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Corresponding Author
M. Ramesh Naik
e-mail: ramesh.naik@naarm.org.in

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Status and Prospects of Organic Farming in India

M. Ramesh Naik[1*], H. Umesh[1], M. Bhargav Reddy[1], Munni Manta[1] and A. V. Ramanjaneyulu[2]

Abstract

India is the second largest populous country in the world. The ever increasing population and diminishing land and water resources are mounting pressure for producing more crop from unit area. The technology driven agriculture forced the farmers to use fertilizers and pesticides indiscriminately which inturn led to further degradation of natural resources such as land, water and environment thus depleting human and animal health. Nowadays, sustainability in agriculture is required to conserve resources without jeopardizing the food production system and biodiversity. Organic farming is a form of sustainable agriculture that has received significant regulatory support for its contribution to environmental preservation. These days, organic foods are preferred by consumers because they are produced without synthetic chemicals duly following animal welfare standards. This paper discusses the current status of organic agriculture in food production, certification and various schemes for promoting organic farming.

1. Introduction

As nearly 67% of India's population depends on farming, it is important to make it a productive, sustainable and profitable enterprise to bring prosperity to farm households. This is possible through sustainable agriculture by means of converting natural resources and bio inhabitants into beneficial wealth. A sharp acceleration nearly six folds is witnessed in food grain production from 51 MT to 310 MT from 1950-51 to 2020-21. This phenomenal increase has been due to the adoption of high yielding varieties (HYV's) in combination with other Green Revolution Technologies (GRTs) in food grains. However, the excessive and disproportionate use of chemical fertilizers and pesticides (Figure 1 and 2) affected soil health and compromised long-term sustainable agricultural production, thus impacting many social, ecological and economic balance. Organic farming practices provide an alternate farming system which is environmental friendly and sustainable. Organic farming aims at optimizing the resources available on-farm

Author's Address

[1]ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana (500 030), India
[2]Senior Scientist (Agro.) & Head, AICRP on Agroforestry, Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad, Telangana (500 030), India

and exclude off-farm resources. So, the concept of organic farming is to "*feed the soil and not the plants*" which means give back to the soil what has been taken away in the due course of time.

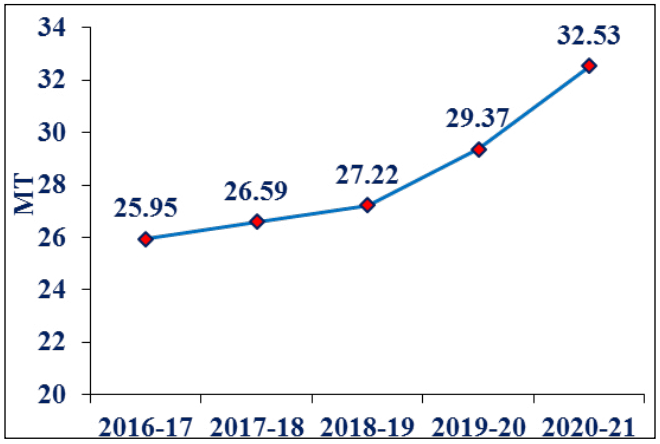

Figure 1: Fertilizer consumption in India (Anonymous, 2021)

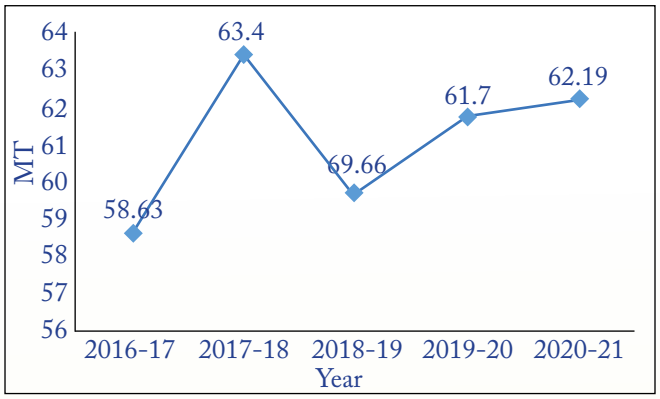

Figure 2: Pesticide consumption in India (Anonymous, 2021)

Organic farming is an agricultural and livestock production system that aims to improve the productivity and health of the agroecosystem's diverse communities including soil organisms, plants, livestock and humans while reducing the use of chemical inputs, avoiding the use of genetically engineered organisms, antibiotics and plant growth promoters.

