



A Short communication Study on Organic Farming as better livelihood in India and Worldwide

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ABSTRACT

The term modern organic farming was symbolize in due response to environmental harm caused by the use of chemical and synthetic fertilizers. It has got numerous ecological benefits. The pest controls and biological fertilizers derived largely from animal and plant wastes and nitrogen-fixing cover crops. In due response to comparison with conventional agriculture, organic farming uses fewer pesticides, reduces soil erosion, decreases nitrate leaching into groundwater and surface water, and recycles animal wastes back into the farm. These benefits are counterbalanced by higher food costs for consumers and generally lower yields. The yields of organic crops have been found to be about 25 percent lower overall than conventionally grown crops, although this can vary considerably depending upon the type of crop. The objective of this study is to review the beneficial aspects of Organic farming worldwide.

1. INTRODUCTION

The organic farming was first developed in the early 1900s by Sir Albert Howard. The use of animal manures and biologically based pest controls resulted in a better farming system. Howard, having worked in India as an agricultural researcher, gained much inspiration from the traditional and sustainable farming practices he encountered there and advocated for their adoption in the West. These practices were further promoted by various researchers who published *Organic Gardening and Farming* magazine and a number of texts on organic farming (Mantinez 1999). The demand for organic food was stimulated in the 1960s by the publication of *Silent Spring*, by Rachel Carson, which documented the extent of environmental damage caused by insecticides. Besides, Organic food sales increased

steadily from the late 20th century. Greater environmental awareness, coupled with concerns over the health impacts of pesticide residues and consumption of genetically modified (GMO) crops, fostered the growth of the organic sector. In the United States, retail sales increased from \$20.39 billion in 2008 to \$47.9 billion in 2019, while sales in Europe reached more than \$37 billion (€34.3 Billion Euros) in 2017. The price of organic food is generally higher than that of conventionally grown food. Depending on the product and the season, the price of organic food can be anywhere from less than 10 percent below to more than 100 percent above that of conventionally grown producing.

National Status of Organic food in India

In India, Organic Farming is not anything new as it has been in practice from ancient times. With the shifting towards minerals-based farming and the chemical and technological advancements made in agriculture in the 1960s, India ushered in an era of Green Revolution. No doubt, the chemical-based agriculture process paid rich dividends in terms of higher productivity through organic farming which helped in pulling the country out of food insecurity for the burgeoning Indian population (Chandra 2004). However, it brought a very negative cascading impact on our ecological

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plateau, creating new problems like degradation of soil health, emergence of new pests/diseases, wiping out of eco-friendly micro organisms and percolation of toxic chemicals into our food chain threatening the very existence of the biosphere of our nation (Sofia 2008). India is bestowed with a lot of potential to produce all varieties of organic products due to its various agro climatic conditions.

In India, the use of our traditional agriculture for functional food needs based on mixed cropping. Millets, pulses, oilseeds, vegetables, edible uncultivated greens — all shared the same space, water, time, pests and labor. India has always had a variety of traditional and ethnic foods that have functional attributes. The health properties of condiments, spices, herbs, whole foods, seasonal fruits and vegetables have been documented in the country's ancient scriptures (Figure 1A to 1E). Some of the functional foods used in the daily diet include turmeric, black pepper, cloves, cinnamon, asafetida, cumin seeds, mint, *tulsi* (holy basil) leaves, green leafy vegetables, fruits, whole wheat and millets (Chhokar *et al.*, 2002). These not only help in treating common ailments, but are also packed with nutrients or phytochemical that cut the risk of cancer, heart diseases, high blood pressure and eye problem, Singh *et al.*, 1997, Timsina *et al.*, 2001).



