

Low-Input, High-Impact: How Mann Deshi's Climate-Friendly Practices Drive Economic Growth

Introduction

Indian agriculture is a vital part of the nation's economy, yet it faces enduring challenges such as land degradation (affecting 30–32% of cultivable land), rising input costs (with fertilizer prices tripling in recent years), limited access to Minimum Support Prices (reaching only 7% of farmers), and fragmented landholdings that constrain profitability and innovation. These issues are further intensified by climate change, which is disrupting monsoon patterns and increasing the frequency of extreme weather events—directly impacting rainfed crop yields and smallholder resilience.

We recognize that addressing these complex and interconnected issues requires more than isolated interventions. A comprehensive, scalable model is needed—one that integrates scientific methods, leverages local knowledge, and strengthens market access, all while promoting climate resilience and economic sustainability.

As student researchers from the Madras School of Social Work, we undertook a comprehensive field study to explore one such model: Mann Deshi's low-input, high-impact, climate-friendly agricultural framework. Our research employed a mix of open-ended questionnaires, expert interviews, and focus group discussions, allowing us to gather both qualitative and quantitative data from multiple stakeholders. We analyzed our findings using thematic analysis and descriptive statistics, and we contextualized the results to assess the model's effectiveness and broader relevance.

In this white paper, *“Low-Input, High-Impact: How Mann Deshi's Climate-Friendly Practices Drive Economic Growth,”* we present the key components of the Mann Deshi model—including the contributions of Soil Sakhis, soil testing services, agronomist support, community radio, and Farmer Producer Companies. We also reflect on how these elements work together to reduce costs, enhance incomes, and build resilience. Finally, we consider how such models can be adapted and scaled by institutions, NGOs, and policymakers to support sustainable agricultural development across India.

1. Indian Agriculture and Challenges

Indian agriculture plays a significant role in the nation's economy, contributing 17.24 percent of the total Gross Value Added (GVA), which equates to ₹ 4,725,223 crore for the year 2023-24, according to APEDA data. The sector also boasts substantial export figures, with total agricultural exports reaching US \$ 48.76 billion, representing 11.16 percent of India's merchandise exports in the same period. Notably, the export of fruits and vegetables has shown strong growth, reaching US \$ 3.9 billion, with a 47.3 percent growth over the past five years, as per outlook data.

Despite its promising contributions to the economy, Indian agriculture faces significant challenges. Land degradation due to unsustainable practices threatens long-term productivity. Rising input costs, particularly for fertilizers and seeds, squeeze farmers' profit margins. Market access and pricing remain volatile, with many farmers struggling to receive fair compensation for their produce. Additionally, the prevalence of small, fragmented landholdings hinders economies of scale and limits the adoption of efficient technologies. These interwoven issues collectively pose obstacles to the sector's sustainable growth and the well-being of the farmers.

- **Land Degradation:** Soil quality is deteriorating. An estimated 30–32% of India's land area is degraded (through erosion, salinity, nutrient loss, etc.). Continuous intensive cropping, deforestation and water overuse have depleted soil fertility in many regions. This undermines productivity and makes land restoration a priority (Bhatnagar, 2024)
- **Rising Input Costs:** Farm input costs (seeds, fertilizers, diesel, labor) are rising faster than crop price support. Analysts note that high input prices, combined with stagnant or low output prices, squeeze profit margins. The cost of DAP fertiliser has tripled, rising from Rs 450, to Rs 1350 per bag now. The prices for urea however, have remained the same due to government intervention as it continues to give heavy subsidies on the essential nutrient. (Pallavi Singhal 2023, Money Control)



- **Market Access and Pricing:** Many smallholders lack direct access to markets or price information. Lacking storage or value-addition infrastructure, farmers sell at distress prices to meet urgent needs. Only seven per cent access the Minimum Support Price (MSP), with most facing fluctuating, middleman-manipulated local prices (Shanta Kumar Committee, 2015). Institutional exclusion further limits their bargaining power or policy influence (NIAM, 2020)
- **Small and marginal farmers:** Over 85 per cent of India's agricultural population, cultivate nearly 45 per cent of the net sown area (Agricultural Census 2015-16). Yet, small landholdings yield insufficient returns for a decent livelihood. Without reliable irrigation, they depend on erratic monsoons, where a single crop failure spells financial ruin. Rising costs for fertilisers, seeds, and fuel shrink margins, leaving little for reinvestment (RBI Handbook, 2022).
- **Climate Change:** Climate change poses a significant threat to Indian agriculture, primarily through its impact on the monsoon. Rainfed crop yields are highly susceptible to the variability of the monsoon, with statistical modeling of rice production revealing that monsoon weather accounts for approximately one-third ($\approx 33\%$) of the year-to-year variation in rice yields (Bowden, Foster, & Parkes, 2023). This sensitivity leaves smallholder farmers, particularly those in arid regions, exceptionally vulnerable. Research conducted in Uttar Pradesh illustrates this vulnerability further, showing that farmers in drought-prone regions like Bundelkhand (Jhansi district) are "highly vulnerable" to climate change due to erratic rains and heat, while those in better-watered areas like Barabanki fare better (Jatav, 2024). Beyond erratic monsoons, the changing climate also brings an increased frequency of cyclones and heat stress, further altering the agricultural landscape and posing significant challenges to the livelihoods of farmers and overall food security.

