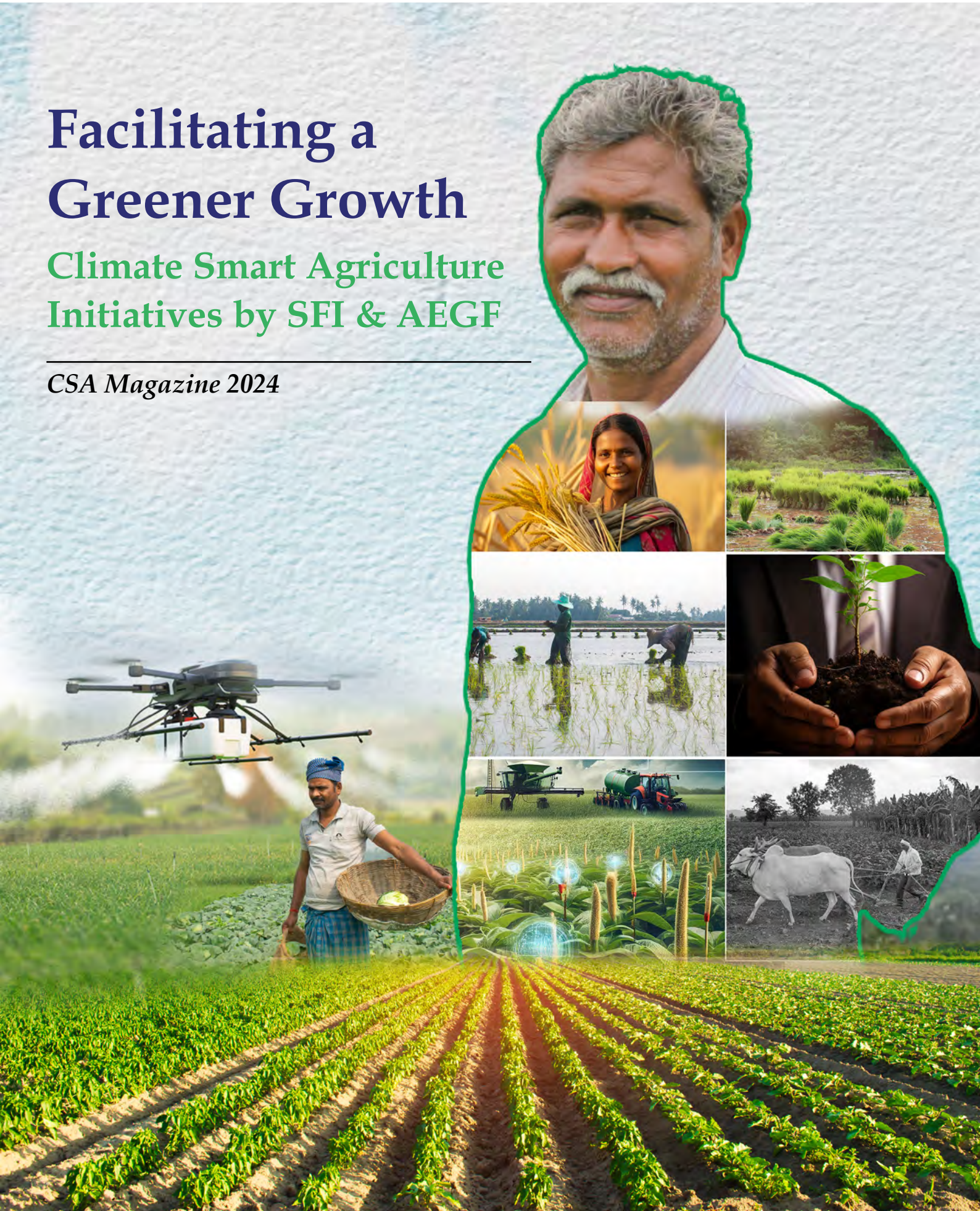
aeg foundation

syngenta foundation India

Facilitating a Greener Growth

Climate Smart Agriculture Initiatives by SFI & AEGF

CSA Magazine 2024



CSA INSIDER

Foreword from
Country Director

To Our Esteemed Readers,

As the **Director of Syngenta Foundation India (SFI)**, it is with immense pride that I introduce to you the inaugural edition of our **magazine on CSA.** This publication is a testament to our steadfast commitment to sustainable agricultural practices and our dedication to address the pressing challenges posed by climate change.

While agriculture has been a pillar of civilization for centuries, it now faces one of its greatest trials—climate change. As stewards of the Earth's resources and guardians of the world's food supply, we must confront this challenge with innovation, wisdom, and a collaboration.

This magazine, beyond a collection of our efforts, serves as a platform to share insights, inspire innovation, and highlight the transformative impact of SFI's Agri-entrepreneurship program in advancing Climate Smart Agriculture (CSA). Each section within this publication has been curated to provide a comprehensive understanding of CSA's principles and practices. We are privileged to feature contributions from passionate and knowledgeable individuals in the field—Farmers, who have embraced these practices. Our Agri-entrepreneurs are playing a crucial role in supporting farmers by providing last mile delivery of services, and our team of experts are shaping the framework and strategies to support Climate Smart Agriculture.

As we launch this magazine during our Climate Smart Agriculture & Agri-entrepreneurship Workshop, we are reminded of the synergy that is created when like-minded individuals & organisations unite. I hope that this magazine will not only inform and educate but inspire action, encouraging funding agencies and knowledge institutions to join us in this noble cause.

I invite you to join us on this journey as we explore the immense potential of advocating Climate Smart Agriculture through our Agri-entrepreneurship program in India. Together, let us cultivate a future that honours our heritage as cultivators and caretakers of the land while embracing the opportunities that lie ahead.

I would like to congratulate the team involved in compiling and editing the CSA magazine and presenting before you the summary of efforts that SFI has put in promoting CSA practices and interventions among small and marginal farmers through our network of Agri-Entrepreneurs.

With warm regards,

Rajendra Jog – Country Director
Syngenta Foundation India

Foreword from

Chief Operating Officer

Dear Valued Readers,

As the **Chief Operating Officer of Agri-Entrepreneur Growth Foundation,** it is with great pleasure and a profound sense of duty that I extend a warm welcome to you in this inaugural issue of the **magazine on CSA**. This publication marks a significant milestone in our journey towards a more sustainable and resilient agricultural sector.

In an era where the impacts of climate change are becoming increasingly tangible, the imperative for Climate Smart Agriculture (CSA) has never been clearer. Our mission is to equip those at the heart of the agricultural industry—the farmers, Agri-entrepreneurs and the policymakers and the funding agencies—with the knowledge, tools, and inspiration to adapt and thrive in changing conditions.

This Magazine highlights of the successes, the innovations, and the hard-earned wisdom that define the CSA being promoted among the farmers. It is also a forum for exploring the challenges we face and forging the solutions we need to overcome them.

As COO, I am intimately aware of the operational challenges that come with transitioning to sustainable practices. It requires not just a change in techniques, but a transformation in mindset, economics, and community engagement. This magazine aims to address these multifaceted aspects, providing a holistic view of what it means to be climate-smart in the agricultural realm.

Launching in tandem with our Climate Smart Agriculture & Agri-entrepreneurship Workshop, this magazine is both a reflection of our current endeavours and a blueprint for future action. I am confident that the testimonials and insights within these pages will resonate with you, whether you are a seasoned practitioner of CSA or new to the concept. I encourage you to engage with the content, to share it with your networks, and to join us for potential collaborations for developing more sustainable future for agriculture.

Together, we can ensure that our agricultural practices are as enduring as the legacy we wish to leave for future generations.

I would like to congratulate and thanks the team involved in compiling and editing of this magazine.

Sincerely,

Pankaj Shukla
COO-AEGF

From the
Editorial Desk

Dear Readers,

It is with great enthusiasm and a deep sense of responsibility, we present the inaugural issue of the magazine on Climate Smart Agriculture, launched in conjunction with our Climate Smart Agriculture & Agri-Entrepreneurship workshop.

In the face of global climate challenges, agriculture is at a crossroads. We need to grow more food in a rapidly changing environment. And business as usual food production isn't working for farmers or the planet.

In this context, Climate Smart Agriculture (CSA) offers solutions that could help farmer cultivate better. CSA is not just about farm practices; it's a commitment to a set of principles that ensures food security, prosperity, resilience, while protecting the environment. This magazine is dedicated to those who are actively integrating these principles into their work and to those who are just beginning their journey towards a more sustainable future.

The current issue covers a diverse range of topics, from training and capacity building of farmers and agriculture entrepreneurs to build more scientific knowledge on the ground; to showcasing success stories of CSA interventions that aim to enable behavioural change at the farm level. There is growing evidence to suggest that adoption of CSA can help improve farm productivity and incomes, build resilience and adaptation on the ground, and mitigate the worst impacts of climate crisis.

As we launch this magazine at our CSA & Agri-Entrepreneurship workshop, we are reminded of the power of collective action and shared knowledge. We encourage you to engage with the content, contribute your insights, and together explore the opportunity to work in synergy to make agriculture part of the solution to combat climate crisis. Together, we can cultivate change and grow a future that works for people and the planet.

We would also like to take the opportunity to thank every member of our team who has supported in bringing these beautiful insights before all of you.

Warm regards,

Dr. Gajanan B. Rajurkar
Lead-CSA initiatives

Ms. Yashaswini S N
Project Assistant

Navigating Climate Change: Impacts on Agriculture and CSA as a Solution

Climate change is a global challenge, and its impacts cannot be ignored. Over the past decade global temperatures have increase by 1.1°C on account of rising greenhouse gas (GHG) emissions emitted from anthropogenic activities. Triggered by climate change, extreme weather events are on the rise across the globe - encompassing shifts in rainfall patterns, increased occurrences of droughts and floods, and the changing geographical distribution of pests and disease. For food producers, increasing climate vulnerability affects their ability to sustain and improve yields and secure their livelihoods. The multifaceted consequences of climate change are deeply concerning, particularly in relation to global food security, poverty eradication, and sustainable development as food demand is expected to triple by 2080.While global food systems are under increasing pressure, food production practices also contribute to growing climate crisis. Estimates of emissions from this sector range from about 20 – 35% of global anthropogenic GHG emissions. Agriculture is the main source of nitrous oxide and methane emissions which have significant near- and long-term impacts on global warming potential.

India holds a crucial position in the global dialogue on greenhouse gas emissions and strategies for mitigation. Globally, India is the third largest emitter of GHGs and the agriculture sector is the second largest contributor, accounting for over 407 megatons of carbon dioxide equivalent (CO_2e). The interconnectedness of sustainability means that any disruption in one part of the world can reverberate across the globe, with varying intensities and timelines. Given India's significant population and biodiversity, vigilance in addressing climate-related issues becomes paramount. The visible effects of climate change in India are disconcerting, particularly as the ever-changing climate poses heightened risks for farmers. With Indian agriculture heavily reliant on monsoons, the climate sensitivity of crop yields becomes a critical concern. Fluctuations in temperature and rainfall patterns directly impact crop productivity, posing a threat to food security in the country. The direct consequences of climate change, including shifts in average temperatures, floods, droughts, and variations in relative humidity, have profound effects on agricultural production, thereby influencing

markets for essential goods, services, and natural resources crucial to production.

Nevertheless, there exist proactive measures and solutions that can empower farmers. Through the adoption of Climate Smart Agriculture Practices, farmers can better equip themselves to anticipate and alleviate the impact of extreme & non-extreme events on their crops, ultimately reducing losses and safeguarding their livelihoods.

Climate Smart Agriculture refers to agricultural practices that not only sustainably increase productivity and enhance resilience (adaptation) but also work towards reducing or removing greenhouse gas emissions (mitigation) where feasible. Furthermore, it aims to contribute to the attainment of national food security and sustainable development goals.

Three Pillars of CSA: Triple Win

Productivity: Sustainably increase agricultural productivity and incomes from crops, livestock and fish, without having a negative impact on the environment. This, in turn, will raise food and nutritional security.

Adaptation: Reduce the exposure of farmers to short-term risks, while also strengthening their resilience by building their capacity to adapt and prosper in the face of shocks and longer-term stresses.

Mitigation: Wherever and whenever possible, CSA should help to reduce and/or remove greenhouse gas (GHG) emissions. This implies that we reduce emissions for each calorie or kilo of food, fibre and fuel that we produce.

Recent Happening & Initiatives- India & Global

A. Key Highlights from COP28

1. **Loss and damage fund**: This fund aim to support the most vulnerable countries in the face of climate-related disasters. Mr. Simon Stiell, Executive Secretary of UNFCCC emphasised this as a major step forward and running start for the COP28. Negotiations also received the pledges of USD 792 million from major countries.

