



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; 11(12): 2964-2971  
© 2022 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 25-09-2022  
Accepted: 05-11-2022

**Rajesh Kumar**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Navjot Rana**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Manveer Kaur**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Sayan Bhowmik**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Mukesh Kumar**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Ayush Negi**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Shivani Singh**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Janaki Raman P**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

**Corresponding Author:**  
**Navjot Rana**  
School of Agriculture, Lovely  
Professional University,  
Phagwara, Punjab, India

## Organic farming status in India: A review

**Rajesh Kumar, Navjot Rana, Manveer Kaur, Sayan Bhowmik, Mukesh Kumar, Ayush Negi, Shivani Singh and Janaki Raman P**

### Abstract

Organic farming is a knowledge intensive system and has been developed by practitioners themselves over the years. Organic farming is native to India. The farmers of ancient India are known to have evolved nature friendly farming systems and practices such as mixed farming, mixed cropping, and crop rotation. The first “scientific” approach to organic farming can be quoted back to the Vedas of the “Later Vedic Period”, 1000 BC to 600 BC. There has been significant increase in the area under certified organic farming during the last 10 years. With less than 42,000 ha under certified organic farming during 2003-04, the area under organic farming grew by almost 25-fold, during the next 5 years, to 1.2 million ha during 2008-09. Organic farming is one such system which provides healthy and safe food without ecological harm. Hence, the Government started promoting organic farming through various schemes like National Project on Organic Farming (NPOF), National Horticulture Mission (NHM), Horticulture Mission for Northeast & Himalayan States (HMNEH), National Project on Management of Soil Health and Fertility (NPMSH&F) and Rastriya Krishi Vikas Yojana (RKVY). The interest of several States in promoting organic farming indicates that organic agriculture is being viewed as a precursor to dynamic change for an otherwise stagnant agricultural sector. Despite the initiatives and rapid progress, apprehension about the economic viability and environmental and human health benefits of organic farming continue to bother agricultural researchers and policy makers. There is a developing significance on health benefits as people are getting cognizant about the food themselves their relatives and family members. Thus, there is a degree for organic farming developed products. Prior people used to expend quality local vegetables, heartbeats, and organic products. This brought about a life span and solid way of life. This paper provides an overview of organic farming benefits and challenges and its present scenario in India.

**Keywords:** Organic farming, soil health, climate change, sustainability, biodiversity

### Introduction

Organic farming is native to India. The farmers of ancient India are known to have evolved nature friendly farming systems and practices such as mixed farming, mixed cropping, and crop rotation. The first “scientific” approach to organic farming can be quoted back to the Vedas of the “Later Vedic Period”, 1000 BC to 600 BC. The essence is to live in partnership with, rather than exploit, nature. In this regard, the “Vrikshayurveda” (Science of plants), the “Krishisashtra” (Science of agriculture) and the “Mrugayurveda” (Animal Science) are the main works. Organic movement owes its origin primarily to the work of Sir Albert Howard, often referred to as the father of modern organic agriculture, who believed that a shift from nature’s methods of crop production to adoption of newer methods leads to the loss of soil fertility (Howard, 1943). From 1905 to 1924, he worked as an agricultural adviser in India, where he documented traditional Indian farming practices and came to regard them as superior to his conventional agriculture science. His research and further development of these methods is recorded in his writings, notably in his book, An Agricultural Testament. It is this pioneering work which sowed the seeds of organic movement in India, placing greater emphasis on the use of compost and other organic sources of plant nutrients to the total exclusion of chemical fertilizers. There has been significant increase in the area under certified organic farming during the last 10 years. With less than 42,000 ha under certified organic farming during 2003-04, the area under organic farming grew by almost 25-fold, during the next 5 years, to 1.2 million ha during 2008-09. Later, however, the area under certified organic farming has fluctuated between 0.78-1.1 million ha. Presently, about 0.5 million ha area is under certified organic cultivation and India ranks 16th in terms of total land under organic cultivation and 92nd position for agriculture land under organic crops to total farming area.

