

Evolution, Present State, and Policy Outlook of Organic Farming in India

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ABSTRACT

Growing environmental awareness and food hazards have decreased consumer trust in food quality, leading to a demand for safer and more ecologically produced food. Organic farming is gaining popularity as it is considered a greener and healthier choice for both consumers and farmers. The term 'organic' was first coined by Northbourne in 1940. Organic farming is a sustainable form of agriculture that promotes biodiversity, soil health, and the use of natural resources. It aims to provide fresh and natural farm products while minimizing harm to the environment and human health. The present study focuses on review of organic farming and explores the trend in organic farming in India. The study will help the decision makers to devise policies to promote organic farming.

Key Words: Organic Farming, Sustainability, Health, Ecology

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INTRODUCTION

Organic farming relies on knowledge and labour-intensive practices, using low external inputs and energy more efficiently than conventional farming [1, 2, 3, and 4]. It has positive effects on birds, insects, wildlife, and soil flora and fauna, and produces cost-effective food products free of synthetic fertilizers and pesticides. Organic agriculture also has the potential to address food security issues, improve soil fertility, and mitigate climate change. It offers a combination of environmentally-sound practices and contributes to increased food availability. Organic farming is a holistic approach that emphasizes the sustainable use of local resources and traditional knowledge, making it suitable for smallholder farmers. Overall, organic farming is a way towards sustainable development and a better quality of life for everyone involved.

Organic farming is needed to maximize agricultural production while minimizing costs and environmental impact. Conventional farming practices that use synthetic fertilizers and pesticides have led to health and environmental problems. Organic farming avoids the use of these chemicals, resulting in health and environmental benefits. It promotes sustainable agriculture by restoring environmental conditions and ensuring nutrition security. Organic farming also upholds soil fertility, ecological balance, and soil health. It offers agronomic and environmental advantages through procedural modifications and strategic management of agricultural systems. Organic farming is particularly beneficial for developing countries like India, as it promotes sustainable resource utilization, increased crop yields, and the safeguarding of the environment and biodiversity. Additionally, organic farming can provide quality food without compromising the needs of future generations. It also improves soil sustainability, minimizes soil degradation and erosion, reduces pollution, and optimizes biological productivity. Organic farming is important for several reasons. Firstly, it has the potential to enhance climate change adaptation and improve food security in Africa. Secondly, organic farming is more efficient in its use of non-renewable energy, maintains or improves soil quality, and has less of a detrimental effect on water quality and biodiversity compared to conventional agriculture [5]. Thirdly, organic food consumption has been found

to positively impact the mental well-being of individuals and promote physical and emotional well-being at the community level [6]. Additionally, organic farming reduces the deterioration of water quality, maintains biodiversity, and reduces the need for chemical reagents to protect crops, thereby improving yield quality and water reusability. Finally, organic agriculture is an important player in global food production, and its positive environmental effects can be further enhanced through the adoption of sustainable agricultural practices and the conservation of agroecosystems [7].

Organic farming is important due to its potential health benefits, food safety concerns, and positive impact on the environment and socio-economic development [8]. It has been shown to have less adverse health effects compared to conventionally grown foods, which often contain higher pesticide residue, heavy metals, and genetically modified organisms [9]. Organic farming also leads to the production of more nutritious foods with higher amounts of protective antioxidants [10]. Additionally, organic farming helps protect water quality, maintain soil quality, and reduce the anthropogenic footprint on the ecosystem [11]. It promotes biodiversity and reduces the need for chemical reagents, resulting in fewer pests and crop diseases [5]. Furthermore, organic farming is seen as a prototype of ecological intensification, which can enhance ecosystem services and potentially conciliate crop productivity and biodiversity conservation. Overall, organic farming is a sustainable and adaptable farming system that supports the goals of environmental protection, healthy eating, and sustainable agriculture. The present study focuses to answer the following research questions:

RQ1: What is the present state of Organic Farming in India?

Evolution of Organic Farming Principles

Since its inception, the organic movement has been rooted in values. In the early 20th century, the founders of what we now know as organic farming were deeply concerned about the direction of agriculture. Over time, various schools of organic agriculture emerged, each with its own approach. By the 1970s, as organic farming gained traction and different standards began to emerge, there was a growing need for cooperation. This led to the establishment of the International Federation of Organic Agriculture Movements (IFOAM) in 1972, bringing together five organizations from South Africa, the USA, and Europe. IFOAM's history mirrors the organic movement's global evolution. In the 1980s, it took the lead in formulating private standards for organic agriculture. Given the diverse practices across regions and IFOAM's global engagement, its standards became known as the IFOAM Basic Standards (IBS), serving as a framework for other standards [12].

