



Concurrent Monitoring – Round IV

**Monitoring and Evaluation for
Project on Climate Resilient Agriculture (PoCRA)
In Marathwada Region, Maharashtra**

**Nanaji Deshmukh Krushi Sanjivani Prakalp
(Project of Government of Maharashtra in
Partnership with the World Bank)**

Submitted by

SAMBODHI

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Acknowledgement

Sambodhi Research and Communications in association with TERI is thankful to the Project Management Unit (PMU), Project on Climate Resilient Agriculture (PoCRA) for awarding the assignment “Monitoring & Evaluation (M&E) for Project on Climate Resilient Agriculture (PoCRA)” in the eight districts of Marathwada area of Maharashtra.

We would like to thank the Project Director and all the subject matter specialists from PMU for providing their guidance and continuous support to the study team for successful execution of this study. Further, the project officials at district as well as sub-divisional level have been very supportive and helpful in successfully completing the fourth round of Concurrent Monitoring.

We would also like to acknowledge the support received from ground level PoCRA team comprising Agriculture Assistants, Agri Supervisors, Cluster Assistants, FFS Coordinators, FFS Facilitators, Krushi Tais, TAO along with VCRMC members.

Most importantly, we would also like to thank all the study participants (respondents) and their families for agreeing to participate in this study and patiently responding to the questions, especially during the COVID-19 pandemic situation.

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Abbreviations

AA	Agriculture Assistant
BBF	Broad Bed Furrow
CA	Cluster Assistant
COVID-19	Corona Virus Disease 2019
CBP	Capacity Building Program
CFP	Community farm pond
DBT	Direct Benefit Transfer
DSAO	District Superintending Agriculture officer
FFS	Farmer Field School
FPO	Farmers Producers Organisation
GF	Guest Farmer
HF	Host Farmer
IDI	In-Depth Interview
MIS	Management Information System
NRM	Natural Resource Management
PDO	Project Development Objective
PoCRA	Project on Climate Resilient Agriculture
PS	Project Specialist
SDAO	Sub-Division Agriculture Officer
SHG	Self Help Groups
TAO	Taluka Agriculture Officer
VCRMC	Village Climate Resilient Agriculture Management Committee

Executive Summary

Introduction

Project on Climate Resilient Agriculture (PoCRA) is being implemented by Maharashtra government in collaboration with the World bank to enhance climate-resilience and profitability of smallholder farming systems in selected districts of Maharashtra. PoCRA is based on a multi-pronged and a comprehensive approach which aims to build climate resilience in agriculture through scaling up tested technologies and practices.

Sambodhi in partnership with TERI is conducting M&E of PoCRA in all eight districts of Marathwada region. As part of the monitoring and evaluation of the project, one of the key components is to conduct concurrent monitoring of the project, which will be conducted bi-annually for six years. Concurrent monitoring aims at finding out what are the bottlenecks in the implementation of each project component and also suggest solutions for the same. It also aims to get beneficiary feedback on the key processes of the different project components. Further, concurrent monitoring also aims to assess the progress of the project on key results frame indicators which are measurable through concurrent monitoring rounds. The first concurrent monitoring was conducted from the start of the project till 31st March 2019. The current round i.e. the fourth round of concurrent monitoring has considered the period from 1st April 2020 to 30th September 2020.

Methodology

The key components of the project that were assessed in the fourth round of the concurrent process and progress monitoring include: Individual matching grants accessed using Direct Beneficiary Transfer (DBT) application, Farmer field school for demonstration of climate-resilient and sustainable farming practices, construction of community assets which are aimed to benefit the farming community of the area including natural resource management works and community farm pond, Farmer Producer Organisations for strengthening post-harvest and value chain strengthening activities, SHGs for providing Agri-services to the farmers. Also, the feedback was taken on VCRM functioning, Krushi Tai functioning and the support received and expected by the FPOs/FPCs. Satisfaction in project planning, micro-planning, with VCMRC, with support from project staff, with government schemes, was also evaluated in the project and control villages. An assessment of the effect of COVID-19 and its associated precautions and restrictions on the progress and implementation of the project was also taken. The project MIS data for the period was also analyzed to understand the progress of the project activities during this period. The study area comprised of eight districts of Marathwada region of Maharashtra viz. Aurangabad, Beed, Nanded, Hingoli, Latur, Osmanabad, Parbhani and Jalna.

Mixed-methods approach has been adopted for concurrent monitoring survey. As part of this we have interviewed beneficiaries of different PoCRA components from the project area and also from comparison areas (where beneficiaries of similar interventions were interviewed). A quantitative survey tool for the beneficiaries and qualitative interview schedules for the key project stakeholders were finalized in discussion with PoCRA PMU team. Round IV concurrent monitoring survey was conducted in 30 project and 15 comparison villages. The purpose of the quantitative survey was to get the feedback of project beneficiaries on PoCRA and also to get feedback of beneficiaries of similar interventions in comparison villages. A sample of 675 beneficiary respondents was targeted for the quantitative survey the complete sample has been achieved. Also, as part of the qualitative component, 28 FGDs with VCRM members, FGDs with Project Specialists; and key-informant interviews of 17 SDAOs, 23 Taluka Agriculture Officer, 25 Agriculture Supervisors, 28 Cluster Assistants, 29 Agriculture Assistants, 6 DSAOs, 29 FFS Facilitators, 17 FFS Coordinators, 23 Krushi Tais and 14 FPC/FPO members were conducted. These interviews were administered to get their feedback on project implementation, understand the key challenges in project implementation and suggest appropriate solutions along with other relevant areas of interest. Qualitative sample shortfall in a few cases was due to the unavailability of the stakeholders for the survey even after two follow-ups and largely due to disruptions due to COVID-19 pandemic. In addition to quantitative survey and qualitative interviews, expert field visits were also conducted. It is to be noted that some of the experts could not undertake field visits due owing to the ongoing COVID-19 pandemic as they or their household members were in high-risk group.

Key Observations and Findings

Cultivation Practices

On the assessment of cultivation practices of the beneficiary farmers, it was observed that almost all beneficiaries (P-99.7%, C- 99.5%) owned land. The major crops cultivated in Kharif are reported as Cotton (56%), Soyabean (55%) and pigeon pea (36%) in the project area. The key crops cultivated in Rabi were chickpea (50%), sorghum (40%) and wheat (37%). The average land holding of PoCRA beneficiaries is 5.5 acres as compared to 4.9 acres of beneficiaries in comparison villages. 91.7% of the surveyed project beneficiaries and 88.2% of the surveyed comparison beneficiaries reported of having access to irrigation facilities, though regular and timely availability of water from these sources is a big challenge. Dug well (P-55%, C-58%) and borewell (P-24%, C-17%) were reported as the main sources of irrigation. It was found that the highest area under cultivation using climate-resilient certified seed varieties in project areas was for pigeon pea and chickpea (68% for both) followed by soyabean (63%). The percentage of land under certified seeds for these three crops is found to be higher (66%) in the current monitoring round as compared to overall 44% in project areas in CM II.

Awareness about PoCRA

On the assessment of sources of information about PoCRA and similar benefits in comparison arm, project staff (31%), gram sabha (29%) and VRCMC (11%) were reported to be the key sources of information in the project arm. However, in the comparison arm, friends and relatives (15%); and other residents in the village (11%) are also prominent sources along with gram sabha meetings (26%) and project staff (20%). In respect to the use of DBT portal, the highest awareness was for the stages: Registration on DBT portal (77%) and application for matching grant (66%). It can be observed that the awareness of the respondents about the in-between steps leading to the final step i.e. disbursement of matching grant was close to 50%. This is also due to higher percentage of beneficiaries in the sample frame who have received disbursements for their individual matching grant. On assessing the awareness of different benefits/activities that can be accessed under PoCRA, the maximum awareness was for individual assets which help to improve water availability in farms i.e. water pumps/pipes/drip irrigation systems or sprinklers (96% beneficiaries were aware of the same), construction of farm ponds (77%) along with other high return activities like construction of shade-net houses, poly house and polytunnels (57%). Awareness of other activities under PoCRA, specifically community benefits (FPO/SHG/ Soil and waterworks) and FFS trainings were observed to be relatively low and needs to be focused by the project staff. Improvement in awareness related to activities like farm pond, shade net, poly house, construction of artificial recharge of open well and drip & sprinkler irrigation has been observed in the current round when compared to previous rounds.

Individual matching grants

In the beneficiary sample for individual matching grant activities, the maximum beneficiaries are for again for assets related to irrigation and increasing water availability, such as drip (48%), sprinkler (44%), pipes (32%), water pumps (28%) and horticulture crops (18%). Other benefits applied were shade-net (9%) and production of certified seeds (5%). Self-motivation (by 84% respondents) is the biggest motivator to apply for project benefit, however project staff (61%) have also been proactive in motivating eligible beneficiaries. In comparison villages too, the biggest factor of motivation is self (82%), however motivation from project staff is reported to be limited (32%). VRCMC members, family members and gram panchayat members in project villages were reported as the key motivators with 18%, 18% and 11% respondents respectively saying that they had motivated them to apply for benefits under PoCRA.

The key reasons for the beneficiaries to apply for individual benefits mainly lay in increasing water supply for agriculture (P-82%, C-85%) and an increase in agriculture production and income (P-90%, C-86%). On enquiring if the beneficiaries had to incur any cost in accessing project benefits, 50% from project area and 46% from the comparison area acknowledged the same. Expenditure was incurred mainly in documentation, transportation and loss of wages and was similar across project and comparison areas. More than 90% of the beneficiaries (P-92%, C-91%) were satisfied with the application process to access benefits. Relatively lower percentage of beneficiaries from PoCRA villages (9%) acknowledged of facing challenges in accessing benefits (under PoCRA) when compared to beneficiaries from comparison villages (14%). Most of the respondents

shared challenges in terms of applying for project benefit (P-62%, C-42%). When enquired if the timeline for completing the project activity or creating the asset is sufficient, 99% respondents from the project arm and 95% respondents from the comparison arm reported the timeline to be sufficient.

Farmer Field Schools

When the FFS beneficiaries were enquired about the reasons for participating in demonstration sessions, 79% respondents participated to learn new technologies in agriculture and 73% with the expectation that it will help to increase their agriculture production. From the farmers who participated in the FFS demonstrations, 70% reported that they had attended all sessions. The reasons given by the remaining 30% farmers for not attending all FFS trainings are that they had personal work (58 %) or family commitments (19%). The climate-resilient technologies most frequently demonstrated as part of FFS were reported to be spraying techniques with safety measures (82%), seed treatment with bio-fertilizers (74%), foliar application of 2% DAP (73%), preparation of pesticide formulation and spraying (70%), application of basal dose of fertilizers (69%), nipping of apical bud (68%), intercropping (68%) and irrigation by drip/sprinkler (66%).

It is encouraging to observe that 92% of FFS beneficiary respondents acknowledged that they have benefitted from attending FFS sessions. FFS participants have realized benefits like increase in crop production and yield (76%), improved awareness of good agriculture practices (72%), better awareness of the use of inputs (68%), few diseases in crops (49%) and improvement in soil health (46%). Highest adoption was reported for technologies including spraying techniques with safety measure (89%), foliar application of 2% DAP (77%), seed treatment with bio-fertilizers (77%), preparation of pesticide formulations and spraying (73%), intercultural cropping (72%), nipping of apical bud (70%), intercropping (69%) and use of climate-resilient varieties (68%). Out of the technologies demonstrated in FFS sessions, the ones reported to be most useful by FFS participants are foliar application of 2% DAP (55%), preparation of pesticide formulations and spraying (39%) and seed treatment with bio-fertilizers (28%).

Community Works – NRM and Community Farm Ponds

Community NRM works as part of PoCRA were observed to be implemented in only three of the sampled project villages. The works undertaken in project villages were compartment/ graded bunding and earthen nala bunds. The comparison villages had most respondent beneficiaries of earthen nala bunds, compartment/ graded bunding and cement nala bunds. It is encouraging to find that satisfaction rate with the quality of NRM assets was reported to be higher in PoCRA villages (90%) when compared to that in comparison villages (75%).

Majority of beneficiaries (78%) were willing to provide support in the form of paying for the maintenance of structure (40%) and providing labour support (44%). Though, a low percentage of respondents reported being member of structure maintenance committee (16%) of the assets.

Similar to the feedback of NRM community asset, the feedback was taken from beneficiaries of community farm ponds. When asked who had motivated them to apply for community farm ponds, in the project area, majority had applied due to motivation from project staff like AA, CA and Krushi Tai (47%) and because of self-motivation (45%). For application for community farm pond they mainly received assistance from e-sewa Kendras (P-84%, C-69%). For the construction of a community farm pond, in the project area, 93% had used their own funds or and had taken loans from their family or friends (67%). None were found to have taken loan from formal financial institutions. Lack of availability of funds currently (56%) and the fact that project benefit has been withdrawn at the district level were the two main reasons reported by beneficiaries who had received presanction but had not started their work. It was encouraging to find that 92% of the project arm respondents reported that they did not face any issue in following the PoCRA guidelines for the construction of a community farm pond. Majority of CFP beneficiaries acknowledged to have benefitted from the CFP with 71% acknowledging that CFP has helped to increase their income.

PoCRA supported FPOs and SHGs

Providing support to FPOs/FPCs for post-harvest management and value chain promotion is one of the key components of PoCRA. In this regard, members of FPOs which are in process/have received support from PoCRA were surveyed. The main activities the FPOs were engaged in were aggregation of produce (71%) and provision of agricultural inputs (56%). 58% member reported that their FPO provides marketing support

to its members while only 24% reported that their FPO was also involved in value-addition of produce. Key services received by the members from their FPO include access to equipment/tools for agriculture (62%), marketing support in selling their agriculture produce and purchasing seeds through their FPO (51%). Approximately half (54%) of the member respondents were aware of the financial support provided by PoCRA to their FPO. On enquiring about the status of PoCRA support to their FPO, 53% respondent shared the application is under processing, while 33% of the respondents shared that their FPO has received support from PoCRA. More than half of FPOs members (52%) acknowledged about the difficulty faced by their FPO in getting bank loan and the challenge of lack of guidance in accessing project benefits (36%). 80% of the respondent believe that they will get better price for their produce after the activities planned with project's support are implemented.

Supporting SHGs in promoting primary processing and supply of agriculture inputs and equipment is also one of the components of PoCRA. 73% of the SHG respondents acknowledged that they do monthly saving through their SHGs and 65% reported that their SHGs are involved in income generating activities. The income-generating activities mainly included renting farm equipment through custom hiring centre (65%), tractor business (19%), marketing and selling of agriculture produce (8%). Almost half of the respondents acknowledged that their SHG has received support from PoCRA and 85% respondents acknowledged that they did not face any difficulty in applying for the project benefits.

Satisfaction on other project parameters

Feedback of the beneficiaries was also taken on the micro-planning process and on different parameters related to the implementation of PoCRA. It is encouraging to observe that majority of the beneficiaries are satisfied on different project parameters. 86% reported to be satisfied with micro-planning process conducted in their village, 85% satisfied with the work of VCRMs. Also, satisfaction with the process of accessing project benefits was observed to be higher in PoCRA villages as compared to comparison villages (P:86%, C:78%). Similarly higher satisfaction was observed with the support received from project staff in PoCRA villages as compared to the project staff in comparison villages (P:84%, C:50%).

PoCRA beneficiaries from an Inclusivity lens

On looking at PoCRA beneficiaries from an inclusivity lens, majority of the respondent beneficiaries are hindus (P:97%, C: 86%). Only few of the project's direct beneficiaries were females (P:14%, C:10%), though the percentage of female beneficiaries is higher in PoCRA villages. Almost all beneficiaries reported agriculture to be their main source of household income (P:99%, C:100%). The average annual household income is observed to be INR 1,93,002 in project arm and INR 1,65,391 in the comparison arm.

Feedback on VCRMC and Krushi Tai functioning

We further inquired into the functioning of the VCRMCs. The surveyed VCRMC's overall had 18.9% SCs, 3% STs, 17.7% NT/VJNT, 16.8% OBCs and 53% women members. VCRMC meetings were found to be conducted mostly once in a month. The main topics of discussion in the meeting were review project progress in their village, guidance to farmer and approval to the application of the farmers etc. The key documents maintained by VCRMC were meeting and proceeding book (available in most of the cases), visit register and cash book (mentioned in few cases), cheque book (in few cases) and documents related to individual applications. Complaint registers were maintained by 10 out of 28 VCRMC. Most of the VCRMCs had received initial training but they requested for follow up refresher trainings on project guidelines and climate resilient agriculture practices. Wherever required, follow up training sessions should also be conducted specifically for women VCRMC members who were not able to attend the project training sessions.

Out of the 30 sampled project villages; Krushi Tai has been recruited in 28 villages. The key tasks that they were aware of included mobilizing women for SHG meetings, creating awareness through home visits, motivating people to take up project benefits, and sharing agriculture-related information. Most of the Krushi Tais see their role and work towards mobilizing farmers, disseminating information regarding the project and guiding farmers regarding the project and farm-related activities. Most of the Krushi Tais (16 out of 23 Krushi Tais) have not undergone any training under the project and need to be provided training on project objectives, components, their roles and responsibilities and their performance evaluation criteria. Only 9 out of 23 surveyed

Krushi Tais acknowledged of having received their first remuneration. Regular payment of remuneration should be ensured to keep them motivated.

Understanding Project progress based on MIS analysis

Analysis of the project MIS data was also done to present key insights and the progress of the project. The period of analysis is from 1 Oct 2019 – 1 Sept 2020. As per the PoCRA MIS data, a total of 2,01,478 beneficiaries have registered in this period. On analyzing the registrations based on landholding of farmers it is found that 44.5% of the registrations are from small farmers, followed by 33.5% by marginal farmers, 19.7% from semi-medium, medium and larger farmers; and 2.3% from landless. Out of all the applications received, 36,780 disbursements worth INR 166 crores have been made so far with the highest number of disbursements in Aurangabad (24,307) and lowest in Jalna (10,743). It has been observed that the average time for processing matching grants is observed to be higher than the previous CM rounds which understood to be largely an effect of COVID-19.

VCRMCs have been formed in 2177 out of 2222 Gram Panchayats. Further, it can be observed that Krishi Tai's have been appointed in 70.78% of the villages. A total number of 5010 FFS in Kharif and Rabi Season of 2019 and 4079 FFS in the Kharif Season of 2020 have been conducted. A total of 84 FPOs and 82 SHGs have been provided with pre-sanctions.

Key Challenges and Actions

One of the key objectives of concurrent monitoring is also to identify the current challenges faced in the project implementation and solicit stakeholder suggestions to address the same. For this, interview with key project stakeholders and expert visits were conducted.

For Individual Farmer matching grant component, financial constraints faced by small and marginal farmers to invest upfront to purchase the assets still remain a key challenge. This challenge has been further magnified due to COVID, as it has affected the income of farmers. Also, based on the beneficiary survey findings, access to institutional finance for accessing project benefits was found to be limited. As a solution, it is suggested that project staff should provide facilitation support to the interested beneficiaries to access institutional finance. Innovative methods like providing vouchers for purchasing assets from empaneled suppliers should be explored so that low-income farmers can access project benefits without excessive financial burden. Expert based on their field observations also pointed out the challenge faced by low-income farmers in accessing project benefits. With the project now open for even semi-medium, medium and large farmers, there has been a substantive proportion of applications from such categories. For this it is suggested that the project should consider providing matching grant in proportion to the farmer's landholding and income so that the most vulnerable farmers can get higher matching grant. Challenge in understanding and implementation of individual activities by a few project staff due to changes in project guidelines was also reported. To address this, it is suggested to conduct six-monthly refresher trainings for the project staff to update them on the revisions in the guidelines. High workload of project staff is reported as a challenge as in previous CM rounds. AAs on average have 5 villages (range 2-12) and CAs have 10 villages (range 6 -15) under their jurisdiction, resulting in delay in approvals, spot verifications and processing of applications. As a solution, it is suggested to have guidelines and limit on the area of CAs/AAs based on criteria like population of the village and accessibility of the villages. Incentives and appreciation should be provided to project staff handling high number of villages. Also, during the expert visits it was observed that many farmers are not aware of the amount of water to be used for irrigation for each crop. It is suggested that awareness and capacity of the farmers should be built on this subject through FFS and other relevant platforms. Challenges in online application through DBT portal are still reported with difficulty in application in places with poor internet connection and lack of options to correct the application in case wrong documents are uploaded by mistake. As a solution it is suggested to strengthen the offline module and have provisions in the application to re-upload documents in case of errors and uploading of incorrect documents. It was also shared that some project activities like farm pond, drip irrigation, motor, goatery have been closed currently though farmers are still interested to apply for them. It is suggested that the project should reassess if any of the closed activities can be resumed. There is also a need felt to build the capacity of Krushi Tais to support AA and CA in application assistance to the farmers. A couple of activities were suggested to be added by beneficiaries and stakeholders under individual benefits which

include matching grant for -developing storage facilities, purchasing farm equipments, solar pumps, farm sheds and micro processing units.

For the FFS component, though the outreach of FFS sessions has improved with time, there is still scope to increase it further, especially for women farmers. Issue of low attendance in FFS sessions has been amplified because of COVID-19. As a solution more efforts are required by the project staff and VCRMC members to motivate farmers to attend FFS sessions regularly while ensuring COVID related safety protocols are followed. Also, incentives should be provided to FFS participants in the form of refreshments and agri-inputs at subsidized costs (if feasible). FFS sessions for women farmers should be kept in afternoon or other suitable times to ensure their higher attendance. Progressive farmers adopting climate resilient technologies through FFS and experiencing increased income should be acknowledged and rewarded by the project, so that it would motivate other farmers to attend FFS and adopt climate resilient technologies.

