syngenta foundation India

ANNUAL REPORT 2016-17

Contents

Messages.....01

Executive Summary.....03

1. Introduction 05

2. AE Programme 07

3. ATA Programme.....09

- Introduction and Candidate Selection ...09
- Restructuring of ATA / AE Training Module 10
- Partnership with NIRD&PR 12

4. Projectwise Infrastructure and on-ground partners.....13

- Placement 14
- Success Stories 15
- Collaboration brings community benefits 16

5. Irrigation.....18

6. Insurance 19

- Replanting Guarantee 2.0 19
- Seed Product Insurance 20

7. AAA Seeds 21

8. Projects 24

9. Financial Report 2016-17 30

Annexures 32

Joint Message from the Chairman, SFI and Executive Director, SFI

Dear Friends,

We are pleased to present you the 2016-17 Annual Report of Syngenta Foundation India.

The agri-entrepreneur (AE) initiative which was initiated in 2014-15 continues to remain the flagship program for Syngenta Foundation India. It has been a year of standardization of various processes in the AE program, for instance the entire AE training content has been standardized and translated into multiple languages. Similarly, by partnering with National Institute of Rural Development and Panchayat Raj (NIRD&PR), AE trainees from all training institutes receive a standard certificate on due completion of the training program.

As AE operations continue to scale-up, we felt necessary to partner with more organizations to administer AE trainings. Therefore, we engaged three new partners in Maharashtra i.e. Snehalaya in Ahmednagar, Sanskruti Samvardhan Mandal (SSM) and Indo Swiss Center for Excellence, Pune. A spin-off of AE program has been skill development of rural youth and providing them jobs in agribusinesses. In 2016-17, total of 210 rural youth were trained, of which 72 were placed in agribusinesses and 77 of them became AEs, while the rest of them chose to become progressive farmers introducing modern technologies in their farms.

Replanting Guarantee Insurance version 2.0 was launched in 2016 and it was extended to all maize growers in the districts of Chittorgarh and Bhilwara in Rajasthan. A collaborative project between CIMMYT, Syngenta India Limited and Syngenta Foundation for development of Affordable, Accessible, Asian (AAA) drought tolerant maize witnessed the first wave of varieties being made available for seed companies to trial in different states.

On behalf of the Board of Directors of SFI and SFSA, we would like to thank all our partners, staff and donors for continuing to support SFI's strategy of developing scalable and sustainable business models for agriculture development in India.

Prakash Apte
Chairman
Syngenta Foundation India (SFI)

S Baskar Reddy
Executive Director
Syngenta Foundation India (SFI)

Executive Summary

In 2016–17, Syngenta Foundation India continued to work on business models for agriculture development as envisioned in Phase III strategy. With an approach to develop a one-stop resource provider for agriculture needs, the foundation's flagship initiative remained developing and launching agri-entrepreneurs (AEs).

By the end of financial year 2016-17, 105 AEs were operational in four states, directly engaging 12,738 farmers, covering 15,138 acres. These AEs facilitated credit of INR 6.75 crore from IDBI bank for 2525 farmers, most receiving institutional credit for the first time. The credit availed by farmers was mostly used for purchasing quality inputs from AEs. The cumulative value of inputs sold by all AEs was INR 5.38 crores.

Along with developing agri-entrepreneurs, SFI also facilitated training and skill development of rural youth under its Agriculture Training Assistant (ATA) program. ATA training is a foundation course in agriculture skill development. 210 candidates were trained under the program, of which 72 were placed in jobs, while 77 opted for entrepreneurship and remaining trainees decided to continue farming by deploying new technologies learnt during the training. One of the important activities undertaken during the year was to standardize the content for AE and ATA training programs. These were also translated into six local languages.

SFI's skill development initiative received unique recognition from the Indian government's National Institute of Rural Development and Panchayati Raj (NIRD&PR), which has agreed to provide certification to all trainees who successfully complete the training. SFI has signed an MoU with NIRD&PR to scale-up AE and ATA trainings in different states.

To help farmers mitigate weather risks, Syngenta Foundation India facilitated 'Rainfall Index- Based Insurance cover" for Maize (NK-30, NK-6240) and Rice (NK-5251 Plus) under the title "Replanting Guarantee (RPG)" for Syngenta India Limited (SIL).

With an objective of developing and providing hybrid maize at an affordable price to small holder farmers, Syngenta Foundation for Sustainable Agriculture (SFSA), CIMMYT and Syngenta India Limited (SIL) undertook a multi-year research initiative to develop a 3-way cross hybrids in Maize. The first wave of these hybrids were tested extensively during this year and some of the varieties were found to be drought tolerant and high yielding.

CHAPTER 1

INTRODUCTION

Syngenta Foundation India (SFI) was established in October 2005 as an independent not-for-profit organization under section 25 of the companies act. SFI's mission is to have small and marginal farmers participate in agricultural development by facilitating access to improved seeds, inputs and knowledge of appropriate agronomic partners. The focus is on educating small and marginal farmers about the latest developments in agriculture suited to their local needs, thereby improving their income.

Evolution of SFI

Syngenta Foundation India marked its 11th year of making a difference to farmers' lives in India. The growth of SFI and its impact on beneficiaries is a result of a well thought-out journey map. The journey map is categorized in three distinct phases.

The first phase lasted from 2005–2009, where extension-driven agricultural projects in disadvantaged regions were the key focus areas. This was done through propagating new technologies including high-performing seeds, improved agronomic practices and control of pests, diseases and weeds. Special techniques such as SRI (System of Rice Intensification), mechanization in rice, and raising seedlings in poly-houses were introduced. This made a positive impact on farmer earnings and helped SFI earn farmer trust.

The second phase (2009–2013) built on the experiences of the first phase. It was learnt that better productivity is just one of the factors that impacts a farmer's income. One of the key factors to ensure a rise in farmer income is to connect farmers to markets. Hence, Phase II focused on linkages to markets and technical advice to farmers.

"Produce Together and Sell Together" came to be the motto of this phase to promote the power of aggregation for small farmers. The essential features of this approach included linking vegetable producers' groups with markets through fewer intermediaries.

Under SFI's guidance, producers' groups adopted processes that increased efficiency, such as tracking change in prices through their mobile phones. Aggregation through collective production and marketing of high-value vegetables led to a significant rise in farmer income; from earning INR 10,000 annually from finger millet and rice, farmers now earned an additional INR 25,000. These Phase II achievements augured the scalability of these steps.