During 2012-13, India had the largest number of organic producers of about 0.6 million and accounted for 1.24 million tons of certified organic produce. India exported 135 products during 2013-14 with the total volume of 194088 MT including 16322 MT organic textiles. The organic agri-export realization was around 403 million US \$ including 183 US \$ organic textiles registering a 7.73% growth over the previous year. Agricultural development policy for developing countries needs to focus on increasing the productivity of the land under cultivation, with lower costs, higher efficiency of products with little or no damage to both humans and the environment. Nedumaran, *et al.* (2020) [23] Organic farming systems have attracted increasing attention over the last one decade because they are perceived to offer some solutions to the problems currently besetting the agricultural sector. Organic farming has the potential to provide benefits in terms of environmental protection, conservation of non-renewable resources and improved food quality. Charyulu, and Dwivedi, (2016) [11] Organic farming is a societal need; it is not only from the consumer's perspective but also from a farmer point of view. For the transformation of rural agriculture into a well sustainable agriculture, organic farming might become a panacea which can build a plinth for sustainable agriculture and reimburse conversion cost and maintain the sustainability of soil. Yadava, (2019) [32] India is home to 30 per cent of the total organic producers in the world, but accounts for just 2.59 per cent (1.5 million hectares) of the total organic cultivation area of 57.8 million hectares, according to the World of Organic Agriculture 2018 report. Pandey and Sengupta (2018) (Most of the farming community is resource poor and purchasing fertilizers and chemicals in adequate quantities is beyond their capacity, thus encouraging organic farming. Moreover, Organic farming is favourable for small and scattered agriculture land holders. Singh, (2019) [29].

### Review of Literature

According to Mendon *et al.*, (2020) [27] the farming of organic products is a unique practice which balances the environmental sustainability and controls the detrimental effect both on customer's safety by creating a positive notion

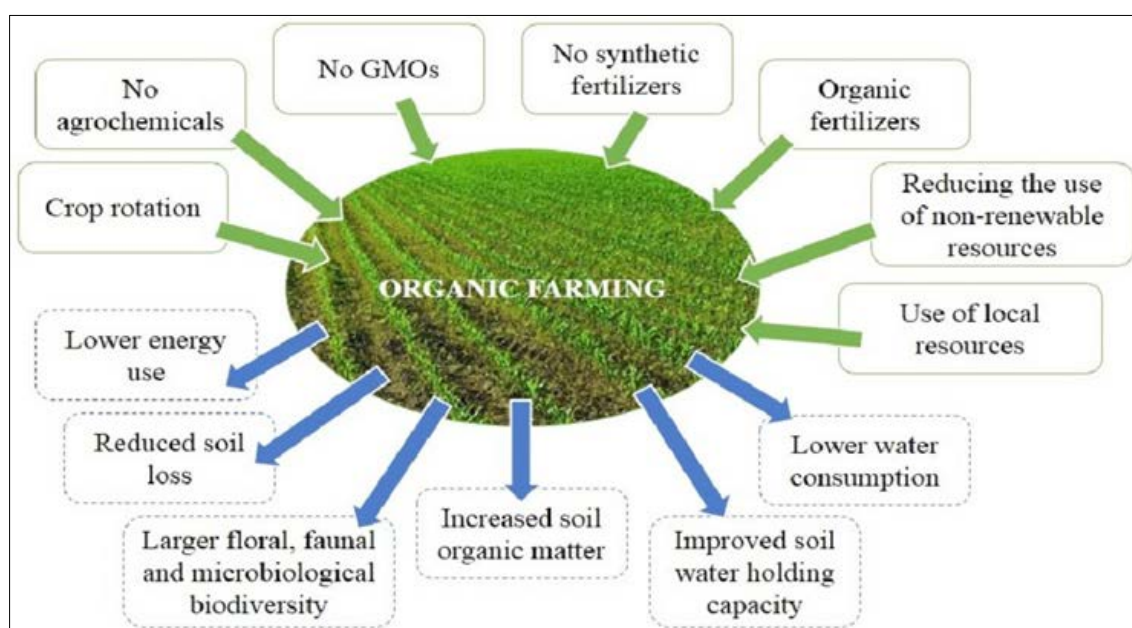
in the minds of the customers. Varkey, (2020) [30] contends that countries, developing as well as developed are emphasising environment sustainability of agricultural production, methods, and practices. The traditional wisdom of farmers on indigenous agrarian practices increasingly being called into question owing to a host of factors. The work of Magnaye, (2018) [24] examines the relationship between smallholder organic farming and entrepreneurship considering the environmental conservation approach of organic farming and the economic enhancement features of entrepreneurship. Furthermore, it intends to determine, through qualitative analysis using case studies, how smallholder organic farming can be planned, and the competencies needed by an organic farmer when venturing into an organic farm enterprise. On the other hand, Giovannucci, (2007) [17] assert that, find that there is significant evidence that organic methods could be favourable for small farmers. In fact, most of the cases clearly noted several direct benefits and related externalities from which it is reasonable to conclude that the promotion of organic agriculture methods among small and resource-poor farmers can be well warranted. Yadav, *et al.*, (2013) [31] add that in the post-independence period, the most important challenge in India has been to produce enough food for the growing population. Hence, high-yielding varieties are being used with infusion of irrigation water, fertilizers.

### Objective

- To study the present status and way forward of organic farming.
- To study the importance of organic farming in this era.
- To study the benefits and challenges of organic farming.