As NRM community works were initiated in only three of the sampled PoCRA villages, it is suggested that more efforts should be put by the project to expedite the implementation of community works. However, due to NRM based programmes and schemes of the state government, prior to PoCRA, VCRMCs of some sampled villages reported that they could not identify new community work but there is a need for maintenance and repair of previous works. Workshops with key stakeholders should be conducted to identify the key impediments and practical solutions. Accordingly, realistic targets and timelines should be set for their implementation. Limited understanding of VCRMC members in their role of planning and implementation of community works is also observed to be a key challenge. As a solution it is suggested that VCRMCs should be provided focused training on community NRM works and how to ensure their timely implementation. Further, many farmers are skeptical in allowing community works to be conducted on or near their agriculture land. To address this, the farmers need to be sensitized about the benefits of NRM structures in increasing their water availability and income. Farmer representatives should be taken for exposure visits to showcase them how NRM works have benefitted the nearby farmers. Also, a few cases of disputes between the CFP applicants over the use of water from the farm pond and over logistical arrangements for distributing water were also observed. As a solution, it is suggested that the project staff should help to ensure that CFP applicants have a prior understanding related to water distribution before going ahead with the implementation of the activity.

The key challenge of availing bank loan by FPOs was still observed amongst PoCRA supported FPOs. As a solution it is suggested that technical support (from expert agencies) should be provided to the applicant FPOs so that they can develop bankable business proposals and have the required documentation to make their proposals acceptable by the banks. Lack of availability of working capital to run their operations is another key challenge reported by the FPOs. As a solution, it is suggested that FPO representatives should be provided training (with PoCRA's support) to manage FPO operations. The project should also provide facilitation support to access bank loans and for enhancing the member base and shared capital of the FPO. Also, the PoCRA supported FPOs were observed to have limited engagement in value addition. The project should provide technical support to the applicant FPOs in shortlisting and implementing value addition and processing activities.

It is also suggested that one must ensure that honorarium of Host farmers and Krushi Tai's should be paid on time to keep them motivated. Impetus also needs to be given on capacity building of Krushi Tais so that they are able to discharge their duty effectively. Further, follow up training for VCRMC members (specifically women VCRMC members) focused on record keeping, financial transactions, fund utilization and on climate resilient agriculture practices and their benefits should be organized.

Activities and benefits under PoCRA have certainly helped the beneficiary farmers in Marathwada region by improving their access to water for irrigation, improving their climate resilience and further increasing their income. Addressing the above-mentioned challenges can further enable the project in achieving its intended objectives.

1. About the Study

1.1. Project Background

Agriculture is the primary source of livelihood in the state of Maharashtra with 22.6 million hectares of land under cultivation (gross cropped area)¹. About 84% of the total area under agriculture in the state is rainfed and is dependent only on monsoon². 49% of the landholdings in the state falls in the marginal category, with less than one hectare of land. Smaller land holdings and heavy dependence on monsoon for irrigation make agriculture vulnerable to climate change impacts. In addition to climate vulnerabilities, farmers face high production and market risks. High production costs, low productivity and water scarcities at the production end and unreliable price of produce due to limited market reach are common challenges faced by farmers across the state.³

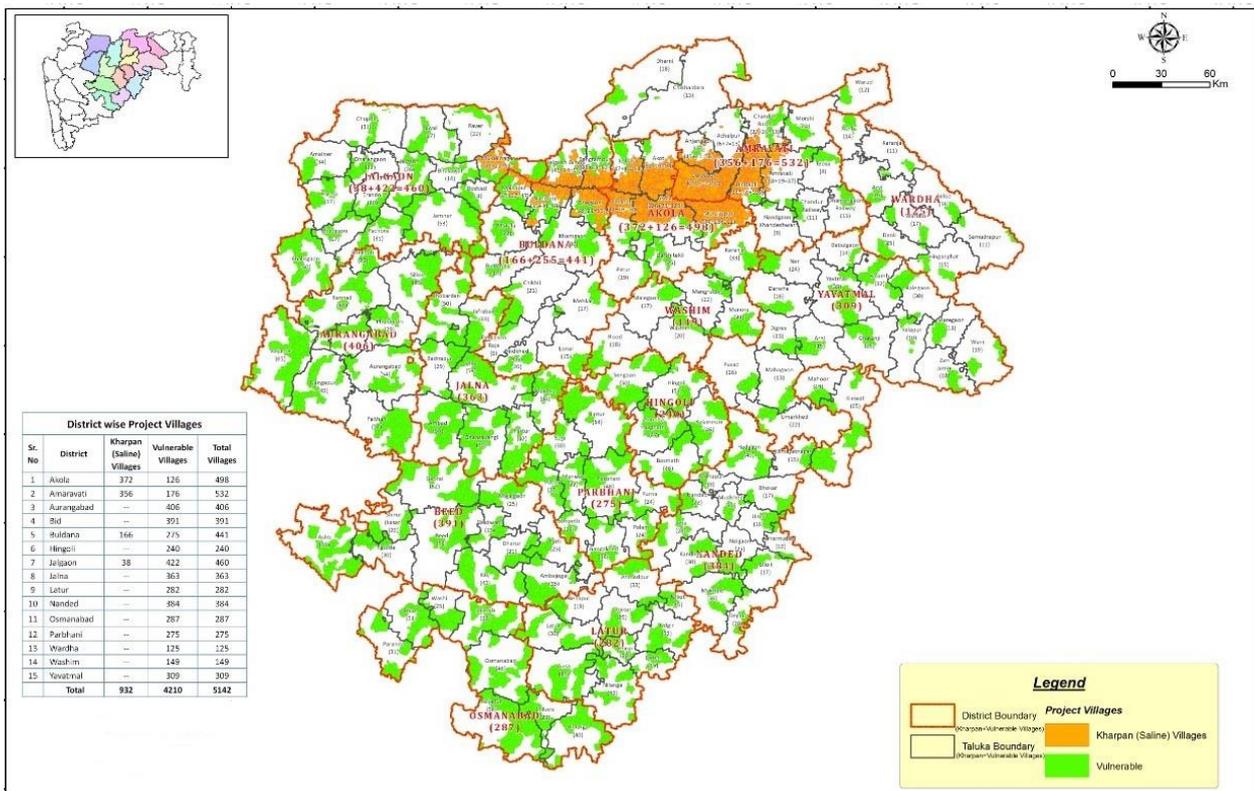


Figure 1: Nanaji Deshmukh Krishi Sanjivani Prakalp (PoCRA) project area and villages

In response to the above-mentioned challenges, the Government of Maharashtra, in partnership with the World Bank, conceptualized the Project on Climate Resilient Agriculture (PoCRA) for 5,142 villages in 15 districts of Maharashtra⁴. This project attempts to bring transformational changes in the agriculture sector by scaling-up climate-smart technologies and practices at the farm and (micro) watershed level. The project aims to contribute to drought-proofing and management of lands in states' most drought and salinity/sodicity-affected villages. The project has been implemented in 15 districts in Maharashtra which include 8 districts of Marathwada region (Aurangabad, Nanded, Latur, Parbhani, Jalna, Beed, Hingoli, Osmanabad), 6 districts of Vidarbha region (Akola, Amravati, Buldana, Yavatmal, Washim, Wardha), Jalgaon district of Nashik Division and approximately 932 salinity affected villages in the basin of Purna river spread across Akola, Amravati,

¹ Source: PoCRA Project Implementation Plan (PIP) document

² Source: ibid

³ Source: PoCRA Project Appraisal document

⁴ Source: ibid

Buldana and Jalgaon districts⁵. Figure 1 highlights the villages where the project is being implemented. This project will be implemented six years from 2018-2024⁶.

The Project Development Objective (PDO) of PoCRA is to enhance climate-resilience and profitability of smallholder farming systems in selected districts of Maharashtra⁷. The project is built around a comprehensive, multi-sector approach that focuses specifically on building climate resilience in agriculture through scaling up tested technologies and practices. The strategic overview, thematic linkages and expected achievements of the project are highlighted in the below schematic.

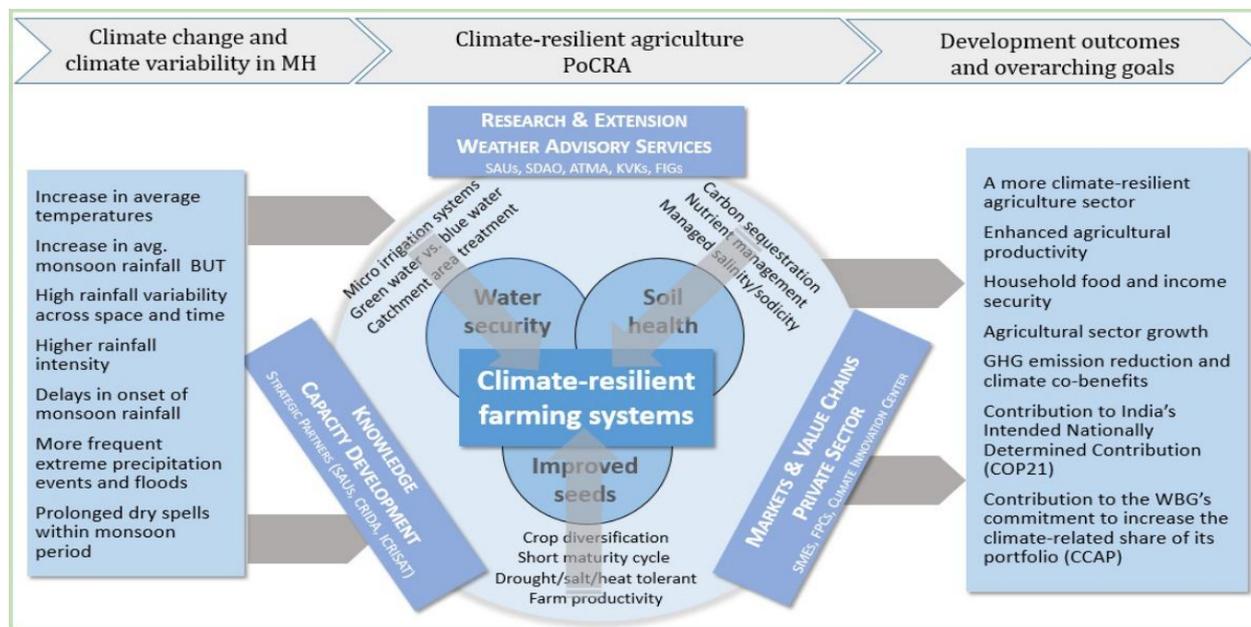


Figure 2: PoCRA strategic overview, thematic linkages and expected achievements

The overall project vision is to contribute towards three critical impact areas: a) Water Security b) Soil Health c) Farm Productivity & Crop Diversification. The need for intervention across these three areas in the region is evident from the agro-climatic attributes of the area. Out of the 15 districts where PoCRA is implemented, the current assignment is conducted in eight districts of Marathwada region, covering 347 mini watershed clusters. The project is being implemented in a phased manner reaching out to 70 clusters in the year I, 175 clusters in year II and 102 clusters in year III.

1.2. Overview of the Study Area

About 40% of the Maharashtra State falls under Drought Prone Area, with less than 750 mm of the annual average rainfall⁸. In Maharashtra, Marathwada region specifically has been floundering under drought condition since 2012 with the highest rainfall deficit in the country at 48% in 2014. The Marathwada region consists of 8 districts: Aurangabad, Beed, Latur, Osmanabad, Parbhani, Jalna, Nanded and Hingoli.

The region has a population of about 1.87 Crores and a geographical area of 64.5 Thousand sq. km⁹. Agriculture is the major source of income generation for over 64% of the state's population. However, given harsh weather conditions, the region's agricultural system has been depleting significantly. Jowar, Bajra, along with other Kharif crops, were completely wiped out in 2012 when monsoon failed (Kumar, Mail Online India, 2013). Jalna, famous for being the biggest producer of sweet lime, had been the worst hit in the drought. The

⁵ Source: PoCRA- Sambodhi Terms of Reference

⁶ Source: ibid

⁷ Source: PoCRA Project Appraisal document

⁸ Hydrology and Water Resources Information System for India, National Institute of Hydrology, Roorkee http://nihroorkee.gov.in/rbis/India_Information/draught.htm

⁹ Census 2011, http://shodhganga.inflibnet.ac.in/bitstream/10603/152935/1/11_chapter%204.pdf

anticipated impact of climatic change as well as climate variability presumably lead to increased pressure on already scarce water resources.

Starting in 2014, the Jalyukt Shivar Abhiyaan¹⁰, one of the state government schemes started its intervention to make the state drought-proof by 2019. It aimed to make 5,000 villages free of water scarcity every year through deepening and widening of streams, construction of cement and earthen stop dams, work on nullahs and digging of farm ponds. A total of 158,089 water management works were to be carried out under this project, of which 51,660 have been completed till April 2018. This demonstrates that there is a need for more concentrated efforts for mitigation and adaptation to reduce the vulnerability of agriculture and making it more resilient.

Within this context, there is an urgent need for the farmers to enhance their resilience to the threats of climate variability. The fact that most of the farmers in the project region are small and marginal¹¹, their adaptive capacity is very limited hence economically viable and culturally acceptable adaptation techniques need to be developed and implemented. The Government of Maharashtra has realized the implications of building climate resilience in the agricultural sector and has developed a drought-proofing and climate-resilient strategy as a long-term and sustainable measure to address the likely impacts of climate change. With this backdrop, the Project on Climate Resilient Agriculture (PoCRA) has been formulated by the Government of Maharashtra with support from The World Bank. This is the first large scale climate-resilient agriculture project in India which aims to enhance climate-resilience in agricultural production systems through a series of activities at the farm level.

2. Objectives of Concurrent Monitoring of PoCRA

Along with evaluating the impact of PoCRA, the other key objective of the assignment is to conduct concurrent progress monitoring of PoCRA for its implementation in Marathwada Region. The objective of concurrent monitoring is:

- To assess the progress of the project on key performance parameters.
- To find out which are the key components of the intervention that are effective, what are the process bottlenecks in the implementation of the project and to get feedback of the key stakeholders on the implementation so that it can be improved during the project implementation.
- To validate the veracity of the MIS data by validating the information in the MIS progress reports.

¹⁰ Government of Maharashtra had launched a water conservation scheme named **Jalyukt Shivar Abhiyan in 2016** to make Maharashtra a drought-free state by 2019. The programme aimed to make 5000 villages free of water scarcity every year. The key aim of Jalyukta Shivar Abhiyan was to establish belief in a farmer that “every drop of rainwater is owned by me and it should percolate in my land”.

¹¹ **'Marginal Farmer'** means a **farmer** cultivating (as owner or tenant or share cropper) agricultural land up to 1 hectare (2.5 acres). **'Small Farmer'** means a **farmer** cultivating (as owner or tenant or share cropper) agricultural land of more than 1 hectare and up to 2 hectares (5 acres)

3. Overarching Monitoring Framework

The framework below presents the overarching approach that has been adopted for the concurrent monitoring of PoCRA:

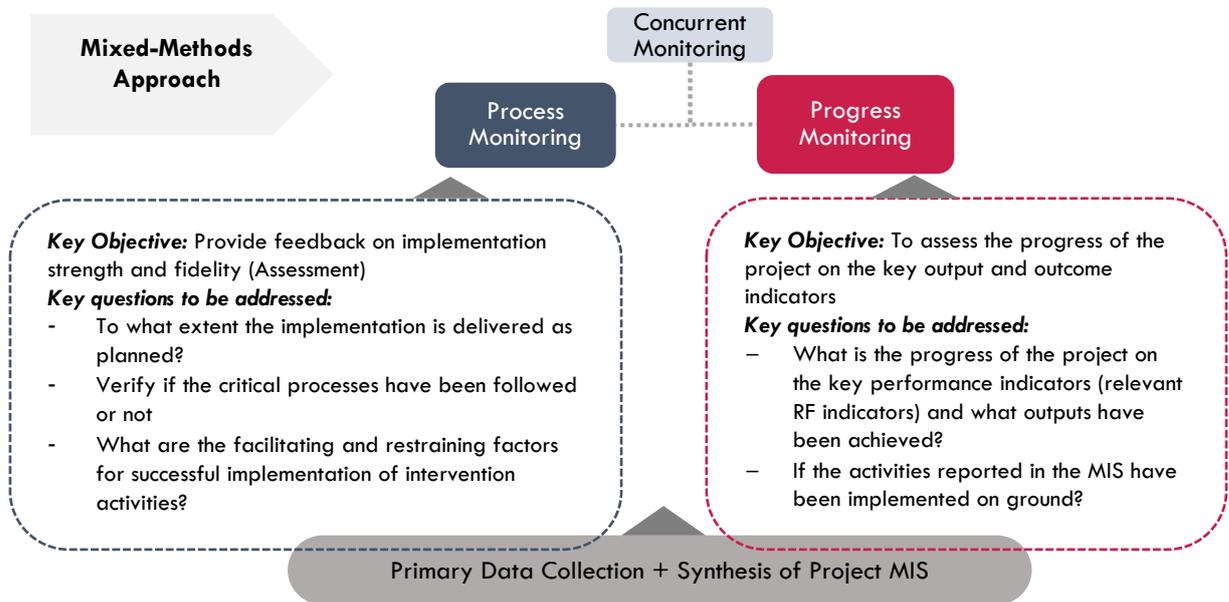


Figure 3: Overarching methodology

4. Methodology

The steps in the approach for concurrent monitoring are as follows.

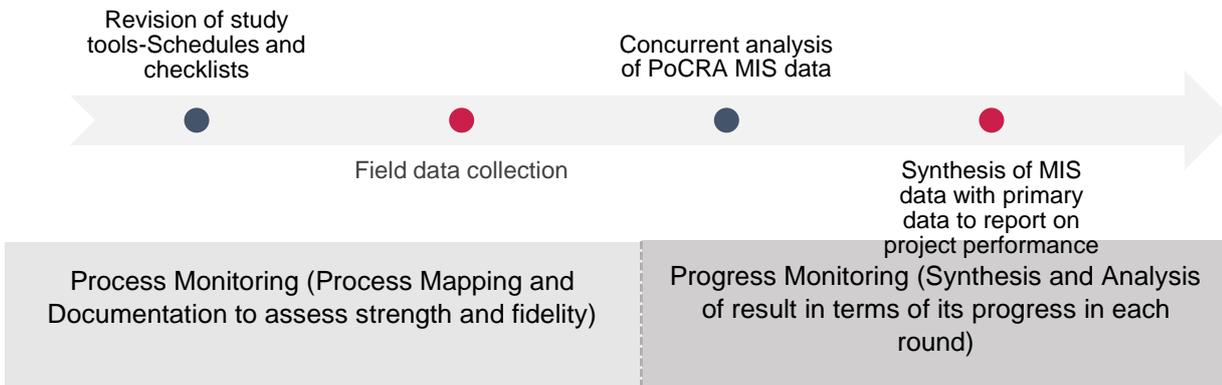


Figure 4: Concurrent monitoring methodology steps

A. Sample selection and process listing

ToR provides the project development objectives along with the list of activities planned to be conducted within the project areas. Given the phased approach to implementation, it is expected that the activities will be carried out in phases, across districts and clusters. Therefore, as a first step, the sample for concurrent monitoring was selected (in line with the proposed sampling methodology). Subsequently, the processes that are being implemented and would need to be monitored were listed. Discussion with PMU team and secondary literature review of relevant documents was done to understand these key processes.

Also, during the process listing, Sambodhi interacted with PMU and other relevant stakeholders to list and understand the ongoing schemes or projects of similar nature in the comparison areas so that a premise for

assessment could be built. Based on the processes to be monitored which were identified during previous CM Rounds and the updates in the programme, the study tools i.e. schedules, and checklists were modified in Round IV, as also mentioned below.

Structured Interview Schedule	Interview schedule was developed for the respondent survey and include questions relating to the access to intervention, processes, respondent’s participation, perception, and feedback on activities. As part of the beneficiary survey, physical observation of the in-progress and completed activities will be done.
Key-informant Interview Schedule	The project activities are being carried out at various levels, including individuals, community (village and cluster) as well as district level. Key informant interviews will be conducted with key stakeholders involved in the implementation of the project to get their feedback on project implementation and further improvement of the program.
Focus Group discussion schedule	Focus group discussions will be done with Village Climate Resilience Management Committee (VCRMC) members and Project specialists of particular districts to investigate the current status of implementation of the project and get feedback on project implementation and further improvement of the program.

The research tools developed in Phase I will be revised based on the suggestions of the PMU team and based on the project requirement. The primary data will be collected based on revised research tools.

In addition to the structured surveys, interviews and focus group discussions with key stakeholders, field visit by experts are also conducted as part of concurrent monitoring. The primary focus of the expert field visit is to provide insights related to the on-ground situation related to agriculture and PoCRA implementation and accordingly highlight the key challenges and suggest solutions for project improvement.

B. Concurrent Analysis of PoCRA MIS Data

For monitoring the progress of the project, the MIS data which reports on the progress of activities and outputs has been analyzed to see if the project implementation is going on as per its planned pace. The project performance is assessed on the key performance indicators including the results framework indicators which need to be assessed on a semi-annual or annual basis. For this, queries or the relevant indicators on which data is required have been identified and the PMU MIS team and other relevant stakeholders were contacted to obtain this data. Component and geography wise analysis has been done to identify the leaders and laggards in the project implementation.

C. Synthesis of MIS data with Primary data to report on project performance

The MIS data on the project progress and the primary data on the quality and feedback of implementation (from stakeholder interviews and beneficiary interviews) is synthesized to report on the status of implementation of the project at that point of time. The concurrent monitoring reports highlights the activities/processes for which the implementation quality needs to be improved. It also aims to identify the challenges or bottlenecks in implementation. The overall objective of the bi-annual concurrent monitoring reports is to provide feedback to the PMU on the status of project implementation and provide recommendations for course correction.