Phase III started out in 2014 with an aim to replicate the successes of aggregation at scale. True to SFI's core vision of creating value for farmers, modernizing agriculture and playing a catalyst in agricultural development, the approach for Phase III was to develop 'last mile agents' who would rapidly scale up the model. Phase III is focused on developing models for small and marginal farmers in the regions, and creating an ecosystem for sustainable development which will flourish without SFI's support.

Based on this approach Agri-Entrepreneurs (AEs) were trained by SFI and operationalized to provide financial and irrigation solutions, farm machinery accessibility and in agro-processing. The details of the model and the success thus far are provided in the latter sections of the report.

CHAPTER 2

AE PROGRAMME

Introduction and progress

As trust in Syngenta Foundation's work began to grow among farmers in the communities it had worked with in Phases I and II, so did the recognition of a need to develop scalable, replicable models of farming practice among smallholders. As part of Phase III, while SFI was looking for business models it became apparent that the AE model had replicable business elements: it is decentralized and it empowers rural youth to play a role in developing agriculture locally in their own communities.

An Agricultural Entrepreneur, or agri-entrepreneur (AE), works with 150–200 farmers in a cluster of 4–5 villages, acting as a one-stop provider of solutions for the agricultural needs of small and marginal farmers and performing four critical functions: 1. Providing better quality inputs, 2. Sharing knowledge and crop advice, 3. Linking farmers to markets, and, 4. Facilitating credit. An AE, therefore, needs to have sharp business acumen, leadership skills and social objectives.

The arrays of services to be provided by the AE make identifying the correct person with social entrepreneurship skills one of the most critical factors for the model's success. The process for AE selection includes a written test and an interview that ensures that the right candidate is selected into the program. As part of SFI's Agriculture Technology Assistant (ATA) training program which aims at creating employable youth for the agriculture sector, a portion of the students who display entrepreneurial interests and traits are also given an option of enrolling in the AE program.

The selected candidates are enrolled in a 45-day residential training program in agriculture and allied sciences which focuses on providing information about advances in technology and the process of leveraging it to increase productivity. The program aims at molding the participants into competent and conscientious entrepreneurs.

In the financial year 2016–17, our AEs served 12,738 farmers covering 15,138 acres. They served 2,525 farmers with credit amounting to INR 6.75 crores. The cumulative value of inputs to agriculture sold by all AEs was INR 5.38 crores. Details of the AE initiative are shown in the table below.

Status of Agri-entrepreneurs in 2016 – 17

State	Number of Agri-entrepreneurs	Number of Farmers	Acreage	Number of Credit-served farmers	Credit Amount (INR crore)	Inputs facilitated (INR crore)
Odisha	26	6845	11485	643	1.70	3.37
Maharashtra	18	1755	655	1159	3.69	1.23
Jharkhand	52	3488	2768	568	0.53	0.45
Andhra Pradesh	9	650	230	155	0.64	0.32
Total	**105**	**12738**	**15138**	**2525**	**6.56**	**5.37**

CHAPTER 3
ATA Programme

Introduction and Candidate Selection

The ATA training is a foundation course in skill development in agriculture. Post completion of the course, SFI assesses if the candidate is suitable for entrepreneurship or employment. Admission to the program is open to candidates who have passed Class 12 or Class 10 (in this case they need some work experience, in addition), preferably locally educated.

Candidates are selected using an effective, in-house developed screening methodology. They are enrolled in a 45-day residential program where application of best practices in agriculture is covered. The content is a judicious mix of functional knowledge (in agriculture) and soft-skill development.

The curriculum relies on a mix of theory and practical classes (60 percent and 40 percent) where concepts are taught through interactive sessions, field visits, practical training, individual and group assignments. The curriculum also includes personality and soft-skill development. Special lectures and interactions with trusted representatives/experts from industry and academia are organized. Input companies are invited on campus to select participants for employment opportunities with them, thus successfully providing placement services too.

Approximately 15 percent of the candidates are seen to have the required combination of business acumen and social sensitivity and form the group of participants most suitable to be AEs.

The number of ATAs trained and number of the AEs operationalized after ATA training are shown in the table below.

Status of Agriculture Technology Assistant Training in 2016–17

Center Name	Candidates Screened	Candidates Shortlisted	Candidates Trained	Candidates selected for Jobs	Candidates enrolled as AEs
Nanded	356	67	29	24	3
Jawhar	95	35	23	10	6
Ahmednagar	128	73	40	19	17
Hyderabad	51	51	51	10	21
Pune	45	36	28	2	1
Kalahandi	43	21	21	7	11
Ranchi	73	25	18	0	18
Total	**791**	**308**	**210**	**72**	**77**

Details of the training methods for ATAs are provided in Annexure 1.

Restructuring of ATA / AE Training Module

As the program picked up scale, a need for the standardization of the training content across all centers was identified. The training modules were changed in order to make the training more robust and effective. The mode of training delivery was changed to a presentation format and the content was now made available in six local languages: Marathi, Odia, Telugu, Kannada, Tamil and Hindi.

Incorporating learning from previous years, the training format has now been restructured to lay more stress on practical and on-the-job training. The format was thus divided into the following three parts:

1) Classroom training (for four weeks)
2) Exposure visit (for a week) (Annexure 2)
3) Attachment with an AE for a week (Annexure 3)

Industry experts hold lectures and interactions with participants to bring in a business perspective and explore the applicability of the knowledge gained during training. Study materials tailored to ensure participant excellence and placement services are also provided to the young people enrolled in the ATA program.

Details of the curriculum and schedules are provided in Annexure 4.

राष्ट्रीय ग्रामीण विकास एवं पंचायती राज संस्थान
National Institute of Rural Development & Panchayati Raj

स्वच्छ भारत

syngenta foundation India

CERTIFICATE OF TRAINING

_ /_ /_____

This certificate is awarded to

_____

(With id: _____)

on successful completion of a course on **Delivery of Agricultural Services, with specialization in Agri-Input Sales, Agriculture Credit, and Agri-Produce Marketing**

Jointly conducted by the National Institute of Rural Development & Panchayati Raj (NIRDPR) and Syngenta Foundation India (SFI)

Director General, NIRDPR

SYNGENTA FOUNDATION INDIA

Executive Director, SFI

Partnership with NIRD&PR

The requirement of a diploma in agriculture as a pre-condition for selling pesticides and seeds is a challenge for young people in rural areas. To overcome it, SFI has partnered with the Indian government's National Institute of Rural Development and Panchayati Raj (NIRD&PR).