Through a participatory stakeholder process, IFOAM articulated the principles of organic agriculture to address the challenges of globalization. These principles—health, ecology, fairness, and care—have become the cornerstone of organic agriculture worldwide. IFOAM has integrated these principles into its own work, evident in revisions such as the Organic Guarantee System.

In navigating globalization's challenges, the emphasis has been on balancing principles with standards. While stricter standards may address issues like externalities, they must not compromise fairness by limiting market access. Striving for equilibrium between principles and standards is ideal, ensuring that organic agriculture remains true to its values while adapting to global demands.

Four major principles of Organic Farming given by IFOAM

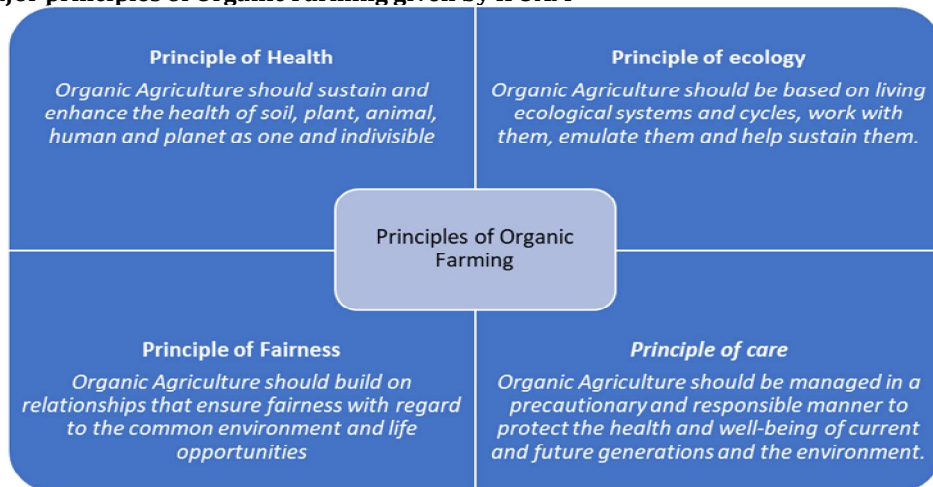


Figure 1. Principles of organic farming (adapted from IFOAM, 1998).

Principle of Health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible.

This principle emphasizes the interconnectedness of human and environmental health within ecosystems. It stresses that the well-being of individuals and communities is inherently linked to the health of the surrounding ecosystems. Healthy soils nurture robust crops, which in turn support the vitality of animals and humans. Health, in this context, is defined as the holistic and harmonious functioning of living systems, encompassing physical, mental, social, and ecological aspects. It transcends mere absence of illness, encompassing the maintenance of overall well-being.

Crucially, health is characterized by qualities such as immunity, resilience, and regeneration. Organic agriculture, whether in cultivation, processing, distribution, or consumption, is dedicated to nurturing and improving the health of ecosystems and organisms across all levels—from microorganisms in the soil to human beings. A central objective of organic farming is to produce nutritious, high-quality food that promotes preventive healthcare and overall well-being.

In line with this principle, organic practices eschew the use of fertilizers, pesticides, animal drugs, and food additives that may pose risks to health. Instead, they prioritize sustainable methods that support the health and vitality of both individuals and the environment.

Principle of Ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.

This principle firmly embeds organic agriculture within the intricate web of living ecosystems. It emphasizes the reliance on ecological processes and the ethos of recycling in production. The sustenance and well-being of all beings are intricately tied to the ecological dynamics of their specific production environments. For instance, for crops, this means thriving within the living soil; for animals, it's about flourishing within the farm ecosystem; for aquatic life, it pertains to thriving within the aquatic environment.

Organic farming, whether involving cultivated plants, livestock, or wild harvests, must align with the natural cycles and ecological harmonies inherent in each specific environment. While these cycles are universal, their practical functioning is contingent upon the unique characteristics of each site. Hence, organic management practices need to be finely attuned to local conditions, encompassing ecological, cultural, and scale-related factors.

Efforts should be directed towards minimizing inputs through strategies like reusing, recycling, and efficiently managing materials and energy. This approach not only upholds environmental quality but also conserves resources. Achieving ecological balance is paramount in organic agriculture, which involves designing farming systems, creating habitats, and preserving genetic and agricultural diversity.

All stakeholders involved in the production, processing, trade, and consumption of organic products bear the responsibility of safeguarding and enhancing the collective environment. This encompasses landscapes, climates, habitats, biodiversity, as well as air and water quality.