Figure 1,1A): Sophitorium Biotech. Students Showing the seeds for organic Farming
 1B) Growth of Baby Plants
 1C) Growing Organic Tomatoes
 1D) Vigorous growth of Vegetables
 1E) Marketing of Fruits
 1F) Customer buying Farming fruits

As per the available statistics, India's rank 8th in terms of World's Organic Agricultural land and 1st in terms of total number of producers as per 2020 data (Source: FIBL & IFOAM Year Book, 2020). The APEDA, Ministry of Commerce and Industries, Government of India is implementing the National Programme for Organic Production (NPOP). The Programme involves the accreditation of Certification Bodies, standards for organic production, promotion of organic farming and marketing etc. The NPOP standards for production and accreditation system have been recognized by European Commission and Switzerland for unprocessed plant products as equivalent to their country standards. Similarly, USDA has recognized NPOP conformity assessment procedures of accreditation as equivalent to that of NOP of US. With these recognitions, Indian organic products duly certified by the accredited certification bodies of India are accepted by the importing countries. APEDA is also in the process of Bilateral equivalence with South Korea, Taiwan, Canada, Japan etc. Besides, In several parts of the country, the inherited tradition of organic farming is an added advantage (Tandon *et al.*, 1992). This holds promise for the organic producers to tap the market which is growing steadily in the domestic and export sector. Organic products are grown under a system of agriculture without the use of nitrogen fertilizers and pesticides with an environmentally and socially responsible approach (Yadav *et al.*, 2013, Prabhakar *et al.*, 2010, Zhu *et al.*, 1984). This is a method of farming that works at grass root level preserving the reproductive and regenerative capacity of the soil, good plant nutrition, and sound soil management, produces nutritious food rich in vitality which has resistance to diseases.

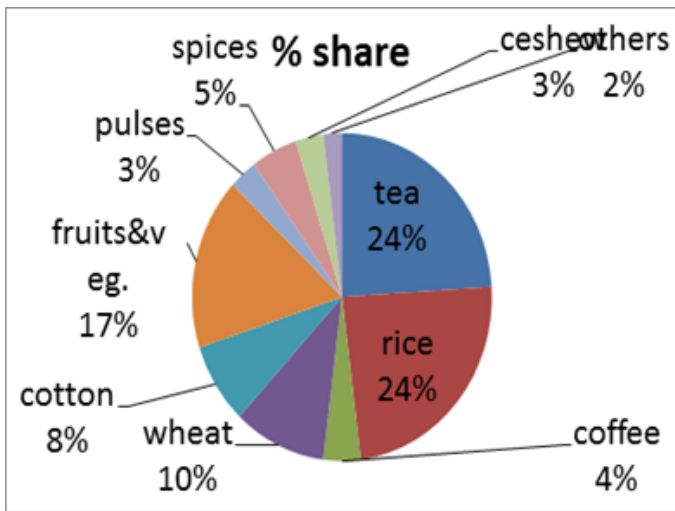
Burning area and production of organic farming in India

India produced around 2.75 million MT (2019-20) of certified organic products which includes all varieties of food products namely Oil Seeds, Sugar cane, Cereals & Millets, Cotton, Pulses, Aromatic & Medicinal Plants, Tea, Coffee, Fruits, Spices, Dry Fruits, Vegetables, Processed foods etc (Figure 1G). The production is not limited to the edible sector but also produces organic cotton fiber, functional food products etc.

Among different states Madhya Pradesh is the largest producer followed by Maharashtra, Karnataka, Uttar Pradesh and Rajasthan. In terms of commodities Oil seeds are the single largest category followed by Sugar crops, Cereals and Millets, Tea & Coffee, Fiber crops, fodder, Pulses, Medicinal/ Herbal and Aromatic plants and Spices & Condiments. Among all the states, Madhya Pradesh has covered largest area under organic certification followed by Rajasthan, Maharashtra, Gujarat, Karnataka, Odhisa, Sikkim and Uttar Pradesh (Figure 1H). During 2016, Sikkim has achieved a remarkable distinction of converting its entire cultivable land (more than 75000 ha) under organic certification. As on 31st March 2020 total area under organic certification process (registered under National Programme for Organic Production) is 3.67 million Hectare (2019-20). This includes 2.299 million ha cultivable area and another 1.37 million Hectare for wild harvest collection.

