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Sustainable growth in Vikshit Bharat: Exploring organic and cow-centric practices for sustainable agriculture

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Abstract

In India, the idea of sustainable growth has received a lot of attention lately, especially when considering the country's rural economy. The term Vikshit Bharat refers to the impoverished or marginalized parts of India. This study investigates the possibilities of organic and cow-centric farming techniques as a means of achieving sustainable development in these regions. In order to solve the current environmental, economic, and social concerns, the study looks into how ancient and indigenous agricultural practices—which have long been a part of India's agrarian culture—can be revitalized and integrated into contemporary agricultural systems. The study looks at the advantages of various methods, such as better biodiversity, less environmental contamination, and healthier soil. Furthermore, examined is how these methods can strengthen the position of small and marginal farmers by lowering their reliance on costly inputs and enhancing rural livelihoods. The report also takes into account the difficulties that come with organic and cow-centric agriculture being so popular in India, including issues with certification, market access, and farmer education and awareness. The article discusses the policy implications and offers suggestions for government funding, research, and extension services to encourage the wider adoption of these sustainable practices. The study concludes by highlighting the potential of cow-centric and organic farming methods to support Vikshit Bharat's sustainable development. India can create a more resilient and sustainable agricultural system that promotes environmental sustainability and the welfare of its rural inhabitants by utilizing indigenous knowledge and practices.

Keywords: Vikshit Bharat, cow-centric, growth

Introduction

Prologue

Globally, organic farming has become an essential part of sustainable agricultural practices because it provides a comprehensive farming approach that puts biodiversity, environmental health, and the welfare of farmers and customers first (Seufert, 2017) ^[9]. The potential of organic farming to address global concerns about food security, environmental degradation, and the sustainability of conventional agricultural practices has garnered substantial attention. One definition of organic food production involves farming methods free of antibiotics, growth hormones, and genetically engineered organisms (Ronald, 2018) ^[8]. Organic farming is especially important in India, where it continues to be the main source of income for a significant portion of the population and the backbone of the economy. Sustainable farming methods have a long history in India, stemming from traditional knowledge systems that have always valued balance with the natural world (Nelson and Shilling, 2018) ^[6]. However, the mid-20th century Green Revolution increased food production but also widely adopted chemical-intensive farming practices. Despite their early effectiveness in raising yields, these practices have had a number of detrimental long-term effects, such as greater reliance on synthetic inputs, biodiversity loss, and soil deterioration. It is believed that organic farming is a safer option. This agricultural method excludes the use of

chemicals and only makes use of organic materials like cow dung. On the other hand, zero-budget natural farming, which is promoted by the Indian government, does not use any outside inputs, including biofertilizers. In addition to improving public health, research indicates that organic farming can enhance biodiversity. Globally, organic farming is estimated to boost local species richness by approximately 34% and abundance by approximately 50% (Meemken & Qaim, 2018) ^[5]. But this depends on a number of things, such the overall environment in which the farms are situated. India is seeing an increase in organic farming. In India, the area under organic farming has increased thrice, from 5,28,171 hectares in 2007 to 1.2 million hectares in 2014 (Hebbal *et al.*, 2018) ^[3]. According to one assessment, India is the country with the greatest number of organic growers. Still, this only accounts for only 2.5 percent of all the land in the nation that is farmed. Numerous initiatives, such as the Paramparagat Krishi Vikas Yojana and the Mission Organic Value Chain Development for North Eastern Region under the National Mission for Sustainable Agriculture, are being used in India to promote organic and natural farming (Darjee, 2023) ^[2]. One explanation for the recent spike in interest in organic farming in India is the problems that conventional agricultural practices have created for the environment and the economy. Instead of using synthetic fertilizers, insecticides, or genetically modified organisms (GMOs),

organic farming relies on natural inputs and processes including crop rotation, compost, and biological pest management. This strategy not only improves biodiversity and soil fertility, but it also lowers pollution levels and fosters healthier ecosystems. Furthermore, as small and marginal farmers make up the majority of India's agricultural workforce, organic farming has the ability to empower them. Through the utilization of locally accessible resources and a decreased reliance on expensive inputs, organic farming has the potential to enhance farmers' economic resilience and promote rural development. Additionally, Indian farmers have access to new markets because to the rising demand for organic goods both locally and abroad.

