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Organic farming in India: Status and challenges with special reference to vegetables

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Abstract

In 2016, India ranked 1st in terms of organic producers with 8.35 lakh (13.5%) and 3rd in terms of organic area under cultivation with 4.2 million hectare (10.5%) of the world. In 2017, out of the 1003 affiliates of IFOAM-Organics International from 127 countries, India possessed 111 of them. It has been forecasted that for the coming years, Indian organic farming will attain a CAGR of more than 25%. This paper reviews the production status of organic vegetables in India for five years from 2015-2019. The purpose for selecting organic vegetables is because these are readily available to the common masses for immediate consumption and India is the second important organic vegetable grower. Recent studies have concluded that organic vegetables are safer to consume than the non-organic ones due to lower nitrate and cadmium content; and lesser pesticide residues. Worldwide only 0.7 % of the organic land was devoted to the cultivation of vegetables, while India offered 14.3 % of its organic area for vegetable cultivation in 2016. In 2009-10, fruits and vegetables (30%) together had the largest organic share in India's crop production. The challenges faced by the organic growers are the insufficient marketing policies and channels and the biological characteristics of vegetables.

Keywords: Organic farming, organic vegetable grower, IFOAM-Organics.

Introduction

In the beginning of 2016, Sikkim became the first “organic state” in Asia and perhaps in the world which attracted lots of attention towards the concept of organic farming. Organic farming may be defined as the cultivation of crops without using synthetic agro-chemicals like pesticides, fertilizers or genetically modified organisms which can sustain the health of the soils, ecosystem, biodiversity and people. Organic farming wasn't a new practise for Indian agriculture as it was practised from time immemorial, before the advent of green revolution. The farmers used all sorts of organic matter ranging from cow-dung to compost for enriching the nutrient content of soil but it resulted in lower productivity and production which wasn't enough to feed to Indian population, post-independence. So, the agricultural scientists found the solution of gaining self-sufficiency in food grains by resorting to hybrid varieties coupled with increased use of synthetic agro-chemicals. These embodied and disembodied components of new and promising technology gave outstanding results and transformed India from an importer to net exporter of food grains. The prolonged and non-judicial use of agro-chemicals gave better results in the short run but have proved to be fatal in the long run, as our soil fertility is declining, crop productivity and production have stagnated. The Indian farmers are now going back to their roots and are taking up the traditional, organic way of cultivation. The harms that were caused by excessive use of synthetic chemicals on soil are going to have long-time effect and hence takes a longer recovery time, thereby indicating towards the time-period required for getting a certificate of organic farming.

Status of vegetable production in India

The level of vegetable production in India was 146.55 million tonnes in 2011 and with the population of 1210 million, vegetable consumption in India was to a tune of 230.40 g/person/day which stood at 87.66 g/person/day during 1951. The recommended level of dietary allowance (RDA) is 300g/person/day so we are still facing a shortage of about 30 million tonnes of vegetables. The vegetable sector suffers through 25 per cent of post-harvest

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losses and only 5 per cent of it are either processed or exported. With the ever-increasing population there is tremendous amount of pressure on the agriculture sector to feed the mouths with the decreasing land share. There is constant battle between the quantity and quality of the produce that can be produced from a given land constraint as only one of them can be taken up as the objective and one has to be forsaken for achieving the another one. It would have been better if both of them could have been achieved in one go.

NSSO 66th round revealed that there is a major shift in the consumption basket of Indian population as people are inclining more towards the non-food grain items like fruits and vegetables. The major reasons behind this shift in consumption habit can be pointed towards the fact that the Indians are becoming more diet conscious, health conscious, their income levels are increasing and they are becoming interested in quality of the produce rather than the quantity. Vegetables are one such agricultural commodities which are consumed on a daily basis and whose price fluctuates with the level of their visual appeal i.e. freshness and colour, etc. Another factor that has been affecting its prices are the cultivation practises followed to grow vegetables, people are ready to pay high prices for the organically grown vegetables. The growing awareness between the masses about organic farming has made it possible for the marketing, commercialization and trade of organic agricultural produce.

