MAHARASHTRA AGRI-SKILLING PROGRAM

CHATRAPATI RAJARAM MAHARAJ UDYOJAKTA VA KAUSHALYA VIKAS ABHIYAN

Tracer Study to measure intermediate outcomes of farmers training in Group Farming Practices

PMKVY | N·S·D·C National Skill Development Corporation | ASCI | महाराष्ट्र शासन | MSSDS | SIILC | Palladium

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Abbreviations & Acronyms

ASCI	Agriculture Skill Council of India
CEO	Chief Executive Officer
FPC	Farmer-Producer Company
FPO	Farmer-Producer Organisation
GESI	Gender Equality & Social Inclusion
GoM	Government of Maharashtra
HR	Human Resources
INGO	International Non-governmental Organisation
INR	Indian Rupee
IT	Information Technology
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation & Learning
MIS	Management Information System
MSRLM	Maharashtra State Rural Livelihoods Mission
MSSDS	Maharashtra State Skills Development Society
NOS	National Occupational Standards
NSDC	National Skills Development Corporation
OBC	Other Backward Classes
PCIPL	Palladium Consulting India Private Limited
PIA	Project Implementation Agency
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
QP	Qualification Pack
RPL	Recognition of Prior Learning
SC	Scheduled Castes
SDMS	Skill Development Management System
SIILC	SIMACES Learning LLP
ST	Scheduled Tribes
STTA	Short Term Technical Advisory
TA	Technical Assistance
ToC	Theory of Change

Executive Summary

I. About the Program

Maharashtra Agri-Skilling Program as a Special RPL (Recognition of Prior Learning) Project for Agri-skilling is being implemented in the state of Maharashtra named as the **Chhatrapati Rajaram Maharaj Udyojakata va Kaushalya Vikas Abhiyan** under the aegis of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 2.0. (hereinafter **"Program"**). The Program aims to recognise prior learning of farmers, orient them to the concept and allied ideas of Group Farming Practice, impart practical inputs in group farming and facilitate paperwork for formation of Farmer Producer Organisations (FPO). The overall target of the Program is to train and certify 2,82,000 farmers in Group Farming Practice and submit 2000 FPO undertakings.

Farmers are mobilized to participate in the training and formally enrolled in the Program through Aadhaar verification by the National Skill Development Corporation (NSDC). Enrolled farmers are put through a structured training that includes both theoretical and practical inputs in group farming practice as prescribed by the Agriculture Skill Council of India (ASCI). The entire training design and content is based on the Qualification Pack and National Occupational Standards for Group Farming Practitioner developed by the National Skill Development Corporation and the Agriculture Skill Council of India. Farmers who complete the entire training are finally assessed and certified by a third party – the Maharashtra State Council for Vocational Training (MSCVT) under the supervision of (ASCI).

The key objective of the Program is to create certified Group Farming Practitioners who can inspire and lead informed and improved agriculture practice by mobilizing other farmers and facilitate undertakings for FPOs from interested farmers. The Special RPL project was also conceived as a means to facilitate convergence of various central and state government schemes and Programs linked to agriculture to create a conducive ecosystem for enhancing agriculture sustainability and incomes.

The program is split into three training phases. As the first phase of the program is over, Charney Research and CMSR Consultants, at the instance of Palladium Consulting India Pvt. Ltd., carried out a Tracer study with participant farmers from six districts of Phase 1 viz. Nanded, Latur & Beed districts in Marathwada region and Wardha, Nagpur & Chandrapur districts in Vidarbha region.

II. Objectives of the Study

The study was conducted to understand the change in knowledge, skills, attitude and practice of the program participants of phase 1 with regard to group farming and Farmer Producer Organizations. Moreover, the study focused on understanding the skills acquired by farmers in the domain of farming practices, crop management, technology, setting up and management of FPOs, exposure to market linkages and networks and changing/emerging aspirations of farmers from the perspective of group farming. Study also attempted to assess if the programme reached out to a diverse set of farmers in terms of gender, caste, disability, religion as well as to document the key learning from the first phase of the programme so that it can offer strategic directions for the remaining phases of the programme.

III. Study Approach

The study adopted a blend of quantitative and qualitative approach to get information. **Quantitative approach** included; one-to-one interview with the selected farmers of six sample districts which comprised of three different categories (a) farmers who were trained and had formed FPC; (b) farmers who were trained but not into FPC and lastly; (c) untrained farmers who were in FPC. The interview with the farmers were conducted using CAPI technique. As part of the **qualitative method,** focus group discussions (FGDs) were organized among the members of FPC and Non-FPC farmers.

The study also focused on gathering information and data through **secondary research**. Various documents such as tracer study brief, Maharashtra Agri-Skilling Program M&E Plan, PMKVY Guideline, interim progress reports, MIS data and training modules were reviewed. In addition to this, a contextual analysis of the program in terms of its design and delivery and its comparison with the other similar initiatives undertaken by government and civil society organizations/NGOs in the state/country was also performed.

This report is based on the complete final poll dataset collected among 2,238 Maharashtra Agri-Skilling Program participants in Phase 1 of the programme from the last week in May through the end of June, 2019. The report also draws on qualitative research from 12 focus groups conducted in the six target districts in Maharashtra amongst men and women, six with people who are in FPCs and six with trainees who are not.

IV. Key Findings

Characteristic of the participants

- Maharashtra Agri-Skilling Program participants seem to be progressive farmers, particularly those who have been trained and formed FPCs. They are above-average for their villages in status - age, education and income.

- The **mean age** of the male respondents was 42 years and that of females was 40. In Chandrapur, Nagpur and Latur, around 32 percent farmers were above the age of 50 years. The representation of young farmers was highest in Beed (34% below the age of 35 years).

- As regards **social category,** almost half of the sample respondents belonged to OBC category (M-48.5 percent, F-61.8 percent) while slightly more than a quarter were from the General category i.e. 29.0 percent (M-30%, F-17%).

- Majority of the sample respondents (40.0%) were those who had undergone schooling between 5^{th} to 10^{th} class. Another 33 percent had studied up to 11^{th}-12^{th} class. Graduates constituted 13 percent of the sample while only 3 percent were postgraduates.

- On an average, farmers owned around 5.6 acres of land of which irrigated land was to the tune of 3.2 acres and rainfed land was around 2.4 acres. Barren land was negligible. It was noticed that the trained farmers had larger land holding (5.9 acres) as compared to the untrained farmers (5.3 acres).

- Overall, the average household **annual income** of the farmers was Rs 1,27,697. The annual income above the overall average household income was noticed among the trained participants (Rs.1,42,621) as compared to untrained participants (Rs.1,10,689).

- All the respondents (except 1.0 percent) had **bank accounts**. About 91 percent respondents had maintained their accounts with Commercial (Nationalized and Private) banks while about 8 percent reported having account in Cooperative bank.

- More than 95 percent respondent (males-97%, females-86% had **mobile phones**. Among the respondents who owned phones, about 64 percent of them were using feature phones while the

remaining 36 percent used smart phones. The number of smart phone users was higher amongst the trained respondents (41%) as compared to untrained respondents (32%).

- Nearly 83 percent respondents who owned feature phones and 96 percent who were operating smart phones stated that they used their phones to get information on crops and farm related knowledge.

Crops cultivated

- The crops that were cultivated during kharif season by majority of farmers were Soybean (56%) followed by cotton (54%), pigeon pea (37%) and paddy (16%). Maximum farmers were growing gram (41%) followed by wheat (31%) and pigeon pea (21%) as rabi crops. Most of the sample farmers (94 percent) do not cultivate any major crops during the summer season due to drought conditions and lack of irrigation facilities.

Loan

- Around 28 percent farmers had availed loan during 2018-19. While 29 percent male farmers took loans in the year 2018-19, only 21 percent women farmers did the same.

- Among the farmers who availed loan, the overall average loan amount was to the tune of Rs 98,764. The average loan amount taken by the FPC participants (Rs, 1,03,344) was much higher than that of the non FPC participants (Rs 89,906).

- More than 95 percent respondents stated taking loans for farm related activities. Around 3 percent farmers stated taking loans for livestock management followed by 2 percent for personal consumption.

- Majority of the farmers (62%) availed loans from Commercial banks followed by 28 percent who stated taking loan from Cooperative banks. Around 9 percent of the sample respondents depended on money lenders.

Market: access, usage and challenges

- Around 68 percent of the respondents (M-68%, F-63%) were purchasing agricultural inputs from market outlets. More than 70 percent of FPC participants were purchasing inputs from the market outlets as compared to only 61 percent non-FPC participants.

- Respondents who sold their agricultural produce in market outlets constituted 71 percent of the sample (M-72%, F-65%). Around 75 percent FPC participants reported using market outlets to sell their produce as compared to only 64 percent non-FPC participants.

- About 59 percent participants reported not being able to get timely information related to crops. FGD participants pointed out that inputs and information from the government department always reached them after the cropping season got over.

- Around 51 percent farmers stated bad roads to reach market as a challenge followed by 31 percent stating inadequate transport facilities. Another 27 percent farmers cited bad weather/climate as a major challenge. The location of market being far away from the villages was felt as a major problem by 24 percent farmers.

Promptness of payment

- Majority of farmers purchase inputs like seeds and fertilizers from traders without paying cash, on the promise that they will repay the amount as soon as they harvest their produce. Hence, they cannot afford to wait till the time the market offers better rates as they need to repay their debts immediately. Although the government (NAFED) offers better rates as compared to traders, they do not make immediate payments. Payments are made after 6 to 8 months. Hence, farmers are forced to sell their produce to the local traders (private buyers) at lesser prices in order to get immediate cash.

Satisfaction among participants regarding training program

- The training program itself was well received by participants as overall, nearly half (48%) of the respondents rated the training as highly satisfactory (rated 5 or 4 on the 5-point scale) while 41 percent felt that the training program was average. The rating of the training program as highly satisfactory was higher (54.0%) among the participants who were trained and into FPC as compared to those who were trained but not in FPC (45%).

- Some of the farmers, especially those who received training but are yet to form FPC, had apprehensions about the success of group farming concept. They were a little skeptical whether they could arrive at a common ground regarding purchase of inputs, cultivation practices and marketing given the fact that there would be several farmers in a group with diverse opinions about different farming practices.

Knowledge about group farming and FPC concept

- Awareness about FPCs and group farming concept was noticed among most of the FGD participants. However, some of them just had a vague idea about the activities that need to be done once the FPC is constituted. Although they had undergone the training and received the certificate, they are yet to start the group farming activity as they lacked knowledge on how to begin the group farming activities.

Reasons for joining a group

- Most of the farmers stated joining the group as they felt that collective farming will help share farm responsibilities, reduce labour costs and better exchange of ideas/knowledge. Also, they felt that marketing will become easier if they sell their produce in bulk.

Major areas learnt by participants in group farming

- Majority of the farmers (87%) had adequate knowledge on crop varieties followed by 78 percent who were aware about the right use of inputs in farming. Another 62 percent stated that they possessed marketing skills. However only 44 percent respondents stated awareness about group farming activities and access to finance. Likewise, only 28 percent had knowledge about post-harvest technology (PHT).

Group farming' advantages

- Around 18 percent farmers felt that group farming would help increase their yields, reduce farming costs and fetch a better price for their produce resulting in increased income. Another 10 percent believed that it would reduce the transportation costs. Getting timely and better-quality inputs was stated as an advantage by 8 percent respondents. Few respondents (7%) also felt that labour costs would substantially reduce with group farming.

Intent to practice group farming

- More than 70 percent of the farmers who had not started group farming stated that they intend to start practicing group farming. It was interesting to note that the number of women farmers (86%) who were interested in group farming were higher than the men farmers (72%).

Anticipating increased income by adoption of group farming practices

- **More than 93 percent respondents believed that adopting group farming practices can help them to increase their income.** As compared to males (93%) a greater number of female farmers (95%) were of the view that there will be an increase in income if they adopt and practice group farming.

Changes in Farming Practices after Training

- Most respondents (51%) made changes in their use of pesticides followed by weedicides use (43%) and use of water (38%). Other changes made by the respondents were use of new seeds (20%), soil testing (15%), weed control methods (11%) and collective procurement (8%).

Changes in post-harvest handling

- About 52 percent farmers stated that they have not made any changes in post-harvest handling. Of the remaining who made changes in post-harvest handling, the most popular change by far, involved storage at 41%. 18 percent stated making changes in processing followed by 11 percent each stating that they made changes in drying and cleaning of the produce. Other changes made by the farmers included packing (10%) and grading (5%).

Changes in marketing

- A majority of participants (52%) report making changes in marketing practices since training: Such changes are more common among those in FPCs (58%) than those not in them (48%). Of those reporting changes, 58 percent stated information sharing, 54 percent mention using common transport, and 49 percent stated collective bargaining with traders.

Changes in farming services

- Around 26 percent participants stated that credit access has improved, 30 percent stated that inputs are now available on time. Improvement in farming services have been stated by 27 percent farmers after they adopted group farming. Improvements were noted in pricing and timely payment by 35%.

Influences on Change

- Among the respondents, a number of factors were identified that are connected to the likelihood that changes have been made in their farm practices. These included participation in the markets, group and FPC membership, social situation (distress, social category, education and income, information sources, and seasonal factors).

Other Changes from the Training

- **Joint investment:** The possibility of joint investments by farmer groups that individual farmers could not afford was mentioned unprompted by several participants in the focus groups. They recognized that investments that would be too large or uneconomical for individual smallholders could become a reality if they cooperated and funded them jointly.
- **Agro-processing:** Group members were very interested in moving up value chains through value-added processing of agricultural produce. They were also aware that this would help solve the employment problems plaguing their areas. Focus group members were very entrepreneurial and keen to develop value-added processing after harvest, such as setting up dal mills or briquettes from sugar cane waste.
- **Organic farming:** There was a lot of interest among the focus group respondents on organic farming since the training taught them about the use of manure instead of chemical fertilizers. They were aware of the risks both to the soil and to the consumers by practising chemical agriculture. Benefits of organic farming were stated as “increase in soil fertility,” “non-poisonous food,” and “increase in yield and good rates.”
- **Women’s empowerment:** The training and FPC or farm group formation gave women farmers a sense of empowerment and encouragement they had not experienced before as expressed by both men and women farmers during the focus group discussions.

Participant’s expectations for incomes and output

- Programme participants have very positive expectations about group farming and FPC membership on agricultural incomes and output. Almost all (93%) think group farming will increase their farm income. The optimism is general: just 7% of both the untrained FPC members and trained non-members are sceptical about better incomes.
- Expectations are also very positive for output increases under group farming. Overall 86% of the respondents surveyed expect group farming to increase their output.
- **Interestingly only 6 percent of those trained and in FPCs are doubtful about increased output, against 17 percent of untrained FPC members and 15 percent of trainees not in FPCs.**

Intentions for spending extra income

- The pre-eminent use of the gains would be the children's education (93%), followed by better quality of life (77%) and better healthcare (57%). Other types of consumption are also mentioned but lag far behind: participation in social functions (17%) and travel (15%). Interestingly, desire for travel was highest (30%) among those using mass media for market information.

V. Challenges and Barriers as Anticipated by Participants

General challenges in farming

- The top-of-mind concerns of the farmers is the **'Lack of water' for irrigation (67%)**. Problems were also related to labour, low prices for produce, threat of wild animals to crops, attack of insects/pests, decrease in soil fertility, Climate change and decrease in land holding size.
- Participants depend on markets, but live far from them and struggle to get timely market information and goods to market promptly.

Women's specific challenges

- Women farmers operate under greater constraints than men as they have less access to information, technology, land, inputs and credit which leads to discrimination.
- Most women do not have land in their names, they are not decision makers and are financially dependent on their husbands. This robs them of their individual identity as a farmer.

- Women tend to face greater challenges when it comes to securing credit. They are generally less experienced with regard to borrowing from an institution, and without assistance and support they find it difficult to access much needed funding.
- Lack of market research and information limit women farmers to market opportunities. Although women do almost all the farm activities, they do not have any knowledge about marketing and do not have any say in marketing activities.
- Most agricultural extension focuses on large-scale commercial farming with limited research conducted on small farming techniques, which are often owned by women.
- In most cases, the farms are located at a distance from the villages. Hence women farmers need to walk long distances, many times carrying inputs like seeds and fertilizers on their heads. Travelling time for farm women is high which leads to less productivity.
- Most trainings are held in common places like temples. Social and religious practices dictate that menstruating women are not supposed to enter temples. Due to this, women are not able to attend the training program in spite of being interested.
- Farm women work under critical conditions in rural areas. Women workers don't get proper food, rest and improper sanitation infrastructure, which leads to the unhygienic working condition.

Barriers to FPC formation

- Registration **cost:** One of the most frequently mentioned barriers was the cost – paying the registration fees and initial deposit.
- **Lack of knowledge about group farming:** The other commonly cited reason was skepticism or ignorance about results and risk-aversion among the poor.
- Access **to credit:** Access to credit was found to be a major factor that prevents farmers from taking a step towards innovation/technology.
- Difficulty **coping with bureaucratic requirements:** Most farmers are not well educated and have little understanding about the extensive documentation that is entailed in the procedure and how to go about getting it done.
- **Lack** of **landownership among women farmers:** Women not having land in their names is a major barrier.
- **Lack of information:** As the concept of group farming is new, it takes a lot of time and efforts to convince and motivate the farmers to try it out.

VI. Conclusions

Phase 1 of the Program has had an important impact on the attitudes, agricultural practices, and aims of smallholder participants in the target districts who have been trained or joined FPCs. Most respondents say they have joined farming groups or will do so, and most see the groups as advantageous. Work remains to be done in overcoming knowledge gaps and other factors limiting FPC formation, particularly among women, but a considerable start has been made. The consequences can already be seen in majorities who report changes in their farming, post-harvest practices, and marketing, as well as many who say farming services are better. Again, there is still a long way to go to diffuse all the improvements the Program aims to promote on a large scale. This will involve encouraging market participation as well as group and FPC membership, and using media and targeting to spread benefits beyond advantaged groups who have been the quickest to seize some of them.

Encouragingly, moreover, the training and FPCs have also helped to awaken new aspirations among small farmers, not just technical changes: Program participants speak spontaneously of making joint investments, processing produce, going organic, and in the case of women, feeling newly empowered.

Thus, the Program is creating expectations for better incomes and output and encouraging farmers to think about using these outcomes to benefit their families. They see a clear connection between the farm improvements and improved financial, crop, and employment results. They want to use these gains to invest in their children's education and keep them on the farm, reducing the rural exodus and promoting their communities' viability. They also want to improve their families' living standards and health.

Nonetheless, they also recognize that problems may face FPCs and MDSP participants. These include their need for further information and consulting help, financial limitations, and women's "double shift." These potential pitfalls should be addressed in order to make sure that the high expectations of the Program participants become realities on the large scale intended by the programme.

Group members repeatedly voiced the need they felt to receive more guidance and hand holding, even though they have already received training in the program. Non-FPC members talked about the need for more support for start-up of the group farming and marketing operations.

Section 1: Introduction and Study Methodology

A. Context

In India, Agriculture is still mainstay of majority of population and almost 55% to 60% population is engaged in agriculture. Agriculture has become input oriented, expensive & farmers are completely dependent on seed, fertilizer, implements, labourers. On the other hand, with increase in population, rapid fragmentation of land is happening. The average size of land holding declined from 4.28 ha (1970-71) to 1.65 ha in 2001; leading to economically non-viable small farms. These small farmers are unable to bear the high cost/ investment for adoption of modern technologies in order to sustain the higher productivity levels, with growing small farms & small farmers the issues of productivity, profitability, adoptability & sustainability are becoming sharper[1].

There are many issues and challenges for small holding agriculture in India. Some of the general issues that confront small and marginal farmers as agriculturalists are imperfect markets for inputs/product leading to smaller value, absence of access to credit markets or imperfect credit markets leading to suboptimal investment decisions or input applications, poor human resource base, smaller access to suitable extension services restricting suitable decisions regarding cultivation practices and technological know-how, poorer access to 'public goods' such as public irrigation, command area development, electricity grids, greater negative externalities from poor quality land and water management, etc". Small holdings need credit for both consumption and investment purposes.

In order to address these issues, a solution is to organise small & resource poor farmers into groups, developing groups of assetless farmers & building them as service providers so as to generate better livelihood facilities & reduce poverty. As groups, small farmers can come together to adopt modern technology & produce higher quality agri- produce & thereby can capture the emerging domestic markets as well as enter into world market. These groups can undertake processing, value additive marketing activities united. The group farming approach will also help in fastest adoption & speed of technologies. It is also helpful in offering the farmers improved technologies.

[1] Group Farming and Micro Irrigation A Way To Prosperity - ICID

B. Farmers Producers Companies (FPCs) in India

A provision for setting up FPCs was made in the Companies Act, 1956 in 2003 by an amendment to the Act. According to the National Bank for Agriculture and Rural Development (Nabard), a producer company is a hybrid between a private limited company and a cooperative society. Therefore, it enjoys the benefits of professional management of a private limited company as well as mutual benefits derived from a cooperative society.

Most of these FPCs in India are concentrated in a few states such as Madhya Pradesh, Rajasthan, Maharashtra and Bihar. The National Commodity and Derivatives Exchange (NCDEX) has taken initiatives to take FPCs along for hedging and other benefits. Yet, FPCs face a number of problems such as the lengthy process of registering a company, non-availability of collateral-free loan at low rate of interest and lack of leadership and business acumen. **According to Niti Aayog member Ramesh Chand, India, a country of six lakh villages, needs at least one lakh FPCs to transform agriculture[2].**

C. The 'Program'

Maharashtra Agri-Skilling Program as a Special RPL (Recognition of Prior Learning) Project for Agri-skilling is being implemented in the state of Maharashtra named as the **Chhatrapati Rajaram Maharaj Udyojakata va Kaushalya Vikas Abhiyan** under the aegis of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 2.0. (hereinafter **"Program"**). The Program aims to recognise prior learning of farmers, orient them to the concept and allied ideas of Group Farming Practice, impart practical inputs in group farming and facilitate paperwork for formation of Farmer Producer Organisations (FPO). The overall target of the Program is to train and certify 2,82,000 farmers in Group Farming Practice and submit 2000 FPO undertakings.

Farmers are mobilized to participate in the training and formally enrolled in the Program through Aadhaar verification by the National Skill Development Corporation (NSDC). Enrolled farmers are put through a structured training that includes both theoretical and practical inputs in group farming practice as prescribed by the Agriculture Skill Council of India (ASCI). The entire training design and content is based

[2] Jayashree Bhosale: How farmer producer company model can transform Indian agriculture

on the Qualification Pack and National Occupational Standards for Group Farming Practitioner developed by the National Skill Development Corporation and the Agriculture Skill Council of India. Farmers who complete the entire training are finally assessed and certified by a third party – the Maharashtra State Council for Vocational Training (MSCVT) under the supervision of (ASCI).

The key objective of the Program is to create certified Group Farming Practitioners who can inspire and lead informed and improved agriculture practice by mobilizing other farmers and facilitate undertakings for FPOs from interested farmers. The Special RPL project was also conceived as a means to facilitate convergence of various central and state government schemes and Programs linked to agriculture to create a conducive ecosystem for enhancing agriculture sustainability and incomes.

The Program is split into three training phases. These phases are being implemented in a cascading manner. Each phase will roll out training activities in 6 to 7 districts till the three phases of the program cover all the 34 districts of Maharashtra. This is a large-scale program aiming to promote small holder agriculture and agricultural value chains in Maharashtra. While doing this, the program will focus on increasing skills, providing overall support to small holder farmers and young entrepreneurs as well as reinforcing market linkages in relevant value chains.

The agri-skilling will help the farmers in improving their social indicators related to their household income. Agri-skilling will also create a sense of need for group farming to achieve better output and the power of collective bargaining as well as sales as necessary step to improve their overall economic well-being. The Mass Skilling (aligned with the scheme under NSDC - RPL- Recognition of Prior Learning) intervention includes input on improved agriculture practices and group farming. The opportunities to get access to financial resources are expected to be larger than that before the project. This will help in building the confidence of the farming community to undertake productive farming from the resources they have been managing collectively through the huge network of their Village Organizations and Local Support Organizations at grass root levels.

Farmers' training is followed-up by a bridge program (RPL) in districts/circle area to provide ongoing support and to understand the impact of the training. After a few weeks of follow-up, the farmers will go through an assessment to check and validate their learning progress.

D. Tracer Study: Objectives & Scope

On the completion of the first phase of the Program, CMSR Consultants (India) and Charney Research (USA) at the instance of Palladium Consulting India Pvt. Ltd., carried out a Tracer study with participant farmers from six districts of Phase 1 viz. Nanded, Latur & Beed districts in Marathwada region and Wardha, Nagpur & Chandrapur districts in Vidarbha region. The study was conducted to assess the initial effects of the initiative and for getting feedback and insights to be used as inputs for the remaining two phases of the programme. It will be followed by subsequent research after the conclusion of the programme to measure systematically the impact of the interventions on attitudes, practices, and output.

The specific objectives of the study were;

- To create a baseline and understand the change in knowledge, skills, attitude and practice vis-à-vis group farming and Farmer Producer Organizations of farmers who participated in the first phase of the program.
- To understand the skills acquired by farmers in the domain of farming practices, crop management, technology, setting up and management of FPOs, exposure to market linkages and networks and changing/emerging aspirations of farmers from a group farming perspective.
- To assess if the program reached out to a diverse set of farmers in terms of gender, social category and disability among others and capture feedback from farmers about the relevance of the program.
- To document the key learning from the first phase of the program in a manner that it offers strategic directions for the remaining phases of the program

Geographical Coverage

The study locations covered the six districts of phase 1 interventions divided into two regions i.e., Vidarbha (Nagpur, Chandrapur and Wardha) and Marathwada (Beed, Latur and Nanded). The district-wise number of talukas and villages visited is presented below;

Table 1: Geographic scope

Regions	District	Number of blocks	Number of Villages
Vidarbha	Nagpur	7	39
	Chandrapur	4	19
	Wardha	6	26
Marathwada	Beed	4	23
	Nanded	5	32
	Latur	5	41

E. Methodology and Sampling

Research techniques

The study used a mix of primary and secondary research techniques to get the information and required data. **Primary research** adopted a blend of quantitative and qualitative research techniques. It included the following;

- One-to-one structured interview with the selected farmers of six sample districts. The sample farmers comprised of three different categories (a) farmers who were trained and had formed FPC; (b) farmers who were trained but not into FPC and lastly; (c) untrained farmers who were in FPC. The study also covered women whose concentration in the sample was in line with their representation in the universe of the project (approx. 10%).
- Focus Group Discussions (FGDs) were conducted with the members of FPC and Non-FPC members. Two FGDs were conducted in each sample district, of which one was conducted among the members of FPC and the other among Non-FPC farmers. Involvement of women farmers was also ensured in the discussion wherever possible. The farmers in the FGDs were excluded from the detailed survey.
- Checklists for eliciting information from the other key stakeholders (Minister Skills, GoM, Principal Secretary Skills, Governance Lead, MSSDS CEO, Academic Lead, Project Director and Field Operation Lead) were circulated by email for their responses to key questions on the project.