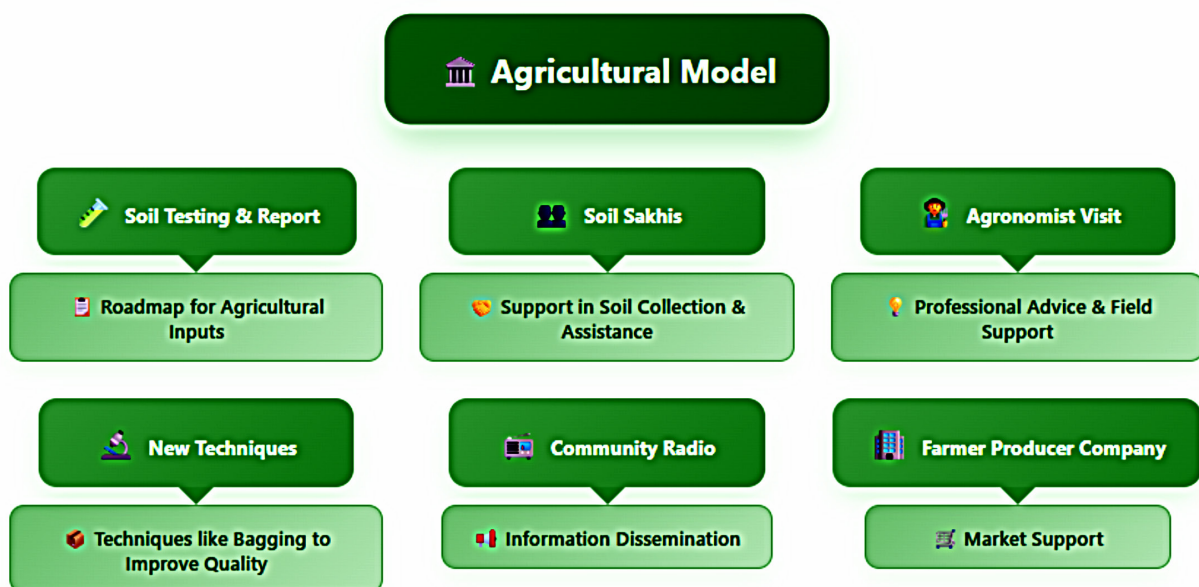


2. Mann Deshi: Agricultural Model

In the heart of rural Maharashtra, the Mann Deshi Foundation embarked on a mission to uplift smallholder farmers, particularly women, weaving a tale of empowerment and agricultural transformation. Their approach wasn't a simple handout, but a carefully constructed model of support, addressing the very roots of farming challenges.

At the ground level, a network of locally trained women, affectionately known as "Soil Sakhis," emerged as trusted guides. They walked alongside farmers, offering initial wisdom on nurturing their land. To delve deeper into the secrets of the soil, accessible testing services provided farmers with a scientific understanding of their fields, paving the way for informed decisions about what their land truly needed.

Experienced agronomists then stepped in, acting as seasoned mentors. With soil reports in hand, they offered personalized advice, suggesting innovative techniques like bagging to protect precious harvests and double drip irrigation to make every drop of water count.





But knowledge wasn't confined to individual farms. The airwaves carried a vital lifeline of information through community radio broadcasts. Farmers in even the most remote corners tuned in to hear timely updates on best practices, learn how to protect their crops from pests and diseases, stay informed about the ever-changing weather, and gain insights into market prices. This proactive sharing of knowledge empowered them to become astute decision-makers.

The story didn't end at the farm gate. Recognizing the power of unity, Mann Deshi fostered the growth of Farmer Producer Companies (FPCs). These collective allowed smallholders to pool their harvests, negotiate better prices, and bypass the complexities of intermediaries. By strengthening their market access, Mann Deshi ensured that farmers received a fairer share of their hard work, cultivating not just crops, but also a more sustainable and resilient agricultural future.

2.1 Soil Sakhi's

Mann Deshi's agricultural advancement is fundamentally driven by its network of "Soil Sakhis" – carefully selected and rigorously trained women from rural communities. These women are not merely data collectors; they are empowered agents of change, strategically positioned at the intersection of traditional farming practices and modern agricultural science. Their training focuses intensely on the precise methodologies of soil sample collection, emphasizing adherence to scientific protocols to guarantee the accuracy and reliability of the gathered data. This meticulous approach to sample acquisition forms the bedrock of the entire soil analysis process.