SFI's skill development initiative received unique recognition from the Indian government's National Institute of Rural Development and Panchayati Raj (NIRD&PR), which became a hub for intensive training and development of the program.

NIRD&PR issues a certificate, which is also signed by SFI, to all successful AE candidates. The issue of the certificate brings about a synergy between SFI's agricultural technology assistant initiative and the national goal of skill development.

To further the project, SFI is in the process of getting accreditation for its training program from the Agriculture Skill Council of India (ASCI) through the Pradhan Mantri Kaushal Vikas Yojana (PMKVY).

The instructors providing the training are an asset to the program. Focussing on their success, NIRD&PR also conducted a 'Train the Trainers' program. Successfully piloted in 2014 in Jawhar, District Palgarh, Maharashtra, the program was subsequently adopted by the other three centers.

CHAPTER 4

Project wise Infrastructure and on-ground partners

Jawhar

SFI runs its ATA program in Jawhar in collaboration with Pragati Pratishthan, a local NGO with a strong presence that it has established with over 12 years of operations in Palgarh district.

A hostel facility for 30 candidates, a training hall and a fully-equipped laboratory have been allotted by Pragati Pratishthan to the ATA program.

The program is run by two experts who form the core training team in Jawhar.

Ahmednagar

Snehalaya, an NGO in Ahmednagar, as an SFI partner for the ATA program, brings the wealth of 25 years' experience in the area. Snehalaya and SFI co-invested in building a training center for the program. The new infrastructure consists of two training halls, a well-equipped laboratory and a staff room, a farm area of over five acres for demonstrations and a hostel facility.

The program is run by two experts who form the core training team in Ahmednagar; however, due to a higher demand, more members are currently being recruited.

Sagroli, Nanded

Nanded operations are supported by Sanskruti Sanvardhan Mandal, a local NGO with over 50 years of experience in the area.

Two training halls are available in the new premises of the NGO which runs a Krishi Vigyan Kendra on 150 acres of land. One main and two junior faculty members oversee and conduct the training.

Koregaon-Bhima, Pune

A Center of Excellence in Agriculture (CEA) has been established by Syngenta Foundation India at Pune.

The Malhotra Weikfield Foundation donated five acres of land, of which two acres have been developed as a model farm to showcase modern farming technologies to students and farmers from surrounding villages.

The CEA and a Knowledge Hub form a 7500 square foot establishment adjacent to the farm. CEA, operated under the Malhotra Weikfield Foundation, will be the main center for ATA training while the Knowledge Hub, managed solely by SFI, will function as a nodal center in specialized fields.

The program is run by two experts who form the core training team in Ahmednagar.

Placement

A total of 72 candidates have been selected on campus for various roles across 19 major companies. Most of the candidates have been absorbed into the agri-inputs domain. After this training, 77 candidates chose to become agri-entrepreneurs.

AE Kavita Patil, Success story alongside

Success Stories

Woman Agri-Entrepreneur creates wealth for self and community

Kavita Patil, 36 years old, is an inspiring example of how women, even in tribal India, can take charge of their destiny with a suitably designed opportunity. The Syngenta Foundation India's (SFI) Agri-Entrepreneur (AE) Program has proven to be one such opportunity.

Kavita, a marginal farmer from the tribal district of Palgarh, Maharashtra, earned an annual income of INR 60,000 from her 1.5 acres of land. In 2016, working as an AE for SFI, she has not only more than trebled her annual income to INR 2 lakhs but has also helped over 315 farmers in her community to adopt more productive agri-practices.

She attributes her success to the constant support of her husband and the active participation of SFI officers in facilitating market linkages and providing prompt grievance redressal.

"My greatest achievement so far has been in getting a total value of INR 60, 00,000 of loans disbursed for 215 farmers, of which around 20 loans have been for women farmers alone," says Kavita. "This has led to the farmers increasing production and will hence increase their income in the near future," she adds with pride. She highlights the lack of awareness in farmers regarding available credit facilities, which she now bridges by working as a correspondent for the IDBI bank, a partner bank of SFI. This has enabled the farmers to avoid local money lenders, who could charge rates as high as 30 percent; today, they can receive credit through easy steps, at a rate of merely 7 percent.

The SFI-designed program clearly defines the role of an AE in bridging information gaps that plague a farmer's income and productivity. By tying up with wholesalers with the support of SFI staff and assisting in price negotiation, Kavita ensures that the farmers get the right price for their produce. She also guides farmers with the appropriate use of pesticides and safety precautions.

"Our village is far away from the nearest urban center where shops for agri-inputs are located. Traveling to the city costs INR 100 which is nearly an entire day's income for some farmers, not taking into account the long hours spent in the commute. In order to save time, most farmers did not inquire about the right method of usage and safety precautions to be taken while using pesticides. Having the advantage of being close to the community, as well as the knowledge transfer by SFI, I ensure that information regarding the correct agriculture practices is shared with them," says Kavita.

Collaboration brings community benefits

Maharashtra State's capital—Mumbai—is home to the Bollywood film industry, but most residents of the western Indian state live far from the glitz, glamour and millionaire lifestyles of the country's revered actors. Most are like Baban Chibhade, small rural farmers scraping a meager living for their families from tiny plots of land.

Poor agronomic practices and poverty that often prevents farmers from buying the inputs they need mean yields are low, and what little excess they have to sell brings in only tiny sums. In the Rabi season, farmers are often forced to look for temporary work away from their farms, uprooting entire families and disrupting school attendance for their children.

Baban dreamt of a better life, and a 2009 seminar run by the Syngenta Foundation India (SFI) proved to be the catalyst. Here he learned about vegetable cultivation, improving yields through better farming techniques and about higher value crops that could feed his family and still provide a surplus to earn him a good income.

With seeds for his first planting provided by SFI, and with their advice to guide him, Baban planted bitter gourd on his one gunta (approximately one 40th of an acre) of land and, to his amazement, earned INR 75,000 (approximately US$1150).

His three brothers were equally impressed.

"I knew I wanted to do what he was doing. This was the way to a better life, for me and for my children. Earlier it was hard to imagine the power of a single gunta of land," said one.

Before long they, too, had begun growing vegetables and, with SFI's support, several others in the area started too.