Organic farming combines traditions (ITKs: Indigenous Technical Knowledge), innovation and science to create a beneficial environment, promoting equitable relationships and a high quality life for all people concerned (IFOAM General Assembly, 2021). Organic farming promotes consumer health, environmental health and national economic growth by generating holistic income. This type of farming can help to achieve many of the United Nations Sustainable Development Goals (SDGs 3, 5, 6, 11, 12, 13, 14, 15 and 16). Organic farming began as a fringe activity in 1905, thus, agriculture was organic in our country prior to the green revolution. The green revolution which was witnessed during mid 1960s managed to improve agricultural performance and farmers income but sustainability issues were not taken care off. The negative effects of chemical farming increased in the late 1990s, consequently, the sustainable agricultural practices to promote organic farming such as *Rishi Krishi*, Natural Farming, Organic Farming, Homa Farming, *Panchagavya Krishi*, Biodynamic Farming and Algae Fertilizer have come into the spotlight over time in different parts of the world. In India, two states, Uttarakhand and Sikkim, have been declared as "organic states". In India organic farming is also being aggressively promoted in other states.

2. Scenario and Status of Organic Farming in India

Organic farming is practiced in 190 countries, with 74.9 M ha of land covered organically by 2021, up from 11.0 M ha in 1999. Asian countries contribute 6.33 M ha, accounting for 9.2% of global land-sharing as organic land in 2021. Organic agriculture in India began with only 42,000 ha in 2003-04 and has grown to a total of 2.8 M ha by 2020-21, which accounts for approximately 2% of the country's total net sown area of 142 m ha (FiBL & IFOAM, 2021). There are 1.8 million organic producers in Asia, with India accounting for highest share. Furthermore, India ranks first in terms of organic producers (1.6 million, compared to only 2.0 lakh in 1999) and fifth in terms of organic farming area. As a result, the area under organic farming in India has increased by 194% in the last ten years. Oilseed crops account for 1.4 lakh ha of the 2.8 M ha area of organic agricultural land, accounting for 0.5% of total organic land coverage.

In India, 68% of the net cultivated area is rainfed, spread across 177 districts. The low fertilizer uses and numerous farming systems in those areas play a significant role in the desire for natural cultivation. Furthermore, the depletion of fossil fuel reserves and the resulting price increases for inputs will make a strong case for persuading traditional farmers to switch to organic farming. Slow research on organic farming expanded globally in the 1970s and 1980s and it steadily increased during 1990s

and 2000s. During the X[th] five-year plan in India, ICAR established a 'Network Project on Organic Farming (NPOF) to develop a package of practices in arable crops at 13 different centres. Furthermore, in the XII[th] five-year plan, seven new centres were approved to cover additional crops (seed spices and tuber crops) including hilly and rainfed regions.

Few states in India have taken a lead in improving organic farming. Madhya Pradesh plays a unique role because it accounts for 27% of the total land area under organic farming in India, followed by Rajasthan and Maharashtra (Figure 3). Sikkim has the highest area under organic agricultural fields among the hill states, while, Arunachal Pradesh has the least. Karnataka has the most and Telangana has the least area under certified natural agriculture among the southern states. North East India has conventionally been organic and the use of chemical substances is far lower than in the rest of the states.

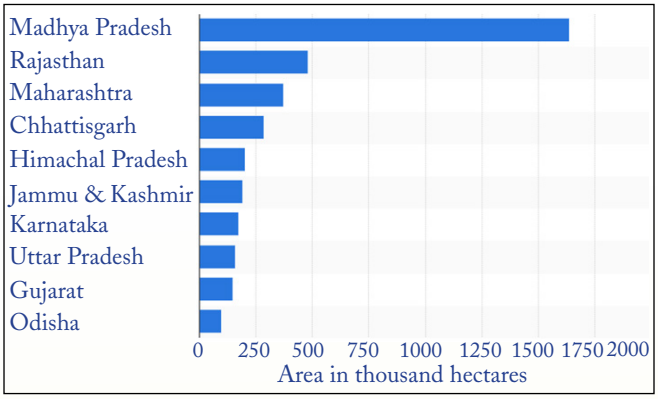

Figure 3: Organic agriculture area in India (x10[3] ha) (Anonymous, 2021)

The area and production are not limited to only the edible sector, but also to cotton fibers, functional food products and so on. Recently, the market for organic products has been steadily expanding. India exported 3.4 MT of organic products valued at USD 10490.5 million. India is a big exporter of organic tea, but, it also has a large export potential for several other products such as coffee, flax seeds, sesame, soybean, medicinal plants, spices, rice, pulses and fruits crops such as bananas, mangoes and oranges to countries such as the United Kingdom, the United States, Ecuador and Italy from states such as Assam, Mizoram, Manipur and Nagaland. India imports organic products with 1.25 MT imported recently, accounting for 3.9% of total organic imports.

