

Mann Deshi Foundation



Mann Deshi  
Foundation

Agriculture and Climate Action  
Programme

# Supplementary Document

FY 2025-2026



# INTRODUCTION

The purpose of the Agriculture and Climate Action Programme is to improve the lives and livelihood of farmers, to help them improve the quality and quantity of their crop while improving the health of their soil and environment. The Sheti Shalas and Exposure Visits are aimed at capacity building for farmers to help improve their scientific knowledge base, inspire new business exploration and introduce them to new technologies.

This supplementary document has been created to show what has happened since, and how the programme has evolved. It follows the same impact framework - viewing progress through the lens of People, Planet and Profit - and should be read alongside the main report rather than as a standalone document.

During the last financial year a heavy focus has been on ensuring farmers get access to agriculture technology, advancing scientific knowledge on farming and expanding geographical reach.

In FY 2025 - 2026 the Agriculture and Climate Action Programme has impacted **21,434 farmers across 5 districts in 239 villages** through its Soil Testing, Water Testing, Sheti Shalas, Exposure Visits and Agriculture Technology initiatives. It has created access to scientific agricultural support, based in rural Maharashtra, through its team consisting of **9** women as Soil Sakhis, **4** Soil Technicians, **5** Agronomists and **2** Community Leaders.



# TWO-YEAR OVERVIEW

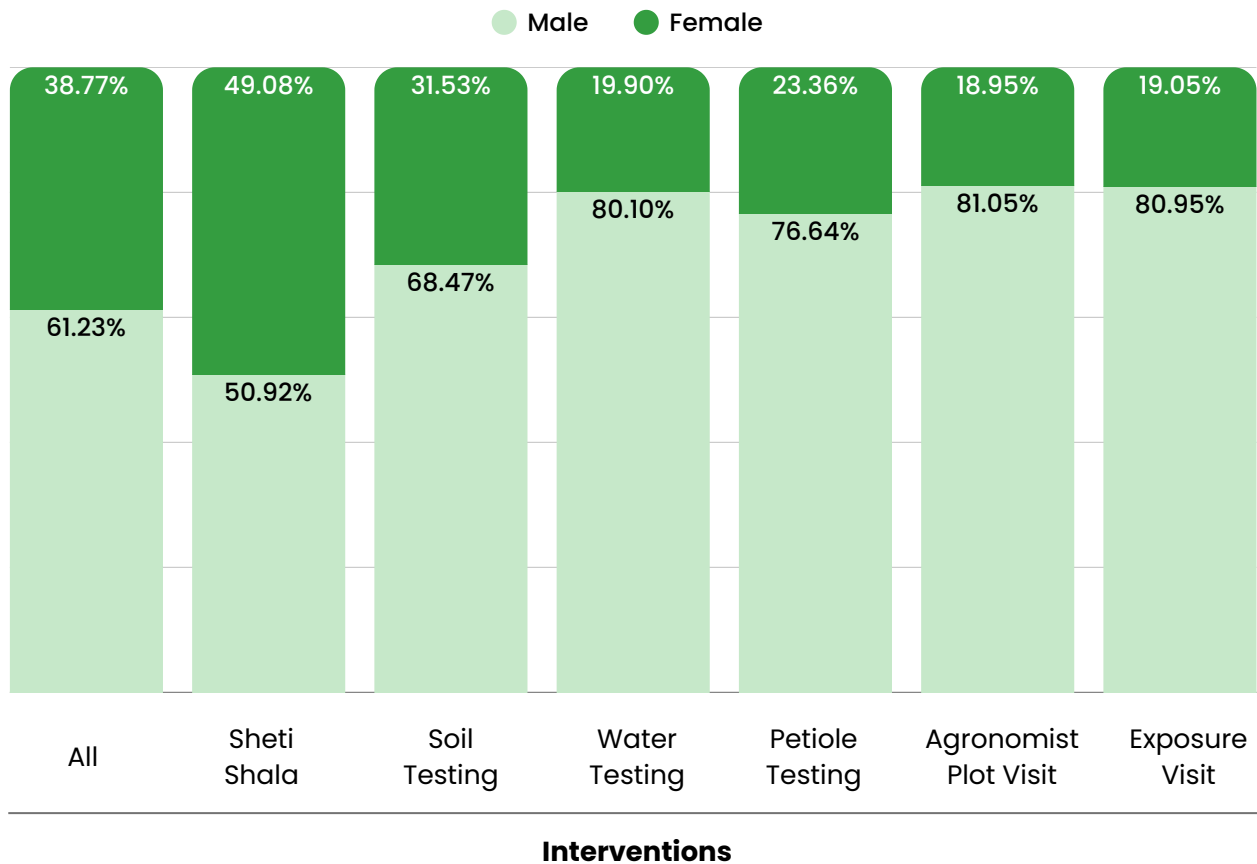
Since its inception in 2024, the programme has reached **21,434 farmers** across **9 drought prone Talukas** and **5 Districts** (Satara, Sangli, Solapur, Kolhapur, Pune), delivering a combination of capacity-building, scientific testing, and on-field advisory services. Over two years, **505 Sheti Shalas engaged 11,809 farmers**, strengthening practical knowledge and peer learning, while a strong emphasis on diagnostics is reflected in **2,394 soil tests**, alongside water and petiole testing, enabling more informed and sustainable input use.

