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Organic Farming in India

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Introduction

Food quality and safety are two paramount factors that have garnered ever-increasing attention among general consumers. Conventionally grown foods have been associated with significant adverse health effects due to the elevated presence of pesticide residues, higher nitrate levels, heavy metals, hormones, antibiotic residues, and even genetically modified organisms. Moreover, conventionally grown foods tend to be less nutritious and contain fewer protective antioxidants. In the pursuit of safer food options, the demand for organically grown foods has witnessed a substantial rise in recent decades, primarily owing to their potential health benefits and concerns about food safety. Organic food production is characterized by cultivation methods that exclude the use of chemical fertilizers, synthetic pesticides, genetically modified organisms, growth hormones, and antibiotics. The surging popularity of organically grown foods can be attributed to their perceived nutritional advantages and positive effects on health. Additionally, organic farming practices contribute to environmental preservation and exert a considerable socio-economic impact on nations. India, a country endowed with indigenous skills and agricultural potential, holds a significant stake in organic agriculture.

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A steering committee led by MS Swaminathan, appointed by the Ministry of Agriculture and Cooperation, has played a pivotal role in advocating for organic farming in rain-fed regions and the northeastern states of India, where the use of fertilizers and other agricultural chemicals is limited. The 42nd Report of the Parliamentary Standing Committee on Agriculture of the 14th Lok Sabha extensively underscores the progress in organic agriculture development while emphasizing the need for its further promotion. The committee suggests that organic farming stands as one of the most promising avenues for generating profitable agricultural products in India, thereby warranting its inclusion as a priority area. Analyzing the impact of organic farming on agriculture and national food security remains crucial. Prime Minister Narendra Modi in his address to the nation on the 75th Independence Day, August 15 urged to his fellow country-men to take 'organic farming' as 'a national duty'. Prime Minister Modi reiterated the importance of organic and natural farming twice in his speech, underscoring a shift towards agricultural practices. In 2001, the Indian government introduced the National Program for Organic Production (NPOP), which set standards for organic production and established accreditation procedures for certifying agencies. This initiative aimed to regulate the organic sector and provide a comprehensive framework for consistent certification of organic products.

Concept and Component of Organic Farming-

The Definition of the word "Organic", is an ecological management production system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on the minimal use of off-farm inputs and on management practices that restore, maintain and enhance "ecological harmony" (National Standards Board of the US Department of Agriculture (USDA)). It may be emphasized here that in the production and marketing of organically produced agricultural products, the check is on the process of its production rather than the product per se, although quality standards, which are quite strict, have to be adhered to. The term organic farming was used by Lord Northbound in 1940. According to

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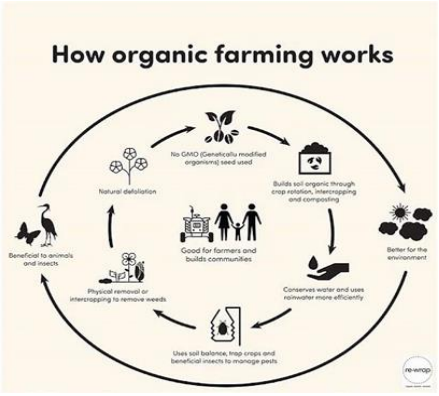
the Food and Agriculture Organization (FAO) organic farming is a special type of production management that uses on-farm agronomic, biological, and mechanical approaches instead of any artificial off-farm inputs to support and increase the health of agro-ecosystems, including biodiversity, biological cycles, and soil biological activities.

Most important components of organic farming are biological nitrogen fixation, crop rotation, residues of crops, bio pesticides, and biogas slurry. Vermicomposting is a major element in organic husbandry, which is effective in increasing the soil fertility and growth of crops in a sustainable way.

