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Organic Farming In India: Growth, Production Dynamics, And Market Paradoxes

Dr. Nila A. Chotai[1], Prof. Leonard L[2], Dr. Manish Kothari[3]
[1].Academic Director, ISBR Business School.
[2].Assistant Professor & Manager Centre for AI, ISBR Business School.
[3].President, ISBR Business School

ABSTRACT
Organic farming has emerged as a prominent pathway for addressing sustainability challenges in Indian agriculture; its developmental outcomes remain uneven. This study examines the trajectory of organic farming in India by analysing farmer structure, expansion of organically cultivated area, production dynamics, category-wise performance, and domestic market outcomes. Using secondary data from certification agencies and government sources, the study reveals a paradoxical pattern: while India leads globally in the number of organic producers and has witnessed rapid expansion in certified organic area, organic food production and domestic market penetration remain limited and volatile. Production trends show a strong dependence on fibre crops, particularly organic cotton, masking declines in several food crop categories. The analysis further highlights an area–production mismatch arising from certification-based reporting mechanisms and export-oriented market structures. Despite substantial production capacity, the domestic organic market remains marginal, constrained by price sensitivity, weak value-chain integration, and limited consumer trust. The study argues that India's organic transition has been predominantly policy- and participation-driven rather than market-oriented. It concludes that sustainable growth of organic farming requires a systemic shift toward domestic market development, improved certification credibility, and farmer-centric institutional support...
Keywords: Organic farming, Agricultural sustainability, Organic production dynamics, Certification and market integration Indian agriculture.
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1. INTRODUCTION:

Agriculture in India has historically played a central role in ensuring food security, rural employment, and economic stability. The production gains achieved through the Green Revolution have increasingly been accompanied by serious environmental and socio-economic costs. Intensive use of chemical fertilizers, pesticides, monocropping practices, and groundwater extraction has led to soil nutrient depletion, declining factor productivity, biodiversity loss, and increased vulnerability of farming systems to climate variability (Tilman et al., 2002; Pingali, 2012). These challenges have raised fundamental concerns regarding the long-term sustainability of India's agrarian growth model, particularly in the context of smallholder-dominated farming systems. In response to these concerns, organic farming has gained prominence as a sustainable alternative that seeks to harmonize agricultural productivity with ecological balance. Organic farming emphasizes soil health, biological nutrient cycling, crop diversification, and the avoidance of synthetic inputs, thereby aligning agricultural production with principles of environmental stewardship and resource conservation (Reganold & Wachter, 2016; Scialabba & Müller-Lindenlauf, 2010). Unlike conventional agriculture, organic farming is conceptualized as a system-based approach rather than an input substitution strategy, integrating agronomic, ecological, and socio-economic dimensions of sustainability (Fess & Benedito, 2018).

India occupies a unique position in the global organic farming landscape. It ranks first in the number of organic producers and second in terms of land area under organic cultivation, reflecting a large-scale adoption of organic practices across diverse agroecological regions. Policy initiatives such as the National Programme for Organic Production (NPOP), Participatory Guarantee System (PGS), Paramparagat Krishi Vikas Yojana (PKVY), and the Mission Organic Value Chain Development for the North Eastern Region (MOVCDNER) have played a significant role in expanding organic farming participation (APEDA, 2024). As a result, the number of certified organic producers and the area under organic cultivation have increased substantially over the past decade. Despite this expansion, the contribution of organic farming to India's overall agricultural output and domestic food market remains limited. Organic farming accounts for only a small proportion of total agricultural land, and organic products represent a marginal share of the Indian FMCG market. Production trends reveal significant volatility, particularly when non-fibre food crops are considered. Several studies have noted that organic production data, often derived from certification-based reporting, may not fully capture actual farm-level output, thereby complicating assessments of organic farming performance (Panneerselvam et al., 2013; Paul et al., 2023). The disconnect between the rapid growth in organic farmer participation and cultivated area on one hand, and the modest growth in organic production and market size on the other, points to a structural paradox in

India's organic farming transition. While organic farming is frequently promoted as a pathway to sustainable agriculture, evidence suggests that its outcomes are shaped by a complex interplay of policy incentives, market access, certification regimes, and farmer capabilities (Clark, 2020; Tal, 2018). In particular, small and marginal farmers who constitute the majority of India's agrarian population face constraints related to knowledge, labor availability, input affordability, and market integration, limiting the scalability and economic viability of organic farming. India's organic farming trajectory has been influenced by global market dynamics. Export-oriented organic production has exposed Indian farmers to international policy shifts, such as changes in organic recognition agreements and trade barriers, which have directly affected production incentives and category-wise performance (Reganold & Wachter, 2016). At the same time, domestic demand for organic products remains constrained by price sensitivity, limited consumer awareness, and trust deficits in certification systems. Against this backdrop, a comprehensive examination of organic farming in India is necessary one that goes beyond normative advocacy and evaluates organic farming through the lenses of farmer structure, area expansion, production dynamics, and market outcomes. By synthesizing secondary data with insights from existing literature, the present study seeks to critically assess the growth and performance of organic farming in India and to identify the structural factors shaping its sustainability and future potential.