Intervention	Total Conducted	Farmers Reached
All		21,434
Sheti Shala	505	11,809
Testing - Soil	2,394	2,394
Testing - Water	226	226
Testing - Petiole	84	84
Testing - Cattle Lab	676	676
Agronomist Plot VIsit	3,844	3,844
Exposure VIsit	49	2,946



Field-level support has remained central to the programme’s approach. **4,393 agronomist plot visits** provided tailored, real-time guidance to farmers, while **exposure visits reached 2,946 farmers**, facilitating knowledge exchange and adoption of improved practices. Complementing this, the **new cattle laboratory supported 676 farmers**, addressing critical gaps in livestock health services in the region.

## Gender Participation Across Interventions



Gender participation across interventions shows a mixed but telling pattern. Overall, women account for **38.77% of participants**, with particularly strong engagement in **Sheti Shalas (49.08%)**, where community-based and group learning formats appear to create more accessible entry points for women. However, participation drops sharply in more technical services such as **soil testing (31.53%)**, **water testing (19.9%)**, and **agronomist visits (18.95%)**, suggesting persistent barriers to women’s access to scientific advisory services and farm-level decision-making spaces. The pattern suggests that while the programme is successfully engaging women at the community level, there remains a need to intentionally strengthen their inclusion in technical, higher-value interventions where knowledge translates more directly into productivity gains and control over farming decisions

## Impact

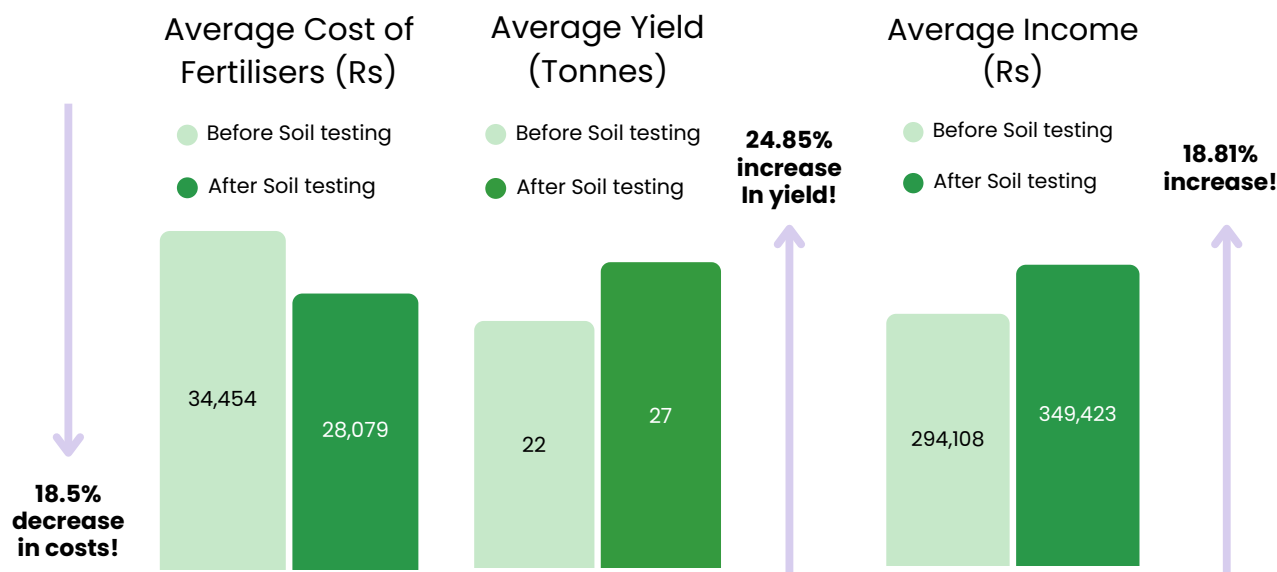
The impact estimates in this supplementary note update those presented in the previous report. While earlier findings were based on a **sample of 182** farmers growing the same crop, the current analysis draws on a larger and more diverse **sample of 1,018 farmers**. This provides a more representative picture of programme outcomes.

### On People

Over the two years, the programme has expanded its reach from **8,963 to 12,471 farmers annually**, reflecting a steady scale-up of activities across Man Taluka and surrounding regions. This expansion has allowed a **stronger sense of confidence, support, and participation among farming households**. Through continued access to scientific information, agronomist guidance, and community-based learning, farmers are increasingly able to make informed decisions and engage more actively in their agricultural practices.

### On Profit

The updated analysis shows a clear improvement in farm-level profitability following soil testing. On average, **fertiliser costs decreased by 18.5%**, while **yields increased by 24.85%**, resulting in an average **income increase of 18.81%**. These results suggest that more informed and targeted input use not only reduces unnecessary expenditure, but also improves productivity, translating into higher returns for farmers. Based on a larger and more representative sample of 1,018 farmers growing the same crop, these findings reinforce the role of scientific soil management in strengthening farm economics.