Beyond their technical expertise, Soil Sakhis function as a vital "nudge unit" within their communities. They proactively engage with farmers, leveraging their local credibility and established relationships to advocate for the adoption of scientific agricultural practices, with a strong emphasis on the crucial first step of soil testing. Their persistent encouragement and persuasive communication are instrumental in overcoming traditional hesitations and fostering a willingness among farmers to embrace data-driven decision-making.





The Soil Sakhis serve as a vital logistical link, efficiently transporting the collected soil samples from the farmers' fields to Mann Deshi's analytical laboratory. This seamless transfer bridges the geographical and knowledge gap that often exists between agricultural research and on-the-ground farming realities. By facilitating this connection, Soil Sakhis ensure that farmers gain access to the critical scientific data and tailored recommendations necessary to optimize their farming practices, improve soil health, and ultimately enhance their yields and livelihoods. Their role is therefore multifaceted, encompassing technical proficiency, community engagement, and logistical coordination, making them indispensable catalysts for agricultural progress within the Mann Deshi ecosystem.

2.2 Soil Testing and Report

Mann Deshi Foundation demonstrates a profound commitment to agricultural advancement through the operation of a state-of-the-art laboratory. This facility is staffed by highly skilled and experienced lab technicians who meticulously perform comprehensive soil testing procedures. These rigorous analyses delve into the intricate properties of the soil, evaluating no fewer than 14 distinct parameters. This detailed investigation yields a holistic understanding of the soil's fundamental composition, encompassing crucial elements and characteristics that directly impact agricultural productivity and plant health.

Upon the completion of the exhaustive soil analysis, Mann Deshi goes a step further by providing farmers with actionable insights. Their team includes experienced agronomists who leverage the detailed soil data to generate highly specific and personalized crop reports. These reports are not generic; instead, they are carefully tailored to the individual farmer's unique requirements and agricultural objectives.

To illustrate this personalized approach, consider a farmer aspiring to cultivate pomegranates. In such a scenario, the agronomist would develop a bespoke report focusing on the specific needs of pomegranate cultivation within the context of the farmer's land. This report includes meticulously calculated recommendations for agricultural inputs, moving beyond





general advice to provide precise quantities of fertilizers, nutrients, and other necessary resources. These recommendations are further refined by considering the specific stages of the pomegranate crop cycle, ensuring that the right inputs are applied at the optimal times for healthy growth and maximum yield. Moreover, the report takes into account the exact dimensions of the farmer's landholding, guaranteeing that input quantities are appropriately scaled for efficient and cost-effective cultivation. This level of detail empowers farmers with the knowledge and guidance necessary to optimize their farming practices, leading to improved crop yields, enhanced soil health, and ultimately, greater economic sustainability.

2.3 Agronomist Visit and New Techniques

As part of Mann Deshi's comprehensive agricultural support system, agronomists play a crucial role in ensuring the success of scientific farming practices. Agronomists conduct regular visits to farmers' fields to closely monitor crop health and provide timely interventions. During these visits, they address farmers' doubts and queries, offering expert guidance on various agricultural matters. Furthermore, agronomists assist in pest invasion control, advising on effective and sustainable methods to protect crops. These consistent interactions help ensure that scientific agricultural techniques are correctly implemented and maintained, leading to healthier crops and improved yields.

To enhance farming practices, Mann Deshi's agronomists suggest and promote a variety of new techniques to farmers. These include the use of crop covers to protect crops from harsh weather and pests, the application of enriched Farm Yard Manure (FYM) to improve soil fertility, and the implementation of double drip irrigation systems for efficient water usage. Additionally, agronomists advise on bagging techniques to ensure proper storage and increase the marketability of produce.

The soil testing was a fundamental part, it was extremely helpful, 50% of fertilizer use is reduced.

Now, I am earning more!

- Usha Kisan Mane, Farmer.





2.4 Community Radio

Community radio plays a vital role in Mann Deshi's agricultural outreach. The radio programs feature shows focusing on practical cropping techniques, innovative cropping ideas, and farm-based advice. Additionally, these broadcasts provide essential market details, including up-to-date prices in nearby markets like Solapur, Pune, Pandarpur, and Kolhapur, enabling farmers to make informed decisions about selling their produce.

Mann Deshi's community radio extends its support by featuring guests who share their experiences and knowledge. These programs are designed to motivate women to explore value addition in their agricultural produce and become entrepreneurs, fostering economic independence and growth within the community.