2. Literature Review

The literature on organic farming has expanded substantially over the past two decades, reflecting growing concerns about the environmental, economic, and social sustainability of conventional agricultural systems. Research spans conceptual foundations, empirical assessments of productivity and ecological performance, and analyses of socio-economic and institutional factors influencing adoption. This section reviews the literature under three broad themes: (i) conceptual and ecological foundations of organic farming, (ii) productivity, climate resilience, and environmental performance, and (iii) socio-economic dimensions and transition challenges, with particular emphasis on the Indian context.

2.1 Conceptual and Ecological Foundations of Organic Farming

Organic farming is widely conceptualized as a holistic production system that seeks to sustain agroecosystem health by emphasizing ecological processes, biodiversity, and natural nutrient cycles while minimizing reliance on synthetic inputs. International frameworks, particularly those articulated by IFOAM, define organic agriculture around principles of health, ecology, fairness, and care, positioning it as a system-level transformation rather than a technological fix. Scholars consistently emphasize that organic farming should not be interpreted as a simple substitution of chemical inputs with organic alternatives but as an integrated approach involving crop rotations, soil organic matter management, biological pest control, and diversification (Reganold & Wachter, 2016; Fess & Benedito, 2018).

Ecologically, the foundation of organic farming lies in the soil–plant–microbe nexus. Empirical studies demonstrate that organically managed systems tend to exhibit higher soil organic carbon, microbial biomass, and biological activity, which improve nutrient cycling, water retention, and resilience to environmental stress (Scialabba & Müller-Lindenlauf, 2010; Rempelos et al., 2023). These attributes are particularly relevant for rainfed and marginal agroecosystems, where soil health plays a decisive role in sustaining productivity. Research on agricultural biodiversity further highlights that organic and diversified systems contribute to the conservation of crop genetic resources, on-farm biodiversity, and ecosystem services, reinforcing long-term sustainability (Bisht et al., 2020). The literature also cautions against idealizing organic farming. Comparative analyses note that regenerative and conservation agriculture approaches often share ecological objectives with organic farming but differ in regulatory boundaries, particularly regarding agrochemical use. This distinction has important implications for certification credibility, policy design, and market trust (Tal, 2018). In the Indian context, scholars argue that organic farming must be understood as an adaptive system that integrates traditional ecological knowledge with modern agronomic and institutional innovations rather than a return to pre-industrial farming practices (Panneerselvam et al., 2013).

2.2 Productivity, Climate Resilience, and Environmental Performance

Productivity outcomes remain one of the most debated aspects of organic farming. A large body of literature indicates that organic yields are, on average, lower than conventional yields, typically ranging between 10–25% depending on crop type, management intensity, and agroecological conditions (Lesur-Dumoulin et al., 2017; Fess & Benedito, 2018). Yield gaps are highly context-specific and tend to narrow under diversified cropping systems, improved organic management, and over longer transition periods. Several studies emphasize that yield stability, rather than yield maximization, is a more relevant metric for assessing organic farming performance, particularly for smallholders. Meta-analyses in horticulture and mixed farming systems show that organic yields exhibit variability comparable to conventional systems, challenging the assumption that organic farming is inherently riskier (Lesur-Dumoulin et al., 2017). Research from India further suggests that organic systems perform competitively in rainfed regions, where conventional input-intensive farming often fails to deliver consistent returns (Panneerselvam et al., 2013). From an environmental perspective, organic farming is frequently associated with reduced energy use, improved soil carbon sequestration, enhanced biodiversity, and lower pesticide exposure. Studies on climate change mitigation highlight that the avoidance of synthetic nitrogen fertilizers significantly reduces fossil energy consumption and nitrous oxide emissions, while organic soil management practices contribute to carbon sequestration (Scialabba & Müller-Lindenlauf, 2010). At the same time, life cycle assessment studies caution that

when evaluated per unit of output, greenhouse gas emissions in organic systems may be comparable to or higher than conventional systems due to yield penalties and land-use implications (Clark, 2020).