\*Sample size of 1018 farmers who grew the same crop in the following growing season

# On Planet

Estimated total emissions reduction

988.37 tonnes CO<sub>2</sub>e

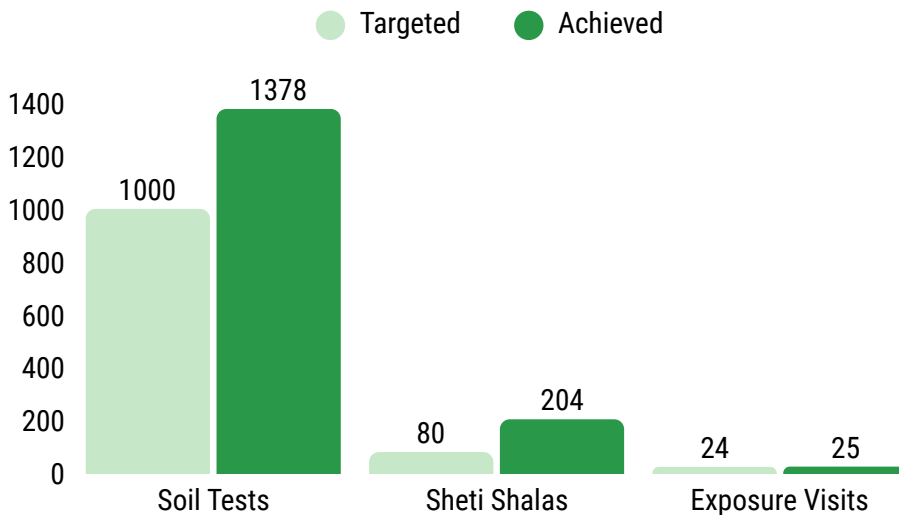
The estimated emissions reduction is calculated based on the observed decrease in fertiliser use (in kg) over the period.

This estimate is indicative and based on the same default emission factors and assumptions used in the previous analysis. As the available data does not disaggregate fertiliser changes by fertiliser type or nitrogen content, the calculation should be interpreted as an approximation rather than a precise emissions inventory. Additionally, the observed reduction in fertiliser use may partly reflect changes in the composition of inputs, including a potential shift between organic and synthetic fertilisers, which cannot be identified in the available data and may affect the accuracy of the estimate.

## FY2025 - 2026

### Programme Goals

In FY 2025 - 2026 the programme has exceeded all its goals.



38%

Above Target For Soil Testing

155%

Above Target For Sheti Shalas

4%

Above Target For Exposure Visits



51%

Women engaged in Sheti Shalas



33%

Women engaged in Exposure Visits

# Programme Reach

Farmers reached

**12,471**

across all interventions

Total interventions conducted

**2,183**

across 7 intervention types

Female participation

**40%**

4,934 women farmers

Districts covered

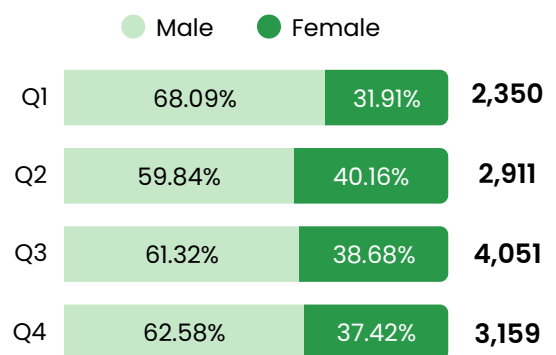
**5**

Satara, Sangli, Solapur + others

## Total Farmers by Interventions

Intervention	Conducted	Farmers	Male	Female
Sheti Shala	202	5,535	2,679	2,896
Exposure Visit	25	1,736	1,223	513
Agronomist Visit	3,295	3,844	2,660	635
Testing - Soil	1,378	2,854	2,217	637
Testing - Water	184	243	201	42
Testing - Petiole	84	84	68	16
Cattle Lab	676	676	26	650

## Quarterly Farmer Reach



Q3 was the strongest quarter. Q1 had the most balanced gender ratio.

# Testing

When the programme was launched in 2024, testing was primarily limited to soil analysis. Since then, it has evolved into a more **integrated diagnostic system encompassing soil, water, petiole, fertiliser, and cattle testing**—each component generating complementary insights that together support more precise and resilient farm management.