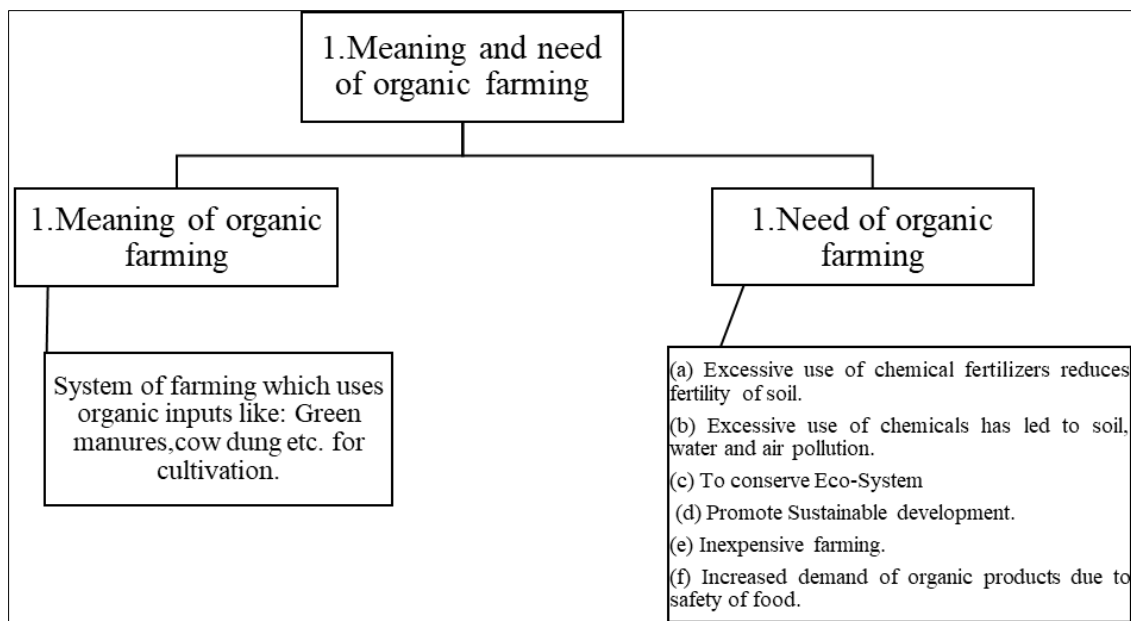
### Organic Farming

The term "organic farming" was coined by Lord Northbound in 1940. The beginnings of the organic movement can be traced back to the beginning of the 1800s. In 1840 Justus Von Liebig developed a theory of mineral plant nutrition. Liebig believed that manure could be directly substituted by certain mineral salts.



**Fig 1:** Organic Farming

## Meaning and importance of organic farming



**Fig 2:** Meaning and importance of organic farming

**Table 1:** Difference between organic farming and conventional farming

S. No	Organic farming	Conventional farming
1	Organic manures, compost, vermicompost	Synthetic nonorganic insecticides
2	Green manures	Weedicides
3	Cover crops & mulches	Genetically Modified Organisms (GMO) seeds
4	Nutrient fixing & solubilizing microbes	Plant growth hormones
5	Natural Minerals	Synthetic dyes and colors
6	Beneficial organisms	Sewage irrigation
7	Biological pest control agents, traps, and cow-based preparations	Artificial ripening chemicals
8	Companion crops and trap crops	Plant antibiotics
9	Mechanical weeding	Soil fumigants

Source: <https://adyanaturals.com/the-organic-philosophy.html>

### Organic Farming in India

Ever increasing population as opposed to an ever-decreasing supply of living resources like food and water has made it necessary to increase agricultural production and stabilize it in a viable and feasible manner. The benefits of ‘Green Revolution’ credited to Dr. MS Swaminathan have now reached a plateau and with diminishing returns it has become necessary to devise alternate techniques. In addition, the excess use of fertilizers and artificial growth regulators has led to an issue called ‘pollution’. The need of the hour is a natural balance between life and property for existence. Keeping in view the fact that fossil fuels are on their way of extinction and are non-renewable, organic, nature friendly ways of farming and agriculture has gained importance.

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. 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. The total volume of export during 2019-20 was 6.389 lakh MT. The organic food export realization was around INR 4,686 crore (689 million USD). Organic products are exported to USA, European Union, Canada, Switzerland, Australia, Japan, Israel, UAE, New Zealand, Vietnam etc. In terms of export value realization Processed foods 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.