Secondary research included reviewing all project related documents such as;

- Tracer Study brief, Maharashtra Agri-Skilling Program M&E Plan, PMKVY Guideline, interim progress reports, MIS data and review of training modules.
- It also included a contextual analysis of the program in terms of its design and delivery and its comparison with the other similar initiatives undertaken by government and civil society organizations/NGOs in the state/country.

Sampling plan

Farmers for the one to one interview were selected using random sampling. For the purpose, a dataset containing farmers of all the three categories was provided by Palladium to CMSR Consultants. This dataset formed the universe for selecting the sample for the study.

Participants for the FGDs were selected on a random basis from amongst the appropriate farmer categories. It was ensured that the villages and participants selected for the FGDs were different from those included in the one-on-one survey. Within the village, CMSR used standard survey procedures to sample from their target universe in the village.

Table 2: Sample achieved

District	Quantitative Sample					Qualitative sample (FGD)		
	Trained + in FPC	Untrained + in FPC	Trained but not in FPC	Total	Women coverage	FPC	NFPC	Total
Beed	21	149	111	281	39	1	1	2
Chandrapur	47	146	106	299	15	1	1	2
Latur	80	153	120	353	29	1	1	2
Nagpur	85	215	124	424	37	1	1	2
Nanded	114	84	180	378	7	1	1	2
Wardha	89	299	115	503	93	1	1	2
Overall	**436**	**1046**	**756**	**2238**	**220**	**6**	**6**	**12**

Fieldwork procedure

A two-day in-house training was organized on 21st and 22nd May, 2019 for the CMSR field enumerators, supervisors, field coordinators and moderators to orient them about the objectives of the study and

acquaint them with each and every question of the survey schedule. The training to teams was imparted by the team leader and research expert in the presence of Palladium staff and Charney Research.

The field team comprised of 24 enumerators, six supervisors and two coordinators who were given training on CAPI for recording the interviews and transmitting the interview data to the server on a day-to day basis. All the field team members were hired locally and were well conversant with the local language. They also had the required experience in conducting such field studies.

Data collection and field movement plans were prepared before initiating the field work. The entire data collection took place within a period of three weeks starting 24th May, 2019.

The farmer interviews were conducted using computer assisted personal interviewing (CAPI) tool. The survey through hand-held devices had several advantages including reduced time gap between data collection and data analysis and ensuring real time monitoring of the data collected. It also allowed immediate uploading of survey results and observe the emerging trends. The 'eRaay' survey platform was used to create and configure the questionnaire. The enumerators were asked to conduct the interviews in offline mode while in the field and sync the data once they had access to the internet (usually at the end of the day).

The FGDs were conducted by an experienced moderator familiar with local language and dialect. All the group discussions were audio recorded for preparing detailed transcripts for insights and analysis.

Survey length and construction

Given that farmers will have lesser time for the survey due to their engagement in farm activities, a structured questionnaire was designed. The questionnaire contained a total of 60 questions, mostly close ended questions and only 3-4 subjective questions. The time taken to complete one interview was about 20-30 minutes. The survey teams were instructed to firstly explain the purpose and objectives of the study to farmers and to start the interview only after taking consent from the respondents.

Quality assurance (QA)

Following steps were adopted for quality assurance of data:

Thorough orientation was given to the field teams on each and every aspect of the assignment. The theoretical training was followed by mock calls. De-briefing sessions were also organised for the field teams.

Due precautions were taken to ensure data quality in field. A supervisor was deployed in each of the sample district who accompanied their respective teams. Supervisors were responsible for overall coordination of their teams in the districts assigned to them. They were also responsible to keep a track of the progress of field work and ensure data quality by verifying randomly the interviews conducted by their team members.

Additionally, at central level, a team member from CMSR Consultants was entrusted to oversee the entire data collection, data management, back checks, etc.

The entire field work was coordinated under the close supervision of a field manager who is highly experienced in handling large - scale data collection tasks. Besides, core team members proposed in the study (project coordinator, domain expert & gender expert) also visited the field and provided their hand holding support to field teams.

The System Analyst applied logical checks during data processing and production of output tables.

F. Limitations

Extreme weather conditions: The timing of the field survey could not be changed given the timeline of the study. May-June being the hottest months with temperatures reaching 47-48° C, it was a tad difficult to travel and conduct farmer interviews.

Non-availability of farmers: At times, the farmers identified on the basis of the list were not available in the village. They were travelling for work or some farm/family related errands.

Denial to participate in interviews by farmers: In some cases, the farmers refused to be interviewed and share their inputs without assigning any reason. Their choice of not wanting to be a part of the interviews was respected by the field enumerators and other farmers were identified to replace them in the sample.

Issues with database: As the database of the farmers covered under the programme for the first phase was being updated simultaneously some minor hiccups that occurred in farmer selection did take place, however, these were resolved quickly.

Time constraints: Constraint of time was felt because of the urgency of the study and geographical coverage - (increased travel time).

G. Structure of the Report

This Report has been organized into seven sections including the present introduction part. Section I gives a brief overview of the tracer study, followed by detailed methodology and approach adopted for completing the assignment. Thereafter the subsequent six sections present the outcome and the findings that emerged from the field survey (one to interview with farmers and FGDs).

Section II briefly summarises the demographic profile of the survey respondents. The section also covers the concern of the farmers including specific concerns related to women farmers in agriculture, resources and farmers' access to market for buying inputs and selling of agricultural produce. Section III talks about the Maharashtra Agri-Skilling Program participants reaction to the training program, including their suggestions for changes. Sections IV highlights the changes adopted by participants in terms of farm practices due to Maharashtra Agri-Skilling Program training program. It also briefly talks about the impact of the program on the farmers. Participants' views for the future is covered in Section V of the report. Mainly this section discusses the expectations of participants from the program and the kind of problems they are anticipating in group farming. Results of the dropout survey is presented in Section VI of the report. Conclusions and Recommendations are presented in Section VII while Executive Summary is placed at the beginning of the report.

Section 2: Program Participants Profile

This part summarizes the demographics, concerns, resources, and market access of the Program training and FPC participants, along with specific data and issues concerning women in the program. The program has attracted progressive farmers, mainly middle-aged, with education and above-average income, chiefly OBC in social category, and having access to electronic and financial connectivity. Their top-of-mind concerns focus on water and electricity, but probing shows transport, fuel, labour and crop prices also as major concern areas. They have resources in land and labour, but few can access loans and those received are largely for crop finance. While active in input and produce markets, these are distant, making market information and transport difficult to come by. The small minority of women in the Program face their own challenges, in terms of land, labour, income, social category, and access to information. They are also up against the problems endemic to women in Indian agriculture, including distance, animals, bad roads and the "double shift" at home and farm.

A. Demographics

Sample coverage

Of the total 2238 respondents, around 19 percent were those who were trained and had formed FPC. Untrained farmers who were a part of FPC constituted 47 percent of the sample while the remaining 34 percent were those who were trained but not in FPC. District-wise data reveals that Wardha (503) had the highest number of farmers covered in the survey, followed by Nagpur (424) and Nanded (378). The study also covered around 10 percent women farmers which was in line with their representation in the universe of the project.

Table 3: District-wise distribution of respondents (number)

District	Trained + in FPC			Untrained + in FPC			Trained but not in FPC			Overall		
	M	F	T	M	F	T	M	F	T	M	F	T
Beed	17	4	21	122	27	149	103	8	111	242	39	281
Chandrapur	46	1	47	132	14	146	106		106	284	15	299
Latur	79	1	80	130	23	153	115	5	120	324	29	353
Nagpur	85	-	85	185	30	215	117	7	124	387	37	424
Nanded	114	-	114	78	6	84	179	1	180	371	7	378
Wardha	72	17	89	234	65	299	104	11	115	410	93	503
Overall	**413**	**23**	**436**	**881**	**165**	**1046**	**724**	**32**	**756**	**2018**	**220**	**2238**

The representation of trained farmers (both, trained + in FPC and trained but not in FPC) was 1192 (53%) while untrained farmers accounted for 1046 (47%). Those who have formed FPC (trained + untrained) represents 66 percent (1482 nos.) of the sample while the remaining 34.0 percent (756 nos.) were those who had not yet formed the FPC.

Age-group

The overall data indicates that Program participants were largely middle aged (47.0 percent in the age group of 35-49 years), with a quarter over 50 and a quarter under the age of 35 years. In Chandrapur, Nagpur and Latur, around 32 percent farmers were above the age of 50 years while the representation of young farmers was highest in Beed (34% below the age of 35 years).

Table 4: Distribution of sample respondents by age-group

District	Age-group (in years)				Total Sample (n)
	Under 24	25-34	35-49	50+	
Beed	4.6	29.5	47.7	18.1	281
Chandrapur	3.7	15.7	48.8	31.8	299
Latur	4.8	18.4	45.0	31.7	353
Nagpur	6.1	24.1	38.4	31.4	424
Nanded	3.7	18.8	54.0	23.5	378
Wardha	8.2	25.0	49.9	16.9	503
Overall	**5.5**	**22.1**	**47.2**	**25.2**	**2238**

The mean age of the male respondents was 42 years and that of females was 40. The district-wise figure reveals that Beed had the youngest male farmers (mean age: 39 years) while the youngest female farmers were from Nanded (mean age: 32 years).

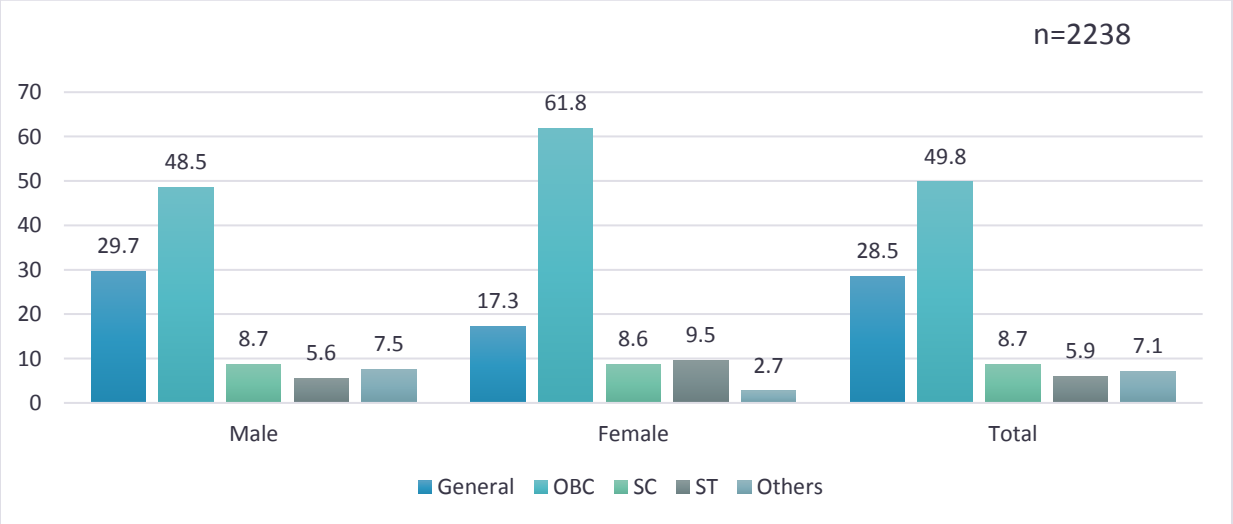
Table 5: Gender-wise distribution of respondents by mean age

District	Male	Female	Total
Beed	38.9	38.6	38.8
Chandrapur	44.0	40.4	43.8
Latur	43.6	43.6	43.6
Nagpur	42.8	39.5	42.5
Nanded	42.2	32.3	42.0
Wardha	38.5	40.4	38.9
Overall	**41.6**	**40.1**	**41.5**
Total sample (n)	**2018**	**220**	**2238**

Social category

Almost half of the sample respondents belonged to OBC category (M-48 percent, F-62 percent) while slightly more than a quarter were from the General category i.e. 29 percent (M-30%, F-17%). The representation of ST category was the least (6%) in the sample while SC category constituted for almost 9 percent.

Fig 1: Gender-wise distribution of respondents by social category



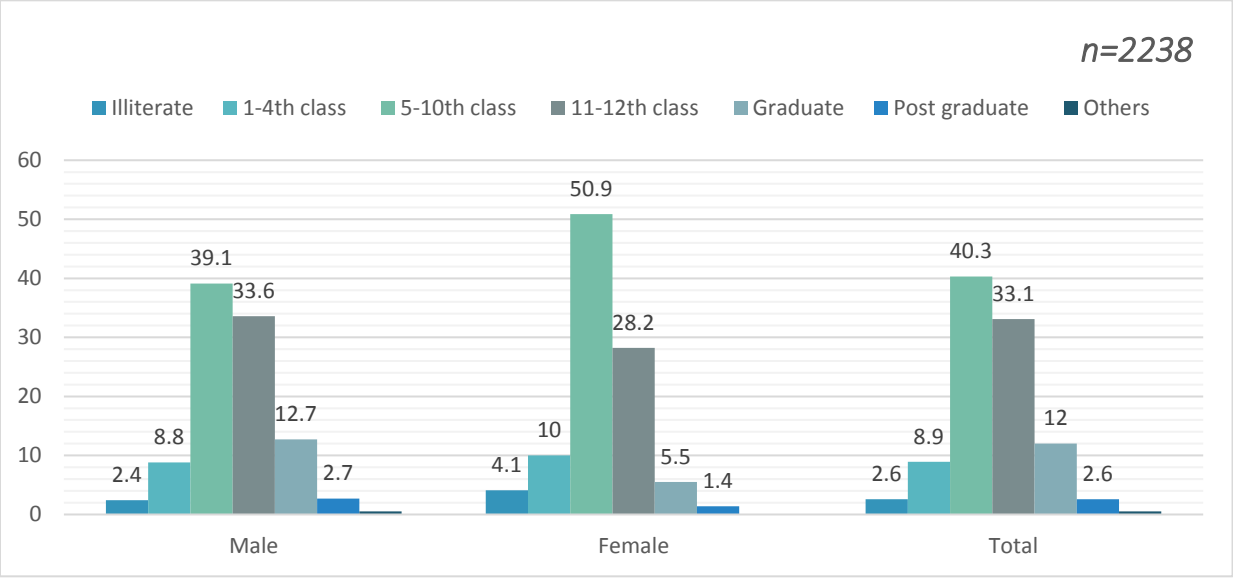
As regards trained and untrained farmers, General category respondents was higher among trained farmers (36%) as compared to that of untrained farmers (20%). On the contrary, concentration of OBC was maximum among untrained farmers (60%) as compared to trained farmers (40%). No significant differences were noted among the SC and ST category with regard to trained and untrained farmers **(Appendix D – Table A1)**.

The representation of OBC category respondents was found to be much higher among the FPC participants (56%) as compared to non FPC participants (37%). However, among the General Category, only 23 percent were a part of FPC while 40 percent were those who were not into FPC. Maximum males as well as females who were a part of the FPC belonged to the OBC category. **(Appendix D – Table A2)**

Educational status

A positive sign that was observed among the sample respondents was that only 3 percent were illiterates (Males: 2.4%, females: 4.1%). Majority of the sample respondents (40.0%) were those who had undergone schooling between 5th to 10th class. Another 33 percent had studied up to 11th-12th class. Graduates constituted 13 percent of the sample while only 3 percent were postgraduates.

Fig 2: Educational status by gender



The percentage of illiterate women among the untrained category was higher (5%) than the trained category of respondents (2%). Educational status of the FPC and non FPC participants were more or less similar with only marginal variations **(Appendix D – A3 & A4).**

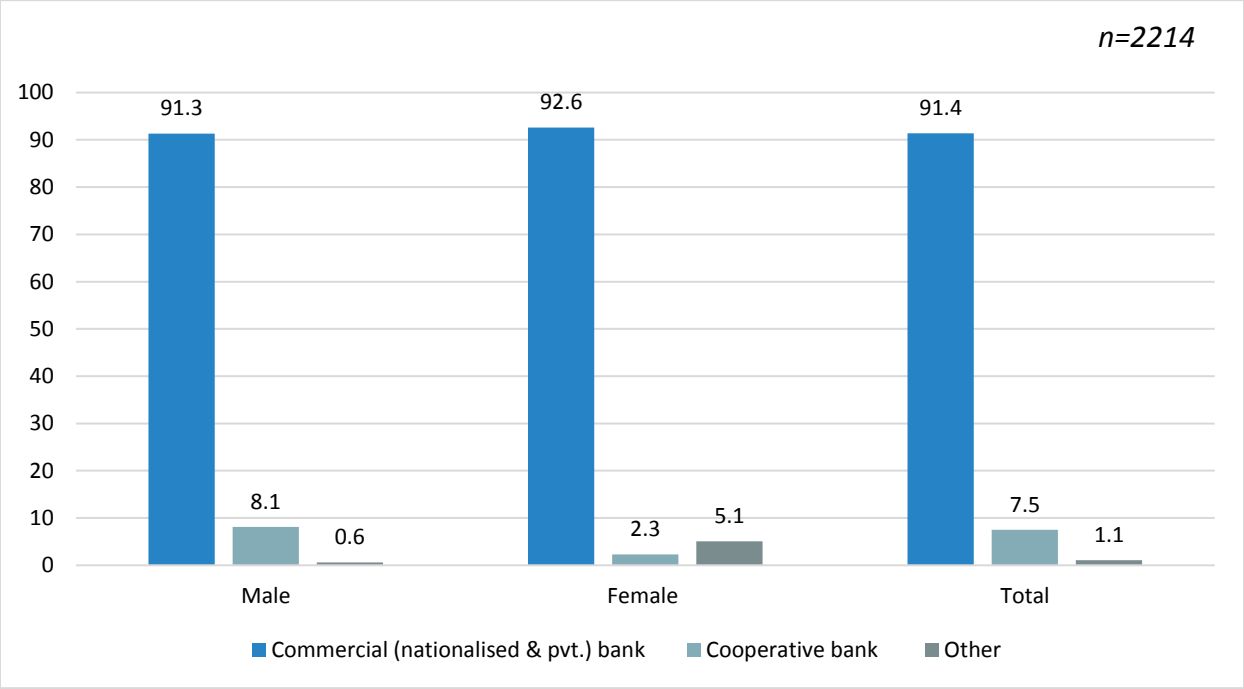
Bank account

Except for 1 percent, all the respondents had bank accounts. Among the female respondents, 98 percent respondents had bank accounts.

Commercial banks were the most preferred bank among the respondents as 91 percent respondents had accounts with Commercial (Nationalized and Private) banks. Only about 8 percent reported having account in Cooperative bank. The analysis by gender indicates that only 8 percent males and 2 percent females in the sample had dealings with Cooperative banks.

Among the trained women respondents, while 98 percent had bank account with Commercial bank, only 91 percent of untrained women were connected with commercial banks. It was interesting to note that cent-percent of the non-FPC female participants had accounts the with Commercial bank.

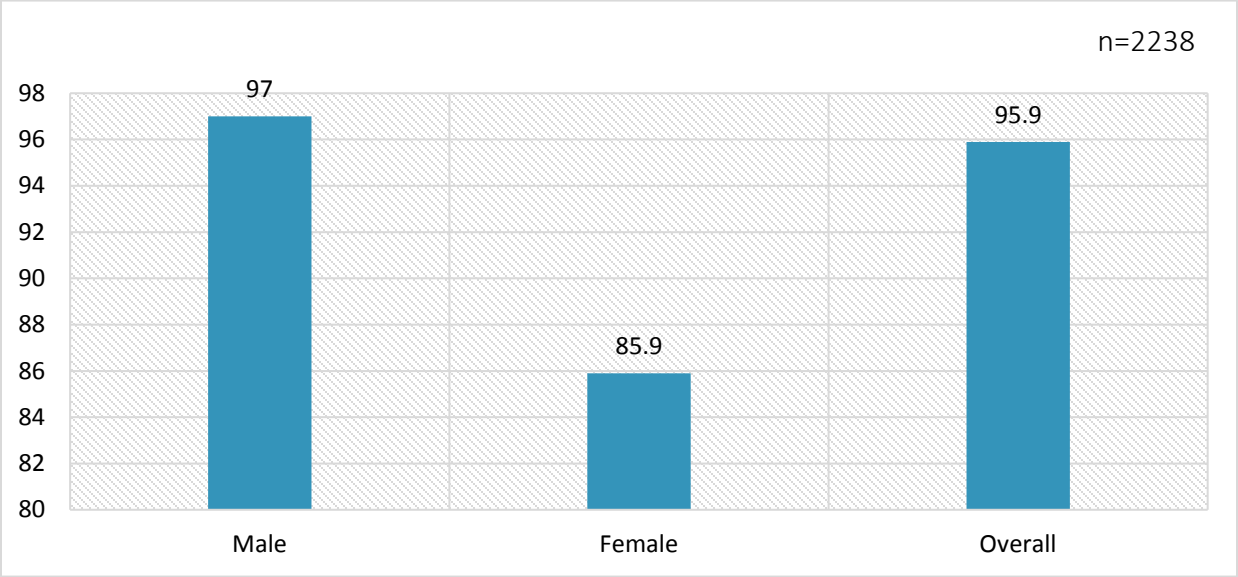
Fig 3: Type of bank account by gender (% to total bank account holders)



Mobile access

More than 95 percent respondent farmers had access to mobile phones. More males (97%) than females (86%) had mobile phones. No major variation was noticed among trained and untrained respondents as well as FPC and non-FPC participants with regard to mobile accessibility.

Fig 4: Mobile access by gender



Among the respondents who owned phones, about 64 percent of them were using feature phones while the remaining 36 percent had smart phones. The number of smart phone users was higher amongst the trained respondents (41%) in comparison to the untrained respondents (32%). Likewise, as compared to women (16%), the usage of smart phones was higher among the men respondents (39%). **(Appendix D - A5)**

Table 6: Distribution of respondents by type of mobile (% to sub-total)

Type of Mobile	Male	Female	Total
Feature phone	61.5	83.6	63.5
Smart Phone	38.5	16.4	36.5
Overall (n)	**1958**	**189**	**2147**

Among the respondents who owned the feature phone, 92 percent were able to operate it by themselves (M-95%, F-72%). In the case of 23 percent women respondents, their phones were being operated by their spouses. Among the trained women respondents', 88 percent of them stated that they operate the phone themselves as compared to only 67 percent of the untrained women farmers **(Appendix D – Table A6).** About 95 percent of the respondents (Males: 96%, Females: 81%) owning smart phones stated being able to operate it themselves.

Table 7: Distribution of respondents by who operate the phone (% to column sub-total)

Who operates	Feature Phone			Smartphone			Total
	Male	Female	Sub total	Male	Female	Sub total	
Self	95.1	72.2	92.4	95.6	80.6	95.0	93.4
Spouse	2.2	23.4	4.7	2.3	9.7	2.6	3.9
Son/Daughter	2.3	4.4	2.6	1.9	6.5	2.0	2.4
Other	0.3	0.0	0.3	0.3	3.2	0.4	0.3
Overall (n)	**1205**	**158**	**1363**	**753**	**31**	**784**	**2147**

Nearly 83 percent respondents who owned feature phones and 96 percent who were operating smart phones stated using their phones to get information on crops and farm related knowledge. The usage of phone (both feature phones and smart phones) to get information on crops was noted higher among the male respondents as compared to female respondents. Trained v/s untrained and FPC v/s NFPC wise analysis is provided in **Appendix D, Table A7**.

Table 8: Farmers seeking information on crops vs type of phone (% to column sub-total)

Type of Mobile	Male	Female	Total
Feature phone	84.5	67.7	82.5
Smart Phone	95.9	93.5	95.8
Overall (n)	**1740**	**136**	**1876**

Farmers were also asked as to whether they used their phones for getting information on financial transactions. Among those who owned the smart phone and feature phone, 96 percent and 86 percent of them respectively stated using their phones for seeking information related to financial transactions. Respondent's category wise analysis is presented in **Table A8, Appendix D.**

Table 9: Distribution of respondents using phone to get information related to financial transactions

(% to column sub-totals)

Type of Mobile	Male	Female	Total
Feature phone	87.0	74.1	85.5
Smart Phone	95.6	90.3	95.4
Overall (n)	**1768**	**145**	**1913**

Respondents who checked their phones on a daily basis to seek agriculture related information constituted 64 percent of the sample. Trained respondents (68%) outnumbered untrained respondents (59%) in terms of seeking information through phone about agriculture on a daily basis. Not much difference was noted between the FPC and non-FPC participants who used their phones to gather information related to farming **(Appendix D-Table 9)**.

Table 10: Distribution of respondents by frequency of seeking information through phone

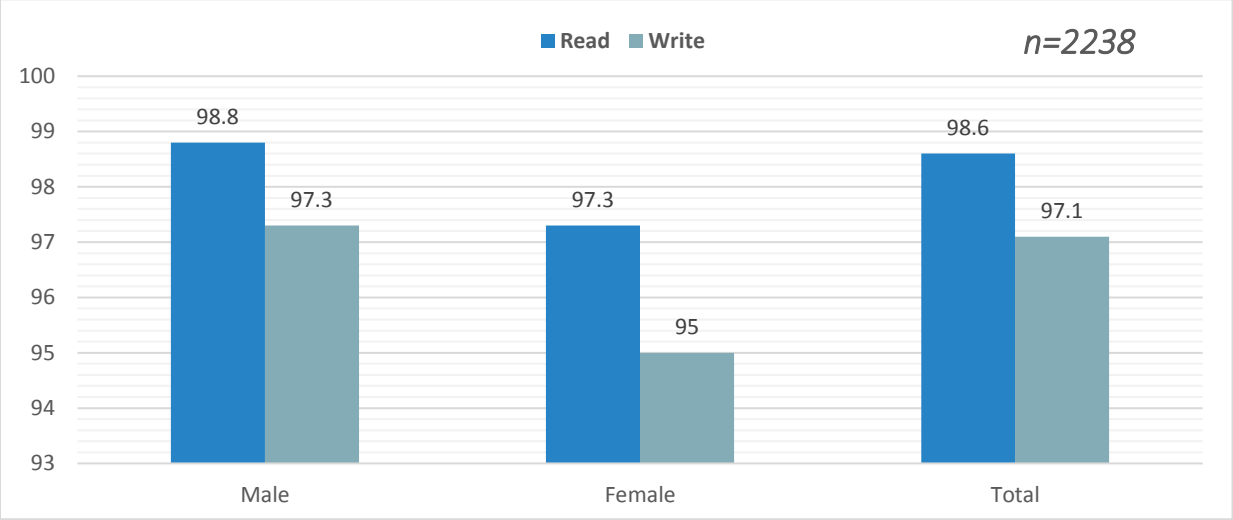
(% to column sub-total)

Type of Mobile	Male	Female	Total
Daily	64.6	55.0	63.7
Weekly	21.8	22.8	21.8
Few times a month	7.3	13.2	7.8
Rarely	6.4	9.0	6.6
Sub-total (n)	**1958**	**189**	**2147**

Marathi language: Ability to read & write

Nearly all (99%) of the respondents could read Marathi and 97 percent of them could also write the language. Males (99%) marginally outnumbered females (97%) in their ability to read Marathi. Similar was the case observed in respect of Marathi writing skills as 97 percent males could write the language as compared to 95 percent females.