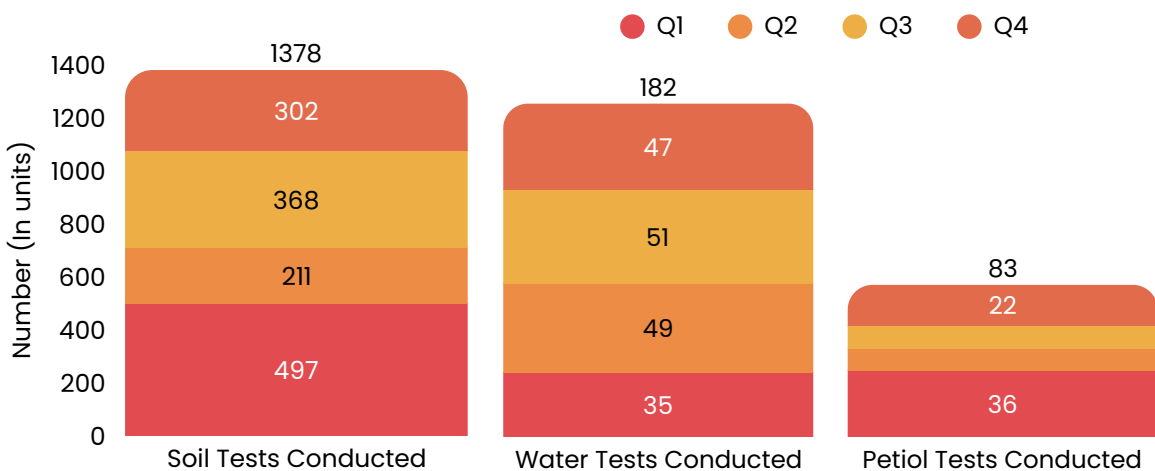
**Soil testing** provides the foundational understanding of nutrient status, pH, and organic matter, which guides baseline fertiliser planning. This is strengthened by water testing, as irrigation water quality directly influences soil chemistry— affecting salinity, nutrient availability, and long-term soil health. By analysing both soil and water together, farmers can better manage nutrient loading and avoid issues such as salt accumulation or micronutrient imbalances.

The inclusion of **petiole testing** adds a dynamic, in-season layer of monitoring. While soil tests indicate what is available, petiole analysis reveals what the plant is actually absorbing at critical growth stages. This allows for timely, corrective interventions—such as targeted foliar sprays or fertigation adjustments—helping to optimise plant nutrition during the crop cycle rather than relying solely on pre-season estimates..

**Fertiliser testing** further closes the loop by assessing the nutrient composition and quality of organic inputs prepared by farmers. This ensures that nutrient applications are based on verified content rather than assumptions, improving nutrient use efficiency and enabling farmers to fine-tune their composting or formulation processes in alignment with crop and soil requirements.

Finally, **cattle testing** extends this integrated approach to livestock health, which is closely linked to farm productivity, particularly in mixed farming systems. Regular diagnostics enable early detection of diseases and nutritional deficiencies, improving animal health, milk yield, and manure quality. Healthier cattle, in turn, contribute higher-quality organic inputs, reinforcing the soil-crop nutrient cycle.

Together, these services move beyond isolated testing toward a systems-based approach, linking soil, water, plant, input, and animal health. This **integrated framework** enables farmers to make evidence-based decisions, reduce input inefficiencies, respond proactively to stress conditions, and ultimately improve productivity, sustainability, and resilience at the farm level.



Fertiliser Testing was introduced in second quarter of FY 2025 - 26 and the programme has conducted 7 fertiliser tests successfully.

# Sheti Shalas

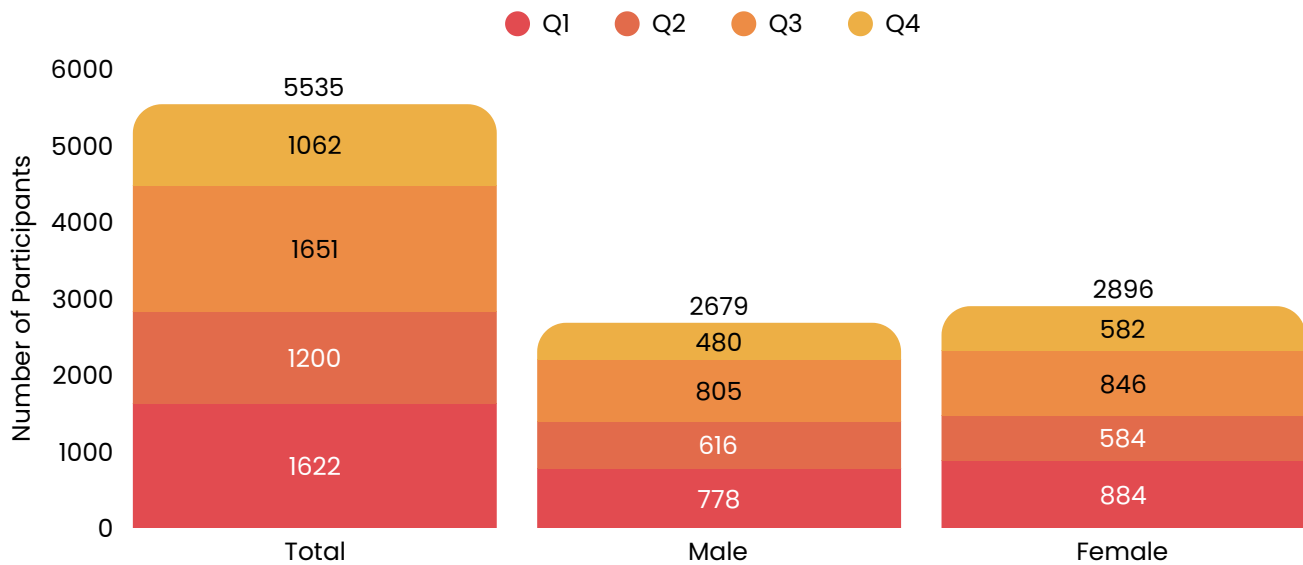
Sheti Shalas are training programmes aimed at upskilling farmers with the knowledge and tools they require to improve their farming practices and to start allied businesses.