The literature increasingly converges on the view that organic farming's climate and environmental benefits are contingent on management quality, crop selection, and system design. Consequently, scholars argue for innovation within organic systems, including organic-specific breeding, improved nutrient management, and integration with broader food-system changes such as reduced food waste and dietary shifts (Reganold & Wachter, 2016; Clark, 2020).

2.3 Socio-Economic Dimensions and Transition Challenges

Beyond agronomic and ecological performance, the sustainability of organic farming is strongly influenced by socio-economic and institutional factors. Studies consistently show that adoption decisions are shaped by farmer perceptions of risk, cost structures, access to knowledge, and market incentives. While organic farming can reduce dependence on costly external inputs, it often requires higher labor input, transitional learning, and delayed economic returns, which can deter small and marginal farmers (Laishram et al., 2022).

In India, the literature highlights significant structural inequalities in organic farming adoption. Empirical evidence indicates that wealthier and larger farmers are better positioned to absorb transition risks, access certification, and integrate into organic value chains, while smallholders face constraints related to affordability, extension support, and market access (Paul et al., 2023). Government-led initiatives such as NPOP, PGS, and MOVCDNER have expanded participation, but scholars argue that policy-driven adoption without parallel market development may lead to superficial compliance rather than economically viable organic transitions.

Market integration emerges as a critical determinant of organic farming success. Case studies of sustainable agricultural business models demonstrate that profitability often depends less on yield performance and more on value addition, branding, direct marketing, and cooperative structures such as FPOs (Hong et al., 2022). Conversely, heavy reliance on export markets exposes organic farmers to global policy shocks, as evidenced by declines in category-wise organic production following changes in international organic recognition agreements.

Organic farming in India faces a paradoxical situation: rapid growth in farmer participation and cultivated area coexists with modest production gains and limited domestic market penetration. Addressing this paradox requires policy realignment, institutional support, and context-specific transition strategies rather than uniform promotion of organic farming across diverse agroecological and socio-economic settings.

3. Research Methodology

This study adopts a descriptive and analytical research design to examine the growth, structure, production dynamics, and market outcomes of organic farming in India. The analysis is based exclusively on secondary data, enabling a macro-level assessment of trends and structural patterns within India's organic farming ecosystem.

3.1 Data Sources

Secondary data were collected from authoritative and publicly available sources, including:

Agricultural and Processed Food Products Export Development Authority (APEDA) reports on organic production, certification, and exports

Ministry of Agriculture & Farmers Welfare publications on organic area expansion and farmer participation

CRISIL Research reports on the Indian organic market

Government of India policy documents and Agriculture Census data

Peer-reviewed academic literature and international reports related to organic farming and sustainability

These sources ensure data reliability, policy relevance, and temporal consistency.

3.2 Period of Study

The study primarily covers the period FY 2019–20 to FY 2023–24, enabling analysis of pre-pandemic, pandemic, and post-pandemic dynamics in organic farming expansion, production volatility, and market performance.

3.3 Variables and Analytical Framework

The analysis focuses on the following key dimensions:

Farmer Structure: classification of organic farmers based on adoption motivations and market orientation

Organic Cultivated Area: growth and regional concentration of certified organic land

Organic Producer Expansion: trends in registered organic farmers under NPOP and PGS

Production Dynamics: total and category-wise organic production trends, including fibre and non-fibre crops

Market Outcomes: domestic organic market size, export orientation, and absorption constraints

Production data were analysed both including and excluding fibre crops to avoid aggregation bias and to assess food-system implications.

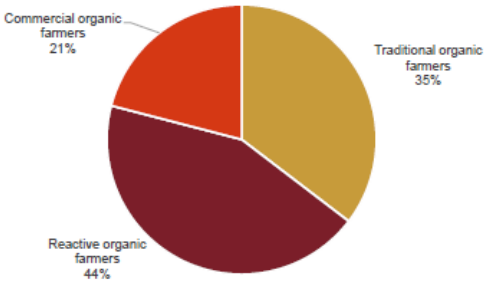
3.4 Method of Analysis

The study employs trend analysis, descriptive statistics, CAGR computation, and comparative category-wise analysis to identify structural patterns and paradoxes in India's organic farming transition. Graphical representations and tabular analysis are used to support interpretation. Special attention is given to understanding area–production mismatches arising from certification-based reporting mechanisms.