2. **Year 2023- the hottest year on record**: Every report of 2023 highlighted the worsening situation of climate. The World Meteorological Organization (WMO) and European scientists of Copernicus both warned of record temperatures in 2023, at 1.40°C above the pre-industrial average (1850-1900).

3. **Oil companies' commitment, not quite adequate**: Although the 50 oil companies have announced in Dubai to achieve "zero" methane emission from their operation by 2030, However Mr. Antony Gutter (UNCC President) highlighted that the promises made by oil companies clearly fall short of what is required.

4. **A declaration on food systems signed by 134 countries**: 134 countries took a pledge & signed a declaration to tackle the climate impacts of food industry. These countries represent 5.7 billion people, 70% of the food consumed and 76% of the emissions produced by the global food system.

5. **Tripling of nuclear energy, called by 22 countries**: In order to reduce dependence on oil, gas and coal, the 22 countries including the United Kingdom, France, the Netherlands, the United States, Canada and Japan signed a declaration calling for tripling the capacity of nuclear power generation by 2050.

6. **Air-conditioning- Commitments of 60 countries**: The US, Canada & Kenya were among the 60 countries, have come together and committed to reduce the emissions from air conditioning by three times by 2050.

7. **Clean hydrogen certificates-commitments of 35 countries**: The United Kingdom, the Netherlands and Belgium among 35 countries, agreed mutually for recognising clean hydrogen certification schemes.

8. **A compromise in the final declaration**: Those: The president of COP-28 Mr. Sultan al-Jaber, recognised the need for abetment of fossil fuels, which is responsible for 80% of global warming.

> "To those who opposed a clear reference to a phase out of fossil fuels in the COP28 text, I want to say that a fossil fuel phase out is inevitable whether they like it or not. Let's hope it doesn't come too late."
>
> **Mr. Antony Gutters**, (UN Secretary-General)

B. India Led Initiatives at COP28:

1. **Green Credit Initiative (GCI):**

- India launched the GCI program to create a participatory global platform to exchange innovative environmental programs and instruments.
- Water conservation and afforestation were two main priorities of this initiative.

2. **Global River Cities Alliance (GRCA):**

- GRCA was launched by the National Mission for Clean Ganga (NMCG) under the Ministry of Jal Shakti, Government of India in COP28.
- The GRCA is a unique alliance covering 275+ global river-cities in 11 countries.
- GRCA highlights India's role in sustainable river-centric development and climate resilience.
- The GRCA platform will facilitate knowledge exchange, river-city twinning, and dissemination of best practices.

C. COP28 in key figures

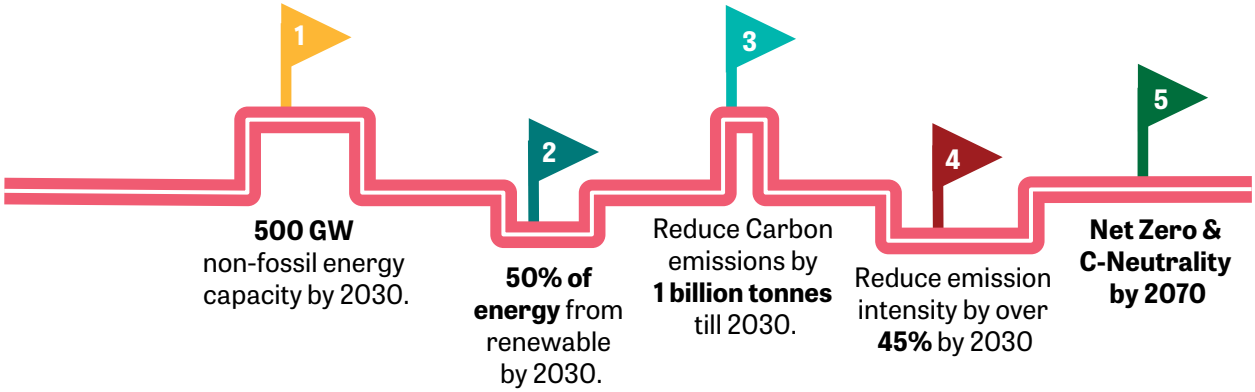
1. According to United Nations, owing to extreme climate events in 2022, more than 56 million people went hungry.

   According to the International Organization for Migration (IOM), almost one third of the population could be exposed to heat waves by 2090 which will result in migration of 2.8 billion people. According to the World Meteorological Organization (WMO) GHG Bulletin No.19, in the year 2022, global average CO2 concentrations exceeded pre-industrial values by 50%, and had continued to rise in 2023, making it as hottest year.

2. According to a press release by the United Nations Environment Programme (UNEP) on 9th Dec 2023 nearly $7 trillion public and private fund – equivalent to 7% of global GDP – supports activities that have a negative impact on nature and directly fuel climate change every year – around 30 times the amount spent annually on nature-based solutions.

D. India's Climate Commitments:

1. PANCHAMRIT: India's' Commitments to Cope with Climate Change



2. Global Green Credit Program (GGCP):

- GGCP was launched by Hon'ble Prime Minister of India under the Ministry of Environment, Forest & Climate Change under COP28. It is initiative under a LiFE movement led by Indian Government. This has been notified on 12th of October 2023, under the Environmental Protection Act 1986. Indian Council of Forest Research and Education (ICFRE) will act as nodal agency for administration, responsible for program implementation, management, monitoring & operation.
- Green credit refers to a unit of an incentive provided for a specified activity: delivering a positive impact on the environment.

Areas which will be part of the credit system

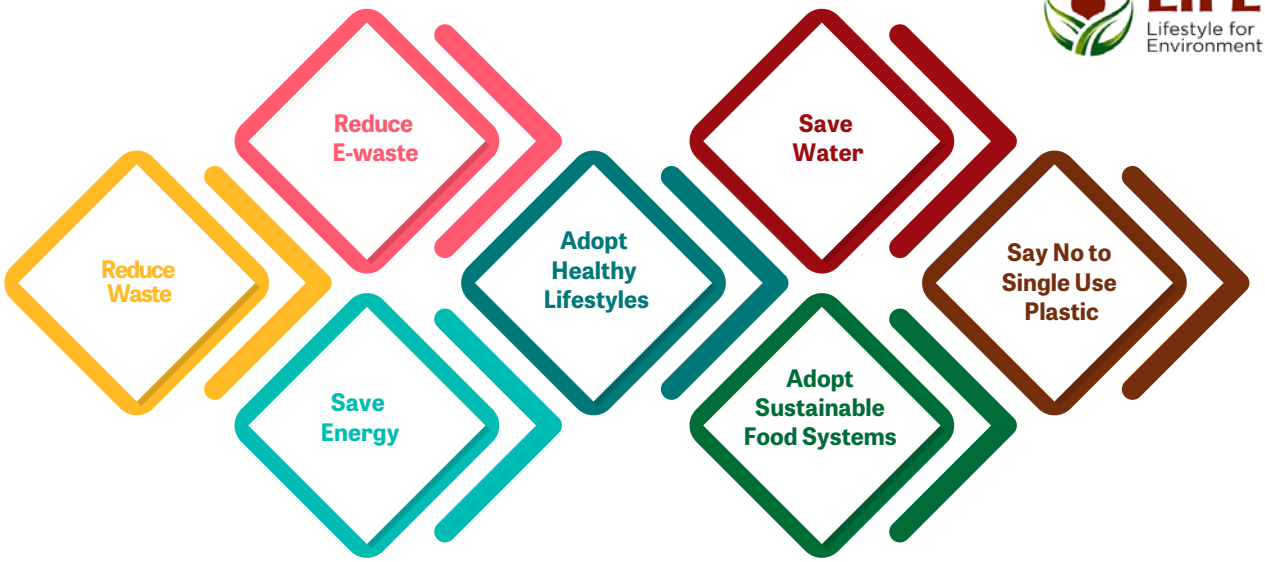
3. LiFE-Lifestyle for Environment

LiFE is a public movement to mobilise individuals to become "Pro-Planet People". This mission is an India led global mass movement to nudge individual & community action to protect and preserve the environment.

Three phases of mission LiFE involves-

- Change in Demand
- Change in Supply
- Change in Policy

LiFE Themes



4. Green Growth: India's Union Budget 2023-24

Moving forward to achieve climate goals;

- **Green Credit Program** launched to incentivise sustainable actions.
- **PM-PRANAM** launched to incentivise states/UTs to promote alternative fertilisers.
- 500 new "**Waste to Wealth**" plants to be established under GOBARadhan Scheme.
- **MISHTI** to be taken up for Mangrove plantation along coastline.
- **Amrit Dharohar** to be implemented over next 3 years for optimal usage of wetlands.

Green GDP is the index of economic growth of a specific nation which takes into consideration the Environmental consequences of the economic growth.

Green GDP is a Monetization of the loss of biodiversity caused by climate change.

SFIs Commitments to CSA

Climate Smart Agriculture: The New Vertical in Syngenta Foundation India

Climate Smart Agriculture (CSA) emerges as Syngenta Foundation India's newest vertical, addressing the urgent need for sustainable farming practices in the face of climate change.

Our Approach Toward Climate Smart Agriculture:

Knowledge Smart

- Capacity Building
- E- learning Platform
- Climate Proof POPs
- Agri. Extension via ICT
- Gender Inclusivity
- Women Empowerment
- AE Training & Incubation
- Financial Literacy

Weather Smart

- Automatic Weather Stations
- Weather Alerts (SMS & IVR)
- Weather based Insurance.

Energy Smart

- Reduced Tillage
- Solar Irrigation
- Micro Irrigation
- Biogas
- Solar Light Traps
- Zero Energy Cool Chamber
- DRE Solutions
- Precision Agriculture

Carbon Smart

- Conservation Tillage
- Soil Amendments- Bio Char, Lime, Gypsum
- Soil Microbial Solutions
- Carbon Credits Registration

Water Smart

- Micro Irrigation
- Land Configurations-BBF, PRB & FIRB
- Laser Land Levelling
- In-situ Water Conservation
- Soil Moisture Indicators
- Farm ponds & Reservoirs
- Rainwater Harvesting

Nutrient Smart

- Soil Testing & Advisory
- Fertigation
- Slow-release Fertilisers
- N Balance Framework
- Biofertilizers
- Crop Rotation
- Cover Crops
- Leaf Colour Charts
- Legumes Intercropping
- Organic Manures
- Residue Management

Ongoing Projects: Supporting CSA

Sl. No.	Project Name	Geography	Funding Agency/ Partner	Project Duration	Major Activities
1	Promoting CSA through Agri. Entrepreneurship Program	Wardha, Ahmednagar & Satara (MH)	EDF	3 years	• Training & capacity building of AEs and farmers • Demonstration of CSA Practices and Technology • #Targeted Farmers: 20,000
2	Development of Model Climate Smart Agriculture Village	Wardha (MH)	NABARD	3 years	• Training & capacity building of farmers • Demonstration of CSA Practices and Technologies • #Targeted HH : 158
3	Development of financial product for DRE component in Agri and Allied Activities	Bihar, Jharkhand, Odisha and Assam	GIZ	1 Year	• Development of 4 Novel Financial Product for financing DRE Technologies in Collaboration with 2 Financial Institutes • Piloting of Novel Financial product with 750 borrowers (125 Women beneficiaries)
4	Implementation of DRE powered livelihood applications across identified locations in Bihar	Bihar	UNDP	1 Year	• Area Mapping & DRE Awareness Creation • Beneficiary Identification & Energy Assessment • Coordinate DRE technology Deployment • Solar Micro Pumps: 100 • Solar DC Refrigerator: 30
5	Implementation of Alternate Wetting and Drying (AWD) Technique in Paddy Cultivation to Enhance Water Use Efficiency and Sustainability	Odisha	Mitti Lab	1.5 Year	• To promote AWD & DSR practices in paddy • Registration of Carbon Credits • #Farmers: 4677 • #Acreage: 17,413

"Fueling rural livelihood through agriculture entrepreneurship"

Empowering Agriculture: An Overview on our Agri-entrepreneurship Program

The AE program designed, tested and rolled out by Syngenta Foundation of India since 2014 to develop Agriculture Entrepreneurs (AEs) wherein village youth (25-40 years) are trained, certified by national institutes, and mentored to build businesses that increase smallholder farmer (SHF) incomes, efficiency and reduce climate footprint through quality inputs, access to markets, credit, and insurance. This program therefore empowers and anchors self-sustaining AEs to provide agriculture services to small holder farmers and enhance their incomes. Along with improving the income of small holder farmers, this program also benefits rural youth through creation of livelihood opportunities. Through this program, 20,000 AEs have been trained since the inception of which 11,511 AEs (83%) are presently active and assisting 1.4 Million farmers working across 13 states covering 210 districts across 23,236 villages reinforced by a team of 34 faculty members and 146 AEMs and management team.