2.5 Farmer Producer Company

The Farmer Producer Company (FPC) at Mann Deshi serves as a cornerstone of economic empowerment for the agricultural community, proactively working to enhance the livelihoods of farmers and substantially elevate their influence within the broader marketplace. This is achieved through a comprehensive strategy that includes the delivery of meticulously tailored workshops designed to optimize farming practices, enhance yields, and improve overall farm management. These educational initiatives equip farmers with the knowledge and skills necessary to adopt modern agricultural techniques and make informed decisions regarding their operations.

Operationally, the FPC plays a crucial role in streamlining the agricultural supply chain by directly procuring produce from its member farmers. This direct engagement eliminates the reliance on multiple intermediaries, thereby ensuring a fairer return for the farmers' hard work. Furthermore, by aggregating the individual harvests of numerous farmers, the FPC achieves a significant increase in the overall volume of produce, which substantially strengthens their collective market power and allows them to negotiate more favorable terms with buyers.





The Vibrant Mumbai Weekend Market: A Confluence of Rural Prosperity and Urban Demand: Imagine the bustling atmosphere of the vibrant Mumbai weekend market, a dynamic and deeply meaningful connection that directly links the dedicated efforts of rural farming communities with the vibrant energy of the urban heart. The market stalls present a breathtaking tapestry of colors and textures, with glistening crimson pomegranates standing out as tangible symbols of the care and dedication poured in by women farmers. This lively marketplace transcends its function as a mere trading post; it acts as a vital meeting point where the essence of the countryside seamlessly blends with the urban landscape. By providing a direct channel for farmers to sell their produce, this initiative elegantly bypasses intermediaries, ensuring that the rewards of their strenuous labor directly benefit the hardworking individuals who cultivate the land. This direct interaction fosters a sense of connection and mutual appreciation between producers and consumers.

Investing in Future Growth and Sustainable Practices: Driven by an unwavering commitment to growth and long-term sustainability, the FPC actively invests significant resources in research and development for value-added products. This forward-thinking approach explores the exciting potential for diversification and enhanced profitability within various agricultural sectors, including goat milk, pomegranate, mango, and millet. By focusing on innovation and market responsiveness, the FPC aims to create new avenues for income generation and ensure the long-term viability of farming in the region. Furthermore, they are strong proponents of value addition at the farm level, empowering farmers to process and package their goods, thereby cultivating increased incomes and fostering a culture of sustainable agricultural practices that prioritize environmental stewardship and resource efficiency

A Poetic Exchange: Connecting Soil to Soul: Visualize the Mumbai market as more than just a commercial space; it embodies a vibrant connection, a symbolic and profound exchange that flows poetically from the fertile soil of Maharashtra to the discerning palate of Mumbai. It represents a tangible bridge across distances, effectively linking rural producers with urban consumers and fostering a sense of shared prosperity. Ultimately, this initiative contributes to a brighter and more sustainable future for the dedicated hands that tirelessly toil the land, ensuring their crucial role in the region's economy and food security is recognized and rewarded.



Transforming Farmers Income

Introduction

Mann Deshi's multifaceted approach has demonstrably transformed farmers' incomes. Their initiatives, such as soil testing, detailed reports, and expert consultations, have led to a significant reduction in input costs, proving that informed practices bear fruit. Furthermore, the introduction of new techniques and timely interventions by agronomists have dramatically raised both the yield and quality of produce. These improvements have not only boosted profits but have also brought tangible happiness and satisfaction to the farming communities they serve.

3.1 Thematic Analysis of Farmers Interview

The qualitative data collected through interviews and focus group discussions revealed several recurring themes that highlight the effectiveness and transformative impact of Mann Deshi's low-input, high-impact agricultural model.

Crop variety and selection emerged as a key theme. Many farmers reported that soil testing played a vital role in confirming the appropriateness of their chosen crops or guiding them to more suitable alternatives. For instance, one farmer noted that the soil testing results affirmed his decision to cultivate onions, while another reported adopting mango cultivation based on expert recommendations. Others, like Santhosh, were first-time farmers who selected ginger and sugarcane after conducting soil analysis on previously uncultivated land.

A second strong theme was **the usefulness of soil testing** itself. Across all respondents, soil testing was viewed as a critical intervention that enabled more informed decision-making. Farmers emphasized that it helped them determine appropriate fertilizer quantities and crop types, resulting in more scientific and efficient agricultural practices. As one farmer put it, "Scientific agriculture is not a choice but a solution." Several described soil testing as a fundamental first step in shifting toward more sustainable farming.





Closely tied to this was the theme of **input cost reduction**. Most farmers reported significant savings on fertilizers and pesticides, with cost reductions ranging from 22% to as high as 75%. One farmer shared that their expenditure dropped from ₹23,000 to just ₹4,000–₹6,000 after adopting soil-based recommendations. Another noted savings of ₹50,000 in pesticide costs alone. These testimonies underscore how precision agriculture can drastically cut input expenses without compromising productivity.