3. Organic Farming and Food Security

The organic farming system in India so far has primarily been driven by farmer and civil societies led movement. Central and state governments have also come forward in recent years to promote organic farming and more recently, natural farming. Further, other North Eastern states are also making efforts towards 100% organic farming. However, the question is whether it will be possible to feed India's growing population, which is expected to rise to 1.7 billion by 2050, without using artificial chemical fertilizers. To meet rising demand, India must increase annual food production to 333 MT by 2030, up from 310 MT now (Anonymous, 2021-22). Due to rapid urbanization in India, the proportion of farm workers in the total workforce is expected to fall to 25.7% by 2050, from 58.2% in 2001 which may create labour deficit in agriculture in general and organic farming in particular. Keeping in view the enough food grain buffer stocks in the country, the task force committee constituted by Government of India suggested that nearly 10% of cultivated area in each state can be diverted towards organic farming (Anonymous, 2016).

4. Prospects of Organic Farming

Indian farming is highly diversified with crops, trees, animals, grasses etc., under diverse agro-climatic regions and it has lot of scope to promote organic farming in various crops.

➢ Organic cultivation of niche crops (crops having high yield potential under organic management and market demand) can be considered in the hilly and rainfed areas.

➢ The default organic areas in states like Himachal Pradesh, Uttarakhand, Madhya Pradesh, Rajasthan, Jharkhand and north-eastern region of India which are not influenced with fertilizers and pesticides can be the potential areas for organic farming. Thus, low fertilizer uses and diversified farming systems make a strong point in favour of going organic in these areas which is also not likely to affect the national food security.

➢ Rich traditional wisdom in these areas for restoration of soil fertility and for pest control further strengthens and provide strong infrastructure for organic system (Aulakh and Ravisankar, 2017).

➢ Various technologies in organic farming need to be fine-tuned and updated to further enhance the crop yields under various agro-climatic conditions. This differential region specific approach will contribute positively to the

cause of human, livestock and eco-system health.

➢ Farmer friendly certification policies and supply-demand chain management for the growth of organic farming in the country is needed.

➢ Systematic phasing out the use of agrochemicals and synthetic fertilizers may be a step in right direction in view of national food security and this can be achieved by practicing good agricultural methodologies.

➢ The main issue with organic farming in India is the 'Transition Period' and is critical, as it takes a minimum of three to five years depending on soil fertility and management practices, for conversion from inorganic to organic farming, during which the plants should be grown organically, but, produce can only be sold at traditional prices and crop yield is also much lower. At the same time, after conversion, there is still risk and uncertainty about the yield and market accessibility

➢ Because organic agriculture is entirely dependent on organic wastes including animal manures, natural wastes, crop wastes, green manures and bio-fertilizers, the critical question is whether or not the natural substances are sufficient to adopt organic farming in India.

➢ Plant safety practices, post-harvest, cost-addition infrastructures, natural input advertising, certification and assembly export functionality are also major challenges.

➢ The most significant barrier to India's organic produce export is the lack of international standards processing, packing, storing and shipping facilities.

5. Is the Supply of Organic Inputs Sufficient in India?

In India, the fertilizer (NPK) use increased to 27.3 MT in 2018-19, up from 0.06 MT in 1950-51. The annual NPK removal from the soil is approximately 52.01 MT, leaving a negative balance of 24.72 MT. India's average fertilizer and pesticide consumption is 133.4 kg ha^{-1} and 0.31 kg ha^{-1}, respectively (Amit and Vineet, 2022). Whereas, nutrient use performance may be very low, for example 33% for N, 15% for P and 20% for K. India is the world's second-largest producer of N fertilizer and the world's largest producer of P fertilizer, while potash is entirely imported. Further, the anticipated and projected $N+P_2O_5+K_2O$ delivered from crop residues is 5.87 and 9.7 MT, respectively, by 2025 and 2050 (Manna et al., 2018). About two-thirds of the available farm animal manure is used to supply fuel cake in villages, with the remaining one-third is used as agricultural land manure (Bhattacharyya et al., 2019). As a result, the anticipated and projected $N+P_2O_5+K_2O$ delivery from farm animal manure is 2.26 and 2.50 MT by 2025 and 2050, respectively (Chandra et al., 2021).