Principle of Fairness

Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities

Fairness within organic agriculture is defined by principles of equity, respect, justice, and responsible stewardship towards the shared world, encompassing both human interactions and relationships with other living beings. This principle underscores the importance of conducting all human interactions within organic agriculture in a manner that upholds fairness across all levels and for all stakeholders involved—be they farmers, workers, processors, distributors, traders, or consumers.

Organic agriculture is committed to ensuring a high quality of life for all involved while also contributing to food sovereignty and poverty alleviation. It strives to meet the demand for quality food and goods while emphasizing the humane treatment of animals, ensuring that they are provided with living conditions conducive to their physiology, natural behaviour, and overall well-being.

Moreover, the management of natural and environmental resources in organic production and consumption must be guided by principles of social and ecological justice, with a responsibility to safeguard these resources for future generations. Fairness necessitates transparent systems of production, distribution, and trade that account for the true environmental and social costs involved, ensuring equitable outcomes for all stakeholders.

Principle of care

Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.

Organic agriculture is a dynamic and adaptive system that responds to both internal and external factors. While practitioners seek to improve efficiency and productivity, this should never come at the expense of compromising health or well-being. Therefore, the adoption of new technologies and the review of existing methods must be approached with caution, given our incomplete understanding of ecosystems and agriculture.

This principle underscores the importance of exercising precaution and responsibility in managing, developing, and selecting technologies within organic agriculture. While science plays a crucial role in ensuring the health, safety, and ecological integrity of organic practices, it is not the sole determinant. Practical experience, traditional wisdom, and indigenous knowledge offer valuable insights that have stood the test of time. In organic agriculture, the prevention of significant risks takes precedence, requiring the adoption of appropriate technologies while rejecting unpredictable ones, such as genetic engineering. Decisions regarding technology choices should be guided by the values and needs of all stakeholders, facilitated through transparent and participatory processes.

Importance of organic farming in India



Figure 2: Benefits of organic farming
Source: IFQAM

Environmental Sustainability and Soil Health: India faces significant challenges related to soil degradation, water scarcity, and environmental pollution. Organic farming practices offer solutions to these challenges by promoting soil health and conservation. Techniques such as crop rotation, intercropping, and the use of organic manures and compost help improve soil structure, fertility, and microbial diversity. This not only enhances soil health but also reduces erosion and water runoff, thereby conserving water resources and protecting the environment. [13, 14].

Health and Food Safety: With increasing concerns about food safety and pesticide residues, organic farming provides a safer alternative for consumers. By avoiding synthetic fertilizers, pesticides, and genetically modified organisms (GMOs), organic produce is free from harmful chemicals and residues. Organically grown fruits and vegetables have been proved to taste better and smell good [15]. This promotes better health outcomes for consumers and reduces the risk of pesticide-related illnesses.

Economic Empowerment of Farmers: Organic farming offers economic opportunities for small and marginal farmers in India [16]. By adopting organic practices, farmers can reduce input costs associated with chemical fertilizers and pesticides. Moreover, organic produce commands premium prices in both domestic and international markets, leading to higher incomes for farmers [17]. This can help alleviate poverty and improve livelihoods in rural areas.

Climate Change Mitigation and Adaptation: Organic farming contributes to climate change mitigation by sequestering carbon in the soil and reducing greenhouse gas emissions. Practices such as organic soil management, agroforestry, and conservation tillage help enhance carbon sequestration and mitigate

climate change impacts [18]. Additionally, organic farming promotes biodiversity conservation and ecosystem resilience, which are essential for adapting to climate change.

Promotion of Traditional and Indigenous Knowledge: Organic farming in India often integrates traditional farming practices and indigenous knowledge systems. Farmers rely on age-old techniques such as mixed cropping, crop rotation, and seed saving, which have been passed down through generations. By promoting these traditional practices, organic farming helps preserve cultural heritage and indigenous wisdom, fostering a deeper connection between farmers and their land.

Export Potential and Market Opportunities: India has emerged as a significant player in the global organic market, with increasing demand for organic products both domestically and internationally. Organic farming presents an opportunity for Indian farmers to tap into this growing market and increase their export earnings. With certification standards in place and support from government schemes such as the National Programme for Organic Production (NPOP), Indian organic products are gaining recognition for their quality and authenticity in the global marketplace.

Sustainable Development Goals (SDGs) Alignment: Organic farming aligns with several Sustainable Development Goals (SDGs) outlined by the United Nations, including zero hunger (SDG 2), good health and well-being (SDG 3), clean water and sanitation (SDG 6), responsible consumption and production (SDG 12), and climate action (SDG 13). By promoting organic farming, India can make significant progress towards achieving these goals and building a more sustainable and resilient agricultural sector.

In summary, organic farming in India offers a holistic approach to agriculture that addresses environmental, social, and economic challenges while promoting sustainable development and food security. By embracing organic practices, India can pave the way towards a more resilient, equitable, and environmentally friendly agricultural system.