4.1. Sampling Methodology

The sampling size and methodology adopted for the current round of CM has been explained in this section. Overarchingly, the same methodology has been adopted as was adopted during the previous rounds of concurrent monitoring. In line with the ToR and the proposed methodology, concurrent monitoring has been conducted in both project and comparison areas. The ratio for the project to comparison remains at 2:1 (as given in the ToR). The concurrent monitoring exercise intends to cover all 347 clusters across eight districts over six years. Twelve concurrent monitoring rounds would be conducted over six years i.e. two in a year. Given the

phased approach to implementation, the implementation will be ongoing in 70 clusters in the year I, 175 in year II and 102 in year III. Sampling strategy for concurrent monitoring is proposed likewise. Number of clusters to be visited in each district in each round has been selected proportionately. The distribution of the beneficiary sample across districts and monitoring rounds is presented in the table below. A total of 30 project clusters and 15 comparison clusters have been covered in Concurrent monitoring Round IV. The list of sampled clusters and villages has been provided in the Annexure section.

Table 1: Sample distribution

Sl. No	Districts	Round wise clusters to be covered												Total
		1	2	3	4	5	6	7	8	9	10	11	12	
1	Aurangabad	3	5	5	5	5	5	5	5	5	5	5	5	58
2	Bid	3	4	3	3	3	3	3	3	3	3	3	3	37
3	Jalna	2	2	5	5	5	5	5	5	5	5	5	5	54
4	Latur	3	3	4	4	4	4	4	4	3	3	3	3	42
5	Osmanabad	3	5	5	5	5	5	5	5	5	5	5	5	58
6	Nanded	2	2	3	3	3	3	3	3	3	3	3	3	34
7	Parbhani	2	3	3	3	3	3	3	3	4	4	4	4	39
8	Hingoli	2	3	2	2	2	2	2	2	2	2	2	2	25
Total Project clusters		20	27	30	30	30	30	30	30	30	30	30	30	347
Total Comparison clusters		10	14	15	15	15	15	15	15	15	15	15	15	174
Total Project sample		300	405	450	450	450	450	450	450	450	450	450	450	5205
Total comparison sample		150	210	225	225	225	225	225	225	225	225	225	225	2610
Total beneficiary sample per round		450	615	675	675	675	675	675	675	675	675	675	675	7815

The steps in sampling methodology that have been adopted for concurrent monitoring Round IV, have been detailed below:

Selection of Project Clusters

30 clusters were sampled for Round 4 of concurrent monitoring. These 30 clusters were sampled proportionately from the 8 project districts, as presented above in the beneficiary sample distribution table (Table 1). The clusters required to be sampled from each district were sampled randomly from the total clusters in the district, in which the project has been implemented in Phase I and Phase II (and excluding the clusters which have already been covered in the previous CM Rounds). Following this approach, the 30 clusters for Round 4 of concurrent monitoring were selected.

Selection of comparison cluster and villages

15 comparison clusters are selected for Round 4 of concurrent monitoring. Based on the overall index score, the non-PoCRA watershed clusters are selected after matching them with PoCRA clusters based on climate vulnerability index score. It is ensured that a district-wise 2:1 proportion is maintained while selecting comparison clusters. The steps followed to identify the comparison arm clusters have been detailed below:

Step 1: The number of comparison clusters to be sampled per district is decided while maintaining 2:1 ratio in project and comparison clusters per district.

Step 2: The comparison clusters in each district which had the closest climate vulnerability index score to the sampled project clusters in the corresponding district are selected.

Step 3: A comparable non-PoCRA cluster is identified for every sampled PoCRA cluster.

Step 4: Finally, 15 clusters are randomly selected from these 30 clusters, while ensuring that the district wise proportion of comparison clusters are maintained.

Selection of Beneficiaries

As mentioned in the ToR, 15 beneficiaries were targeted to be surveyed from each sampled cluster/village. Out of these, nine beneficiaries of individual interventions (e.g., individual drip irrigation systems, individual farm ponds) were sampled. Out of these nine beneficiaries, a) two beneficiaries were applicants of Direct Benefit Transfer (DBT) who have at least received pre sanction, b) three beneficiaries who have received DBT disbursement, c) one beneficiary was chosen from the list of host farmers from farmer field school and d) three beneficiaries (one female and two males) were chosen from the list of guest farmers who had participated in the farmer field schools. These five DBT beneficiaries and four Farmer Field Schools (FFS) beneficiaries were randomly chosen from the list of beneficiaries in the sampled village. In the comparison villages, list of beneficiaries (receiving benefits similar to that of PoCRA beneficiaries) was identified with help of the local agriculture assistant or Krushi Mitra or with the help of gram panchayat officials. Further the beneficiaries for the survey are chosen randomly from this list. Table 2 summarizes the summary of selected beneficiary categories. In case a sampled beneficiary was not available on the day of the survey, a replacement for the corresponding sample was identified randomly to ensure adequate sample coverage.

Community beneficiaries are classified in four categories 1) beneficiaries for natural resource management (NRM) activities 2) community farm pond beneficiaries 3) members of Farmer Producers Company/ Farmer Producers Organisations (FPCs/FPOs) getting project support 4) members of SHGs getting project support. The sample frame of Community Natural Resource Management (NRM) works implemented, community farm ponds developed, Self Help Groups (SHGs) supported and FPCs supported were taken from the PMU team. Beneficiaries or potential beneficiaries living in the catchment area of the NRM works community intervention were identified with the support of village-level functionaries including Cluster Assistant, Agriculture Assistant and VCRMC members. The final coverage of the sample was based on the status of execution of individual and community activities in the sampled villages. In case of unavailability of the required number of beneficiaries of the specific category, the maximum available number of beneficiaries were surveyed.

Table 2: Total planned quantitative sample with respect to the category

Activity Category	Activity	Sample per Village	Total Sample (Project)	Total Sample (Comparison)	Remarks
Individual Beneficiaries		9	270	135	405
	DBT Matching Grant beneficiaries				
	Pre sanction received and following stages	2			
	Beneficiaries receiving disbursement	3			
	FFS beneficiaries				
	Host Farmer (HF)	1			2 male, 1 female (wherever available)
	Guest Farmer (GF)	3			GF were sampled
		6	180	90	270
Community Beneficiaries	Beneficiaries of NRM activities				3 sampled villages have NRM works, a sample of 10 from each was targeted.
	Community farm pond (CFP) beneficiaries				CFPs work has been initiated in 16 sampled villages. Upto 5 beneficiaries (as per availability) were taken from each village.

Activity Category	Activity	Sample per Village	Total Sample (Project)	Total Sample (Comparison)	Remarks
	FPC members				4 members each from 14 sampled FPCs – 2 from each district (excluding Prabhani district where no FPO has been funded)
	SHG members				5 members each from 8 SHGs (one in each district)
Target Sample		15	450	225	675

Apart from the quantitative interview, qualitative interviews have been conducted with the key project stakeholders to get their feedback on the current situation project implementation. The details of the qualitative interview conducted are detailed in Table 3 below.

Table 3: Planned qualitative sample

Target Respondent	Sample	Enquiry Technique	Remarks
VCRMC Representatives	1 discussion with VCRMC representatives per cluster (in project clusters), up to 30	– Discussion with VCRMC Representatives	Investigation on all project activities implemented in their village (capacity building, implementation, challenges, and suggestions for course correction)
FPC/FPO Representatives	Two FPO/PFC representatives interviews per district, up to 16	– IDI with FPC/FPO Representatives	Investigation on support from PoCRA (support received, process bottlenecks, and suggestions for course correction)
Project Specialists (PS Agriculture, PS Agribusiness, PS HRD) PoCRA in districts	Discussion with Project Specialist in all eight project districts	– Discussion with Project Specialists (with PSs implementing PoCRA at district level)	Investigation on all project activities implemented in their district (implementation, challenges, and suggestions for course correction)
SDAO	IDI with SDAO's of all sub-divisions sampled for concurrent monitoring	– IDI with SDAO	Investigation on all project activities implemented in their district (implementation, challenges, and suggestions for course correction).
Agriculture Assistant	IDI with Agriculture assistants of all sampled villages (in project clusters), up to 30	– IDI with AA	Investigation on all project activities implemented at village level (implementation, challenges, and suggestions for course correction)
Cluster Assistant	IDI with Cluster assistants of all sampled villages (in project clusters), up to 30	– IDI with CA	Investigation on all project activities implemented at village level (implementation, challenges, and suggestions for course correction)
Krushi Tai	IDI with Krushi Tai's of all sampled villages (in project clusters), up to 30	– IDI with Krushi Tai	Feedback on project-related activities implemented by Krushi Tai)
FFS Facilitator	IDI with FFS facilitators of all sampled villages (in project clusters), up to 30	– IDI with FFS Facilitator	Investigation on implementation of FFS at village level (implementation, challenges, and suggestions for course correction)
FFS Coordinator	IDI with FFS Coordinators, of all sub-divisions sampled for concurrent monitoring	– IDI with FFS Coordinator	Investigation on implementation of FFS in their district (implementation, challenges, and suggestions for course correction)

Target Respondent	Sample	Enquiry Technique	Remarks
Agriculture Supervisor	IDI with Agriculture Supervisors of sampled project villages	– IDI with Agriculture Supervisor	Investigation on project activities part of the scope of the Agriculture Supervisor (implementation, challenges, and suggestions for course correction)
Taluka Agriculture Officer (TAO)	IDI with Taluka Agriculture Officers of sampled project villages	– IDI with TAO	Investigation on project activities part of the scope of the TAO (implementation, challenges, and suggestions for course correction)
District Superintending Agriculture Officer/ Project Director, Agriculture Technology Management Agency (DSAO/PD ATMA)	IDI with DSAO and PD ATMA in all eight project districts	IDI with DSAO/PD ATMA	Investigation on all project activities implemented in their district (implementation, challenges, and suggestions for course correction)

Key components and process covered under PoCRA

The key project components/implementation processes which were observed during the current concurrent monitoring Round have been mentioned below:

1. Individual Farmer Matching Grant (DBT)
2. Farmer Field School
3. Community Interventions (NRM works and Community Farm Ponds)
4. Farmer Producer Organisation/ Farmer Producer Companies
5. Support to SHGs
6. VCRMC Functioning
7. Krushi Tai's functioning

5. Sample Covered for Process Monitoring

5.1 Quantitative Data

The sample was targeted based on the above-mentioned sampling approach. As mentioned above, the actual sample covered was dependent upon the implementation status of project interventions and the availability of beneficiaries in the sampled villages. A total of 445 respondents in the project and 230 respondents in Comparison villages were covered. (Table 4) Of the 445 respondents covered in the project area, 266 respondents were for individual interventions and 179 for community interventions. In the comparison area, a total of 230 respondents were covered with 142 beneficiaries from individual benefits and 88 from community benefits. (Table 5)

Table 4: District-wise quantitative sample coverage in project and comparison villages

District	Project	Comparison
Aurangabad	85	46
Beed	40	15
Hingoli	43	15
Jalna	83	32
Nanded	39	30
Osmanabad	70	45
Parbhani	36	15
Total	445	230

Beneficiaries from project area and comparison area

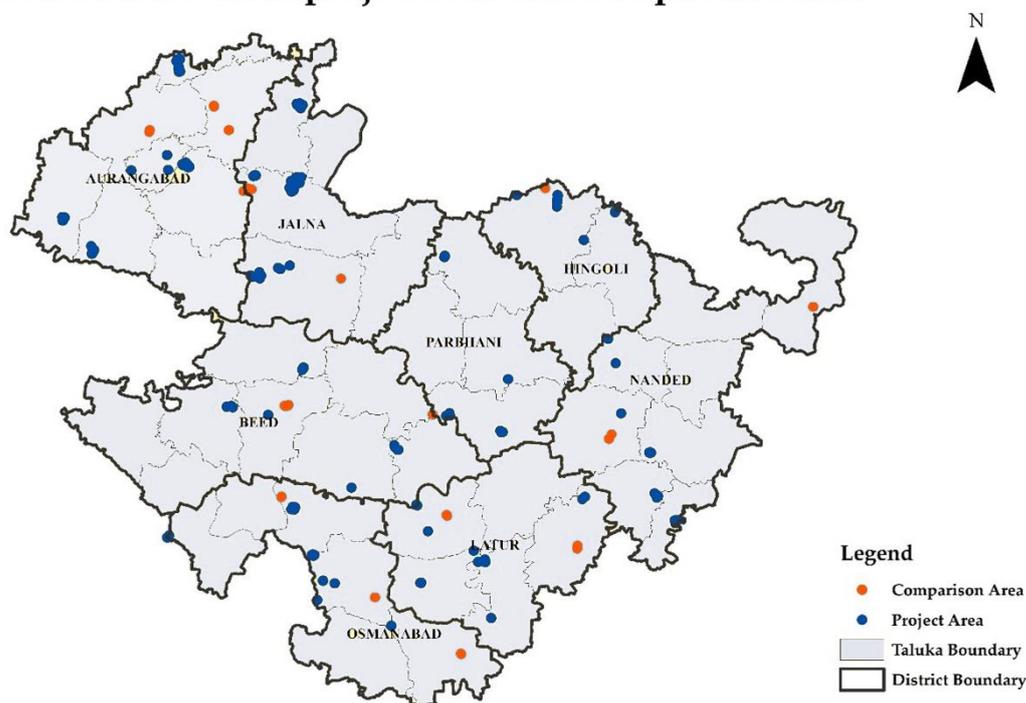


Table 5: Category wise quantitative sample coverage in project and comparison villages

District	Project	Comparison	Total
Individual	266	142	408
DBT (pre-sanction approval not received)	60	20	80
DBT (pre sanction approval received)	90	116	206
FFS- Host Farmer	29	2	31
FFS- Guest Farmer	87	4	91
Community	179	88	267
NRM Community works	32	75	107
Community Farm Pond	51	13	64
FPC Member	56	-	56
SHG Member	40	-	40
Total	445	230	675

In Fajalpur village, Aurangabad District, no FFS host or guest farmer was found. In Undri PD village two DBT beneficiaries with pre-sanction approval were surveyed instead of three , since there were only two beneficiaries in the sample from this village.

5.2 Qualitative Data

As detailed above key project stakeholders from the sampled area were reached out for qualitative interviews. Table 6 presents the sample which was covered. The sample shortfall in a few cases was due to the unavailability of the stakeholders for the survey even after two follow-ups.

Table 6: Qualitative respondents

S.no.	Research Tool	Sample Covered
1	FGD with VCRMC Members	28
2	IDI with AA	29
3	IDI with CA	28
4	IDI with FPO representatives	14
5	IDI with TAO	23
6	IDI with AS	25
7	IDI with SDAO	17
8	FGDs with PS	8
9	IDI with DSAO/PD ATMA	6
10	IDI with FFS Facilitator	29
11	IDI with FFS Coordinator	17
12	IDI with Krushi Tai	23

Expert Field Visits

As detailed above, to get insights on project implementation, expert field observation visits were conducted. The Agronomy expert, Agri business expert and environment expert had conducted expert visits along with field observation visits from the research team members from Sambodhi. Agribusiness expert had also telephonically interacted with different FPOs to get their feedback on the project implementation.

Unfortunately, due to the spread of COVID-19 pandemic, few of the consortium’s experts were not able to travel to the field, given the health and safety risks (in line with government and health ministry recommendations) as they were more than 55 years in age and/or had co-morbidities.

6. Findings

6.1 Awareness and information review about PoCRA amongst respondents

As one of the key objectives of concurrent monitoring, the study aims to gauge the level of awareness of the beneficiaries of the different benefits under PoCRA and other schemes, sources of information and if they received and adopted any of the agricultural technologies being promoted.

Source of Information The respondents were asked of the people or groups through whom they came to know about PoCRA in project areas and about other projects with similar benefits in the comparison area.

In case of project villages, the most prominent source of information was project staff (31%) - which includes Agriculture Assistant, Cluster Assistant, FFS facilitator, Project specialist, Krushi Tai etc.; gram sabha meeting (29%) and VCRMC committee members (11%).

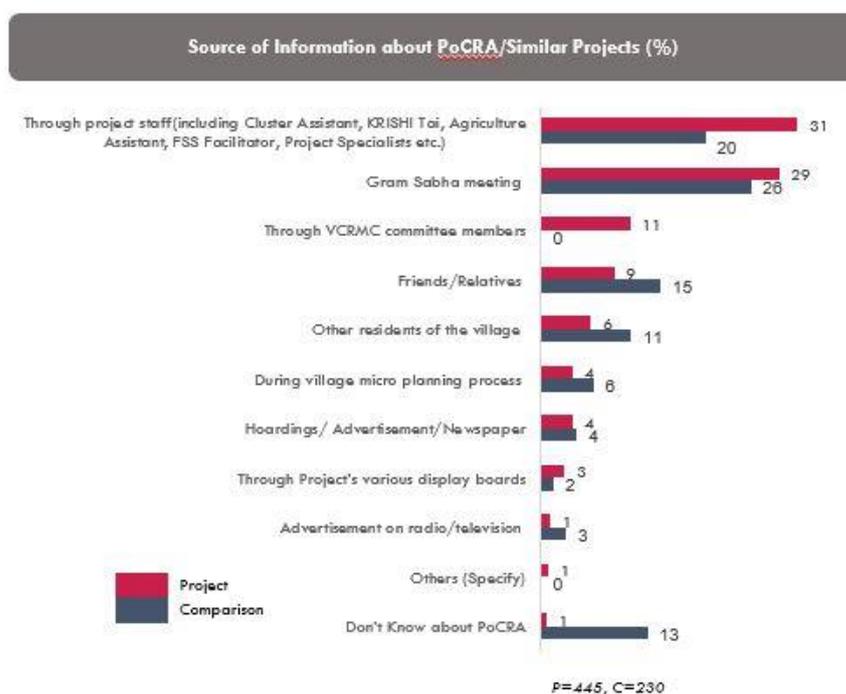


Figure 5: Source of Information about PoCRA

In case of comparison villages, information was mostly sourced from gram sabha meeting (26%), through project staff (20%), friends and relatives (15%) and other residents in the village (11%). Other sources include agriculture department, FPOs and PoCRA YouTube channel. It can be analyzed that higher percentage of beneficiaries in comparison villages rely on informal sources like friends/family and other residents of the village.

Awareness on steps of DBT:

When project respondents were asked of the various steps of the DBT, maximum awareness was observed for steps including registration on DBT portal (77%), application for matching grant on DBT portal (66%), verification of application by cluster assistant (55%), approval by VCRMC committee (53%) and spot verification by agriculture assistant (51%). The other steps from approval of the application by SDAO to transfer of matching grant to beneficiary account were also known to more than 30% of the respondent. It has also been observed that some beneficiaries who have received matching grant were also not aware of the exact steps in between pre sanction and transfer of matching grant.

Awareness on benefits from PoCRA: The maximum awareness was observed for the matching grant for purchase of water pumps/pipes and drip irrigation system (96%), construction of farm pond with inlet and outlet (77%), matching grant for construction of shade net house, poly house, polytunnels (57%) and plantation of fruit trees on boundaries of farmlands & horticulture plantations (50%). There was limited awareness of the community interventions, FPO/SHG support interventions and demonstration of climate resilient practices as part of FFS which should be further promulgated by the project stakeholders.

An improved awareness of the benefits/activities under PoCRA have been observed. The increase in awareness has been seen for activities including farm pond related activities (59% in CMII to 77% in CMIV), construction of shade-net, poly houses (26% in CMII to 57% in CMIV), plantation of fruit trees (19% in CMII to 50% in CMIV), construction of artificial recharge of open well (11% in CM II to 24% in CM

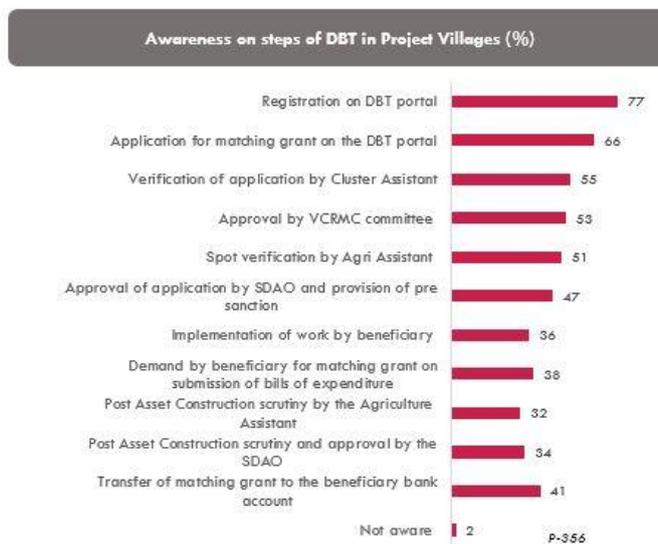


Figure 6: Awareness on steps of DBT in Project Villages (%)



Figure 7: Awareness of benefits of PoCRA

IV) and drip & sprinkler irrigation (85% in CM II to 96% in CM IV).

This chapter presents the findings from the primary survey for the fourth round of Concurrent Monitoring. The findings from the concurrent monitoring of different project components like Individual Farmer Matching Grant, Community interventions, FFS etc are presented below in different sub chapters.

6.2 Individual Farmer Matching Grant

This section presents the findings from the concurrent monitoring of the Individual Farmer Matching Grant component. The purpose of this section is to review the process of DBT application, various categories of project benefit available and experience of project beneficiaries in undertaking the implementation of the project activity.