This research paper aims to explore the potential of organic farming as a sustainable agricultural practice in India. It will examine the benefits and challenges of organic farming, its impact on soil health, biodiversity, and farmer livelihoods, and the role of policy and institutional support in promoting organic agriculture. Through a comprehensive analysis of existing literature, case studies, and field data, the paper seeks to contribute to the understanding of how organic farming can play a crucial role in achieving sustainable agricultural development in India.

In conclusion, organic farming represents a promising pathway towards sustainable agriculture in India. By embracing organic practices, India can address the environmental and economic challenges of conventional farming, while also preserving its rich agricultural heritage for future generations.

Approach

Research as conducted to find what are various organic and cow-centric agriculture practices followed in India. What is the major impact of these practices in agriculture system of India. How much we are lagging and what are the major challenges and hurdles in the path. The research is conducted based on secondary data collected from published works about role of organic and cow-centric agriculture in vikshit bharat. Systematic details gather from different sources and website about how Indian agriculture affected from cow-centric and organic agriculture. Different magazines and news articles have been utilized for the research paper preparation. Conversations with knowledgeable people, institutions, specialist, economist, farmers was congregated.

Outcome

Currently conventional agricultural system is used worldwide. This technique is intrinsically damaging and not tenable. As per the Ministry of Agriculture and Farmers' Welfare (MoAFW), 2.78 million ha was covered under organic farming in India as of March 2020 (Khurana & Kumar, 2020) ^[4]. This is about 2 per cent of the 140.1 million ha net sown area in the country. Thus, organic farming accounts for only 2% of net sown area, and only 1.3% of farmers are registered to practice organic farming. It is obvious that thus far, this hesitant approach hasn't been helpful. For Indian agriculture to become self-sufficient, radical reform is required. For this reason, natural and organic farming must be integrated into the mainstream of agriculture.

India has launched several policies and programs to promote organic farming over the years, aiming to enhance sustainable agricultural practices and reduce the dependency on chemical fertilizers and pesticides. The Association for Propagation of Indigenous Genetic Resources (APIGR) hosted the first-ever meeting of non-governmental organizations (NGOs) on organic farming in India in October 1984 at Wardha. The Bordi Conference took place in Maharashtra, the state that served as the focal point of the Indian organic farming movement.

Under the Agricultural and Processed Food Products Export Development Authority (APEDA) of the Ministry of Commerce and Industry, Government of India, the National Programme for Organic Production (NPOP) was launched in 2001. India's first organic agricultural policy was created in 2005 by the Ministry of Agriculture at the time. Only in 2014–15 did the Ministry of Agriculture and Farmers' Welfare (MoAFW) launch the National Mission for Sustainable Agriculture, which aimed to encourage organic farming. The National Centre of Organic Farming (NCOF), the National Project on Organic Farming (NPOF), the Paramparagat Krishi Vikas Yojana (PKVY), the Mission Organic Value Chain Development for North East Region (MOVCDNER), and a soil health management program were among the initiatives and programs pertinent to organic farming. The Central government launched the Paramparagat Krishi Vikas Yojana (PKVY) in 2015–16, stepping up its efforts to support organic farming. Over the past few years, states have also come out, albeit with differing degrees of emphasis. Sikkim emerged as the inaugural 100% organic state in India. Himachal Pradesh and Andhra Pradesh also want to become entirely agricultural states by 2022 and 2027, respectively. But in actuality, India's organic and natural farming movements are still specialized rather than widespread.