Alongside cost savings, **yield improvement** was widely reported. Farmers shared quantifiable outcomes, such as an increase in yield from 11 quintals to 19 quintals or an additional 1 ton of pomegranate harvested. The link between scientific planning and better productivity was consistently reinforced across responses.

Another important insight was the gradual **shift toward sustainable practices**. Several farmers mentioned transitioning to organic inputs like farmyard manure and vermicompost, and reducing chemical fertilizer and pesticide usage. These practices not only support environmental health but also improve long-term soil quality.

Finally, a theme of **climate awareness and openness to technology adoption** surfaced throughout the data. Many farmers acknowledged that changing weather patterns made traditional methods less reliable and stressed the need for scientific interventions. There was also a clear willingness to embrace technology, such as soil testing and climate-based crop planning, as essential tools for future resilience.

These themes, taken together, illustrate how the Mann Deshi model fosters data-driven, climate-resilient, and economically viable farming practices. The farmers' voices affirm the model's real-world relevance and its potential for wider replication.





3.2 Quantitative Analysis

To assess the economic and agronomic impact of Mann Deshi's low-input, high-impact agricultural model, we conducted a quantitative analysis of data collected from 30 farmers. The dataset included variables such as input costs, crop production (in tonnes), and earnings (in lakhs), recorded both before and after soil testing. These farmers cultivated a range of crops including grapes, pomegranate, tomato, and ginger, with landholdings ranging from 1 to 3.5 acres.

The analytical methodology involved calculating summary statistics (mean values) to observe broad patterns, followed by paired sample t-tests to statistically evaluate the significance of changes in key indicators. This approach enabled us to measure whether observed differences in input cost, yield, and income were not just descriptive but also statistically meaningful.

The findings from this analysis provide empirical evidence of the benefits of soil testing, revealing statistically significant improvements in farmer outcomes across all key metrics.

Metric	Before Soil Testing	After Soil Testing
Input Cost (₹)	₹68,717	₹51,817
Production (Tonnes)	13.32	17.46
Earning (in Lakhs ₹)	₹9.15	₹13.98

Source: NRCP Report and In-Depth Interview

The soil testing was a fundamental part, it was extremely helpful, 50% of fertilizer use is reduced. Now, I am earning more!

The comparative analysis of average values before and after soil testing reveals a clear positive trend in farm-level economics. On average, farmers reported a reduction in input costs from ₹68,717 to ₹51,817, indicating a savings of approximately ₹16,900 per farmer. Simultaneously, production per farmer increased from an average of 13.32 tonnes to 17.46 tonnes, reflecting improved yield efficiency and better farm management. Most notably, the average earnings per farmer rose significantly from ₹9.15 lakhs to ₹13.98 lakhs, suggesting that the combination of cost reduction and productivity enhancement led to substantial income gains. These mean-based trends demonstrate that the adoption of soil testing has both agronomic and financial benefits for smallholder farmers.



To assess the statistical significance of the observed changes, paired t-tests were conducted for input cost, production, and earnings before and after the adoption of soil testing. The results indicate a statistically significant reduction in input costs ($t = 9.20$, $p < 0.00001$), confirming that farmers were able to reduce unnecessary expenditure after receiving soil-specific recommendations. In terms of production, the t-test yielded a statistically significant increase ($t = -6.77$, $p < 0.0001$), affirming that soil testing contributed to higher yields. Similarly, the rise in farmer earnings was statistically significant ($t = -6.10$, $p < 0.0001$), suggesting a strong link between scientific input optimization and income enhancement. These results provide robust empirical evidence that soil testing is not only agronomically effective but also economically transformative for small and marginal farmers.

Indicator	t-statistic	p-value	Result
Input Cost	9.2	1.70×10^{-6}	Significant decrease
Production	-6.77	3.06×10^{-5}	Significant increase
Earnings	-6.1	7.70×10^{-5}	Significant increase

Source: NRCP Report and In-Depth Interview

Increase in Crop Production:

Average production rose from 13.32 tonnes to 17.46 tonnes, a 31% improvement. This suggests better alignment between soil health and crop management practices.

Increase in Farmer Earnings:

Average income increased from ₹9.15 lakhs to ₹13.98 lakhs, a gain of over ₹4.8 lakhs per farmer. Earnings growth was driven by both higher yields and reduced input costs.

Statistically Significant Impact:

Paired t-tests showed highly significant improvements in all three indicators ($p < 0.0001$). Confirms that soil testing has a measurable and meaningful effect on farm economics.

Economically Transformative Tool:

The results support the view that scientific soil testing is a powerful intervention for small and marginal farmers, leading to both agronomic and financial gains.