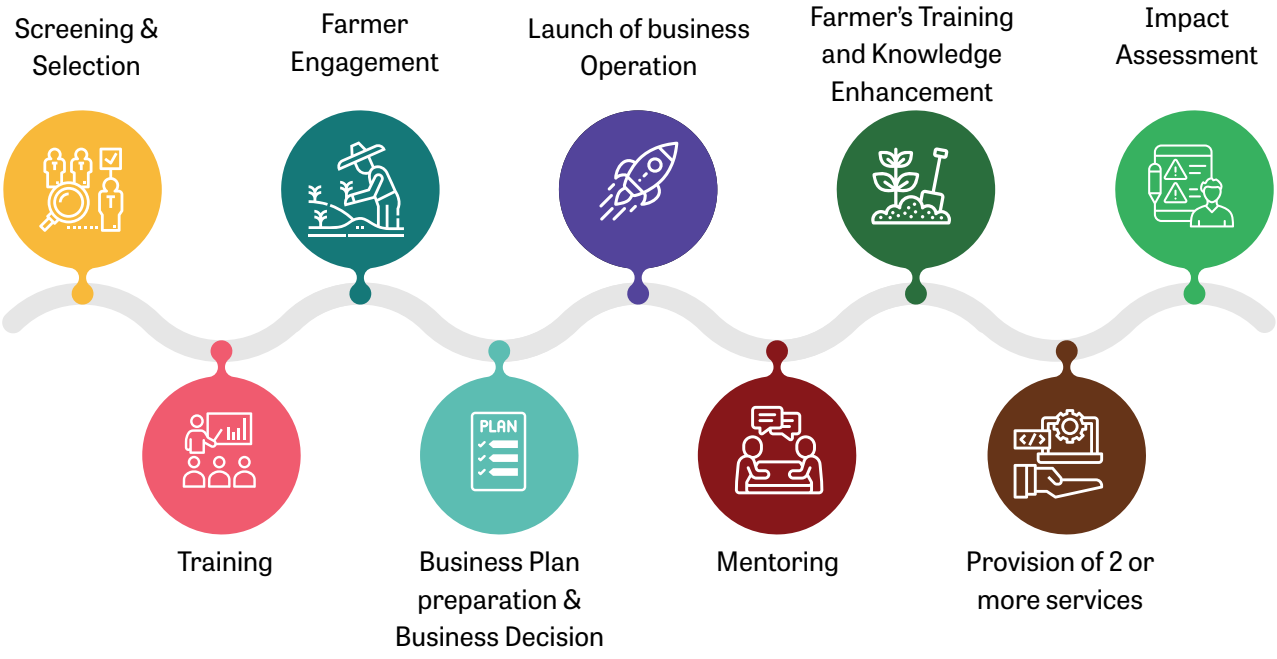
SFI's Agri-Entrepreneurship - Definition

The process in which opportunities based on the local problems of rural communities are identified to develop his/her own business to support the targeted farmers/customers with the help of relevant institutional support.

Objective

The objective of AE Model is to develop and anchor self-sustainable Agri-Entrepreneurs (AEs) to provide agriculture services to small holder farmers to fulfill the threefold purpose of generating rural employment, improving agricultural incomes and practices and furthering environmental sustainability.

AE Life Cycle



AE Extension Model

Current Reach

20,000 Trained AEs

52% Female AEs (Active)

1.4 Mn Total Farmers

45% Women Farmers

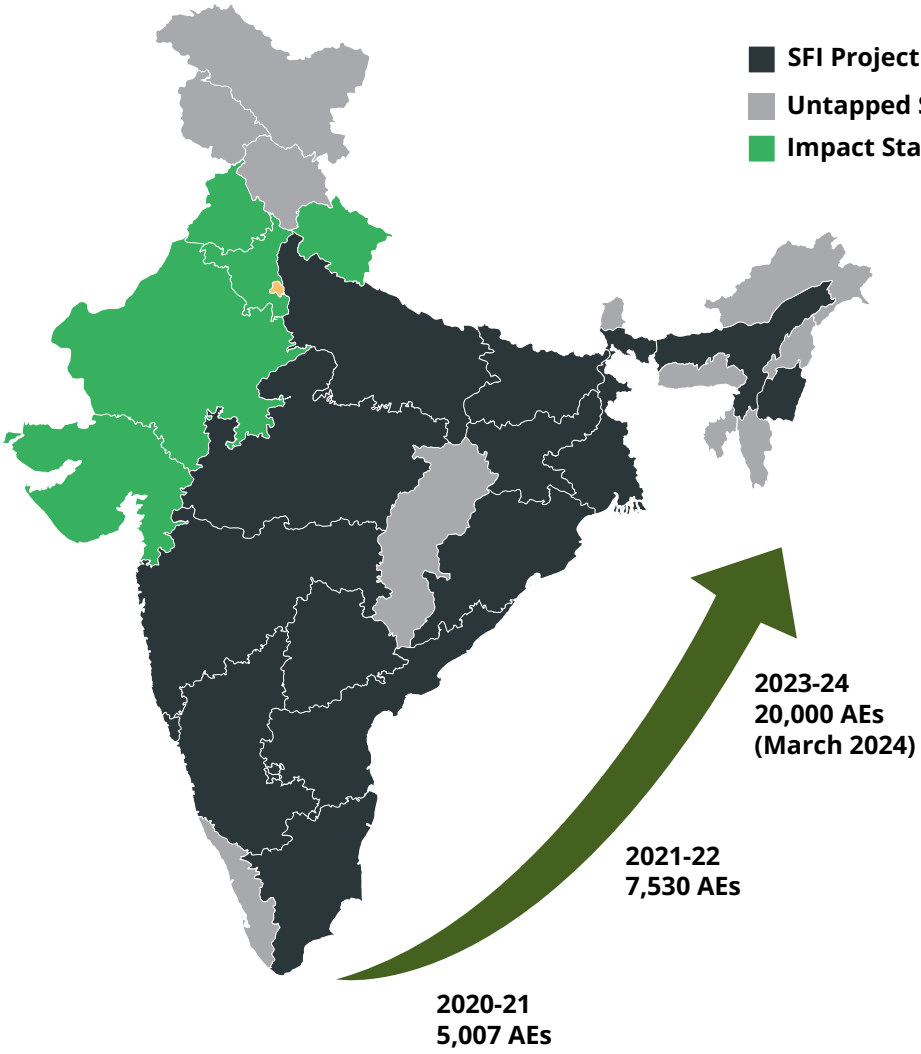
3,260,065 Acreages

13 States, 210 Districts

23,236 Villages

146 AEMs

Current reach of Agri Entrepreneur Program in India



SDG Goals

Leveraging Agri-Entrepreneurs for Sustainable Agricultural Transformation

1. Agri-Entrepreneurs: Champions of Climate-Smart Agriculture

Agri-Entrepreneurs play a pivotal role in advancing climate-smart agriculture principles by:

- Championing long-term soil health initiatives, fostering sustainability from the ground up.
- Spearheading advancements in fertilizer and water management, optimizing resource usage.
- Offering comprehensive CSA services, promoting resilient seed varieties and integrated weed, pest, and nutrient management practices.

2. Improving access through AE Kiosks

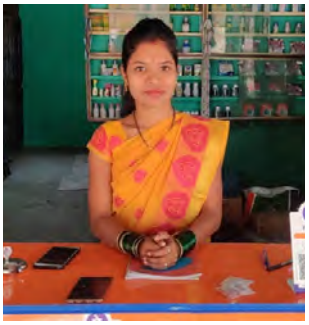
- AE Kiosks serve as vital hubs, granting farmers access to essential resources such as vermicompost, soil microbial solutions, stress-tolerant seed varieties, liquid fertilizers, decomposer, organic products, and soil testing services.
- By facilitating access to quality inputs, AE Kiosks bolster the resilience and profitability of smallholder farming systems, empowering farmers to thrive in challenging environments.
- Agri-Entrepreneurs are revolutionizing agricultural practices by offering comprehensive, 360-degree value chain services to local farmers.
- By enhancing the efficiency of crop production systems, Agri-Entrepreneurs effectively reduce input costs per unit yield while simultaneously strengthening value chains, thereby optimizing farm operations and improving overall farm efficiency.

3. Harnessing the AE Model for Sustainable Development

- The Agri-Entrepreneur (AE) model emerges as a potent catalyst for sustainable development, aligning with **10 out of the 17** United Nations Sustainable Development Goals.
- By fostering agricultural productivity and income generation, cultivating resilience to climate change, and mitigating greenhouse gas emissions, the AE model holds immense promise in advancing global sustainability agendas.

By harnessing the collective efforts of Agri-Entrepreneurs, we can pave the way for a more sustainable and prosperous agricultural future, driving positive socio-economic and environmental outcomes for communities worldwide.

Agri Entrepreneurs engaged in various Archetypes



Agri Input

Vermicompost

Mechanisation

Nursery

Leaders in Action: Core Team Spotlight

Mr. Rajendra Jog
Executive Director

Mr. Pankaj Shukla
Chief Operating Officer (COO)

Dr. Anitha Govindaraj
Key Account Manager

Mrs. Aparna Shukla
Lead–Monitoring and Evaluation

Mr. Avijit Nayak
Head-Agronomy and Innovations

Mrs. Bhawna Nirmal
Key Account Manager

Dr. Gajanan Rajurkar
Lead-CSA Initiatives

Mr. Kedar Ghungurde
Head-Finance

Mr. Rahul Tidake
Head-Strategy & New Initiatives

Mr. Ravindra Katre
Head-Training and Knowledge Management

Mr. Varun Yadav
Head-Market Linkage

Mr. Vikram Borade
Head - Credit Initiatives and Research

Mr. Keshav Borkar
Zonal Head-East

Mr. Amol Deshmukh
Zonal Head-West

Mr. Dheerendra Kumar
Zonal Head-North

Blueprints of Ingenuity: Project Spotlights

We have been dedicatedly implicating Climate Smart Agriculture since 2017, which supports climate smart agriculture principles, prioritizing sustainability and fostering adoption among farmers. Through strategic collaborations with esteemed partners such as SIL, SEIF, Corteva, TNC, EDF, GiZ, UNDP, NABARD and Mittilabs. We have been collectively pursuing various targets with a unified goal of promoting environmentally friendly practices. The brief information of our projects is furnished as below

1. Syngenta India Ltd. & Schneider Electric India Foundation (SEIF)

Solar Lift Irrigation Project The Solar Lift Irrigation project at Jharkhand boasts an impressive array of Macro Pumps, including 5 and 7.5 horsepower models, totaling 36 units. The financial model for this endeavor operates on a 40:60 basis, with farmers contributing 40% and the remaining 60% covered by subsidies. This initiative has successfully reached out to 727 households, covering an extensive area of 511 acres.

2. GiZ: Micro Solar Pump Projects

Since 2020, we have been actively promoting the adoption of solar micro pumps. Our efforts will have already reached approximately 76 households, covering various agri allied activities like nursery Piggery, Kitchen garden and plantations etc.

2020-23 ›
Solar Micro Pumps
Jharkhand, Odisha, Assam

2020-23 ›
Financial Product Development for DRE
Jharkhand, Odisha, Assam, Bihar

Micro Solar Pumps Installed in Farmers Field

Since 2023, we are developing 4 Novel financial products for promoting DRE technologies like Solar micro pump, milking machine, aerator, rice mill and Dc refrigerator. This project will benefit 750 farmers from Jharkhand, Assam, Bihar and Odisha.

3. GIZ Sustainable Soil Management Project

In the year 2021-22, the Sustainable Soil Management (SSM) initiative diligently compiled sustainable soil management technologies deployed within the Prosoil project area. Our focus extended to developing a comprehensive capacity-building module on SSM measures, tailored specifically for project sites in Maharashtra and Madhya Pradesh in partnership with FICCI. Our efforts culminated in the collation of approximately 58 SSM technologies, contributing significantly to the enhancement of soil health and agricultural sustainability in the region. Designed and developed 10 capacity building modules on planning & implementation of SSM measures in the field considering local resources.

Team discussing with farmers on SSM measures at Ahmednagar District

4. Corteva: Promotion of Direct Seeded Rice (DSR)

Our initiative to promote Direct Seeded Rice (DSR) cultivation has made significant strides across two states, Uttar Pradesh and Madhya Pradesh. In a concerted effort spanning 21 districts and 272 villages, we have spearheaded training and incubation programs for 269 Agri-Entrepreneurs (AEs) specializing in DSR custom hiring businesses. As a result, 4,519 farmers have embraced this innovative technology, leading to the cultivation of DSR across 9,206 acres of agricultural land.