But SFI's Bhushan Ahire had bigger ideas for them. He formed the Shree Swami Samarth Farmer Group made up of 11 growers in the area. By joining forces the farmers could fill the pick-up truck that took their produce to market, maximizing efficiency and reducing costs. With okra as their main Kharif crop, each earned an average of INR 30,000 (approximately

US$460) from his smallholding, aided by the vendor networks that SFI helped establish as far afield as New Delhi.

By 2013, all the farmers in the area had taken up vegetable growing, cultivating in groups of 3–4 to gain economies of scale. Landless farmers were helped to lease land, and a credit scheme operated by SFI in association with IDBI Bank helped each farmer receive credit of around INR 25,000 (approximately US$380) to invest in farm improvements.

The impact on the whole community has been profound. Weatherproof, plastered houses have been built, motorcycles purchased, and the children—who used to be uprooted each time their parents migrated for work—have been enrolled in school, paving their way to a better future.

CHAPTER 5
Irrigation

Water accessibility is a key challenge for small and marginal farmers. It becomes a critical factor in determining the amount of a farmer's annual income as farmers decide how often they should cultivate their land depending on the availability of water.

Understanding this, SFI in association with local partners, has taken up multiple irrigation projects across Maharashtra and Jharkhand. In Odisha, SFI has leveraged government subsidies to carry out the implementation of irrigation projects. In Maharashtra and Jharkhand, farmers' contributions and financing partners were brought together to execute the projects.

Business model

SFI enables a farmer's group to access credit from IDBI bank to develop irrigation infrastructure (lift irrigation and drip irrigation) in a village. Each farmer contributes 40 percent of the profit generated by the rabi crop to repay the loan (to IDBI bank), allowing payment to be completed over three years.

The determinants of a successful project are:

1. Developing a market-led extension system and ensuring that farmers attain reasonable profits from cultivation of high-value vegetables.
2. Anchoring an AE serving a group of farmers for whom the irrigation infrastructure is planned; the AE liaises between IDBI bank and the farmers' group.
3. Identifying the right turnkey service providers who design, develop and maintain the irrigation infrastructure.
4. Identifying private investors or IDBI bank to fund the irrigation infrastructure.

Of the total investment of INR 13.11 million (USD 19,500), INR 2.1 million came from a grant provided by an external agency, Cox and Kings. SFI invested approximately INR 1.0 million towards developing project plans and reports, electricity connections and acquiring water permissions. The remaining INR 10 million was provided as credit by IDBI bank.

CHAPTER 6

Insurance

Replanting guarantee 2.0

India ranks first among the rainfed agricultural countries of the world in terms of both extent and value of produce. About 60 percent of total net sown area comes under rainfed lands. Rainfed crops account for 48 percent of the area under food crops and 68 percent under non-food crops. Rainfed areas in India are highly diverse, ranging from resource-rich areas to resource-constrained areas. Some of the resource-rich areas are highly productive and have experienced widespread adoption of technology. However, most of the areas are resource constrained and dry.

Farming in resource-constrained areas is seen by farmers as a means of subsistence rather than an opportunity for growth and profitability. Rainfed agriculture is practiced under a wide variety of soil types, agro-climatic and rainfall conditions, ranging from 400 mm to 1600 mm per annum. Rainfed crops are prone to water stress due to breaks in the monsoon during crop growth. This water stress is largely due to unpredictability of rainfall, delay in sowing, diversity in crop management practice and variability of the soil type. The prolonged breaks can result in partial or complete failure of the crops, negatively impacting the profitability of resource challenged farmers.

The fear of a bad monsoon leads Indian farmers to be reluctant to use high-quality hybrid seeds and thus they commonly cultivate maize and rice crops using local or inferior quality seeds. Given these practices, farmers do not reap benefits from higher-quality hybrid seeds which, when accompanied by an adequate monsoon, have a higher return on investment (ROI) compared to any other seeds. Syngenta's Maize NK-30, NK-6240 and Rice NK-5251 Plus hybrids are such high-quality seed varieties, which can bring prosperity to the farmers as they are known for their performance under drought conditions.

To help farmers overcome the challenges brought about by the use of inferior inputs and to ensure higher yield and maximum return for their endeavors, Syngenta Foundation India facilitated '**Rainfall Index- Based Insurance cover**" for Maize (NK-30, NK-6240) and Rice (NK-5251 Plus) under the title "**Replanting Guarantee (RPG)**" for Syngenta India Limited (SIL). This is an "Index-Based Weather Insurance Offer" with insurance service provider ICICI Lombard General Insurance Company Limited, to provide corn and rice growers of SIL the benefit of protection against deficit rainfall during sowing, establishment and/or transplanting period.

In situations of inadequate rainfall as mandated, farmers who purchased Syngenta's NK-30, NK-6240 and NK-5251 Plus were to register their case to receive compensation from the partner organization ICICI Lombard to replace the seed with either the same or other hybrid seeds.

In 2015, RPG piloted for the first time in seven markets (Amerpura, Bassi, Kanera, Luhariya, Parsoli, Sadi and Vijaypur) in Chittorgarh district of Rajasthan, where farmers from Kanera market received claims due to deficit rainfall. In 2016, RPG was extended to all maize growers in Chittorgarh and Bhilwara districts in Rajasthan covering 654 villages and to hybrid rice (NK-5251 Plus) growers in Balrampur and Surajpur districts, covering 284 villages of Chhattisgarh state. In 2016, there was a claim from 5 out of 22 weather stations in Balrampur district. 2017 marks the third year of RPG in Rajasthan, and it is now being extended to Karnataka state to support Syngenta NK-6240 hybrid maize growers based on weather stations at every village level.

Seed Production Insurance

This product was designed to insure crops against yield losses due to abnormal weather conditions such as deviations in temperature, rainfall and relative humidity, for farmers in Andhra Pradesh (maize), and Chhattisgarh, Odisha and Telangana (rice).

In Andhra Pradesh, 38 farmers growing maize in about 84 hectares in West Godavari district, were covered under Seed Production Insurance during Rabi 2016 (October to March), but no payouts were reported due to good prevailing weather.

Rice seed production insurance was piloted in April and May 2017 in the districts of Dhamatari (Chattisgargh), Kalahandi (Odisha), and Khammam and Warangal (Telangana), with 119 farmers covering 125 hectares; normal weather was reported and hence there were no payouts.