Challenges in the adaption of Organic farming

Farmers encounter numerous hurdles when transitioning to organic farming. Some primary constraints include the exorbitant expense of organic inputs, the necessity for certification, inadequate market opportunities for organic products, and the challenge of achieving satisfactory yields at competitive prices. Additionally, there is limited demand for organic products, difficulties associated with implementing organic techniques, increased production risks, and a lack of consolidated land suitable for organic farming.

Another significant challenge arises from socio-economic constraints, which pose the primary obstacle followed by infrastructural, technological, and situational factors in the adoption process of organic farming. Compared to conventional production, organic farming demands more labour, contributing to higher labour costs and consequently making organic food more expensive. Despite its potential, organic farming has yet to take center stage in Indian agriculture. If left unaddressed, these challenges could adversely impact the agricultural sector on policy, commercial, and infrastructural fronts, hindering the expansion of organic farming and compromising the quality of organic food products. It is imperative to tackle these issues to ensure the financial stability of the farming sector [19].

A prominent challenge arises from the widespread use of pesticides and chemicals for insect pest and weed control, leading to the evolution of pest and weed species. This presents a primary obstacle in transitioning from conventional farming to organic methods [20].

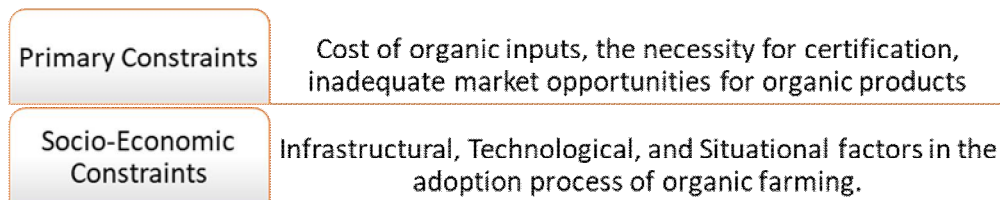


Figure 3: Constraints to organic farming

Source: IFQAM

The outcome of an in-depth investigation concludes that meeting the growing demand for food grains due to population increase relies significantly on effectively tapping into the potential of organic farming. Additionally, utilizing mulching techniques, which were observed to improve the biological properties of soil, is essential for boosting agricultural production [19].

Government support is pivotal for organic agriculture, necessitating farmers to obtain certification for their produce to bear the "organic" label. Specific organic standards apply to crops, animals, and wild-crafted products, as well as the processing of agricultural goods. The USDA has overseen organic farming through the National Organic Standards since 2000, with numerous accredited certifying bodies spread across the nation.

Organic farming in India is poised for significant growth and transformation in the coming years. The Indian organic food market has experienced substantial expansion; with a value of 68,000 crores in 2020. Projections suggest further growth, with estimates indicating a value of \$94.5 billion by 2030. Graphical representation of organic farming is shown in figures 1-5. It is quite vigilant that country has experienced an upward trend in Organic area. In the similar fashion number of organic producers has also increased tremendously.