Principles of organic farming-



Organic farming is based on the following principles:

1) To produce food of high quality in sufficient quantity.
2) To encourage and enhance biological cycles within the farming system involving microorganisms,soil flora, plants and animals.
3) To maintain and increase the long-term fertility of soils.
4) To create a harmonious balance between crop production and animal husbandry.
5) To produce fully bio-degradation organic products.
6) To minimize all forms of pollution.
7) To promote the healthy use proper care of water, water resource and all lives therein

Organic Farming in Ancient India

The concept of organic farming in India traces its origins back to a remarkable span of 10,000 years, as evidenced by numerous references within Indian historical literature. Given that agriculture constituted the primary source of sustenance in India, the utilization of naturally occurring substances to enhance productivity, bolster disease resistance, and manage pests has been an enduring practice since time immemorial. Techniques such as the application of oil cakes, cow dung, and neem leaves persistently endure in contemporary Indian agriculture as methods for pest control and preservation. The introduction of chemical fertilizers, aimed at augmenting productivity, commenced around the late 1850s. However, the foundations of organic farming were laid thousands of years before this period. In ancient times, Indian farmers embarked on crop cultivation along riversides, ingeniously harnessing

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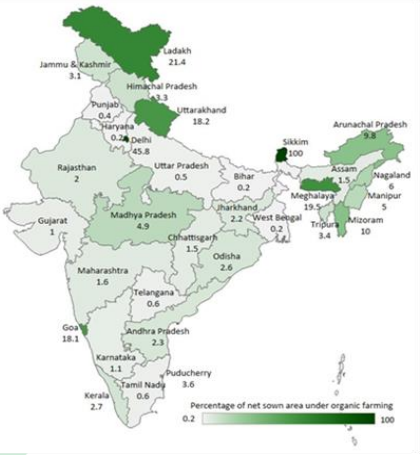
natural resources. Notably, the Mahabharata introduced the Kamadhenu cow, intimately associated with agricultural practices. The Ramayana eloquently elaborated on the cyclical process wherein deceased matter and waste transform into nurturing nutrients for the earth. The Vedic scriptures intricately delineate the principles of organic farming. Works like Krishi Parashar, Brihatsamhita, and Manusmriti expound upon these principles. The Rigveda underscored the use of organic manure and the pivotal role of cow dung in fostering plant growth. Furthermore, Kautilya's Arthashastra acknowledges the employment of oil cake and animal excreta for agricultural betterment.

Present status of Organic Farming

India stands at the forefront, ranking first in terms of the total number of organic producers as of 2020 data, and holds the eighth position globally in terms of the world's organic agricultural land (Source: FIBL & IFOAM YearBook, 2020). Despite the challenges posed by the COVID-19 pandemic in 2020-21, India's organic agricultural, food, and retail sectors have exhibited resilience, with organic product exports from India surpassing the $1 billion mark. Notably, the United States accounted for 54% of these exports. Driven by an increasing preference for health-enhancing and immunity-boosting foods, the domestic consumption of organic food products has also witnessed substantial growth. According to India's APEDA report, organic crop production reached 3.2 million metric tons in 2020-21, marking a 36% increase compared to 2019-20. Sikkim became the first State in the world to become fully organic and other States including Tripura and Uttarakhand have set similar targets. North East India has traditionally been organic and the consumption of chemicals is far less than rest of the country. Similarly, the tribal and island territories are being nurtured to continue their organic story. During financial year 2022, Chhattisgarh had the highest organic agriculture area with over three million hectares across India. Followed by Madhya Pradesh with over 2.3 million hectares of organic farming land. Mainly, Rice and wheat as cereal; tea and coffee as beverages; Cardamom, black

Figure. State-wise organic coverage (proportion to the net sown area of the state)



Source: Lok Sabha 2019; Ministry of Agriculture & Farmers Welfare 2019

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pepper, ginger, turmeric as spices; black gram and red gram as pulses; mang, banana, pineapple, orange, cashew nut, walnut as fruits; okra, brinjal, garlic, onion, tomato, potato as vegetables; sesame, castor, sunflower as oilseeds; cotton as commercial crops are mainly cultivated in organic farming.

Product	Percent
Rice	24
Tea	24
Fruits and Vegetables	17
Wheat	10
Cotton	08
Spices	05
Coffee	04
Pulses	03
Cashew	03
Others	02
Total	100
Source: Organic Farming news letter	

Percentage share of crops in organic farming

Organic farming: An economic view

The economic performance of organically produced crops, in comparison to conventionally grown crops, is not consistently linear. It varies depending on the specific crop and the region. While organic systems can adopt a low-cost production approach with minimal on-farm inputs, the potentially lower yields might impact their profitability in comparison to conventional crops. Providing adequate nutrition to organic crops can escalate production costs significantly. Organic farming, despite potential reductions in crop productivity, can be financially viable due to the availability of premium prices (20-40% higher than normal prices). Nevertheless, incorporating practices like using crop residues, green manure, phosphorus-solubilizing microbes, poultry manure (5 t/ha), and neem cake (0.2 t/ha) led to higher yields and net returns than inorganic management in a rice-wheat system. In a comparative study of organic and conventional farming systems across Uttarakhand, Madhya Pradesh, and Tamil Nadu, lower production costs for organic farming have been reported. However, due to labour costs, organic crop production expenses tend to be higher than those for conventional crops. This is attributed to the labour-intensive application of organic manures and manual weeding. For instance, the cost of manual