3.3 Major Findings

From Thematic Analysis (Qualitative Insights)

- Crop Suitability & Selection:

Soil testing helped farmers validate or shift to more appropriate crops (e.g., mango, ginger, pomegranate), even for first-time cultivators.

- Crucial Role of Soil Testing:

Universally regarded as a fundamental and transformative tool, soil testing empowered farmers with scientific insights to optimize inputs and improve decision-making.

- Significant Input Cost Reduction:

Farmers reported reducing fertilizer and pesticide usage by 22% to 75%, saving as much as ₹50,000 in some cases.

- Yield Enhancement:

Notable yield gains were cited, such as increases from 11 to 19 quintals, or an extra 1 ton in total output, highlighting productivity benefits.

- Transition to Sustainable Practices:

Some farmers shifted to farmyard manure, vermicompost, and reduced chemical dependency, indicating a movement toward environmentally friendly agriculture.

- Climate Awareness and Tech Adoption:

Farmers increasingly view scientific tools and technology (like soil testing) as necessary to cope with erratic weather and changing climatic conditions.

From Quantitative Analysis (Statistical Insights)

- Input Cost Decrease:

Average input costs dropped from ₹68,717 to ₹51,817—a reduction of ₹16,900 per farmer.

- Production Increase:

Average yield increased from 13.32 to 17.46 tonnes—a 31% improvement.

- Earnings Increase:

Farmers' average income rose from ₹9.15 lakhs to ₹13.98 lakhs, marking a gain of ₹4.8 lakhs per farmer.

- Statistical Significance:

All changes in input cost, production, and income were found to be statistically significant ($p < 0.0001$) using paired t-tests, affirming that these improvements were not due to chance.



Climate Impact of Mann Deshi Foundation's Low-Input Agricultural Model

Agriculture is both a contributor to and a victim of climate change. In India, where smallholder farmers dominate the agricultural landscape, unsustainable input use—especially nitrogen-based fertilizers and synthetic pesticides—has led to soil degradation and greenhouse gas (GHG) emissions. In response, the Mann Deshi Foundation has pioneered a low-input, high-impact, climate-resilient agricultural model focused on empowering farmers through soil testing, localized advisories, and sustainable input use. This part explores the climate benefits of this model, drawing from qualitative interviews and quantitative data collected from farmers who adopted the practices.

4.1 Carbon Emissions in Agriculture: The Problem

Synthetic fertilizers and pesticides have high carbon footprints. Urea, for example, emits between 5.6–6.9 kg CO₂e per kg due to both manufacturing and field-level emissions. Excessive use of nitrogen leads to nitrous oxide (N₂O) release—a greenhouse gas nearly 300× more potent than CO₂. Furthermore, pesticide production emits between 14–23 kg CO₂e per kg, depending on the type.

India's agricultural systems suffer from heavy nitrogen overuse. Mann Deshi's model intervenes directly in this area by replacing guesswork with soil science, helping farmers apply inputs more precisely, thereby reducing emissions at both the production and application stages.

4.2 Carbon Emission Reduction: Evidence from the Field

Metric	Value
Average Input Cost Reduction (₹)	₹16,900
Average Income Increase (₹ in Lakhs)	₹4.83 lakhs
Average Carbon Emission Reduction (tonnes CO ₂ e)	0.56 tonnes

This data, derived from a sample of farmers practicing Mann Deshi's model, shows a clear environmental and economic impact. Farmers not only saved on costly inputs but also curbed their carbon emissions by over half a tonne each, making agriculture more climate-aligned.

Source: NRCP Report and In-Depth Interview

4.3 Qualitative Insights: Farmer Voices on Climate and Sustainability

In-depth interviews and focus group discussions further reinforce the carbon narrative. Farmers consistently shared that soil testing reduced fertilizer and pesticide use by 22% to 75%, aligning directly with emission reductions. One farmer noted:

"Earlier I used urea and DAP without knowing the quantity. Now I apply only what is needed, and my costs and carbon are down."

Additionally, several farmers have transitioned toward organic inputs like farmyard manure and vermicompost, which have significantly lower environmental impacts.

4.4 Qualitative Insights: Farmer Voices on Climate and Sustainability

Beyond direct emission reductions, the Mann Deshi model fosters climate-conscious behavior. Farmers have reported:

- Increased awareness of climate variability
- Greater openness to scientific advice
- Willingness to adopt resource-efficient technology