6. Certification in Organic Farming

Certification is critical in organic farming because it provides a means of verifying marketing claims, particularly for export purposes. Even though several agencies such as NPOP (National Programme for Organic Production), APEDA (Agricultural and Processed Food Products Export Development Authority), FSSAI (Food Safety and Standards Authority of India), PGSI (Participatory Guarantee System for India) and among others, to facilitate certificates of organic land and produce, the certification procedure is not farmer-friendly. Apart from that, certification is a complicated and costly procedure that necessitates extensive documentation and access to farm statistics via a web portal, making the entire process more difficult for farmers. Further, differential certification for different countries is to be avoided.

7. Status of Current Policies on Organic Farming in India

Many states have enacted organic farming policies, but, there is no unified national policy that applies to the entire country. Sikkim's State Policy on Organic Farming (2004) and the Sikkim Organic Mission began on August 15, 2010, to transform the complete state to organic status by December 15, 2015. Kerala's organic policy went into effect in 2010, while Karnataka's organic policy went into effect in 2004 and was reformed throughout 2017. Madhya Pradesh's state policy on organic farming went into effect in 2010. In Gujarat, an organic farming policy was implemented in 2015 with the goal of encouraging the use of natural resources in a manner which is technically sound, economically feasible, non-degrading and acceptable at social level to promote organic agriculture. Throughout the year 2017, the Rajasthan state organic policy was also implemented. The Odisha organic farming policy was developed in 2018 to make farming climate-resilient, reduce farmers' risks, and increase farm income oriented. It is planned to promote healthier soils through eco-friendly methods, reduce input costs, and provide a market for organic products. The Chhattisgarh government unveiled the new Godhan Nyay theme in July 2020. The theme aims to increase

farmer and cattle rancher income, promote production and use of organic compost, thus improving soil health. In the absence of a Pan-India policy, Agri-export Policy 2018, with its emphasis on clusters and the promotion of "Produce of India," has completely engulfed organic farming in India.

8. Different Schemes for Promoting Organic Farming

Table 1: Schemes for promoting organic farming in India

Scheme	Objectives	Incentives given to the farmers	Area covered (Till date)
Paramparagat Krishi Vikas Yojana (PKVY)-2015	Promotion of cluster based organic farming, PGSI	• Rs. 50,000 ha^{-1} for three years, (62% is given as an incentive).	6.1 lha in different states
Bhartiya Prakritik Krishi Paddhati (BPKP) sub-scheme of PKVY-2020	Promotion of traditional indigenous practices	• Rs. 12,200 ha^{-1} for three years for cluster formation, capacity building, certification and residue analysis.	4.09 lha in different states
Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)-2015	Promoting third-party certified organic farming in the region through FPOs	• Rs. 25,000 ha^{-1} to farmers for three years for organic inputs.	74,880 ha in all North Eastern states
Rastriya Krishi Vikas Yojana-2007	Incentivizing the states that is increasing their agriculture investment including organic farming	• Agripreneurship orientation- stipend of Rs. 10,000 per month. • Seed stage funding of incubates-up to Rs. 25 lakhs (85%-grant and 15% is the contribution from the incubator). • Pre-seed stage funding of agripreneurs- up to 5 lakhs (90% is a grant and 10% is the contribution from the incubator).	6.19 lha in different states
The National Project on Organic Farming (NPOF)-2004	Promote organic farming practices for effective utilization of resources	• Assistance for compost production unit and for individuals up to 33% of cost (limit to Rs 63 lakh/unit).	26.57 lha in different states
National Mission for Sustainable Agriculture (NMSA)- 2014	Construction of vermi compost units, organic input production units and green manuring	• Financial assistance upto 50% of cost (upto to Rs. 125 ft^3). • Assistance of Rs. 50,000 per unit for permanent structure and Rs. 8,000 per unit for HDPE vermi bed	--

9. Conclusion

The organic farming is considered as the most practical way to nurture the land and help regenerating the soil. This is likely a step towards long-term improvement by deciding not to use synthetic chemicals to produce high dietary quality food in sufficient quantities. It is a new agricultural machine that is rapidly changing farming practices. But, India with it's large population has to plan meticulously in promoting organic farming and avoid food crisis.

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