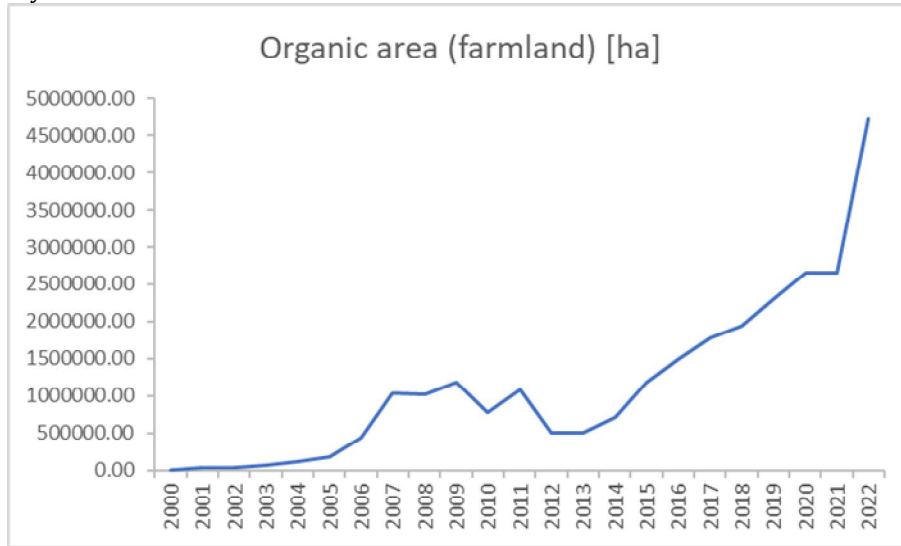


Figure 4: Organic area
Source: NPOP, 2022-23

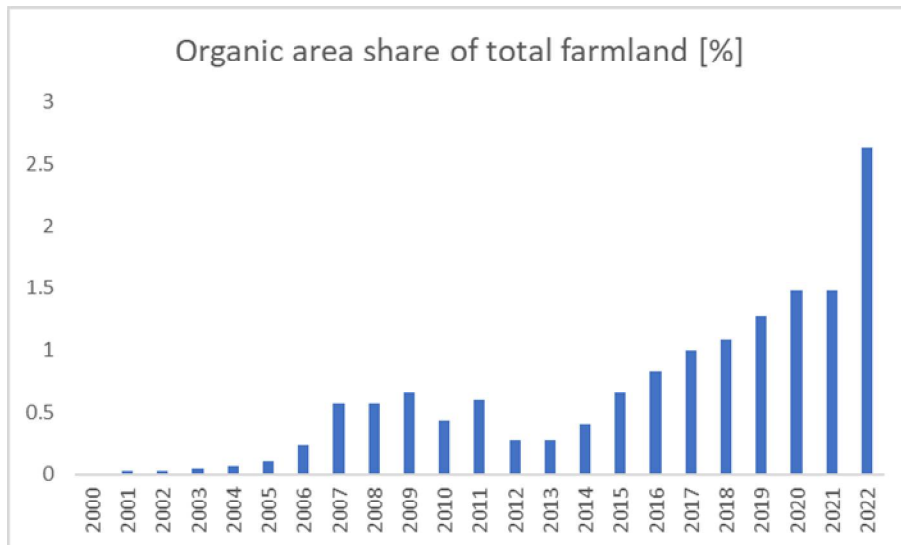


Figure 5: Organic area shares of total farmland [%]
Source: NPOP, 2022-23

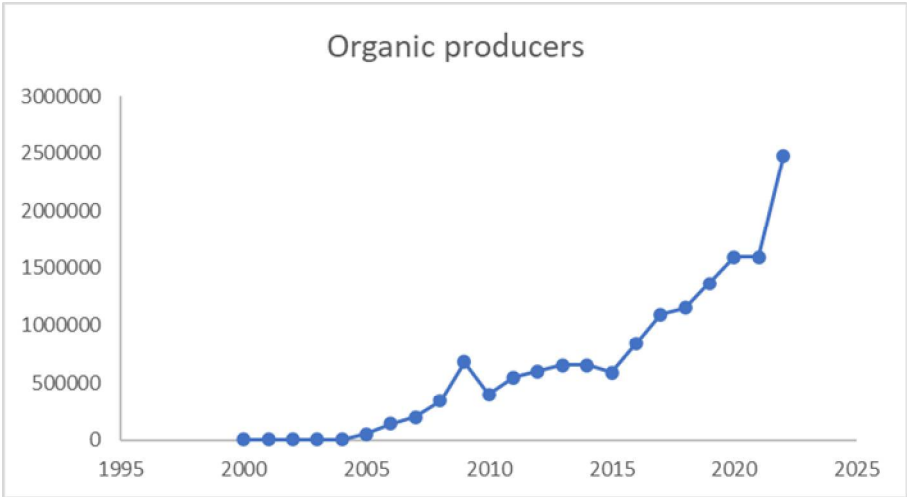
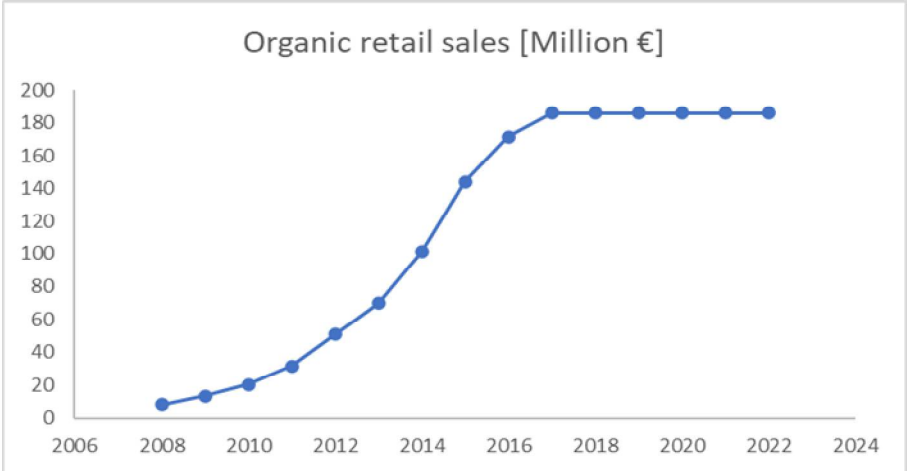
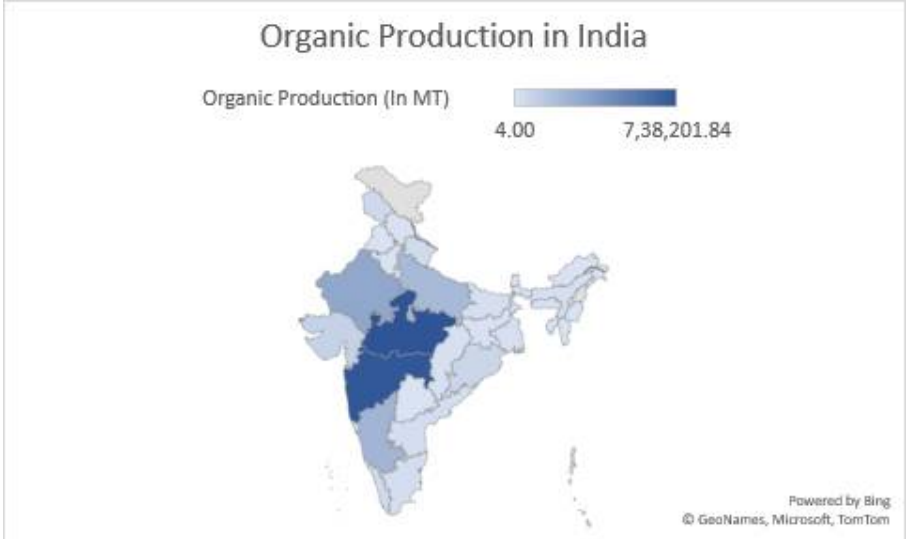