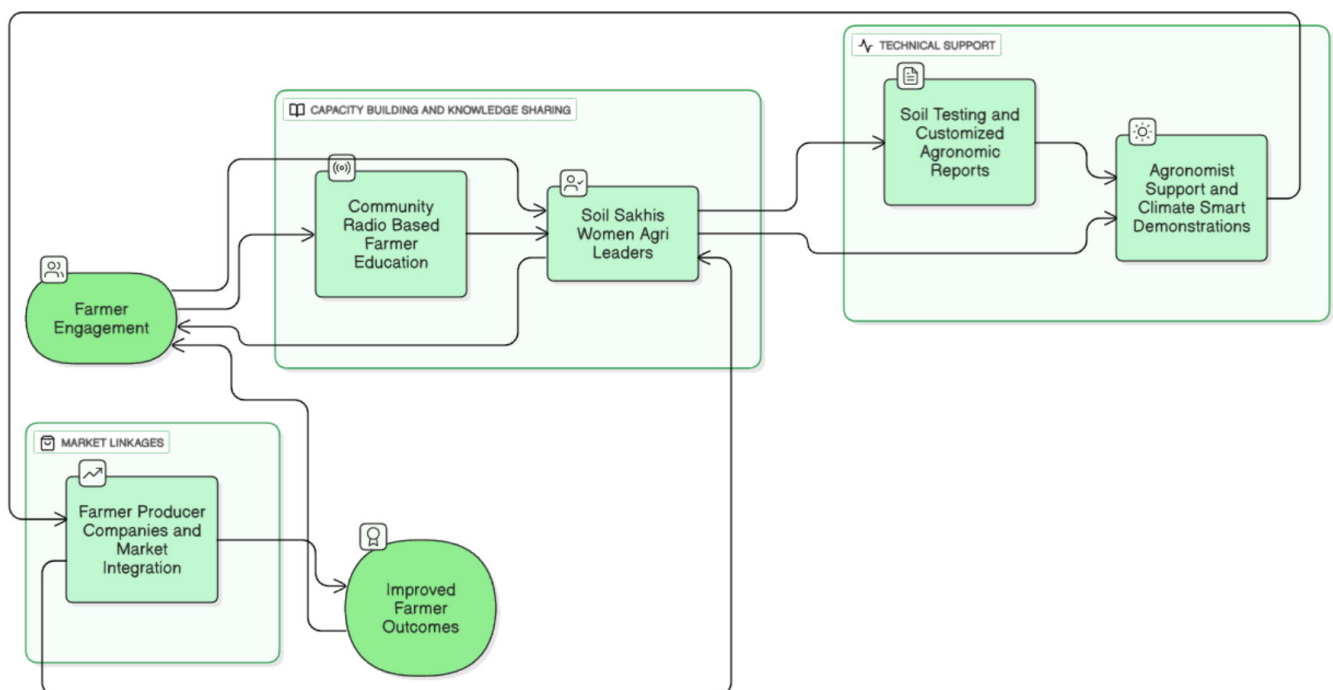
This behavioral shift is just as critical as the numbers, it marks the beginning of a cultural transition toward climate-smart farming in semi-arid regions.



Replication Roadmap for Scaling Mann Deshi's Low-Input, High-Impact Agricultural Model

The Mann Deshi Foundation's agricultural model is a proven approach to enhancing farm productivity, economic resilience, and climate sustainability. Rooted in low-input, data-driven practices, it empowers smallholder farmers, particularly women through community-led interventions and targeted agronomic support.

To facilitate its adoption across different regions, this replication roadmap outlines the model's five core components and provides a detailed, step-by-step guide for implementation by state governments, non-governmental organizations (NGOs), rural development institutions, and private partners.



Mann Deshi's Agricultural Model

5.1. Core Components of the Mann Deshi Model

The Mann Deshi model consists of five interrelated elements:

- Soil Sakhis (Women Agri-Leaders)
- Soil Testing and Customized Agronomic Reports
- Agronomist Support and Climate-Smart Demonstrations
- Community Radio-Based Farmer Education
- Farmer Producer Companies (FPCs) and Market Integration

5.2 Component-Wise Replication Strategy

5.2.1. Soil Sakhis: Enabling Last-Mile Agricultural Outreach


Objective:

To develop a grassroots network of trained women leaders who promote scientific agriculture and serve as the first point of contact for farmers.

Steps for Replication:

- 1. Identification Criteria:** Select literate women from within local SHGs or community groups who possess strong social credibility.
- 2. Training Program (2–3 weeks):**
 - Soil sampling techniques
 - Safe handling and labeling protocols
 - Recordkeeping and farmer engagement techniques
- 3. Resource Provision:** Provide soil collection kits, logbooks, gloves, and transport support.
- 4. Incentivization:** Offer performance-linked honorariums based on metrics such as samples collected and farmer follow-up success.

Implementation Guidelines:

- Utilize SHG networks for mobilization.
 - Monitor adoption rates of soil testing and soil-based agriculture as performance indicators.
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5.2.2. Soil Testing and Customized Recommendations

Objective:

To generate science-backed soil health cards and input plans tailored to individual farm plots.