Review of Benefits Applied and Application Status

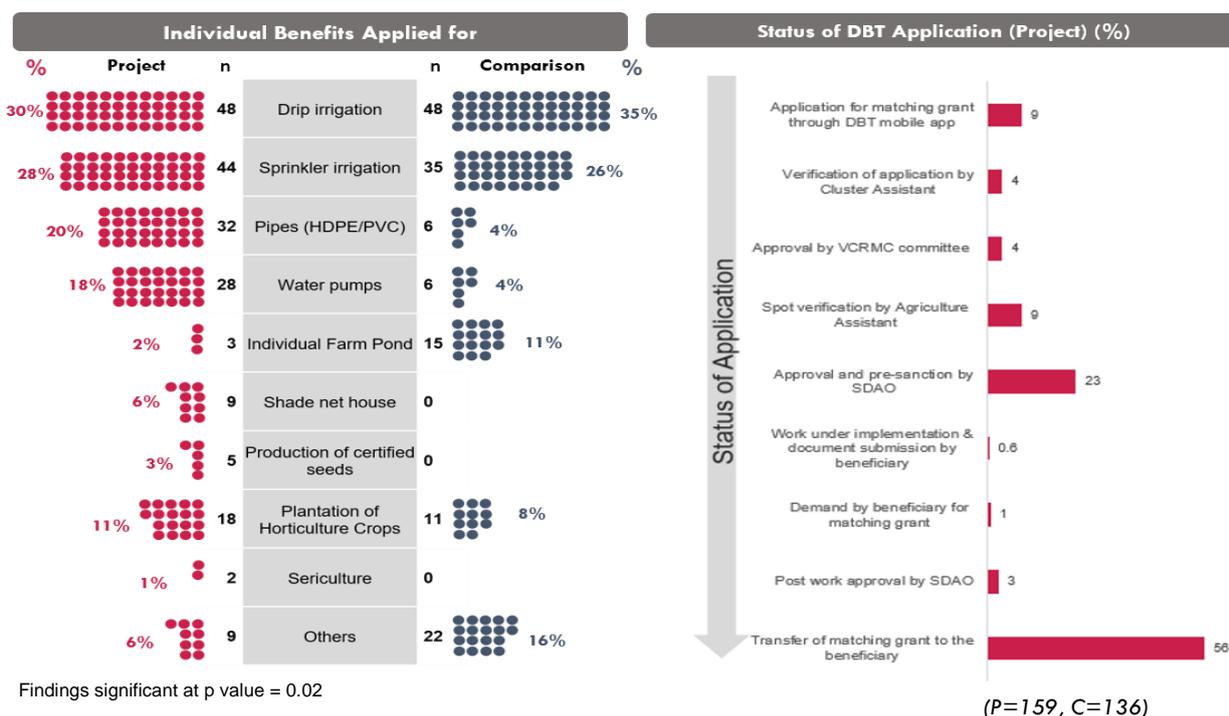


Figure 8: Individual benefits applied for and status of dbt application

Sampled beneficiaries interviewed in Individual DBT category were majorly those that have benefited in six categories (as presented in the above figure): Drip irrigation, Sprinkler irrigation, HDPE/PVC pipes, Water pumps, Plantation of horticulture crops and Individual farm ponds.

Individual activity sample suggest that horticulture activity has gained demand as higher beneficiaries of this activity are observed in the sample during CMIV as compared to previous rounds. It is considered to be an activity with a high amount of initial care but assured and good income over the medium and long run.

There were few cases from project benefit category of Vermicompost unit (1 case), Polyhouse (1 case), Plantation of agroforestry (1 case), Construction of open dug well (1 case), Backyard Poultry (1 case), Small ruminants (1 case), Inland fisheries (1 case) and FFS Host farmer assistance (1 case) which have been put under Others. The “others” category under Comparison beneficiaries included Dal machine (1 case), Onion storage unit (4 cases), Rotameter (2 cases), Seed sowing machine (1 case), solar pump (2 cases), thresher (1 case), and tractor provisions (2 cases).

The DBT application status is in line with the application status as per which the beneficiaries have been sampled. In terms of the status of DBT application, 49% of the cases were at the stage before the implementation of work, i.e. in the application, verification by Cluster and Agriculture Assistant; and approval

by VCRMC and SDAO. There were 60% of the cases where work has been completed and the applicant is at later stages of the process including demand for matching grant has been made, post-work approval and transfer of matching grant. There is one case where project activity work is still under implementation. The maximum number of cases (56%) in the sample include those where the complete cycle of verifications, work and approval have been conducted and the transfer of matching grant to the beneficiary has been made. The higher number of cases who have received matching grant after completion of activity is also because of the sampling design whereby, from 5 Individual beneficiary respondents randomly selected from each the village, three were chosen from the ones who had already received the disbursement and two were selected from the ones who are in the process of implementation or at any other stage of application.

There are 23% of the cases where approval and pre-sanction by SDAO have been received, as can be seen in the figure. Out of these, 44% respondents reported that they are currently arranging money and will start the construction of the asset soon. However, 50% of the cases, i.e., 18 respondents reported facing difficulty in arranging funds and thus not able to initiate the activity.

Most and least popular Activities

The most applied and promising activities under Individual category are Drip Irrigation, Sprinkler Irrigation, Farm Pond and Horticulture. Drip, Sprinkler and Farm pond are popular technologies for saving water and are liked by farmers as they can take more crops cycles and save their crop during less water availability in any season. Orchards and horticulture are considered a very promising activity by some respondents. They are perceived to require high amount of initial care but assured and good income over the medium and long run. *Micro irrigation related benefits have remained the most popular individual category benefits as was the trend in previous concurrent monitoring rounds.*

“Climate change reduces yields and costs more, so some farmers are now cultivating orchards as they can produce two crops a year. He can also take intercrop and earn money” - Cluster Assistant

Most of the stakeholders did not mention about any particular activity when asked about the least applied one. Though some respondents mentioned that goat rearing activity is challenging to implement. Landless households who had applied for the same have found it challenging to manage due to issues in buying and selling then as their relevant markets are concentrated in specific areas causing difficulty for landless in buying and selling them.

Some of the activities received mixed reviews. Polyhouse and shadenet were reported to the most popular by a few stakeholders though a few considered them to be the least popular. These activities are very successful in growing exotic vegetables which can be sold at good prices. They are also useful in protecting the crop from excessive sun and require less water due to plants in shade making it quite popular in some villages. However, these were cited as least popular of the activities by few respondents as most small farmers find it too high to invest in a polyhouse or shade-net house. The loan amount is usually too high, and banks are apprehensive to provide such high loans to small farmers. So even when the small farmer is interested, he/she is not able to apply for polyhouse and shade-net house.

Activities suggested to be added in Individual benefit list:

In addition to the existing list of activities under the project, some of the additional activities that were suggested to be added in Individual Benefit list includes:

1. Onion storage warehouses: Since there is a substantive onion production in the region, many AAs, CAs and ASs have suggested to set up onion warehouses through PoCRA.
2. Forest plantations such as Chandan, teak can also be promoted under horticulture plantations.
3. Machines that help in mechanization of agriculture activities were also suggested to be added. The machines that are in demand include harvester, sowing machine, tillage machine, planting machine, fodder cutting machine and tractor amongst others.
4. Storage units and stock houses for fruits and vegetables, especially supporting orchard production was also suggested. This is related to the fact that there have been substantive number of farmers who have

invested in orchard plantations and they are exploring possibilities of storage facilities that they avail to secure their production.

5. Solar run motor pumps were also suggested as activities that can be added to the individual benefit category. AAs and CAs reported that there is problem in availability of electricity consistently in the region because of which farmers have to fetch water from far off to irrigate their fields, many a times during a night-time. Based on expert observations it is suggested that assets such as solar dryers can also be considered to be added under individual assets or provided on rent through CHCs
6. Individually owned and run enterprise units that are involved in processing- both backward and forward value chains of agriculture produce suggested to be included in the individual category of farmers. This may include seed processing units, pulse processing. The idea is that farmers are interested in selling final product instead of only raw produce, because the margins of selling raw produce is low and there are price fluctuations.
7. Cow sheds: It was pointed out by Agriculture Supervisors and Agriculture Assistants, that there has been a huge demand from farmers as most farmers have livestock and cow sheds can help in their security.
8. Farm Shed: A demand for farm shed has emerged, especially due to good rains in the current year's monsoon cycle. The crop gets damaged or harmed due to heavy rains. In order to prevent this damage, farm sheds are considered a viable set-up to save crops, seeds and agri-equipments.
9. Moorghaas preparation- It was suggested by the SDAO that matching grant for Moorghaas preparation should be added, as in Jalana it can be helpful to farmers to generate additional income.

Reasons for rejection of individual grant applications

The most common reason stated for the rejection of the Individual grants application was related to documentation. Reasons ranged from incorrect details filled in forms, incomplete forms submission, failure of document verification related to forms. Also, if the farmer had already availed the benefit on the same technology in the last 7 years from any government scheme, then his application would be rejected. Other reasons for rejection included lack of fulfilment of eligibility criteria, the financial constraint on behalf of the applicant.

Reasons for delay in the approval of individual grant applications

The most common reason emerged from the stakeholder responses was delay in processing at the end of cluster assistants/ agriculture assistants due to their high workload. Since the CA and AA have to service a high number of villages, a lot of time is lost in moving around the villages. On investigating this, it has been found that an AA had on average 5 villages (range 2-12) under his jurisdiction, including on average 2 PoCRA villages (range 2-6). A CA on average has 10 villages to service (range 6 -15). Other major reasons for the delay in grants application included delayed VCRMC meetings. These delays were due to multiple reasons such as COVID-19 lockdowns, lack of a sufficient number of members for meetings.

"A CA or AA has at least four to five villages, some have ten to twelve villages, so often, it takes time to do spot verification, so application is delayed. Delays occur due to large work area. We cannot hold that meeting if 60% of the committee members are not present so there may be a delay in approving the application for an individual grant." - Cluster Assistant

Application Process Review

Key Motivations to Apply for Project benefits

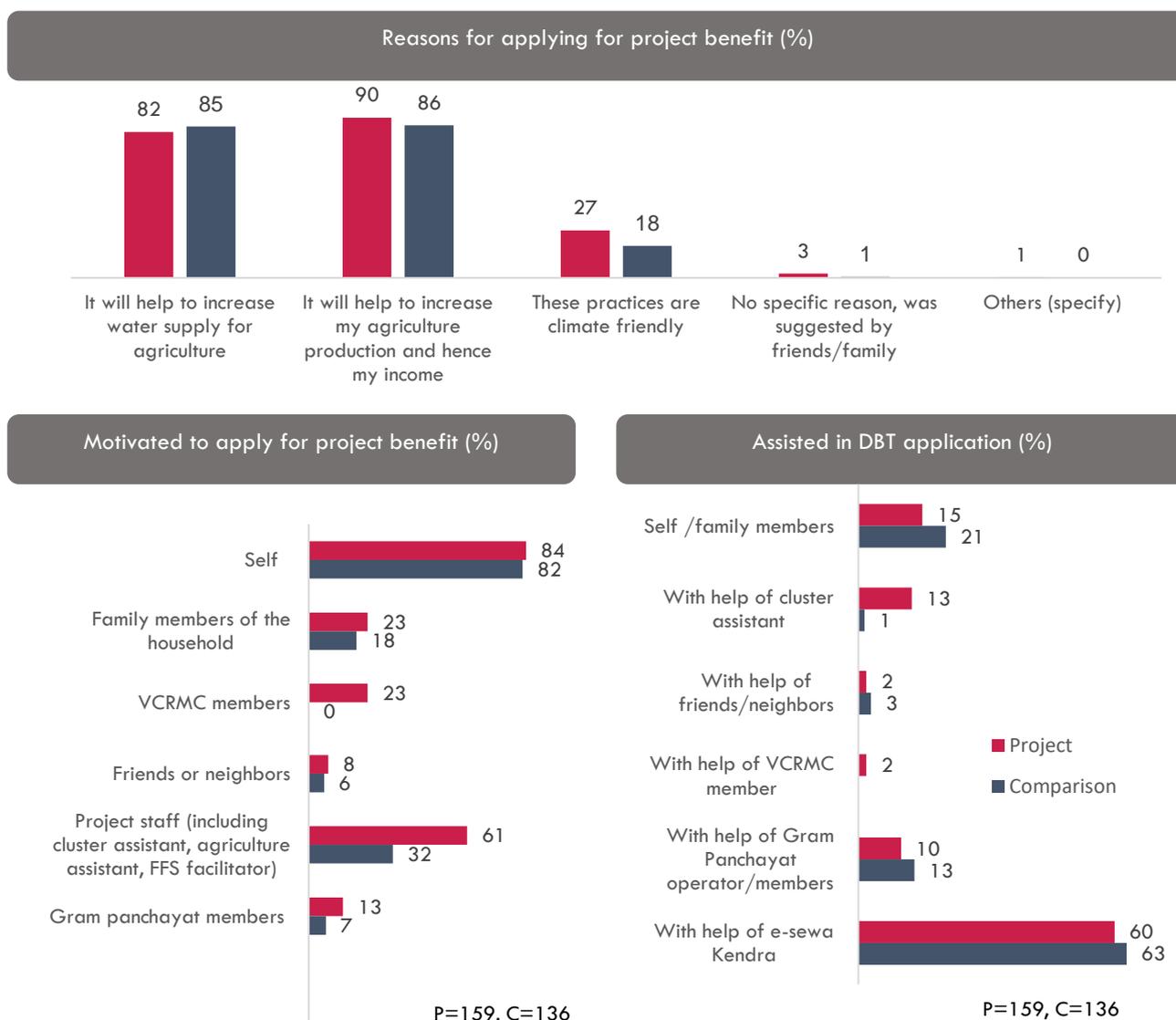


Figure 9: Reasons, motivation, and assistance for application

The two key motivations behind applying for project benefits included an increase in water supply for agriculture; and increase in agriculture production and hence income. Also, a few beneficiaries in project and comparison villages mentioned climate-friendly technologies as the motivating factor for project applications which is an improvement from the previous CM rounds. There is a possibility that respondents connect to manifestations of climate change like water availability than the word 'climate-change' itself, thus highlighting the low percentage of farmers opting 'climate change vulnerabilities' as the key motivation to apply for project benefits.

While most of the respondents (84% in project villages and 82% in comparison villages) were also self-motivated to apply for the project benefits, there was a substantive number of respondents in the project villages (61%) who were motivated by their interactions with project staff. This is similar to the trend in CM II monitoring report where 53% of the respondents were motivated by project staff. 32% respondents in comparison villages were motivated by project staff. 23% of the respondents in project villages were also motivated by VCRMC members and members of their family. Also, 13% of the respondents in the project and 7% in the Comparison villages were motivated by discussions and interactions with Gram Panchayat Members.

Further, a more formal process in assistance for applying for individual benefits through DBT have been observed. A substantive increase in assistance/applications through e-Sewa Kendras has been observed over previous rounds. Percentage of beneficiaries receiving application support from e-sewa kendra is reported to be 59% in CMIV as compared to 25% in CMII.

Key Reason for not applying for Individual Matching Grant

As also observed in the previous CM rounds, the most common theme that emerged as to why farmers don't apply for individual benefits through DBT are financial constraints. For all the works involved with the individual benefits category, the beneficiaries have to spend the amount first on their own. After the verification of works, the matching grant is then later credited to the beneficiary account. Most stakeholders stated that many of the eligible farmers don't have the financial resources to make the first payments and thus opt-out of the project. Another major factor why eligible farmers won't apply for individual benefits schemes was documentation related. The farmers need to update their land records (7/12 documents) with the Talathi officer first and then update it digitally. Most of the respondents indicated their unwillingness to go to the Talathi officer and get the same work done and hence they don't register themselves for individual benefits.

Additional costs incurred during Application Stage

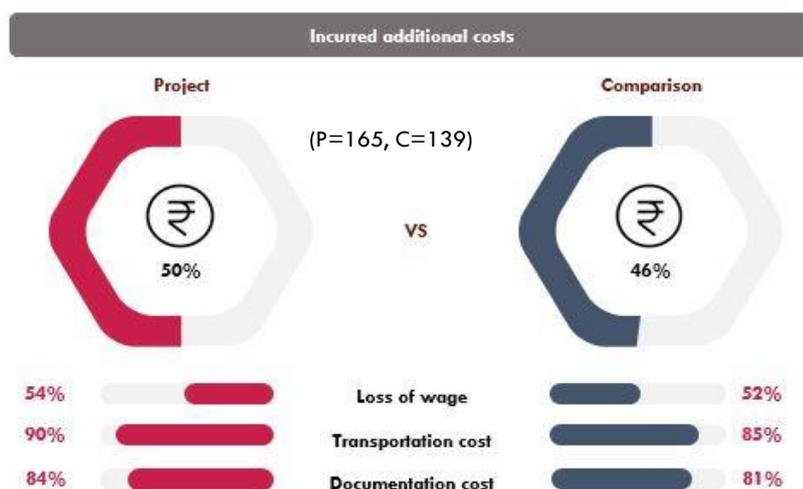


Figure 10: Additional costs incurred by respondents, during the application stage

Approximately 50% of the respondents in both project and comparison villages acknowledged incurring additional costs while applying for the project benefit. The costs mainly included transportation and documentation costs. Also, approximately 50% in both project and comparison villages mentioned the loss of wage or employment because of the amount of time spent in applying and its follow up. An average estimated cost of INR 1546 was incurred by the project respondents (including opportunity cost of loss of wage). In the case of comparison, the average cost is INR 1484.

Experience of the Respondents from the Application Process

Overall Experience has been satisfactory: More than 99% of the respondents in project villages and 95% in comparison villages identified “good” or “satisfying” as the major feedback to the application process. It was investigated if respondents faced challenges or problems in the application process of Individual DBT application. Relatively lower percentage of respondents reported facing challenge in the project arm as compared to the comparison arm. The most common challenge faced is the problem in applying for project benefits (62% in project and 42% in Comparison). Lack of funds to construct the asset (31% in project and 32% in comparison) is a common problem faced by both project and comparison villages. It is interesting to note that lack of support on how to register and apply was a challenge faced by 16% of the respondents in comparison village whereas no one reported this as a challenge in the project villages. Lack of guidance to

apply for availing the subsidy and delay in project staff for sanctions were other common problems identified by approximately one-third of the respondents in both project and comparison villages.

The percentage of beneficiary respondents acknowledging that they had faced challenges during the application process have reduced (9% in CMIV as compared to 20% in CM II). For the beneficiaries facing issues, challenge due to lack of internet was the most reported problem (reported by 62% in CMIV as compared to 22% in CMII). Lower percentage of beneficiary respondents reported delay from project staff as a challenge (Reported by only 15% in CMIV as compared to 50% in CMII)

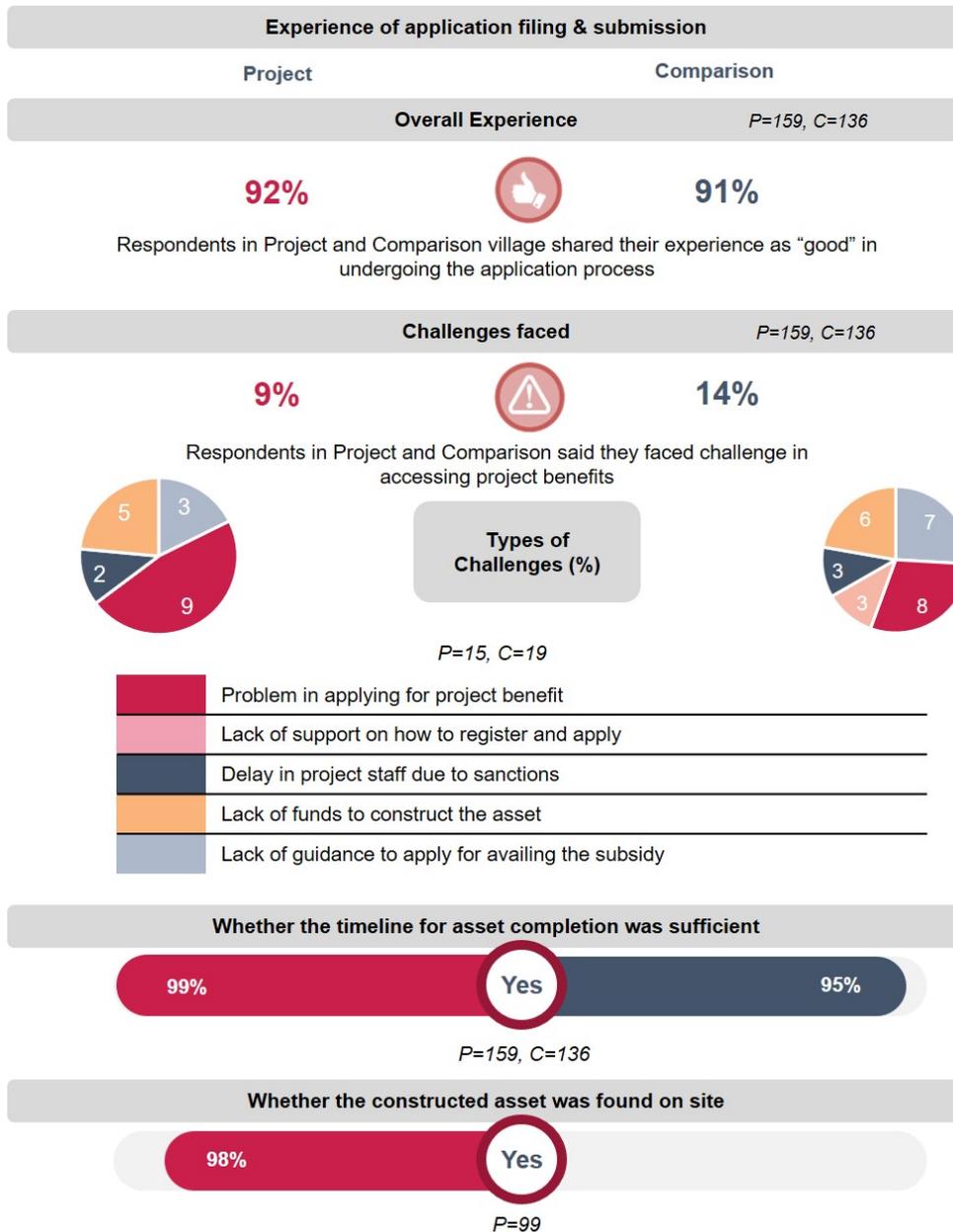


Figure 11: Experience of Respondents in Application Process and Implementation

Reasons of not implementing activities despite receiving pre-sanction

Financial difficulties had been one of the key reasons because of which farmers have got pre-sanctions but have not started implementing the activity. In such cases, various VCRM committees reported trying different measures. Some VCRM committees mentioned that they warn the farmer by calling them to VCRM meeting or asking the reasons of delay at gram panchayat meeting. This pushes the farmer to take timely steps if he has the resources. In other cases, VCRM committees guide the farmer in accessing loans. VCRM committees have also connected farmers with shopkeepers that can provide them with an asset on faith that the farmer will pay the shopkeeper as he gets the matching grant from PoCRA. While this has worked, there were few cases where farmers had to further take loans to pay off the shopkeeper due to delay in subsidy disbursements. Though these cases were limited.