Status of organic vegetable farming

Asia houses 41 per cent (1.1 million) of the 2.7 million

organic producers of the world, out of which India has 0.83 million producers. The total agricultural area dedicated to organic farming in Asia was approximately 4.9 million hectares in 2016. As on 31st March 2018, total area registered under National Programme for Organic Production of India was 3.56 million hectares. This included 1.78 million hectares (50 per cent) under organic crop production and 1.78 million hectares under wild harvest collection. India ranks 9th in terms of world's organic agricultural land and 1st in terms of organic agricultural producers. India exported about 21.27 million tonnes of total agricultural produce (Rs. 1,084 billion in value) including rice, animal products and fresh vegetables and fruits and exported around 0.31 million tonnes of organic products worth Rs. 24.77 billion in 2016-17.

In 2016, globally the total area under organic vegetable cultivation (0.43 million hectares) was 0.7 per cent of the total area under vegetable cultivation (62 million hectares) and 4.3 per cent of the 10.6 million hectares available for organic farming. With respect to 2015, the area under organic vegetable cultivation witnessed a slight increase of 0.7 per cent during 2016. Out of the total land available for organic vegetable cultivation, Asia holds about 16.33 per cent of it. In 2010, India exported 143 MT of organic vegetables (0.24 per cent of the total organic produce exported) while 5000 MT (20 crores) of organic fruits and vegetables were consumed domestically. During 2014-15 India produced 10823.93 MT of organic vegetables, so we are able to conclude that the organic vegetable production has been following a rising trend. The Indian authorities have introduced a common logo for organic foods i.e. 'Jaivik Bharat'.

Table 1: Growth rate of some selected organic vegetables over recent years in India

Year		2015	2016	2017	2018	2019
Area (Hectares)		292309.50	292309.50	292309.50	292309.50	292309.50
Yield (Kg)	Okra	0	493.1	13085	53214	28337
	Brinjal	0	3560	21643	39555	24082
	Capsicum	0	0.8	2307.9	21090	44.5
	Chilli	0	6689.5	22866	24553	59455
	Tomato	0	11015	72658	246104	84564
	Total	0	21758.4	132559.9	384516	196482.5
Growth rate in yield (%)	Okra	0.00	0.00	2553.62	306.68	-46.75
	Brinjal	0.00	0.00	507.95	82.76	-39.12
	Capsicum	0.00	0.00	288387.50	813.82	-99.79
	Chilli	0.00	0.00	241.82	7.38	142.15
	Tomato	0.00	0.00	559.63	238.72	-65.64
	Total	0.00	0.00	509.24	190.07	-48.90

Source: www.pgsindia-ncof.gov.in

The data has been retrieved from the website of PGS India and due to data limitations inference for only five vegetables could be made out. Table 1 shows the growth rate of organic vegetables in India over the span of five years. The data revealed that the area under organic vegetable farming in India has been constant throughout this time-period whereas the production has increased manifold. This can be attributed to the policy interventions made by the government and the increase in awareness of the Indian masses. In 2019, almost all the vegetables are showing negative growth but it is still too early to come to any conclusion as the year has just started and we can just hope that the figures of 2019 will surpass the last year's figures.

Future challenges for organic vegetable farming

Organic farming is concerned with safeguarding the reproductive and regenerative capacity of the ecosystem along

with providing nutrition- rich food for human consumption. There have been numerous studies which have outlined the fact that the organic production provides lower productivity in comparison to the inorganic ways of production. So, there lies a question of how to balance productivity with quality of the produce as organic farming directly clashes with the objective of producing more from few resources for more mouths to feed. A rise in the awareness and demand for organic produce has led to an increase in its production but the sector of organic farming faces many hurdles for its growth and development. An attempt has been made to outline them and the possible measures that can be implied to overcome them.

1. Supply chain management

Organic products face inefficient and poor collection channels, lower production and productivity, inadequate storage, processing, transportation facilities and quality

control that are in-line with the global standards. Lack of training for farmers, producers and processors also pose as some of the other challenges that needs to be taken care of. Vegetables are amongst the most common perishable agricultural commodities and are more likely to losses if proper care is not taken during their storage and transportation, making them unfit for export. Therefore, improvements in the post-harvest handling of the produce including setting up of cold-storages, air-conditioned trucks for transportation, usage of proper packaging materials may be considered as solutions to some extent to address the supply chain related challenges. Priority should be given to quality management at each step in the supply chain and attempts should be made to develop direct business relations, sales should be planned according to the production, and contract farming may be introduced to make the supply chain more efficient.