### Research on Organic Farming

Keeping in view the ever-increasing negative impacts on human health and ecology due to present commercial farming systems following intensive usage of synthetic inputs, research and policy makers are forced to find out alternative way of farming. Organic farming is one such system which provides healthy and safe food without ecological harm. Hence, the Government started promoting organic farming through various schemes like National Project on Organic Farming (NPOF), National Horticulture Mission (NHM), Horticulture Mission for Northeast & Himalayan States (HMNEH), National Project on Management of Soil Health and Fertility (NPMSH&F) and Rashtriya Krishi Vikas Yojana

(RKVY). In addition, government agencies of many States are involved in either promotion of organic programmes or formulation of organic policies. The interest of several States in promoting organic farming indicates that organic agriculture is being viewed as a precursor to dynamic change for an otherwise stagnant agricultural sector. Despite the initiatives and rapid progress, apprehension about the economic viability and environmental and human health benefits of organic farming continue to bother agricultural researchers and policy makers. Indian Council of Agricultural Research (ICAR) initiated a network project on organic farming in 2003-04 under the Project Directorate for Farming Systems Research (PDFSR), Modipuram to study productivity, profitability, sustainability, quality, and input-use-efficiencies of different crops and cropping systems under organic farming in different agro-ecological regions. Thirteen research stations from all over the country are participating in the project. Similarly, The All-India Network Project on Bio-fertilizers (AINPB) under the Indian Institute of Soil Science, Bhopal is mandated to formulate and testing of mixed bio-fertilizers for diverse cropping systems and to improve bio-fertilizer technology with reference to quality, carriers, consortia and delivery systems. The University of Agricultural Sciences, Dharwad (Karnataka) established the Institute of Organic Farming in 2006 with an objective to cater to the needs of organic farmers and other stakeholders in the State. Similarly, in 2006, the University of Agricultural Sciences, Bangalore (Karnataka) established the Organic Farming Research Center at Shimoga and Organic Farming Research Station at Naganahalli (near Mysore) to scientifically validate and analyze the claims of organic agricultural produce and help popularize it among farmers. The Department of Organic Agriculture was established by the CSKHPKV, Palampur (Himachal Pradesh) in 2009 with a specific mandate to promote organic farming in the State. In addition, many ICAR Institutes and State Agricultural Universities have initiated several research projects or centers to develop location-specific organic farming modules. The major findings of some of these studies (both on-farm and on-station) are: Typically, farmers experience some loss in yields after discarding synthetic inputs and converting their operations from the conventional systems to organic production. Before restoration of full biological activity in soils, pest suppression and fertility problems are common. The degree of yield loss varies and depends on inherent biological attributes of the farm, the farmers' expertise, the extent to which synthetic inputs were used under previous management and the state of natural resources. For example, the grain yield of wheat was markedly lower under organic management (36-65% and 23-54% less in the first and second year of transition, respectively) than with the conventional treatment. Similarly, the yields of bell pepper and French bean under organic management were significantly lower (25.2-45.9% and 29.5-46.2%, respectively) than under conventional management during a 2-year conversion period. After the conversion period, organic agriculture usually produces similar or significantly higher yields and requires fewer external inputs compared to conventional agriculture. Several region-specific cropping systems have been identified through network project on organic farming, which performed either better than or at par with conventional cropping in terms of yield and economics. A survey conducted during 2008-09 in Maharashtra, Karnataka, Tamil Nadu (including Puducherry), Kerala and Uttarakhand involving 50 certified

organic farms and 50 comparable conventional farms revealed that organic farming, despite the reduction in crop productivity by 9.2%, provided higher net profit to farmers by 22.0% compared to conventional farming. This was mainly due to the availability of premium price (20-40%) for the certified organic produce and reduction in the cost of cultivation by 11.7%. In cases, where such premium prices were not available and the cost of cultivation was higher primarily due to purchased off-farm inputs, organic farming was not found economically feasible. Similarly, in another study conducted in Madhya Pradesh, Tamil Nadu and Uttarakhand involving 120 certified organic farms and 120 conventional farms, it was found that organic farming reduced the input cost without affecting the net margin in all three states. Organic farming in most cases was comparable to conventional farming in terms of yield in Uttarakhand and Tamil Nadu. However, the yield was lower under organic farming in Madhya Pradesh where farms focused on cash crop production (cotton). While yield of rice and wheat generally was lower under the organic systems, yield from intercropping food crops was generally higher. A comparison of 60 organic and 60 conventional cotton farms in Central India revealed that the average cotton yields in organic fields were 4-6% higher compared to conventional farms. The variable production costs were 13-20% lower in organic cotton mainly due to 40% lower costs for inputs. Due to slightly higher cotton yields, the 20% organic price premium and lower production costs, gross margins in organic cotton fields were 30-43% higher. Further, many farmers observed that they need less rounds of irrigation and that the organic cotton can sustain longer periods of drought. Several studies conducted across the country have clearly established that soil quality improves under organic management in terms of various parameters, viz. physical, chemical, biological properties, availability of macro- and micronutrients, indicating an enhanced soil health and sustainability of crop production in organic farming systems. In an extensive survey involving 376 farmers (199 organic and 177 inorganic farmers) in seven states (Himachal Pradesh, Uttarakhand, Maharashtra, Tamil Nadu, Karnataka, Kerala, and Rajasthan), the cost-benefit analysis indicated favourable economics of organic farming in India. Farmers in 5 out of 7 states were better placed as far as organic farming is concerned. The returns were higher in Himachal Pradesh, Uttarakhand, Karnataka, Maharashtra, and Rajasthan. It is evident from limited short-term research findings that many crops respond better to organic management particularly after an initial conversion period of 2-3 years. Organic farming can significantly contribute to improving the livelihoods of small holders as it generates higher incomes and involves less risk.