## QoQ Participation

5,535 farmers have been trained through the Sheti Shala's against a goal of training 4,900 farmers. The intended outreach has been surpassed by 13%

# 202

Sheti Shalas  
Conducted



53%

Women farmers participation



# Exposure Visits

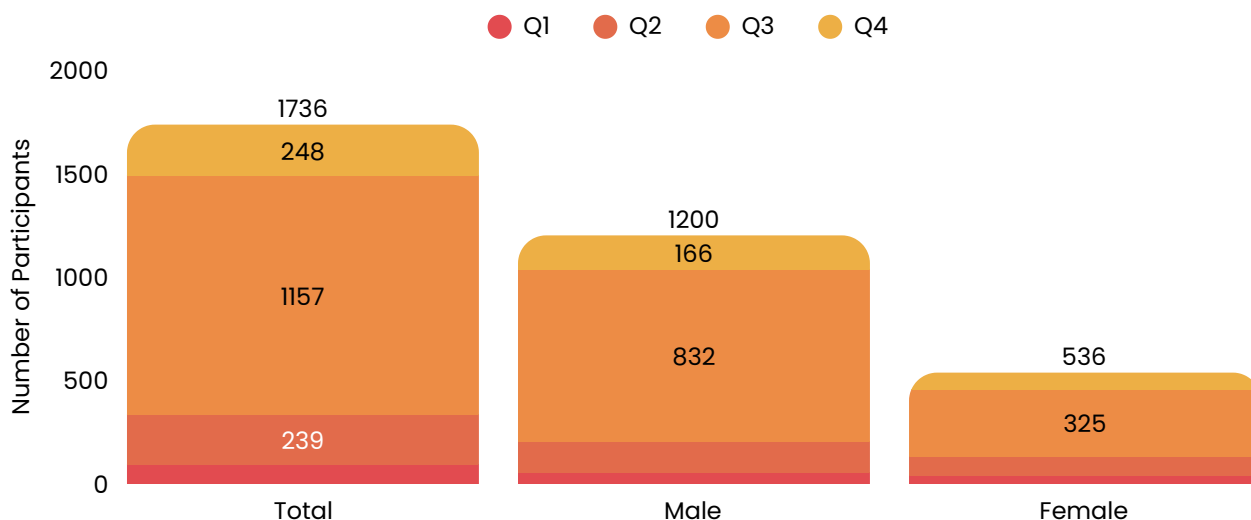
Exposure Visits are off-site visits that farmers are taken on to see how other organisations and farmers run their farms and businesses. The purpose of these excursions are to inspire farmers to learn from others best practices and start businesses of their own.

## QoQ Participation

1,736 farmers have participated in Exposure Visits, against the goal total of 1200. The intended outreach has been surpassed by 44.67%

25

Exposure Visits Conducted



33%

Women farmers participation



# COMPARISON

This section compares programme performance across two consecutive financial years - FY 2024-25 and FY 2025-26 - tracking the reach, delivery, and demographic profile of farmer outreach activities across Satara, Sangli, Solapur, and other districts of Maharashtra. Over this period, the programme has grown meaningfully: unique farmers reached **increased by 13.7%**, from **6,458 to 7,344**, while total interventions conducted rose by **27.3%**. Alongside this scale-up, the programme expanded its suite of interventions, introducing **Cattle Lab and Petiole Testing** for the first time, and significantly deepened its geographic footprint beyond its Satara base.

Farmers reached

**8,963** → **12,471**

**+39.1%**

All interventions combined

Total interventions conducted

**1,715** → **2,183**

**+27.3%**

Sessions across all types

New interventions introduced

**2**

Cattle Lab & Petiole Testing

## Total Interventions Conducted

Intervention	FY24-25	FY25-26	Change
Sheti Shala	303	202	-33.33%
Exposure Visit	24	25	+4.17%
Agronomist Visit	549	3,295	+500.18%
Testing - Soil	1,016	1,378	+35.63%
Testing - Water	42	184	+338.10%
Testing - Petiole	-	84	-
Cattle Lab	-	676	-

## Farmers Reached by Intervention

Intervention	FY24-25	FY25-26	Change
Sheti Shala	6,274	5,535	-11.78%
Exposure Visit	1,210	1,736	+43.4%
Agronomist Visit	549	3,844	+600.18%
Testing - Soil	1,016	2,854	+180.91%
Testing - Water	42	243	+478.57%
Testing - Petiole	-	84	-
Cattle Lab	-	676	-

## Reach by District

Satara

**77,44** → **9,960**

+28.62%

Sangli

**798** → **1614**

+102.62%

Solapur

**209** → **680**

+225.36%

Others

**212** → **217**

+2.36%

Geographic expansion is the standout story - Sangli doubled and Solapur districts tripled, signalling the programme's growing footprint beyond its core Satara base.