Fig 5: Gender-wise distribution of respondents by their Marathi reading & writing skills (% to total)



Household income through agriculture

Overall, the average household income of the farmers was Rs 1,27,697. The annual income above the overall average household income was noticed among the trained participants (Rs.1,42,621) as compared to untrained participants (Rs.1,10,689). On the other hand, the average annual income of the FPC participants was lower at Rs.1,16,694 as compared to non-FPC participants (Rs.1,48,735).

Table 11: Distribution of respondents by average annual household income from agriculture

Respondent' Category	Gender		Total
	Male	Female	
Trained	145289	87455	142621
Untrained	112362	101758	110689
FPC	119510	99441	116964
NFPC	151297	90781	148735
Overall	**130914**	**98182**	**127697**

B. Concerns

Farmer's problems

The top-of-mind concerns of the farmers in the focus groups were problems related to water, labour, low prices for their produce, threat of wild animals to crops in the field etc. The field survey respondents also indicated that **'Lack of water'** was one of the biggest concerns/problems in villages (67%), followed by problem of frequent load shedding (34%). Problem related to labour and threat by wild animals were also two key concerns that emerged during the field survey.

The detailed observations on the major problems that emerged from the focus group discussions are summarised below:

Water problem: Across the districts, farmers complained of paucity of water for irrigation. They were dependent on rainfall which is not sufficient for the crops. If the rainfall is delayed, farmers have to do the sowing all over again resulting in increased cost implications. Many times they have to purchase seeds 2-3 times to re-sow as the crops do not grow well due to lack of rainfall. According to farmers of Savneer block, Nagpur, during the previous year, there was very little rainfall at the time of harvesting, resulting in substantial reduction in the yield. The soil in the area is black soil. In this kind of soil, excess rainfall results in flooding and in case of low rainfall, the soil becomes hard which affects the yield adversely. In Beed, Kolgaon, farmers are able to cultivate only one crop as they are completely dependent on rain water for irrigation. In Beed and Latur regions**,** there is shortage of drinking water and villagers have to rely on water tankers. In Murud, Latur, farmers have to depend on water tankers throughout the year, even during the rainy season. There are borewells but the water lasts only for 1-2 months. In Samudrapur, Wardha, only 25 percent farmers have access to wells. In Hinghanghat, Wardha, there is the Pothra dam but water is available only during December-January making the area unsuitable for cotton cultivation.

Labour Problem: Getting labour for farm work is a major issue across all the selected districts. In Vidarbha region, labour have to be sourced from outside, i.e., from Chhattisgarh and Madhya Pradesh. Therefore, in addition to the wages, they have to be given travel charges and advance payment. They have to be paid wages in the range of Rs 50,000 to 70,000 besides arranging for their firewood and lodging. Another concern is that the younger generation is not interested in working as farm labourers resulting in severe labour shortage. The other issue is that most labourers are not willing to work for more than 5-6 hours a

day due to extreme weather conditions. During focus group discussions, few participants opined that group farming would reduce the labour issues to a great extent.

Low price for produce: Farmers do not get remunerative price as they are forced to sell their produce to middlemen at lower rates soon after harvesting. There are no fixed rates for the products. Most farmers borrow money for farming and soon after the harvest, they need to pay off their immediate debts. Thus, they cannot afford to wait till the prices increase. Another issue with the farmers is the lack of storage/warehousing facilities for their crop output. According to majority of the farmers, the input costs are very high eating away into their profits. As the farmers sell their produce in small quantities, the traders do not find it lucrative to come to the village to purchase the produce. The farmers are thus forced to arrange transportation facilities adding to their overall costs.

Lack of loans from banks: Majority of the banks do not offer loans to farmers. Even a farmer who owns 20 acres of land with no outstanding loans/ never been a defaulter is not able to get a loan of Rs 2 lakh from the bank. Many times, banks sanction the loan but when the farmers approach the banks for withdrawing the amount, they are not allowed to withdraw more than Rs 10,000. Farmers are also told to produce various documents for which they have to do a lot of running around. This was specifically pointed out by the FPC participants from Nagpur.

Threat of wild animals: In Vidarbha region, pigs enter the fields at night and destroy the crops (Paddy, Gram and Wheat) especially during the time of harvest. In Nagbheed block, Chandrapur, there is constant threat of tigers, deer and *nilgai* particularly during the flowering stage of paddy.

Attack of insects/pests: Farmers from Hinghanghat, Wardha reported that since the last 2-3 years, the cotton crop is being attacked by pink bollworm. It chews through the cotton lint and feeds on the seeds. If not controlled on time, most plants die and there is no yield.

Decrease in soil fertility: Farmers pointed out that the soil fertility has decreased in the last 10-20 years which is attributed to the use of chemical fertilizers. The use of chemical fertilizers also endangers the health of bacteria that fix the nitrogen balance in the soil. These nitrogen-fixing bacteria are responsible for converting the atmospheric oxygen into a form of nitrogen that can be used readily by plants. As a farmer from Latur puts it *"khethi karke zyada laab nahi hain. Lekin hamare dada pardada ki dee hui zameen hain, toh hum khethi kar rahein hain" (Farming does not yield good profits. Only because we have ancestral land, we are doing farming).*

Climate change: Climate change has badly affected the crop calendar. The average temperatures during the summer months has increased. Also, the duration of summer has extended by 15-20 days. This has resulted in reduction of moisture in the soil and it affects cultivation in a negative way.

Decrease in land holding size: The average farm holding size has been decreasing with each passing generation and as compared to earlier times, farmers have smaller land holdings. This is because the land is divided among family members and also because people from the cities are purchasing farm lands for investment purposes although they are not keen on farming.

Farmer's views on input and output prices

During the field survey, Program participants were asked about the current market rates of crops, inputs, labour, water, power and fuel. They were asked to rate their views on a scale of 1 to 5 wherein 1 represented the lowest rate and 5 the highest.

Crop Prices: Around 42 percent respondents expressed discontent with the crop prices and rated it 'bad'. However, 43 percent respondents believed that the prices they received were reasonable.

Input Prices: The input prices were rated high by 29 percent of the respondents while 48 percent respondents found the input prices reasonable.

Labour Rates: Respondents who thought that the labour charges were quite high constituted 24 percent of the sample. During the group discussions it was learnt that rates are high due to shortage of labour especially during peak seasons of sowing and harvesting. The participants further reiterated, that they needed to source labourers from Chhattisgarh and M.P. and in addition to paying advance, their lodging and firewood requirements also need to be taken care of.

Water rates: Around 41 percent respondents believed that the water rates were reasonable while 23 percent felt that the rates were high.

Power rates: The power rates were rated high by 24 percent respondents while 39 percent believed the power rates to be reasonable.

Fuel prices: Nearly 30 percent respondents believed that the fuel rates were high while 31 percent felt that it was reasonable.

Table 12: Farmers feedback about 'Input & Output prices'

Input & Output Prices	1- Lowest	2	3	4	5- Highest
Crop prices	*11.3*	*29.3*	*42.9*	*11.8*	*4.7*
Input prices	*5.2*	*17.9*	*47.9*	*19.4*	*9.6*
Labour rates	*6.3*	*27.5*	*42.4*	*15.4*	*8.4*
Water rates	*6.4*	*29.1*	*41.3*	*15.2*	*8.0*
Power rates	*7.6*	*29.6*	*38.9*	*14.4*	*9.4*
Fuel prices	*13.8*	*25.2*	*31.3*	*19.5*	*10.2*

Respondent's category (trained/untrained & FPC/NFPC) wise analysis is given in **Table A10, Appendix-D.**

Specific problems of women farmers

During the field survey, around 72 percent respondents did not mention any specific problems faced by female farmers. Those who did, cited wild animals (6%), lack of information about farming (4%), non-availability of labour on time (3%) and poor road conditions to reach farms (2%). **During the focus group discussions, Program participants cited various challenges for women in farming which are summarized below:**

- Women are involved in less skilled tasks like sowing, transplanting, weeding and harvesting which involve a lot of hard work and time. While transplanting paddy, they have to bend and stand in knee deep water for long hours causing back aches and several other health issues.
- Women have dual responsibilities of taking care of children, cooking, cleaning and livestock management in addition to their contribution to farming. Hence, they are overworked most of the time.
- Women farmers are generally not the decision makers with regard to farm activities. Although on the one hand, women participate in most of the farm activities, on the other, the same trend is not visible in decision making.
- In Summer, the temperatures go up to 48°C and women have to work in these extreme heat conditions. In agriculture, all tasks need to be done on a timely basis and hence cannot afford to sit at home even for a day even in extreme weather conditions. A farmer from Nanded says ***"kheti mein kal karein so ab chalta hain"*** (What has to be done tomorrow needs to be done today is the rule of

farming). Most of the fields are located at a distance and women have to walk long distances to reach their farms. According to a woman farmer ***"We cannot miss out on even one day whether there is heavy rainfall or extreme heat. Even if we are unwell, we have to work".***

- While standing in knee deep water for transplanting, women are bitten by snakes and scorpions. Hospitals are located at a distance and they do not get immediate treatment which leads to several complications.

- Women farmers do not have land in their names. As a result, this deprives women of access to credit and government schemes. Moreover, women are unable to afford newer technologies that will increase yields, are unaware of or cannot afford expensive and improved seed varieties, do not have adequate knowledge about the new farming systems in India. Women have limited decision-making power and are often excluded or marginalized from governance institutions and policy-making processes. Contribution of women farmers in agriculture is not acknowledged and only male farmers are usually considered when it comes to demonstrations and trainings.

C. Resources

Land size

On an average, farmers owned around 5.6 acres of land of which irrigated land was to the tune of 3.2 acres and rainfed land was around 2.4 acres. Barren land was negligible. Respondents were taking around 0.6 acres of land on lease for cultivation. Of the 0.6 acres of land farmers took on lease, 0.3 acres was cultivated under rainfed conditions and the remaining 0.3 acres was used to cultivate crops under irrigated conditions.

Table 13: Distribution of farmers by average land holding size (in acres)

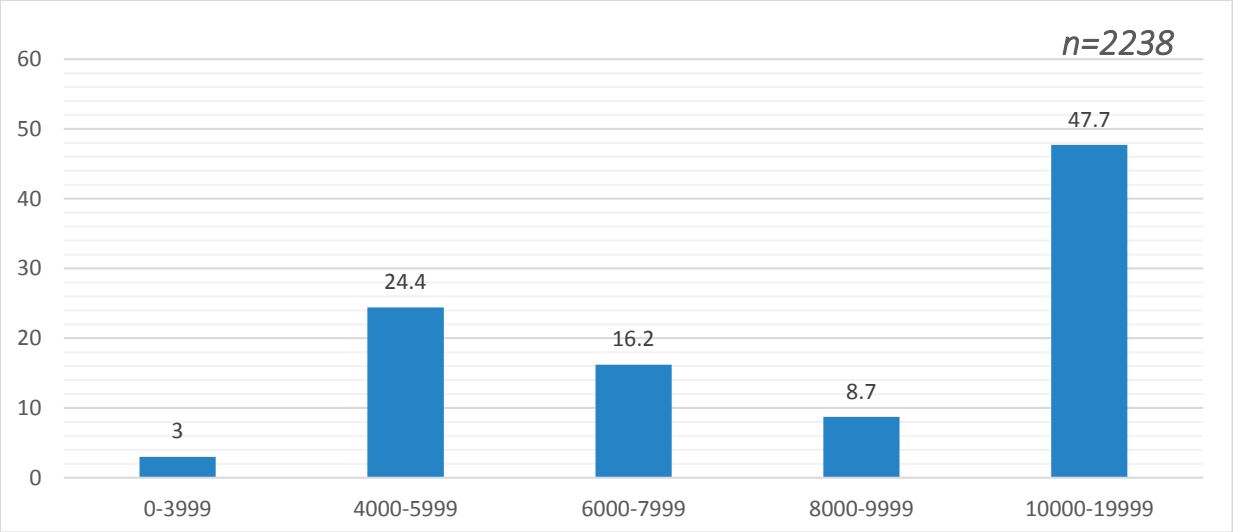
Type of Land	Irrigated			Rainfed			Barren			Overall		
	M	F	T	M	F	T	M	F	T	M	F	T
Own land	3.3	2.3	3.2	2.4	2.0	2.4	0.1	0.0	0.1	5.8	4.3	**5.6**
Leased in	0.3	0.2	0.3	0.3	0.2	0.3	0.0	0.0	0.0	0.6	0.4	**0.6**
Leased out	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Total Operational	**3.6**	**2.5**	**3.5**	**2.7**	**2.1**	**2.7**	**0.1**	**0.0**	**0.1**	**6.4**	**4.7**	**6.2**

It was noticed that the trained farmers had larger land holding (5.9 acres) as compared to the untrained farmers (5.3 acres). As regards the FPC and non-FPC participants, the non-FPC participants had a land holding of around 6.2 acres on an average while the land size of the FPC participants was to the tune of 5.4 acres. The land holding size, incidentally is not a function of being in FPC or at least not at this stage. **(Appendix D-Table A11).**

Land lease rates

According to a large number of respondents (48%) the rate per acre for leased land was between Rs 10,000 to 19,999 followed by 24 percent who stated the rates as fluctuating between Rs.4000 to Rs.5999 per acre. Those who stated that the rate per acre fell in the range of Rs 8000 to Rs.9999 constituted 9 percent of the sample while 16 percent cited the land lease rates as Rs.6000 to Rs.7999 per acre.

Fig 6: Distribution of land lease rate/acre (in Rs.) (% to total)



The average land lease rate was noted at Rs.8770/acre for the overall sample. However, in Chandrapur (Rs. 6284), Latur (Rs. 7277), Nagpur (Rs. 8309) and Wardha (Rs. 8427), the land lease rate was below the overall average of Rs. 8770. As compared to other districts, the land lease rate per acre was highest in Nanded (Rs. 11776), followed by Beed (Rs. 10558).

Table 14: Distribution by average land lease rate/acre (in Rs.)

District	Average lease rate
Beed	10558.7
Chandrapur	6284.3
Latur	7277.6
Nagpur	8309.0
Nanded	11776.5
Wardha	8427.4
Overall	**8770.6**

Farm labour

On an average, it was observed that farmers had to hire around 3-4 male labourers and around 6 female labourers on their farms. This was besides engaging 1-2 male family members and 1-2 female members to carry out various farm activities. It was seen that the trained farmers hired more labourers (both male and female labourers) to work on their farms as compared to untrained farmers.

Table 15: Distribution by average number of labour involved per farm

Respondent's category	Male			Female		
	Family	Hired	Sub Total	Family	Hired	Sub Total
Trained	1.6	4.2	2.7	1.8	7.2	4.3
Untrained	1.4	2.6	1.9	1.3	5.1	3.0
FPC	1.5	3.0	2.1	1.3	5.7	3.3
NFPC	1.7	4.3	2.8	2.0	7.2	4.4
Overall	**1.5**	**3.5**	**2.4**	**1.6**	**6.2**	**3.7**

Crops cultivated

Kharif crops: The crops that were cultivated during kharif season by majority of farmers were Soybean (56%) followed by cotton (54%), pigeon pea (37%) and paddy (16%). Very few farmers (1% to 3%) were cultivating crops such as jowar, moong (green gram), vegetables, orange etc.

Table 16: Distribution by major crops grown by farmers during Kharif (% to total)

Crops	Trained	Untrained	FPC	NFPC	Total
Pigeon pea	36.2	38.0	36.3	38.4	37.0
Cotton	53.7	53.5	55.3	50.4	53.6
Paddy	13.0	18.8	16.7	13.9	15.7
Jowar	3.0	1.4	2.1	2.6	2.3
Vegetables	1.4	3.3	2.8	1.3	2.3
Orange	1.3	0.9	0.7	2.0	1.1
Soybean	59.6	51.3	53.6	59.9	55.7
Moong	1.6	1.2	1.2	1.9	1.4
Others	4.3	2.0	2.6	4.2	3.2
Overall (n)	**1192**	**1046**	**1482**	**756**	**2238**

Rabi crops: Around 18 percent of farmers were not cultivating any crops during the rabi season due to lack of irrigation facilities. Maximum farmers were growing gram (41%) followed by wheat (31%) and pigeon pea (21%) as rabi crops. Around 16 percent respondents also reported cultivating jowar. The cultivation of jowar during rabi season was noticed in the Marathwada region (Beed, Nanded and Latur districts).

Table 17: Distribution by major crops grown by farmers during Rabi (% to total)

Crops	Trained	Untrained	FPC	NFPC	Total
Pigeon pea	21.4	19.9	20.9	20.2	20.7
Gram	41.3	40.4	40.1	42.3	40.9
Paddy	10.6	11.4	10.3	12.2	14.7
Wheat	28.8	34.1	33.5	27.0	31.3
Jowar	18.2	12.3	11.8	22.6	15.5
Vegetables	1.9	0.8	1.1	2.0	1.4
Orange	2.7	0.6	1.2	2.6	1.7
Sugar cane	1.9	0.9	1.5	1.3	1.4
Black gram	6.3	2.1	3.1	6.7	4.3
Others	3.4	4.3	3.9	3.4	3.7
None	16.1	19.6	19.8	13.8	17.7
Overall (n)	**1192**	**1046**	**1482**	**756**	**2238**

Summer crops: Most of the sample farmers (94 percent) do not cultivate any major crops during the summer season due to drought conditions and lack of irrigation facilities. Only 6 percent respondents reported cultivating crops like gram, jowar and vegetables that was used mainly for personal consumption.

Loan

When asked if they availed of any loans in 2018-19, around 28 percent farmers responded in the affirmative. Only 23 percent of the untrained farmers as compared to 32 percent trained farmers availed loans for agricultural purposes. While 29 percent male farmers took loans in the year 2018-19, only 21 percent women farmers did the same. No variation was seen among the FPC and non FPC participants in terms of availing loan.

Table 18: Percentage distribution of farmers by loan availed (% to total)

Respondent' Category	Yes			No			Sample (n)
	Male	Female	Sub Total	Male	Female	Sub Total	
Trained	32.2	25.5	31.9	67.8	74.5	68.1	1192
Untrained	24.3	18.8	23.4	75.7	81.2	76.6	1046
FPC	29.1	19.1	27.8	70.9	80.9	72.2	1482
NFPC	28.2	28.1	28.2	71.8	71.9	71.8	756
Overall	**28.7**	**20.5**	**27.9**	**71.3**	**79.5**	**72.1**	**2238**

Among the farmers who availed loan, the overall average loan amount was to the tune of Rs 98,764. The average loan amount taken by the FPC participants (Rs, 1,03,344) was much higher than that of the non FPC participants (Rs 89,906). Likewise, the loan taken by the trained farmers was higher at Rs 99,513 as compared to untrained farmers (Rs 97,513). Although the Maharashtra Agri-Skilling Program program is in its initial stages, it appears that the trained farmers and those in FPC have started expanding their farm activities considering the higher loan amount taken by them.

Table 19: Average loan amount

Respondent' Category	Male	Female	Total
Trained	96688	173357	99513
Untrained	99182	86710	97604
FPC	104994	86111	103344
NFPC	83995	223889	89906
Overall	**97608**	**113667**	**98764**

It was attempted to find out the amount of loan taken by the farmers. Majority of the farmers (44%) took a loan amount in the range of Rs 56,000 to Rs 1,00,000. The loan amount taken by 23 percent of the farmers was in the range between Rs 31,000 to Rs 55,000 while another 13 percent took a loan amount of Rs 16,000 to Rs 30,000. Around 11 percent farmers took a loan of more than Rs 1.5 lakh.

Table 20: Percentage distribution of farmers by amount of loan taken in Rs. (% to total)

Respondent' Category	0-5K	6-15K	16-30K	31-55K	56-100K	101-150K	>150K	Total
Trained	1.1	3.2	15.8	22.6	40.5	5.0	11.8	380
Untrained	0.8	2.0	9.4	22.9	50.2	4.5	10.2	245
FPC	1.2	3.2	11.7	21.4	45.4	5.3	11.9	412
NFPC	0.5	1.9	16.4	25.4	42.3	3.8	9.9	213
Overall	**1.0**	**2.7**	**13.3**	**22.7**	**44.3**	**4.8**	**11.2**	**625**

Those farmers who availed loans were asked to state the purpose for which they took loans. More than 95 percent respondents stated taking loans for farm related activities. Around 3 percent farmers stated taking loans for livestock management followed by 2 percent for personal consumption. The same trend was noticed in case of both trained and untrained farmers as well as FPC and non FPC participants **(Appendix D-Table A12)**.

Table 21: Percentage distribution of farmers by purpose of loan (% to sub-total)

Purpose of loan	Male	Female	Total
Crop	*95.7*	*95.6*	*95.7*
Livestock	*2.9*	*4.4*	*3.0*
House repair	*1.4*	*0.0*	*1.3*
Repair/Purchase of machineries	*0.2*	*0.0*	*0.2*
Personal Consumption	*2.1*	*0.0*	*1.9*
Others	*2.4*	*0.0*	*2.2*
Overall (n)	***580***	***45***	***625***

Majority of the farmers (62%) availed loans from Commercial banks followed by 28 percent who stated taking loan from Cooperative banks. Around 9 percent of the sample respondents depended on money lenders. As compared to male farmers (62%), a greater number of female farmers (73%) took loans from Commercial banks. This was true in case of all categories of respondents, i.e., trained and untrained as well as FPC and non FPC participants. On the contrary, more male farmers (28%) took loan from Cooperative banks as compared to female farmers (16%) **(Appendix D-Table A13).**

Table 22: Percentage distribution of farmers by source of loan (% to sub-total)

Source of loan	Male	Female	Total
Commercial Bank	*61.6*	*73.3*	*62.4*
Money Lender	*9.0*	*11.1*	*9.1*
Co-op Bank	*28.4*	*15.6*	*27.5*
SHG	*0.2*	*0.0*	*0.2*
Family/friends	*0.3*	*0.0*	*0.3*
MFI	*0.2*	*0.0*	*0.2*
Others	*0.3*	*0.0*	*0.3*
Overall (n)	***580***	***45***	***625***

D. Market Access

Market for buying inputs

Around 68 percent of the respondents (M-68%, F-63%) were purchasing agricultural inputs from market outlets. It was noted that more than 70 percent of the FPC participants were purchasing inputs from the market outlets as compared to only 61 percent non-FPC participants implying that FPC participants were more into group farming activities.

Table 23: Distribution of respondents by their use of market outlet for buying agriculture inputs

Respondent' Category	Yes			No			Sample (n)
	Male	Female	Total	Male	Female	Total	
Trained	65.7	72.7	66.0	34.3	27.3	34.0	1192
Untrained	70.8	60.0	69.1	29.2	40.0	30.9	1046
FPC	71.9	63.8	70.9	28.1	36.2	29.1	1482
NFPC	60.8	59.4	60.7	39.2	40.6	39.3	756
Overall	**67.9**	**63.2**	**67.5**	**32.1**	**36.8**	**32.5**	**2238**

Market for selling agriculture produce

Respondents who sold their agricultural produce in market outlets constituted 71 percent of the sample (M-72%, F-65%). Around 75 percent FPC participants reported using market outlets to sell their produce as compared to only 64 percent non-FPC participants.

Table 24: Distribution of respondents by their use of market outlet for sale of agriculture produce (% to total)

Respondent' Category	Yes			No			Sample (n)
	Male	Female	Total	Male	Female	Total	
Trained	69.5	76.4	69.8	30.5	23.6	30.2	1192
Untrained	75.4	61.2	73.1	24.6	38.8	26.9	1046
FPC	76.4	64.9	74.9	23.6	35.1	25.1	1482
NFPC	64.4	65.6	64.4	35.6	34.4	35.6	756
Overall	**72.1**	**65.0**	**71.4**	**27.9**	**35.0**	**28.6**	**2238**

Distance of nearest market

The average distance to the nearest markets from the villages was around 16 kms which is one of the biggest challenges for the farmers as they need to travel this distance to purchase inputs or sell their produce or avail market related information. The transportation facilities and the conditions of the roads are poor in most of the villages as stated by the participants during the focus group discussions. The distance of market from the villages was farthest in Wardha (19 kms) followed by Latur (18 kms) and Beed (17 kms). The minimum distance that farmers needed to travel from their villages to the market was in Nanded and Chandrapur i.e. 11 kms each.

Table 25: Distribution of respondents by average distance to the nearest market (% to row total)

District	<3 Km	3-6 Km	7-10 Km	>10 Km	Average distance (Mean)	Project Sample (n)
Beed	3.6	6.8	8.9	80.8	17.0	**281**
Chandrapur	5.0	11.7	39.1	44.1	11.8	**299**
Latur	4.8	5.7	11.6	77.9	18.4	**353**
Nagpur	4.0	18.6	10.1	67.2	13.7	**424**
Nanded	9.0	8.7	39.7	42.6	11.7	**378**
Wardha	0.8	7.8	15.1	76.3	19.3	**503**
Overall	**4.3**	**10.1**	**20.2**	**65.4**	**15.5**	**2238**

Type of transport

Maximum respondents (89%) hired trolleys to take their agricultural produce to the market. Around 5 percent stated using their own trolleys while 3 percent transported their produce to the market in trucks. Similar trend was noticed among trained/untrained respondents as well as FPC/non FPC participants **(Appendix D-Table A14)**.

Table 26: Distribution of type of transport used to take the produce to the market (% to sub-total)

Type of Transport	Male	Female	Total
Own Trolley	5.3	5.5	5.3
Hired trolley	89.3	87.3	89.1
Truck	3.3	4.1	3.4
Bullocks	0.5	0.5	0.5
friend's trolley	0.3	0.9	0.4
Rickshaw	1.1	1.4	1.1
Others	0.2	0.5	0.2
Overall (n)	**2018**	**220**	**2238**

Challenges accessing market

According to maximum participants (59%), the main challenge in accessing markets was the inability to get timely information related to crops. This aspect was also reiterated by the respondents during the focused group discussions. According to them, inputs and information from the government department or other departments always reached them after the cropping season got over. Around 51 percent farmers stated bad roads to reach market as a challenge followed by 31 percent stating inadequate transport facilities. Another 27 percent respondents cited bad weather/climate as a major challenge especially as the temperatures go up to 48-49°C during the summer months. The location of market being far away from the villages was felt as a major problem by 24 percent farmers.