Participants in the above pilot programs were:

1. Syngenta India Limited (SIL): seed company
2. ICICI Lombard General Insurance Company: insurer
3. Farmers: insured
4. NCML: weather data provider
5. Tattva Outsourcing Solutions: call center
6. Tata Docomo: telecom operator
7. India Post in Rajasthan and Chattisgargh
8. SFI: program facilitator.
9. Sai Ram Agrotech: A third party dealt with data entry in Rajasthan and Chattisgargh.

CHAPTER 7

AAA Seeds

Affordable, Accessible, Asian (AAA) Drought Tolerant Maize Project

A collaborative program between CIMMYT and Syngenta AG, sponsored by Syngenta Foundation for Sustainable Agriculture

Principle Objective: To develop and make available at an affordable price to smallholder farmers hybrids of tropical maize. Three-way or top cross or double cross hybrids form about 80 percent of the best hybrids in the market and produce approximately double the yield of popularly grown open-pollinated varieties (OPVs) which are commonly cultivated in rain-fed, drought prone areas.

Genetics and technology applied:

- Identification of the lines possessing genes of drought tolerance;
- Combining these with the lines possessing traits for high yield;
- Application of high-tech tools e.g., marker-assisted breeding, drought-tolerance indexing and other skills necessary for evolving hybrids with adaptation to the target ecologies, possessing good drought tolerance and with potential for high yields;
- Genes for drought tolerance are derived mainly from CIMMYT (CIM) lines while those for high yields are from Syngenta (SYT).

Management of the program is by a joint committee consisting of members from Syngenta, CIMMYT and Syngenta Foundation for Sustainable Agriculture (SFSA).

Outcome to date and plan of work in India:

The program team has field-tested a number of promising 3-way cross hybrids and identified a few that are well adapted, drought tolerant and high yielding. With a view to further testing and evaluation of the shortlisted AAA maize hybrids emerging out of the 'first wave' of the program, replicated field trials are being undertaken with cooperators in the Kharif of 2015. These trials are placed in a contiguous region lying across three neighboring states of Gujarat, Madhya Pradesh and Rajasthan. The process of liaising with the partners and coordination of these trials is led by SFSA. Eight seed companies (Ganga Kaveri seeds, Bisco Seeds, Advanta Seeds, Rasi Seeds, Nugene Seeds, Nirmal Seeds, Indo American Seeds, Nuziveedu Seeds) participated in trialing.

Three hybrids were chosen as candidates for the demo marketing – TA5084, TA5144 and TA5104 –of which TA 5084 was the most preferred hybrid by the co-operators. Seeds of these three hybrids will be made available for demo marketing/trials during the 2017 Kharif. Soft launch of this hybrid will be in the 2017 Kharif and a commercial launch is proposed during the 2018 Kharif season.

Syngenta will take the necessary steps for registering (licence to sell) the hybrids in the states of Madhya Pradesh, Gujarat and Rajasthan. Syngenta will also enter the hybrids into national trials (i.e., AICRP maize) in the 2017 Kharif and will be responsible for getting the hybrids notified in due course. The licencing agreement will be between Syngenta and interested companies, aided by SFSA. Licencing terms will be made available by Syngenta. Upon signing the agreement Syngenta will provide all the necessary documents. Syngenta will also provide all the know-how to produce the hybrids. Syngenta will provide both male and female parent seeds to the licensee. The male parent seed would be provided free of charge.

Wave II trials - the way forward

Wave II was started by Syngenta in the 2013 Kharif season with 230 hybrids. In the wet and dry season of 2016 about 12 hybrids were to be tested by Syngenta. Out of these, Syngenta expected to have five short-listed hybrids at the 6.1 stage for the wet season 2017 for testing with different cooperators.

Co-operators trial results summary, Kharif 2015

Grain Yield (t/ha) at 20% Standard Moisture

Entry No.	Entry		M.P.				Gujarat						Rajasthan								
			Ganga Kaveri Seeds			Bisco Seeds	Ganga Kaveri	Nuziveedu Seeds			Advanta	Rasi Seeds	Rasi Seeds		Bisco Seeds	Nuziveedu Seeds	Advanta		Nugene Seeds	Mean	Rank
			Mandsur	Neemuch	Raoti	Khargone	Nanadukva	Lunawada	Himmatnagar	Dahod	Gopalpura	Lunawada	Banswara	Siyalia	Nilod	Veral	Bhatwara khurd	Purohita Ka Sawta	Chitorgarh		
1	TA5104		8.0	6.9	8.2	6.7	11.2	10.7	8.1	11.0	5.9	14.2	7.5	4.4	3.9	5.6	4.6	3.4	5.2	7.38	6
2	TA5024		13.1	6.4	10.1	4.5	5.1	12.0	8.5	12.5	7.0	11.0	8.0	5.0	4.1	4.3	4.6	2.5	8.3	7.47	5
3	TA5084		11.4	5.9	12.1	5.7	11.9	10.8	9.2	10.2	7.3	13.7	8.3	5.6	4.3	5.8	6.0	3.1	9.5	8.28	2
4	TA5114		12.0	4.4	8.8	6.9	6.6	12.1	7.7	10.6	5.9	11.2	5.7	5.2	4.4	4.8	4.9	2.7	6.5	7.07	8
5	TA5144		11.2	6.5	9.6	7.4	6.6	10.3	8.3	9.7	5.1	13.7	6.5	4.3	4.4	6.5	6.8	3.8	7.7	7.55	4
6	NK 30	Standard Check	12.8	6.3	8.8	8.3	10.0	10.5	8.3	12.0	7.4	11.1	9.7	4.9	4.2	5.3	5.1	2.6	7.2	7.92	3
7	Local Check		9.5	4.6	8.6	7.0	8.1	8.9	7.6	9.2	5.8	14.7	6.5	5.0	3.6	3.5	5.7	2.6	9.9	7.12	7
8	Company check		13.7	7.0	12.4	6.3	10.5	12.4	10.4	13.5	6.2	13.0	7.0	5.0	3.7	5.4	6.8	3.0	4.5	8.28	1
Grand Mean			11.5	6.0	9.9	6.6	8.7	11.0	8.5	11.1	6.3	12.8	7.4	4.9	4.1	5.2	5.5	3.0	7.4	7.63	
CV(%)			9.7	9.7	10.8	8.7	7.0	12.5	8.5	13.3	20.2	11.2	11.4	14.3	12.3	18.0	18.8	12.5	12.6	16.06	
CD			1.9	1.0	1.9	1.0	1.1	2.4	1.3	2.6	2.2	2.5	1.5	1.2	0.9	1.6	1.8	0.7	1.6	0.832	
Rainfall (mm)			761	616.9	1105	1068.0	417.2	417.2			545.0	417.2	670.0	477.5	699.0	453.5	484.5	477.5	450.5		
Irrigations (Pre flowering			2	2	2	1.0		1.0	1.0	1.0	0	2.0	1.0	1.0	2.0		0		3		
Irrigations (Post flowerin						1.0						2.0			1.0						

CHAPTER 8
Projects

Jawhar Project (Maharashtra): NGO Partner: Pragati Pratishthan - Palghar District

Market-Led Extension: SFI has been working in 180 villages distributed in 17 clusters over five blocks (Palgarh, Jawhar, Mokhada, Vikramgadh, and Dahanu and Talasari). For the 2016 Kharif the target was 1510 families cultivating vegetables on 403 acres.