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weeding in rice is approximately 6 times higher and in wheat about 1.5 times higher than using herbicides. Prospects in India are promising, considering the country's vast agricultural expanse of 142 million ha, with 68% of it rainfed across 177 districts, covering 86 million ha. The average fertilizer application rate is merely 36.4 kg/ha, far below the national average of 76.8 kg/ha. This scenario favours organic practices, particularly in these regions, without endangering national food security. India's rich traditional knowledge in soil fertility restoration and pest control further supports organic systems. Organic farming has the potential to diversify rice-wheat cropping systems, necessitating systematic phasing out of agrochemicals and synthetic fertilizers, potentially facilitated by Effective Good Agricultural Practices (GAP). Introducing a certification mechanism, such as India GAP certification, could encourage farmers with a small premium, ensuring the availability of safe and affordable certified food for consumers. It's important to note that a complete shift to organic farming might not be feasible in high-input areas due to its impact on food grain contributions to the central pool. Therefore, a gradual transition and strategic reduction of agrochemicals and synthetic fertilizers would be a prudent approach.

Organic farming policies and schemes

The government to promote organic farming has implemented certain policies in the country and gained economic benefits.

1. ***Paramparagat Krishi Vikas Yojana (PKVY)***

The organic farming policy was launched in the year 2015 and adopted organic villages. The PKVY scheme focuses on soil health management, which is the most crucial project of NMSA. The use of chemical fertilizers needs to be reduced from the rain or hilly areas. Organic farmers are also provided with subsidies.

2. ***Rashtriya Krishi Vikas Yojana***

The organic farming policy includes methods that are boosted in the states through this scheme. Agricultural plans are formulated in the districts to provide maximum return benefits to the organic farmers. The mission aims to gain nutritional benefits from organically yielded

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products. The organic policy focuses on improving the health of the people, especially the marginalized sector.

3.Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)

The organic farming policy was launched by the ministry to promote organic farming in the northeastern states of Assam, Tripura, Meghalaya, Nagaland, Arunachal Pradesh, Manipur, Sikkim. The focus is to ensure a developmental value chain in the market. The scheme also devises market link strategies and storage of organic products.

4.Zero Budget Natural Farming

The process involves drawing inspiration from traditional Indian agricultural practices by avoiding synthetic fertilizers. This organic farming policy is crucial for the economy of organic farming.

5.Agri-Export Policy

The policy was launched in 2018, which is responsible for promoting organic farming and creating an impact on the market. This deals with the economic planning of organic farming.

6.National Project on Organic farming (NPOF)

The project focuses on improving the organic production units, biopesticides, biofertilizers thereby reducing the dependency on chemical fertilizers. The scheme also provides certification programs and encourages organic farming. The scheme has the recognition of Switzerland and the European Union.

Conclusion

India possesses one of the world's largest arable land areas, with a net sown area of 140.1 million hectares. Agriculture and its related sectors remain the primary source of livelihood, engaging 54.6 percent of India's workforce, particularly in rural regions where around 70 percent of households depend on agriculture. Notably, 146 million farming families, predominantly small and marginal with landholdings of 2 hectares or less, contribute to this sector. For India to achieve true self-reliance, a substantial transformation in the agriculture sector is imperative. Prioritizing farmers' income, minimizing chemical usage,

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and producing healthier food while conserving resources are essential. Despite its historical roots and alignment with Sustainable Development Goal 2, the organic and natural farming movement in India remains niche. Only 2 percent of the country's net sown area practices organic farming, with a mere 1.3 percent of farmers registered for it. This, however, underscores the untapped potential. By fostering awareness, adhering to global standards, and targeting both domestic and international markets, India's organic farmers can secure a notable position in global agricultural trade. This shift requires organic and natural farming to be integrated into mainstream agriculture, supported by robust scientific data and farmer-friendly certification policies that encourage adoption. Both central and state governments must orchestrate and drive this change on a larger scale, exhibiting political commitment and allocating adequate resources.

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