There were no significant variations in the challenges stated by the trained, untrained respondents as well as FPC and non FPC farmers **(Appendix D-Table A15)**.

Table 27: Challenges faced by farmers in accessing market (% to sub-total)

Key Challenges	Male	Female	Total
Poor road condition	50.9	50.0	50.8
Lack of timely information	59.2	60.0	59.2
Inadequate transport facility	32.1	41.8	33.0
Bad weather/climate	28.0	21.4	27.3
Distance of market is far away from village	27.2	18.6	26.3
Others	5.3	13.2	6.1
Overall (n)	**2018**	**220**	**2238**

Market information sources

Nearly 47 percent respondents stated that they depended on friends for gathering information on markets. Another 20 percent sourced market information from traders while 13 percent depended on their families for market related information. Around 12 percent received market information from SMS on their mobiles. Only 4 percent and 3 percent respondents stated getting market related information from televisions and newspapers. No significant difference was noted among the trained/untrained respondents or FPC/non FPC participants **(Appendix D-Table A16)**.

Table 28: Source of market information (% to sub-total)

Sources of market	Male	Female	Total
Friends	*48.0*	*32.7*	*46.5*
Family	*9.9*	*38.2*	*12.6*
Radio	*0.9*	*0.9*	*0.9*
TV	*4.3*	*1.8*	*4.0*
Phone/SMS	*12.6*	*3.6*	*11.8*
Newspaper	*3.1*	*1.8*	*3.0*
Extension worker / Scientist	*0.6*	*0.9*	*0.6*
Trader	*20.1*	*20.0*	*20.1*
Other	*0.5*	*0.0*	*0.5*
Overall (n)	***2018***	***220***	***2238***

Promptness of payment

An attempt was made to find out after how many days the farmers get their payment on selling their produce. It was learnt that majority of farmers purchase inputs like seeds and fertilizers from traders without paying cash, on the promise that they will repay the amount as soon as they harvest their produce. Hence, they cannot afford to wait till the time the market offers better rates as they are required to repay their debts immediately. Although the government (NAFED) offers better rates as compared to traders, they do not make immediate payments. Payments are usually made after 6 to 8 months. Hence, farmers are forced to sell their produce to the local traders (private buyers) at lesser prices in order to get immediate cash.

> ***"Last time I sold my produce to the government (NAFED) for a good rate. However, it took me one whole year to get my payment. Then what is the use of selling to NAFED when my cash requirement is immediate? If we sell our produce to the government, we do not get money on time. If we sell it to traders, we get lower prices"*** (Farmer, Latur)

Among those who sell their produce to the local (private) traders, around 66 percent stated that they receive the payment in less than a week after the sale of their produce while 30 percent said that the payment takes a little more than a week. Only 4 percent respondents stated that it takes more than a month for them to get their dues.

There was hardly any difference between the statements of trained and untrained farmers or FPC and non FPC participants.

Table 29: Distribution by promptness of payment

District	<a week	> a week	> a month	Total
Beed	77.2	12.1	10.7	281
Chandrapur	37.5	61.9	0.7	299
Latur	80.7	18.7	0.6	353
Nagpur	64.4	30.4	5.2	424
Nanded	43.7	52.4	4.0	378
Wardha	86.5	10.3	3.2	503
Overall	**66.4**	**29.7**	**3.9**	**2238**

Section 3: Reactions to the Program

Reactions to Program training have been quite positive, among participants in general and those in FPCs in particular. This is evident both from the survey and focus group discussions. The training has made the group and FPC concepts familiar to participants, some of whom were introduced to it by prior group efforts. Their belief is that farming groups and FPCs will help them to increase production and incomes, underscored by message tests in the focus groups. However, women cited specific issues hampering their involvement in training and FPCs, including lacking knowledge of farming, marketing, decision-making authority, and land titles.

A. Satisfaction among Trainees

During the one to one interview, respondents were asked to rate the group farming training on a scale of 1 to 5 where 1 represented "lowest satisfaction level" and 5 was considered "highest satisfaction level". The rating was done to assess the general satisfaction among the Maharashtra Agri-Skilling Program participants regarding the training program. The training program itself was well received by participants as overall, nearly half (48%) of the respondents rated the training as highly satisfactory (rated 5 or 4 on the 5-point scale) while 41 percent felt that the training program was average. Only 11 percent farmers reported that the training was not up to the mark.

It was interesting to note that the rating of the training program as 'highly satisfactory' was higher (54%) among the participants who were trained and into FPC as compared to those who were trained but not in FPC (45%). It can therefore be inferred that farmers who liked the training program better were the ones who formed the FPCs.

Table 30: Average rating of the Group Farming by the participants training on 5- point scale (1 to 5)

Respondent' Category	Rate	Male	Female	Grand Total
FPC	1 – Lowest	2.2	0.0	2.1
	2	6.3	8.7	6.4
	3	37.8	34.8	37.6
	4	37.8	47.8	38.3
	5 – Highest	16.0	8.7	15.6

Respondent' Category	Rate	Male	Female	Grand Total
	Sub-total (n)	**413**	**23**	**436**
NFPC	1 – Lowest	2.9	3.1	2.9
	2	8.8	25.0	9.5
	3	42.3	46.9	42.5
	4	30.4	9.4	29.5
	5 – Highest	15.6	15.6	15.6
	Sub-total (n)	**724**	**32**	**756**
Overall	1 – Lowest	2.6	1.8	2.6
	2	7.9	18.2	8.4
	3	40.6	41.8	40.7
	4	33.1	25.5	32.7
	5 – Highest	15.7	12.7	15.6
	Overall (n)	**1137**	**55**	**1192**

Satisfaction level of the Program participants was assessed through the focus group discussions. Majority of farmers who participated in the group discussions expressed their satisfaction with the program and the training. Most farmers were enthusiastic about selling their produce collectively as it would reduce transportation charges and offer better bargaining power. They were also upbeat about the fact that once they get the vendor's license, they can directly sell their produce to the millers without having to depend on middlemen. According to a farmer from Samudrapur, Wardha, most farmers face labour shortages during the harvesting season. A solution for this is collective farming will help overcome peak season labour shortage.

"The miller does not purchase from us directly as we do not have the license for trading. So, we sell our produce to the brokers of the Bazaar samiti. The brokers then sell the produce to the traders who in turn sells it to the millers. If we get the license for trading, we will not need these middlemen who eat into our profits. So, we will get a better price for our produce and avail the benefit directly" (Farmer, Chandrapur).

Some of the farmers, especially those who received training but are yet to form FPC, had apprehensions about the success of group farming concept. They were a little skeptical whether they could arrive at a common ground regarding purchase of inputs, cultivation practices and marketing given the fact that there would be several farmers in a group with diverse opinions about different farming practices.

B. Women's Views and Challenges

- Women farmers operate under greater constraints than men as they have less access to information, technology, land, inputs and credit which leads to discrimination. Their multiple roles also constrain their time and mobility with a higher proportion of them being illiterate and engaging in subsistence agriculture without being up to date with current technologies.

- Most women do not have land in their names, they are not decision makers and are financially dependent on their husbands. This robs them of their individual identity as a farmer. A woman farmer from Chandrapur says "Although my husband discusses with me about what crops to cultivate or when and where to sell the produce, it is he who takes the final decision. I do not have much exposure about these things".

- Women tend to face greater challenges when it comes to securing credit. They are generally less experienced with regard to borrowing from an institution, and without assistance and support they find it difficult to access much needed funding.

- Lack of market research and information limit women farmers to market opportunities. Although women do almost all the farm activities, they do not have any knowledge about marketing and do not have any say in marketing activities. Even those who are involved in marketing are confined to local markets only where the prices are much lower than that of the urban markets. As a woman farmer from Wardha says "Initially there could be some problems for us as we have never been to the market and so are not aware of how to sell the produce or the other formalities. Till now we were confined to our homes and farm. Once we step out of the house and start getting involved, we will learn".

- Most advanced technology includes ploughs, cultivators, planters, harvesters and irrigation equipment. These advancements are aimed at a male specific audience, with improvements aimed to accommodate their requirements. Women farmers often lack the know-how and the confidence to use most of the new technologies.

- Most agricultural extension focuses on large-scale commercial farming with limited research conducted on small farming techniques, which are often owned by women.

- In most cases, the farms are located at a distance from the villages. Hence women farmers need to walk long distances, many times carrying inputs like seeds and fertilizers on their heads. Travelling is

a major concern for farm women as transportation facilities are not available in rural areas. Travelling time for farm women is high which leads to less productivity.

- Most trainings are held in common places like temples. Social and religious practices dictate that menstruating women are not supposed to enter temples. Due to this, women are not able to attend the training program in spite of being interested.

- Farm women work under critical conditions in rural areas. They have compromise with their health also to earn some income. Women workers don't get proper food, rest and improper sanitation infrastructure, which leads to the unhygienic working condition.

C. Group Farming and FPC

Most of the farmers in the program are a part of farming groups and are optimistic about the same. However, some of them are sceptical and unconvinced about the group farming concept. This doubt, along with cost, credit, and bureaucracy, hampers FPC formation. In the case of women too, they lack landownership and information about the group and FPC concepts.

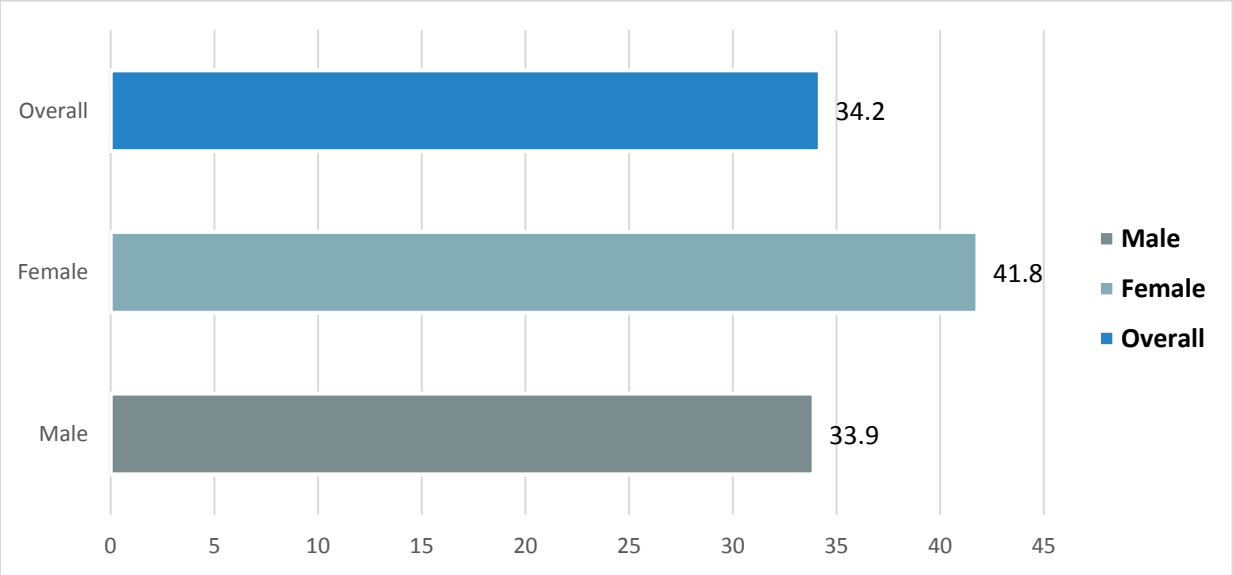
Adequate knowledge about group farming concept

About 37 percent of the respondents stated that they did not have much knowledge and information related to group farming. During the FGD, it was learnt that many respondents were aware of the group farming concept through Agriculture departments, ATMA and NGOs working in the area. Farmers from Samudrapur, Wardha stated that about five to six FPCs existed in their area which were formed by the NGOs. But 99 percent of them are non-functional as on date. The reason cited by the farmers for the defunct status of these FPCs was absence of proper follow-ups and handholding. Also, proper information about how to run the company was not given to the farmers and after forming the company, no further action was taken.

Involvement in prior group farming training

When the respondents were asked whether they had attended trainings on group farming earlier, around 34 percent stated in the affirmative. Interestingly, more females (42%) than males (34%) stated attending prior trainings on group farming.

Fig 7: Percentage distribution of respondents stating their involvement in prior group training



Major areas learnt by participants in group farming

Respondents were probed about the training areas which they knew and had adequate information. Majority of the farmers (87%) stated having adequate knowledge on crop varieties followed by 78 percent who were aware about the right use of inputs in farming. Another 62 percent stated that they possessed marketing skills. However only 44 percent respondents stated awareness about group farming and access to finance. Likewise, only 28 percent had knowledge about the post-harvest technology (PHT).

Table 31: Distribution by respondents' knowledge about major training areas in group farming (% to subtotal)

Major training area	Male	Female	Total
Training on varieties of crops	*88.0*	*74.5*	*87.3*
Training on input use	*78.2*	*69.1*	*77.8*
Training on marketing skills	*62.5*	*58.2*	*62.3*
Training on PHT / PHT	*28.9*	*30.9*	*29.0*
Training on access to finance	*43.9*	*41.8*	*43.8*
Training on group farming	*43.6*	*40.0*	*43.5*
Others	*0.0*	*0.0*	*0.0*
Overall (n)	***1137***	***55***	***1192***

FGD participants also stated gaining knowledge on new farming practices from the training which is summarized below:

- Training helped farmers in understanding various aspects of farming better such as collective sale of produce resulting in better bargaining power. Respondents opined that transportation charges will reduce substantially on collective sale of produce. They were also aware of the fact that once the FPC is formed, and they get the vendor's license, they can directly sell their produce to the millers without having to depend on middlemen.
- Most farmers have work on farms only for 4 months as one crop cycle gets over in this time period and they are forced to remain idle for the remaining 8 months. Participants have realized that if they start group farming, they can do processing, milling, packaging as well as marketing the produce which will result in additional employment and engagement throughout the year as well as better profit margins.
- Farmers were planting paddy seeds close to each other without maintaining a distance which resulted in increased pest attack and decreased yield. During the training, farmers learnt that they need to plant the seedlings at a distance which will make its growth better.
- Several farmers are planning to do soil testing or have already done it after learning about it during the training.
- Farmers learnt that sowing should be done East-West facing. Earlier they used to follow North-South sowing. This increases the availability of light to plants.
- Few participants were planning to make briquettes from sugarcane waste, soya milk, soya paneer and soya oil extraction. Some farmers were keen to start processing units to increase their profit margins.
- Participants displayed interest to switch to organic farming and gained knowledge on using cow urine in the farms and to avoid burning garbage in field. Many of them displayed interest to start vermi-composting and green composting.
- Farmers learnt that cultivating dehencha (sun hemp) in the field will improve soil fertility and that it is a good organic fertilizer. Less diseases/pests attack the paddy crop when dehencha is grown along with paddy.

- Participants gained knowledge about placing sticks in the middle of the paddy fields as it will attract birds to perch on it and eat any insects/pests that may attack the paddy crop.
- Farmers stated that they had started planting flowering plants on the boundaries of the fields which they learnt during the training. This will attract insects/pests and the paddy crop will be spared from the insect/pest attack to some extent.

Group formation to date

Almost all farmers in the survey have started forming farmer groups or intend to. Some 78 percent have done so already, and another 16 percent intend to. Amongst those who went through the training but were not yet in FPCs, 68 percent are now in groups.

Table 32: Distribution of respondents who had initiated forming farmers groups (% to total)

Respondent' Category	Yes			No			Total
	Male	Female	Sub total	Male	Female	Sub total	
Trained	76.1	63.6	75.5	23.9	36.4	24.5	1192
Untrained	79.7	86.1	80.7	20.3	13.9	19.3	1046
FPC	82.2	86.7	82.8	17.8	13.3	17.2	1482
NFPC	69.5	43.8	68.4	30.5	56.3	31.6	756
Overall	**77.7**	**80.5**	**77.9**	**22.3**	**19.5**	**22.1**	**2238**

Reasons for joining a group

Majority of farmers pointed out that in case of individual farming, one person has to bear the entire responsibility of farming. If more people are involved, the work gets distributed and things can be done faster. Also, marketing will become easier if there is bulk produce. The traders will come to the village to buy produce instead of each farmer having to sell his individual produce to middlemen at lower rates. Few farmers stated that if they work in a group, they can use each other's knowledge and can thus help one another.

"Once we form the FPC we will stop selling our produce to the bazaar samiti. Our plan is to sell our collective produce directly to the miller. Then we will get a profit of Rs 500 per quintal. If we are 10-15 members then our collective produce will be around 20-40 tonnes. We can make a profit of Rs 250-300 per quintal and we can also put an amount of Rs 100 per quintal in the company's name". This way both we farmers and the company will be benefitted (Farmer, Samudrapur, Wardha).

Intent to practice group farming

More than 70 percent of the farmers who had not started group farming stated that they intend to start practicing group farming. It was interesting to note that the number of women farmers (86%) who were interested in group farming were higher than the men farmers (72%).

Table 33: Distribution of respondents by their Intent to practice group farming

Respondent' Category	Yes			No			Total
	Male	Female	Sub total	Male	Female	Sub total	
Trained	71.7	85.0	72.6	28.3	15.0	27.4	**292**
Untrained	72.6	87.0	74.3	27.4	13.0	25.7	**202**
FPC	74.8	84.0	75.7	25.2	16.0	24.3	**235**
NFPC	69.2	88.9	70.7	30.8	11.1	29.3	**239**
Overall	**72.1**	**86.0**	**73.3**	**27.9**	**14.0**	**26.7**	**494**

Group advantages and disadvantages

An attempt was made to find out from the respondents as to what they thought were the advantages of group farming. Around 18 percent farmers felt that group farming would help increase their yields, reduce farming costs and fetch a better price for their produce resulting in increased income. Another 10 percent

believed that it would reduce the transportation costs. Getting timely and better-quality inputs was stated by 8 percent respondents. Few respondents (7%) also felt that labour costs would substantially reduce with group farming. Other advantages stated by farmers (1 – 5%) was marketing will become easier, easy loan accessibility, knowledge sharing among farmers, more employment opportunities and ability to learn new farming techniques. However, around 39 percent respondents stated that they did not see any benefits due to group farming. Most FGD participants also echoed the benefits of group farming. *According to FPC members from Nagbheed, Chandrapur,* ***"The main reason (for group farming) is that we feel that we will get better incomes; the yield/ produce will increase when we do collective farming; marketing will become easier".*** *FPC members from Nanded stated "There are many changes happening in agriculture, in crop and water; marketing is becoming important and is a solution for low prices of farm produce; the farm prices have reduced so there is a need to do group farming".*

There was almost no hostility to the group farming concept, even though uncertainty was substantial. Very few respondents (11%) mentioned disadvantages of group farming. The leading one is the potential for disputes among participants (4%), who may have different cropping preferences or land holding sizes. ***"If we need to do collective farming, all of us have to cultivate the same crop. Also, all of us have different land holdings." (Farmer, non-FPC, Group 12, Nagpur).*** The only other concern mentioned by a few was lower prices for produce (3%) and that all group members may not be available at the same time (1%).

Anticipating increased income by adoption of group farming practices

Slightly more than 93 percent respondents believed that by adopting group farming practices, they can increase their income. As compared to males (93%) a greater number of female farmers (95%) were of the view that there will be an increase in income if they adopt and practice group farming. Majority of them opined that they can purchase inputs in bulk at less costs. They also believed that the collective sale of produce will fetch a better price in addition to reducing the transportation charges.

Table 34: Farmers' perception about increase in farm income to after adoption of group farming practices

Respondent' Category	Yes			No			Total
	Male	Female	Sub total	Male	Female	Sub total	
Trained	93.8	94.5	93.9	6.2	5.5	6.1	1192
Untrained	92.1	95.8	92.6	7.9	4.2	7.4	1046
FPC	93.2	95.7	93.5	6.8	4.3	6.5	1482
NFPC	92.8	93.8	92.9	7.2	6.3	7.1	756
Overall	**93.1**	**95.5**	**93.3**	**6.9**	**4.5**	**6.7**	**2238**

Reactions to messages favouring joining

Majority of the respondents, around 60 percent of them stated that they joined the FPC or would be interested in joining because it is a legal structure and hence, it is a much better option than group efforts or cooperatives. Also, for most farmers, the FPC is a new concept and they were enthusiastic to try it out and see its benefits. The second most favored reason for joining FPC as stated by the respondents was that once they form the company, they can hand over the reins of the company to their children and they can earn better from farming. Several farmers pointed out that as agriculture was not a profitable venture, hence, their children were not keen on farming and were fast moving to the cities in search of lucrative jobs and a better lifestyle. They therefore felt that once they become a part of FPC and if they can earn better, they will be able to secure a better future for the coming generations. Around 10 to 15 percent respondents stated the reason for joining FPC was that they can increase their produce and earn better prices in the market as a result of group farming.

Challenges to women in group farming

Cent percent FGD participants were of the view that women will not face any challenges in group farming. On the contrary, they felt that the jobs of women will become easier with group farming as the work load will be divided and they can spend less time on the farms. Few women farmers who were a part of the focus groups stated that this will be a blessing for them as they will get more time to take care of their children and household activities. A farmer of Nagbheed block Chandrapur opined that once they form the company, they can buy implements and agricultural machinery which will make women's tasks easier. Farmers also believed that if they start a processing unit, women can help with the packaging.

Awareness of FPCs

Awareness about FPCs and group farming concept was noted among most of the FGD participants including Non-FPC participants. However, some of them just had a vague idea about the activities that need to be done once the FPC is constituted. FPC participants from Hinganghat (Wardha) stated that though they had undergone the training and received the certificate too. However, they are yet to start the group farming activity as they lack knowledge on how to begin the group farming activities. They requested that they be given more support and handholding to start group activities.

Barriers to FPC formation

Respondents of the focus groups cited few barriers to FPC formation which are listed below:

- Registration cost: One of the most frequently mentioned barriers was the cost – paying the registration fees and initial deposit. *As non FPC farmers from Nagbheed, Chandrapur puts it "We have not formed the FPC because we do not have money to bear the initial registration costs. According to non FPC women participants from Latur "So many women came up initially but when they got to know that they will have to pay Rs 1600 (splitting registration 10 ways) and Rs 10,000 (for the deposit) they backed off.* Some respondents said it would only be possible to pay the registration costs only in November-December after the kharif harvest as more than 95 percent were not cultivating during the hot, parched summer and hence no money for the registration costs.

> ***"If we think that deep down there is no benefit, there is no reason to unnecessarily spend Rs 10,000. They told us many benefits of group farming but people here want to continue the way they are because they don't have the money. The mindset to start something and grow is lacking; people in the rural area do not think like this". "What if we spend the money required and then there is no benefit; some people fear that their papers will be mortgaged. What if it does not work out? (Farmer, non-FPC, Nanded).***

- Lack of knowledge about group farming: The other commonly cited reason was skepticism or ignorance about results and risk-aversion among the poor. This is in line with the survey findings that linking failure to form groups with doubt about benefits.

- Access to credit: Access to credit was found to be a major factor that prevents farmers from taking a step towards innovation/technology. *"We got a training from Zilla parishad for one month. We*

wanted to start something but the bank did not grant us any loan; the person who wants to start something new does not get a loan. (Farmers, non-FPC, Group 6, Tintarvani, Beed).

- Difficulty coping with bureaucratic requirements: Most farmers are not well educated and have little understanding about the extensive documentation that is entailed in the procedure and how to go about getting it done. *"They trouble us by asking us to get 10 different documents; people in Delhi do not understand the satbhara (land certificate), and that it is proof of a person owning land. So, we had to get an attestation from the tehsildar; we wasted two months running behind to get all the documents ready." (Men, FPC, Savneer Nagpur).*

- Lack of landownership among women farmers: Women not having land in their name is a major barrier. According to a woman participant from Samudrapur, Wardha "Everyone who is a part of FPC should have land in their names. The land we own is in the name of my father-in-law. So, this could pose a problem if I want to be a part of FPC. Many women are willing to join the group but they do not have land in their names.

- Lack of information: As the concept of group farming is new, it takes a lot of time and efforts to convince and motivate the farmers to try it out. *It takes time to influence the people; we have been going around the village convincing women about the benefits of group farming, we have to explain what exactly the FPC is and what are the benefits. (Non-FPC participants, Samudrpur, Wardha).*

Section 4: Changes Due to the Program

There is clear and convincing evidence that even at this early stage, the Program has led to substantial awareness of the benefits of group farming and improved agricultural practices, as well as considerable movement towards both. Interest, belief, and membership in group farming are quite real and widespread among Maharashtra Agri-Skilling Program participants, even if ignorance, cost, and other barriers restrain FPC formation. Farm and post-harvest practices, marketing, and farming service access have all improved substantially since the initiation of training and FPCs, although there is still much room for progress. Influences on change include market participation, group and FPC involvement, social situation and status, and seasonal factors. Beyond the specific technical improvements tested by the survey, the research also uncovered several benefits from training that also serve the goal of a more productive state agriculture, including interest in joint investment, agro-processing, and organic agriculture, as well as a tangible sense of empowerment among women exposed to the training or FPCs.

A. Changes in Farming and Marketing

There is clear evidence of the programme's impact on the farmers who have been trained or joined FPCs. Many farming practices have been improved; most participants have made changes. Post-harvest handling has also seen not just openness to change but the implementation of one or more modifications by most. The majority of farmers surveyed also report adopting better marketing practices and a substantial minority reports better access and provision of farm services.

Farming practices

It was attempted to find out whether the respondents had changed, modified or introduced any farming practices after they attended the training. Around 32 percent respondents did not make any changes in their farm practices. Most respondents (51%) made changes in their use of pesticides followed by weedicides use (43%) and use of water (38%) Other changes made by the respondents were use of new seeds (20%), soil testing (15%), weed control methods (11%) and collective procurement (8%). Very few farmers (1 to 5%) reported adopting soil treatment, biological control and following better marketing practices. The impact of just one of these changes, collective purchasing, was highlighted during the focus group discussions in Kolgaon, Beed where a member mentioned that the FPC had cut the cost of soya seeds by 50% by joint purchases from government.