4. Analysis and Interpretation:

4.1. Structure of Organic Farming Community in India

Fig 1: Estimated share of different category of farmers practicing organic farming methods



Source: CRISIL analysis and Agriculture census 2015-16

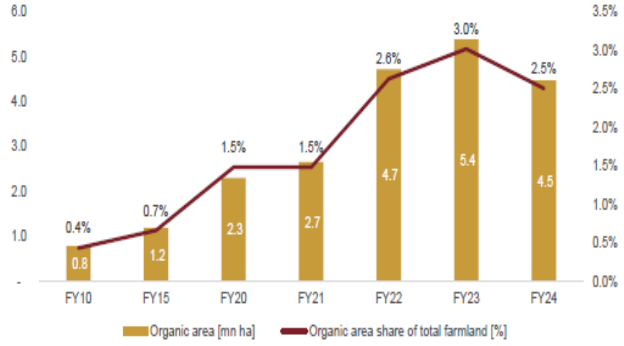
Organic farming in India is characterized by a heterogeneous farmer base, reflecting diverse motivations, production practices, and degrees of market orientation. Unlike a uniform transition model, the organic farming community in India comprises multiple categories of farmers whose engagement with organic practices varies in intensity and intent. Understanding this structural composition is critical for evaluating the sustainability and scalability of organic farming in the country.

Organic farmers in India can be understood as comprising three broad categories based on their production practices, motivations, and degree of market orientation: traditional organic farmers, reactive organic farmers, and commercial organic farmers. Traditional organic farmers are those who have historically practiced low-input or non-chemical agriculture, often due to limited access to synthetic inputs or reliance on indigenous farming knowledge systems. These farmers are predominantly located in rainfed and tribal regions and tend to follow organic practices by default rather than through formal certification. Although their farming methods are largely consistent with ecological principles of organic agriculture, their levels of market integration, access to certification, and productivity outcomes remain relatively limited.

Reactive organic farmers constitute the largest segment of India's organic farming community. These farmers adopt organic practices primarily in response to external pressures such as rising input costs, declining soil fertility, or policy incentives. Their transition is often partial and incremental, involving selective reduction of chemical inputs rather than a complete system redesign. The dominance of this group suggests that organic farming in India is frequently driven by economic necessity rather than ecological conviction, raising concerns about the long-term consistency and resilience of organic practices. Commercial organic farmers represent a smaller but more visible segment, characterized by deliberate adoption of certified organic farming with strong market orientation. These farmers are more likely to engage with certification systems, Farmer Producer Organisations (FPOs), and export markets. Their practices are relatively standardized, and they benefit from better access to extension services, credit, and market linkages. The limited share of commercial organic farmers indicates structural constraints in scaling market-driven organic farming across India. The predominance of reactive and traditional organic farmers underscores a key structural challenge: while farmer participation in organic farming is numerically large, the depth of adoption and economic integration remains uneven. This imbalance has direct implications for productivity, certification outcomes, and market development, reinforcing the need for differentiated policy and support mechanisms tailored to distinct farmer categories rather than a one-size-fits-all organic transition strategy.

4.2. Growth of Organic Cultivated Area in India

Fig 2: Growth of Organic Cultivated Area in India



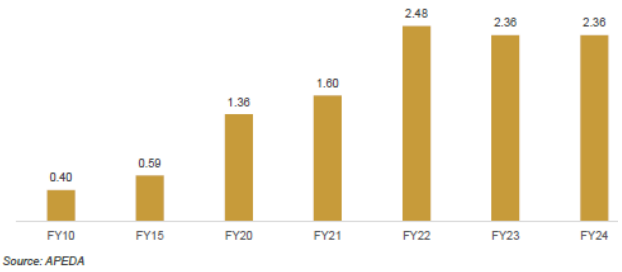
Source: The World of Organic Agriculture 2024

The expansion of organic cultivated area in India over the last decade reflects a steady policy-driven transition toward sustainable agricultural practices. As of 2023–24, the area under organic certification (excluding wild harvest areas) is estimated at approximately 4.5 million hectares, accounting for nearly 2.5% of the total agricultural land in the country. Although this share remains modest in relative terms, the absolute growth signals increasing institutional and farmer-level engagement with organic farming (APEDA, 2024).

The expansion of organic land in India has been driven primarily by government-supported initiatives such as the Paramparagat Krishi Vikas Yojana (PKVY), the Mission Organic Value Chain Development for the North Eastern Region (MOVCDNER), and various state-led organic missions. These programmes have lowered entry barriers to organic farming by providing financial incentives, input support, and group-based certification mechanisms, thereby enabling farmers particularly smallholders to convert portions of their land to organic cultivation (Paul et al., 2023; Hong et al., 2022). Organic cultivated area in India exhibits a high degree of regional concentration. Four states Madhya Pradesh, Maharashtra, Gujarat, and Rajasthan together account for nearly three-fourths of the total organically cultivated area. This concentration reflects the predominance of rainfed farming systems, relatively lower baseline chemical input usage, and stronger institutional support in these regions (Panneerselvam et al., 2013). Scholars note that organic farming tends to expand more rapidly in rainfed regions, where conventional input-intensive agriculture often yields diminishing returns (Reganold & Wachter, 2016). While the growth in organic cultivated area indicates strong policy momentum, the literature emphasizes the need to assess area expansion alongside productivity, market integration, and farmer capability to determine the sustainability of India's organic transition.

