total production of certified organic product was 1.7 million MT (2017-18). Madhya Pradesh was largest producer among different states followed by Maharashtra, Karnataka, Uttar Pradesh and Rajasthan (FiBL &, IFOAM yearbook 2018).

### Growth of Organic Agricultural Land in India

Organic farming is the outcome of the continuous efforts by dedicated people to build up the best possible relationship between the earth and men (Yadav, 2011). Organic farming in India has grown at a steady pace after the implementation of National Programme for Organic Production (NPOP) in 2001 by the Ministry of Commerce and Industry (Department of Agriculture, Cooperation and Farmers Welfare, 2016). According to the World of Organic Agriculture Report 2018, India has largest i.e., 8, 35,200 certified organic farmers in the world. It is about more than 30 per cent of the total number i.e. 2.7 million organic producers. India contributes only 3.08 percent i.e. about 1.78 million hectares under certified organic cultivation of the total area i.e., 57.8 million hectares (FiBL Report 2018).

Table 2 shows growth of India's total organic agricultural land since 2009-2017 along with yearly percentage change in organic farming. This table reveals that organic farming shows increasing growth trends since 2003-04 to 2017-18 in India. But, in 2010-11 and 2012-13, there is a fall in growth trends due to decline in area under organic cotton and also due to spread of BT cotton and the non-availability of non-BT seeds (FiBL, 2013). Thereafter, there is a continuous growth received in this context. In 2011-12 it was 39.00 percent due to increase in organic agricultural land in Delhi, Goa, Gujarat, Himachal Pradesh, Madhya Pradesh and Uttar Pradesh. In 2012-13, there has been a steep fall by 53.88 percent due to decrease in organic agricultural land in Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, and Rajasthan. The overall trend shows high fluctuations due to increase or decrease in organic agricultural land in various states in India during 2008 to 2017.

**Table 1 Country with the Highest Share of Organic Agricultural Land in World**

(Area in Hectare)

Sr. no.	Country	2011	2012	2014	2015	2016	2017	%Change
1.	Australia	12001724	12001724	17150000	22690000	27145021	35645038	196.95
2.	Argentina	3796136	3637466	3061965	3073412	3011794	3385827	-10.80
3.	U S A	1948946	2178471	2178471	2029327	2031318	2031318	4.22
4.	Spain	1621898	1593197	1710475	1968570	2018802	2082173	28.37
5.	China	1900000	1900000	1925000	1609928	2281215	3023000	59.10
6.	Italy	1096889	1167362	1387913	1492579	1796363	1908653	74.00
7.	France	975141	1032941	1118845	1375328	1538047	1744420	78.88
8.	Uruguay	930965	930965	1307421	1307421	1656952	1882178	102.17
9.	India	1084266	500000	720000	1180000	1490000	1780000	64.16
10.	Germany	1015626	1034355	1047633	1088838	1251320	1373157	35.20
11.	Canada	841216	833883	903948	944558	1099014	1191739	41.66
12.	Brazil	687040	705233	705233	750000	750000	1136857	65.47
13.	Mexico	366904	487393	501364	584093	673968	673968	83.69
14.	Poland	609412	661956	657902	580731	536579	494979	-18.77
15.	Austria	542553	533230	525521	553570	571585	620764	14.41
16.	United Kingdom	638528	590009	521475	495929	490205	497742	-22.04
17.	Sweden	480185	477685	501831	518983	552695	576845	22.12
18.	Turkey	442582	523627	491977	486069	523777	520886	17.69
19.	Czech Republic	460498	488658	472663	478033	488591	520032	12.92

**Source:** FiBL & IFOAM-Organics International, *The World of Organic Agriculture, Statistics & Emerging Trends, 2012- 2019.*

**Table- 2 Growth of Organic Farming in India (2008-2019)**

Year	Area in Hectares	%age Change	Years	Area in Hectares	%age Change
2003-04	42000	-	2011-12	10,84,266	39.00
2004-05	76000	80.95	2012-13	5,00,000	-53.88
2005-06	1,73,000	127.63	2013-14	5,10,000	2.00
2006-07	5,38,000	300.98	2014-15	7,20,000	41.17
2007-08	8,65,000	60.78	2015-16	11,80,000	63.88
2008-09	10,18,470	17.74	2016-17	14,90,000	26.27
2009-10	11,80,000	15.86	2017-18	17, 86,500	19.89
2010-11	7,80,000	-33.89			