The major Kharif vegetables cultivated were bitter gourd, cucumber, okra, chilli, ridge gourd and red pumpkin. About 50 percent of the area was under bitter gourd (over 198 acres), a decrease from an earlier figure of about 70 percent; this was an attempt to help farmers diversify from bitter gourd into other vegetables to minimize market risk.

During the 2016 Rabi season a total of 1201 farmers cultivated vegetables on 648 acres. The main Rabi crops were: tomato, cucumber, chilli, cow pea, cluster bean and onion. The total production was 1928 metric tons (MT), of which 80 percent was collectively sent to various wholesale markets.

Despite the improved yield, the produce did not fetch a good price owing to increased supply from other regions to the wholesale markets which resulted in lower net profits.

Wada Project (Maharashtra): NGO Partners: Pragati Pratisthan - Palghar District

Market-Led Extension: In the Rabi season, SFI identified 29 villages in 3 clusters. A total of 339 families participated, and the total area under high value cultivation was 222 acres. Cow pea (71 acres) was the dominant crop. Total production was 1180 MT, of which 80 percent was collectively sent to markets such as Vashi, Palghar, Surat and Bhivandi.

During the Kharif season we worked with 500 farmers and brought 125 acres under vegetable cultivation.

The main Kharif crops were: bitter gourd, okra, bottle gourd, ridge gourd, cucumber, chilli and cow pea. The total targeted production was 625 MT.

Vishakhpatnam Project (Andhra Pradesh):
NGO partner - Bhagavatula Charitable Trust (BCT)

SFI worked in Vizag during 2016–17 in 19 villages with 980 farmers growing vegetables in 230 acres. Nine AEs inaugurated retail agri-input businesses after getting seed and pesticide licenses from the Government of Andhra Pradesh. All AEs worked towards establishing their shops and creating customers in the first phase. In the second phase, three AEs in particular made significant efforts to attract customers and, by March 2017, they had covered 40 villages and reached out to 900 customers from the initial 450. Some AEs are still working in this direction. By March 2017, the agri business had scaled up to INR 39,60,965.

By March 2017, 161 Kisan Credit Cards (KCC), worth about Rs 61 lakhs, had been issued. Renewals of the KCC were prompt. Polyhouses were running successfully and processes had stabilized, with a production of 1,80,000 seedlings by the end of March 2017, against orders.

From January to March work towards enrolling fresh AEs into training centers was carried out. The SVRR training center was established at Chevella, near Hyderabad, and a batch of 32 students was enrolled, from Miryalguda, Suryapet, Vikarabad and Chevella regions. The first batch went through a 45-day training course; some were absorbed into different agricultural activities such as production and cultivation while some were in other occupations.

Sale and Transporting of seedlings

Farmers procuring seedlings from Polyhouse

Monthly AE's Review Meeting

Kalahandi Project (Odisha):
NGO Partner – Kartabya, Harsha Trust

Transactions by AEs during 2016-17

	PNGO	No. of AEs	Farmers covered	Total Transaction (INR)					
				Seeds	Fertilizer	Pesticide	Others	Seedlings	Total
1	KARTABYA	35	4931	57,08,648	22,82,007	67,77,158	80,45,741	48,085	228,61,639
2	Harsha Trust	9	1914	9,28,379	53,534	8,01,695	0	0	17,83,608
Total		44	6845	66,37,027	23,35,541	75,78,853	80,45,741	48,085	246,45,247

Agri-credit model

SFI signed an MoU with IDBI Bank in July 2014 to facilitate agri-credit to small and marginal farmers in all SFI's projects, with the objective of providing credit for high-value farming such as vegetable and hybrid seed production. In this model, the AE acts as the BC for the area and prepares and processes loan documents. In 2016–17, 175 Kisan Credit Cards worth INR 49,20,000 were sanctioned to farmers; by the end of the year, the principal sanctioned was INR 181,00,000 through 583 KCCs.

Agricultural subsidy

In the areas of Odisha where SFI and the partner NGO work, most farmers are smallholders whose economic conditions are not good enough for them to create agricultural assets and improve farming. To address this issue, SFI with the partner NGO worked to make assets and inputs available to farmers through subsidies by linking them to different government schemes (details in the table below).

	Assets and inputs created using government/other funds	Unit	Value (INR)
1	Subsidy on polyhouses	1	1,12,000
2	Subsidy on onion storage (60%)	4	2,34,000
3	Subsidy amount released on HSP	433 acres	34,64,000
4	Drip-irrigation subsidy (90%)	14	12,60,000
5	Deep borewell subsidy (80%)	64	51,20,000
6	Subsidy amount for bitter gourd single-line trolley	4 acres	63,000
7	Poly-mulching subsidy@1000	8	8,000
8	Subsidy on vermi compost tank@10K	12	1,20,000
9	Subsidy on solar irrigation (5HP)	1	2,50,000
10	Paddy seed@997/quintal	1377 quintals	13,72,869
	Total subsidy		120,03,869

Market-led extension

After SFI's interventions, there was a remarkable increase in the income of the farmers because of high-value farming, but the absence of relevant knowledge led to problems in marketing the agricultural produce, transport, etc. SFI, together with the partner NGO, has been linking farmers to the market since 2013–14. In 2016–17, 592 farmers were linked to the collective marketing of vegetables with a turnover of INR 13 million.