Farmer Awareness Program

DSR Sowing Machine

DSR Demo Plot

5. Environmental Defense Fund (EDF): Promoting Climate Smart Agriculture through Agri-Entrepreneurship Program

Since 2022, our collaboration with the EDF Team in Maharashtra has been instrumental in promoting Climate-Smart Agriculture (CSA) and establishing CSA Villages. EDF has developed a comprehensive CSA curriculum tailored for Agricultural Entrepreneurs (AEs), aiming to raise awareness among rural youth about climate change and empower them to establish enterprises aligned with climate-smart principles. These initiatives aim to assist farmers to adopt good agriculture practices while mitigating the effects of climate change. Additionally, EDF is collaborating with SFI to enhance the capabilities of executives, frontline workers, and extension workers, enabling them to facilitate the adoption of climate-smart agriculture (CSA) techniques among farmers.

Through the joint efforts of EDF and SFI, a CSA model is being implemented, deploying interventions that prioritize resource efficiency, climate resilience, and securing agricultural livelihoods. EDF has championed the nitrogen balance (N-balance) framework, offering a cost-effective and scientifically sound method for stakeholders to evaluate its impact on farmer incomes and nitrogen losses, thus aiding environmental conservation on a larger scale.

In our initial project phase, as part of the CSA model, we implemented a range of interventions such as Mycorrhiza, Integrated Pest Management (IPM), Vermicomposting, Seed Replacement, Direct Seeded Rice (DSR), and Integrated Nutrient Management (INM), reaching 2000 farmers directly. Furthermore, we conducted assessments to evaluate the effectiveness of these interventions, in with comparison to the control plots. Over 15,000 farmers have received training and adoption of CSA practices and technologies.

In the second phase, our project focus spans across Ahmednagar, Wardha, and Satara districts of Maharashtra. Our focus is on developing a CSA models tailored to bolster productivity, foster resilience, and curb greenhouse gas (GHG) emissions, especially in water and nutrient-intensive crops like sugarcane, cotton, wheat, and soybean. With an aim to reach 100,000 farmers by demonstration of CSA models and providing customised advisory services through N-balance framework. we remain steadfast in our commitment to fostering climate smart agricultural practices and mitigating environmental impacts for the betterment of farming communities and ecosystems for a sustainable future.

Promoting cultivation of sugarcane through seedlings at Ahmednagar

Training Farmers on Wheat Cultivation Practices at Wardha

Vermicompost Production by AE at Palghar

Exposer Visits of Farmers at Sugarcane Plot in Ahmednagar

Training Farmers on INM Practices in Wheat crop at Wardha

Sugarcane Demonstration Plot at Ahmednagar

6. NABARD: Development of Model Climate Smart Agriculture Village

In collaboration with NABARD, our focus in Wardha District, Maharashtra, is on establishing a model Climate-Smart Agriculture (CSA) village by 2026. Our efforts primarily revolve around empowering the community through training and capacity-building initiatives for farmers. Additionally, we conduct on-ground demonstrations showcasing CSA practices and technologies to enhance agricultural sustainability and resilience. With a target of reaching 158 households, we aim to foster widespread adoption of CSA principles,

Disease and Pest Identification in Cotton Demo Plot at CSAV

contributing to the holistic development of farming communities and the promotion of environmentally conscious agricultural practices in the region.

Live demonstration of trap installation at CSAV

PIMC members field visit to demo plot

7. UNDP: Implementation of Decentralized Renewable Energy (DRE): Powered livelihood applications across identified locations in Bihar

Presently, we are closely working with UNDP, aimed at promoting the adoption of DRE technologies among smallholder farmers in Bihar. Our primary activities include comprehensive area mapping and raising awareness about DRE solutions. Additionally, we are actively involved in identifying beneficiaries and conducting energy assessments, as well as coordinating the deployment of DRE technology. As part of this effort, we will be facilitating the distribution of 100 micro pumps and 30 DC refrigerators to support the agricultural and household needs of the local community.

8. TNC: Promotion of Regenerative Agriculture and No-Burn Agriculture in Punjab

- Created awareness among 77,500 farmers on benefits of Regenerative Agriculture & No-Burn Agriculture.
- 2,000+ farmers have adopted no-burn agriculture in high intensity activity cluster.

Training farmers on Regenerative Agriculture

HIAC

High Intensity Activity Cluster

- Patiala District 52 villages
- 120 AEs trained
- 2500 Farmers registered

MCIA

Multiple Component Implementation Approach

- 5 Districts: Bathinda, Mansa, Sangrur, Muktsar & Faridkot, 160 villages/district
- Trained 1657 AEs
- Reached out to 75000 farmers

9. Mitti Lab: Implementation of Alternate Wetting and Drying (AWD): Technique in Paddy Cultivation to Enhance Water Use Efficiency and Sustainability

In collaboration with Mitti Labs, we have taken up implementation of AWD & DSR Technologies of paddy cultivation in the Odisha State. Mitti Labs will design the methodology for GHG emission estimation and register the farmers for the carbon credit program with the help from distinguished validation & verification agencies. This program will engage a total of 4,677 farmers covering an area of 6,965 Ha. through the implementation of AWD practices. A safe AWD system along with other CSA practices will be implemented including usage of field water tubes for measuring water depth in the fields. The existing AE network will be leveraged for promotion of safe AWD & DSR across Odisha to reduce water usage and methane emission while ensuring production sustainability.

CSA in Action

SFI by leveraging AEGF Network have implemented various Climate Smart Agriculture Projects in Maharashtra, by reaching 25,000+ farmers and Decentralised Renewable Energy projects in Jharkhand, Odisha and Assam benefiting more than 900 households.

In this section, we'll delve into the SFIs most impactful strategies, focusing on:

1. Capacity Building
2. Climate-Smart Agriculture (CSA) Interventions.

We'll explore how our targeted training programs have enhanced farmer expertise and productivity and examine the tangible benefits of CSA Interventions that have led to increased yields, cost savings, and environmental sustainability.

Step by Step Action

- Development of CSA Training module & Climate Proof POPS of Crop and Validation of Training Content from Agri. Experts
- Deployment of CSA Trainings to Farmers
- Deployment of Climate Proof Crop Specific Trainings to Farmers
- Deployment of CSA Interventions under selected crop
- Monitoring & Evalution of CSA Demostration Plots
- Assessment of adoption rate of CSA Practices by other farmers
- Impact Assessment

Capacity Building

We've developed a CSA Training Module tailored for Faculty and AEMs (Agriculture Entrepreneur Mentors) in collaboration with EDF, a comprehensive training program spanning across six sessions. Our curriculum covers a spectrum of CSA intricacies, ensuring a holistic understanding of its principles. Also, two CSA sessions from the CSA Module have been inserted into AE curriculum. These sessions were translated in regional languages such as Marathi, Hindi, Telugu, Tamil, and Odiya.

CSA Module	
Session 1	Concept of Climate Change
Session 2	Climate Change Impact and CSA
Session 3	Soil Health Management
Session 4	N-Balance and its Calculations
Session 5	Rice Water Management
Session 6	Importance of Carbon Tons

SFI Staff: A majority of our staff members have enthusiastically engaged in our intensive two-days CSA training program. Notably, almost all 35 Faculties, pivotal in mentoring Agriculture Entrepreneurs (AEs), have undergone comprehensive CSA training, both through in-person and online platforms.

The locations and numbers of candidates trained are given as follows:

Location/ Venue	#Candidates trained	Year
Jawhar	30	Mar, 2022
Baramati	35	May, 2022
Ahmednagar	12	Sept, 2022
Patna	31	Oct, 2022
Nashik	31	July, 2023
Wardha	27	July, 2023
Nanded	33	Sept, 2023
Total	**199**	

CSA Training for Core Team at NIASM, Baramati

Development of Master Trainers: We also conducted a training program on Climate Smart Agriculture for 198 AEs to become 'Master Trainers' for delivering training to farmers under EDF Project. These Master Trainers will play a crucial role in educating farmers about the principles and practices of Climate Smart Agriculture.

CSA Training for Master Trainers at Wardha

CSA Training for Master Trainers at Ahmednagar

Agriculture Entrepreneurs (AEs): A total of 2799 AEs have undergone training across India.

To gauge candidate performance effectively, we've integrated advanced assessment digital tools like Classmarker, Mentimeter etc., Furthermore, our module incorporates gamification techniques to encourage active engagement utilizing interactive activities such as storytelling, ice breaking, token rewards. This approach creates a dynamic learning environment that not only enhances knowledge retention but also fosters hands-on application.

Farmers: To build resilience among farmers, there is a need for capacity building through effective training modules and programs. By creating comprehensive training modules and imparting suitable training to farmers, we empower them with the knowledge and skills necessary to adapt to the changing climate. These training programs cover Climate smart agriculture practices, water management strategies, and ways to mitigate the impact of climate change on their crop yields.

Additionally, 2025 Farmers have received trained on Wide & Narrow transplanting techniques of paddy cultivation, while 200 farmers have adopted AWD practice and 4,519 farmers have embraced DSR technologies.

Training to Farmers

Location	FY 2022-23	FY 2023-24
Palghar	7237	NA
Wardha	8359	6530
Ahmednagar	NA	2489
Total	15,596	9,019

CSA Training for Internal Team, Wardha

CSA Training for Internal Team, Ahmednagar

CSA Training for Faculties and AEM, Patna

Farmers Training on Wheat Crop, Wardha

CSA Interventions & Demonstrations

I. Demonstration Plots

On-farm demonstrations facilitate scaling of locally appropriate climate-smart agriculture (CSA) practices among farmers through “learning by doing”. It also helps to capture information about preferred CSA practices, since farmers suggest their own learnings. The interplay between local perceptions and scientific analysis will permit promotion of locally appropriate CSA technologies. Therefore, adhering to the principle of "seeing is believing," CSA demonstrations can significantly enhance nitrogen use efficiency (NUE), improve soil health, mitigate post-harvest losses, manage diseases, and streamline production practices. Thus, it can helps foster greater interest among small holder farmers in adopting these technologies.

Therefore, to exemplify the effectiveness of climate proof package of practices (PoPs) and CSA techniques, SFI has implemented over 100 demonstration plots in the farmers field during kharif and Rabi seasons. These demonstrations have been setup specifically for water and nutrient intensive crops such as Sugarcane, Paddy, Cotton & Wheat.

Interventions in Cotton crop:

- Training & Capacity Building
- Soil Testing & Recommendation
- Raised Bed Planting
- Integrated Pest Management
- Integrated Nutrient Management
- Drip Irrigation & Fertigation

Cotton Demonstration Plots, Wardha

Interventions in Wheat crop

- Training & Capacity Building
- Soil Testing & Recommendation
- Seed Replacement with resilient cultivars
- Seed Treatment: Trichoderma
- Use of soil microbial solutions
- Integrated Nutrient Management: Mix Micronutrient (Zn, Cu, B, Fe, Mn) + N-Balance+ Biofertilizer + Compost
- Integrated Pest Management
- Water Management: Sprinkler Irrigation

Wheat Demonstration Plots at Wardha

Interventions in Sugarcane Crop

Sr. No	New Interventions	Embedded CSA Practices
1	Sugarcane Nursery	Critical stage irrigation management, INM (Soil Testing+ Nitrogen Balance + Azospirillium), IPM-White Grab Traps + Tricho card, Power Weeding for initial 40-70 days
2	Ratoon Management	Ratoon Manager, Power Weeding for initial 40-70 days, INM (Soil testing + Nitrogen Balance + City Compost), IPM-White Grab Traps + Tricho card
3	Drip Irrigation & Fertigation	Seed Treatment, Bio pesticides, INM (Soil testing + Nitrogen balance + Liquid Fertilizers), IPM – White Grabs + Nematodes
4	Straw Management	Seed Treatment, Shredder Machine, Speed Compost, White Grab Traps, IPM, INM (Soil testing+ Nitrogen Balance + Azospirillium),

Sugarcane Seedlings Promotion, Ahmednagar

Sugarcane Demonstration Plot, Ahmednagar

Straw Management under Sugarcane, Ahmednagar

II. Exposure Visits

Exposure visit of farmers were conducted in the demo plot from the same village as well as nearby villages to motivate them to adopt climate smart agriculture practices. Field visits are planned through a cluster approach to enable farmers facing initial hurdles to benefit from the experience of farmers who have benefited positively from the interventions. These exposure visits have been instrumental in educating farmers about impact of climate change on agriculture, identifying faulty agricultural practices, and promoting efficient utilization of available resources. Farmer exposure visits are providing valuable insights into Cotton, Paddy, Wheat, Sugarcane, Soybean & Chickpea crops for adopting good cultivation/ agriculture practices. With over 10,000 farmers having explored the demonstration plot during these exposure visits. Participants had the opportunity to witness the remarkable progress achieved in these plots, serving as a source of inspiration compared to their regular fields. Furthermore, the exposure visits also provided a platform for the farmers to learn more about pest and disease identification techniques, further empowering them in their agricultural endeavours.