# WHAT IS NEW

## Expansion of Testing Parameters

The programme expanded its soil analysis from 14 to 21 parameters to better support farmers with data-driven insights. Seven new parameters—Boron, Water Holding Capacity, Cation Exchange Capacity, Sodium, Carbonate, Bicarbonate, and Chloride, were added based on field observations and expert recommendations. These additions help assess micronutrient balance, soil fertility, water retention, and salinity risks more accurately. The enhanced testing enables farmers to make informed decisions on irrigation, fertilization, and crop selection. It also helps detect soil issues early and improve overall productivity. Ultimately, this expansion promotes sustainable farming and better soil health management.

## Cattle Lab

Launched in **May 2025**, the **Mann Deshi Cattle Lab** was established to address a critical gap in access to timely and reliable veterinary diagnostics in rural areas. Recognising that most rural households depend on livestock such as cows, buffaloes, goats, and sheep not only for income but also for daily subsistence, the lab was created to bring essential diagnostic services closer to the community. The facility supports a range of animals, including dairy buffalos, cows, sheep, and goats. It offers key tests including **Complete Blood Count (CBC)** to assess overall health and detect infections or anaemia, **Kidney Function Tests (KFT)** and **Liver Function Tests (LFT)** to evaluate vital organ performance, and **urine analysis** to identify mineral imbalances such as calcium and phosphorus deficiencies. Now operating for nearly a year, the lab is run by a dedicated team of three, comprising a lab technician, a livestock supervisor, and a coordinator, and has conducted **676 tests** to date, strengthening access to animal healthcare and improving outcomes for farmers across the region.

### Rani Galande

Rani Galande from Gangoti, a farmer reliant on livestock, faced a serious crisis when her Holstein Friesian cow suddenly fell critically ill. The animal had been unable to stand for six days, had stopped eating, and showed symptoms including high fever (102.2°F), continuous panting, and loss of rumination. Rani turned to the Mann Deshi Cattle Lab. A blood test enabled accurate diagnosis, allowing for timely and targeted treatment. The cow gradually recovered and has now returned to full health, resuming milk production and restoring a vital source of income. This case illustrates the importance of accessible, timely diagnostics in protecting both livestock and farmer livelihoods.



## Technology

In FY 2025-26, a heavy focus was put on providing farmers with access and knowledge to **Agriculture Climate Technology**. Sheti Shala workshops and Exposure Visits were conducted on topics of Weather Forecast Stations and Soil Sensors, AI and Agriculture, Biogas units and Trichogramma amongst others. In order to ensure that farmers are able to adopt the technology, Mann Deshi Foundation in partnership with Mann Deshi Mahila Bank provided climate financing to purchase technology on credit. Agriculture technology has proven to make farming more efficient, increase the yields and reduce the costs of production for farmers.

## AI Weather Forecast Stations and Soil Sensors

Based on the weather, the weather forecast station mobile app gives real time updates to the farmer to optimise farming. By **tracking temperature, wind speed and wind speed direction** farmers are able to make decisions regarding which fertilisers to be put in the field at which point of time. Apart from



weather forecast station, the app is also able to predict which **disease and pest attacks the crop is most susceptible to depending on the changes in weather**. The app suggests preventive methods to ensure that the crop's immunity increases and does not get infected.

With the help of soil sensors, data on different parameters such as ground water level, soil moisture, PH level etc is recorded in the app in a timely manner. This data generates accurate data for farmers and advises them on when to irrigate the farm and in what qualities the irrigation is needed by the soil.

As a result, **73 farmers** have been provided training on AI Weather Forecast Stations and Soil Sensors out of which **6 farmers have purchased soil sensors**.

# AI Technology in Agriculture

During the last financial year, **farmer conferences on AI in agriculture technology** were conducted. Training farmers on AI technology is becoming essential for modern, sustainable agriculture. Topics covered during the training sessions are on how to enables farmers to plan crops more effectively by analyzing historical data, soil conditions, and climate patterns. How **AI tools help farmers make timely decisions based on accurate weather forecasting**, reducing risks from unpredictable conditions.

How to use AI to integrate soil and water testing data, farmers can apply the right inputs in the **right quantities, improving efficiency**. How to use **AI-powered pest and disease identification** allows early detection, minimizing crop losses and reducing excessive pesticide use. How farmers can also use AI to monitor crop health in real time and take preventive actions. **Data-driven insights** help optimize resource use, lowering production costs while increasing yields.

Additionally, the role of **AI in supporting market analysis by providing real-time price** trends and demand forecasts, helping farmers decide when and where to sell their produce for maximum profit was also touched upon.

Overall, the aim is to train farmers in AI to empower them with knowledge, improve decision-making, and enhance productivity. The training promotes sustainable farming practices, conserves resources, and increases resilience to climate change. By adopting **AI, farmers can transition from traditional methods to smart, technology-driven agriculture, ensuring long-term growth and profitability**.