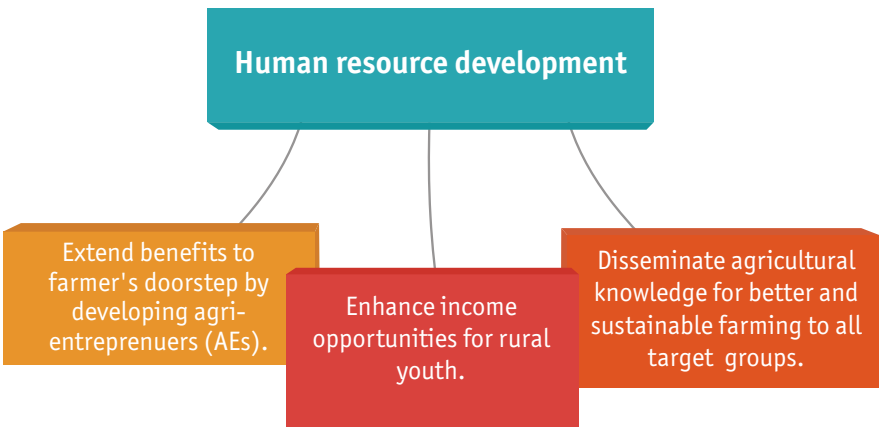
Hybrid seed production

This technology opened up avenues for remunerative incomes among the small farmers in Kalahandi. A total of 387 farmers took up hybrid seed production in paddy on 974 acres during Rabi 2016 and harvested 6536 quintals of raw seed. The total value received by farmers was INR 35.2 million. Three seed producer companies (Syngenta India Ltd., Bayer Crop Science, and US Agriseeds) were associated with the program.

This initiative has created tremendous interest amongst both farmers and seed production companies. An increasing number of farmers are showing interest in participation.

Human resource development through ATA training

The association PNGO-SFI aims to help resource-poor farmers in applying improved production technologies for better productivity and higher incomes. However, continuity would not be possible in the project mode, and so the association came up with the AE model (through the ATA training program); the objectives are represented in the figure below.



Kharif campaigning

Kharif campaigning was held with new and existing AEs to scale up extension services to the farmers. This was started during the second half of March in 2016 and continued for 90 days, benefiting farmers in different ways. The program was run with the active participation of partner NGO, SFI and AES.

	Name of Partner NGO	Number of villages covered	Total number of farmers	Male	Female	Aadhar Number	Mobile number
1	KARRATABYA	32	3193	2818	375	2914	1429
2	Harsha Trust	36	1874	1014	860	1868	203
	Total	68	5067	3832	1235	4782	1632

Trial and demonstration

- Cauliflower variety Happy 101 from Nobel seed was cultivated in 18 decimal of land by 8 farmers and the average yield was 112 kg/decimal.
- Kharif onion was successfully adopted by 3 villages by 45 farmers in 22 acres with an average yield of 70 quintals/acre.
- 43 proposals for solar borewells and 12 drip irrigation projects have been submitted to the District Agricultural Officer.

CHAPTER 9

Financial Report 2016-17

SYNGENTA FOUNDATION INDIA
Balance Sheet as at 31 March 2017

	Notes	31 March 2017 Rs.'000	31 March 2016 Rs.'000
Equity and Liabilities			
Reserves and Surplus	3	25,745	14,016
		25,745	14,016
Current Liabilities			
Short-term borrowings	4	-	3,266
Trade payables	5		
- outstanding dues to micro enterprises and small enterprises (Refer Note 16)		-	-
- outstanding dues of creditors other than micro enterprises and small enterprises		254	1,012
Other current liabilities	6	50	263
		304	4,541
TOTAL		26,049	18,557
Assets			
Current Assets			
Cash and cash equivalents	7	25,554	17,582
Short-term loans and advances	8	312	732
Other current assets	9	183	243
		26,049	18,557
TOTAL		26,049	18,557
Summary of Significant accounting policies	1-2		
See accompanying notes to the financial statements	3-19		

The accompanying notes are an integral part of the financial statements.

As per our report of even date

For B S R & Associates LLP
Chartered Accountants
ICAI Firm registration no.: 116231W/W- 100024

Shiraz Vastani
Partner
Membership No. 103334

Place: Pune
Date: 16 July 2017

For and on behalf of the Board of Directors of
Syngenta Foundation India
U91120PN2005PTC139186

Prakash K.Apte
Director
DIN - 00196106

S.Baskar Reddy
Chief Functionary and Whole time Director
DIN - 07245794

Place: Pune
Date: 14 July 2017

SYNGENTA FOUNDATION INDIA

Statement of Income and Expenditure for the period ended 31 March 2017

	Notes	31 March 2017 Rs.'000	31 March 2016 Rs.'000
Income			
Grants and Donations		108,785	75,221
Other Income	10	1,358	521
Total Income		**110,143**	**75,742**
Expenses			
Project expenses	11	83,150	47,437
Operating and other expenses	12	15,264	24,325
Total Expenses		**98,414**	**71,762**
Excess of Income over Expenditure		**11,729**	**3,980**
Summary of Significant accounting policies	1-2		
See accompanying notes to the financial statements	3-19		

The accompanying notes are an integral part of the financial statements.

As per our report of even date

For B S R & Associates LLP
Chartered Accountants
ICAI Firm registration no.: 116231W/W- 100024

Shiraz Vastani
Partner
Membership No. 103334

Place: Pune
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For and on behalf of the Board of Directors of
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Prakash K.Apte
Director
DIN - 00196106

S.Baskar Reddy
Chief Functionary and Whole time Director
DIN - 07245794

Place: Pune
Date: 14 July 2017

Annexure 1

Training Methods for ATA program

- Selection assessment sheet
- Structured personal interview Q&A
- Audio-visual material
- Trainer's manual
- Reference manual
- Display boards
- Polyhouse and demonstration farms
- In-house stay facilities
- Testing methods:
    1. Objective-type (multiple choice questions)
    2. True/False type
    3. Rearranging-type
    4. Subjective-type
    5. Best-practices based
    6. What-NOT-to-do type
    7. Problem-based
    8. Scenario-based
- Surprise visits to training centers
- 360-degree feedback system for trainers
- 360-degree feedback system for trainees.

Annexure 2

Exposure visits for ATA trainees

1. **Visits to:**

   (a) Soil-testing laboratories to understand soil testing.

   (b) Market distributors to understand market distribution process

   (c) Farms

   (d) Seed processing units.

2. **Interactions with relevant persons such as:**

   (a) District Agriculture Officer

   (b) Agricultural universities

   (c) Progressive farmers.

3. **Visits to understand functioning of:**

   (a) Market yards

   (b) Meteorological laboratories

   (c) Farmer-producer organizations (FPO).