Table 35: Change in farm practices after training

Respondent' Category	Pesticide use	Weedicide use	Water use	New seeds	Weed control methods	Collective procurement	Soil testing	Soil treatment	Better marketing	Bio-control	None	Others	Grand Total
FPC	49.5	39.2	36.9	22.9	11.7	11.5	20.0	6.4	2.1	2.8	32.6		436
NFPC	52.4	45.2	37.8	18.1	10.4	5.7	11.6	4.1	0.8	1.7	31.1		756
Overall	**51.3**	**43.0**	**37.5**	**19.9**	**10.9**	**7.8**	**14.7**	**4.9**	**1.3**	**2.1**	**31.6**		**1192**

Changes in post-harvest handling

An attempt was made to find out if any changes have been made in post-harvest handling of produce by the respondents after attending the training programme. 52 percent farmers stated that they have not made any changes. Of the remaining who reported changing post-harvest handling, the most popular change by far, involved storage at 41%. 18 percent stated making changes in processing followed by 11 percent each stating that they made changes in drying and cleaning of the produce. Other changes made by the farmers included packing (10%) and grading (5%). It was interesting to note that higher number of FPC participants reported making changes in storage, processing, drying, packing, cleaning and grading as compared to non FPC participants although the difference was in the range of only 1 to 3 percent.

Table 36: Change in post-harvest handling after training

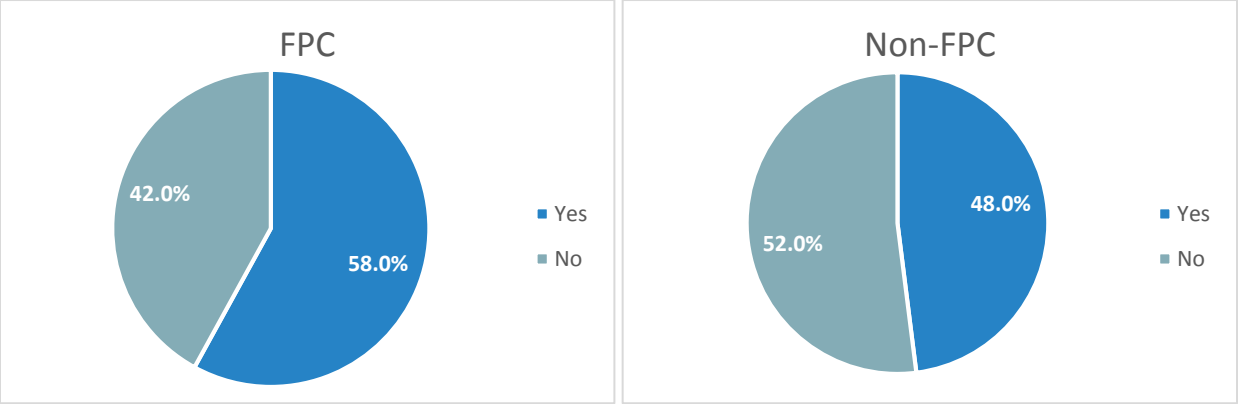
Respondent' Category	Storage	Processing	Drying	Packing	Cleaning	Grading	None	Grand Total
FPC	41.7	19.3	13.3	11.2	12.2	5.5	51.4	436
NFPC	40.5	17.9	10.4	9.8	10.1	5.0	52.0	756
Overall	40.9	18.4	11.5	10.3	10.8	5.2	51.8	**1192**

Changes in marketing

Marketing practices have also changed considerably among the Maharashtra Agri-Skilling Program program participants. A majority of participants report changes in marketing practices since training: 52%

have made them. Such changes are more common among those in FPCs (58%) than those not in them (48%).

Fig 8: Distribution by change in marketing after training



Of those reporting changes, 58% stated information sharing, 54% mention using common transport, and 49% mentioned collective bargaining with traders. These changes address the major problems respondents cited in marketing – the distance and reliance on rented transport, as well as the scarcity of timely information.

Changes in farming services

Respondents were asked to rate the changes they witnessed in terms of access to credit, timely availability of inputs, quality of farm services and pricing and timely payment after adopting group farming. The rating was to be made on a scale of 1 to 5 wherein 1 represented no change and 5 meant making major changes. Few Maharashtra Agri-Skilling Program participants (26%) say the credit access has improved while 29 percent see little to no change. 30 percent stated that inputs are now available on time. However, 17 percent did not see any change in getting timely inputs. Improvement in farming services have been stated by 27 percent farmers after they adopted group farming, although larger numbers still see little or no change. Improvements were noted in pricing and timely payment by 35%, with little change seen by 21%. There was hardly any variation in the statements given by the trained/untrained and FPC/non FPC participants.

Table 37: Distribution by changes in farming services

Services	1- No change	2	3	4	5- fully change	Grand Total

Access to Credit	8.0	21.2	44.6	18.2	8.1	2238
Timely availability of inputs	4.3	13.2	52.3	22.1	8.1	2238
Quality of farm services	5.0	18.5	47.4	21.2	7.8	2238
Pricing and Timely payment	4.7	16.7	43.5	24.1	11.0	2238

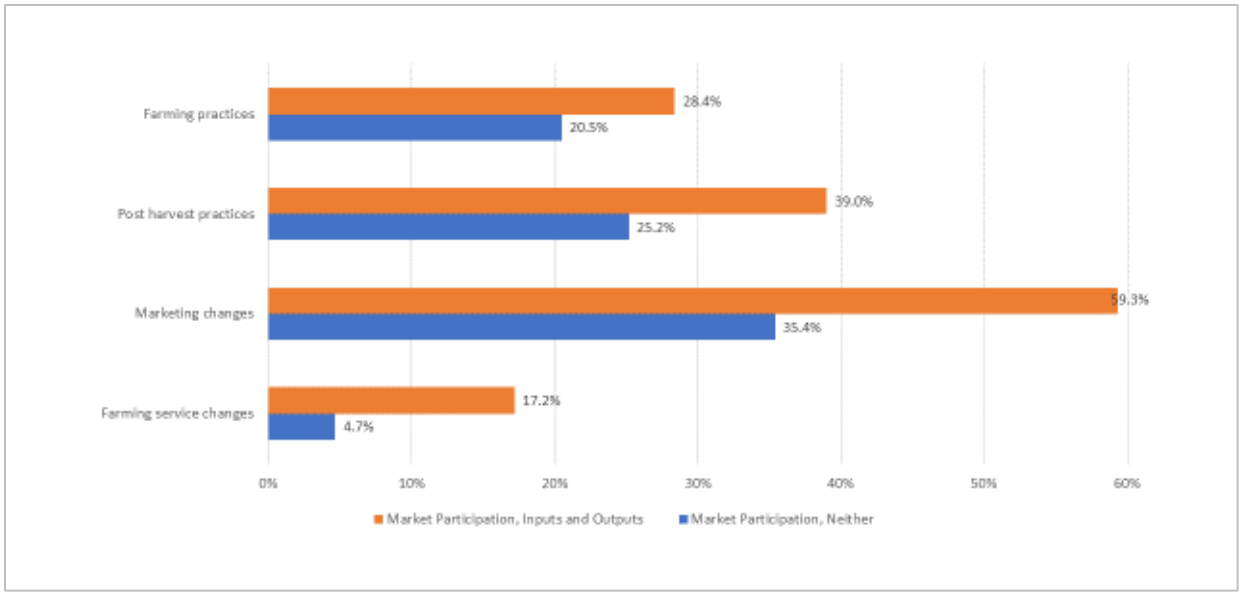
B. Influences on Change

Among the respondents, a number of factors were identified that are connected to the likelihood that changes have been made in their farm practices. These included participation in the markets, group and FPC membership, social situation (distress, social category, education and income, information sources, and seasonal factors).

Market participation

The extent of participation in markets is the strongest and most consistent influence on the proportion who made progressive changes in their agricultural practices among survey respondents. This is evident in all four major areas of change examined in the survey. Across the set of farm practices in the survey, on an average some 28.4% of regular market participants for inputs and produce made changes, compared to 20.5% of subsistence farmers. The gaps are even larger in the other areas. Some 39% market participants changed post-harvest practices, against 25% of subsistence farmers. The most evident difference concerns marketing changes, where 59% of regular market participants report changes, a difference of 24% more than those who are not. Similarly, when we constructed an index of farming service changes, 5% of market participants reported substantial change, against just 17% of those who are not regular participants.

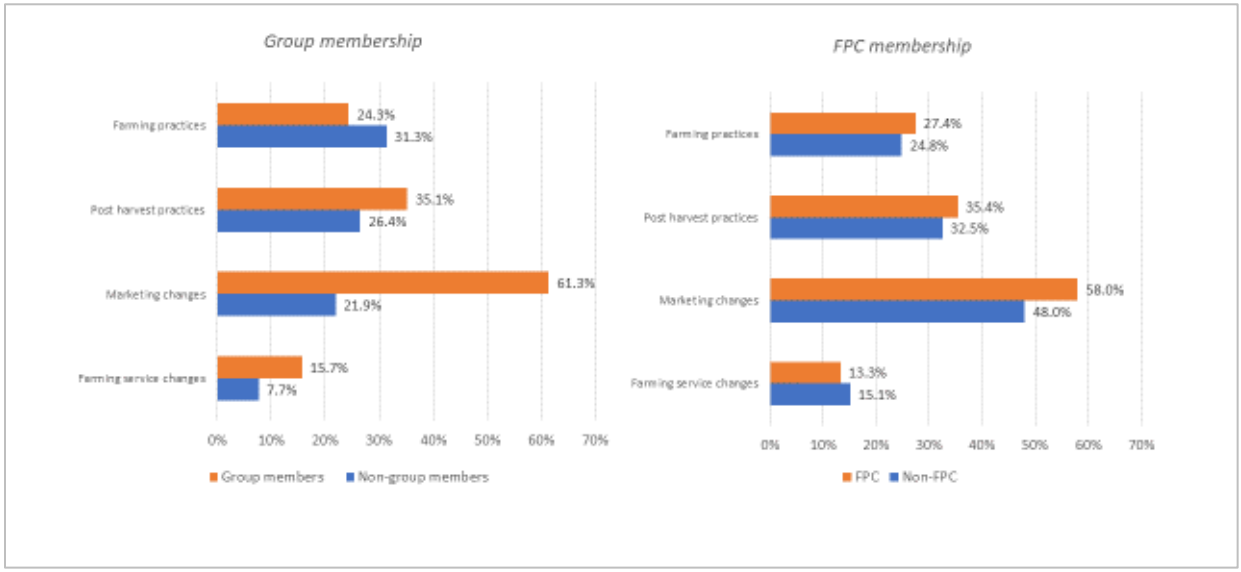
Fig 9: Market Participation-Impact on farming changes


Farming practices
28.4%
20.5%
Post harvest practices
39.0%
25.2%
Marketing changes
59.3%
35.4%
Farming service changes
17.2%
4.7%
0%
10%
20%
30%
40%
50%
60%
Market Participation, Inputs and Outputs
Market Participation, Neither

Group and FPC membership

Farming group membership is also related to farm improvements, more so than FPC membership, although the latter also has some linkage to them. The one area where group members were less active was change in farming practices themselves, where on an average 24% made changes compared to 31%. Here the difference favours FPC membership, where on average 27% made changes compared to 25%.

Fig 10: Group and FPC Membership-Impact on Farming Changes



However, in the other areas the effects of group membership were evidently stronger. In post-harvest practices, 35% of group members on average made changes, against 26% of non-members. The gap is biggest on marketing changes, where 61% of group members report change, 39% more than the corresponding figures for non-group members. In farm services, too, there is a difference, with 16% of group members noting substantial change, compared to 8% of group members. On all three of these topics, the effects of FPC membership are smaller, and even slightly negative on farm service change.

Social situation

The social situation of individual farmers also influences the likelihood that the Program participants have made changes, although in a fairly complex way.

In two important respects, disadvantaged populations appear to have been among the main beneficiaries of the program. Significantly, the most distressed farmers (in terms of crop, fuel, water, labour, and input prices) reported substantially more gains than the overall survey population in terms of post-harvest

practices. The same was true in the area of farming services. Another category, the OBCs, who are the plurality of the programme members, reported the largest proportions of change in both farming practices and post-harvest, compared to other caste groups.

However, advantaged populations also appeared to have made above-average gains in some aspects too. The least-distressed (most fortunate) farmers also reported above-average improvements in post-harvest and marketing practices as well as in farming services. The General category farmers also did best in terms of marketing and farming services, as did the groups higher in education and income. In other words, although the program has benefitted disadvantaged groups in some major respects, socially advantaged groups with more resources have also been quick to make use of its offerings.

Table 38: Social Situation-Impact on Farming Changes

	Distress	Social Category	Education	Income
Farming practices		OBC+		
Post-harvest	Most + Least +	OBC+		
Marketing	Least +	General +	More +	More +
Farming services	Most + Least +	General +	More +	More +

+ indicates that a group had the largest proportion in the column to make that change, and at least 10% more than the lowest such group in the save category
A blank space indicates no substantial relationship was found for those factors.

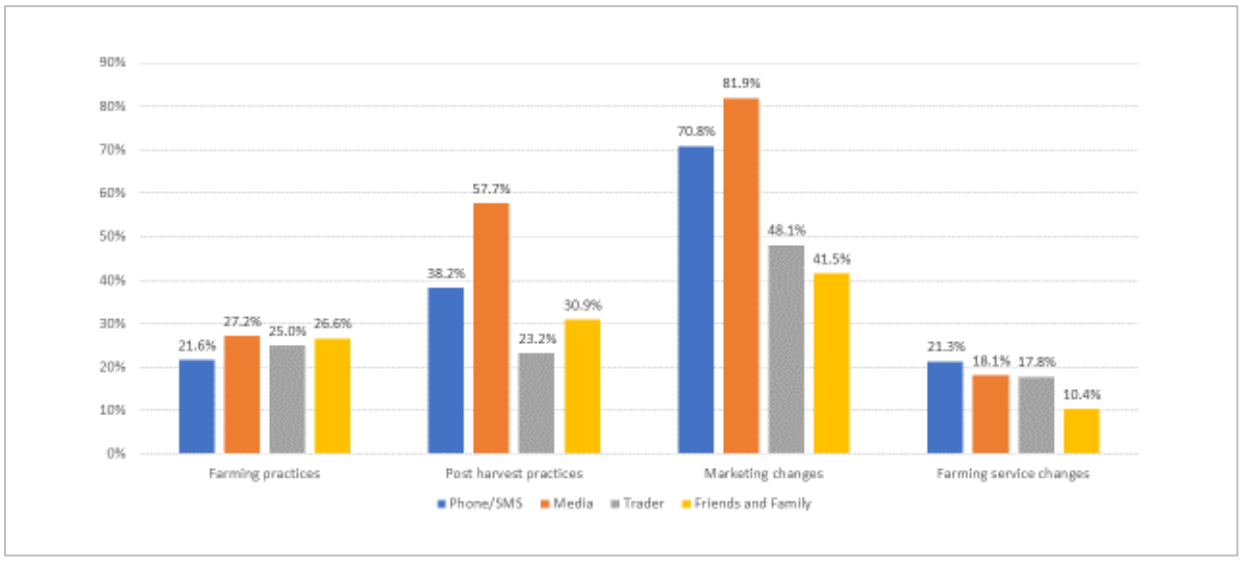
Information sources

The information sources farmers rely upon also correlate to how extensively they have implemented the farming changes Maharashtra Agri-Skilling Program is promoting. While phones are almost universal in the respondents' households and many use them to get information on the market, there are sharp differences in the principle sources they access for market information. The survey looked at four major ones: two modern sources, phone/SMS messaging and mass media, and two traditional ones, traders and friends or family.

Using modern information sources on the market was related to substantially more change in the Program participants' practices. This is most marked in the case of marketing itself – where 82% of media users and 71% of phone users say they have made changes, while minorities have done so among those who

rely on traders (48%) or friends and family (42%). The pattern is similar for post-harvest practices, where the changes tested in the study were on average made by 58% of media users, well ahead of the 38% among phone users and far above the figures for those relying on friends and family (31%) or traders (23%). The pattern is similar but differences much smaller for accessing farm services. Mass media users also lead slightly on changing farming practices, although the smallest share is those relying on phones.

Fig 11: Information Sources-Impact on Farming Changes



The relationship between information sources and change on smallholders' farms bears further examination. It is possible there is an element of false correlation: it may be that some of the connection between media use and agricultural change is because "modernisers" favour both. However, these findings are suggestive of ways Maharashtra Agri-Skilling Program can use media and target participants to encourage further change in their farm activities, to be discussed further under recommendations.

Seasonal factors

Some of the changes noted in the survey seem related to seasonal factors. The training in the regions surveyed was conducted between January and May. Thus, it fell after the kharif (monsoon) growing season in July-October, during the rabi season (October-March), and also partly during the summer (April-June) season. Producers active in the rabi season, then underway, made the most changes in pesticides for their crops in the fields. Producers in the dry summer were the likeliest to have changed water practices, and particularly likely to have made changes in marketing, including collective transport and information sharing, which all would come after the crops were harvested. The broadest changes were

reported by kharif producers, who had completed the season for 2018-19 and were preparing for the next season. This included the most changes in seed selection, marketing plans, credit and input availability, and pricing and payment.

C. Other Changes from the Training

Several other important changes in Program participants' aspirations and attitudes were revealed by the qualitative research, above and beyond the changes to date in agricultural and marketing practices reported in the quantitative study. The additional consequences of the training discussed in the focus groups included the possibility of collective investments, agro-processing, organic agriculture, and promoting the engagement of women in farming. These collateral benefits all support the programme's objectives of transforming Maharashtrian agriculture in a more productive and competitive direction.

Joint investment

The possibility of joint investments by farmer groups that individual farmers could not afford was mentioned unprompted by several participants in the focus groups. They recognized that investments that would be too large or uneconomical for individual smallholders could become a reality if they cooperated and funded them jointly.

"Individually we will not be able to invest so much. But now 10 or 11 of us have come together and contributed." (Man, FPC, Murud, Latur)

"We all have small pieces of land, if we come together, we can buy a tractor." (Woman, non-FPC, Murud, Latur)

Agro-processing

Group members were very interested in moving up value chains through value-added processing of agricultural produce. They were also aware that this would help to solve the employment problems plaguing their areas. Focus group members were very entrepreneurial and keen to develop value-added processing after harvest, such as setting up dal mills or briquettes from sugar cane waste. As pointed out by the FPC participants of Kolgaon, Beed ***"Today we are cultivating raw materials and if we convert our raw material into finished product then we can start our own business properly; there would be price increment; some people will get employment; we can cut off the middleman; transportation cost will reduce; If we come together and sell all our produce together, we will get proper price for our produce".*** Another FPC participant from Chandrapur echoed *"The biggest*

problem is unemployment. So, once we form the FPC, we will do milling and packaging the produce in gunny bags ourselves and also market it by which we can engage ourselves for more time and we will also get profit".

Organic farming

There was a lot of interest in the focus groups on organic farming since the training taught them about the use of manure instead of chemical fertilizers. They were aware of the risks both to the soil and to the consumers by practising chemical agriculture. According to a non-FPC woman respondent, the benefits of organic farming are "increase in soil fertility," "non-poisonous food," and "increase in produce and good rates for produce." FPC participants of Kolgaon, Beed pointed out that "Soil quality is degrading; the production has also decreased with the use of chemical fertilizers; if we use chemical fertilizers, the beneficial microorganisms in the soil will die and our land will deteriorate and become unfertile in the long run. We learnt that if we do group farming, we can do marketing as well; we can also export; we will get good food to eat.

Women's empowerment

The Program training and group formation have given women farmers a sense of empowerment and encouragement they had not experienced before. This, too, was mentioned spontaneously by both men and women during the focus group discussions. According to a woman respondent from Murud, Latur ***"I was not confident about farming but after going there (the training) I got the confidence that I can also take the decision and do farming".***

In sum, Phase 1 of the Program has had an important impact on the attitudes, agricultural practices, and aims of smallholder participants in the target districts who have been trained or joined FPCs. Almost all say they have joined farming groups or will do so, and most see the groups as advantageous. Work remains to be done in overcoming knowledge gaps and other factors limiting FPC formation, particularly among women, but a considerable start has been made. The consequences can already be seen in majorities who report changes in their farming, post-harvest work practices, and marketing, as well as many who say farming services are better. Again, there is still a long way to go to diffuse all the improvements the programme aims to promote on a large scale. This will involve encouraging market participation as well as group and FPC membership, and using media and targeting to spread benefits beyond advantaged groups who have been the quickest to seize some of them.

Encouragingly, moreover, the training and FPCs have also helped to awaken new aspirations among small farmers, not just technical changes: the participants speak spontaneously of making joint investments, processing produce, going organic, and in the case of women, feeling newly empowered. Thus, the evidence from this study suggests that in the six districts examined, the Program has made a considerable start towards its objective of transforming agriculture in Maharashtra.

Section 5: Participants' Views of the Future

The awakening of aspirations among Maharashtrian farmers by the Program includes hope for their better incomes and improved living conditions for their families, not just for technical improvements in their farming. There is a real sense of optimism among the vast majority of participants that their incomes and productivity will improve as a result of the program. They intend to use this to benefit their families and above all their children. Nonetheless, they are also aware of potential pitfalls they face. These include the need for further training, financial issues, and the "double shift" facing women who may have demands from group farming to spend more time in the fields when they already have extensive responsibilities at home.

A. Programme Participant Expectations

Focus group members think Program participation will raise their incomes and output, thanks to their willingness to form FPCs and groups and improve agricultural practices. The principal uses they imagine for this increased income are investments in their children's education and living standards.

Expectations for incomes and output

Program participants have very positive expectations for the effects of group farming and FPC membership on agricultural incomes and output. Almost all (93%) think group farming will increase their farm income. The optimism is general: just 7% of both the untrained FPC members and trained non-members are sceptical about better incomes, only slightly higher than the 4% among trained FPC members.

The categories of respondents where there are many doubters are largely those on the margins of the programme and the market. The sole social groups where more than 10 percent are doubtful of income gains are the minorities who don't intend to join farming groups (44%) and those who don't participate in input and produce markets (12%). By crop the only ones who fell into that category were growers of oranges (23%) and paddy (13%).

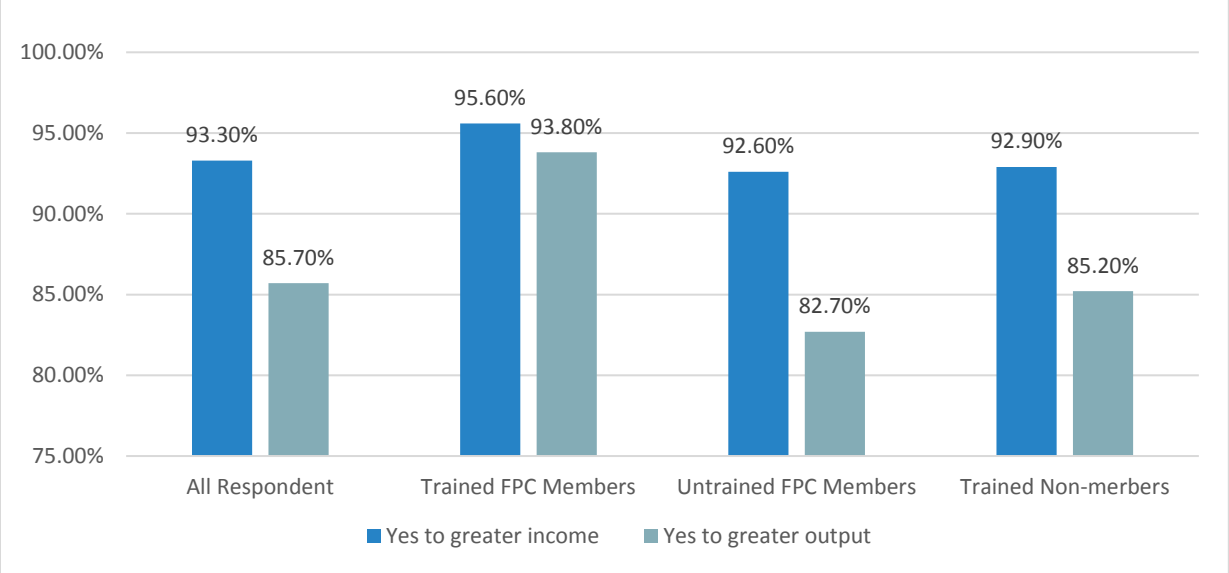
Expectations are also very positive for output increases under group farming, if somewhat less than for income: overall 86% of respondents surveyed expect group farming to increase their output. (The

somewhat larger proportion expecting income gains may reflect expectations of improved pricing as well as additional employment from agro-processing.)

Here training and FPC membership matter: only 6 percent of those trained and in FPCs are doubtful about increased output, against 17 percent of untrained FPC members and 15 percent of trainees not in FPCs.

However, the most sceptical are again principally those less involved with the programme: those not in groups (39% doubtful). However, there is a surprising distinction by social category: the only other group where fewer than 80 percent expect higher output is the OBCs (22% doubtful), while very few in the General castes share their doubts (2%). By crop the only doubtful group was orange producers, where 74% did not expect increases from group production.

Fig 12: Expectations from group farming: income and output



Comments on future expectations in the qualitative research were largely along similar lines, pointing to improved incomes and output.

There are also expectations of work in agro-processing resulting from the programme and expressions of hope that greater prosperity from farming will make it possible to keep children in the village and farming communities alive. Women participants from Murud, Latur were keen on having other sources of income besides farming like setting up processing units etc.

An FPC participant from Nanded pointed out, ***"In today's world no one wants to do farming, if we do not change now, our children will never want to do it and they will disown the land. If there is an increase in production and income, our children would be interested".***

Intentions for spending extra income

The focus of farmers' intentions for the use of financial returns from the Program participation is their children first and foremost. Farmers in the programme also say that increased incomes which result will help their families directly.

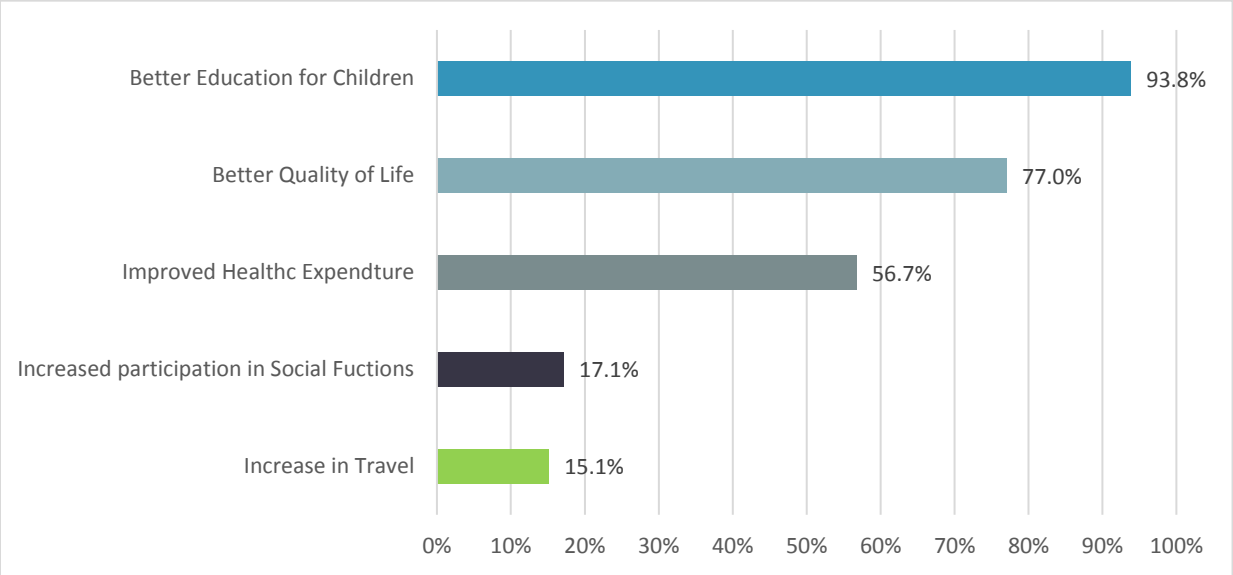
The pre-eminent use of the gains would be the children's education (93%), followed, for majorities, by two other options: quality of life (77) and better healthcare (57%). Other types of consumption are also mentioned but lag far behind: participation in social functions (17%) and travel (15%). Interest in the latter two was fairly uniform across social groups. Interestingly, desire for travel was highest (30%) among those using mass media for market information. What is not present, however, is spontaneous mention of using higher returns for further investment in farm productivity.