Farmers Exposure Field Visit to Sugarcane Demonstration Plot at Ahmednagar

Farmers Exposure Field Visit to Cotton Demonstration Plot at Wardha

III. Demo Events

Demonstration events involving multi stakeholders have been organised to offer farmers the opportunity to gain exposure to innovative agricultural practices, fostering knowledge exchange and skill development. Through active participation in these events, farmers gain access to invaluable insights and engage in peer-to-peer learning, empowering them to implement sustainable and climate-resilient farming techniques. Additionally, these events serve as platforms for farmers to provide direct feedback, ensuring that agricultural interventions are tailored to their needs and realities. This collaborative approach ultimately leading to enhanced productivity and resilience in the face of environmental challenges.

Field demonstration events held in Wardha & Ahmednagar Districts of Maharashtra, saw active participation from stakeholders including KVKs, Agri departments, NGOs, Research scientists, and other relevant line departments. These events aimed to disseminate the knowledge among wider farmer networks and interacted with farmers for their feedback have provided us with immense knowledge and pride.

Demo Event of Sugarcane Plot, Ahmednagar

Interaction with Sugarcane Growers, Ahmednagar

Demo Event of Wheat Crop, Wardha

Sowing the Seeds of Sustainability: CSA Interventions and Their Impact

In this section, we will explore the Climate-Smart Agriculture (CSA) interventions implemented by SFI & AEGF in collaboration with our valued partners, aimed at fostering sustainability in the farmers' fields. We will also delve into the profound impact of these interventions on the livelihoods of the farmers, showcasing the transformative power of climate smart agriculture practices.

Soil Health Management

Improving Soil for Sustainable Production

Over the decades, more than 30% of farming soils in India have degraded, impacting nearly 98 million hectares. The reasons behind this degradation include improper use of chemical fertilizers, inadequate organic matter recycling, and inappropriate tillage practices. To address this critical issue, it is essential to focus on increasing soil organic carbon (SOC), which currently stands at an average of 0.3-0.4%, far below the desired range of 1-1.5%. Elevating SOC levels is crucial for enhancing productivity and ensuring food security, while building climate resilience. Recognizing the significance of soil health, the Indian government has implemented various programs and schemes like soil health cards and other soil initiatives nationwide. Despite these efforts, many farmers still face challenges in accessing soil testing facilities, receiving timely reports, and obtaining resources to interpret the results and receive customized recommendations. To bridge this gap, Syngenta Foundation India (SFI) has launched an initiative to improve soil health. Our focus lies in promoting reduced tillage, applying soil microbial solutions and vermicompost, conducting soil testing, and recommending balanced doses of fertilizer, are among the other practices.

SOIL HEALTH INITIATIVE

Objectives:

1. To develop mapping of soil nutrient status
2. To generate fertilizer recommendation of major crops cultivated by the farmers.
3. To educate the growers on the overall soil testing and recommendation for maintaining and improving their soil health status

1. Soil Testing & Recommendation:

- **Soil testing training**: SFI has provided training on Sample collection techniques, result interpretation, and effective implementation of recommended practices.
- **Linking to soil testing laboratory**: Through our extensive AE network, SFI has ability to establish connections between soil testing laboratories & smallholder farmers.

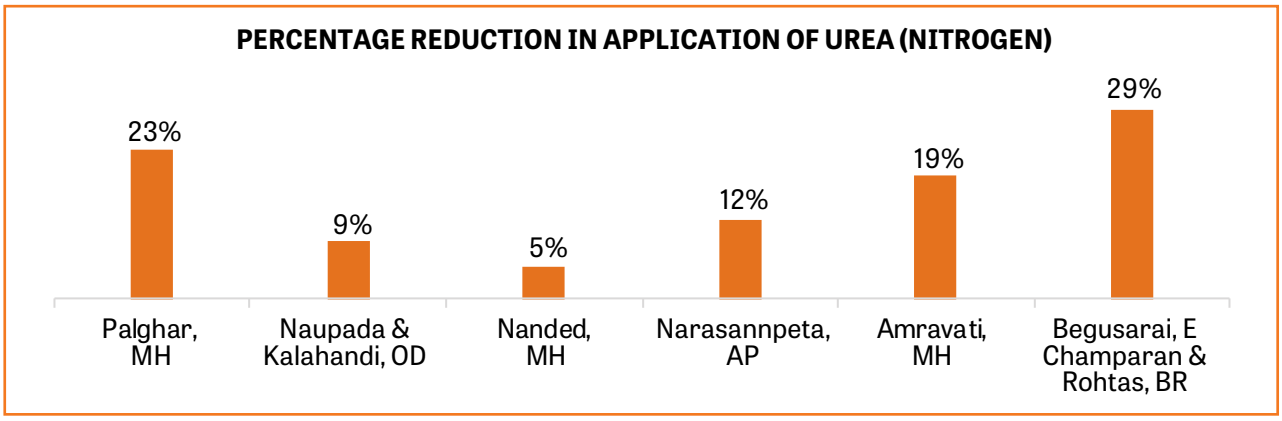
Soil Health Awareness

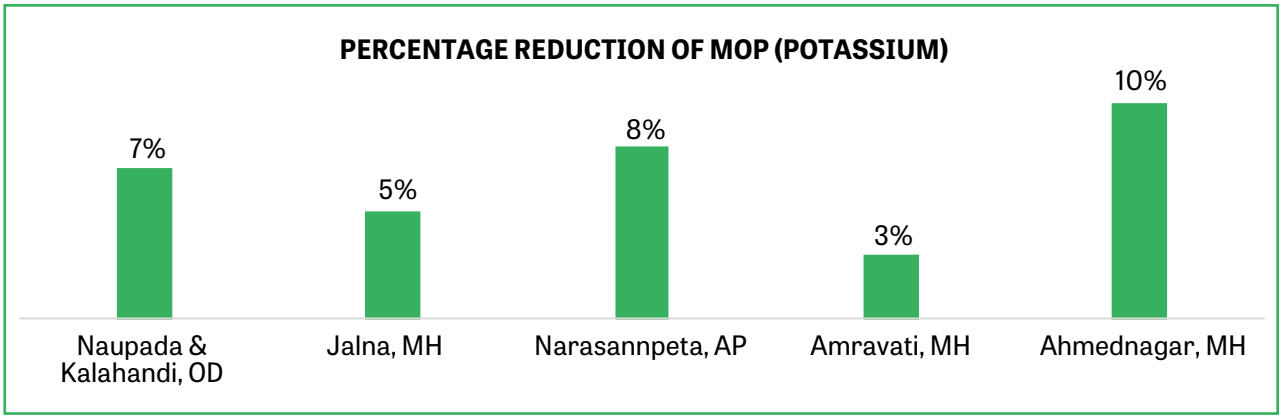
Process of Implementation

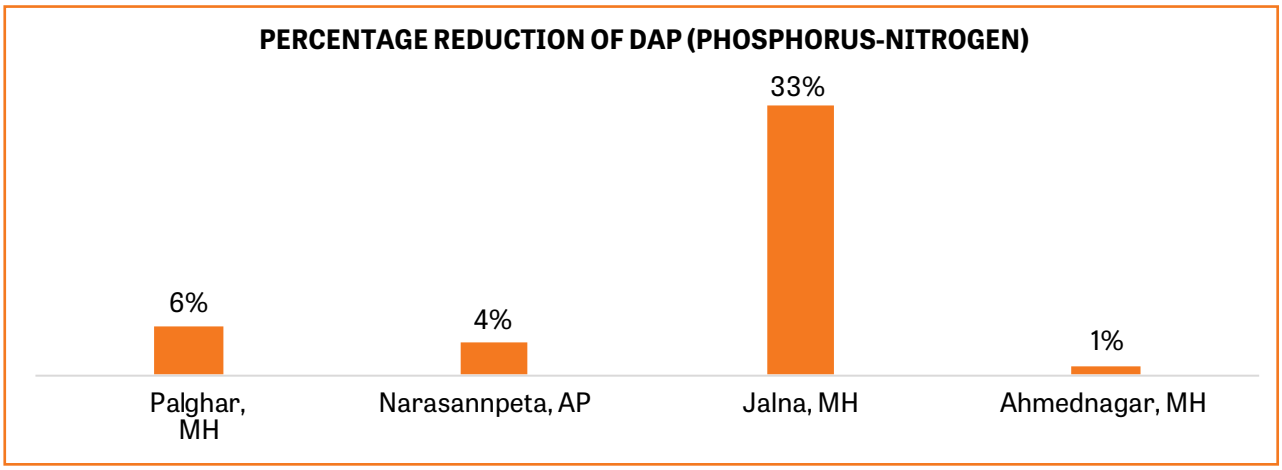
- Preparation of project charter
- Development of training module on soil sampling
- TOT & soil health awareness campaign for farmers
- Identification of Farmers and collection of soil samples
- Mapping of soil testing laboratories
- Soil testing & report orientation to farmers
- Fertilizers advisory & impact assessment

Impact:

a. **Reduction in fertiliser application**: The soil testing resulted in reduction of fertilizer usage by the farmers in our intervention areas as given below.







b. **Cost saving**: In terms of saving in cost across 8 project locations, it is observed that there is saving of approximately, INR 25-178 on Urea, INR 79-360 on DAP and INR 51-255 on MOP.

c. **Social Impact Awareness**: Govt has already taken an initiative to reduce the weight of urea bag from 50 to 45 kg. This has brought down the consumption of nitrogenous fertiliser by 8% per Ha. Furthermore, with SFIs initiative the awareness on the usage of fertiliser have been enhanced among smallholder farmers.

Hands on Training on Soil Sampling in Farmers Field

Soil Reports Distribution to Farmers

Soil Reports Distribution and Orientation to Farmers

2. Application of Mycorrhiza:

About the Intervention:

Mycorrhiza represents a symbiotic association between the roots of higher plants and fungi. This relationship serves to enhance mineral absorption by the green plants. The fungal hyphae extend from the plant roots into additional soil areas, aiding in the absorption of various nutrients, particularly Phosphorus, Zinc, and Copper, which are then transmitted to the plants. Moreover, mycorrhiza provides a protective cover, increasing seedling tolerance to drought, higher temperatures, disease fungi, and extreme soil acidity. It supports better germination, rapid root growth, and nutrient uptake. Additionally, mycorrhiza stimulates photosynthesis and provides some immunity against soil-borne diseases.

Farmers Outreach:

We have promoted a mycorrhiza granule with 2,000 farmers in Palghar, Wardha & Ahmednagar Districts of Maharashtra state.

Impact:

Palghar Farmers had used the Mycorrhiza under Cowpea and Vegetable crop. However, Wardha farmers have used it for wheat crop. It was observed that requirement for application of fertilizer dosage reduced significantly in case of Wheat crop. Farmers didn't apply second split of fertilizer during top dressing application, thereby saving around 25% cost on fertilizer due to this simple application. In Palghar area, plots using Mycorrhiza have shown 13-20% yield enhancement in Cowpea crop as compared to control plots. Thus, we can say with conviction that there is a definitive tangible benefit associated with usage of mycorrhiza on yield enhancement and fertilizer optimization.

Promotion of Mycorrhiza with the Farmers at Palghar and Wardha Districts, Maharashtra State

Renewable Energy

Renewable energy solar pumps are indispensable as a climate-smart technology for several reasons. They effectively reduce carbon emissions by harnessing clean solar energy, aiding in the fight against climate change. By promoting efficient water usage in applications like irrigation and livestock watering, these pumps contribute to water conservation efforts. Their ability to operate off-grid ensures resilience to climate variability, guaranteeing uninterrupted water access even in adverse conditions. Additionally, solar pumps offer long-term cost savings by utilizing abundant solar energy, making them economically advantageous. They also play a pivotal role in rural development, particularly in off-grid areas, by empowering communities and fostering socio-economic growth. Overall, renewable energy solar pumps provide a sustainable solution for water and energy security while promoting environmental stewardship.

Farmers Reach:

Embracing renewable energy solutions for sustainable agriculture, this initiative has made significant strides in promoting solar-powered irrigation systems. From 2018 to 2024, benefiting 800 households across 550 acres in Jharkhand, Odisha and Assam.

Impact:

1. **Convergence with Government Schemes** like plantation schemes, MGNREGA, NRLM & SRLM
2. **Change in Livelihood Activities** - Farmers have added new activities like Nursery, Piggery and fishery etc. due to micro solar pumps, leading to increased income.
3. **Change in Cropping Pattern** - Increase in Cropping Area and cropping intensity due to availability of reliable water supply using micro solar water pumps.
4. **Change in Technology** - Farmers shifted from diesel pump to solar pump.
5. **Empowering Women Farmers** - Due to ease of operation of MSWP, the whole family of beneficiary including senior members and women can easily connect and start the pump. The MSWP are light weight & portable, plug and play system convenient to use as compared to conventional diesel pumps.

What?

A solar water pump system is essentially an electrical pump system in which the electricity is provided by one or several Photo Voltaic (PV) panels

Where?