2. Food Origin and Mileage

The concept of food miles refers to the distance travelled by the food to reach the fork from the farm gate i.e. from the place of production to the place of consumption, is of utmost importance in the case of organic food products. Maintaining continuity and quantum of supply of organic products are major concerns for most of the food companies due to its ever-increasing rise in demand. The key to minimize food miles lies within the aegis of streamlining the logistics i.e. reorganisation and automation of order, warehouse and transportation by incorporating ICT's in their management.

3. Size of farms and collaboration

The amount of production in small and medium farms is limited to a few hundred tonnes which is particularly evident in perishable commodities like dairy, fruits and vegetables where linkage with markets and primary processing is vital. The unorganized small producers can be aggregated by forming cooperatives and producer companies which will enable them to combine their produce to avail loans, create storage and processing facilities in the proximity of production, strengthen their production and marketing strategies.

4. Marketing and Sales Management

Marketability of organic products involves social acceptance and ecological aspect of the produce and for achieving it, concentrated efforts are required in building of capacity and tackling the issues related to production, logistics and quality parameters. Organic certification plays an important role in marketing of agricultural produce and grocery supermarkets are potentially the most attractive channels for the sale of organic products. However, these grocery marts are often very demanding in terms of product quality, availability and price. When it comes to organic vegetables, they are available with the small vendors as well, but one cannot guarantee the quality of these vegetables. Market survey is a very important measure to derive information about the target consumers, their preferences, consumption pattern. Pro-active certification, opting of standardized packaging techniques, generic promotions are some other solutions which can be taken up for this constraint.

5. Cost, margins, price setting and value addition

Setting of prices for organic produce in comparison to the conventional produce is very elastic in nature which is the

major marketing challenge. The pricing mechanism which is followed in general cannot be applied to the organic produce because their cost of cultivation is quite higher than that of the traditional produce. The prices for organic products vary significantly between different retail formats, different companies and across the product categories, which also is a significant problem for the organic industry. This challenge can be taken care by determining basic price by the producers beforehand followed by future pricing based on the actual benefit-cost ratio of organic products. The cost of the production of vegetables may be reduced if farmers make use of Participatory guarantee scheme (PGS) and benefits may be increased by incorporating condensed supply chain and fixing premium prices for the organic produce.

6. Sector Development, Market assurance and certification

The crucial element in organic vegetable marketing is to establish credibility of the produce through proper certification and gain consumer's confidence. In many of the developing countries, national regulations for organic agriculture are followed but it lacks effective regulation for the use of the term "organic". Loss of confidence and confusion in the organic products may create long-term implications for the organic market. Pro-active certification is a must to gain customer's trust, especially if the produce is not sold directly from the farm, but through a third party like that of retail shops, marts.

7. Willingness to pay for the organic produce

The people are becoming more and more diet and health conscious but it is still evident that they are not willing to pay more for the organic produce. There is only a particular section of consumers who can afford and are willing to afford organic vegetables. Policy interventions are needed in this regard in order to reduce the cost of cultivation and to increase the awareness about the organic produce (vegetables).

8. Transition Assistance

The conversion period can be a financially difficult phase for the farmers because of the several direct and indirect costs involved in the process. During the early stages of the transition, there is an additional requirement of heavy investments in farm-undertakings, such as soil fertility building and protecting mechanism, farm implements and storage. Organic techniques are generally more labour intensive and thus the wages lead to increase in cost of cultivation. There should be policies which can help the farmers during the three year conversion period in the form of annual payments, like that of DBT's being provided under KALIA and Kisan Samman Nidhi.

9. Issues in Certification

The process of certification involves extensive paperwork which includes the detailed farm history, results of soil and water tests, annual on-farm inspection and fees to be paid for annual surveillance by the certification bodies. The underlying cost coupled with the prolonged procedure, lack of knowledge and understanding is a hurdle in the organic certification procedure in India, particularly for the small and marginal vegetable growers. Efforts should be made to make the procedure simple and cost effective. Moreover, government intervention may be required to bring down the

certification cost and awareness should be increased for opting for Participatory Guarantee Scheme.