Here's an overview of some key initiatives presented in Table 1

A 2020 survey by the International Federation of Organic Agriculture Movements (IFOAM) placed India foremost with regard to the number of organic farmers in the world. It, however, ranked India ninth with regard to organic land. Organic farming coverage has not spread uniformly across the states. Some states have taken the lead in improving organic farming coverage, while others are lagging behind. Only a small portion of the net sown area in most states is used for organic farming. Madhya Pradesh, Rajasthan, and Maharashtra, the top three states with the most land under organic cultivation, only have 4.9, 2.0, and 1.6% of their relative net sown area in organic farming. A few states like Meghalaya among them Ten percent or more of Mizoram, Uttarakhand, Goa, and Sikkim's net sown area in the organic section (Agriculture Research Data Book 2019) ^[1]. All of these states—aside from Goa—are located in steep terrain. Union Territories like as Chandigarh, Lakshadweep, Dadar, and Nagar Haveli, as well as Delhi, having 10 per cent. The establishment of the Sikkim Organic Board in 2003 marked the start of Sikkim's transition to full organic status. Over the years, it gradually cut the subsidy on chemical fertilizers by 10%, and in 2014, it outright forbade them (Sikkim state policy on organic farming, 2004) ^[10]. The law made the use and sale of chemical fertilizers illegal. Sikkim's switch to

organic farming was comparatively easy because the region uses some of the least amount of fertilizer per hectare in the nation. In 2015, the state's whole agricultural land was converted to "certified organic," and in 2016, Sikkim was legally proclaimed as a "100% organic" state. Zero-budget natural farming (ZBNF) is described by the Ministry of Agriculture and Farmers' Welfare as a chemical-free natural farming system that encourages the use of inexpensive inputs (plant extracts and cow dung/urine) in conjunction with advised agronomic techniques like mulching and intercropping. The National Institute for Transforming India (NITI Aayog) held a discussion in July 2018 about the potential for pushing ZBNF nationwide in a manner similar to that of Andhra Pradesh. ZBNF work has also been started in Himachal Pradesh, Gujarat, Haryana, Karnataka, and Kerala. For example, Karnataka, through the corresponding state agriculture or horticulture institutions, has started implementing ZBNF on a pilot basis in an area of 2,000 hectares in each of the state's 10 agro-climatic zones. Since May 2018, Himachal Pradesh has been carrying out the Prakritik Kheti Khushal Kisan initiative, which is supported by the state. To pique farmers' interest in ZBNF, Kerala, Gujarat, and Haryana have held awareness campaigns, trainings, and workshops. Bhartiya Prakritik Krishi Paddhti (BPKP) is the word used by the Central Ministry of Agriculture and Farmers Welfare to promote natural farming. It has been suggested that BPKP be included as a new sub-mission under the PKVY program. The Center has granted states the freedom to use any conventional or

organic farming model under PKVY. When it comes to mass-implementation of the zero-budget natural farming initiative, Andhra Pradesh is leading the pack among all the states. It recently changed its name to "community-managed natural farming" from the phrase "climate-resilient zero-budget natural farming." Even after the national organic agricultural policy was implemented 15 years ago, the organic movement in India is still far from being widespread. Regretfully, it is little more than a specialized movement driven by farmers and civil society organizations. Governmental encouragement of natural farming methods is a relatively new development that is restricted to a small number of states. It is still difficult for chemical-free farming to be included in conventional agricultural interventions. The nation's organic and natural agricultural movements are hindered by the numerous concerns held by the three main stakeholder groups: the government, farmers, and consumers. Because some barriers are highly interdependent, the problem gets worse (Fig.1). For instance, the buyer must be prepared or able to pay the additional money if the farmer wants to profit more from organic produce in exchange for the increased work or risk. However, the farmer might not be as driven if the customer wants to purchase organic goods at the same price as conventional produce. This leads to a vicious cycle, and unless a third party, such as the government, takes action on any particular issue, the problem is probably going to persist. However, if the government is prevented from intervening for its own reasons, this may also not occur