Solar water pumps can supply water to locations which are beyond the reach of power lines/ frequent power cuts/Power is not enough

Why?

- Suitable for agri and agri-allied activities
- Early pay back period
- Long Life (Around 25 Years)
- Reliable source of power supply
- More saving due to low maintenance
- low yielding borehole has time to refill.
- Suitable for surface water sources like farm ponds, lakes

Farmers with Micro Solar Pumps

Seed Replacement & Seed Treatment

Climate-resilient crops and varieties offer increased tolerance to various abiotic stresses, aiming to maintain or even improve yields under adverse conditions. By adapting to challenging soil and climatic conditions, these crops play a crucial role in marginal agricultural areas, where traditional farming practices may struggle to cope. Moreover, enhancing crop yield can effectively reduce the greenhouse gas emissions-to-yield ratio, thus enhancing the profitability aspect of Climate-Smart Agriculture (CSA) approaches.

Additionally, biofertilizers used for seed treatment represent eco-friendly companions to these resilient seeds, holding the potential to boost crop productivity sustainably. These biofertilizers not only enhance nutrient availability and uptake but also promote plant growth while mitigating the incidence of diseases and pests. Importantly, they offer cost-effective and environmentally friendly alternatives to chemical fertilizers, thereby safeguarding soil health, water quality, and biodiversity.

Seed coating with Trichoderma spp. stands out as a promising technique within agricultural practices, functioning as an integral component of the seed–plant–soil system. This approach replaces chemical seed treatments, facilitating seed bio-priming by making beneficial microorganisms accessible to crop roots. By colonizing the rhizosphere during the critical early germination stage, Trichoderma spp. promote healthy and rapid plant development, improving nutrient uptake and stress tolerance.

Farmers Outreach:

- More than 1060 farmers in Palghar, Wardha & Ahmednagar districts were benefitted by seed replacement program under the Wheat, Paddy & Sugarcane crops.
- In Ahmednagar, we promoted new variety of sugarcane Phule 15012 developed by Central Sugarcane Research Station, Padegaon. This program was implemented in collaboration with ICAR-IISR Biological Control Centre, Pravaranagar (Maharashtra). The program aims to expand cultivation of new variety of sugarcane to 375 hectares in upcoming year, covering 25-30% of the command area of Sugar Factory, Pravaranagar.

Wheat Seed Distribution, Wardha

Sugarcane Seed Distribution, Ahmednagar

Wheat Seed Treatment with Trichoderma, Wardha

Demonstration Plot with Replaced Wheat Seed, Wardha

Paddy- AWD, DSR & Wide and Narrow Transplanting

Climate-smart agriculture (CSA) interventions are vital for mitigating methane emissions in paddy crop cultivation. Techniques such as alternate wetting and drying (AWD), direct-seeded rice (DSR), and precise fertilizer management can help reduce anaerobic conditions in the soil, thus lowering methane production.

1. AWD using field water tube

Alternate Wetting and Drying (AWD) is a technique for conserving water in irrigated paddy cultivation. However, its direct contribution to climate benefits may be limited. This is because there can be significant N2O fluxes in rice fields that are intermittently flooded at medium to intense levels. Draining water from the field can increase the risk of N2O emissions, while maintaining higher water levels in the field can lead to increased CH4 emissions. Various factors, including carbon and fertilizer usage, influence greenhouse gas (GHG) emissions. Among these factors, the flooding regime appears to be the most significant predictor of the net climate impacts on a farm-specific basis. Using water pipes to monitor the water level in the field can be helpful in mitigating both CH4 and N2O emissions. Ideally, the water level should fluctuate within a range of plus or minus 7 cm in the water pipe.

Farmers outreach

Sr. No	State	District	#Trials
1	Maharashtra	Nashik	160
		Palghar	20
2	Andhra Pradesh	Eluru	01
Total Trials			**181**

Field Water Tube at Irrigated Paddy Field

Impact

Reduction in Irrigation Events: The number of irrigation events has been reduced from 8 to 6 in most of the trial plots.

No Change in Crop Yield: Significant yield change was not observed in all the trials.

Cost Reduction in Cultivation: The cost of cultivation has been reduced by 11%.

Training Farmers on Field Water Tube Installation

Harvesting of Paddy in 4x4 sq m area

2. Direct Seeded Rice (DSR)

Direct seeding rice (DSR) is a technique of growing rice by direct seeding without raising nursery, without transplantation, without standing water, on un puddled soils under less irrigation with unsaturated (aerobic) condition. Direct-seeded rice (DSR) is a feasible alternative to conventional puddled transplanted rice, an approach towards climate smart agriculture with good potential to save water, reduce labour requirement, requires limited energy for pumping irrigation water, which reduces the formation of green- house gases majorly Methane in the rice fields thus helps in mitigating green-house gas (GHG) emission, and adapt to climatic risks. The yields are higher comparable with transplanted rice if crop is properly managed. The system has been proved cost-effective and farmers' friendly but require further improvement in technological approach to realize greater benefits.

In our endeavour to promote Direct Seeded Rice (DSR), spanning across the states of Uttar Pradesh, Madhya Pradesh, and Maharashtra we've made significant strides:

Accomplishments:

- Our efforts have reached 21 districts and 272 villages, benefiting a diverse farming community.
- Through comprehensive training and incubation programs, we've empowered 269 Agri-Entrepreneurs (AEs) to establish thriving DSR custom hiring businesses.
- A total of 4,519 farmers have embraced this innovative technology, catalyzing agricultural transformation.
- 9,206 acres of agricultural land have been transitioned to DSR cultivation, enhancing productivity and sustainability.
- Our initiatives have facilitated the acquisition of DSR machineries by 122 AEs, with an additional 147 AEs investing in new equipment, amplifying operational efficiency.
- Leveraging credit linkages, we've empowered 121 AEs to expand their DSR ventures, fostering economic resilience within local farming communities.

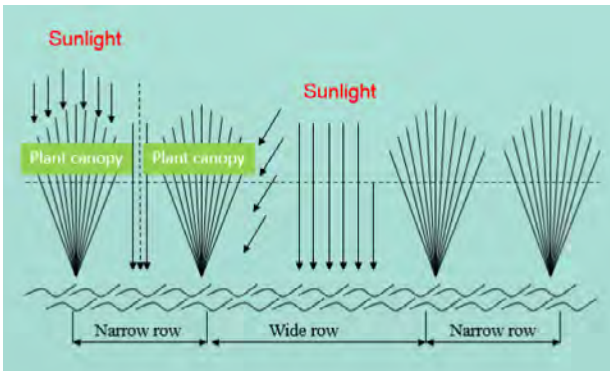
Impact:

- Increase in yield up to 14.5 % in case of DSR plots over transplanted rice.

Direct Seeded Rice (DSR) Field

3. Wide & Narrow Transplanting of Paddy

Wide & narrow rows transplant involves growing of Paddy in alternate wide & narrow pattern following the row to row spacing of 20cm and 45 cm. This innovative technology creates condition for optimum number of panicles per hill as well as a greater number of grain per panicle and provides better edging effect in photosynthesis and nutrient absorption.

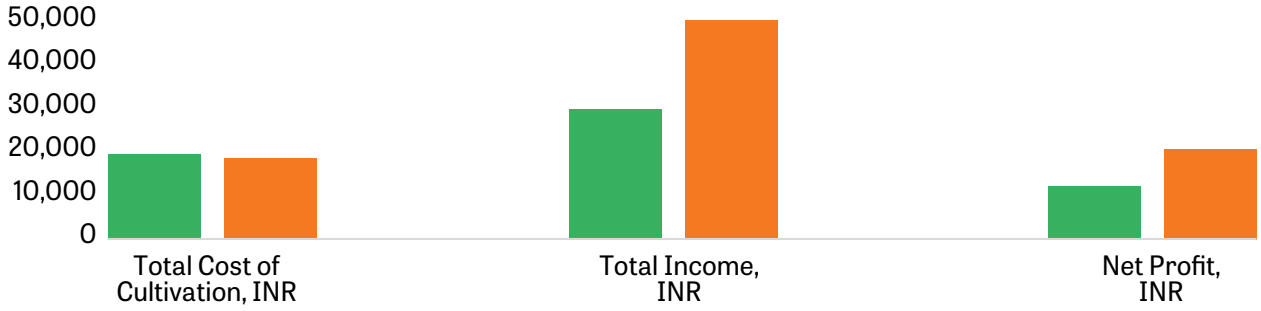


Principles of Wide & Narrow Transplanting

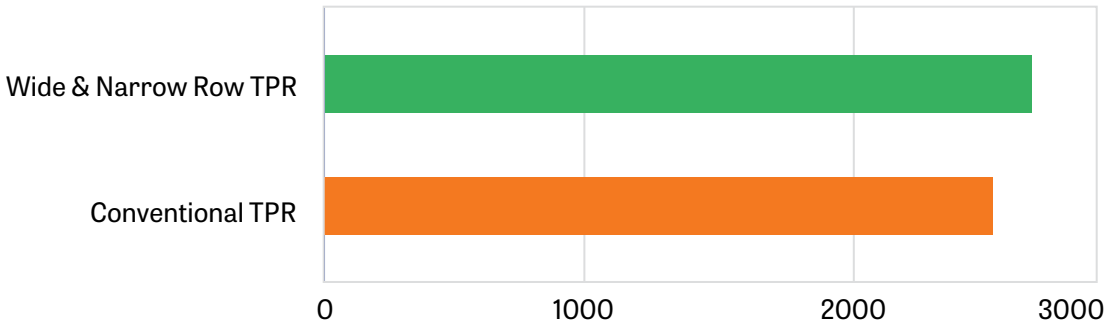
Accomplishments:

- In Kharif 2020, SFI conducted over 40 trials on wide and narrow row transplantation in Bihar, Jharkhand, Maharashtra, and Odisha States.

Wide and Narrow Paddy Cultivation



Yield WNR Vs Control



Integrated Nutrient Management

Integrated nutrient management (INM) plays a pivotal role in reducing greenhouse gas (GHG) emissions by optimizing nutrient use efficiency in agricultural systems. By combining organic and inorganic nutrient sources, INM helps maintain soil health, improve crop productivity, and minimize nitrogen losses that contribute to GHG emissions like nitrous oxide. Overall, INM offers a holistic approach to nutrient management, promoting sustainable agricultural practices that mitigate GHG emissions while maintaining soil health & productivity.

1. Vermicompost:

Earthworms naturally turn waste source materials in hard concrete or plastic constructions into compost through a process called vermicomposting. Compost created through this environmentally friendly procedure is traditionally and frequently used as a natural fertilizer to promote plant development. Compared to FYM, vermicompost is more abundant in macro and micronutrients such N, P, K, Fe, S, and Ca. While FYM has 0.5% of N, 1% of P, and 0.5% of K, vermicompost contains 2% of N, 1.2% of P, and 1% of K. Since the variety and activity of the microorganisms are greater than FYM, they can mobilize more natural nutrients than FYM.

Customized modules on vermicomposting were included in the training program and are taught to the AE candidates by the experts of Syngenta foundation India (SFI) and Agri Entrepreneur Growth Foundation (AEGF).

Total 62 AEs have been established exclusively for production & supply of vermicompost. On an average having 7 cycles per year with 3 vermicompost beds, AE can earn an income of Rs.1,05,000.

2. Mixed Micro-nutrients:

The use of mixed micronutrients in agriculture is essential for optimizing plant health and productivity. These micronutrient formulations have a potential to improve soil structure and microbial activity, further contributing to sustainable agricultural practices.

The mix micronutrients were promoted with 500 farmers from Wardha & Ahmednagar District.

Micro Nutrient Distribution to Farmers

SFI & EDF Team Visit to examine AEs Vermicomposting Beds

3. Nitrogen Balance Approach: To increase nitrogen use efficiency enabling reduction in GHGs emissions

In Maharashtra, Nitrogen use efficiency has been reported to range from 30% to 50% depending on the crop type and the management practices involved. Improved NUE can be achieved using different practices like split application, foliar spray, fertigation, slow-release fertilizers, stage wise application etc. The N-Balance approach is applied to assess N-balance scores enabling us to offer tailor-made recommendations to the farmers on optimum fertilizer usage.

SFI, in collaboration with EDF, implemented the nitrogen balance approach with 10,000 farmers in the year 2023. Utilizing KoboCollect tool, data on fertilizer usage and yields was collected facilitated by 198 Agri-entrepreneurs. Incentives were provided to encourage consistent data collection. Leveraging the scores obtained from the survey, we aim to develop crop-specific fertilizer advisories towards optimizing the use of nitrogenous fertilizer and curtail excess usage, thereby aiding in carbon equivalent emission reduction.