Almost all the respondents (99% in project and 95% in comparison) found the timeline for construction and completion of the asset sufficient. Of the 99 cases of project respondents with constructed assets, there were only 3 cases where the activity or the asset could not be verified. 2 cases pointed out that since their project benefit is on the production of certified seeds which they do in Kharif season, and hence they could not show the field since Rabi season was ongoing during the survey.

When the project beneficiaries were sought suggestions on how to improve the processes in the project implementation, 43% said they are satisfied with the current process. Approximately a quarter (23% of the respondents) requested support in filling the application and understanding the process of application and getting the benefit. Another quarter, 25% of the respondent said that the amount of matching grant should be increased. This needs to be seen in the light with observations shared by the project officials during interactions. One, the matching grant provided by PoCRA is higher than provided by other government schemes. Second, there are some project benefits especially polyhouse and shadenet that require a much higher amount of investment that becomes difficult for a small farmer to uptake at an individual level. Some other recommendations included the need for internet and application filling facility at gram panchayat office and timely disbursement of subsidy for improving the implementation of the project.



Picture 1: Individual Beneficiaries of Shade net and pipes

Further, feedback specific to each type of activity for which matching grant was provided was also taken. This feedback was taken from the beneficiaries who had implemented the activity or purchased the asset.

1. **Drip Irrigation:** 19 beneficiaries who have set up a drip irrigation system using project grant participated in the survey. Almost 50% of them (10 beneficiaries) use their irrigation set regularly. 36% of them (i.e., 17 respondents) use it only when required. The remaining 2 beneficiaries use their sets seasonally. The area irrigated using drip irrigation lied between 1 to 6 acres (3.37 acres on average). The frequency of irrigation lied with 1-3 times. Most of the farmers used drip irrigation to irrigate cotton (68%), Sorghum (21%), Pigeon Pea (26%), Green gram (10%), Maize (10%), Onion (10%), Sugarcane (10%) and Wheat (15.7%). Other crops include chickpea, black gram, millet, sunflower, ginger, guava, sweet lime. None of the respondents mentioned any difficulty in accessing the project benefits. All project beneficiaries acknowledged benefitting from using drip irrigation. The most common benefits felt by the beneficiaries include an increase in income (79%), increase in production (68%), increased availability of water for protected irrigation (68%), increase in the area of cultivation during Rabi season (47%) and availability of water during dry spells (42%).
2. **Sprinklers Irrigation:** There were a total of 25 beneficiaries who had accessed a sprinkler irrigation system as a project benefit and were surveyed. Most of them (88%) used Sprinkler sets only on the requirement. Common crops that are irrigated using sprinkler irrigation includes soybean (68%), chickpea (68%), sorghum (48%), wheat (40%), cotton (36%), pigeon pea (32%). Other crops include green gram, black gram, groundnut, maize, onion, potatoes, coriander. Similar to drip irrigation beneficiaries, no one shared any difficulty accessing project benefits. When asked of the benefits felt by the beneficiaries after using sprinkler irrigation includes an increase in income (84%), increase in production (68%), increased availability of water for irrigation (64%), efficient use of water (44%) and availability of water during dry spells (36%); and change in cropping pattern (8%).
3. **Pipes:** 19 beneficiaries who have received the benefit of pipes from PoCRA were surveyed. Most of them (10 out of 19 beneficiaries) used it only on the requirement. One third (6 beneficiaries) use it regularly. The land irrigated by pipes ranges from 1 to 5 acres (average 3.97 acres) . The usual frequency using pipes is between 1-4 times. 84% (16 beneficiaries) witnessed an increase in income, 63% (12 beneficiaries) witnessed an increase in production and 58% (11 beneficiaries) witnessed increased availability in water for irrigation. 7 beneficiaries (37%) also witnessed an increase in the area of cultivation during the rabi season.
4. **Water Pumps:** Of the 18 beneficiaries who have accessed water pumps as a project benefit and were surveyed, 16 of them (89%) use water pumps only on the requirement. The range of land size irrigated using water pumps goes from 1 to 5.5 acres (average 3.71 acres). While no beneficiary faced any difficulty in access the project benefits, 83% of them (15 beneficiaries) witnessed increased availability in water for irrigation. 72% (13 beneficiaries) witnessed an increase in production, 67% witnessed an increase in incomes. Almost half of the beneficiaries witnessed an increase in the area of cultivation during Rabi season (10 beneficiaries), an increase in the area of cultivation during Kharif season (9 beneficiaries) and timely availability of water for irrigation (9 beneficiaries).
5. **Shade-net Houses:** Out of the 3 shade-net beneficiaries who were surveyed, two of them had undergone training on how to do cultivation in shade net house. All the three shade-net beneficiaries are primarily growing vegetables in their shade-net. All of them get the guidance of how to cultivate through agriculture department staff. 2 of the beneficiaries use the asset regularly while the third reported that currently he uses it seasonally. While 2 beneficiaries are able to sell their produce easily, the third one is yet to witness his first production cycle. Increase in income, production and employment are common benefits received by the beneficiaries of shade net houses.
6. **Horticulture Plantations:** From the 7 project beneficiaries of horticulture plantation, only 1 had received training. The source of training was the Department of Horticulture. While four of the beneficiaries had grown sweet Lime (57%), other fruits include mango, pomegranate, guava and lime. The beneficiaries had 1-2.5 acres of land under horticulture, with 3 out of 7 with 1 acre of horticulture plantation. 4 out of 7

sourced their saplings from government nursery. The other three took it from government approved nursery. All 7 of them have installed drip irrigation for efficient use of water. Production from horticulture has only started in 1 of the 7 beneficiaries. The one beneficiary whose production has started reported facing difficulty in selling his produce in the market.

Also, in the project sample there was one beneficiary who had received disbursement for goat rearing activity. The respondent acknowledged of practicing the activity currently but was not finding the market suitable for purchase/sales. He was aware of his responsibilities for this activity which included continuing his business for three years, getting insurance for his ruminants and getting them vaccinated. Lastly the beneficiary has acknowledged benefiting from the activity in terms of increased income and better self-employment opportunity.

Most of the VCRMC committees are satisfied with the current priority criteria of DBT application, which gives priority to SCs, STs, OBCs, widow, minority and land less. However few VRCMCs pointed out that nomadic Tribes should also be specially recognized under the project. Focused Group Discussion with two of the VRCMCs also pointed out that irrespective of the caste, any farmer who is in economic need should be provided with the subsidy benefit, thus questioning the rationale of caste and tribe-based reservations. It was also suggested that project benefits like goat rearing should also be open to farmers with land (specifically for farmers with minimum land/income); with certain reservations or higher subsidy share for landless.



Picture 2: Beneficiaries' field - Horticulture Plantations and Drip irrigation

Feedback on DBT Application

Almost all AAs and CAs find the DBT application of good utility. It is also very effective in preventing fake cases. One of the instances mentioned is how the application provides information about farmers and the nature of benefit received by them. As the required documentation is all uploaded in soft copies and thus reduce the time and resource spent in printed copies.

Although some of the common problems that were pointed out includes internet and network issues that makes it difficult for uploading documents, photographs and filing the form. Often, farmers have to fill the form multiple times as they lose the application webpage in bad network areas. The problem is further aggravated when officials have to go for spot verification which is on the field and the internet facility is usually poor. Addition of offline features in the application was highly recommended by the officials.

Similarly, issues related to recording GPS were also reported. Sometimes, the app picks up a different location than the actual. E.g. In villages near Maharashtra border, it sometimes picks the location of nearby Andhra Pradesh's territory making it difficult for the farmer to upload the photograph with appropriate location.

It was also reported that sometimes farmers make mistakes while filling up the online application. It was suggested that there should be an option to cancel at taluka/cluster level and rectify the incorrect application. The 8A form is especially the one that cannot be re-uploaded for correction, as pointed out by a cluster assistant. Two cluster assistants also suggested training in use of the app can help farmers in better utilization of the app.

It was also mentioned that when PoCRA officials use the DBT app, the dashboard shows the number of people who have been paid disbursements. There should be a provision where the details of the numbers – i.e. the number of applications made today, number of applications approved by the committee and the list of these applicants should be available on the dashboard itself.

Taluka Officers were also convinced about the utility and were satisfied with the DBT app. Though one of the TAO mentioned the lack of capacities of farmers to use the app as most of them are uneducated.

Feedback on project guidelines

Most of the officials including agriculture assistants, cluster assistants, agriculture supervisors and Taluka agriculture officers said they have clarity on project guidelines.

Some officials, especially agriculture assistants pointed that there have been repetitive changes in the guidelines of the project and that has led to problems of understanding and execution on their part. And since guidelines in the past have changed quite frequently, there have been times when they weren't aware of the most recent change while conducting their field job.

A booklet with the revised set of guidelines was suggested to be shared periodically so that it can be kept as a record and can be easily accessible for reference. Some AAs also suggested a refresher training course on guidelines of the project to be organized regularly, perhaps 6-monthly so that all officials can be well-updated on the revisions of the guidelines.

Some AAs and CAs mentioned specific guidelines that they had difficulty to fully understand. There include freshwater fishing project benefits, PVC pipe guideline and orchard plantations. The difficult areas included to understand payment terms based on the area of land under the project. Some officials had issues in understanding the verification instructions in the guidelines of orchard plantation.

Expert field observations on individual activity implementation:

Based on the expert field observations, it has been suggested that the project may consider looking at the land holding from a household level, while deciding the eligibility criteria, though this may have challenges in implementation. Further, a support system for enabling landless and marginalized households to avail institution loans, access to markets should also be attempted to be developed by the project. Field experts also highlighted that to avoid distress sale of the farm produce, individual/ group or community assets related to developing storage infrastructure should be promoted. Similarly assets related to value addition/ increasing shelf life of these assets should also be promoted along with small units to make the by-product of the perishable produce. A cluster-based plan under PoCRA can support FPOs in the project clusters where there is a specific crop in abundance.

Action taken to mobilize eligible farmers in applying to get benefits of PoCRA

Several steps have been taken by AA, CA and VCRMC committee to spread awareness and motivate farmers for applying to project benefits under PoCRA. These included special meetings, dedicated campaigns, door-to-door engagement and specific discussion in gram sabha on PoCRA and their related benefits. Some villages have taken our local campaigns through cultural engagements like *Prabhat Pheri*.

Key challenges faced in implementing individual activities under PoCRA

One of the major challenges reported in this period is delay in financial disbursements causing financial distress on farmer Households. Many farmers had to take loan to implement the activity. Delay in the matching grant caused anxiety and some had to consider/take loan from local money lenders to pay to the shopkeepers for the assets purchased.

Specially to more expensive benefits like Shadenet, a small and marginal farmer, how much ever interested, is not able to invest such huge amount. It may be useful to explore ways in which the financial burden can be distributed over time in such cases.

There have also been cases where farmers are not aware of how to use an asset like drip irrigation system but have applied for the benefit. It is critical in such cases that requisite capacity building and awareness sessions are ongoing at the village level to ensure farmers know what the most appropriate technology for them is and how to use it thereof.

6.3 Farmer Field Schools (FFS)

This section presents the finding from the concurrent monitoring of Farmer Field School Component being implemented under PoCRA. The two key stakeholders in Farmer Field Schools include Host Farmers and Guest Farmers. Host farmers are the one who host the farmer field school on their agriculture land. Guest farmers are the one who attends the Farmer Field Schools to learn through demonstrations of new climate resilient agriculture technologies promoted under PoCRA. It is to be noted that this section focuses on the FFS findings from PoCRA villages as only seven beneficiaries had reported undergoing FFS or similar training sessions in comparison villages. This section is organized under two key sub-components:

- i. Review of performance and success indicators of Farmer Field Schools organized under PoCRA
- ii. Process review, Motivations and Operational review of FFS

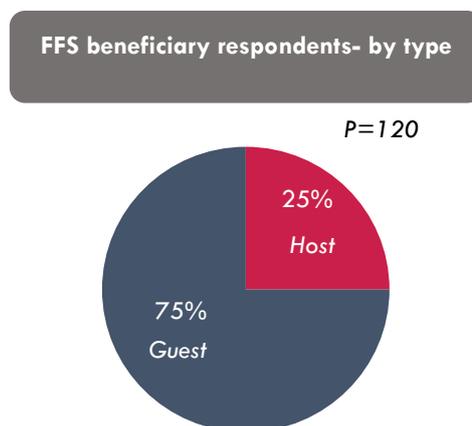


Figure 12: FFS beneficiary respondents by type

Review of Success of FFS by Surveyed Beneficiaries

A total of 120 farmers were surveyed from project villages which include 30 host farmers and 90 guest farmers. Due to the small sample of farmers from comparison villages, they have not been included in the analysis and the findings focus on the feedback on FFS conducted in the project area.

Amongst the host farmers, cotton was demonstrated in 12 out of 30 host farmer fields, which is the most demonstrated crop amongst the sample. Chickpea and intercropping of soybean and pigeon pea was demonstrated in 8 each out of 30 Host Farmers surveyed. Thus cotton, chickpea and intercrop of soybean and pigeon pea were three most commonly demonstrated crops. This is followed by 5 host farmers demonstrating soybean, 3 demonstrating cotton and green gram. Only 1 Host farmer out of 30 had demonstrated maize, intercropping of cotton & green gram, and intercropping of cotton and pigeon pea each. Cotton, soybean + pigeon pea (intercropping) and soybean were the most common crops demonstrated in FFS Sessions during CMII reporting too. Most of the farmers (70%) were convinced to participate in the FFS session by Agriculture Assistants. VCRMC members (13%) and FFS Facilitators (10%) had also contributed in convincing host farmers to participate in FFS sessions.

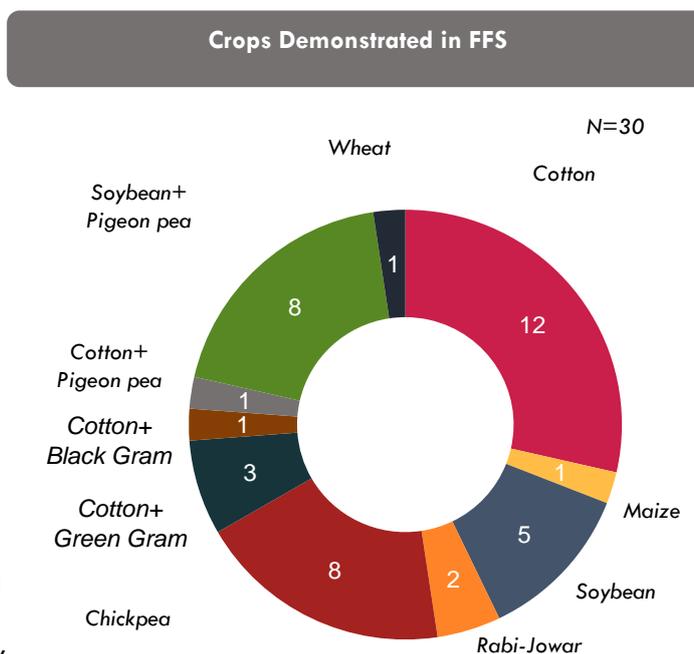


Figure 13: Crops demonstrated in FFS Sessions

Out of the 120 respondents to the survey, technologies on which maximum FFS beneficiaries received training include: Spraying techniques with safety measures (82%), Seed treatment with bio-fertilizers (74%), Foliar application of 2% DAP (73%), Preparation of pesticide formulation and spraying (70%), Application of basal dose of fertilizers (69%), Nipping of apical bud (68%), Intercropping (68%) and Intercultural operations (67%) and Irrigation by Drip/Sprinkler (66%).

The adoption of technologies, including before or after the training can be seen highest in Spraying techniques with safety measure (89%), Foliar application of 2% DAP (77%), Seed treatment with bio-fertilizers (77%), Preparation of pesticide formulations and spraying (73%), Intercultural cropping (72%), Nipping of apical bud (70%), Intercropping (69%) and Use of climate-resilient varieties (68%). Technologies like Spraying techniques with safety measures (47%), nipping of apical bud (47%), foliar application of 2% DAP (46%), Preparation of pesticide formulations and spraying (45%), use of climate-resilient varieties (44%), seed treatment with biofertilizers (43%), intercropping (40%), Irrigation by Drip/Sprinkler (38%), thinning and gap filling (38%), foliar application of potassium nitrate (38%) and draining of excess water (37%) recorded high adoption rate post the training session in FFS was conducted. On the other hand, spraying techniques with safety measures (43%), intercultural operations (38%) and foliar spray of micronutrient (36%) had high adoption rates even before a training session in FFS was conducted. Technologies that had lowest adoption rate overall includes the use of the Trichocards/ Crysopa (9%), sowing of broad bed furrow (14%), sowing of refugee in cotton (17%), the opening of alternate furrow/dead furrow (23%), Sticky traps (26%), Bird perches (10/acre) (28%).

Technology wise Training and Adoption in FFS (%)

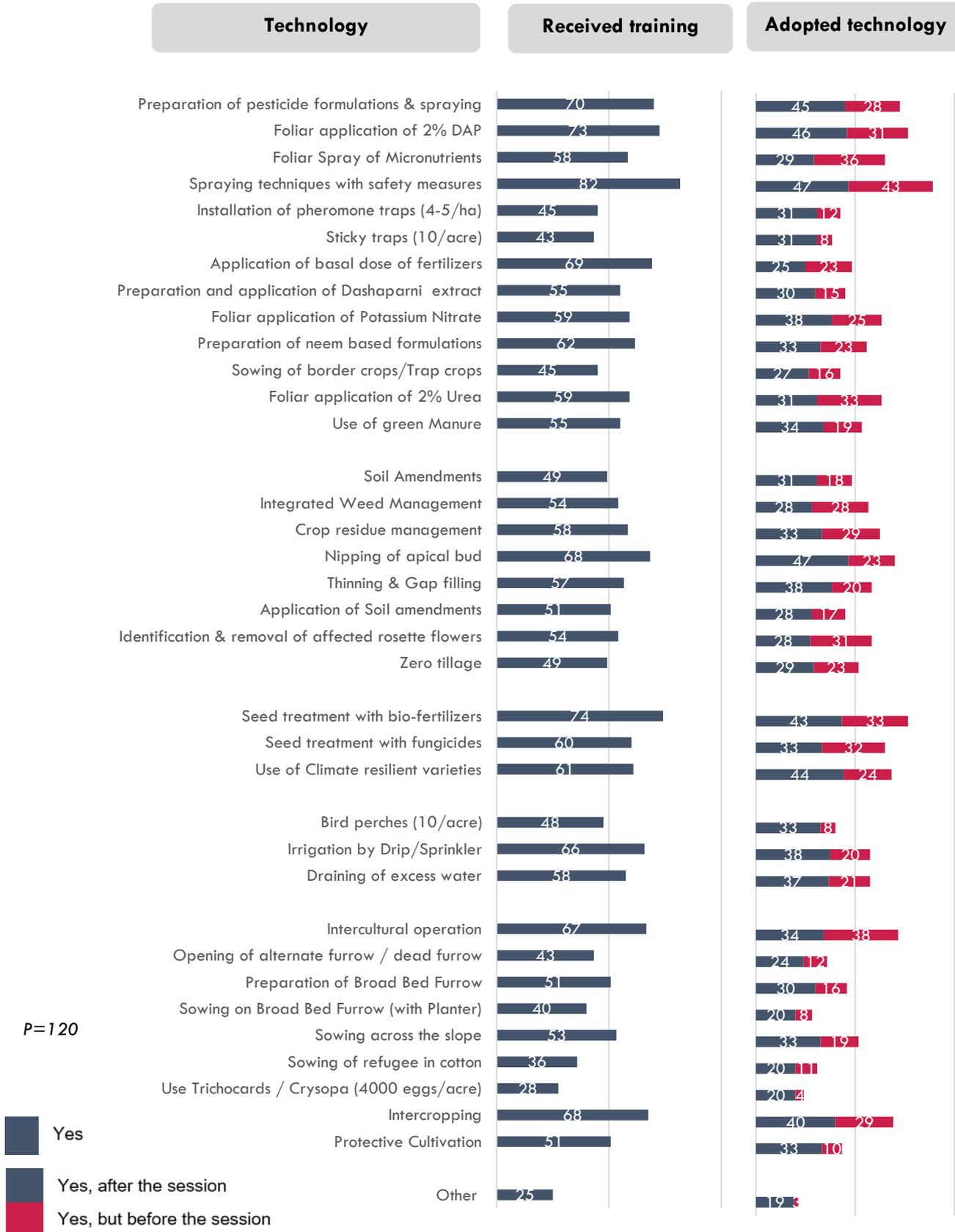


Figure 14: Training and adoption of technology in FFS Session

On analyzing the adoption of technologies demonstrated in FFS session by gender, adoption of technology (atleast one) after attending FFS session was observed to be higher for male guest farmers (92%) as compared to female farmers (86%), though this difference is not observed to be significant. Technologies for which higher adoption rate was observed amongst women guest farmers (as compared to men farmers) mainly include sowing of refugee in cotton, opening of alternate furrow/dead furrow, identification & removal of affected rosette flowers, use of climate resilient varieties, sowing across the slope and intercropping.