4.3. Expansion of Organic Producers in India

Fig 3: Expansion of Organic Producers in India

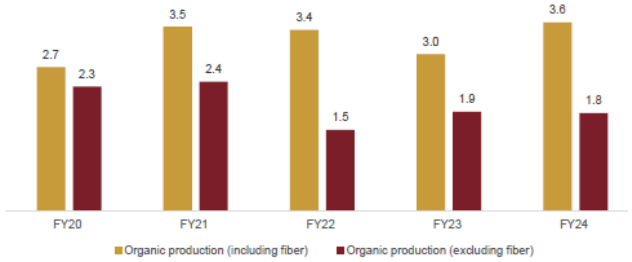


Source: APEDA

India currently hosts the largest number of organic producers globally, with approximately 2.3 million farmers registered under the National Programme for Organic Production (NPOP) and an additional 1.8 million farmers under the Participatory Guarantee System (PGS). This rapid increase in organic producers represents one of the most distinctive features of India's organic farming landscape (APEDA, 2024). The growth in organic producers has not been uniforming over time. Between 2015 and 2020, the number of organic producers increased by over 170%, primarily due to the implementation of MOVCDNER, which promoted cluster-based organic farming and the formation of Farmer Producer Organisations (FPOs) in the northeastern states. FPOs have played a pivotal role in aggregating small farmers, facilitating certification, and linking producers to markets (Hong et al., 2022; Bisht et al., 2020). A further surge in organic producer registration was observed during the post-COVID period, with a 55% increase between 2021 and 2022. This shift has been attributed to heightened consumer demand for safe and traceable food, rising costs of chemical inputs, and increased farmer awareness of ecological risks associated with conventional farming (Laishram et al., 2022; Reganold & Wachter, 2016). Despite the impressive numerical growth, the literature raises concerns regarding the depth and quality of adoption. A large proportion of registered organic producers cultivate organic crops within producer groups, while only a small fraction operates independently or engage directly with value-added markets. The presence of processors, traders, and wild operators remains limited relative to the size of the producer base, indicating weak value-chain integration (Paul et al., 2023). While the expansion of organic producers underscores India's leadership in organic participation, scholars caution that numerical growth alone does not ensure economic viability or ecological outcomes. The sustainability of this expansion depends critically on institutional support, market access, and alignment between production, certification, and consumption systems.

4.4. Trends in Organic Production in India

Fig 4: Total production of organic produces in India (mn MT):



Source: APEDA

The trajectory of organic production in India reveals a complex and uneven pattern that contrasts sharply with the steady expansion in organically cultivated area and the growing number of certified producers. Aggregate production data show that India's organic output increased consistently up to fiscal year 2021, indicating an initial phase of consolidation and scale-building within the organic sector. This upward momentum was not sustained in subsequent years, signalling deeper structural and institutional vulnerabilities within India's organic production ecosystem. A critical distinction emerges when organic production is analysed including and excluding fibre crops, particularly organic cotton. While total organic production inclusive of fibre remained relatively high in recent years, organic food production excluding fibre experienced a sharp contraction in fiscal 2022, with reported declines of nearly 37%. This divergence indicates that a substantial share of India's organic production growth has been driven by fibre crops rather than food commodities, raising concerns regarding the food-system implications of India's organic transition (APEDA, 2024). This decline in reported production coincided with a period of rapid expansion in organic cultivated area, which increased from approximately 2.7 million hectares to nearly 4.7 million hectares. This apparent contradiction reflects the nature of organic production reporting in India. Organic output figures compiled by APEDA are derived from transaction certificates issued by certification bodies, capturing only commercially traded organic produce rather than total farm-level production (Panneerselvam et al., 2013). As a result, disruptions in certification processes, trade flows, or market access can significantly affect reported production statistics without necessarily indicating changes in actual field-level output.