Table1: Policy framework and programs driving organic farming in India

Programs	Launched year	Objective
National Programme for Organic Production (NPOP)	2001	Managed by the Agricultural and Processed Food Products Export Development Authority (APEDA), this program sets standards for organic production, certification, and the promotion of organic farming practices.
National Project on Organic Farming (NPOF)	2004	To promote organic farming through technical capacity building, production of organic inputs, and awareness creation. The project includes activities like setting up bio-fertilizer production units, encouraging the use of organic inputs, and certifying organic produce.
Organic Farming Policy	2005	The policy aims to promote organic farming as an essential component of sustainable agriculture. It provides guidelines for organic production, certification, and marketing to ensure the growth of the organic sector.
Rashtriya Krishi Vikas Yojana (RKVY) - Organic Farming Component	2007	As part of RKVY, funds are allocated to states for organic farming initiatives. It supports various organic farming activities, including the development of organic clusters and the provision of organic inputs to farmers.
National Mission on Sustainable Agriculture (NMSA)	2014	NMSA promotes sustainable agricultural practices, including organic farming, to enhance soil health and productivity.
Paramparagat Krishi Vikas Yojana (PKVY)	2015	Under the umbrella of the National Mission of Sustainable Agriculture (NMSA), this program aims to encourage the traditional agricultural practices of India. It focuses on the development of organic clusters and encourages farmer groups to adopt organic farming in a structured manner.
Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)	2015-16	Specifically designed for the North Eastern states of India, this program promotes the entire organic value chain, from production to processing, and marketing. It helps in the creation of organic clusters and facilitates the certification process for organic farmers in the region.
Zero Budget Natural Farming (ZBNF)	2015	Although not solely an organic farming initiative, ZBNF promotes farming methods that rely on natural resources and minimal external inputs. It's a low-cost farming method that aligns with organic principles, focusing on the use of cow dung and urine as fertilizers.
Jaivik Krishi Portal	2018	This online platform was created to promote organic farming by providing information on organic farming practices, inputs, and marketing. It serves as a digital marketplace for organic products and helps farmers access the market directly.
Bhumi Suposhan and Samridhi Yojana	2020	This state-level initiative focuses on restoring soil health and promoting organic farming practices to increase agricultural productivity sustainably.