SFI & EDF Team Validating the N Balance Survey

Nitrogen Added (Via Manure, Fertilizer and Legume) − **Nitrogen Removed** (Via Grain and Biomass) = **Nitrogen Balance** (Nitrogen at risk of beign lost to the Air or Water)

Master Trainers conducting N-Balance Survey of Farmers in Wardha & Ahmednagar Districts

Integrated Pest Management

Integrated Pest Management (IPM) holds significant importance in mitigating the impact of climate change on agricultural ecosystems. By integrating various pest control strategies such as biological, cultural, and chemical methods, IPM offers a comprehensive approach to managing pests while minimizing environmental impact. In the context of climate change, where shifting weather patterns and altered pest dynamics pose new challenges, IPM provides farmers with adaptive and sustainable solutions. Through the strategic use of monitoring, biological controls, habitat manipulation, and resistant crop varieties, IPM empowers farmers to proactively address pest pressures in a manner that is resilient to climatic uncertainties, ultimately promoting agricultural sustainability.

Accomplishments:

- Promoted sticky traps and pheromone traps by covering 1,950 farmers at Palghar, Wardha and Ahmednagar Districts.

Impact:

- Blue and Yellow Sticky Traps were used under Chilly and Watermelon crop. These traps reduced the population of white fly and sucking pest significantly. It also created awareness among farmer which helped them in choosing right chemicals at right time based on the pest population observed on the sticky traps.
- Farmers were also demonstrated about the use of trap crops like marigold and Coriander, Neem based pesticides for prevention of pest and insect attack on crop. Marigold as a trap crop around cabbage and cauliflower crop helped in controlling diamondback moth and nematodes. Overall, 2-3 spray applications were reduced using IPM approach at Palghar and Wardha Locations which also saved the expenditure on spraying product and their application. In cotton crop, use of traps reduces 2 times spraying of pesticides in Wardha District

Installed Sticky & Pheromone Traps in Farmers Field

Land Configuration Method

Broad Bed Furrow Planting in Soybean:

Broad Bed Furrow (BBF) technology is an advanced land configuration method used for sowing of soybean seeds or other relevant crops on a broad bed followed by furrow. This method facilitates proper drainage of excessive water accumulated during high intensity rainfall. Additionally, it supports soil moisture conservation, increases crop productivity, and reduce water. BBF technology is particularly beneficial in areas facing water scarcity and erratic rainfall patterns, making it a sustainable approach to agriculture.

Impact of BBF sowing method

- 20-30% Increase in Yield and 29% Reduction in input cost as compared to previous year

Broad Bed Furrow Planting of Soybean at Muradgaon Belsare Village, Wardha

Seed the Change: Journey begins for CSA Village

In recent times, there has been a growing emphasis among individuals and organizations on Climate Smart Agriculture (CSA) principles, recognizing their significant potential to enhance agricultural practices and effectively address climate change. While numerous organizations and institutes have successfully developed proof of concept for various CSA interventions targeting water and nutrient-intensive crops, there remains a notable scarcity of material or evidence showcasing the effectiveness of CSA principles when applied at a cluster or village level. Enhancing agricultural practices across entire villages through the adoption of CSA principles could greatly assist farmers in adapting to adverse climatic conditions. Acknowledging this pressing need for Climate Smart Agriculture adoption, NABARD and Syngenta Foundation India have collaborated to launch the pioneering "Model Climate Smart Agriculture Village" project in Muradgaon Belsare village, Deoli Block, Wardha District, Maharashtra. This initiative aims to serve as a compelling example for further adoption, with plans to extend the project to 100 villages in Maharashtra and eventually scale it to 1,000 villages across India. This innovative initiative aims to empower the farmers of 158 households with the knowledge and tools to thrive despite unpredictable climate conditions.

Objectives:

- To develop a model Climate Smart Agriculture village through different CSA interventions
- To create evidence and check the effectiveness of Climate Smart Agriculture interventions on different crops (Cotton, Soybean and Wheat) with wider exposure to farmers of model village as well as villages in near vicinity.

Demographic Details	
Village	Muradgaon Belsare
Block	Deoli
District	Wardha
No. of Households	158
Total Population	634
Major crops in Khariff	Cotton, Soybean
Major crops in Rabi	Wheat, chickpea

Live Demonstration of Seed Treatment with Trichoderma

Soil Testing Reports Distributions & Orientation

Farmers Exposure Field Visit to Soybean Demo Plot

Activities in CSA Villages

Capacity Building

- Developed 2 modules exclusively on CSA
- Developed 3 modules on Soil, Water & Crop Management

Soil Health Management

- Application of Mycorrhiza
- Soil Testing and Recommendation
- BBF for Soybean

Seed Replacement Program

- Wheat seed has replaced with new variety
- Use of Bio-fertilizers and Trichoderma in seed treatment

Integrated Nutrient Management

- Application of Micronutrients
- Vermicomposting
- Liquid Organic Fertilizers

Integrated Pest Management

- Sticky Traps
- Refugee crop
- Pheromone Traps
- Light Traps

Tree Plantation

- Gulmohar
- Neem
- Karanj

Demonstration Plots and Farmer Field School

- Total 4 demonstration plots have been established
- Farmers Field school

Information, Education and Communication

- Developed leaflets for awareness creation
- Broadcasting of Radio Jingles
- Peer to peer learning

Impact:

- Enhanced farmers awareness on soil testing and CSA through training & capacity building programs.
- BBF technology in soybean cultivation have improved the yield upto 20-30% and also there is a reduction of 29% in input costs.
- About 20-25% increase in yield and 19% reduction in input cost was observed in cotton crop.
- 10-16% increase in yield was observed under wheat crop with improved cultivar.

Testimonials from the Farm

Mr. Samudrala Venkateswara Rao, Lakshmipuram, Eluru District, Andhra Pradesh

Initially Mr. S. Venkateswara Rao skeptical about the Alternate Wetting and Drying (AWD) method and he was concerned about yield and weed management. However, after the trial, he had saved 30-40% water with approximately 25% reduction in electricity bills. Recognizing its Climate-Smart Agriculture benefits, 120 farmers in his village have planned to adopt AWD in upcoming seasons.

Mr. Kiran Dhage, Newasa block, Ahmednagar District, MH

Mr. Kiran, a graduate, has been engaged in farming and has encountered challenges such as high cultivation costs and low production. Through our CSA program, he received a new sugarcane variety that is tolerant to salinity. Additionally, he applied Trichoderma treatment to the cane. As a result, he is delighted with the performance of the new variety and its growth. Furthermore, the new variety has reduced the need for excessive pesticide application, further adding to his satisfaction.

Mr. Gunvantrao Zod, Kajalsra, Wardha District, MH

Despite his 30 years of experience, Mr. Gunvant had been facing productivity issues with earlier seed varieties. However, in 2023, after receiving improved wheat varieties from SFI, he noticed a significant improvement in germination rates and a substantial increase in crop yield.

Mr. Dinesh Pandurang Bhagat, a farmer from Muradgaon Belsare Village, Wardha, MH

Mr. Dinesh has been farming for over 25 years, facing challenges such as pest infestations, lack of agricultural knowledge, and the impact of climate change. In 2023, as part of the Climate Smart Agriculture Village Program by the Syngenta Foundation and NABARD, he received training in soil, water, and crop management.

As a participant, Dinesh implemented the Broad Bed Furrow (BBF) Technology for sowing soybean seeds (Godrej 9605). This approach significantly enhanced soil moisture conservation, increased crop productivity, and reduced water and input usage. The results were impressive—he achieved a yield of approximately 7.5 quintals per acre, reducing input costs by INR 2200. Notably, there was a substantial 20-30% increase in yield per acre compared to the previous year. This success highlights the effectiveness of climate-smart agricultural practices in promoting productive farming methods.

Mr. Sachin Vasantrao Kondalkar, Pavnur, Wardha District, MH

Mr. Sachin, a farmer with a decade of experience, had previously encountered challenges, particularly struggling with excessive fertilizer use that was adversely affecting soil health. In 2023, he has done soil testing, received comprehensive training, and obtained crop-specific recommendations. These interventions resulted in reduction in fertilizer usage and save in cost on synthetic fertilisers.

Mr. Manohar Masram, Talni Bhagat, Wardha District, MH

Manohar Masram has been farming for 20 years. A veteran wheat cultivator, he has seen the many problems that have plagued the growers of Talni Bhagat village, such as high temperature, unseasonal rains, droughts, and a lack of agriculture knowledge. Under the AEGF-EDF collaboration, Mr.Masram was able to avail training about soil, water and crop management, with our AE testing the soil from his farm and replacing the wheat seeds. He has enjoyed the benefits of the high-quality seeds and agri-inputs with his yield increasing by nearly 3 quintals from an acre.

Mr. Manohar Doke, Gandhre village, Palghar District, MH

Mr. Manohar Doke completed his AE training in April 2022 and set up a vermi bed business. The vermiseed, vermiculture and vermiwash provided by the team allowed Mr, Doke to start earning from the venture in 45 days and sell the vermiseed at Rs. 350/kg and vermiwash at Rs. 20/litre to local farmers and NGO's. The farmers have enjoyed the benefits of the vermi-products offered by the AE-mainly enhanced soil health, lower fertiliser costs and better plant growth & productivity.

Mr. Bhabasaheb Kangune, Maktapur, Ahmednagar District, MH

Mr. Bhabasaheb has been grappling with challenges of maintaining adequate plant population to get higher sugarcane tonnage. Once after he got the training on sugarcane & CSA practices, he has received sugarcane seedlings under our CSA program and successfully planted and maintain the plant population. As a result, he is now pleased with the crop stand and ensuring proper PoPs under our team guidance. We are excited to evaluate the final yield.

Mrs. Padmabati Naik, Chhoriagarh Village. Kalahandi district, Odisha

As a smallholder farmer, Mrs. Padmabati is having 4.5 acres of land and used to grow paddy & vegetable with limited access to water. Lots of efforts tried to convert the land useable but failed as the land is in isolated area away of her home. In the year 2021, she got an opportunity to avail 1 HP Micro Solar Irrigation Pump though MSWP Project. She installed that pump on stream (Haller Jore) and now, cultivating Paddy 1 Acre, Sugarcane 1.5 Acre & Pumpkin-0.5 Acre including vegetables. She is very much satisfied with the water flow getting through 1 HP surface pumps. Seeing the water flow, she arranged and attached 8 sprinklers which are running exceptionally well to cultivate her 3 acres land. She got additional income of 60 k.

Mrs. Raimoni Toppno, Nagri Village, Ranchi, Jharkhand

Raimoni Toppno, a small farmer from the Tribal community of Village Nagri, who manages 2.5 acres of land where she cultivates Paddy along with few vegetables. In 2020, she ventured into Mango Orchard cultivation with support from JSLPS. However, irrigation was a challenge as she had to manually bring water from the river, proving to be both troublesome and expensive. With a family of nine members reliant on agriculture and animal rearing, meeting daily requirements was tough due to low income from the fields, exacerbated by the unavailability of irrigation lifting devices and erratic electricity supply. To address this, she availed a 0.5 HP Micro solar Pump, enabling her to efficiently irrigate her Mango Orchard with 125 mango saplings and start cultivating tomatoes.

Mrs. Ritamoni Saikia, Morongi Village, Assam

Ritamoni Saikia, a small farmer residing in Morongi Block of Golaghat. She is staying with her husband and two sons. Her husband is working as a teacher in their locality. She is engaging with tea farming to support financially to her husband. They have 1.8 acres of total land, where they have 1.5 acres of tea plantation. An amount of Rs. 45,000 they have earned from their tea plantation annually.

Through the project supported by GIZ, she acquired a subsidized 1 HP MSWP. She installed the pump in her field and start doing piggery unit with 21 piglets and started a 'Tea nursery' with 75,000 plants. The solar pump draws groundwater for the requirement of farming activities. The MSWP has allowed her to increase the scope of her agribusinesses, she has already earned from the selling of piglets & seedlings.

Mrs. Archana Bire, AE from Talani Bhagat, Wardha District, MH

Despite increasing fertilizer usage over the years, she faced stagnant yields and hardened land. Attending a CSA training program by the Syngenta Foundation transformed her approach. Motivated by the potential of vermicomposting, she began production with three beds, supported by the foundation.

By March 2022, Archana had completed two production batches, yielding 4.6 tonnes of vermicompost, which she distributed among fellow farmers. Although immediate impacts on yield and fertilizer usage were not significant, she anticipates long-term benefits. Her vermicomposting venture now yields an annual turnover of 80,000 to 90,000 rupees, with a profit margin of 7,000 to 8,000 rupees per batch. This success underscores the productivity and sustainability of vermicompost for both revenue generation and profit margins.

Climate Stewards: Partners & Collaborators

We extend our deepest gratitude to our esteemed external collaborators for their unwavering support and partnership with the SFI in championing Climate-Smart Agriculture. Your collective expertise, innovative approaches, and shared vision have been pivotal in our journey towards a more resilient and sustainable agricultural future. We celebrate the strides we've made together and look forward to continuing this fruitful alliance. Thank you for being an integral part of this transformative endeavour.