Figure 6: Number of Organic producers [Source: NPOP, 2022-23]



**Figure7: Number of Organic retail Stores
Source: NPOP, 2022-23**



**Figure: Organic Production in India
Source: NPOP, 2022-23**

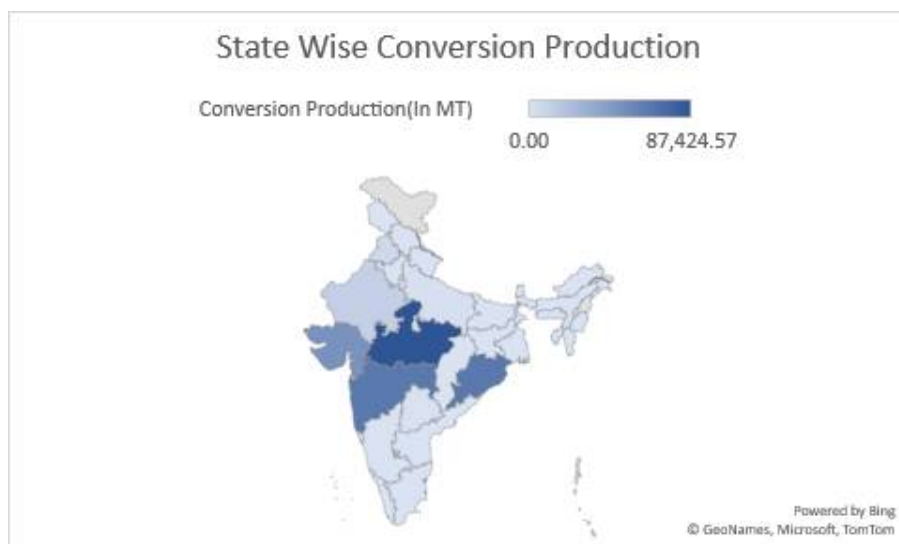


Figure 9: State Wise conversion Production [Source: NPOP, 2022-23]