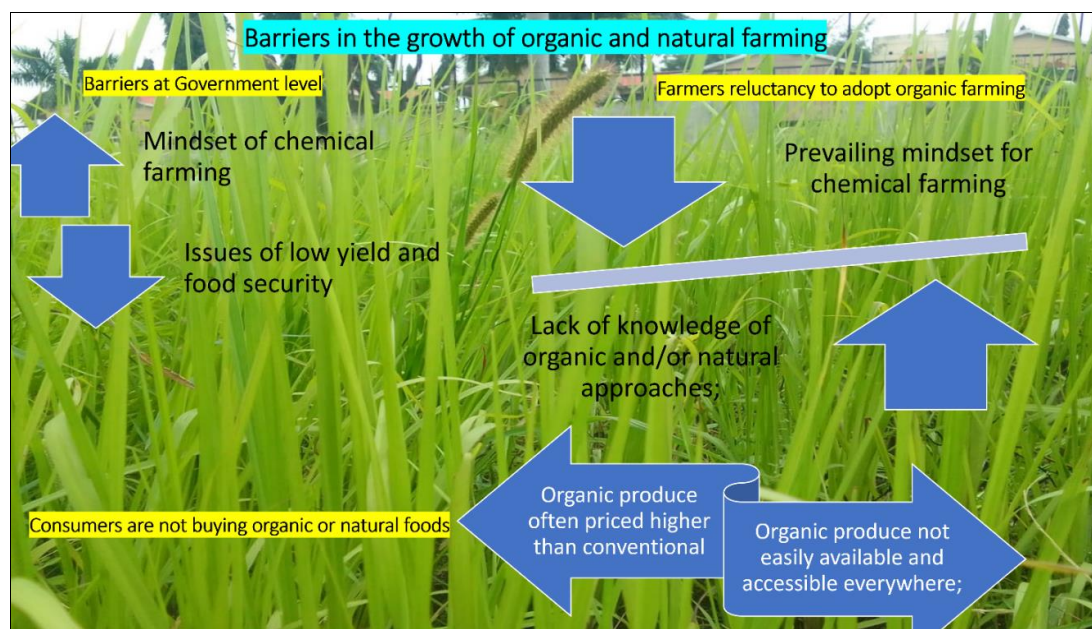


Fig 1: Barriers in the growth of organic and natural farming

Even-though there are several hurdles toward the adoption and practice of organic farming in India, if we start looking at ground level we will find many people are adopting organic practices in agriculture. The experiment in organic farming has been successfully conducted at various corners of India. There are several success stories where organic farming has been successfully achieved in India. There are several Padmasree winner farmers with successful achievement in organic farming. *Kisan Chachi*, Rajkumari Devi, a homemaker from Bihar who became a successful organic farmer and supporting several women's. Another extraordinary achievement in organic farming is by Bharat Bhushan Tyagi, who is a science graduate from Delhi University from Bulandshahar, Uttar Pradesh has practiced organic farming and takes it to the height of success. He presented one of the finest examples in the field of organic farming and spent 30 years in experimenting with different agricultural techniques. Additionally, he built a cutting-edge research and training facility in his community, which helped over a million farmers and their families by teaching and training them in organic farming as a means of subsistence and income. Guntur, Andhra Pradesh, is home to organic farmer Venkateswara Rao Yadlapalli. He has been assisting thousands of farmers in switching to organic farming by utilizing contemporary technology. This includes the mobile applications he just released for natural and related farming. In addition, he publishes journals that support horticulture, animal husbandry, and natural farming, such as Rythunestham, Pasunestham, and Prakruthi Nestham. Additionally, he hosted yearly award and felicitation events for exceptional organic farms. A few forward-thinking farmers in Puliangudi village, in the Tirunelveli region of Tamil Nadu, are successfully using a sound package of environmentally friendly technology to grow rice. "The technologies are effective when used with native rice types like Kitchili Samba. Organic rice commands a premium price in the market and the cost of cultivation is significantly lower, according to Mr. P. Gomathinayagam, a Puliangudi pioneer in organic farming.

The key component of an effective organic farming operation is vermicompost. It is essential to about 85% of organic crop cultivation. Typically, farmers in the nation construct a roof for their vermicompost manufacturing facility using either asbestos sheets or thatched straw. There will be sand, plain cement, or perhaps toughened red dirt on the bottom of the unit. Mr. D. Bharani, a forward-thinking organic farmer from Mayiladuthurai taluk in the Nagapattinam region of Tamil Nadu, made the four poles supporting his crude compost unit out of indigenous tree trunks. Extract from ginger and garlic: A biopesticide for organic farming Using organic methods saves money on pricey chemicals. Ms. Rajareega is pictured producing the botanical insecticides on her farm in Tamil Nadu's Sivaganga district. In Tamil Nadu's rice bowl, the Thanjavur area, organic farming is currently in style. After using chemical fertilizers for a while, farmers are now switching back to organic farming practices. The Central Bank of India recently provided nearly one hundred farmers in the Thanjavur district with firsthand knowledge of the profitability of organic farming. They were brought to the state-of-the-art TARI horticultural farm located in Marunkulam, where organic farming was used to raise bananas, maize, and paddy.

Epilogue

Natural farming should not be adopted in a "knee-jerk fashion," as Sri Lanka did, according to NITI Aayog member Ramesh Chand, who spoke with Financial Express in June. According to him, India can increase the area dedicated to chemical-free farming by twofold: by 2030, it may reach 30% of its total land area without compromising food security, since any decrease in exports or output would be offset by a decrease in fertilizer subsidies. In 2020, the NITI Aayog commissioned a survey that revealed that although farmers believed natural farming to be more robust to climate change, require less water, and improve soil quality, it might eventually result in nutrient exhaustion from the soil if monocropping practices were adhered to.

"NF [natural farming] might not be a suitable replacement for conventional farming in terms of producing large amounts of food." Instead, it might be encouraged in low-input areas for smallholders, according to the paper written by experts at the Hyderabad-based ICAR-National Academy of Agricultural Research Management. As scientists pointed out in a review, there might be a middle ground to consider: "smart combinations of organic and conventional methods could contribute toward sustainable productivity increases in global agriculture. Organic farming is not the paradigm for sustainable agriculture and food security."

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