Technology Validation by GATE

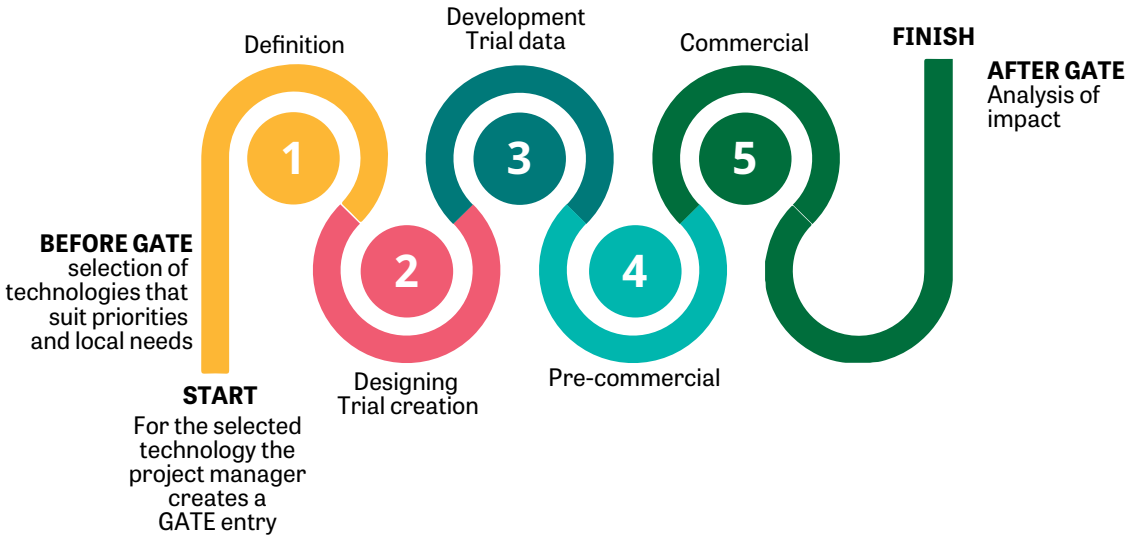
Syngenta foundation has developed Global Agricultural Technology Evaluation (GATE) Platform to capture real-time data of a technology demonstrated in farmers' fields. GATE is a digital platform enabling transparent project management and advancement of innovations during the process of technology testing and validation. The services provided are identification, validation and facilitate market access of new technologies for upscaling.

GATE builds from Syngenta Foundation's experience and networks across Asia and Africa. With a dynamic network of local R&D sites and community level distribution agencies, Syngenta Foundation provides an invaluable gateway for the tech-transfer service. Agencies work closely with smallholders and local communities, understand their needs and issues, support the entry of new technologies into the market by aggregating demand, training the farmers in the use and benefits of the innovative technologies, and supporting and de-risking access to finance.

By supporting high quality technology transfer, GATE helps develop new markets for the innovators, and delivers high value for smallholders and local businesses in developing regions. GATE serves as a hub for testing, evaluating, and showcasing innovative agricultural technologies and solutions.

GATE platform can help in developing ecosystem to enable the technology provider to validate their technology with smallholders, so that the adoption of the technologies can be accelerated. Moreover, GATE can also support the farmer to connect with various relevant stakeholders.

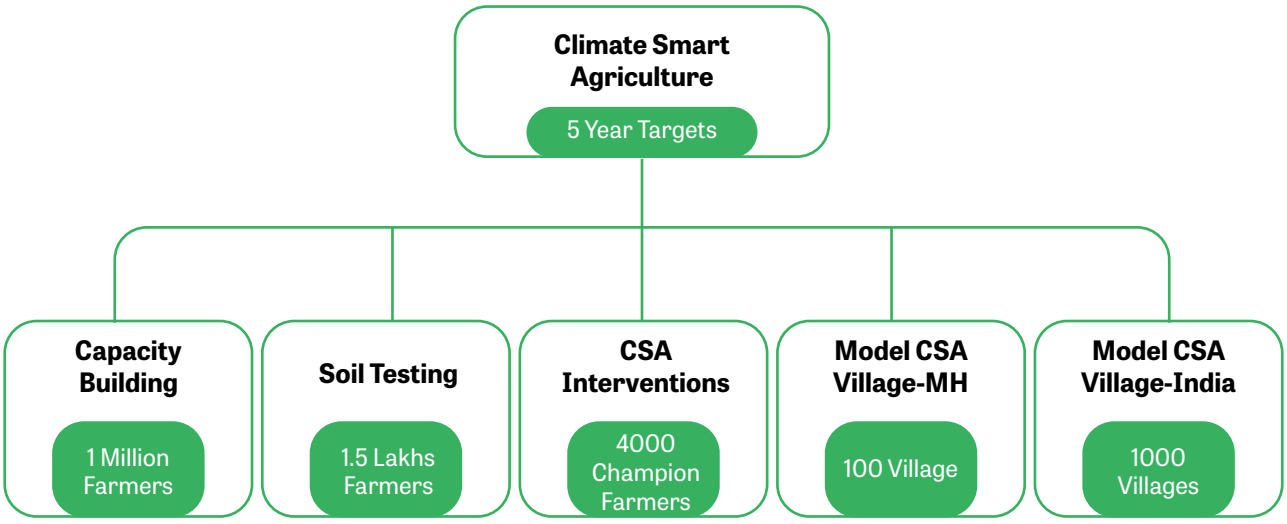
Gate Phases



Road Ahead

As Syngenta Foundation India (SFI) looks to the future of Climate-Smart Agriculture (CSA), our roadmap is defined by innovation, collaboration, and a steadfast commitment to sustainability. Our vision is to integrate cutting-edge technology with traditional farming wisdom to empower farmers in the face of a changing climate. We will follow the below approach to achieve the climate smart agriculture goals through our agri-entrepreneur network.

Our Targets & Commitments for next 5 years



Making the Farm Operations more Climate Smart

Farming Practice	CSA Interventions	Who (Type of AE)	How	Expected Output
Land Preparation	Reduced Tillage Minimum Tillage Zero Tillage	Mechanization AE	Access, CB	Reduced Compaction, Reduced GHGs emission
Land Leveling	Laser land Levelling	Mechanization AE	Access, CB, Incentivizing	Improved Yield, Improved DU, Improved WUE & NUE
Land Configuration	BBF (Broad Bed Furrow) PRB (Permanent raised Bed)	Mechanization AE	Access, CB, Incentivizing	Improved Drainage, Improved Yield, Moisture Conservation
Selection of Seed	Stress Tolerant Varieties	Agri Input AE	Access, CB, Incentivizing	Improved Adaptation, Improved Yield
Seed Treatment	Trichoderma Biofertilizers Beejamrit	Agri Input AE	Access, CB, Incentivizing	Improved Nutrient Uptake, Improved NUE, Improved Fungal Resistances
Raising of Seedlings	Nursery	Nursery AE	Access and CB	Quality Seedlings, Disease Free, Improved Germination, Optimized Plant Population
Sowing/ Transplanting	Zero Till Seed Drill Happy Seeder Super Seeder Drilling with Marker	Mechanization AEs	Access, CB, Incentivizing	Reduced Energy consumption, Reduced Labor Cost, Improved use of Soil Moisture, Reduced Compaction, Reduced GHGs
Irrigation (Water Management)	Drip Sprinkler Critical Stage AWD/DSR (only for paddy) FIRB (Furrow Irrigation with raised Bed)	Irrigation AE	Govt. Scheme Convergence, CB, Climate Proof POPs	Reduced water usage, Improved Application Efficiency, Improved NUE, Improved Yield and Quality, Reduced GHGS

Making the Farm Operations more Climate Smart

Farming Practice	CSA Interventions	Who (Type of AE)	How	Expected Output
Integrated Nutrient Management (INM)	N-Balance Approach Soil Testing & Advisory Green Manuring FYM/Compost Liquid Fertilizers Slow-Release N-Fertilizer Legume as intercrop Soil Amendments-Biochar, Lime, Gypsum etc)	Agri Input AE Soil Testing AE Vermicomposting AE	Access, CB, Incentivizing	Improved FUE, Reduced GHGs emission, Improved Soil health, Improved Yield
Integrated Pest Management (IPM)	All type of Traps Trap/refugee Crops Crop Rotation Bio Pesticides	Agri Input AE Spraying AE	Access, CB, Incentivizing	Reduced Spraying Events, Reduced tolerance of crop to Pest and disease attack, Reduced Spraying Cost, Reduced GHGs
Weed Management	Use of Weedicides Mechanical Weeders	Mechanization AE Agri Input AE	Access, CB, Incentivizing	Reduced of Labor Cost, Reduced Weed Population, Improved Yield and Quality
Harvesting	Harvesting at Right Stage Combine Harvester	Mechanization AE Advisory AE	Access, CB, Govt. Scheme Convergence	Reduced Grain Losses, Reduced Labor cost,
Residue Management	Use of SMS Decomposer Shredder	Mechanization AE	Access, CB, Govt. Scheme Convergence	Improved SOC, Improved Soil Health, Improved Water Holding Capacity
Post Harvest Management	Cleaning, Grading, Sorting and Storage Value Addition	Processing AEs	Access, CB, and Govt. Scheme Convergence	Improved Income, Reduced PH losses, Reduced GHGs Emission
Marketing	Collective Marketing Aggregation centers Digital Marketing Linking with Organised Buyers	Marketing AEs	Access, CB	Enhanced Price Realization, Improved income, Reduced Transport Cost, Reduced GHGs emissions

Abbreviations:

AE	Agri Entrepreneurs
AEM	Agri Entrepreneur Mentor
AWD	Alternate Wetting and Drying
BBF	Broad Bed Furrow
CB	Capacity Building
CSA	Climate Smart Agriculture
CSAV	Climate Smart Agriculture Village
DRE	Decentralized Renewable Energy
DSR	Direct Seeded Rice
DU	Distribution Uniformity
EDF	Environmental Defense Fund
FIRB	Furrow Irrigation with Raised Bed
GATE	Global Agricultural Technology Evaluation Platform
GHGs	Greenhouse Gases
GIZ	German Development Agency
HH	Households
ICT	Information and Communication Technology
IVR	Interactive Voice Response
Jeevika or BRLPS	Bihar Rural Livelihood Promotion Society
JSLPS	Jharkhand State Livelihood Promotion Society
LCC	Leaf Colour Chart
MPKV	Mahatma Phule Krishi Vidyapeeth
NABARD	National Bank for Agriculture and rural Development.
NUE	Nitrogen Use Efficiency
PIMC	Project Implementation and Monitoring Committee
POPs	Package of Practices
PRB	Permanent Raised Bed
SDG	Sustainable Development Goal
SFI	Syngenta Foundation India
SMS	Short Messaging Service
SMS	Straw Management System
UNDP	United Nations Development Program
WUE	Water Use Efficiency
ZECC	Zero Energy Cool Chamber

Social Media

Please follow us on below social media pages

Linked in	https://www.linkedin.com/company/aegf/	
Facebook	https://www.facebook.com/AEGFIndia/	
Instagram	https://www.instagram.com/aegfindia/	
Youtube	https://www.youtube.com/@AEGFoundationIndia	
Twitter	https://twitter.com/aegfindia?lang=en	

NOTES

NOTES

NOTES

Climate Smart Krishak

We have taken an initiative of developing 'Climate Smart Krishak', a simulation game which is a pioneering tool designed to engage farmers & stakeholders in the principles of Climate-Smart Agriculture (CSA) in an interactive and entertaining manner. This game simulates real-world farming scenarios, allowing players to make decisions on crop management, resource utilization, and implement CSA techniques in a virtual setting. As players navigate through various levels, they encounter challenges and opportunities that mirror the realities of farming in a changing climate.

Objectives.

1. **Peer to peer Learning**: Foster peer-to-peer learning to cultivate a collaborative knowledge-sharing environment.
2. **Decision-Making**: Elevate decision-making capabilities by facilitating cross-learning experiences that address the challenges posed by climate change.
3. **Awareness and Insight**: Amplify awareness and insight into the climate smart agriculture and how best they can prepare themselves to cope with climate change.
4. **Comprehension**: Deepen difference between practices which are climate smart and problematic agricultural practices which will harm environment.

कृषि अभ्यास

syngenta foundation India

aeg foundation

For further information, please contact:

Syngenta Foundation India
Amar Paradigm, Survey No - 110/11/3
Baner Road, Baner, Pune, Maharashtra 411045
www.syngentafoundation.org

Agri-Entrepreneur Growth Foundation
Amar Paradigm, Survey No - 110/11/3
Baner Road, Baner, Pune, Maharashtra 411045
www.www.aegf.in