Exports of organic food product from India worldwide

In terms of export value realization Processed foods



S. No	State Name	Total Groups	Total Group Members (Farmers)	Total Area(Ha)	Area per group (ha)	Members per group	% to total area
1	Madhya Pradesh	992	40200	46413	47	41	28
2	Maharashtra	1043	37317	20012	19	36	12
3	Uttarakhand	491	26560	19572	40	54	12
4	Uttar Pradesh	806	36429	15154	19	45	9
5	Karnataka	538	18238	15130	28	34	9
6	Rajasthan	410	17029	8162	20	42	5
7	Chhattisgarh	338	7538	6004	18	22	4
8	Himachal Pradesh	142	5413	4971	35	38	3
9	Gujarat	173	6073	4412	26	35	3
10	Arunachal Pradesh	1	6	4000	4000	6	2
11	Jharkhand	180	8828	3571	20	49	2
12	Kerala	247	3510	3196	13	14	2
13	Tamil Nadu	210	3466	2824	13	17	2
14	Punjab	1	18	2643	2643	18	2
15	Assam	119	3044	2526	21	26	2
16	West Bengal	105	4879	2013	19	46	1
17	Nagaland	34	1247	1265	37	37	1
18	Andhra Pradesh	79	707	1215	15	9	1
19	Tripura	61	2267	1000	16	37	1
20	Odisha	21	643	770	37	31	0.5
21	Jammu And Kashmir	14	914	692	49	65	0.4
22	Telangana	138	871	600	4	6	0.4
23	Manipur	57	358	282	5	6	0.2
24	Haryana	11	80	106	10	7	0.1
25	Total	6211	225635	166534	27	36	100

Source: PGS India website (9th sept. 2017)

Figure 1G: Nationalwise percentage of production of Organic Farming Products.

1H): Indian Organic farming Production Details Staewise.

including soya meal(45.87%) lead among the products followed by Oilseeds (13.25%), Plantation crop products such as Tea and Coffee(9.61%), Cereals and millets (8.19%), Spices and condiments (5.20%), Dry fruits (4.98%,Sugar(3.91), Medicinal plants(3.84%) and others. The overall production of Organic farming in Global point of view shown in Figure 2.

Several literature surveys revealed the total volume of export during 2019-20 was 6.389 lakh MT. The organic food export realization was around INR 4,686 core (689 million USD). Organic products are exported to USA, European

Global growth of organic farming

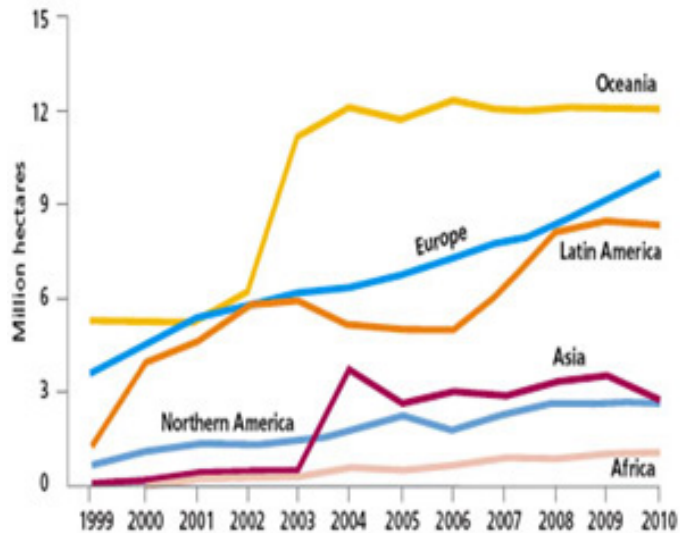


Figure 2 A): Global Status of Organic Farming
B): National Status of Organic Farming

Union, Canada, Switzerland, Australia, Japan, Israel, UAE, New Zealand, Vietnam etc. Some samples companies profiled in this report are: Coca Cola Co. (U.S.), Danone (France), Unilever N.V. (U.K.), Nestle S.A. (Switzerland) Pepsi Co (U.S.). Besides above, In India, the consumer healthcare division has Glaxo Smith king, is a fast moving healthcare company which includes Horlicks, Horlicks biscuits, Mallova products, Boost viva report is obtained from various primary and secondary sources (Figure 3). Extensive research was done and need more to cover up all the key developments and technology trends to analyze the market. Data have been collected from Farm Equipment Manufacturers Association, Agricultural Engineers Association (AEA), Association of Equipment Manufacturers (AEM) and many others.