4. **Visits to relevant locations/organizations to understand:**

   (a) Irrigation systems

   (b) Agricultural Information Technology

   (c) Farm machinery

   (d) Organic farming

   (e) Poultry and dairy farming

   (f) Medicinal plants

   (g) Cultivation methods

   (h) Polyhouses, nurseries, sericulture.

Annexure 3

Internship with seasoned Agri-Entrepreneurs

One of the unique aspects of the AE training program by NIRD&PR and SFI is a mini-internship for trainees in which each trainee is attached to an established Agri Entrepreneur to learn the practical aspects of business capabilities taught during the training program, by observation. Some of these business capabilities are:

1. Campaigning/promotional activities/marketing
2. Services provided by AEs
3. Details of credit linkage process: farmers' Kisan Credit Card and CC loan
4. Input sales and product-wise profit margins
5. Record maintenance and documentation
6. Farm advisory services
7. Collective marketing
8. Managing relationships with distributors and farmers
9. Best-practices in the business
10. Cost-benefit calculations
11. Core challenges and how to overcome them.

Annexure 4

Curriculum of training program

Program Curriculum

The training program's day is divided into seven periods of 45 minutes each. Four are before lunch and three after a lunch break.

To achieve the learning objectives, the training is a judicious mix of both, the basics of the subject (functional knowledge of Agriculture), and Skills and Work Attitude.

Content	Modules
Important Basics of Subject	• Climatic Situation • Soil health management • Seeds and seed production • Irrigation and water management • Farm implements and machinery • Weed management • Integrated pest management • Production technology of major local crops • Extension management • Legal aspects: acts, rules and regulations related to agri inputs.
Skills and Work Attitude	• Communication skills (speaking, reading and writing) • Interpersonal skills • Managing relationships • Self-confidence | Initiative | Positive Attitude | Achievement orientation • Usage of technology: computers, smart phones, tablets, apps, internet, email

Training Content

I. Subject Knowledge\Content Details, module-wise:

Module	Key Contents
1. Agro-Climatic Situation of the Region	• Overview of agricultural production system in state • Agro-climatic situation of state • Weather parameters and their impact on agricultural production • Suitable cropping systems for the state • Relevance of agro-meteorological information for crop production
2. Soil Health Management	• Soil profile, types of soil • Characteristics, properties (physical, chemical and biological) • Importance of soil testing, soil sampling and farm advisories, based on testing • Problematic soils in the state and their management • Soil erosion and management • Macro- and micro-nutrient deficiencies • Integrated nutrient management • Importance of liquid fertilizer and plant growth regulators
3. Seed and Seed Production	• Difference between seeds and grain, types of seeds and importance of quality seeds in crop production • Seed treatment: importance and procedure • Seed testing: importance and procedure • Seed storage and maintenance • Principles and practices of seed production, seed certification process

Module	Key Contents
4. Irrigation and Water Management	• Importance of water in crop production and basic principles of irrigation • Water use efficiency: systems and methods of irrigation • Installation and management of micro irrigation (drip, sprinkler, etc.) • Calculation of cost-benefit of micro irrigation
5. Farm Implements and Machinery	• Farm mechanization: scope and importance • Names and uses of different farm implements and machinery • Custom hiring centers: concept and develop business model for self-employment.
6. Weed Management	• Importance of weed management • Types of weeds • Integrated weed management (physical, chemical and biological)
7. Integrated Pest Management	• Importance of pest and disease management in agriculture • Difference between harmful and beneficial insects • Insects and disease damage symptoms • Difference between nutrient deficiency and disease symptoms • Classification of pesticides and new generation pesticides • Compatibility of agro-chemicals • Storage pests and their management • Integrated pest management (physical, mechanical, cultural, biological and chemical methods) • Precautionary measures in procurement, handling and application of agri- chemicals and others inputs; first aid

Module	Key Contents
8. Production Technology of Major Local Crops	• Cereals: paddy, maize, jowar, bajra, etc., • Pulses: red gram, black gram, green gram, bengal gram, etc. • Oil seeds: groundnut, sunflower, sesamum, mustard, safflower, castor • Vegetable crops: tomato, brinjal, chilli, cole crops (broccoli, cabbage, cauliflower), cucurbits • Commercial crops: cotton, sugarcane • Brief exposure to medicinal, aromatic plants and floriculture • Rain-fed farming: crop planning for rain-fed farming
9. Extension Management	• Importance of extension in transfer of technology • Extension methods: training, motivation, demonstration, exhibition, exposure visit, kisan melas • Market-led extensions: meaning, role of AE in promoting forward-backward linkages for farmers • Cyber extension: concept, sources of information, access to information and dissemination to farmers • Major flagship programs of state/central government related to agricultural development (eligible beneficiaries and benefits)
10. Legal: Acts, Rules & Regulations	• Seed Act and Pesticides Act • Fertilizer Control order • Essential Commodity Act and Consumer Protection Act • Sales tax/VAT • Benefit of Acts, Rules and Regulations related to agriculture to the farmer and traders

II. Skills & Work Attitude\Content Details\Module-wise

Module	Key Contents
11. Communication Skills	Speaking, reading and writing • Reading brochures, pamphlets, booklets for product information • Reading relevant newspapers • Preparing brief reports, presentations • Conducting training programs, group discussions
12. Interpersonal Skills	• Interacting with people • Building and managing relationships with farmers and other stakeholders
13. Work Attitude	• Being and becoming confident • Taking initiative • Positive attitude • Achievement orientation
14. Usage of Technology	• Basics of computers: hardware, software, internet basics • Usage of smart phones: internet, email, messages and apps • Usage of tabs: internet, email, messages and apps • Basics of information security • Productive use of social media like Facebook and WhatsApp

Schedule of Training Program Deliverables:

#	Topic	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1.	Program Orientation						
2.	Vocational Skills Training						
3.	Soil and soil health						
4.	Agro-climate and water management						
5.	Plant nutrients and IPDM						
6.	Integrated weed management/ pest management and farm machinery						
7.	Seed Production						
8.	Crop Agronomy						
9.	Agri-extension and MLE						
10.	Agri-finance/ Agri-entrepreneurship						
11.	Legal Acts and Taxes						
12.	Training: Soft skills						
13.	Training: Entrepreneurship Skills						
14.	Field visits						
15.	Attachment with established AE						
16.	Graduation						

NOTES

NOTES

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