Amongst these technologies, the top 3 technologies that respondents found most useful included Foliar application of 2% DAP (55%), Preparation of pesticide formulation and spraying (39%), and seed treatment with bio-fertilizer (28%). There was 100% adoption rate both in project and comparison villages; whereby all the FFS respondents have atleast adopted 1 technology. 92% in project and 71% in comparison have adopted a technology after training. On the other hand, there were 84% cases in project and 86% cases in comparison where adoption of a technology was done before training. In case of adoption amongst FFS guest farmers, it can be seen maximum adoption after training was in use of climate resilient varieties (75%). Also, the adoption was least after training in foliar application of 2% urea (44%) and sowing on broad bed furrow (44%)

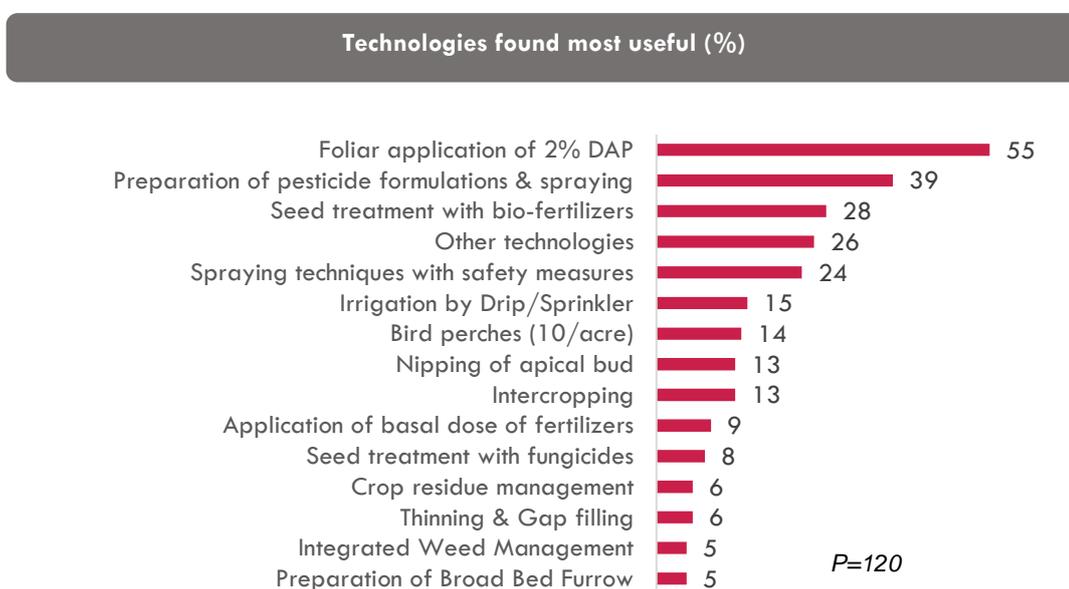


Figure 15: Technologies found most useful

“Villages that are closer to the highway or main town of the block usually understand the technology quickly, but their adoption is low. It is seen that such farmers are closer to the market and other information sources and are thus more up to date with latest technological options. On the other hand, villages that are in out skirts and not well connected to the town take much longer time to understand a technology, but their adoption rates are higher. Since there is limited exposure and limited information sources, such farmers usually take the guidance sincerely and attempt to adopt the demonstrated technology.” FFS coordinator.

The most adopted technologies reported by FFS Coordinators and facilitators are seed treatment, intercropping, spraying practice, natural ways of pesticide management and organic farming through gasparini ark, neem extract, sticky traps, bird perches soil testing, and sowing moong in cotton. It was reported that BBF maker was not available in many places and pheromone trap was not given on time by the department. The most common reasons for adoption included good results, less costly, water-saving, easy to use, and potential impact on income. Some facilitators shared how farmers find some technologies like BBF to

be very complex and thus avoid its use. Improvement in adoption has been observed for technologies including Spraying techniques with safety measure (89%), Foliar application of 2% DAP (77%), Seed treatment with bio-fertilizers (77%).

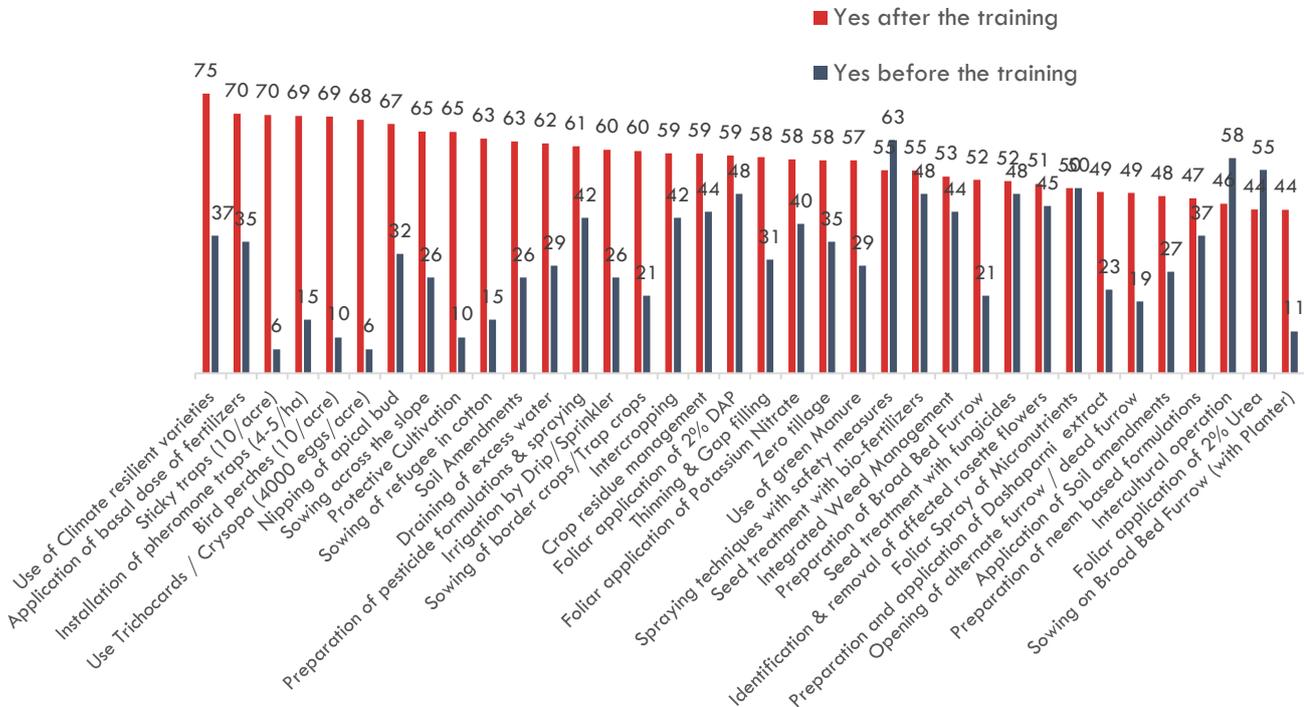


Figure 16: Adoption of technology by FFS Guest Farmers

When asked what are the training topics that farmer respondents are most interested in, many wanted to learn new updated technologies. Specific topics included drip irrigation, goat rearing, micro-enterprises, about soil testing, preparation of hybrid seeds, pest management, about turmeric and groundnut cultivation practices, water management amongst others.

Broad Bed Furrow Technology: Deeper Insights from Farmer Field Schools

Thought facilitators pointed out the difficulties and complexities of BBF technology, utility of BBF was also asked to 64 farmers who have been trained in this technology. Out of 64 farmers who had undergone training on Broad Bed Furrow Technology (BBF), 78%, i.e. 50 of these respondents found BBF technology to be useful. When probed on the utility of BBF technology by these 50 respondents, 52% of them found it helpful in root development. Another 48% highlighted use of BBF in drainage of excess water.

Method by which BBF Technology helped in protection of crop (%)

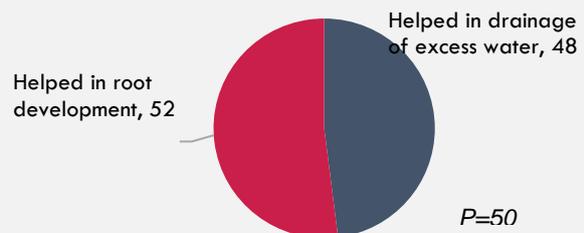


Figure 17: Use of BBF Technology in protection of crops

The respondents were asked on the operational and utility aspects of Farmer Field School. This section highlights some of the important findings from the same.

Information about FFS: More than half of the respondents get information about the next FFS session via SMS or WhatsApp message (52%) generally through FFS facilitator or CA. A substantive percentage of respondents (36%) receive this information in person through project staff (Agriculture Assistant and Cluster Assistant. It is heartening to find that almost all (96%) FFS beneficiaries acknowledged that the information provided by the FFS facilitators in the FFS session is useful. It is heartening to observe that 92% of the FFS participants acknowledged that they would continue to use the technologies demonstrated in FFS sessions. Of the ones who mentioned that they will not continue, the reasons includes that they found the technology expensive (40%) and too difficult to apply (20%). Another 40% did not find the technology useful.

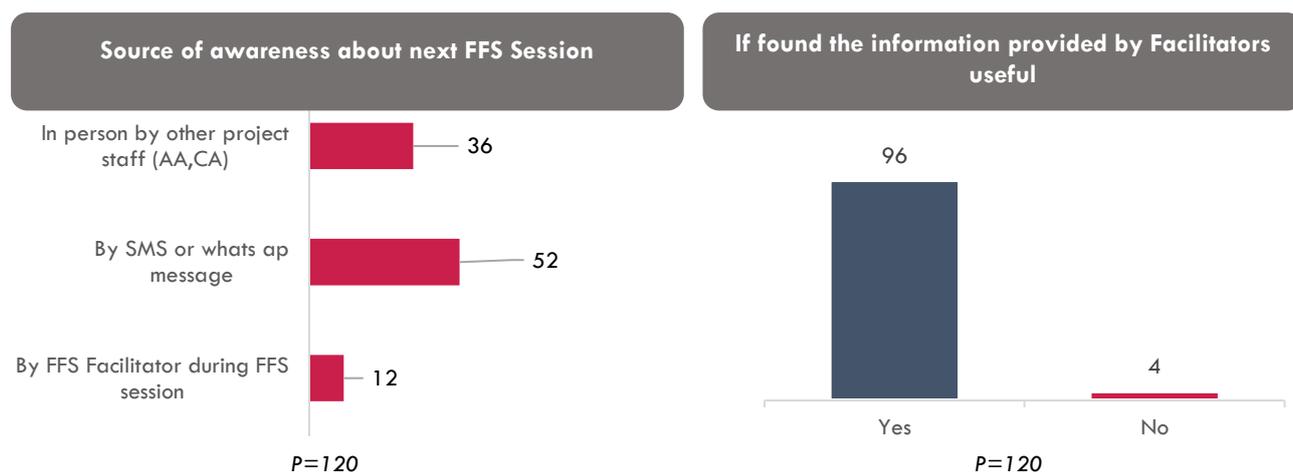


Figure 18: Awareness of next FFS Session and usefulness of the information provided at FFS

Attendance and Motivations to participate in Farmer Field Schools: 70% of the respondents, i.e., 84 out of 120 respondents attend all technical sessions of the Farmer Field Schools. Most of the respondent had attended 2 sessions (28%), 3 sessions (23%) or 1 session 23%). 10% of the respondents had conducted more than 5 sessions. When asked about what the reasons were for not being able to attend all demonstration sessions, most of them (58%) had to skip the session due to personal work. Another 19% had family commitments which made them skip the session. Only 3% were not aware of the timing, while 6% did not find going to the session of any use. The key reasons why farmers participated in FFS was the drive to learn new technologies (reported by 79% beneficiaries). Further 73% of them also were motivated to increase production and income from farming. A substantive number of farmers were motivated to explore ways to reduce costs of production (56%) and learning application of fertilizer and pesticides (51%). More than one-third of the respondents participated to learn how to save their crop from climate variations (32%).

Reasons for low attendance and ways to mitigate:

The most common reason cited by FFS Facilitators and Coordinators for low attendance is that farmers are busy with other priorities, especially personal work, or work on their fields. Most facilitators inform the farmers 2-3 days before the FFS session through WhatsApp Messages or calls about the topic and timing of the FFS session. Few facilitators added strategies like reaching the field 2-3 hours before the FFS to mobilize, providing tea and breakfast, organizing entertainment games, personally meeting, and pursuing through door-to-door campaigns. Some took help from Krushi Tais and Krushi Mitras to inform the farmers for greater outreach. Some facilitators as well as Agriculture Assistants highlighted how certain small token material works as a good motivation.

“If one wants to compete with large fertilizer and pesticide companies who organize events with Loud Music, DJ and entertainment, the least a government-supported FFS should do, is to provide pen and notebook, as it is a general human nature to feel happy for receiving something in hands along with information that is being shared”. - Agriculture Assistant

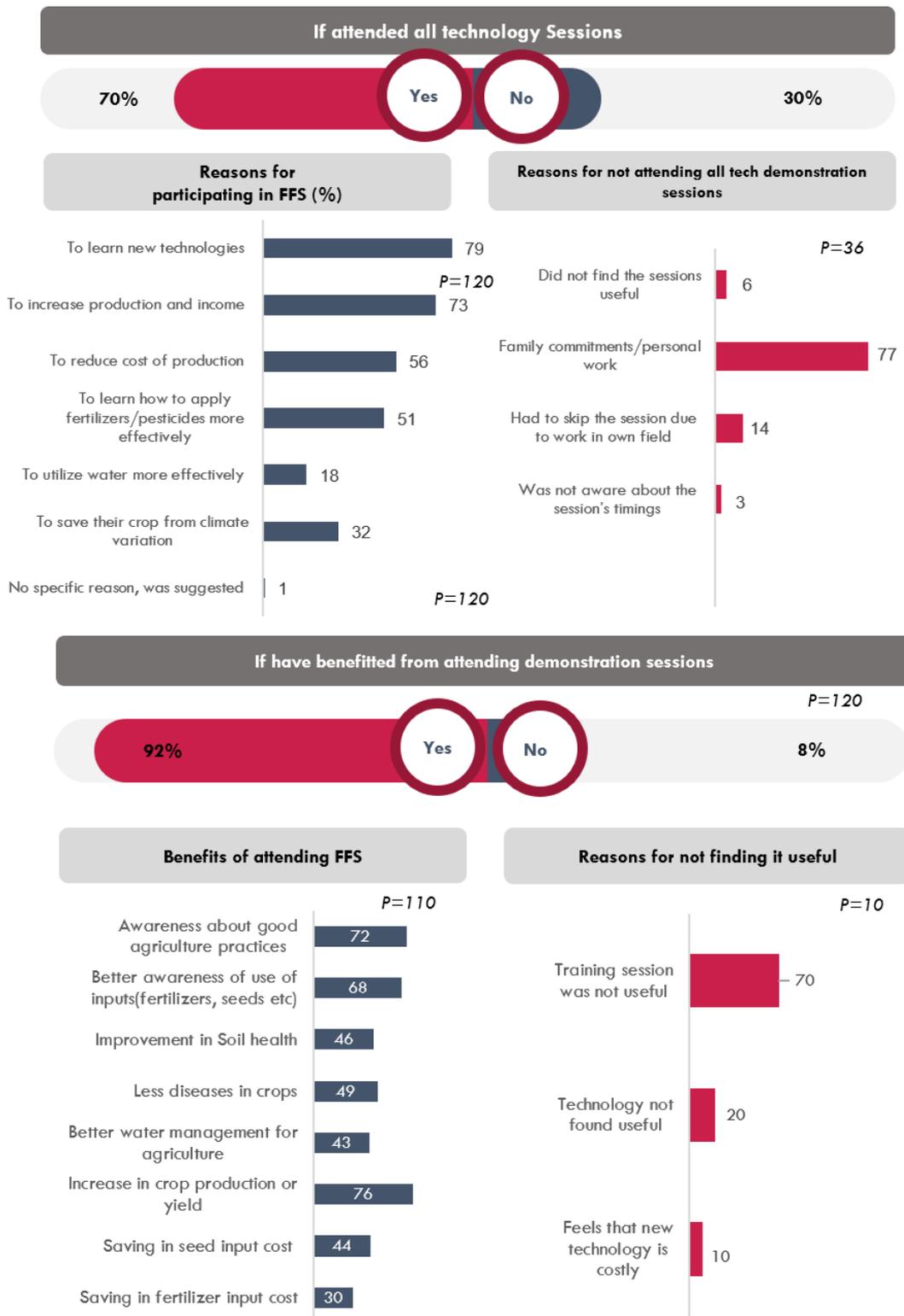


Figure 19: Motivation, Participation and Benefits of FFS Sessions

Benefits from Demonstration sessions:

It is heartening to find that 92% of the FFS participants acknowledged that they have benefitted from attending FFS session. Most prominent benefits they identified included increase in crop production or yield (76%), awareness about good agriculture practices (72%) and better awareness of the use of inputs (fertilizers, seeds,

etc.) (68%). Close to 50% also witness less disease in crops (49%), improvement in soil health (46%), saving seed input costs (44%) and better water management (43%). For the ones who did not find the demonstration session benefitted them, 70% felt the training session was not designed well to be useful.

Feedback on quality and effectiveness of FFS session conducted under PoCRA

Most coordinators reported FFS as good in quality and effectiveness, they mentioned that effectiveness has increased as farmers are more aware now, are using new technologies. Teaching a new technology with requisite demonstration is considered an effective way of gauging the attention of the farmers. Many FFS coordinators mentioned the quality of FFS sessions have improved as the project is maturing. This is because of wider range of technology incorporations and ways of engagement with farmers that FFS has identified. FFS Facilitators specially pointed out of the utility of their training by KVKs and agriculture experts that help them to facilitate good quality FFS Sessions. The simple and local language is preferred so that farmers feel connected to the issue. Strategies and ways that can help in enhancing communication amongst groups, demo-based teaching with charts, using learning videos on YouTube and co-finding the solution is an effective strategy shared by some of the FFS Facilitators. A session that involves feedback and listening to farmers queries and issues is usually more successful than only one-sided engagement. Coordinators suggested that FFS Facilitators should reach the field before the time for FFS to gain farmer’s trust.

Some FFS coordinators suggested that effectiveness of FFS sessions can be measured by the adoption rate amongst participating guest farmers and their consistent and increasing attendance in these sessions. While this has improved, according to many of the FFS Coordinators, some have also mentioned the challenges that they have faced in maintaining the quality and effectiveness of the FFS. Challenges include poor rapport and lack of co-ordination between Krushi Tai and FFS Facilitators. Secondly, due to certain unpaid dues of FFS Facilitators, Krushi Tais and host Farmers, there were instances of non-cooperation from these stakeholders. Ensuring timely payment of the remuneration of these stakeholders is important to keep them motivated and ensure effective implementation of the project.

“Though all facilitators are educated, they need more training for increasing their knowledge. They should work as per need of farmers. They need to develop problem -solving capacity and give solution to the problems raised by farmers” FFS Coordinator

Host Farmers’ Experience of FFS: Of the host farmers surveyed, only 17% had acknowledged that they have received their honorarium. Further, 26% of them were awaiting and were aware that it is in process and 57% reported of not receiving the same. Most of the surveyed farmers decided to become a host farmer because of motivation by the Agriculture Assistant (70%). Higher yield (43%) and less pest attack (33%) were the two key differences notices by host farmers in the quality of cultivation between the experiment and control plot.

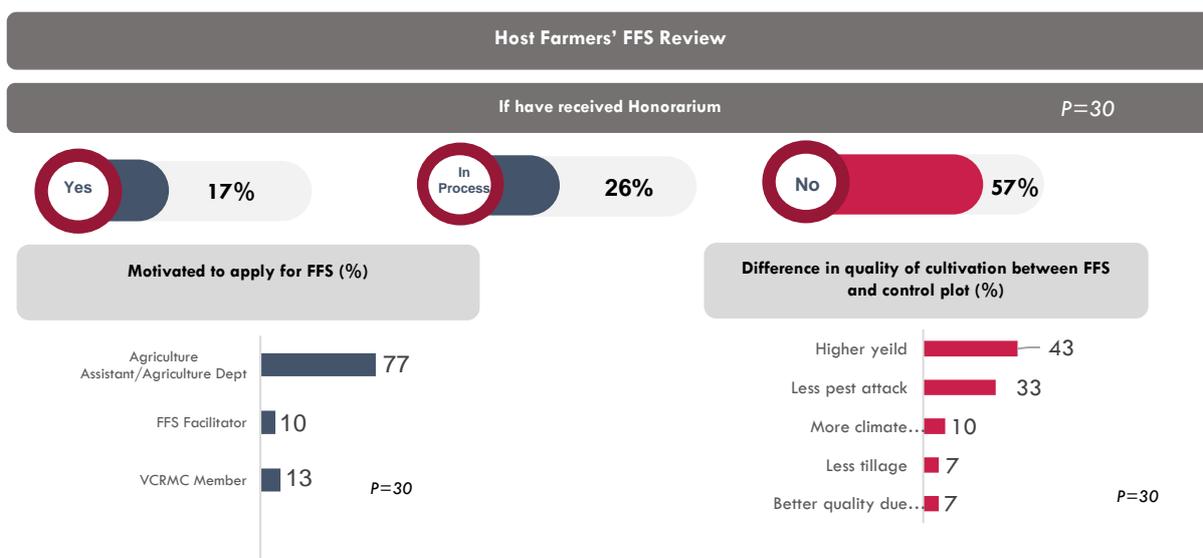


Figure 20: Host Farmer.

Criteria for selection of Host farmers and challenges faced

Some of the common criteria followed by facilitators in the selection of host farmers include a progressive farmer, whose land is close to the village, someone who is responsive and has good rapport amongst other farmers, usually selected in consultation with AA, CA and VCRMC of the village. The farmer must also be willing to adopt new farming techniques on his farm. Certain facilitators also gave preference to educated, knowledgeable and skilled farmers with the availability of water in his/her field. He/she must be recognized and awarded for his farming techniques. Some facilitators took the support of Gram Sabha for selecting the host farmer.