Organic farming methods and its Equipments

Organic food, fresh or processed food produced by organic farming methods. Organic food is grown without the use of synthetic chemicals, such as human-made pesticides and fertilizers, and does not contain genetically modified organisms (GMOs). (Surekha



Figure 3: Some Brand Products of Organic Farm

et al., 2011, Amir et al., 2011) Organic foods include fresh produce, meats, and dairy products as well as processed foods such as crackers, drinks, and frozen meals. The market for organic food has grown significantly since the late 20th century, becoming a multibillion dollar industry with distinct production, processing, distribution, and retail systems with the help of Sophisticated equipment's (Figure 4).



Figure 4: Sophisticated Equipments for Organic Farming

Fertilizers need to score the good impact of organic farming

Organic matter can be applied through the application of manure, compost, and animal by-products, such as feather meal or blood meal (Nambiar et al., 1992, Singh et al., 2001, Onduru et al., 2002). Due to the potential for

harboring human pathogens, the USDA National Organic Standards mandate that raw manure must be applied no later than 90 or 120 days before harvest, depending on whether the harvested part of the crop is in contact with the ground. Composted manure that has been turned 5 times in 15 days and reached temperatures between 55–77.2 °C (131–171 °F) has no restrictions on application times (Tamaki et al., 2008, Chan 2012, Ranganathan et al., 1997). The different types of organic fertilizers are shown in Figure 5.

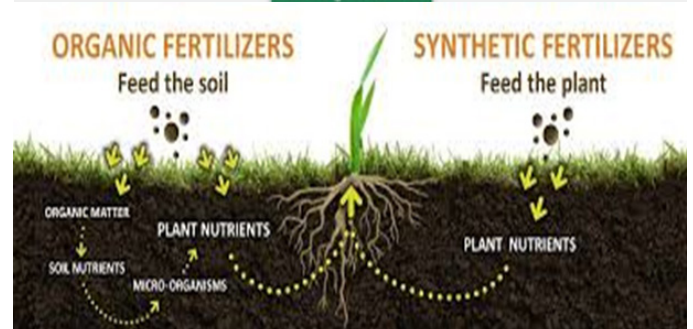


Figure 5: Different types of Organic Fertilizers and its activity

Compost adds organic matter, providing a wide range of nutrients for plants, and adds beneficial microbes to the solids (Edwards *et al.*, 1974, Sharma *et al.*, 1990, Gaur *et al.*, 1992). These nutrients are mostly in an unmineralized form that cannot be taken up by plants, soil microbes are needed to break down organic matter and transform nutrients into a bioavailable "mineralized" state (Ionoko *et al.*, 1984). In comparison, synthetic fertilizers are already in mineralized form and can be taken up by plants directly.

Farmers Market

A regulatory framework is most important when consumers and farmers are geographically separated, and such a framework is likely to cater to larger-scale producers who participate in a more industrial system. This regulatory approach does not necessarily match consumers' assumptions about organic food production, which typically include images of small family farms and the humane treatment of animals. In general, regulations surrounding organic food do not address more complex social concerns about family farms, farm worker wages, or farm size, and organic policy in some places does little to address animal welfare.

CONCLUSION

Overall, organic food has grown in popularity, as consumers have increasingly sought and purchased foods that they perceive as being healthier and grown in ways that benefit the environment. Indeed, consumers typically buy organic food in order to reduce their exposure to pesticide residues and GMOs. Besides, In several parts of the country, the inherited tradition of organic farming is an added advantage. This holds promise for the organic producers to tap the market which is growing steadily in the domestic and export sector. Organic products are grown under a system of agriculture without the use of chemical fertilizers and pesticides with an environmentally and socially responsible approach. This is a method of farming that works at grass root level preserving the reproductive and regenerative capacity of the soil, good plant nutrition, and sound soil management, produces nutritious food rich in vitality which has resistance to diseases. Further, some research shows that organically produced crops have higher nutritional content than comparable nonorganic crops, and some people find organic foods to be tastier. The question remains, however, whether organic food shipped in from across the globe is truly a sustainable method of food production. Certainly organically produced food from a local farmer who employs an integrated whole-farm approach is fairly environmentally sustainable, though the economic sustainability of such an Endeavour can be challenging.

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