Steps for Replication:

- **Infrastructure Development:** Establish basic regional soil labs or partner with universities, KVKs, or CSR-supported labs.
- **Testing Parameters:** Analyze macro (NPK), micro nutrients, pH, electrical conductivity (EC), organic carbon, and moisture retention capacity.
- **Report Design:** Include crop-specific nutrient schedules. Provide seasonal recommendations and fertilizer usage calendars.
- **Delivery Mechanism:** Soil Sakhis hand-deliver reports or distribute digital versions via mobile platforms.

Implementation Guidelines:

- Ensure report accessibility through QR codes or mobile-compatible formats.
- Use visuals and local language for low-literacy populations.

5.2.3. Agronomist Support and Climate-Smart Agriculture

Objective:

To reinforce soil-based recommendations and promote sustainable practices through regular field visits and demonstration plots.

Steps for Replication:

- **Deployment:** Appoint one agronomist for every 200–300 farmers.
- **Interaction Protocol:** Schedule regular village visits (1–2 per month) to guide farmers on pest management, irrigation, and seasonal planning.

Recommended Practices:

- Promote judicious input use in line with soil health data.
- Introduce low-carbon solutions such as organic inputs and mulching.



5.2.4. Community Radio for Agricultural Knowledge Dissemination

Objective:

To provide timely and localized agricultural information to farmers, particularly in remote and underserved areas.

Steps for Replication:

- **Media Partnerships:** Collaborate with existing community radio (CR) or FM stations.
- **Program Content Development:**
 - Weekly shows on soil health and fertilizer management
 - Climate updates, rainfall forecasts, and crop advisories
 - Success stories from farmers and market rate information
- **Farmer Engagement:** Enable interaction through phone-ins, SMS queries, and WhatsApp voice messages.

Implementation Guidelines:

- Localize language and content according to dialect and cropping calendar.
- Sync broadcasts with seasonal agricultural needs.

Implementation Guidelines:

- Ensure report accessibility through QR codes or mobile-compatible formats.
- Use visuals and local language for low-literacy populations.

5.2.5. Farmer Producer Companies (FPCs) and Market Integration

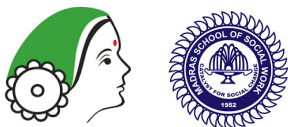
Objective:

To improve farmers' access to markets and enable collective bargaining through farmer-owned institutions.

Steps for Replication:

- **FPC Formation:** Facilitate registration of groups comprising 300–500 farmers under the Companies Act.





- **Training & Capacity Building:** Conduct workshops on pricing, packaging, Offer post-harvest handling best practices
- **Market Linkage Development:**
 - Partner with institutional buyers (hotels, schools)
 - Promote sales in urban weekend markets and e-commerce channels

Implementation Guidelines:

- Introduce digital traceability and transparent pricing via QR codes.
- Encourage value addition at source (solar drying, millet products, fruit peeling).

5.3. Cross-Cutting Implementation Strategy

Component	Function in the Model	Key Metrics for Monitoring
Soil Sakhis	Entry-point community outreach	Entry-point community outreach Number of farmers reached; sample collection rates
Soil Testing	Scientific decision-making	Cost reduction per farm; crop yield changes
Agronomist Support	Reinforcement and demonstration	Visits made; sustainable practice adoption rates
Community Radio	Ongoing behavioral nudging	Listener base; feedback received
FPC & Market Linkages	Financial sustainability	Sales volume, average prices realized, profit margins



Cultivating a Sustainable and Equitable Future

Mann Deshi's low-input, high-impact agricultural model offers a powerful, replicable solution to the intersecting crises of farmer distress, environmental degradation, and climate vulnerability. By placing scientifically trained women leaders—Soil Sakhis—at the heart of its intervention, and combining grassroots action with expert agronomic support, community radio, and collective market access, the foundation creates a holistic support system that transforms agriculture from the ground up.

Empirical data shows significant reductions in input costs, improvements in yields, and substantial increases in farmer income. Just as importantly, this model fosters a mindset shift among farmers toward sustainability, climate resilience, and entrepreneurial thinking. It moves beyond subsidy dependency to empower smallholders—particularly women—as knowledgeable stewards of land and active participants in markets.

In a country where agriculture remains a primary livelihood, the Mann Deshi model stands as a beacon for policymakers, NGOs, and social enterprises aiming to scale up climate-smart farming practices. As climate change continues to challenge traditional agriculture, this model shows that the future lies in community-led innovation, data-driven decision-making, and inclusive economic growth—proving that low input can indeed lead to high, lasting impact.





Low-Input, High-Impact



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Special Acknowledgement

Mann Deshi Foundation

Karan Sinha

Founder, Mann Deshi Centre for Climate
Resilient Agriculture

Shimona Chadha

Consultant - Mann Deshi Foundation

Vanitha Pise

Community Leader- Mann Deshi Foundation

Rupesh Mane

Mann Deshi Foundation



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