One of the most significant external shocks influencing organic production trends was the withdrawal of the Organic Recognition Agreement by the United States in 2021. Following this policy shift, many Indian organic operators were compelled to divert their produce to conventional markets, leading to a decline in certified organic transactions and a corresponding reduction in reported organic production (Reganold & Wachter, 2016; Paul et al., 2023). This episode highlights the vulnerability of India's organic production system to export-oriented certification regimes and international policy decisions.

Transitional challenges including yield fluctuations during conversion phases, limited availability of organic inputs, and inadequate technical and extension support have further contributed to production instability (Fess & Benedito, 2018; Clark, 2020). Collectively, these factors demonstrate that organic production outcomes in India are

shaped less by agronomic potential alone and more by certification mechanisms, market structures, and global trade linkages. While India has achieved numerical scale in organic adoption, organic production particularly for food crops remains structurally fragile. Addressing this fragility requires a strategic shift toward strengthening domestic market development, enhancing certification credibility, and providing farmer-centric production support, rather than relying predominantly on export-driven organic growth.

4.5. Category-wise Organic Production Performance in India

Category-wise organic production trend in past 5 years:

Category	FY20 (MT)	FY21 (MT)	FY22 (MT)	FY23 (MT)	FY24 (MT)	CAGR (FY20–FY24)
Fibre	3,70,709	10,37,610	18,85,390	10,87,031	17,08,822	47%
Sugar	2,33,778	7,97,828	3,23,930	7,29,505	6,99,222	41%
Cereals and Millets	82,717	32,123	42,452	3,38,486	4,11,140	1%
Oilseeds	1,06,975	65,597	47,808	4,08,330	3,22,935	–28%
Spices & Condiments	57,803	1,05,130	95,087	68,320	75,310	7%
Pulses	70,991	91,040	73,789	68,819	74,908	1%
Fresh Fruits and Vegetables	64,820	67,350	81,554	68,359	73,019	1%
Medicinal Plants Products	7,028	8,056	10,119	7,575	7,197	0.40%
Tea	44,771	42,121	42,845	39,208	37,823	–4%
Coffee	20,359	22,402	20,071	34,328	38,355	16%
Fodder	8,733	11,060	7,896	16,484	18,513	21%
Others	2,558	5,797	10,784	7,168	8,884	36%
Dry Fruits	8,481	11,500	14,489	7,730	7,051	–5%
Processed Food	2,944	4,004	6,289	4,587	5,144	14%
Flower	7,226	13,191	7,390	454	548	–48%
Tuber Products	4,853	3,135	1,484	1,963	262	–51%
Total Production (including fibre)	27,09,120	34,68,992	34,10,195	29,59,226	35,50,481	7%
Total Production (excluding fibre)	23,39,040	24,31,382	15,24,805	18,65,986	18,42,159	–8%

Category-wise analysis of organic production provides deeper insights into the structural strengths and

vulnerabilities of India's organic farming sector. While aggregate production figures offer a broad overview, disaggregated data reveal significant heterogeneity across crop categories, driven by market orientation, export dependence, and policy exposure. The recent production trends indicate that India's organic growth has been uneven, with certain categories expanding steadily while others experiencing sustained decline.

Fibre crops, particularly organic cotton, have emerged as the most dominant and resilient category within India's organic production portfolio. The fibre segment recorded consistent growth over the past five years and accounts for a substantial share of total organic output. This dominance explains why aggregate production figures (including fibre) remain relatively stable despite declines in several food crop categories. The literature suggests that organic cotton benefits from well-established export channels, relatively standardized certification processes, and stronger price realization in international markets (Reganold & Wachter, 2016; Paul et al., 2023).

In contrast, multiple food crop categories have shown declining or stagnant trends, particularly after fiscal year 2021. Oilseeds represent the most pronounced case of contraction, registering a cumulative decline with a negative compound annual growth rate (CAGR) over the review period. This downturn has been closely linked to the imposition of anti-dumping duties on Indian organic soybeans by the United States, which significantly reduced export demand. Given that India supplied a substantial share of US organic soybean imports during 2019–20, the policy shift had immediate and adverse impacts on organic oilseed production (APEDA, 2024).

Categories such as pulses, spices and condiments, and certain processed food segments have experienced production volatility or decline. The withdrawal of the US Organic Recognition Agreement in 2021 further intensified these trends, as certified organic produce in these categories was diverted to conventional markets, undermining price premiums and discouraging continued organic cultivation (Clark, 2020). Analysis of reported data indicates that more than half of the organic crop categories registered production declines following this policy shock. On the other hand, cereals and millets exhibited relatively stable or modestly positive trends, reflecting growing domestic interest in nutritionally rich and climate-resilient grains. Fruits and vegetables, while important for domestic organic consumption, displayed mixed performance, constrained by post-harvest losses, certification costs, and weak cold-chain infrastructure (Laishram et al., 2022). Taken together, the category-wise evidence highlights a key structural issue in India's organic farming landscape: over-reliance on export-oriented categories, particularly fibre and select oilseeds, has made organic production vulnerable to external policy shocks. Strengthening domestic demand, diversifying organic crop portfolios, and improving value-chain support for food crops are therefore critical for stabilizing and sustaining organic production growth in India.