### Types of organic farming

#### ▪ Pure organic farming

It involves the use of organic manures and biopesticides with complete avoidance of inorganic chemicals and pesticides (Kankam, *et al.*, 2020) <sup>[21]</sup>.

#### ▪ Integrated Organic Farming Systems

Pure organic farmers don't want to use much or any technology in their work. This is different from integrated organic farming systems, which use all technology they can get to make their life easier and to make more food. But they still don't include some big amounts of chemicals or pesticides or something like that. Still inside organic rules.



Fig 3: Meaning and importance of organic farming

#### ■ **Integrated organic farming**

Integrated organic farming involves integrating techniques aimed at achieving ecological requirements and economic demands such as integrated pest management and nutrients management.

#### ■ **Government initiatives to promote organic**

■ **Farming Paramparagat Krishi Vikas Yojana (PKVY)**  
Paramparagat Krishi Vikas Yojana promotes cluster based organic farming with PGS (Participatory Guarantee System) certification. Cluster formation, training, certification and marketing are supported under the scheme. Assistance of Rs. 50,000 per ha /3 years is provided out of which 62 percent (Rs. 31,000) is given as incentive to a farmer towards organic inputs. (<https://agriculturepost.com/5-govt-schemes-promoting-organic-farming-in-india>)

#### ■ **Rashtriya Krishi Vikas Yojna**

Assistance for promotion of organic farming on different components are also available under Rashtriya Krishi Vikas Yojana (RKVY) with the approval of State Level Sanctioning Committee. (<http://www.indianbotanists.com/2014/02/avail-benefits-from-government-schemes.html>)

#### ■ **One District - One Product (ODOP)**

The programme aims to encourage more visibility and sale of indigenous and specialized products/crafts of Uttar Pradesh, generating employment at the district level. The presence of aggregators is imperative to bring about economies of scale for the small and marginal farmers. (Drishti IAS, 2020) <sup>[12]</sup>.

#### ■ **National Mission on Oilseeds and Oil Palm (NMOOP)**

Financial assistance @ 50% subsidy to the tune of Rs. 300/- per ha is being provided for different components including bio-fertilizers, supply of Rhizobium culture/Phosphate Solubilising Bacteria (PSB)/Zinc Solubilising Bacteria (ZSB)/Azotobacter/ Mycorrhiza and vermicompost. (<https://pib.gov.in/Pressreleaseshare.aspx?PRID=1656146>)

#### ■ **The organic farming action programme 2017-2020**

The objective of the Organic Farming Action Programme is to promote and significantly develop organic farming by means of priority measures.

As a particularly high number of organic farms are active in Uniq areas, they also obtain a quarter of the compensatory allowance for less-favoured areas.

Bonus for organic production, the so-called 'Bio-bonus' (higher subsidy, better assessment in the selection process) in connection with aids granted for investments, processing and marketing, education, information, and sales.

A holistic philosophy and a farming cycle as complete as possible, with a diverse structure, are the principles and prerequisites of successful organic farming. The natural resources of soil and water are used in an environmentally compatible manner and are preserved for future generations (<http://www.organicfarmbest.com/organic-farm/>)

#### ■ **Challenges in Organic Farming**

##### ■ **Shortage of Biomass**

Many experts and well-informed farmers are not sure whether all the nutrients with the required quantities can be made available by the organic materials. Even if this problem can be surmounted, they are of the view that the available organic matter is not simply enough to meet the requirements. (<https://www.yourarticlelibrary.com/essay/major-problems-and-constraints-for-organicfarming-in-india/25013>)

##### ■ **Disparity of Supply and Demand**

Non-perishable grains can be grown anywhere and transported to any location, but this is not the case with fruits and vegetables. It should be produced locally for which there should be willing companies, aggregators, and farmers around that particular area from where the demand is coming. But generally, the demand comes from metros where there are no farmlands to produce organic fruits and vegetables. Smart transport and dedicated channels of supply are the solutions to

this disparity. (<https://www.bizencyclopedia.com/article/major-challenges-in-organic-farming-in-India>)