While most of the facilitators did not find any difficulty in selecting host farmers, few had difficulty in convincing farmers for a certain crop demonstration. Few also raised the issue of non-payment of honorarium in the previous cycle, resulting in refusal by farmers to be the host again.

Feedback on Skills, Roles and Responsibilities of FFS Facilitator and FFS Coordinator:

The key roles and responsibilities reported by FFS Facilitators involved mobilizing farmers for FFS, giving farmers information about the latest technology and to share the session plans and details before the session. Some facilitators also shared that it is their responsibility to organizing FFS including the selection of host farmers and the experiment plot.

The roles and responsibilities reported by the coordinators were guiding and supervising the facilitators. The facilitators are guided on how to conduct FFS. Further, coordinators reported conducting regular monitoring of facilitators' work and solving any problem facilitators may face in strategy or operations.

"My key responsibility is to ensure FFS are arranged, take soil testing and seed treatment class in the first-day session. I aim to make organic farming more viable for farmers and also promote the use of BBF technology"
FFS Coordinator.

The approaches that were adopted for making FFS schedule depended on the climate, crop type, pattern, condition and crop cycle, location, availability, and convenience of farmers. Many reported that FFS was conducted in such a way that there is a gap of a few days between session, so farmers do not get disinterested and they get a good response/attendance in the sessions. Some reported that FFS schedule is prepared by coordinators in discussion with the facilitators while some reported that facilitators prepare schedule on their own or in consultation with AA or as per farmer's convenience, which is later approved by the coordinator.

"We decide the schedule as per the crop cycle, for example, we start the FFS before sowing then conduct the FFS for every crop within 25 days, 6 sessions are for soybean and 8 for tur, as well as also decided on the date of soil testing done by the facilitator." - FFS Coordinator

Steps were taken to Improve skills of Facilitators:

"We try to build the capacity of FFS facilitators with the help of KVK. Also, we call the scientists and organize guest lecturers in FFS for updating knowledge & take help of AO in the taluka for the same." - FFS Coordinator

Coordinators reported that they themselves check and observe the facilitators and guide them in case of problem. Some reported that during their monthly meeting, discussion on the skills of facilitator is done and accordingly training is arranged for the facilitators with support of KVK or agriculture coordinators. Other than a meeting, they are trained through webinars and WhatsApp and are given demonstrations on the field.

Review of FFS Facilitators work by FFS Coordinators

Some of the common indicators used by FFS coordinators to review facilitators include review of their punctuality in FFS sessions, their knowledge and aptitude on farming and ability of sharing information and mobilizing the farmer to participate and then adopt the technology. Some coordinators mentioned that apart from the bi-monthly review meetings, they also make visits to field to review their work with the farmers on the

field. In case of any scope of improvements, most coordinators share the possibilities and guide the facilitators through their interactions on the field, and in meetings.

Training material/literature regarding climate-resilient technologies:

Most of the coordinators were engaged in the preparation of booklet. As reported by the coordinators, they prepared a project-friendly technology training booklet, for every crop which is then given to every FFS. In the case of coordinators did not prepare the booklets themselves, they were engaged in providing data like rainfall, temperature, etc. Two coordinators reported not having any booklets available in their area.

"I have prepared the booklets on CRA and also prepare small videos for farmers, I prepared booklet under the guidance of VNMAU and provided them written material" - FFS Coordinator.

Crop Cutting Experiment Experience

The coordinators reported attended the cutting experiment of corn, soybean and cotton. Differences, especially in yield were observed in most of the Crop Cutting Experiment attended by FFS Coordinators. Few of the challenges that the coordinator reported were that actual data in Crop Cutting Experiment was not being noted to estimate correct yield estimation. The data of changes in the yield of experiment plot and control plot needs to be recorded over cycles of harvest. Recording this data with accuracy was reported to be missing in some of the experiments.

Feedback on women farmers participation in FFS

Most coordinators reported that Krishi Tai helps them in mobilizing women for their participation in FFS. Krishi Tai helps and encourages women to attend FFS also supports facilitators in conducting FFS sessions for women. They inform women about the importance of FFS by doing house to house visit. Facilitators also take help of few women assistants, CA and Krushi Mitra to mobilize women farmers for FFS. Some coordinators also engaged with the SHG groups under MSRLM. Information about activities done under FFS and how women can benefit from the same, was circulated in these SHG groups for wider dissemination. Coordinators also took the help of the CRPs working in MSRLM in increasing awareness among the women in the village.

One coordinator shared that he faced a challenge in mobilizing women for FFS as women had no time because they were already busy in their domestic work, in that case, they arranged FFS at a time which was convenient for the women to attend. Some coordinators reported that women attendance was low when FFS was conducted in the morning time as they had other work in the morning, or due to family issue or some were not allowed to leave their homes. Few facilitators observed that women participation is high in case FFS is conducted for only women as compared to the FFS conducted for both women and men. Some FFS Facilitators introduced elements of dal mill and other income generating activities within their FFS which attracted more women. There has been mixed response in the case of women-only FFS. While some observed better participation of women in women only FFS sessions but many others still grappled with low attendance even in case of women-only FFS Sessions. It was added that women are highly engaged in domestic work, daily wage work and field work and thus is it very difficult for her to make time for FFS. Some requested male farmers to send women to FFS, and distribute pen, cap and registers to participants to motivate them.

It was also acknowledged by FFS coordinators that in cases where women farmers were attending the FFS sessions, they would spend more time on FFS, give more attention, ask more queries, are practical and have a high adoption rate of technology than men. More seriousness towards FFS among women were reported, they would come to FFS after finishing their domestic work while men would send some other family member in their place if they got busy in other work.

"We have arranged three women focused FFS in Rabbi and three FFS in Kharif. The women participation is better in women only FFS sessions. We have selected the women host farmer and have also given them sickle to harvest soybean, which has helped to improve women participation" - FFS coordinator

An important insight for the concurrent monitoring was that it is important to schedule FFS sessions at different time for men and women farmers. Morning time is more suitable to male farmers, though afternoon time is more suitable to female farmers.

“As a solution to the low attendance of farmers in the agricultural school, if the agricultural school is held in the morning, all the male farmers will come, but the female farmers cannot come and if the agricultural school is kept in the afternoon, all the male farmers are engaged in their work, but female farmers will come. So we must plan accordingly.” CA

Special efforts in FFS for reducing the production cost of farmers

Most of the FFS Facilitators shared for reducing the cost of production, organic methods of farming including pest management, fertilizers use and soil management methods are demonstrated in FFS sessions. Some of the technologies that were demonstrated, as mentioned by FFS Facilitators include use of compost manure, neem extract, pheromone trap, dashparni extract, zero-tillage, biomass usage for improving soil health and BBF technology for reducing cost of cultivation, amongst others.

Accuracy of information put on FFS App by FFS Facilitator

Most of the facilitators shared that they have been regularly filling information on the FFS App and have not faced any issue/ have ever been summoned by senior officer for any clarification or error. Some of the facilitators mentioned that there have been few instances where they were summoned by senior officer to correct their mistake. The nature of mistakes include error in measurements, no-entry of certain values asked. Some of the FFS Facilitators also shared that entering information of the App during FFS session becomes a little problematic. Because of the constant use of phone during the FFS session, sometimes farmers think that the facilitator is not sincere in conducting the FFS and using the phone in the middle of the session. Networks issues and thus problems in using presentations from the app were also cited by few FFS facilitators.

Feedback on capacity building sessions organized by PMU

All facilitators who had received training shared that they have benefitted from the training. Some facilitators who had only online training preferred if they could get the chance for regular training. Topics covered under the training included training on agro-met services, farming practices like pest management, organic farming, soil conservation, sowing and harvesting technologies. Also, one-third of the FFS facilitators reported that they have not got any training yet, though all of them were interested going for one.

Regular meetings for review with SDAO and FFS Facilitator

Almost all coordinators reported of having regular meeting, twice a month, with SDAO and FFS Facilitator to review the work and keep track of progress. The usual days are 1st and 3rd Saturday, except in some cases where it is shifted to Thursday/Friday. All coordinators shared that they do not face any problem while organizing these meetings. However, one coordinator reported that no such meeting has happened in this year, although it used to be a practice till prior year.

6.4 Community Interventions

6.4.1 NRM Community Benefits

This sub-section presents the findings from the concurrent monitoring of the NRM community interventions based on the quantitative interviews with PoCRA NRM intervention beneficiaries, beneficiaries of similar interventions in comparison area and from the qualitative interviews with key project stakeholders. The total sample of beneficiaries of community based NRM assets is 32 respondents in project villages and 75 respondents in comparison villages.

All the assets constructed in project villages were found on the site. All the assets in project villages were already constructed. In case of comparison villages, 99% of the assets were already constructed. 50% of the respondents in project villages and 31% in the comparison villages shared that social audit has been done in their village. There were also substantive number of respondents who were not aware if the social audit was done or not (28% in project villages and 40% in comparison villages).



Picture 3: Compartment Bunding in one of the Sampled villages

Type of NRM Asset: The distribution of NRM assets in project villages included earthen nala bunds (44%), compartment/graded bunding (53%) and desilting/repair of old water storage (3%). On the other end, in comparison villages, 45% of the respondents were beneficiaries of earthen nala bund, followed by 29% of cement nala bunds and 25% of compartment/graded bunding. Earthen Nala Bunds, Cement Nala Bund and Compartment grading are the three most common NRM assets developed/under construction. Though no assets were observed to be constructed in PoCRA villages during previous CMII round, but few of these assets were commonly found in comparison villages of CMII round.

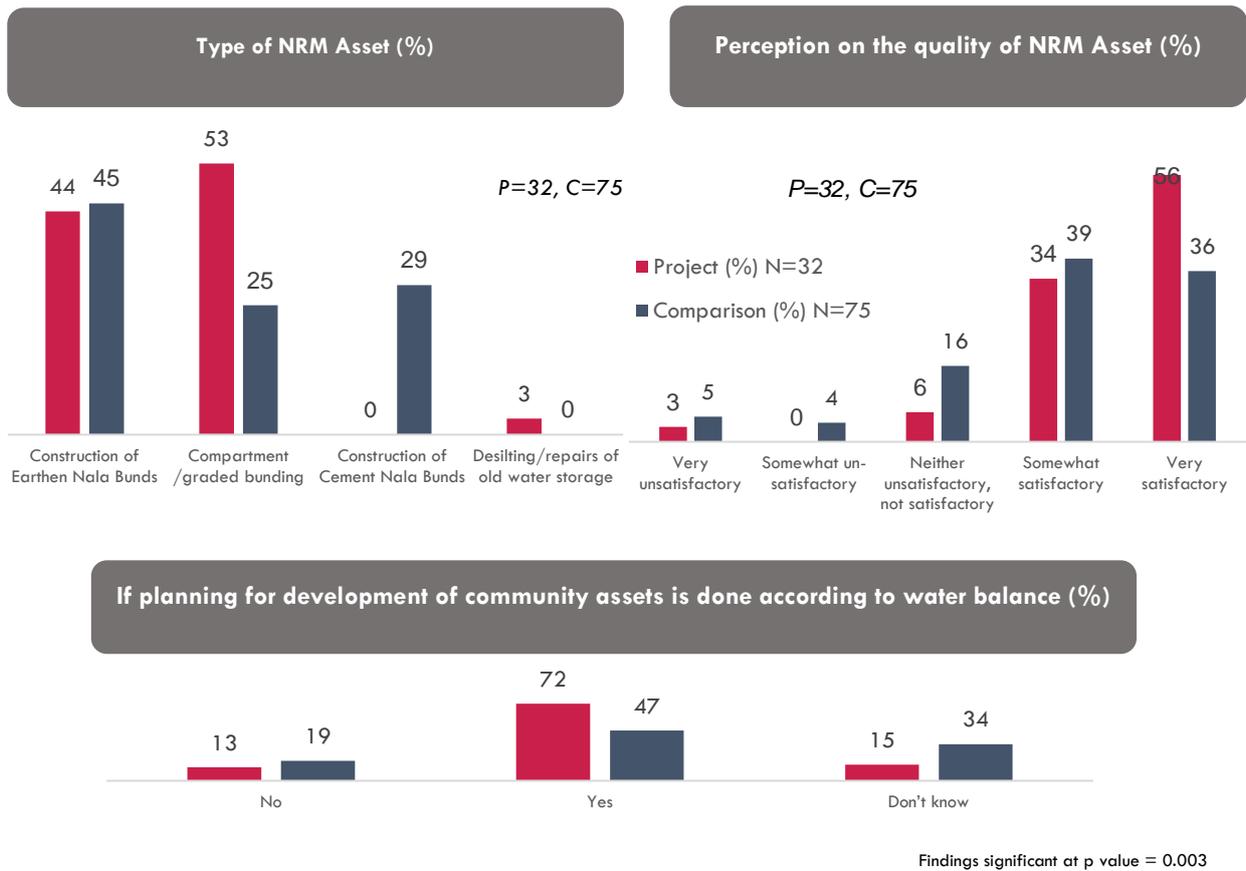


Figure 21: Type and quality of NRM Asset

Perception on the quality of NRM Asset: It can be analyzed that the quality of NRM assets was perceived better in the PoCRA villages as compared to comparison villages. In case of project beneficiaries, more than half of the respondents (56%) were very satisfied with the quality of NRM asset as compared to 36% in comparison village. 3% in the project respondents and 9% of the comparison respondents found the quality very unsatisfactory or somewhat unsatisfactory.

When asked if the NRM work was found useful, 81% in project villages and 51% in comparison villages acknowledged the assets to be very useful. 19% in project villages and 44% in comparison found it somewhat useful. While there was no one in project villages, 5% in comparison villages found the work not useful at all.

Planning for development of community asset in accordance with water balance: Higher percentage of NRM beneficiaries in PoCRA villages acknowledged that planning of the development of the community work was done in accordance with the water balance (72% in POCRA villages as compared to 47% in comparison villages). 13% in project villages and 19% in comparison village said that they do not think water balance was considered while planning for the community assets.

Maintenance of the NRM Asset: When the project beneficiaries were asked if they will be willing to involve in the maintenance of the NRM asset, 78% were affirmative and were willing to involve themselves. Of the 25 people who said yes, 44% were willing to provide labour support from self or family for maintenance of the structure. Another 40% were willing to pay for maintenance of the structure. The remaining 60% were willing to be part of the structure maintenance committee.

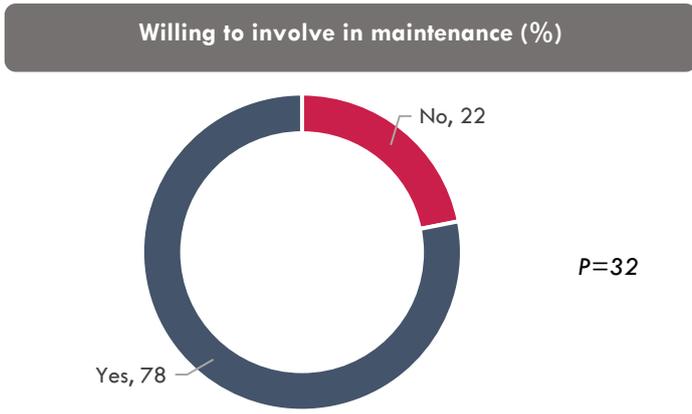


Figure 22: Involvement in maintenance of NRM Asset

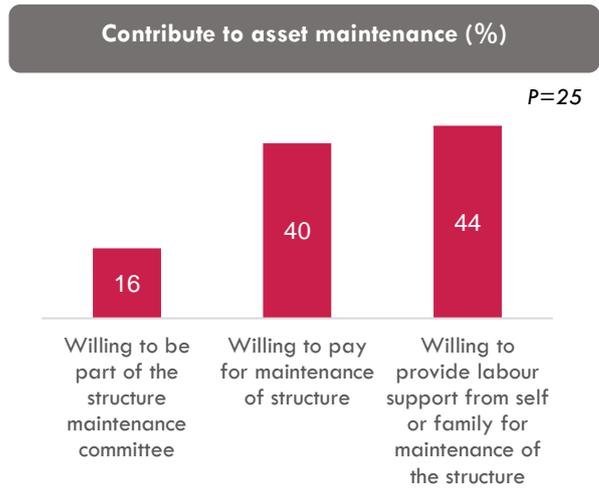


Figure 23: Contribution to asset maintenance

6.4.2 Community Farm Pond (CFP)

Similar to the feedback on NRM assets, feedback was taken from beneficiaries of community farm ponds. The beneficiary sample for community farm ponds include 51 beneficiaries from project area and 13 from comparison area. In project villages, mostly 5, 4 or 2 members had come together to apply for CFPs, with 27%, 25% and 22% as the project beneficiaries interviewed from each category, respectively. In the case of comparison villages, several farmers who have collectively built a farm pond were also 5 or 3 at 38% and 23% respectively. The maximum number of farmers in one community farm pond were 9 members in the project and 10 members in comparison. In 98% of the project cases, the asset was found on site. 83% of the project respondents shared that their farm pond does not have an inlet-outlet. And 83% of the project respondents have a lining their farm pond.

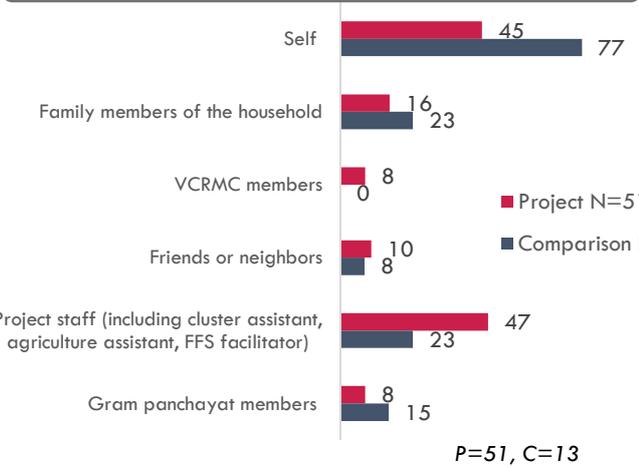
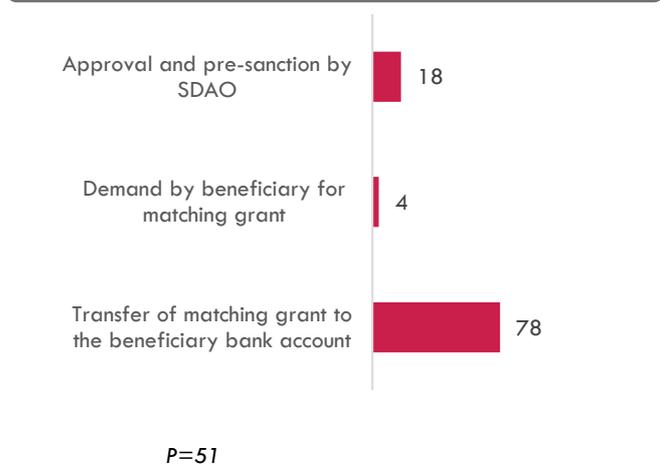
Status of Application: 78% of the respondents in project villages had already received matching grant in their beneficiary bank account; and thus, were already benefiting from the constructed community farm pond. 18% were at the stage of approval and presanction by SDAO. 4% of the project beneficiaries surveyed had raised the demand for matching grant.

Motivation to apply: Most of the respondents in project villages were either motivated by project staff (47%) or were self-motivated (45%) as they applied for community farm pond. In the case of comparison villages, the motivation was largely driven by self (77%), followed by family members (23%) and project staff (23%). It can be safely said that in PoCRA villages, project staff has been proactive in motivating eligible beneficiaries to take advantage of benefits available under PoCRA project.

Assistance in the application: Most of the project (84%) and comparison (69%) respondents submitted their application with the assistance of e-Sewa Kendra. A significant 23% in the case of comparison villages were assisted by their family members. Cluster Assistants assisted in application filing of 8% of the project beneficiaries surveyed. Relatively higher percentage of beneficiaries (84% in CMIV as compared to 27% in CMII) sought support from e-sewa Kendras for applying for CFP activity.

Status of Application (%)

Motivated to apply (%)



Assisted in application (%)

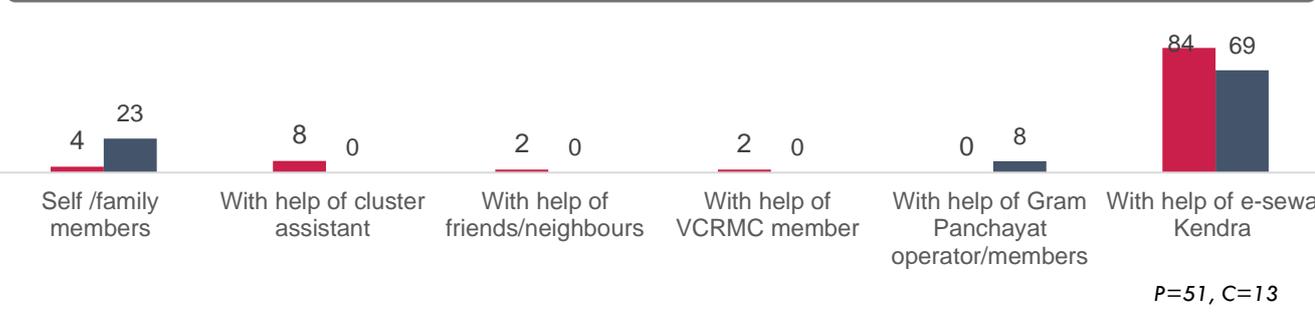


Figure 24: Status of application, motivating factors and assistance for applying



Picture 4: Community farm pond beneficiary

Perceived benefits from Farm Pond: 71% beneficiaries in PoCRA villages acknowledged that the CFP has or will help to increase their income. Apart from that, increase availability in water and agriculture was also considered as a benefit in both project (63%) and comparison (63%) villages. Increase in production, change in the cropping pattern and availability of water during dry spells are other benefits perceived by community farm pond beneficiaries. Almost one-third of the project respondents (33%) also witnessed an increase in the area of cultivation during the Rabi season, as compared to 15% in comparison villages.