Group farming will be helpful for our children's education. We want our children to be well educated. So increased production and income will help. (Non-FPC participant, Murud, Latur).

We do not have many years left in our lives. We thought forming a company will be helpful for our children; we have to think of something for our children's future. (FPC participant, Hinghanghat, Wardha).

The emphasis on benefits to children and the family comes through strongly in the focus groups as well. Focus group members said their principle aim in using gains from Maharashtra Agri-Skilling Program participation would be to improve their children's schooling and lives.

Fig 13: Uses for extra income



B. Problems Anticipated

There are a number of potential pitfalls programme participants mentioned, despite their optimism about the impact of the Program. These were revealed in the focus group responses. They include the need for more consulting and training assistance, help meeting the financial requirements for FPC formation, and avoiding a situation where labour demands on women from the farm groups become insupportable.

Need for continued consulting and additional information

Group members repeatedly voiced the need they felt to receive more guidance and learn more, even though they have already received scores of hours of training in the Program. Non-FPC members talked about the need for more support for start-up of the group farming and marketing operations. Others wanted information going above and beyond what they had already learned after establishing the FPC, particularly on issues such as management, government relations, and marketing.

- Farmers from Nagbheed block, Chandrapur wanted to know how to expand the company after its formation and whether they can get any help from the government.
- Non-FPC FGD participants from Chandrapur were skeptical about doing group farming as they felt that different members could have different opinion about farming practices and this could lead to fights and hence were not convinced about the concept of FPC or group farming.

- Several farmers were worried that if they take a group loan and some members refuse to repay it, the whole burden will fall on the other participants.
- FGD participants of Beed stated that they did not have any information about the government schemes that they were eligible to avail and hence wanted to know if once they form the FPC, whether they would be eligible to avail different government schemes and if they could get more information about them.
- Farmers wanted to know where to get good quality inputs at lower rates. A participant was interested in setting up a processing unit and he wanted to know if he could get a plot of land to start the unit.
- Majority of the non-FPC participants stated that they did not form the company due to lack of initial capital required for it. They wanted to know if the initial capital amount/registration fee would be paid for them.
- Few farmers from Nanded wanted more information on how to do collective marketing.

Thus, the Maharashtra Agri-Skilling Program has done more than to incite attempts at better farming. It is creating expectations for better incomes and output and encouraging farmers to think about using these outcomes to benefit their families. They see a clear connection between the farm improvements and improved financial, crop, and employment results. They want to use these gains to invest in their children's education and keep them on the farm, reducing the rural exodus and promoting their communities' viability. They also want to improve their families' living standards and health. (One yellow light, however, is that they do not prioritize re-investing their gains in farming, at least spontaneously.)

Nonetheless, their hopes are not naïve ones – they also recognize that problems may face FPCs and MDSP participants. These include their need for further information and consulting help, financial limitations, and women's "double shift." These potential pitfalls should be addressed in order to make sure that the high expectations of Maharashtra Agri-Skilling Program participants become realities on the large scale intended by the programme.

Section 6: Outcomes of Dropout Survey

In Phase 1 of the Maharashtra Agri-Skilling Program program, 62,996 farmers were enrolled of which 14,996 (24%) farmers did not appear for the assessments. The farmers who did not appear for assessments are considered as dropouts by the program. A study was carried out to understand the factors that led to the farmers dropping out of the training program. The survey also sought suggestions from the respondents for improving participation in the program and motivating them to adopt group farming. The feedback from dropout farmers is considered a critical input for the successful rollout of future phases and hence an attempt was made to reach out to such farmers to understand the key reasons and challenges faced by them in completing the assessments through the telephonic survey.

This section of the report is divided into two sub-sections i.e. A & B. The sub-section (A) talks about the dropout status of 14996 farmers by district, gender, age, social category and education while sub-section (B) discusses the outcomes of the dropout survey.

A. Dropout Status

Highest percentage of dropout was noted in Beed (29%), followed by Latur and Nanded with 26% and 24% respectively. This indicates that dropout percentage is lower in districts of Vidarbha region (Nagpur, Chandrapur and Wardha) than the districts from Marathwada region. Dropout percentage among women farmers was slightly lesser (21%) as compared to men farmers (24%).

The dropout status by age group indicated that young farmers (less than 27 years of age group) had the highest dropout percentage while it was found lowest among the middle-aged farmers (36-45 years).

Except for General Category, dropout percentage in other categories such as OBC, SC & ST was more or less similar (22-23%). General category had the highest dropout ratio at 26%. Likewise, as compared to the educated and qualified farmers, percentage of dropout was higher among the lesser educated farmers.

B. Results of Dropout survey

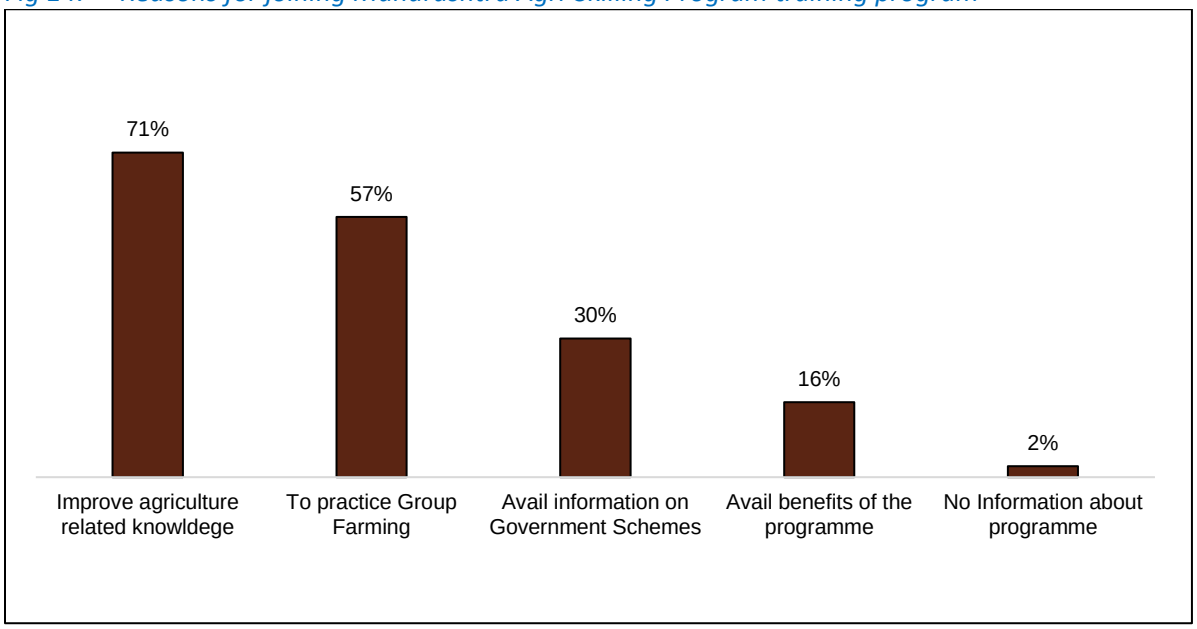
A total of 213 farmers were interviewed using a structured questionnaire consisting of 8 different questions. Firstly, a sample distribution across the six districts was decided on the proportion of dropouts

from the respective districts, and then a district wise list of dropouts was generated and randomized. This random list for each district was used by the data collection MRM team to call the dropout farmers. 27 women farmers were contacted through the survey. The survey outcome is given below:

Reasons for joining the Program

It was found that even among the dropouts, the aspiration behind attending these trainings were high. They responded positively to the training and stated enrolling for the program to gain agriculture related knowledge (71%), to learn more about Group farming and practice it (57%) as well as to avail information about government schemes (30%).

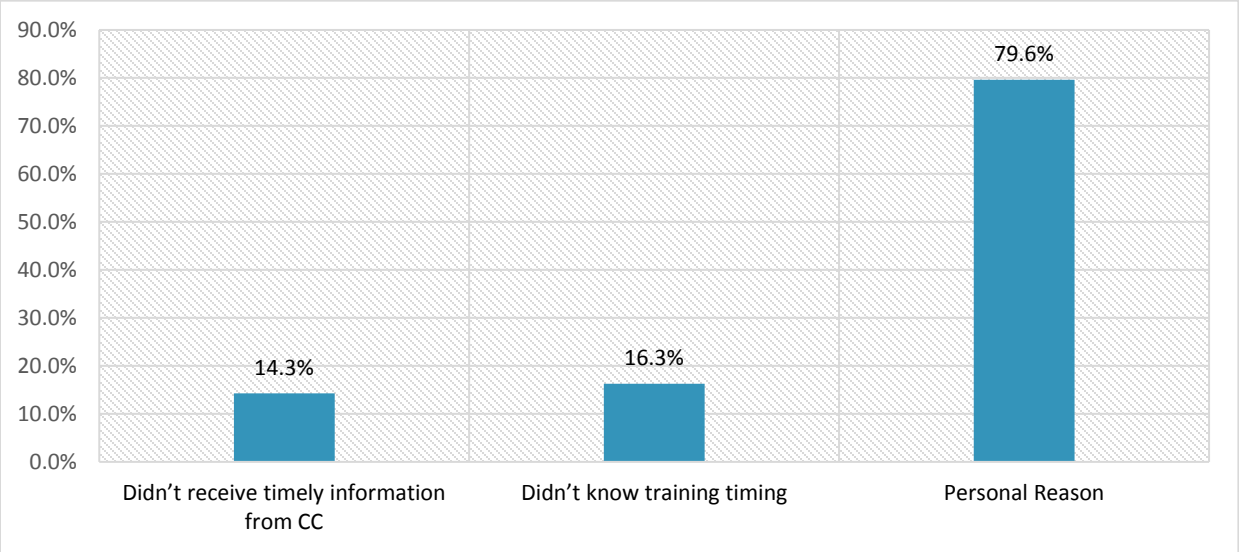
Fig 14: Reasons for joining Maharashtra Agri-Skilling Program training program



Challenges faced during program participation

Investigation among the dropouts revealed that few respondents (23%) faced challenges during the program participation. Maximum participants (80%) stated personal reasons for not attending the training program followed by 16 percent who said they were not aware of the timing of the training sessions. Another 14 percent stated that they did not receive information about the program on time from the Circle Coordinator.

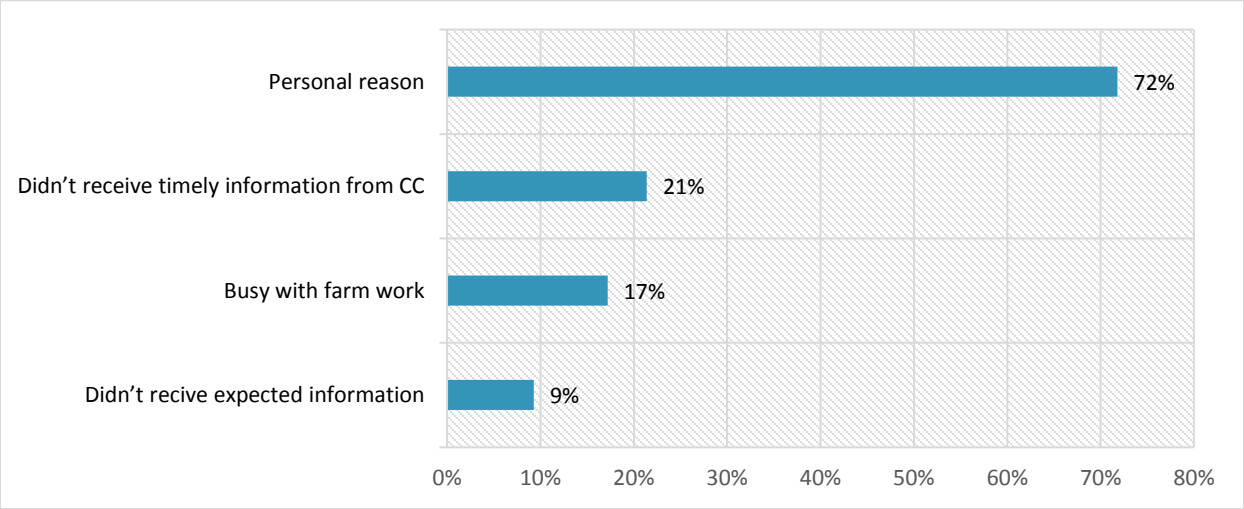
Fig 15: Challenges to attend training



Reasons for not completing the program

Majority (72%) stated personal reasons for not completing the training programme, 21% also reported that they did not receive timely information from the circle coordinator (CC) and 9% shared that they did not receive information that they had expected. **Majority of the participants dropped out after the 3-Day orientation program.**

Fig 16: Reasons for not completing programme

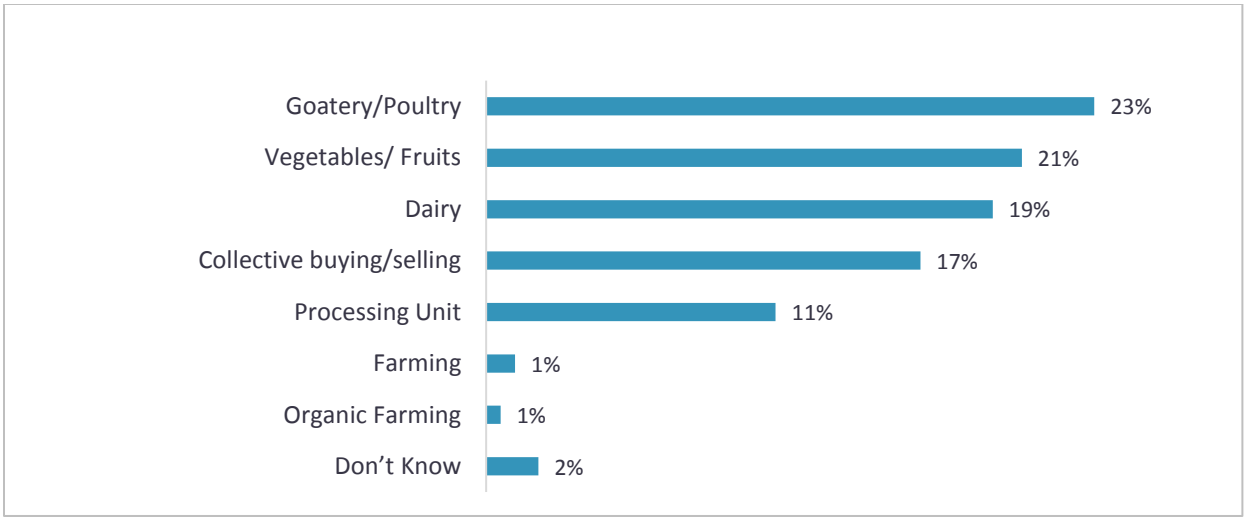


It was observed that 92 percent of farmers reported that they would want to complete the training on group farming in future. 85 percent also stated that they would like to participate in group farming activities / FPC.

Business interests for Group Farming

It was noticed that the participants were interested in business/value chains. Most farmers expressed their interest in goatery/poultry (23%) followed by cultivating vegetables and fruits (21%). Another 19 percent participants were interested in starting dairy activities. Around 17 percent and 11 percent participants articulated their desire to start collective buying and selling and setting up processing units respectively.

Fig 17: Business Interests for Group Farming



C. Conclusion

- It would be a good idea to tap educated farmers for such training programs as there are fewer drop outs among them. They will be more likely to influence other farmers. Also, middle aged farmers (36-45 years) could be motivated to join the program as more drop outs was noticed among participants above the age of 45 years and those less than 27.
- Around 45 percent farmers dropped out after the 3-day orientation program (OD), So it is important that the farmers be informed and convinced about the importance of the training sessions which will be conducted over the following 8 weeks and the assessment about during the OD program.
- Experts could be involved in influencing and motivating the farmers by making them aware of the benefits of group farming and its long-term impact.

- It is also important to give timely information about the program format and schedule as well as advertise the program so that it can reach maximum farmers.
- As most participants displayed a keen interest in allied activities, it would be helpful to consider other business interests like goatery, poultry, setting up processing units etc during the training so as to provide them with alternate employment opportunities.

Section 7: Conclusions and Recommendations

The Tracer Survey has offered a broad overview of the progress in the Program's Phase 1 areas. It has shown that the program has engaged large number of progressive small farmers, many worried about drought and other local conditions but were positive about the possibilities the programme has opened up. They are grateful for the training the programme has given them. They favour the farmers group and FPC concepts and have begun to respond to the opportunities offered by these innovations on a considerable scale. Women smallholders as well as men have been attracted to the programme, but also face specific issues that restrict their participation. This section draws some overall conclusions about Maharashtra Agri-Skilling Program and makes a number of recommendations on how to promote its success.

A. Conclusions

The Program has energized most participants to join and become active in farming groups and FPCs, and this, together with the training offered, is changing agricultural practices.

Majority of the participants in the programme say they will establish farming groups, and most report changing farming practices as well. Enthusiasm about the potential of group farming and FPCs is widespread. Majority report changing their cultivation practices, post-harvest practices, and marketing along the lines taught in the training. On most of these changes, the participants who are trained or in FPCs are leading the way. While there is still a long way to go before all the changes are universalized, the findings strongly suggest that, as intended, the Program has kick-started the transformation of agriculture in Maharashtra.

Participants feel hopeful that the farming changes underway will increase their incomes and better the lives of their children and families.

Overwhelmingly the participants think that the changes the programme is promoting will lead to greater output, higher incomes, and more employment opportunities for them and their fellow participants. These findings are consistent with comments by focus group members. The most frequent use for greater incomes mentioned is spending on children's education, with better living standards and health care just behind. The programme is seen as offering participants' households hope for a better life. Participants

also believe that once they form the company and it is successful, they can hand over its reins to their children so that they don't need to look out for outside employment or migrate in search of jobs.

The program has tapped the entrepreneurial imaginations of participating farmers, as well as encouraging women to feel a new sense of empowerment.

Farmers who have been trained or joined FPCs are keen to take on new business opportunities, including jointly implementing mechanisation, agro-processing, and organic farming, in addition to improving their production and marketing of existing crops. The sense of entrepreneurship evident among the participants in the focus groups contrasts sharply with the more traditional, risk-averse mind-set often associated with smallholders in the past. Similarly, women trained in the program report an exhilarating sense of possibility and capability they have not experienced before and are willing to try new techniques and willing to take risks. In other words, participants inspired by the Program have begun thinking big, well beyond the specific farm improvements taught by the programme.

The training is well regarded, with participants generally positive on the course and trainers.

The largest part of the trainees – nearly half – rates the training highly, and very few who went through the course give it low marks. The majority of those who are both trained and in FPCs are positive. Comments about the training contents in the focus groups also were favourable. However, most participants felt that there should be more follow-up and handholding to start the group farming activities. The principal desire expressed after the course was that participants wish they could have more training, not less. Even the candidates who had dropped out of the training were keen to attend another training programme in future.

Agricultural changes are uneven, influenced by market participation, group membership, social status, and media use as well as training and FPC involvement.

Analysis of improvements to date in cultivation, post-harvest, and marketing practices shows several factors are involved, in addition to training and FPCs. Participating in input and produce markets (rather than subsistence agriculture) and membership in farmer groups bear the strongest association with changes in farming. The most distressed farmers are among those reporting the most change after the harvest and in farm services, while by social category OBCs have made the most changes in cultivation and post-harvest activities. But greater gains in marketing and farming services are reported by

advantaged groups – the least distressed, general castes, and educated and higher income farmers best placed to take advantage of them. Targeted efforts are desirable in order to even out these inequalities.

Barriers to FPC and group participation include scepticism about benefits, paperwork problems, and cost.

Repeatedly the research found evidence of several barriers that restrict participation in FPCs and farming groups. The strongest one seems related to doubt that they actually will provide benefits. This seems to reflect both a lack of awareness of the ways they could help smallholders as well as the risk averseness of the poor, who have little margin for error, when facing potential changes or expenses. A second, specific to FPCs, was the difficulty of dealing with the necessary paperwork, and in particular acquiring all the documents required for the establishment of the company. The third, also concerning FPCs, involves the cost for every member involved in establishing the company. This was felt to be a burden or even a deterrent to participation by some, particularly in the non-FPC focus groups. Addressing these issues would facilitate group and FPC expansion.

Women face specific barriers to participation in FPCs and groups, including ignorance, lack of landownership, and time pressure.

While many women are excited by the horizons the programme opens up, they also mention factors specific to women that impede their participation in farming groups and FPCs. First among these is ignorance of aspects of farming, particularly the business and technical aspects. Although they are involved in all major farm activities, they know less about the technical aspects of cultivation than men, and often much less about the post-harvest and marketing phases, which have tended to be male domains. Second, although women often cultivate, they frequently lack landownership rights or at least land certificates. Finally, the pressure of the "double shift" – home on top of farm responsibilities – makes it hard for them to commit time to farming when it is needed.

All in all, it can be concluded that the Tracer Survey reveals that Maharashtra Agri-Skilling Program has scored important successes in its first phase, training and empowering a mass of small farmers to modernize their farming and marketing processes. This survey has provided considerable evidence of these gains. At the same time, it has also revealed barriers to change in these areas, which need to be addressed if further success is to be obtained. A final judgement on the results of the programme will await the results of future evaluations (see Appendix A). However, the initial assessment of the

programme to this point, on the basis of this Tracer Survey, is positive and provides grounds for optimism as it extends to the rest of the state.

B. Recommendations

On the basis of these findings from the research, we would make the following recommendations regarding Maharashtra Agri-Skilling Program going forward to increase its reach, effectiveness, and impact on agriculture in Maharashtra.

Encourage participation in groups, FPCs, and agricultural improvement by targeted messages and media.

The research suggests that the most effective messaging to encourage participation emphasizes the benefits of the programme – but that different messages and media will be most effective with different audiences. With men and people already in FPCs, messaging can focus on increasing production, income, and employment. On the other hand, with women and people not yet in FPCs, there was more responsiveness to messaging that the programme would enable them to provide better lives for their children and let them stay in the community.

However, since we also learned that an important precursor to group participation is participation in the market itself, this too should be dealt with. In order to overcome this barrier, messaging is needed to encourage farmers focused on subsistence and self-sufficiency to take the risks of market and group participation.

Moreover, since there have been widely varying rates of adoption of new agricultural techniques even among those in groups or FPCs and with Maharashtra Agri-Skilling Program training, targeted follow-up messaging discussing specific technical and marketing changes could help to advance the progress more uniformly. In particular, to reach the laggards on marketing improvements and accessing farm services, these communications should focus on downscale farmers: OBCs and SC/STs, and the less educated (those with less than full secondary education) and lower income participants (farming income of Rs75,000 or less).

In terms of media preferences, there are also differences between groups of participants. The survey showed that those reliant on phone/SMS or media (TV, radio, newspapers) for market information also tended to be more actively improving their agricultural procedures. This suggests an effort to use these

information sources. In particular, in the focus groups it was seen that men and FPC members tended to prefer information via media, as well as YouTube, while women and non-FPC participants tended to prefer face-to-face interaction. Both groups were open to receiving information via phone, SMS, or WhatsApp.

After training, conduct regular follow-up and consulting on topics of interest to program participants.

In the focus groups, many participants urged regular follow-up training for farmers in the program. They emphasized that once the training course was over, the trainers should visit the villages at least once a month to monitor the progress of the activities, to offer technical inputs and clear any doubts the farmers might have. There was also a strong emphasis on actual demonstration in fields, observation, and even visits to see farms that are applying new techniques rather than only focusing on the theoretical aspects. The opportunity to see live in action what is being taught or suggested can have a great deal of appeal to participants. This was also true for the chance to observe agro-processing facilities such as a turmeric mill in order to understand their functioning.

Participants also wanted the opportunity to consult and learn from experts on a variety of specific topics of concern to them. These included cultivation practices (seed processing, manure and other fertilisers, and composting, water conservation), marketing and export production, and new potential business lines, such as dal mills, poultry farming, goatery and animal husbandry.

Ease or facilitate the paperwork and financial requirements for setting up FPCs.

Survey respondents repeatedly complained that they found the paperwork and documentation requirements for the establishment of FPCs onerous and time-consuming. It would be helpful if ways could be found to reduce the paperwork requirements or to engage facilitators to assist farmers who are trying to set up an FPC. This barrier seems to have slowed or frustrated the formation of FPCs for some participants.

The financial requirements for contributions by FPC members would also seem an area which the programme could address. This, too, was seen as a substantial barrier to FPC formation in the focus groups, particularly by women with their lesser resources. Financial aid or loans could be offered to help with these costs, perhaps on more generous terms to women. Another possibility would be allowing payment over time or in instalments, so that FPC formation could begin with payments complete after a subsequent harvest.

Women's participation could be encouraged by specific training

Knowledge of farming techniques is critical to productivity; however, women farmers have inadequate access to agricultural extension and training services. Modifications to the training curriculum could help to respond to women's need for more extensive training, especially (but not only) on post-harvest and marketing topics. Since many are starting with a lower knowledge base than men, this could be taken into account in the training plans.

The time problems of women in farming groups, particularly household heads, also need consideration. Arrangements for child care or meal sharing could be made, either by women in the groups cooperating with each other on this or by the group engaging someone for these tasks.

Trainings should be organised at places suitable for women. For instance, if the trainings are held at temples, it will not be possible for menstruating women to attend the training as per social and religious norms. It is also important that training and agricultural technologies are accessible and adapted to rural women's needs and constraints. New technologies and training are critical for women farmers to be able to become better decision makers. Access to modern, labor-saving technologies is also critical for women in agriculture.