#### ▪ **Time**

Indeed, organic farming requires greater interaction between a farmer and his crop for observation, timely intervention and weed control for instance. It is inherently more labor intensive than chemical/mechanical agriculture so that, naturally, a single farmer can produce more crops using industrial methods than he or she could by solely organic methods (<https://small-farm-permaculture-and-sustainable-living.com/>)

#### ▪ **High MRP**

It is almost obvious that due to the extreme care taken to go along with organic farming, the results would be kept at a high price. Once sold to the market, most of the place is devoted to the sale of these organic fruits and vegetables. Most people do that to approve of organic products because of this. The items sold in the market are half the price of non-organic products. So, we can say that organic items are expensive and not every consumer is willing to pay the price for it. (<http://www.akmindia.in/organic-farming-proscons/>)

#### ▪ **Lack of special infrastructure**

Most large organic farms still operate in an industrialized agriculture style, including industrial transportation of the food from field to plate. Unfortunately, this involves the adoption of the same environmentally harmful practices as those of factory farms which are however hidden under the cover of being organic. (<https://greentumble.com/pros-and-cons-of-organic-farming/>)

### **Benefits of organic farming**

#### ▪ **Better Taste and More Nutrition**

Fruits and vegetables that are organically raised have a much better taste than other mechanically farmed ones. This is since they are given a much longer time to develop and are not pumped with artificial things. The sugar structures in these crops have more time to mature and develop into a tasty and nutritious product. (<https://www.b2bio.bio/en/noticias-productosecologicos/ventajas-y-desventajas-de-organic-farming>)

#### ▪ **Reduces pesticide and chemical residue in soil**

Organic farming minimizes the use of pesticides and chemicals thereby reducing the major environmental issues. It ensures the health of soil, water, air and flora and fauna. Also reduces the major environmental issues like soil erosion, air pollution, water pollution etc.

#### ▪ **Promotion of Biodiversity**

Crop rotation to build soil fertility and raising animals naturally helps promote biodiversity, which promotes greater health across all living species. As organic farms provide safe havens to wildlife, local ecosystems also improve. (<https://precisionagriculture.re/8-benefits-of-organic-farming/>)

#### ▪ **Consumes Less Energy**

Organic farming does not rely on the use of synthetic fertilizers as opposed to conventional techniques that are generous with these external chemicals. Avoiding fertilizers contributes to a greater cause of energy conservation. This is because manufacturing synthetic fertilizers consumes a

significant amount of energy. On average, it's safe to say that the energy usage is lower by at least 30-50% in the organic farming systems. The British Department for Environment, Food and Rural Affairs in one of their reports suggested that organic crops and organic dairying use 35% and 74% less energy respectively than their conventionally grown counterparts.

#### ▪ **Long-term sustainability**

Organic farming is a long-term, sustainable approach to food production. Organic farming takes a proactive, preventative approach instead of dealing with problems after they emerge which can be too late. (<https://www.econation.co.nz/organic-food/>)

#### ▪ **Reduced erosion and better water management**

Both soil improvement and the concept of keeping the ground "covered" as much as possible, either by mulches or cover crops, reduces soil erosion. Soils with improved structure and higher content of organic matter and the more compact growth of an organic crop also reduces the water consumption in agriculture. (<http://grolink.se/resources/oa/benefits-of-organic-farming/>)

#### ▪ **Familiarity with the techniques**

Organic farming is like going back to the roots before mechanization hit the lands. Thus the farmers can easily understand and adapt to the techniques of organic farming that deploys traditional knowledge. The farming techniques are based on how well a farmer can make the best use of his immediate natural resources. (<https://www.24mantra.com/blogs/organic-lifestyle/what-if-india-goes-fully-organic-how-will-this-benefit-the-farmers/>)

### **Way Forward**

Organic farming is a knowledge intensive system and has been developed by practitioners themselves over the years. Several authors have reflected on past difficulties faced by scientists working on organic farming and the acceptance of both the research and the scientists themselves in the wider research community. Although many ICAR institutes and state agricultural universities have initiated research on organic farming, the literature is dominated by comparisons of organic and conventional agriculture. There are several researchable issues, and more are likely to emerge as researchers begin to explore it. Some of these include Eco-friendly and economical organic packages in various field crops, commercial crops, vegetables, spices and condiments, aromatic crops and other horticultural crops keeping in view the export standards of various countries are to be developed and popularized. Multidisciplinary research approach is to be strictly followed for development of organic packages. Delineation of the potential areas or zones including hill and tribal areas for organic farming by identifying contiguous blocks of areas with little or no chemical input use and where productivity can be enhanced by using permitted inputs to enable group certification to farmers. Carry out a country wide survey or incentivisation of areas in arid, semi-arid and dry sub humid regions about the level of chemical input use, productivity in selected commodities which have potential to fetch price premiums in international markets. Survey, documentation, and critical evaluation of indigenous technological knowledge on organic farming. Inter-