4.6. Indian Organic Market Size Estimation

Despite India's prominent position in global organic production and its large base of certified organic farmers, the size of the domestic organic market remains relatively modest. Estimates indicate that in fiscal year 2023, the total Indian organic market was valued at approximately ₹16,800 crore (around USD 2 billion). This accounts for only about 1.4% of the global organic market, which was estimated at USD 142 billion in 2022, and merely 1.2% of the Indian FMCG market, valued at roughly USD 167 billion during the same period. These figures reveal a substantial disconnect between India's production potential and its domestic market absorption capacity. A key factor underlying this limited market size is the structural orientation of India's organic sector toward exports rather than domestic consumption. Although India produced approximately 3.5 million metric tonnes of organic produce (including fibre) in FY2024, exports during the same period amounted to only 0.26 million metric tonnes, representing about 7% of total production. The remaining share of organic produce is either absorbed by domestic markets at non-organic price levels or diverted into conventional supply chains due to certification constraints, weak traceability, and limited organized retail penetration. This phenomenon significantly undermines price realization and reduces incentives for farmers to sustain organic practices. Institutional challenges further shape market outcomes. While certification systems such as NPOP and PGS have expanded farmer participation, inconsistencies in labeling, traceability, and enforcement dilute market confidence. Studies emphasize that the absence of integrated value-chain models linking farmers, processors, retailers, and consumers limits the scalability of organic markets in India (Reganold & Wachter, 2016). In contrast, successful organic markets globally are characterized by strong branding, cooperative marketing structures, and policy support that stimulates demand alongside production. The evidence indicates that India's organic sector faces a market paradox: rapid expansion in production capacity without commensurate growth in domestic demand. Addressing this imbalance requires a strategic shift from production-centric policies toward market development, consumer awareness, and value-chain integration, ensuring that organic farming becomes economically viable for producers while remaining accessible to consumers.

4.7. Key Challenges in India's Organic Farming Ecosystem

Despite significant growth in the number of organic farmers and the area under organic cultivation, India's organic farming ecosystem continues to face multiple structural, institutional, and market-related challenges that constrain its long-term sustainability. These challenges operate across the production, certification, marketing, and policy dimensions, collectively shaping the outcomes of India's organic transition. One of the foremost challenges relates to certification complexity and compliance costs. Although systems such as the National Programme for Organic Production (NPOP) and the Participatory Guarantee System (PGS) have expanded coverage, certification remains time-consuming, administratively demanding, and costly particularly for small and marginal farmers. Group certification models reduce individual costs, but they often dilute

accountability and consistency in compliance, affecting market credibility. Inconsistencies in certification recognition across domestic and international markets expose farmers to policy risks, as evidenced by the adverse impacts following changes in organic recognition agreements with major importing countries. A second critical challenge concerns production-related constraints during the transition phase. Organic conversion typically involves a temporary decline in yields, increased labor requirements, and greater management complexity. Many farmers lack access to reliable organic inputs, localized technical knowledge, and extension services tailored to organic systems. Inadequate research on region-specific organic practices and crop varieties further limits productivity gains. As a result, farmers particularly those classified as reactive organic adopters may revert to conventional practices when short-term economic pressures intensify. Market access and price realization represent another major bottleneck. While India produces a substantial volume of organic output, only a small fraction is sold as certified organic, with the remainder entering conventional markets due to weak procurement systems, limited organized retail penetration, and poor traceability mechanisms. Price-sensitive domestic consumers, coupled with low awareness and trust in organic labels, restrict demand growth. This undermines the economic incentives required for farmers to sustain organic practices and discourages investment in value addition and processing. Institutional and policy-related challenges further compound these issues. Organic farming policies in India have largely emphasized area expansion and farmer enrollment, often without parallel investment in market development, logistics, and consumer education. Fragmented policy implementation across states leads to uneven outcomes, while limited coordination between agriculture, food processing, and commerce departments weakens value-chain integration. Over-reliance on export markets has also increased vulnerability to international trade shocks, affecting category-wise production stability. Value-chain integration and organizational capacity remain weak. Although Farmer Producer Organisations (FPOs) have shown promise in aggregating organic produce and improving bargaining power, their coverage and operational efficiency are uneven. Constraints related to professional management, working capital, and market linkages limit their effectiveness in scaling organic value chains.