**Source:** Author's calculations from FiBL and IFOAM- Organic International, *the World of Organic Agriculture Statistics and Emerging Trend (2004-2019)*

### **State-wise Organic Certified Area**

Table 3 presents the top twenty states of the country, which witnessed the continuous increase in organic farmland since 2005-06 to 2017-18. The highest growth in organic farmland is noticed in Madhya Pradesh (596814.09 hectares) during this period. It is followed by Maharashtra with an increase of 216903.86 hectares and Rajasthan with an increase of 186466.22 hectares. The other states in the list are, Sikkim, Odisha, Gujarat, Uttar Pradesh, Karnataka, Uttarakhand, Kerala etc.

### **Production of Certified Organic Products**

Green revolution initially boosted production yield per hectare but the yield is trending down and somewhere declining. External cost like environmental and health issues are on a rise. In 2018-19 India has produced around 1.78 million metric tonnes (MT) of certified organic products which includes all varieties of food products such as sugarcane, oil seeds, cereals and millets, cotton, pulses, medicinal plants, tea, fruits, spices, dry fruits, vegetables,

coffee etc. The production is not limited to the edible sector but also produces organic cotton fiber, functional food products etc. Madhya Pradesh is the largest producer of agricultural organic products followed by Maharashtra, Karnataka, Uttar Pradesh and Rajasthan. In terms of commodities oil seeds are single largest organic products followed by sugarcane, cereals and millets, fiber and species (Agricultural & Processed Food Products Export Development Authority, 2019).

### ***Export of Organic Products***

With increase in awareness, the demand for organic product is increasing both in developed and developing countries. Europe and North America are the major market for organic products due to health conscious and high purchasing power. Organic products are exported from India to European Union, USA, Canada, Switzerland, Korea, Australia, New Zealand, and South East Asian countries.

During 2018-19 India's export of processed food was Rs. 31111.90 crores. There is a huge capacity of producing vegetables and fruits in India. It is largest producer of ginger and okra amongst vegetables and rank second in production of potatoes, onions cauliflowers, cabbages, brinjal etc. The main exported items were vegetables, cucumber and gherkins, fruits, juices and nuts, pulses, groundnuts, jiggery and confectionary, alcoholic beverages and milled products (FiBL & APDEA, 2019). Table 4 shows export of certified organic farming from 2008-09 to 2018-19. Table 4 depicts that in 2018-19 total export was 614000 MT of Rs. 5151.00 crores. Whereas during 2008-09, it was 44476 MT of Rs. 537 crores.

### ***6. Constraints Faced by Organic Farmers in India***

In spite of increase in demand for organic products, potential organic farmers in India are facing various problems such as, low prices of organic products, cost associated with organic certification, minimum support from government, lack of marketing and storages facilities, lack of technical guidance, new investments made by the farmer on resources during conversion period etc. Organic food market is fragmented and unorganized. The consumption of organic food in India is very low as compare to developed countries.

Due to lack of extension service in our country, farmers are not aware about the use of modern organic inputs and other technical information. Poor means of transportation, communication, Lack of enterprising ability of farmers, lack of proper education, lack of training and skill are the important drawbacks faced by the farmers.

### ***7. Government Initiatives to Promote Organic Farming***

The organic sector at present is insignificant in India when compared to the total cropped area of our country but organic farming is one of the rapidly adopted methods of agricultural production. Government of India has introduced National Project on Organic Farming (NPOF) to encourage the production of organic farming and promote organic manufacture units in the country. It also gives boost to the usage of organic inputs such as manure, biologically produced fertilizers and pesticides. This scheme was introduced during 10<sup>th</sup> five-year plan with outlay of Rs. 57.04 crore.