disciplinary and location-specific research must be taken up for development of package of practices for organic farming. Organic production packages will be more location specific than inorganic package of practices as the input use depends largely on locally available resources. Identification of suitable varieties from existing pool for optimum productivity, quality and pest resistance. Understand the nutrient release patterns of different organic sources in combination and alone. Development of cost-effective technologies for on-farm organic manure production as well as large-scale production of compost from domestic, agricultural, and industrial wastes. Development of appropriate machines, tools and machine or bullock driven devices for organic farming operations such as manure spreader, mechanical weeding machines, seed drills for multi-crop sowing and planting etc. Generation of adequate scientific information on the yield, quality, economics, and post-harvest aspects of various crops under different management levels and agro-climatic conditions. Study the role organic agriculture in mitigating the climate change and the potential of organic farming to adapt to climate change. Developing methods which link production systems to product quality and onwards into both livestock and human health and well-being.

### Conclusion

The phenomenon of 'Organic agriculture' is the only solution to nurture the land and to regenerate the soil by going back to our traditional method of farming i.e., free from chemicals, pesticides and fertilizers. This is a possible step for sustainable development by choosing not to use chemicals, synthetic materials, pesticides, and growth hormones to produce high nutritional quality food and in adequate quantities (Onkar and Suryawanshi, 2019) <sup>[28]</sup> Organic farming is an option agricultural system which quickly changes farming rehearsals. It depends on composts of natural starting points, for example, fertilizer excrement, green excrement, and bone feast and so forth substantially more than deciding not to utilize pesticides, fertilizers.

There has been significant increase in the area under certified organic farming during the last 10 years. With less than 42,000 ha under certified organic farming during 2003-04, the area under organic farming grew by almost 25-fold, during the next 5 years, to 1.2 million ha during 2008-09. It is evident from limited short-term research findings that many crops respond better to organic management particularly after an initial conversion period of 2-3 years. Organic farming can significantly contribute to improving the livelihoods of small holders as it generates higher incomes and involves less risk.

### References

- Admin. 8 Benefits of Widespread Organic Farming; c2015 Feb 27. Retrieved from <https://precisionagriculture.re/8-benefits-of-organic-farming/>
- Admin. Introduction to Agriculture and Basic Methods of Organic Farming; c2020 Aug 05. Retrieved from <https://byjus.com/biology/agriculture-and-organic-farming/>
- Advantages and Disadvantages of Organic Farming; c2019 Aug 02. Retrieved from <https://tutsmaster.org/advantages-and-disadvantages-of-organic-farming/>
- Advantages and disadvantages of Organic Farming. (n.d.). Retrieved from <https://www.b2bio.bio/en/noticias-productos-ecologicos/advantages-and-disadvantages-oforganic-farming> 5. Agriculture Post. (2020, September 18).
- Govt schemes, promoting organic farming in India. Retrieved from [https://agriculturepost.com/5-govt-schemes-promoting-organic-farming-in-\]](https://agriculturepost.com/5-govt-schemes-promoting-organic-farming-in-)
- Apeda. (n.d.). Retrieved from [http://apeda.gov.in/apedawebsite/organic/Organic\\_Products.html](http://apeda.gov.in/apedawebsite/organic/Organic_Products.html)
- Avail Benefits from Government Schemes for Organic Farming. (n.d.). Retrieved from <http://www.indianbotanists.com/2014/02/avail-benefits-from-government-schemes.html>
- Benefits of organic farming in India. (n.d.). Retrieved from <https://www.24mantra.com/blogs/organic-lifestyle/what-if-india-goes-fully-organic-how-will-this-benefit-the-farmers/>
- Benefits of organic farming: Organic Farming in India. (n.d.). Retrieved from <http://www.organicfarmbest.com/organic-farm/>
- Bighaat. (n.d.). Organic Farming in India. Retrieved from <https://www.bighaat.com/blogs/kb/organic-farming-in-india>
- Charyulu DK, Dwivedi AK. Economics of Organic Farming Vis-' Vis Conventional Farming in India; c2016 November 17. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2859912](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2859912)
- Drishti IAS. Organic Farming in India. 2020, August 21. Retrieved from <https://www.drishtias.com/daily-updates/daily-news-analysis/organic-farming-in-india>
- Elayaraja, Vijai C. Organic farming in India: Benefits and Challenges. 2020;7:3021-3029.
- Farming Base. Organic Farming Types, Importances, Advantages and Benefits. 2020, September 23. Retrieved from <https://farmingbase.com/organic-farming-types-importances-advantages-and-benefits/>
- Farming India, Ashmi CL Meena, Owner FI, Umbarkar CR, Ballzykid CRU. Organic Farming in India: Organic Farming Methods and Certification. 2020, July 05. Retrieved from <https://www.farmingindia.in/organic-farming/>
- Featured Video. (n.d.). Retrieved from <https://www.upsciasexams.com/articledetails/219/Organic-Farming-Types-methods-objectives-and-advantages-Organic-farming-in-India>
- Giovannucci D. Evaluation of Organic Agriculture and Poverty Reduction in Asia; c2007 June 24. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=996119](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=996119)
- Greentumble. Sustainable Organic Farming: Pros and Cons; c2020 August 13. Retrieved from <https://greentumble.com/pros-and-cons-of-organic-farming/>
- Howe M. Advantages and Disadvantages Organic Farming; c2017, July 12. Retrieved from [https://small-farm-permaculture-and-sustainableliving.com/advantages\\_and\\_disadvantages\\_of\\_organic\\_farming/](https://small-farm-permaculture-and-sustainableliving.com/advantages_and_disadvantages_of_organic_farming/)