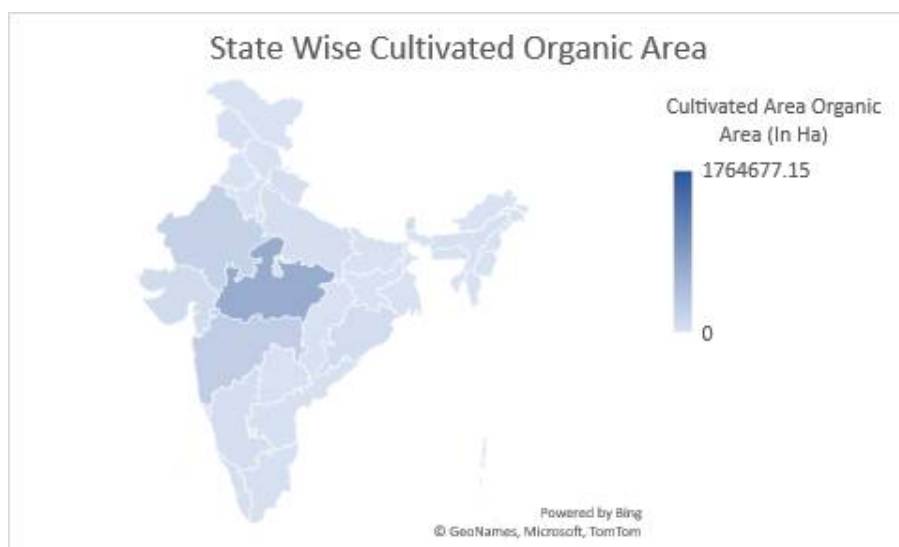


Figure 10: State Wise Cultivated Organic Area (Source: NPOP, 2022-23)

Table 1: Organic farming in India: Key Statistics

Cultivated Area (Organic)	1764677.15 Ha
Cultivated Area (In conversion)	3627115.82 Ha
Wild Harvest Collection Area	4780130.56 Ha
Farm Production (Organic)	2664679.54 MT
Farm Production (In conversion)	288146.75 MT
Wild Harvest Production	19468.21 MT
Total Export Quantity	312800.51 MT
Total Export value (INR)	Rs.5525.18 Crore
Total Export Value (US\$)	708.33 million USD

Source: NPOP [State Wise Organic Area]

Table 1 depicts the key statistics of Organic farming in India. India produced approximately 2.9 million metric tons of certified organic products in the fiscal year 2022-23. Organic farming in India has experienced over 200% growth in certified area in the last two years, reflecting an increasing adoption of organic practices. As per the reports Cultivated Area (Organic) in India is 1764677.15 Ha, whereas cultivated area (In conversion) is 3627115.82 Ha. Farm Production (Organic) is 2664679.54 MT and Wild Harvest Production is 19468.21 MT.

Table 2: Top 20 Exporting Countries

Country Wise Export during 2022-23				
Sl. No.	Country Name	Exported Qty (In MT)	Total Value (In Crore Rs)	Value (In USD Million)
1	European Union	117369.85	2726.304	349.5261
2	U.S.A.	126804.57	2040.561	261.6104
3	CANADA	38726.391	332.234	42.5941
4	GREAT BRITAIN	11670.826	146.393	18.7684
5	SWITZERLAND	4630.467	92.621	11.8744
6	AUSTRALIA	1045.793	45.052	5.776
7	VIETNAM	3649.192	20.723	2.6569
8	ECUADOR	1812.24	18.896	2.4225
9	ISRAEL	1720.733	15.929	2.0421
10	JAPAN	223.434	15.866	2.0341
11	NEWZEALAND	875.813	13.474	1.7275
12	KOREA REPUBLIC	1505.56	13.237	1.6971
13	U.A.E.	390.855	7.181	0.9206
14	SRI LANKA	636.221	7.044	0.9031
15	MOROCCO	79.315	4.672	0.5989
16	SINGAPORE	179.689	4.317	0.5534
17	CHINA	547.2	3.438	0.4408
18	SAUDI ARABIA	184.198	3.233	0.4144
19	THAILAND	177.291	2.79	0.3577
20	MALAYSIA	121.113	1.702	0.2182

Source: NPOP, 2022-23

Table 3: State Wise Status of organic Farming in India

S.NO.	State Name	Cultivated Area		Total Area (In Ha)
		Organic Area (In Ha)	Conversion Area(In Ha)	
1	Madhya Pradesh	686208.31	831168.8	15,17,377.11
2	Maharashtra	258638.55	1025675.6	12,84,314.15
3	Gujarat	84404.36	851526.64	9,35,931.00
4	Rajasthan	216440.36	364239.43	5,80,679.79
5	Odisha	77950.82	117128.66	1,95,079.48
6	Uttarakhand	32634.01	65,759.72	98,393.73
7	Telangana	7288.85	77,185.37	84,474.22
8	Karnataka	44342.45	37,673.11	82,015.56
9	Sikkim	75453.18	22.096	75,475.28
10	Uttar Pradesh	52422.44	15,584.61	68,007.05
11	Andhra Pradesh	26949.05	35,966.97	62,916.02
12	Tamil Nadu	18652.5	39,914.20	58,566.70
13	Jharkhand	1499.76	52,620.11	54,119.87
14	Kerala	32602.71	11,511.74	44,114.45
15	Bihar	17594.82	15,152.76	32,747.58
16	Jammu & Kashmir	25093.94	7,510.56	32,604.50
17	Meghalaya	21652.71	2,356.33	24,009.04
18	Assam	15593.93	7,473.49	23,067.42
19	Mizoram	4796.84	15,264.10	20,060.94
20	Tripura	2490.13	17,124.31	19,614.44
21	Chhattisgarh	13258.18	3,641.68	16,899.86
22	Arunachal Pradesh	3109	9,773.68	12,882.68
23	Nagaland	7550.61	5,002.56	12,553.17
24	Goa	11203.22	1,193.19	12,396.41
25	Himachal Pradesh	8507.25	2,557.85	11,065.10
26	Manipur	7682	3,003.50	10,685.50
27	Punjab	890.12	9,002.53	9,892.65
28	West Bengal	7479.66	1,314.58	8,794.24
29	Haryana	2265.54	629.22	2,894.76
30	LADAKH	0	121.42	121.42
31	Pondicherry	21.17	0.34	21.51
32	New Delhi	0.72	16.67	17.39
33	Andaman & Nicobar Islands	0	0	0
Total:		1764677.2	3627115.82	53,91,792.97