Land rights for women farmers

Modifications can be considered to program rules so that women with use rights to land, formal or informal, are allowed to participate in farming groups, even if they do not have formal title or land certificates. Ensuring the registration of all women farmers who do not own land in their name as cultivators in the land documents through systematic sensitisation of revenue department will be a step forward towards giving security for land use. Also, it will be a good idea to ensure that women farmers get subsidized bank credit by facilitating issuance of Kisan Credit Cards in their names. Similarly, facilitation can also be done for membership in other decision-making forums such as Primary Agricultural Societies, ATMA program.

Women lack the confidence to haggle at markets or sell farm produce without their husband's permission or presence. Women's voices in public meetings are often not solicited and women hold fewer leadership positions. Therefore, women could be encouraged/ trained to be elected as Panchayat members. This could help them to have better exposure and decision-making skills.me forums at block, district and state levels.

Farmer groups could be heterogenous for better functioning

Having groups with a degree of social and economic heterogeneity and with educated members will be advantageous as knowledge sharing can happen. Educated farmers who are willing to accept change easily and try out innovations/new technology will be in a position to convince others in a better manner. Farmers in the 30 to 50 years age group could be tapped as they would be willing to adopt more easily. An ideal group size would be one that has around 10 members. Very small groups of 3–4 members may face high costs of hiring labour, and very large groups can encounter problems of coordination and low returns per capita.

Identifying champions & leaders

Identify female and male champions possessing leadership qualities who can play a critical role in raising awareness about group farming and the benefits of forming the FPC.

Proper selection of field staff who can motivate and influence farmers

Care could be taken to select field staff who can motivate and influence the farmers about the advantages of group farming and forming FPCs. Some farmers are wary of officials and doubt their intentions. Hiring field staff who can communicate well and are suitable to the increasing needs of the farmers will prove to be an advantage. The trainings provided to the farmers should be transformative and there is an even greater need to invest into business transformation support services to farmers. Older farmers who have been following traditional farming since years may require more convincing and encouragement to start adopting new farming techniques. Therefore, the field staff would need to be patient with more persuasive skills.

Lending Financial support to FPCs for business expansion and long-term sustainability

Palladium may consider to create separate funds for the FPCs for expansion of business activities and for ensuring the long-term sustainability of the FPCs. Financial assistance could be provided for facilitating adoption of appropriate technologies by the farmers through the provision of training cum exposure visits, organizing for demonstrations on the use of the various technologies, organizing financial credit counselling, providing support for financial literacy and dissemination of appropriate technologies to the farmers. It was learnt that various institutions who are into promoting FPCs like SFAC, NABARD etc have made similar provisions.

Palladium could provide technical, managerial support hand-holding, capacity building and market intervention efforts of the FPO.

Support can be provided in terms of skill development so as to enable the FPC members to improve production/productivity, Business planning, Technological extension through classroom training and exposure visits, agricultural university tie ups, expert meetings etc. It was seen that this kind of support was made by NABARD to the FPCs promoted by them.

Providing marketing support

During the survey and group discussions, majority of the farmers felt that they do not get adequate prices for their agricultural produce mainly due to lack of marketing facility as well as marketing skills among them. Hence, support to the FPCs/farmer groups could be provided in the form of (a) Credit and/or grant support for setting up of marketing infrastructure facilities for sale of produce, (b) Establishment of rural haat and rural mart and support for marketing through them and (c) Facilitate tie-ups with buyers for Producers Organization's produce.

Developing Strong local systems and institutions

Strong local systems and institutions (community, government, private sector and civil society) should be developed that enable group farming/FPCs. There is a need for strengthening and institutionalizing the informal farmers' groups and institutions for the successful formation of FPC. It will be useful to identify relevant actors and initiatives, beyond Palladium's existing networks, whose work may intersect with theirs and devising an outreach strategy that can accompany their activities. Partnering with local institutions (technical, institutional, political) can bring multiple benefits in terms of acquiring and disseminating knowledge, creating and implementing tools, accessing funding. Besides, it should be noted that it is important to formalize partnerships (partnership agreement, MoU) in order to ensure long-term engagement.

C. What NABARD & SFAC have done for FPO Promotion: A Learning for Palladium

- NABARD created Producers Organization Development Fund (PODF) with initial corpus of Rs. 50 crores out of its operating surplus during 2011-12, for supporting the existing POs. The broad objective of the fund is to provide financial/ non-financial support to Producers' Organizations for facilitating improved credit access, ensure adequate capacity building, market linkages and need based handholding services to meet their 'end to end' requirements and thereby ensuring sustainability and economic viability.
- NABARD provides financial support to the FPCs in two ways - A fund titled "Producers Organisation Development Fund" has been created towards this end. (1) Lending to FPOs for contribution towards share capital on matching basis (1:1 ratio) to enable the FPO to access higher credit from banks. This is a loan without collateral which will have to be repaid by the PO after specified time. The maximum amount of such assistance is Rs. 25 lakh per PO with a cap of Rs. 25,000 per member. (2) Credit support against collateral security for business operations.
- In order to oversee the promotional efforts and provide policy inputs for creating appropriate ecosystem for FPOs to sustain their business operations, NABARD constituted a National Advisory Committee headed by its Chairman and members from the concerned Ministries of the Govt. of India and other various departments. Similarly, State level Consultative Committees have been formed under its Regional Offices to provide necessary guidance to the implementation of the scheme and ensuring desired synergy between the efforts of various stakeholders for building sustainable FPO.
- Considering the need for a centralized data base on FPOs, NABARD has launched a dedicated web portal and digitized the data in respect of all its FPOs including profile of the shareholder members and uploaded on its website for use by the stakeholders.

- A Performance Measurement (grading) Tool has been developed in consultation with key stakeholders, for the assessment and monitoring of overall performance of FPOs.
- NABARD through its State offices has launched a massive awareness campaign on the role of FPOs in building farmers' resilience against climate change, increasing agricultural productivity and bringing optimal efficiency in the agri value chain through achieving the economy of scale for ensuring enhanced income to the farmers, particularly small producers.
- SFAC supports FPOs through empanelled Resource Institutions (RIs), which provide various inputs of training and capacity-building, and linking these bodies to input suppliers, technology providers and market players.
- **Funding support from** SFAC to the FPOs is available in two forms i.e. (1) SFAC operates a Credit Guarantee Fund to mitigate credit risks of financial institutions which lend to the Farmers Producer Companies without collateral. This helps the FPCs to access credit from mainstream financial institutions for establishing and operating businesses and (2) provides matching equity grant up to Rs. 10 lakh to the FPCs to enhance borrowing power, and thus enables the entities to access bank finance. 1.37.

Appendix A: Setup and Timing of Endpoint and Impact Evaluations

This note is to start discussion of how to plan for the future evaluations. It lays out considerations to keep in mind, based on the goals of the project and what we have learned from the Tracer Study, as well as choices that will need to be made to set them up.

Endpoint Evaluation (Nov 2019 – Feb 2020)

- Goal: measure results of the intervention (Maharashtra Agri-Skilling Program training and support services)
- Poll should follow harvesting of all or most crops, which means in December
- Report has to be completed by first week February 2020.
- Timing should take lessons from actual timeline of Tracer Study: 6 weeks for fieldwork and data preparation, 4 weeks after that for write-up of draft report.
- Phase 1 districts should definitely be included – we can compare results with Tracer Study
- Could possibly include panel study (farmers interviewed in Tracer Study) and partly new interviewees, to allow before vs after comparisons for programme
- Also needs control group of farmers in the same districts who were NOT trained and NOT in FPCs or Maharashtra Agri-Skilling Program farmer groups (to allow comparisons between participants and non-participants).
- Question to discuss: should Phase 2 & 3 districts be included?
    - ✓ Will we have good baseline data for those districts?
    - ✓ Will the training have been completed before the crop cycle began (15 June)? Would this be true for Phase 2 districts and not Phase 3 districts? Then perhaps just Phase 2 should be in.

Impact Evaluation (February – April 2020)

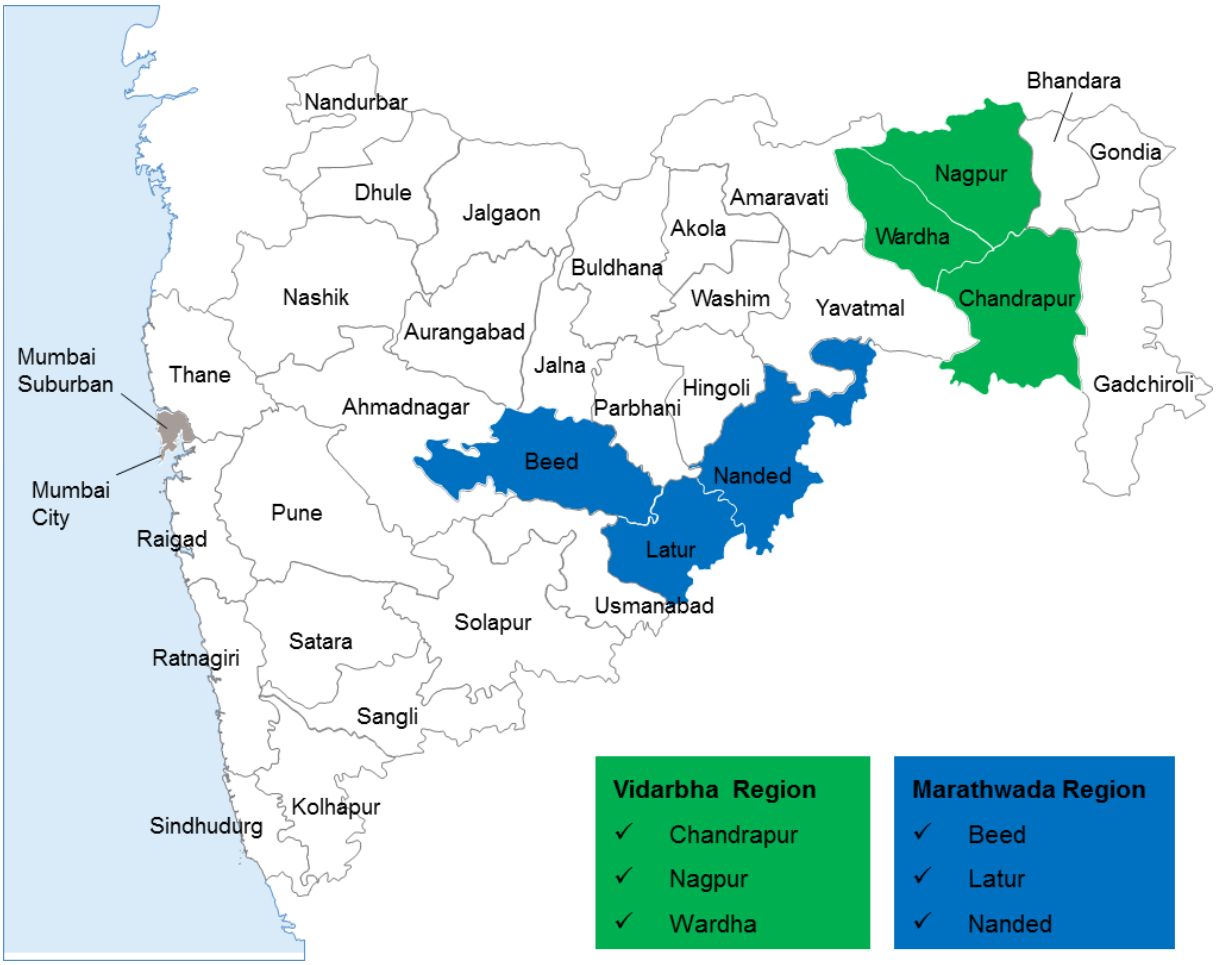
- Goal: measure effects of the intervention on incomes, and social indicators, and add to measures of results from the Endpoint Evaluation with results of rabi season.
- Planned for March 2020, after marketing of kharif crops is complete and rabi crops are harvested.
- Should include districts from all 3 phases, and programme participants and non-participants.

Timelines

Both surveys will require planning, budgeting, and contracting before questionnaire and sampling development to avoid the rush that marked the tracer survey. Here are some ideas to make it work.

	Tracer Study	Endpoint Study	Impact Study
Questionnaire and sample planning	May 10-23 In country: week of May 19	Nov 1 – Nov 22 In country: Week of Nov 17	February 2020
Fieldwork & Data cleaning	May 24- Jun	Nov 22- Jan 3	March 2020
Final report	Jul 12	Feb 7	April 2020

Appendix B: Map of Survey Locations



Appendix C: Frequency Questionnaire

Maharashtra Agri-Skilling Program Tracer Study

Survey Dates: 24th May to 7th June, 2019

Frequency Questionnaire: Final

Total respondents: 2238

C6. Respondent's Category

- Trained + in FPC 19.5%
- Untrained + in FPC 46.7%
- Trained but not in FPC 33.8%

C9. Age (in completed years)

- Under 24 years 5.5%
- 25-34 years 22.1%
- 35-49 years 47.2%
- 50+ years 25.2%
- Mean 41.5

C10. Sex

- Male 90.2%
- Female 9.8%
- Transgender 0.0%

C11. Total Family members

- Male Adults 2.1
- Male Children 0.8
- Female Adults 1.8
- Female Children 0.7
- Other Adults 0.0
- Other Children 0.0
- Total Adults 3.9
- Total Children 1.5

C12. Social Category

- General 28.5%
- OBC 49.8%
- SC 8.7%
- ST 5.9%
- Others 7.1%

C13. Educational Status

- Illiterate 2.6%
- 1-4th class 8.9%
- 5-10th class 40.3%
- 11-12th class 33.1%
- Graduate 12.0%
- Post graduate 2.6%
- Others 0.5%

C14. Do you have any bank account?

- Yes 98.9%
- No 1.1%

C15. Which type of bank?

- Commercial (Nationalised & pvt.) Bank 91.4%
- Cooperative bank 7.5%
- NBFC 0.2%
- Post office 0.4%
- Others 0.5%

C16. Do you have access to mobile phone?

- Yes 95.9%
- No 4.1%

C17. If yes, type of phone?

- Featured phone 63.5%
- Smart phone 36.5%

C18. Generally, who operate the phone most of the time?

- Self 93.7%
- Spouse 3.9%
- Son/daughter 2.4%
- Others 0.3%

C19. Do you use your phone to get information related to crops?

- Yes 87.4%
- No 12.6%

C20. Do you use your phone to get information related to financial transactions?

- Yes 89.1%
- No 10.9%

C21. How frequently, do you seek information through your phone?

- Daily 63.7%
- Weekly 21.8%
- Few times a month 7.8%
- Rarely 6.6%

C22. Language (Marathi)

- Read 98.6%
- Write 97.1%

C23. Land holding size (in acre): Summary of Means

- Total own land 5.6
- Total leased in 0.6
- Total leased out 0.0
- Total holding 6.2
- Total Irrigated 3.5
- Total Rainfed 2.7
- Total Barren 0.1
- Total holding 6.2

C24. What are the land lease rate in your village for agriculture?

- 0-3.99K 3.0%
- 4K-5.99K 24.4%
- 6-7.99K 16.2%
- 8-9.99K 8.7%
- 10K-19.99K 47.7%
- Mean 8770.6

C25. Farm Labour?

- Male: Family 1.5
- Male: Hired 3.5
- Female: Family 1.6
- Female: Hired 6.2
- Total Labor 9.8

C26. Major two crops cultivated by the respondents

Rabi:

- Gram 40.9%
- Wheat 31.3%
- Pigeon pea 20.7%
- Jowar 17.7%
- Paddy 14.7%
- Black gram 4.3%
- Orange 1.7%
- Sugar cane 1.4%
- Vegetables 1.4%
- Chili 0.8%
- Safflower 0.8%
- Turmeric 0.6%
- Chick Pea 0.4%
- Silk 0.3%
- Lakori (Grass pea) 0.3%
- Moong 0.2%
- Banana 0.1%
- Mosambi 0.1%

- Maize 0.1%
- None 17.7%

Kharif:

- Soybean 55.7%
- Cotton 53.6%
- Pigeon pea 37.0%
- Paddy 15.7%
- Jowar 2.3%
- Moong 1.4%
- Vegetables 1.3%
- Orange 1.1%
- Chili 1.0%
- Turmeric 0.8%
- Urad 0.5%
- Kidney beans 0.5%
- Black gram 0.2%
- Mosambi 0.1%
- Bajra 0.1%
- Maize 0.1%
- Lakori (Grass pea) 0.1%
- None 0.8%

Summer:

- Vegetables 2.4%
- Jowar 1.0%
- Black gram 0.6%
- Gram 0.5%
- Turmeric 0.4%
- Moong 0.3%
- Chili 0.2%
- Sugar cane 0.1%
- Cluster beans 0.1%
- Banana 0.1%
- Orange 0.1%

- Mosambi 0.1%
- Maize 0.1%
- Lakori (Grass pea) 0.1%
- None 94.4%

C27. Annual household Income through Agriculture? (in Rupees)

- <50K 16.6%
- 50-75K 26.9%
- 76-100K 20.5%
- 100K+ 36.1%
- Mean 127696.6

C28. Distance of nearest market from your village?

- <3km 4.3%
- 3-6km 10.1%
- 7-10km 20.2%
- >10km 65.4%
- Mean 15.5

C29.What are the two biggest challenges in your village/area?

- Drinking water problem 66.6%
- Frequent load shedding (electricity) 33.5%
- Wild animals' problem 18.2%
- Poor road condition 16.1%
- Good inputs not available fertilizers/seeds/implements 8.7%
- Labour problem 7.5%
- Market far off 2.6%
- Other 10.9%
- None 10.7%

C30. How are things for farmers in the village? Please rate it on scale of 1 to 5 where '1' is lowest and '5' is highest?

Crop Prices:

- 5-Highest 4.7%
- 4- 11.8%

- 3- 42.9%
- 2- 29.3%
- 1-Lowest 11.3%

Input Prices:

- 5-Highest 9.6%
- 4- 19.4%
- 3- 47.9%
- 2- 17.9%
- 1-Lowest 5.2%

Labour Prices:

- 5-Highest 8.4%
- 4- 15.4%
- 3- 42.4%
- 2- 27.5%
- 1-Lowest 6.3%

Water Prices:

- 5-Highest 8.0%
- 4- 15.2%
- 3- 41.3%
- 2- 29.1%
- 1-Lowest 6.4%

Power Rates:

- 5-Highest 9.4%
- 4- 14.4%
- 3- 38.9%
- 2- 29.6%
- 1-Lowest 7.6%

Fuel Prices:

- 5-Highest 10.2%
- 4- 19.5%
- 3- 31.3%
- 2- 25.2%

- 1-Lowest 13.8%

C31. What are the two biggest needs of the farmers in this village?

- Water availability for drinking and irrigation 63.3%
- Electricity 28.8%
- Proper roads to reach field 16.6%
- Protection From wild animals 13.4%
- Need of labourers 7.6%
- Compound wall around farm land 6.7%
- Seed availability 6.5%
- Markets are at a distance 3.8%
- Proper market rates for produce 3.4%
- Transportation of goods 2.2%
- Other 11.0%
- None 10.1%

U32. Do you have adequate knowledge of Group Farming (to be asked only from the untrained)?

- Yes 62.8%
- No 37.2

T33. What are the major training areas in group farming that you know?

- Training on varieties of crops 87.3%
- Training on input use 77.8%
- Training on marketing skills 62.3%
- Training on PHT / PHT 29.0%
- Training on access to finance 43.8%
- Training on group farming 43.5%
- Others 0.0%

T34: How would you rate the GF training on a scale of 1 to 5 where '1' being the lowest and '5' being the highest score?

- 5-Highest 15.6%
- 4- 32.7%
- 3- 40.7%
- 2- 8.4%

- 1-Lowest 2.6%

T35. Were you involved in any group farming training earlier than this?

- Yes 34.2%
- No 65.8%

C36. Did you use any market outlet for buying of agriculture inputs?

- Yes 67.5%
- No 32.5%

C37.Did you use any market outlet for selling of agriculture produce?

- Yes 71.4%
- No 28.6%

C38. What are your main sources of market information?

- Friends 46.5%
- Family 12.6%
- Radio 0.9%
- TV 4.0%
- Phone/SMS 11.8%
- Newspaper 3.0%
- Extension worker/Scientist 0.6%
- Trader 20.1%
- Others 0.5%

C39. What transport do you use to reach your agriculture produce to the market?

- Own Trolley 5.3%
- Hired trolley 89.1%
- Truck 3.4%
- Bullocks 0.5%
- friend's trolley 0.4%
- Rickshaw 1.1%
- Others 0.2%

C40. What are the key challenges in accessing the market? (Multiple responses)

- Lack of timely information 59.2%
- Poor road condition 50.8%
- Inadequate transport facility 33.0%
- Bad weather/climate 27.3%
- Distance of market is far away from village 26.3%
- Others 6.1%

C41. Did you take any loan last year (2018-19)?

- Yes 27.9%
- No 72.1%

C42. Amount of loan.

- 0-5K 1.0%
- 5-15K 2.7%
- 16-30K 13.3%
- 31K-55K 22.7%
- 56K-100K 44.3%
- 101K-150K 4.8%
- >150K 11.2%
- Mean 98764.5

C43. Purpose of loan?

- Crop 95.7%
- Livestock 3.0%
- House repair 1.3%
- Repair/Purchase of machineries 0.2%
- Personal consumption 1.9%
- Others 2.2%

C44. Source of loan?

- Commercial Bank 62.4%
- Money Lender 9.1%
- Co-op Bank 27.5%
- SHG 0.2%

- Family/Friends 0.3%
- MFI 0.2%

T45. Have you started forming a farmers group?

- Yes 77.9%
- No 22.1%

T46. If no, do you intend to practice group farming?

- Yes 73.3%
- No 26.7%

T47. Do you think adoption of group farming practices will help you increase farm income?

- Yes 93.3%
- No 6.7%

C48. Are there any practices that you changed/modified/introduced after attending the training? (Multiple Responses)

- Pesticide use 75.1%
- Weedicide use 62.9%
- Water use 54.8%
- New seeds 29.1%
- Weed control methods 16.0%
- Collective Procurement 11.4%
- Soil testing 21.5%
- Soil treatment 7.2%
- Better marketing 1.8%
- Bio-control 3.1%

C49. Please name the crop that you have made changes in post training?

- Soybean 13.4%
- Cotton 6.2%
- Pigeon pea 1.9%
- Turmeric 0.8%
- Wheat 0.7%
- Gram 0.7%
- Vegetables 0.6%

- Fruits 0.5%
- Sugarcane 0.3%
- Moong 0.3%
- Maize 0.3%
- Black Gram 0.3%
- Urad 0.3%
- Orange 0.1%
- Paddy 0.1%
- Jowar 0.1%
- Safflower 0.1%
- None 76.0%

C50. Have you made changes in handling crops post-harvest? (Multiple response)

- Storage 84.9%
- Processing 38.1%
- Drying 23.8%
- Packing 21.4%
- Cleaning 22.4%
- Grading 10.8%

T51. Do you market your produce differently after training?

- Yes 51.7%
- No 48.3%

Collective bargaining

- Yes 49.2%
- No 50.8%

Collective transport

- Yes 53.9%
- No 46.1%

Collective information sharing

- Yes 57.9%
- No 46.1%

C52. In how many days do you get your payment?

- <a week 66.4%
- >a week 29.7%

- <a month 3.9%

C53. In your opinion, please name any two advantages of group farming.

- Cost of farming will reduce/less investment more yield1 7.4%
- Better yield 17.2%
- Better price for produce/ Increased income/Higher profits 17.2%
- Reduction in transport cost 10.1%
- Time is saved/Can get inputs on time 8.3%
- Can get seeds at low price/better quality seeds 7.9%
- Labour problem will get solved/less labour requirement 7.5%
- Saving money 4.5%
- Unity among farmers/knowledge sharing 3.9%
- Can get more information about farming like new farming techniques, use of pesticides/weedicides/fertilizers/soil testing 3.6%
- Selling of produce/marketing becomes easier/faster 2.6%
- Other 5.6%
- Don't know 2.8%
- None 39.4%

C54. In your opinion, please name any two disadvantages of group farming.

- Loss of Unity/ Difference of opinion 4.3%
- Less price of produce in market 3.3%
- Other 7.3%
- None 89.1%

C55. How do you rate the changes in the following aspects of crop cultivation after adoption of group farming? (Rating on 1 to 5 where 1 being no change and 5 being fully change)

Access to credit:

- 5-Fully change 8.1%
- 4- 18.2%
- 3- 44.6%
- 2- 21.2%
- 1- No change8.0%

Timely availability of Inputs:

- 5-Fully change 8.1%

- 4- 22.1%
- 3- 52.3%
- 2- 13.2%
- 1- No change 4.3%

Quality of farm services:

- 5-Fully change 7.8%
- 4- 21.2%
- 3- 47.4%
- 2- 18.5%
- 1- No change 5.0%

Pricing and Timely Payment:

- 5-Fully change 11.0%
- 4- 24.1%
- 3- 43.5%
- 2- 16.7%
- 1- No change 4.7%

C56. Do you expect any increase in your crop output as a result of group farming?

- Yes 85.7%
- No 1.2%
- Not sure 13.1%

C57. If you have better income, how do you intend to utilize it?

- Better education for children 93.8%
- Better quality of life 77.0%
- Improved health expenditure 56.7%
- Increase in travel 15.1%
- Increased participation in social functions 17.1%
- Others 3.6%

C58. What are the specific challenges faced by women farmers in your village?

- Fear of the wild animals 5.6%
- Lack of information About Crops/do not know about group farming 4.3%
- They don't get labour on time / it is difficult to get female labour 2.8%
- Women not given training on farming 2.4%

- Other 12.7%
- None 72.2%

C59. What are the specific challenges for women to engage in group farming?

- Personal problems 12.4%
- Lack of information about farming/Women not trained in farming 4.4%
- Women don't have land in their names/Land in husband's name 3.7%
- Women's decision not consider important/cannot take independent decisions 3.1%
- Others 9.5%
- None 66.9%

C60. What are some of the specific feedback from women to the group farming training?