## Bio Gas Units

As a part of this programme, farmers are trained on the benefits of installing bio gas units and how to use and maintain them. **Bios Gas units** are recommended for farmers who also practice **animal rearing** or dairy farming. We provide training to farmers on how to set up bio gas units to convert cow dung into bio gas. This enables farmers to switch to bio gas saving their income.



Farmers are also provided with training on how to create **byproducts from the bio gas unit to further increase and diversify their incomes.**

Biogas units are useful because they turn everyday farm waste like dung and crop residue into something valuable. Instead of letting this waste decompose and release methane into the air, it gets converted into clean cooking gas, which reduces dependence on LPG or firewood and brings down household expenses.

What's equally important is the by-product, **biogas slurry, which works as a natural fertiliser.** Farmers can use it to improve soil health and reduce spending on chemical fertilisers, often leading to better and more stable yields over time. There's also a strong livelihood and health angle. Using biogas means less smoke in the kitchen, which improves respiratory health, and it reduces the time and effort, usually by **women**, spent collecting firewood. Overall, it supports a more circular, low-cost farming system where waste is reused, costs go down, and both incomes and environmental outcomes improve.

To ensure that agriculture technology is accessible and affordable for farmers, Mann Deshi goes one step ahead by providing farmers with **access to credit** for agriculture technology. **6 Farmers** have successfully purchased and installed biogas units out of which **2 farmers** have been provided with access to credit and loans. Agriculture technology such as biogas has shown positive response from farmers stating increase their yields and reduction in costs of production.

# Trichogramma Technology

**Trichogramma are tiny parasitic wasps used in biological pest control.** The wasps lay their eggs inside pest eggs (mainly moths and borers) preventing the pests from hatching and damaging crops. This eco-friendly approach reduces dependency on chemical pesticides, safeguards the environment, and promotes sustainable farming practices.



The objective is to establish a small-scale Trichogramma production lab at Mann Deshi that **provides farmers with an affordable and timely supply of bio-control cards, supporting eco-friendly and women-led agriculture initiatives.**

## **Benefits of Trichogramma:**

Implementing Trichogramma production revolutionizes agriculture by offering significant benefits for the environment and food safety. This **natural pest control method** reduces reliance on chemical pesticides, cutting harmful residues and promoting healthier soils. As consumer demand for chemical-free produce rises, Trichogramma aligns with these preferences while fostering biodiversity and sustainable farming practices.

Establishing Trichogramma production labs not only **empowers women farmers by creating economic opportunities** but also ensures cost-effective pest management through a reliable supply of bio-control cards. This initiative enhances community resilience against agricultural challenges while promoting eco-friendly practices.

Trichogramma can reduce pesticide use by **30% to 70%**, enabling farmers to reduce the number of treatments from multiple applications to just 1-2 or none. As chemical residues decrease, the quality of produce often improves **by 20% to 40%**, leading to **higher market grades and better pricing**. Additionally, crop yields increase by **10% to 30%**, particularly in pest-sensitive crops like tomatoes and peppers, resulting in larger fruit sizes and greater harvestable weight.

# SONALI CHIRME



**Sonali Chirme** is a progressive pomegranate farmer from **Bidal**. She approaches her orchard with the precision of a scientist and the conviction of a leader. She regularly conducts soil, water, and leaf stem testing, ensuring every decision is informed. But her ambitions have never stopped at her own farm gate. She brings knowledge, skills, and employment to the women around her and her journey gained deeper direction when she connected with the Mann Deshi Agriculture Centre.

*"Mann Deshi's soil and water testing changed how I work in my farm - I stopped guessing and started knowing. But what matters more to me is that I didn't keep this knowledge to myself, I like to teach and I believe if women understand their crops the way I do now, they don't just farm better, they lead better."*

## Mann Deshi Interventions

**Soil Testing Report:** Regular soil health assessments helped Sonali identify nutrient imbalances and organic matter gaps in her pomegranate orchard, forming the foundation of her improved crop management approach.

**Water and Leaf Stem Testing:** Beyond soil, Sonali adopted routine water quality and leaf petiole testing, allowing her to monitor how soil and irrigation conditions were being translated into plant health - and to intervene before problems escalated.

**Crop-wise Fertiliser Schedule:** Based on integrated test results, Sonali received a customised, balanced fertiliser plan that significantly reduced unnecessary input expenditure while improving orchard productivity.

**Pomegranate Pruning Training:** Sonali learned pomegranate pruning techniques and went further, mastering the skill and training 5 other women from her community, creating direct agricultural employment.

## Impact & Results

- **Yield Improvement:** Total pomegranate production grew **from 15 tonnes to 24 tonnes**, a remarkable increase driven by precise nutrient management and improved orchard practices.
- **Reduced Input Costs:** Scientific fertiliser planning reduced **total farming expenses from ₹51,000 to ₹39,000** by eliminating excess and imbalanced input use.
- **Net Income Growth:** Sonali's total income from pomegranate more than doubled, rising from ₹6,50,000 to ₹14,00,000 - a transformation made possible by higher yields, better produce quality, and leaner input costs.
- **Soil and Crop Health:** Integrated testing and balanced nutrition led to healthier soil biology, improved water retention, and stronger, more productive pomegranate trees season after season.
- **Sapling Production and Local Impact:** Through air layering, Sonali produces and sells quality pomegranate planting material to farmers in her area, becoming a trusted local resource and strengthening the wider agricultural ecosystem.