National Project on Management of Soil Health and Fertility (NPMSF), has implemented during 11<sup>th</sup> five-year plan with outlay of Rs. 429.85 crore. The main objective of this scheme was to promote the balanced use of fertilizers and organic manure. Paramparagat Krishi Vikas Yojana has been introduced in order to motivate farmers to take up organic farming and support marketing facilities. Under PKVY organic farming is promoted through adoption of organic village by cluster approach and PGS certification. Under National Mission for Sustainable Agriculture (NMSA), 100 (FiBL & APDEA, 2019). Table 4 shows export of certified organic farming from 2008-09 to 2018-19. Table 4 depicts that in 2018-19 total export was 614000 MT of Rs. 5151.00 crores. Whereas during 2008-09, it was 44476 MT of Rs. 537 crores. percent assistance provided by the state government for setting up mechanization of fruit / vegetable waste. The main objective of this scheme is to promote sustainable agriculture through climate change adoption measures. Participatory Guarantee System (PGS) is a locally focused quality assurance system. It is based on participatory approach, vision and trust. In PGS organic farmers have full control over the process of certification. PGS represented the active participation of producers and consumers in their organic guarantee process. National advisory committee (NAC) under PGS regulates and monitors selection of Zonal and Regional Councils. It defines the operational and policy guidelines and standards for PGS India. The committee consists of chairman, secretary, joint secretary and six permanent members including its executive secretary. It has four nominated members appointed for fixed tenure of two years. These nominated members are representatives of regional council of north, south, east and west respectively. A consumer representative is also its member.

**Table 3 State-wise Organic Certified Area (Including wild areas) 2015-16**

(Area in Hectare)

Sr No.	States/UTs	2005-06	2017-18	Increase in Organic Certified Area
1.	Madhya Pradesh	16581.37	613395.46	596814.09
2.	Maharashtra	18786.69	235690.55	216903.86
3.	Rajasthan	22104.91	208571.13	186466.22
4.	Sikkim	177.64	76076.18	75898.54
5.	Odisha	26387.86	105616.24	79228.38
6.	Gujarat	1627.06	81268.94	79641.88
7.	Uttar Pradesh	3033.97	55197.53	52163.56
8.	Karnataka	4117.17	86945.98	82828.81
9.	Uttarakhand	5915.85	42304.66	36388.8
10.	Kerala	15474.47	31660.142	16185.67
11.	Goa	5555.07	11900.18	6345.11
12.	Andhra Pradesh	1661.42	29748.65	28087.23
13.	Jammu and Kashmir	22315.92	22870.34	554.42
14.	Himachal Pradesh	3647.41	14153.47	10506.06
15.	Assam	1817.50	28011.81	26194.31
16.	Chattisgarh	293.16	20530.75	20237.59
17.	Tamil Nadu	5423.63	17247.28	11823.65
18.	Jharkhand	0	17387.93	17387.93
19.	Meghalaya	0	40335.66	40335.66
20.	West Bengal	NA	5811.48	-

*Source: Author's calculations from India Stat 2005-06 to 2017-18***Table 4 Export of Certified Organic Products from 2008-09 to 2018-19**

Year	Export Volume (MT)	Export Value (INR Crore)
2008-09	44476.00	537.00
2009-10	58408.00	526.00
2010-11	69837.00	699.00
2011-12	115417.20	839.34
2012-13	160277.00	1155.80
2013-14	177765.30	1328.60
2014-15	285663.00	2099.60
2015-16	263687.00	1975.87
2016-17	309767.00	2478.17
2017-18	458000.00	3453.48
2018-19	614000.00	5151.00

*Source: Government of India, 2017 and India Stats, 2009-19*

## 8. Conclusion

As evident from the above discussion that area under organic farming as well as number of organic farmers is continuously increasing. Organic farming is being practiced since ages in India, still lacks literature in research when it comes to local level. To create awareness, popularity and expansion of organic agriculture, the local and regional studies can play an important role. Participatory Guarantee Scheme (PGS) in India playing an important role in providing organic certification by strictly following organic farming methods. Various

studies reveals that the organic yield initially decreases and then starts increasing over a period of time. Per unit cost of production in organic farming is lower than chemical farming.

Today organic products have a great demand as well as market value. The climatic concerns are at peak and most of the countries including India are working towards developing sustainable agricultural practices. To overcome the various issues such as, declining agricultural productivity, rural unemployment, to improve socio-economic conditions. There is an urgent need to adopt organic farming in India on a large scale to avoid adverse impact on environmental issues.

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