5. Discussion: India's Organic Farming Paradox

The findings of this study reveal a fundamental paradox at the core of India's organic farming transition. On one hand, India has emerged as a global leader in organic agriculture in terms of the number of organic producers and the area brought under organic certification. On the other hand, organic farming continues to occupy a marginal position within the country's broader agricultural and food system, with limited contributions to domestic consumption, uneven production outcomes, and fragile market integration. This disconnect highlights that numerical expansion alone is insufficient to ensure a sustainable organic transition. A key dimension of this paradox lies in the structure of adoption. The dominance of reactive and traditional organic farmers suggests that organic farming in India is often driven by economic distress, rising input costs, or policy incentives rather than long-term ecological or market-oriented strategies. While such adoption expands participation, it also results in partial or inconsistent implementation of organic practices, limiting productivity gains and certification credibility. This helps explain why growth in organic area has not translated into proportionate increases in certified organic output, particularly for food crops. Another critical aspect of the paradox is the area–production mismatch. The analysis shows that organic cultivated area has expanded steadily, yet organic production especially when fibre crops are excluded has exhibited volatility and decline during certain periods. This divergence reflects the influence of certification-based reporting systems, which capture commercially transacted organic output rather than actual farm-level production. External shocks such as changes in export recognition agreements or market access conditions can significantly distort production statistics without necessarily indicating agronomic failure. The paradox is further reinforced by the production–market disconnect. Despite producing millions of tonnes of organic output annually, India's domestic organic market remains small, accounting for a minimal share of the FMCG sector. The majority of organic produce either enters conventional markets or remains underpriced due to weak traceability, limited organized retail penetration, and low consumer trust in organic certification. This undermines price realization for farmers and weakens the economic rationale for sustained organic cultivation.

From a policy perspective, the findings suggest that India's organic strategy has been production-centric rather than market-centric. Government initiatives have successfully mobilized farmers and expanded certified area but have not sufficiently addressed downstream constraints such as value-chain development, consumer awareness, and institutional coordination. Over-reliance on export markets has further exposed the organic sector to international policy risks, as evidenced by category-wise production declines following trade disruptions.

India's organic farming paradox underscores the need for a reorientation of organic policy and practice. Sustainable organic growth requires moving beyond headline indicators of participation toward deeper integration of ecological integrity, economic viability, and market development. Without such alignment, organic farming risks remaining a fragmented and vulnerable niche within India's agricultural landscape, despite its significant scale and potential.

6. Conclusion

This study examined the evolution, structure, and performance of organic farming in India by analysing farmer composition, cultivated area, production trends, and market outcomes. The findings highlight that India's organic farming transition is marked by a clear paradox: while the country has achieved global prominence in terms of the number of organic producers and the extent of organically certified land, organic farming continues to play a limited role in domestic food systems and

agricultural markets. The analysis demonstrates that growth in organic farming has been largely policy-driven, with significant emphasis on farmer enrollment and area expansion through certification-based programs. This expansion has not been accompanied by commensurate improvements in organic food production, market penetration, or farmer income stability. Production trends reveal considerable volatility, particularly when fibre crops are excluded, underscoring the vulnerability of organic food categories to certification mechanisms, export dependence, and international policy shocks. The small size of India's domestic organic market, relative to both global organic markets and the national FMCG sector, reflects persistent constraints related to consumer awareness, price sensitivity, trust in certification systems, and weak value-chain integration. As a result, a large proportion of organic produce is absorbed into conventional markets, diluting price premiums and weakening incentives for farmers to sustain organic practices. This outcome disproportionately affects small and marginal farmers, who face higher transition risks and limited capacity to absorb short-term income fluctuations. The study underscores that the sustainability of organic farming in India cannot be ensured through expansion of certified area alone. Instead, a systems-oriented approach is required one that integrates production support, credible certification, domestic market development, and institutional coordination. Strengthening Farmer Producer Organisations, improving traceability and branding, investing in organic-specific research and extension services, and fostering consumer awareness are essential to align ecological objectives with economic viability. Organic farming in India holds significant potential as a pathway toward environmentally sustainable and socially inclusive agriculture. Realizing this potential requires a strategic shift from a narrow focus on adoption metrics toward a holistic framework that balances ecological integrity, farmer livelihoods, and market development. Future research may build on this study by examining farm-level profitability, consumer behaviour, and region-specific organic value-chain models to inform more effective and resilient organic farming strategies in India...

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