# SATISH PANDURANG KALE



Satish Pandurang Kale is a progressive sugarcane farmer from Sargarwadi. Like many farmers in his region, he was facing rising input costs, imprecise nutrient management, and unpredictable yields which made sustainable farming a growing challenge. In 2024, determined to turn things around, Satish chose to embrace technology and scientific farming. His journey changed when he connected with the Mann Deshi Agriculture Centre.

*"I had been farming the same way for years, but I realised that times are changing and I needed to change with them. Soil testing opened my eyes... I could finally see what my land needed. The agronomist's guidance gave me a plan, and that plan gave me results I had never seen before."*

## Mann Deshi Interventions

**Soil Testing Report:** A comprehensive soil health assessment was conducted for Satish's farm, enabling precise identification of nutrient gaps and informing a targeted fertiliser strategy for his sugarcane crop.

**Crop-wise Fertiliser Schedule:** Based on the soil report, Satish received a customised fertiliser plan that optimised nutrient application, eliminating guesswork and reducing wasteful or excessive input use.

**Agronomist Visits:** Regular field visits by Mann Deshi agronomists helped Satish monitor crop progress, fine-tune farm management practices, and address challenges at the right time.

**Banana Crop Support:** Soil testing and expert fertiliser recommendations were extended to his banana crop as well, improving vegetative growth and fruit setting. A total of 5 dedicated agronomist visits were conducted for the banana crop alone.

## Impact & Results

- **Scientific Crop Planning:** Adoption of soil testing enabled informed decisions on fertiliser and nutrient management, making farming more planned, efficient, and sustainable.
- **Yield Improvement:** Satish recorded a production of **80 tonnes of sugarcane** – a significant improvement over previous seasons driven by balanced nutrition and timely agronomic interventions.
- **Optimised Input Costs:** Soil test-based cultivation kept his total farming cost at a lean **₹52,000**, ensuring every rupee spent on inputs delivered measurable returns.
- **Net Income:** His total income from the sugarcane crop reached **₹240,000**, reflecting the direct impact of scientific practices on farm profitability and resulting in a stronger financial footing for Satish and his family.
- **Multi-Crop Benefit:** The ripple effect of soil testing and expert guidance extended beyond sugarcane, with his banana crop also showing improved growth and yield potential.

# KAILAS JAMDAR



**Kailas Jamdar** is a dedicated **mulberry** farmer and sericulture practitioner from **Piliv**. Having built a steady livelihood through silk farming, Kailas had established a reliable rhythm - his first three batches yielded a healthy income ₹3 lakh per batch. Then, without warning, everything changed. His fourth and fifth batches collapsed entirely. Cocoons turned weak and hollow, and his income plummeted to just ₹1 lakh per batch. With no clear explanation for the sudden decline, Kailas found himself at a crossroads, until he reached out to the Mann Deshi Agriculture Centre.

*"I had no idea what was going wrong. My farming hadn't changed, but my results had. Mann Deshi's experts didn't just tell me what to do, they showed me why, with evidence. For the first time, I understood the science behind my own farm, and that knowledge brought me back from the edge of serious loss."*

## Mann Deshi Interventions

**Soil Testing Report:** A detailed soil health analysis revealed that potassium levels in Kailas's farm were three times higher than optimal which was affecting the quality of silkworm nutrition and cocoon formation.

**Water Quality Testing:** Water samples were tested and found to have high pH and TDS levels, which had elevated harmful chloride content in the mulberry plants, also a key factor weakening the silk cocoons.

**Mulberry Leaf Petiole Testing:** Beyond soil and water, Mann Deshi conducted plant tissue testing on mulberry leaf petioles, providing a complete picture of how soil and water imbalances were being absorbed into the crop and affecting silkworm health.

**Expert Analysis and Corrective Guidance:** Mann Deshi agronomists carefully studied all test results together and provided Kailas with a structured corrective plan, addressing nutrient imbalances, water quality issues, and revised farming practices.

## Impact & Results

- **Root Cause Identification:** Comprehensive testing of soil, water, and petiole uncovered the precise combination of factors that had been silently destroying cocoon quality across two consecutive batches.
- **Soil Health Correction:** Guided adjustments to fertiliser application brought nutrient levels back into balance, restoring the quality of mulberry leaf.
- **Water Quality Management:** Interventions based on water test results helped reduce the intake of harmful chlorides into the plants, directly improving cocoon strength and integrity.
- **Cocoon Recovery:** From the sixth batch onwards, cocoon quality improved significantly, transitioning from weak, hollow cocoons back to strong, marketable silk produce.
- **Income Restoration:** Kailas's per-batch income recovered from a low of ₹1 lakh during the crisis period back to over ₹3 lakh, restoring the financial stability his family depends on.



**Mann Deshi**  
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