Source: NPOP, 2022-23

Table 4: Country Wise Export during 2022-23

Sl. No.	Country Name	Exported Qty (In MT)	Total Value (In Crore Rs)	Value (In USD Million)
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19	THAILAND	177.291	2.79	0.3577
20	MALAYSIA	121.113	1.702	0.2182
21	KUWAIT	72.984	1.288	0.1651
22	QATAR	19.585	1.076	0.1379
23	MAURITIUS	41.811	0.935	0.1198
24	OMAN	89.235	0.712	0.0913
25	TURKEY	18	0.707	0.0906
26	BAHRAIN	35.201	0.59	0.0757
27	BRAZIL	32.87	0.574	0.0736
28	KENYA	0.99	0.569	0.0729
29	FRENCH POLYNESIA	34.4	0.446	0.0572
30	SOUTH AFRICA	6.478	0.427	0.0547
31	BOLIVIA	22	0.329	0.0422
32	CHILE	4.833	0.311	0.0399
33	TRINIDAD AND TOBAGO	48.581	0.27	0.0346
35	HONG KONG	6.706	0.253	0.0324
36	YOGOSLAVIA (SERBIA-MONTENEGRO)	1.346	0.235	0.0302
37	BANGALADESH	6	0.19	0.0244
38	TAIWAN	0.222	0.148	0.019
39	MOLDOVA	0.282	0.092	0.0118
40	BOSNIA AND HERZEGOVINA	3	0.092	0.0118
41	COLOMBIA	0.284	0.08	0.0103
42	NIGERIA	0.045	0.061	0.0079
43	SAINT LUCIA	0.047	0.029	0.0037
44	GEORGIA	2.508	0.026	0.0034
45	RUSSIA	1.76	0.026	0.0034
46	FRENCH GUIANA	0.085	0.024	0.0031
47	INDONESIA	0.5	0.016	0.0021
48	WEST INDIES	0.005	0.002	0.0003
Total		312800.5	5525.178	708.3562

Total Export Quantity in the fiscal year 2022-2023 was 312800.51 MT which tends to Rs.5525.18 Crore (708.33 million USD). Madhya Pradesh leads in organic production, followed by other states like Sikkim. Organic farming covers about 2% of India's net sown area, indicating a growing trend towards sustainable agriculture. Organic farming in India showcases significant potential, supported by government initiatives and increasing consumer awareness. In 2021, India had approximately 2,657,889 hectares of organic agricultural land, including conversion areas. India has seen a significant increase in the adoption of organic farming practices, leading to a rise in the number of organic producers across the

country. India produced approximately 2.9 million metric tons of certified organic products in the fiscal year 2022-23. These products include various food items such as oilseeds, fiber, and sugarcane.

CONCLUSION

Several factors contribute to the promising future of organic farming in India. First, increasing awareness about the health and environmental benefits of organic produce drives consumer demand. Additionally, government support through policies and initiatives fosters the development of organic agriculture. Furthermore, organic farming aligns with India's sustainability goals and provides opportunities for small-scale farmers to adopt environmentally friendly practices. With increasing concerns about food security and environmental sustainability, organic farming is positioned to play a crucial role in India's agricultural landscape. The future of organic farming in India looks promising, with growing market demand, government support, and a focus on sustainability driving its expansion. India's organic food market is expanding, with the potential to become one of the largest globally. As of 2022-23, India has 1.59 million organic producers cultivating 2.7 million hectares of land organically. In 2021-22, 2,780,000 hectares were certified for organic farming. Despite limited consumption data, reports suggest a growing domestic market for organic foods, with India potentially having the highest organic food market growth globally. The share of land used for organic farming in India is around 1.5% of the total agricultural land. This indicates a growing interest and investment in organic agriculture within the country.

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