20. India has the highest number of organic farmers globally, but most of them are struggling. (n.d.). Retrieved from [https://www.downtoearth.org.in/news/agriculture/india-has-the-highest-number-of-organic-farmers-globally-but-most-of-them-are-struggling-61289:text=India is home to 30, of Organic Agriculture 2018 report](https://www.downtoearth.org.in/news/agriculture/india-has-the-highest-number-of-organic-farmers-globally-but-most-of-them-are-struggling-61289:text=India%20is%20home%20to%2030%2C%20of%20Organic%20Agriculture%202018%20report).
21. Kankam T, Okese KA, Boamah J. Organic Farming: Types, Principles, Methods and Importance. 2020, June 08. Retrieved from <https://blog.agrihomegh.com/organic-farming-typesprinciples/>
22. Gopinath KA, Mitnala Jayalakshmi. Organic Farming Research in India: Present Status and Way Forward. 2018. 10.31220/osf.io/qxetj.
23. Nedumaran MM, Prabakaran DG, Kumar VMA, Alaguraja M. Challenges and Possible of Organic Farming; c2020 April 14. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3555601](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3555601)
24. Magnaye D. Smallholder Organic Farming: An Entrepreneurial Strategy in Harmony with Nature. 2018, November 13. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3283615](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3283615)
25. Major Challenges in Organic Farming in India. (n.d.). Retrieved from <https://www.bizencyclopedia.com/article/major-challenges-in-organic-farming-in-india>
26. Major Problems and Constraints for Organic Farming in India. 2014, February 07. Retrieved from <https://www.yourarticlelibrary.com/essay/major-problems-and-constraints-for-organic-farming-in-india/25013>
27. Mendon S, Salins M, Aithal PS. Emerging Trends in Sustainability of Organic Farming and its Impact on Purchase Intention: A Review & Research Agenda. 2020, January 13. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3512860](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3512860)
28. Onkar K, Suryawanshi SB. Organic Farming in India: An overview. 2019. Retrieved from <http://www.jetir.org/view?paper=JETIRBL06011>
29. Singh N. Economic and Environmental Aspects of Organic Farming: Evidence from India. 2019, March 05. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3241639](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3241639)
30. Varkey J. Financial Inclusion and Organic Farming Practices of Kuruchya Tribe in Wayanad: An Empirical Study. 2020, March 08. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3536824](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3536824)
31. Yadav SK, Babu S, Yadav MK, Singh K, Yadav GS, Pal S. A Review of Organic Farming for Sustainable Agriculture in Northern India. 2013, June 05. Retrieved from <https://www.hindawi.com/journals/ija/2013/718145/>
32. Yadava AK. Current Status of Organic Farming and Role of Government Institutions in India. 2019, August 08. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3431720](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3431720).
33. <https://findanyanswer.com/what-are-the-types-of-organic-farming>
34. <https://adyanaturals.com/the-organic-philosophy.html>
35. [3.https://findanyanswer.com/what-are-the-types-of-organic-farming](https://findanyanswer.com/what-are-the-types-of-organic-farming)
36. [4.https://pib.gov.in/Pressreleaseshare.aspx?PRID=1656146](https://pib.gov.in/Pressreleaseshare.aspx?PRID=1656146)
37. <http://grolink.se/resources/oa/benefits-of-organic-farming/>
38. <https://academic.oup.com/fqs/article/4/2/69/5861338>
39. [7.https://suminterindiaorganics.com/here-are-the-5-key-environmental-benefits-of-organic-farming](https://suminterindiaorganics.com/here-are-the-5-key-environmental-benefits-of-organic-farming)
40. <http://www.akmindia.in/organic-farming-pros-cons>