- Women have in complete information about farming 9.5%
- Women will get motivation and will get financial progress 9.1%
- More information on marketing 9.1%
- Need for more support from the government 6.8%
- Should involve as many women as possible 5.5%
- Should be able to avail loans 4.5%
- Women should own land 3.2%
- Women's participation in group farming is not ensured 2.3%
- Women should come together and fulfill their needs/ More unity among women 1.4%
- Women should be given a chance to speak/decision making 0.9%
- None 47.7%

Appendix D: Reference Tables

Table A1: Social category distribution by trained and untrained farmers (% to sub-total)

Respondent' Category	Social Category	Male	Female	Total
Trained	General	36.9	18.2	36.1
	OBC	39.9	52.7	40.5
	SC	7.6	12.7	7.8
	ST	6.9	9.1	7.0
	Others	8.7	7.3	8.6
	Sub-total (n)	**1137**	**55**	**1192**
Untrained	General	20.3	17.0	19.8
	OBC	59.6	64.8	60.4
	SC	10.2	7.3	9.8
	ST	3.9	9.7	4.8
	Others	6.0	1.2	5.3
	Sub-total (n)	**881**	**165**	**1046**

Table A2: Social category distribution by FPC and NFPC participants (% to sub-total)

Respondent' Category	Social Category	Male	Female	Total
FPC	General	23.5	16.0	22.5
	OBC	55.3	63.8	56.3
	SC	9.2	7.4	9.0
	ST	4.5	11.2	5.3
	Others	7.6	1.6	6.8
	Sub-total (n)	**1294**	**188**	**1482**
NFPC	General	40.7	25.0	40.1
	OBC	36.5	50.0	37.0
	SC	7.9	15.6	8.2
	ST	7.5	0.0	7.1
	Others	7.5	9.4	7.5
	Sub-total (n)	**724**	**32**	**756**

Table A3: Educational status by trained & untrained (% of sub-total)

Respondent' Category	Social Category	Male	Female	Total
Trained	Illiterate	2.8	1.8	2.8
	1-4th class	9.2	9.1	9.2
	5-10th class	37.1	52.7	37.8
	11-12th class	34.2	29.1	34.0
	Graduate	13.0	7.3	12.8
	Post graduate	3.1	0.0	2.9
	Others	0.5	0.0	0.5
	Sub-total (n)	**1137**	**55**	**1192**
Untrained	Illiterate	1.9	4.8	2.4
	1-4th class	8.3	10.3	8.6
	5-10th class	41.8	50.3	43.1
	11-12th class	32.8	27.9	32.0
	Graduate	12.4	4.8	11.2
	Post graduate	2.3	1.8	2.2
	Others	0.6	0.0	0.5
	Sub-total (n)	**881**	**165**	**1046**

Table A4: Educational status by FPC & NFPC participants (% to sub-total)

Respondent' Category	Social Category	Male	Female	Total
FPC	Illiterate	2.0	4.3	2.3
	1-4th class	8.1	9.0	8.2
	5-10th class	40.8	51.6	42.2
	11-12th class	33.0	28.2	32.4
	Graduate	13.1	5.3	12.1
	Post graduate	2.5	1.6	2.4
	Others	0.5	0.0	0.5
	Sub-total (n)	**1294**	**188**	**1482**
NFPC	Illiterate	3.2	3.1	3.2

Respondent' Category	Social Category	Male	Female	Total
	1-4th class	10.1	15.6	10.3
	5-10th class	36.2	46.9	36.6
	11-12th class	34.7	28.1	34.4
	Graduate	12.2	6.3	11.9
	Post graduate	3.2	0.0	3.0
	Others	0.6	0.0	0.5
	Sub-total (n)	**724**	**32**	**756**

Table A5: Distribution of respondents by type of mobile (% to sub-total)

Category	Type of Mobile	Male	Female	Total
Trained	Feature phone	58.3	85.4	59.4
	Smart Phone	41.7	14.6	40.6
	Sub-total (n)	**1102**	**48**	**1150**
Untrained	Feature phone	65.8	83.0	68.2
	Smart Phone	34.2	17.0	31.8
	Sub-total (n)	**856**	**141**	**997**
FPC	Feature phone	63.0	84.0	65.4
	Smart Phone	37.0	16.0	34.6
	Sub-total (n)	**1258**	**162**	**1420**
NFPC	Feature phone	59.0	81.5	59.8
	Smart Phone	41.0	18.5	40.2
	Sub-total (n)	**700**	**27**	**727**
Overall	***Feature phone***	***61.5***	***83.6***	***63.5***
	Smart Phone	***38.5***	***16.4***	***36.5***
	Overall (n)	***1958***	***189***	***2147***

Table A6: Distribution of respondents by the operator of the phone (% to column sub-total)

Respondent' Category	Who operates	Feature Phone			Smartphone			Total
		Male	Female	Sub total	Male	Female	Sub total	
Trained	Self	96.1	87.8	95.6	97.6	100.0	97.6	96.4
	Spouse	1.7	9.8	2.2	1.3	0.0	1.3	1.8
	Son/Daughter	2.0	2.4	2.0	1.1	0.0	1.1	1.7
	Other	0.2	0.0	0.1	0.0	0.0	0.0	0.1
	Sub-total (n)	**642**	**41**	**683**	**460**	**7**	**467**	**1150**
Untrained	Self	94.0	66.7	89.3	92.5	75.0	91.2	89.9
	Spouse	2.8	28.2	7.2	3.8	12.5	4.4	6.3
	Son/Daughter	2.7	5.1	3.1	3.1	8.3	3.5	3.2
	Other	0.5	0.0	0.4	0.7	4.2	0.9	0.6
	Sub-total (n)	**563**	**117**	**680**	**293**	**24**	**317**	**997**
FPC	Self	95.1	68.4	91.2	94.2	76.9	93.3	91.9
	Spouse	2.3	27.2	5.9	3.0	11.5	3.5	5.1
	Son/Daughter	2.3	4.4	2.6	2.4	7.7	2.6	2.6
	Other	0.4	0.0	0.3	0.4	3.8	0.6	0.4
	Sub-total (n)	**792**	**136**	**928**	**466**	**26**	**492**	**1420**
NFPC	Self	95.2	95.5	95.2	97.9	100.0	97.9	96.3
	Spouse	2.2	0.0	2.1	1.0	0.0	1.0	1.7
	Son/Daughter	2.4	4.5	2.5	1.0	0.0	1.0	1.9
	Other	0.2	0.0	0.2	0.0	0.0	0.0	0.1
	Sub-total (n)	**413**	**22**	**435**	**287**	**5**	**292**	**727**
Overall	*Self*	*95.1*	*72.2*	*92.4*	*95.6*	*80.6*	*95.0*	*93.4*
	Spouse	*2.2*	*23.4*	*4.7*	*2.3*	*9.7*	*2.6*	*3.9*
	Son/Daughter	*2.3*	*4.4*	*2.6*	*1.9*	*6.5*	*2.0*	*2.4*
	Other	*0.3*	*0.0*	*0.3*	*0.3*	*3.2*	*0.4*	*0.3*
	Overall (n)	***1205***	***158***	***1363***	***753***	***31***	***784***	***2147***

Table A7: Farmers seeking information on crops vs type of phone (% to column sub-total)

Respondent's Category	Type of Mobile	Male	Female	Total
Trained	Feature phone	86.4	58.5	84.8
	Smart Phone	97.6	100.0	97.6
	Sub-total (n)	**1004**	**31**	**1035**
Untrained	Feature phone	82.2	70.9	80.3
	Smart Phone	93.2	91.7	93.1
	Sub-total (n)	**736**	**105**	**841**
FPC	Feature phone	84.0	67.6	81.6
	Smart Phone	95.1	92.3	94.9
	Sub-total (n)	**1108**	**116**	**1224**
NFPC	Feature phone	85.5	68.2	84.6
	Smart Phone	97.2	100.0	97.3
	Sub-total (n)	**632**	**20**	**652**
Overall	*Feature phone*	*84.5*	*67.7*	*82.5*
	Smart Phone	*95.9*	*93.5*	*95.8*
	Overall (n)	***1740***	***136***	***1876***

Table A8: Distribution of respondents using phone to get information related to financial transactions

(% to column sub-totals)

Respondent's Category	Type of Mobile	Male	Female	Total
Trained	Feature phone	88.3	78.0	87.7
	Smart Phone	96.5	71.4	96.1
	Sub-total (n)	**1011**	**37**	**1048**
Untrained	Feature phone	85.4	72.6	83.2
	Smart Phone	94.2	95.8	94.3
	Sub-total (n)	**757**	**108**	**865**
FPC	Feature phone	86.5	72.8	84.5

Respondent's Category	Type of Mobile	Male	Female	Total
	Smart Phone	94.4	96.2	94.5
	Sub-total (n)	**1125**	**124**	**1249**
NFPC	Feature phone	87.9	81.8	87.6
	Smart Phone	97.6	60.0	96.9
	Sub-total	**643**	**21**	**664**
Overall	*Feature phone*	*87.0*	*74.1*	*85.5*
	Smart Phone	*95.6*	*90.3*	*95.4*
	Overall (n)	***1768***	***145***	***1913***

Table A9: Distribution of respondents by frequency of seeking information through phone

(% to column sub-total)

Respondent's Category	Type of Mobile	Male	Female	Total
Trained	Daily	68.1	58.3	67.7
	Weekly	21.1	20.8	21.0
	Few times a month	5.4	16.7	5.9
	Rarely	5.4	4.2	5.3
	Sub-total (n)	**1102**	**48**	**1150**
Untrained	Daily	59.9	53.9	59.1
	Weekly	22.7	23.4	22.8
	Few times a month	9.7	12.1	10.0
	Rarely	7.7	10.6	8.1
	Sub-total (n)	**856**	**141**	**997**
FPC	Daily	64.3	54.3	63.2
	Weekly	21.5	21.6	21.5
	Few times a month	7.6	14.8	8.5
	Rarely	6.6	9.3	6.9
	Sub-total (n)	**1258**	**162**	**1420**
NFPC	Daily	65.0	59.3	64.8

Respondent's Category	Type of Mobile	Male	Female	Total
	Weekly	22.3	29.6	22.6
	Few times a month	6.7	3.7	6.6
	Rarely	6.0	7.4	6.1
	Sub-total (n)	**700**	**27**	**727**
Overall	*Daily*	*64.6*	*55.0*	*63.7*
	Weekly	*21.8*	*22.8*	*21.8*
	Few times a month	*7.3*	*13.2*	*7.8*
	Rarely	*6.4*	*9.0*	*6.6*
	Sub-total (n)	***1958***	***189***	***2147***

Table A10: Farmers feedback about 'Input & Output prices'

Respondent's Category	Input & Output Prices	1- Lowest	2	3	4	5- Highest
Trained	Crop prices	12.3	29.6	42.7	11.2	4.2
	Input prices	7.0	17.4	47.1	19.2	9.3
	Labour rates	8.2	24.4	43.4	15.8	8.2
	Water rates	7.8	25.8	42.3	16.2	7.9
	Power rates	9.6	25.8	40.1	15.1	9.5
	Fuel prices	14.0	21.4	33.4	21.6	9.6
Untrained	Crop prices	10.0	29.0	43.2	12.4	5.4
	Input prices	3.2	18.5	48.9	19.6	9.9
	Labour rates	4.2	31.0	41.3	14.9	8.6
	Water rates	4.8	32.8	40.2	14.1	8.1
	Power rates	5.4	33.9	37.6	13.7	9.4
	Fuel prices	13.5	29.6	29.0	17.1	10.8
FPC	Crop prices	11.9	30.4	41.6	11.6	4.4
	Input prices	5.1	18.8	47.3	19.8	9.0
	Labour rates	6.3	29.3	41.8	15.1	7.5

Respondent's Category	Input & Output Prices	1- Lowest	2	3	4	5- Highest
	Water rates	6.8	30.5	40.4	14.8	7.5
	Power rates	8.0	30.8	38.5	13.7	9.0
	Fuel prices	14.3	26.7	30.6	19.1	9.3
NFPC	Crop prices	9.9	27.1	45.5	12.0	5.4
	Input prices	5.3	16.1	49.2	18.5	10.8
	Labour rates	6.5	23.9	43.5	15.9	10.2
	Water rates	5.6	26.3	43.1	16.0	9.0
	Power rates	7.0	27.2	39.7	15.9	10.2
	Fuel prices	12.7	22.4	32.8	20.2	11.9
Overall	*Crop prices*	*11.3*	*29.3*	*42.9*	*11.8*	*4.7*
	Input prices	*5.2*	*17.9*	*47.9*	*19.4*	*9.6*
	Labour rates	*6.3*	*27.5*	*42.4*	*15.4*	*8.4*
	Water rates	*6.4*	*29.1*	*41.3*	*15.2*	*8.0*
	Power rates	*7.6*	*29.6*	*38.9*	*14.4*	*9.4*
	Fuel prices	*13.8*	*25.2*	*31.3*	*19.5*	*10.2*

Table A11: Average land size distribution by trained & untrained and FPC and NFPC (acres)

Respondent's Category	Land size	Irrigated	Rainfed	Barren	Grand Total
Trained	Own land	3.3	2.6	0.1	5.9
	Leased in	0.3	0.3	0.0	0.6
	Leased out	0.0	0.0	0.0	0.0
	Total Operational	3.6	2.9	0.1	6.6
	Sub-total (n)	**1192**	**1192**	**1192**	**1192**
Untrained	Own land	3.1	2.2	0.0	5.3
	Leased in	0.3	0.2	0.0	0.5
	Leased out	0.0	0.0	0.0	0.0
	Total Operational	3.3	2.4	0.0	5.8

Respondent's Category	Land size	Irrigated	Rainfed	Barren	Grand Total
	Sub-total (n)	**1046**	**1046**	**1046**	**1046**
FPC	Own land	3.1	2.2	0.0	5.4
	Leased in	0.3	0.3	0.0	0.6
	Leased out	0.0	0.0	0.0	0.0
	Total Operational	3.4	2.5	0.0	5.9
	Sub-total (n)	**1482**	**1482**	**1482**	**1482**
NFPC	Own land	3.3	2.7	0.1	6.2
	Leased in	0.2	0.3	0.0	0.6
	Leased out	0.0	0.0	0.0	0.0
	Total Operational	3.5	3.1	0.1	6.7
	Sub-total (n)	**756**	**765**	**756**	**756**

Table A12: Percentage distribution of farmers by purpose of loan (% to sub-total)

Respondent's Category	Purpose of loan	Male	Female	Total
Trained	Crop	95.9	100.0	96.1
	Livestock	3.6	0.0	3.4
	House repair	1.6	0.0	1.6
	Repair/Purchase of machineries	0.3	0.0	0.3
	Personal Consumption	2.5	0.0	2.4
	Others	1.9	0.0	1.8
	Sub-total (n)	**366**	**14**	**380**
Untrained	Crop	95.3	93.5	95.1
	Livestock	1.9	6.5	2.4
	House repair	0.9	0.0	0.8
	Repair/Purchase of machineries	0.0	0.0	0.0
	Personal Consumption	1.4	0.0	1.2
	Others	3.3	0.0	2.9

Respondent's Category	Purpose of loan	Male	Female	Total
	Sub-total (n)	**214**	**31**	**245**
FPC	Crop	95.5	94.4	95.4
	Livestock	2.4	5.6	2.7
	House repair	1.1	0.0	1.0
	Repair/Purchase of machineries	0.3	0.0	0.2
	Personal Consumption	2.7	0.0	2.4
	Others	2.7	0.0	2.4
	Sub-total (n)	**376**	**36**	**412**
NFPC	Crop	96.1	100.0	96.2
	Livestock	3.9	0.0	3.8
	House repair	2.0	0.0	1.9
	Repair/Purchase of machineries	0.0	0.0	0.0
	Personal Consumption	1.0	0.0	0.9
	Others	2.0	0.0	1.9
	Sub-total (n)	**204**	**9**	**213**
Overall	*Crop*	*95.7*	*95.6*	*95.7*
	Livestock	*2.9*	*4.4*	*3.0*
	House repair	*1.4*	*0.0*	*1.3*
	Repair/Purchase of machineries	*0.2*	*0.0*	*0.2*
	Personal Consumption	*2.1*	*0.0*	*1.9*
	Others	*2.4*	*0.0*	*2.2*
	Overall (n)	***580***	***45***	***625***

Table A13: Percentage distribution of farmers by source of loan (% to sub-total)

Respondent's Category	Source of loan	Male	Female	Total
Trained	Commercial Bank	63.7	78.6	64.2
	Money Lender	7.9	0.0	7.6
	Co-op Bank	27.0	21.4	26.8
	SHG	0.3	0.0	0.3
	Family/friends	0.5	0.0	0.5
	MFI	0.3	0.0	0.3
	Others	0.3	0.0	0.3
	Sub-total (n)	**366**	**14**	**380**
Untrained	Commercial Bank	57.9	71.0	59.6
	Money Lender	10.7	16.1	11.4
	Co-op Bank	30.8	12.9	28.6
	SHG	0.0	0.0	0.0
	Family/friends	0.0	0.0	0.0
	MFI	0.0	0.0	0.0
	Others	0.5	0.0	0.4
	Sub-total (n)	**214**	**31**	**245**
FPC	Commercial Bank	62.8	75.0	63.8
	Money Lender	9.8	13.9	10.2
	Co-op Bank	27.1	11.1	25.7
	SHG	0.0	0.0	0.0
	Family/friends	0.0	0.0	0.0
	MFI	0.0	0.0	0.0
	Others	0.3	0.0	0.2
	Sub-total (n)	**376**	**36**	**412**
NFPC	Commercial Bank	59.3	66.7	59.6
	Money Lender	7.4	0.0	7.0
	Co-op Bank	30.9	33.3	31.0

Respondent's Category	Source of loan	Male	Female	Total
	SHG	0.5	0.0	0.5
	Family/friends	1.0	0.0	0.9
	MFI	0.5	0.0	0.5
	Others	0.5	0.0	0.5
	Sub-total (n)	**204**	**9**	**213**
Overall	*Commercial Bank*	*61.6*	*73.3*	*62.4*
	Money Lender	*9.0*	*11.1*	*9.1*
	Co-op Bank	*28.4*	*15.6*	*27.5*
	SHG	*0.2*	*0.0*	*0.2*
	Family/friends	*0.3*	*0.0*	*0.3*
	MFI	*0.2*	*0.0*	*0.2*
	Others	*0.3*	*0.0*	*0.3*
	Overall (n)	***580***	***45***	***625***

Table A14: Distribution of type of transport used to take the produce to the market (% to sub-total)

Respondent's Category	Type of Transport	Male	Female	Total
Trained	Own Trolley	5.6	3.6	5.5
	Hired trolley	88.2	85.5	88.1
	Truck	3.8	7.3	3.9
	Bullocks	0.5	0.0	0.5
	friend's trolley	0.4	1.8	0.5
	Rickshaw	1.3	0.0	1.3
	Others	0.1	1.8	0.2
	Sub-total (n)	**1137**	**55**	**1192**
Untrained	Own Trolley	4.8	6.1	5.0
	Hired trolley	90.8	87.9	90.3
	Truck	2.7	3.0	2.8
	Bullocks	0.5	0.6	0.5

Respondent's Category	Type of Transport	Male	Female	Total
	friend's trolley	0.1	0.6	0.2
	Rickshaw	0.8	1.8	1.0
	Others	0.3	0.0	0.3
	Sub-total (n)	**881**	**165**	**1046**
FPC	Own Trolley	4.3	5.3	4.4
	Hired trolley	91.3	87.8	90.9
	Truck	2.7	3.7	2.8
	Bullocks	0.4	0.5	0.4
	friend's trolley	0.2	1.1	0.3
	Rickshaw	0.9	1.6	0.9
	Others	0.3	0.0	0.3
	Sub-total (n)	**1294**	**188**	**1482**
NFPC	Own Trolley	7.0	6.3	7.0
	Hired trolley	85.8	84.4	85.7
	Truck	4.4	6.3	4.5
	Bullocks	0.7	0.0	0.7
	friend's trolley	0.6	0.0	0.5
	Rickshaw	1.5	0.0	1.5
	Others	0.0	3.1	0.1
	Sub-total (n)	**724**	**32**	**756**
Overall	Own Trolley	5.3	5.5	5.3
	Hired trolley	89.3	87.3	89.1
	Truck	3.3	4.1	3.4
	Bullocks	0.5	0.5	0.5
	friend's trolley	0.3	0.9	0.4
	Rickshaw	1.1	1.4	1.1
	Others	0.2	0.5	0.2
	Overall (n)	**2018**	**220**	**2238**

Table A15: Challenges faced by farmers in accessing market (% to sub-total)

Respondent's Category	Key Challenges	Male	Female	Total
Trained	Poor road condition	50.9	49.1	50.8
	Lack of timely information	61.1	52.7	60.7
	Inadequate transport facility	34.4	47.3	35.0
	Bad weather/climate	27.3	14.5	26.7
	Distance of market is far away from	30.3	21.8	29.9
	Others	3.1	10.9	3.4
	Sub-total (n)	**1137**	**55**	**1192**
Untrained	Poor road condition	51.0	50.3	50.9
	Lack of timely information	56.6	62.4	57.6
	Inadequate transport facility	29.1	40.0	30.8
	Bad weather/climate	28.9	23.6	28.1
	Distance of market is far away from village	23.0	17.6	22.2
	Others	8.2	13.9	9.1
	Sub-total (n)	**881**	**165**	**1046**
FPC	Poor road condition	50.4	47.9	50.1
	Lack of timely information	59.5	58.5	59.4
	Inadequate transport facility	29.5	41.5	31.0
	Bad weather/climate	27.6	22.9	27.0
	Distance of market is far away from village	24.9	17.0	23.9
	Others	6.6	15.4	7.8
	Sub-total (n)	**1294**	**188**	**1482**
NFPC	Poor road condition	51.9	62.5	52.4
	Lack of timely information	58.6	68.8	59.0
	Inadequate transport facility	36.6	43.8	36.9
	Bad weather/climate	28.7	12.5	28.0
	Distance of market is far away from village	31.2	28.1	31.1

Respondent's Category	Key Challenges	Male	Female	Total
	Others	2.9	0.0	2.8
	Sub-total (n)	**724**	**32**	**756**
Overall	Poor road condition	50.9	50.0	50.8
	Lack of timely information	59.2	60.0	59.2
	Inadequate transport facility	32.1	41.8	33.0
	Bad weather/climate	28.0	21.4	27.3
	Distance of market is far away from village	27.2	18.6	26.3
	Others	5.3	13.2	6.1
	Overall (n)	**2018**	**220**	**2238**

Table A16: Source of market information (% to sub-total)

Respondent's Category	Sources of market	Male	Female	Total
Trained	Friends	45.6	21.8	44.5
	Family	7.2	34.5	8.5
	Radio	0.9	0.0	0.8
	TV	5.5	0.0	5.3
	Phone/SMS	16.0	5.5	15.5
	Newspaper	3.7	1.8	3.6
	Extension worker / Scientist	0.6	1.8	0.7
	Trader	19.7	34.5	20.4
	Other	0.8	0.0	0.8
	Sub-total (n)	**1137**	**55**	**1192**
Untrained	Friends	51.1	36.4	48.8
	Family	13.3	39.4	17.4
	Radio	0.9	1.2	1.0
	TV	2.6	2.4	2.6
	Phone/SMS	8.3	3.0	7.5

Respondent's Category	Sources of market	Male	Female	Total
	Newspaper	2.4	1.8	2.3
	Extension worker / Scientist	0.6	0.6	0.6
	Trader	20.7	15.2	19.8
	Other	0.2	0.0	0.2
	Sub-total (n)	**881**	**165**	**1046**
FPC	Friends	46.8	33.0	45.0
	Family	10.7	38.3	14.2
	Radio	0.9	1.1	0.9
	TV	3.6	2.1	3.4
	Phone/SMS	12.2	3.2	11.1
	Newspaper	2.8	2.1	2.7
	Extension worker / Scientist	0.8	1.1	0.8
	Trader	21.7	19.1	21.4
	Other	0.6	0.0	0.5
	Sub-total (n)	**1294**	**188**	**1482**
NFPC	Friends	50.1	31.3	49.3
	Family	8.4	37.5	9.7
	Radio	0.8	0.0	0.8
	TV	5.5	0.0	5.3
	Phone/SMS	13.4	6.3	13.1
	Newspaper	3.7	0.0	3.6
	Extension worker / Scientist	0.3	0.0	0.3
	Trader	17.3	25.0	17.6
	Other	0.4	0.0	0.4
	Sub-total (n)	**724**	**32**	**756**
Overall	*Friends*	*48.0*	*32.7*	*46.5*
	Family	*9.9*	*38.2*	*12.6*

Respondent's Category	Sources of market	Male	Female	Total
	Radio	*0.9*	*0.9*	*0.9*
	TV	*4.3*	*1.8*	*4.0*
	Phone/SMS	*12.6*	*3.6*	*11.8*
	Newspaper	*3.1*	*1.8*	*3.0*
	Extension worker / Scientist	*0.6*	*0.9*	*0.6*
	Trader	*20.1*	*20.0*	*20.1*
	Other	*0.5*	*0.0*	*0.5*
	Overall (n)	***2018***	***220***	***2238***

Table A17: Changes in various aspects of crop cultivation after adoption of group farming

Farming Services	Respondent' Category	1- No change	2	3	4	5- fully change
Access to Credit	Trained	10.2	21.2	42.1	17.8	8.6
	Untrained	5.4	21.1	47.4	18.6	7.5
	FPC	7.4	21.1	45.7	18.8	7.0
	NFPC	9.0	21.4	42.5	16.9	10.2
	Overall	**8.0**	**21.2**	**44.6**	**18.2**	**8.1**
Timely availability of inputs	Trained	4.9	11.7	53.6	21.3	8.5
	Untrained	3.5	15.0	50.8	22.9	7.7
	FPC	3.8	14.4	50.5	23.8	7.4
	NFPC	5.2	10.8	55.7	18.8	9.5
	Overall	**4.3**	**13.2**	**52.3**	**22.1**	**8.1**
Quality of farm services	Trained	5.9	15.9	47.7	22.1	8.4
	Untrained	4.1	21.4	47.0	20.3	7.2
	FPC	4.7	19.0	48.0	21.1	7.1
	NFPC	5.7	17.5	46.2	21.4	9.3
	Overall	**5.0**	**18.5**	**47.4**	**21.2**	**7.8**
Pricing and Timely payment	Trained	5.3	14.2	44.0	25.3	11.2
	Untrained	4.0	19.6	42.9	22.7	10.8

Farming Services	Respondent' Category	1- No change	2	3	4	5- fully change
	FPC	4.3	17.9	42.4	24.3	11.1
	NFPC	5.6	14.3	45.6	23.7	10.8
	Overall	**4.7**	**16.7**	**43.5**	**24.1**	**11.0**

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About National Skill Development Corporation (NSDC): National Skill Development Corporation, working under the aegis of Ministry of Skill Development & Entrepreneurship, is a unique public-private-partnership which aims to catalyze creation of quality vocational training ecosystem in India. The organisation provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train-the-trainer academies either directly or through partnerships. Since establishment in 2009, NSDC has trained more than 2 crore people through its partnership with 600+ training partners, wide a robust network of 11,000+ training centers spread over 600 districts across the country. NSDC has institutionalized 37 Sector Skill Councils and is also implementing Government's flagship skill development schemes such as Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Pradhan Mantri Kaushal Kendra (PMKK), National Apprenticeship Promotion Scheme (NAPS), among others.

CONTACT US

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