10. Limited knowledge on organic farming

Organic vegetable farming lacks suitable models/ systems for cultivation, chalked out for different climatic conditions with appropriate technologies. Insufficient on-farm organic matter and inaccessibility of external inputs, organic ways of post-harvest techniques and packing are some of the challenges that have been cited in organic farming. Increased funding, R&D in the organic farming practises and systems especially tailored out for different crops and agro-climatic conditions, development of suitable crop varieties and livestock breeds will lead to increased adoption rate of organic farming.

11. Market intelligence

The data and information regarding production, productivity, area covered, export and import of category wise organic

produce is either very limited or aren't updated. The data and its analysis forms the foundation for crafting policies but in the absence of reliable data's it is very difficult to do so. There is an urgent need to take up comprehensive studies on benefit-cost and cost of cultivation for organic farming in general and organic vegetables in particular.

12. Insurance cover for organic farming

Vagaries of natural calamities are same for both conventional and organic farming, as they suffer the same and farmers in both the cases suffer loss. So, there's a need to either include organic farming under the protection of crop insurance schemes or another scheme should be chalked out exclusively for organic farming.

Policies of Government of India for promotion of Organic farming

Table 2: Government Initiatives to Promote Organic Farming

Programmes	Highlights
National Project on Organic Farming (NPOF)	<ul style="list-style-type: none"> Central sector scheme, implemented during the 10th FYP with an outlay of Rs. 57.04 crore. Expanded in the 11th FYP with an outlay of Rs. 101 crore. Objective: to encourage the organic food production and promote manufacture and usage of organic and biological inputs, such as organic manure, bio-control agents, and biologically produced fertilizers and pesticides. Provides financial aid upto Rs. 63 lakhs (33% of the capital cost) for constructing fruits and vegetables waste compost units, through NABARD. Provides subsidy upto 40 lakhs (25 % of the capital cost) for the construction of bio-fertilizer or bio-pesticide production unit, through NABARD.
National Project on Management of Soil Health and Fertility (NPMSF)	<ul style="list-style-type: none"> Implemented during the 11th FYP with an outlay of Rs. 429.85 crore. Objective: to promote the judicious and balanced use of fertilizers and organic manure on the basis of soil test results. Provides financial assistance of Rs. 500/hectare for promoting the use of organic manure.
Network Project on Organic Farming	<ul style="list-style-type: none"> Initiated by ICAR in the 10th FYP at the Project Directorate for Farming system Research at Modipuram. Objective: to develop package of practises for different crops and farming systems for organic farming in different agro-climatic conditions of India. Package of practises have been developed for: basmati rice, rain fed wheat, maize, red gram, chickpea, soybean, groundnut, mustard, Isabgol, black pepper, ginger, tomato, cabbage and cauliflower.
National Horticulture Mission (NHM) and Horticulture Mission for North East and Himalayan State	<ul style="list-style-type: none"> Centrally Sponsored Scheme, launched in 2005-06. Aim: to strengthen the growth of the horticulture sector comprising of fruits, vegetables, roots and tuber crops, mushroom, spices, flowers, aromatic plants, cashew and cocoa. Provides subsidy of 50 % for establishing vermi-compost units and HDPE vermi-beds. Provides assistance for organic certification of Rs. 5 lakh for a group of farmers covering an area of 50 hectares. Provides Rs. 30,000 per beneficiary for adopting organic farming.
Rashtriya Krishi Vikas Yojna (RKVY)	<ul style="list-style-type: none"> Provides assistance to the projects formulated and approved by the state for decentralized production and marketing of organic fertilizers.
National Mission for Sustainable Agriculture (NMSA)	<ul style="list-style-type: none"> 100 % assistance by the state government for setting up of mechanization of fruit/vegetable waste. 100 % aid for setting up of quality control laboratory for testing bio-fertilizers, upto Rs. 85 lakhs.
Paramparagat Krishi Vikas Yojana (PKVY)	<ul style="list-style-type: none"> Provides Rs. 20,000 the farmers up to 3 years for performing organic farming. Procuring packaging material, preparation of labels, holograms, printing and branding of organic produce at Rs. 2,500/acre Provides financial aid for a cluster of 50 acres, to the tune of Rs. 1,20,000 for transporting organic produce to the market place. In order to motivate and support marketing facilities, financial assistance of Rs. 36,330/cluster is provided to organize an organic fair.

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