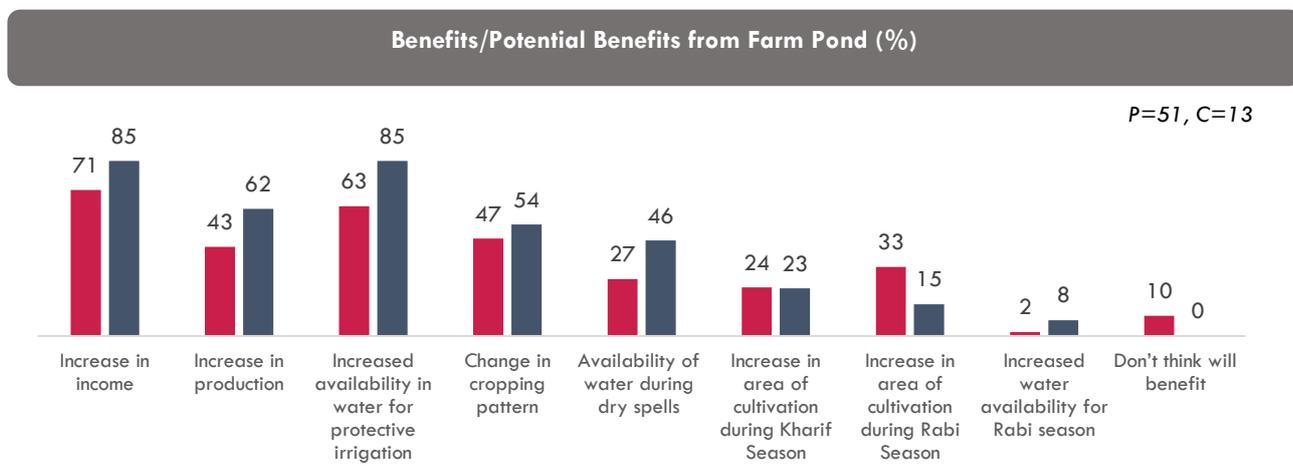


Figure 25: Benefits/ Potential Benefits from Farm Pond (%)

On further enquiring about the utility of the CFPs, 50% of the project respondents shared that the water in the CFP lasts for approximately 60-90 days. 21% reported that water last less than 60 days. 29% of the project respondents shared that the water last between 100 to as long as 240 days. 93% of the project respondents use the asset only as per requirement.

57% of the CFP beneficiaries irrigate upto 4 acres using farm their pond. 26% irrigate between 5 acres to 10 acres. 17% remaining respondents shared they irrigate between 10 – 28 acres of land.

Sources of Funds: There were 42 beneficiaries out of 51 in project villages who had already constructed the community farm pond. They were investigated on the source of funds they used. 93% of them used their own funds to invest in a community farm pond. 67% took the load from friends/ extended family members or neighbours. Only 2% of the beneficiaries took a loan from a money lender. It is suggested that mechanism should be strengthened to ensure that potential CFP beneficiaries are able to avail loan from banks and other formal financial institutions.

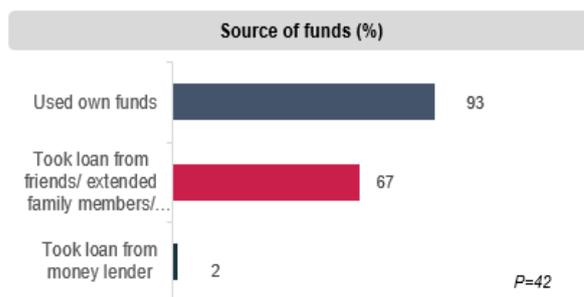
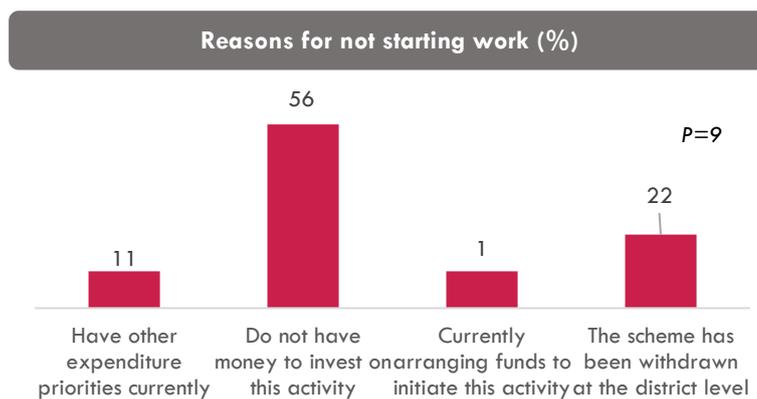


Figure 26: Source of funds for CFPs (%)

Reasons for not starting work: 9 project respondents who have the requisite approvals and have not started their work yet were investigated for the reason in not doing so yet. 5 of them (56%) currently did not have requisite money to invest in this activity. 2 of them have been unable to do so since the project benefit has been closed at the district level and they expect that payments would not be done even if they construct the asset. A similar reasoning was also observed in qualitative interactions with key stakeholders.



Issues faced while taking project benefit: All project beneficiaries were investigated on problems or challenges they faced while taking project benefits under CFP activity. 92% of them reported that they did not face any issue. 6% had problems due to the eligibility criteria in accessing the project benefit where each farmer must have at least 0.6 ha of land. Another 4% had troubles in construction as per the specified size of the farm pond and 2% additional felt the farm pond site to be selected as per technical norms was a matter of concern for them.

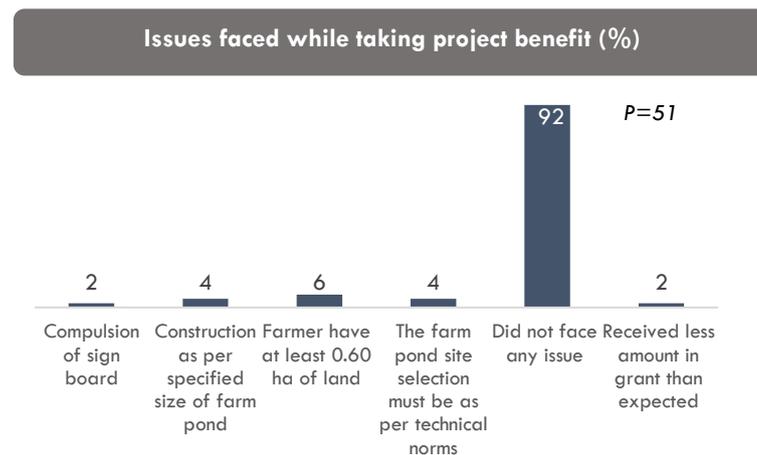


Figure 27: Reasons for not starting work and issues faced while taking project benefit

Stakeholder Feedback on community works

Feedback of key stakeholders involved in implementation of community works was taken to get insights into their current implementation status. Most of the respondents stated that community work had not started yet in their villages or have been stopped currently. The villages where community works had happened, it mostly entailed in the category of the community farm pond. Some of the challenges faced included disputes regarding distribution of water from CFPs, logistic arrangements of distributing water, and delayed payments of grants. For the NRM community works, the challenges included lack of functional VCRMC committee and thus limited planning on community work, lack of people's participation and non-approval on the DPRs developed.

It was pointed out by Taluka Agriculture Officers that community works, especially NRM work required continuous and dedicated engagement to build a buy-in amongst farmers and get them on board. Usually, at first instance, farmers are not ready to contribute or share their resources in a common pool. During water conservation works like streams, nallas, rivers, the land is fragmented. Also in cases where a dam needs to be raised to carry out the water conservation works and the dam is near the farm, the farmers are generally not ready to give the land. Farmers raise objections like the soil of the dam should not come in their fields. Sometimes, people with different tendencies come together for execution of community work, so they need to be guided to avoid problems later during water distribution. E.g. in case of CFPs with more than two people come together, where each has a different cropping pattern, and each crop needs different proportions of water. This creates problems in distributional aspects. A pre-understanding in such cases avoid conflict at later stages. For the community work to be implemented successfully, all the villagers should coordinate and have good relations with each other.

“All the farmers need water, but no one is willing to give up their area for check dams, so now cement dams are being built on rivers and streams. In case of cement dams, not much area is involved, so cement dams should be built.” Agriculture Assistant

Another bottleneck reported in planning and implementation of NRM works was that for eight to nine months, it is difficult to do most measurements or actions because there is a crop in the field. In February, the fields become vacant and spot verification begins. Therefore it was suggested, soil water conservation works must be done in three to four months till January, which sometimes delays the implementation of the work.

“Farmers feel that if water conservation works are done in the field, their farmland will be eroded, and the productivity of the land will be reduced. Therefore, soil and water conservation works could not be initiated, and we are not able to find any solution to this problem.” Cluster Assistant

Further, some SDAOs mentioned that the project can be further improve and detail the guidelines of NRM activities being implemented under PoCRA He further added, there is a need to build capacities and understanding of these guidelines of the project staff and VCRMC members so they can implement it smoothly. An SDAO reported that they is an option of creating tender at the VCRMC level for soil conservation works, but the understanding related to roles and responsibility of creating, publishing and bid opening of the tenders is limited.

6.5 PoCRA Supported FPO beneficiaries

One of the key components of PoCRA is to strengthen the existing farmer producer organizations or companies in their entrepreneurial ventures by providing them with financial support. This is aimed to strengthen the post-harvest activities and value chain of the major crops and to strengthen the supply chain for the climate-resilient crop varieties in the project area. The FPOs that have applied to receive support or have received support through PoCRA were sampled from each district and feedback of their members were taken to understand the current activities taken by the by FPOs and get feedback on the support received through PoCRA till now. Two FPOs who have received/applied for support from PoCRA were randomly selected from each district (Except Parbhani district – since, currently there is no FPO supported in Parbhani district by PoCRA). Feedback from 56 FPO members was taken as part of CM IV. 21% of these FPOs were established before 2016. 43% of the FPOs were established in 2017-18. And the remaining FPOs were established in 2019-20. 10 FPC's out of 14 have reported to be profitable in the year 2019-20. All the FPC's were found to be functional with minimum turnover of INR 93 thousand to maximum turnover of INR 4 crore. The reported profit ranged between INR 8000 - 800,000.

Type of FPC Member and Functionality: Out of 56 FPC members, 47 members (84%) were only members while nine (16%) were Board members/ Directors. Almost all respondents (98%) acknowledged that their FPO is currently functional.

Activities that FPO is involved in: Most of the respondents (71%) shared that their FPO is involved in the aggregation of agriculture produce. Close to 58% shared that their FPO is also providing support accessing market to sell their produce. 56% of the respondents shared provision of agriculture inputs like seeds, fertilizers within the scope of activities conducted by the FPO. 36% shared their FPO is providing training to the farmers on best agriculture practices. However, only 24% of the FPO respondents shared that their FPO is involved in value addition of agriculture produce like sorting, grading, etc.

Services and facilities received from FPO: Getting access to equipment and tools for agriculture from their FPO (62%) and marketing support in selling their agriculture produce (62%) are the two most significant services that respondents were receiving from their FPO. Almost half of the respondents were purchasing seeds through FPO (51%). 47% were involved in purchasing chemicals and fertilizers from FPOs and 42% were reaching out the FPO for grading and sorting of their agriculture produce. Only 9% of respondents shared that they are getting value-added services received from their FPO. 57% of the respondents acknowledged having received training from FPOs. Topic of training included agriculture related technologies, banana

cultivation, soil management, irrigation practices, FPO functions, organic farming and seed production amongst others.

Comparing CMII and CMIV rounds, most of the FPOs reported aggregation of produce (73% in CMII, 71% in CMIV), providing agriculture inputs (66% in CMII, 56% in CMIV) and providing access to market (39% in CMII, 56% in CMIV); and value addition as key activities by their FPO (39% in CMII, 24% in CMIV). Though a relatively higher percentage of framers reported receiving training on best agricultural practices during the current round (36% in CMIV as compared to 17% in CMII)

Selling of agriculture produce to FPO: When respondents were enquired if they sold their agriculture produce to the FPO, 71% of the respondents had sold their produce to the FPO. Soybean (43%) and Chickpea (30%) were the crops that were mostly sold to the FPO. Other crops include Maize (16%), Wheat (14%), Turmeric (13%), Cotton (13%), Pigeon pea (13%).

Review of “Only Member” Category of FPO Respondents on their knowledge and participation in FPO decision making was conducted as a part of the survey. This was to understand the institutional strength and transparency of the FPO as an institution.

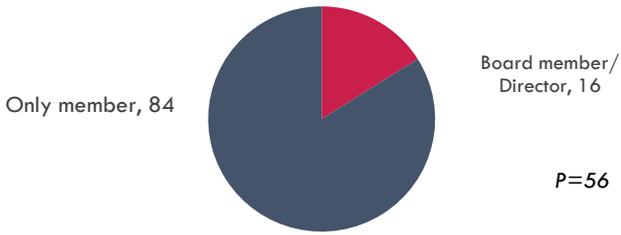
Frequency of participation in General Body meetings of FPO/FPC: When *only members* were asked how frequently they attend the General Body meetings of their FPC/FPO, 70% of them said they ‘always’ attend the meeting, 26% acknowledged that they attend the meeting sometimes, while only 2 respondents (4%) said that they rarely attend such meetings.

Participation in Decision-making process of the FPO/FPC: When asked if they participate in the process of decision making in their FPO, 62% of the respondents acknowledged that they always participate in the FPOs decision making process. 34% (16 respondents) shared that they ‘sometimes’ participate in decision making. Only 1 respondent mentioned that they never participated in the decision making of the FPO/FPC.

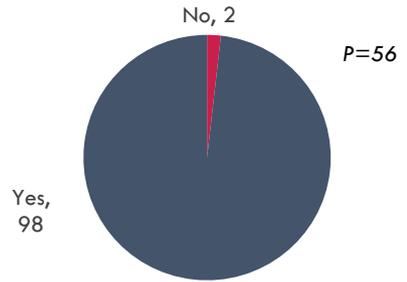
Priority for storage of produce in the FPO: 41 out of 47 respondents (87%) shared that they get priority for storage of produce in the FPO, while 6 (13%) did not see them getting such priority.

Custom Hiring Centre at FPC: 74% respondents (35 out of 47 respondents) affirmed that their FPO has a Custom Hiring Centre. All 35 respondents hire equipment from the Custom Hiring Centre at a discounted rate, being a member.

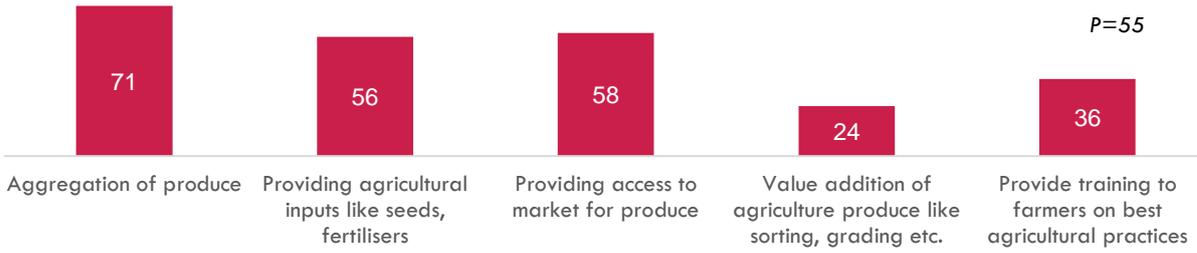
Type of FPC Member (%)



If FPC is functional (%)



Activities that FPO is involved in (%)



Services and facilities received from FPO (%)

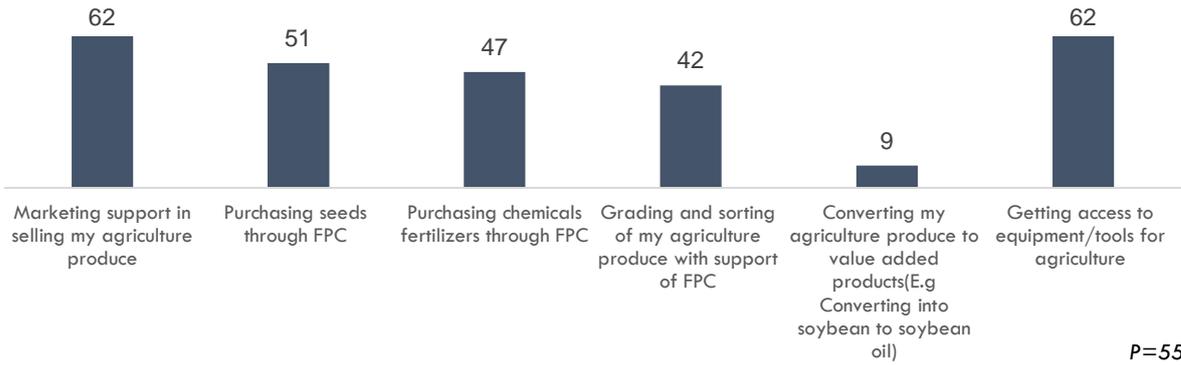


Figure 28: Profile of farmer producer organisations/Companies surveyed

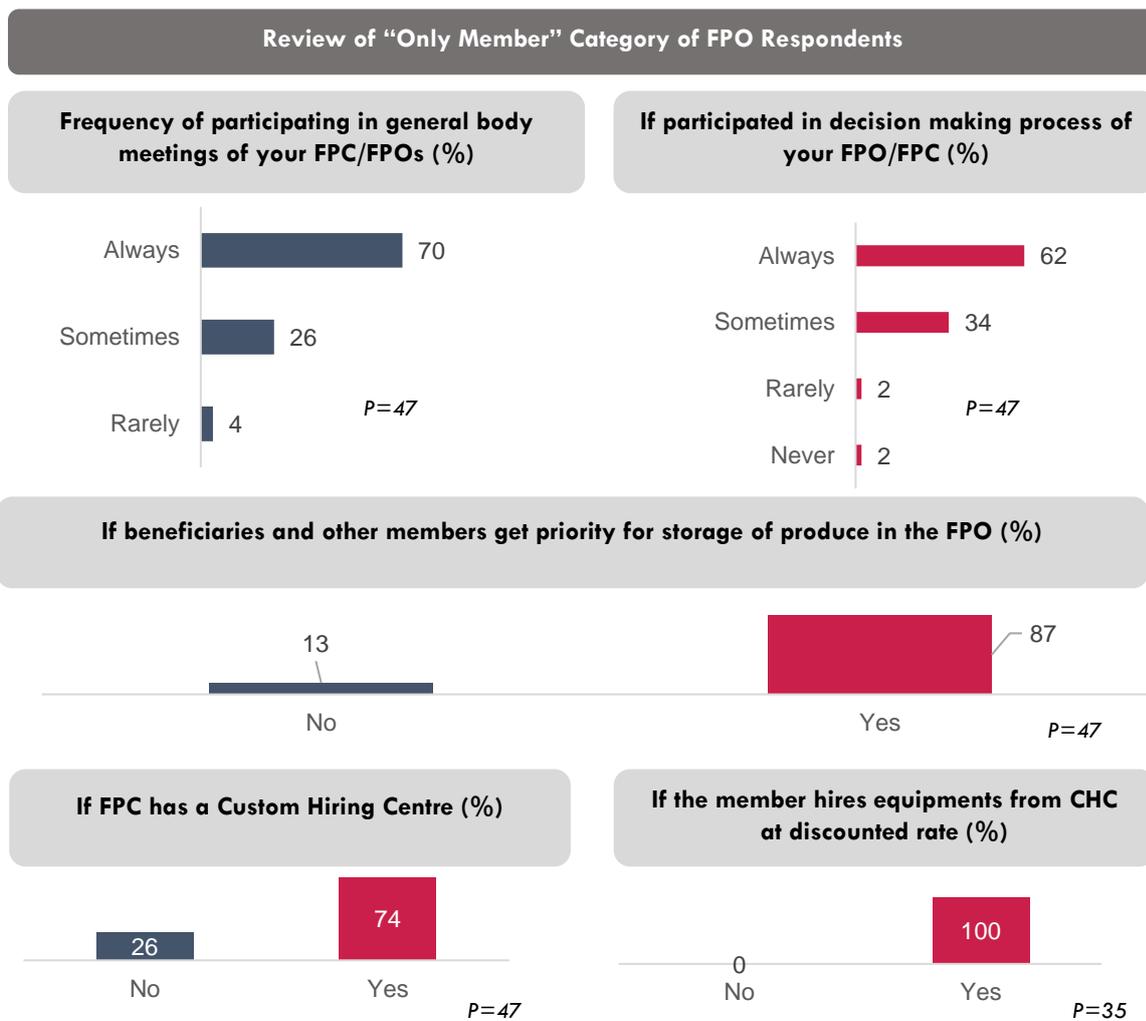


Figure 29: Information & Participation Review of 'only member' category of FPO respondents

The respondents were also enquired on their knowledge, perception and experience with PoCRA's financial support.

Awareness on Status of Application: Approximately half of the FPO beneficiaries were aware about the business plans prepared by their FPO. Out of the 30 respondents who were aware, there were 16 cases (53%) whose reported that their FPO's PoCRA application was under processing stage. 10 respondents (33%) reported to having received support from PoCRA. 4 cases were in the application stage. CHC had been developed in the cases (where their FPOs have received support from PoCRA). Most of the projects applied for PoCRA are in the range of INR 10-30 lakhs except in one case where the total value is approximately INR 80 lakhs.

Difficulties faced in applying or getting the benefit: Out of the respondents acknowledging facing difficulty, 52% reported difficulty in getting bank loans, 36% reported lack of guidance in accessing project benefits and 32% faced difficulty in getting pre sanction for their application

(Perceived) Benefits from financial support from PoCRA: 80% of the beneficiaries believe that they will get a better price for their produce after getting support from PoCRA. 50% believe their incomes will increase from selling value-added products. 30% believe they will get access to markets to sell their produce.

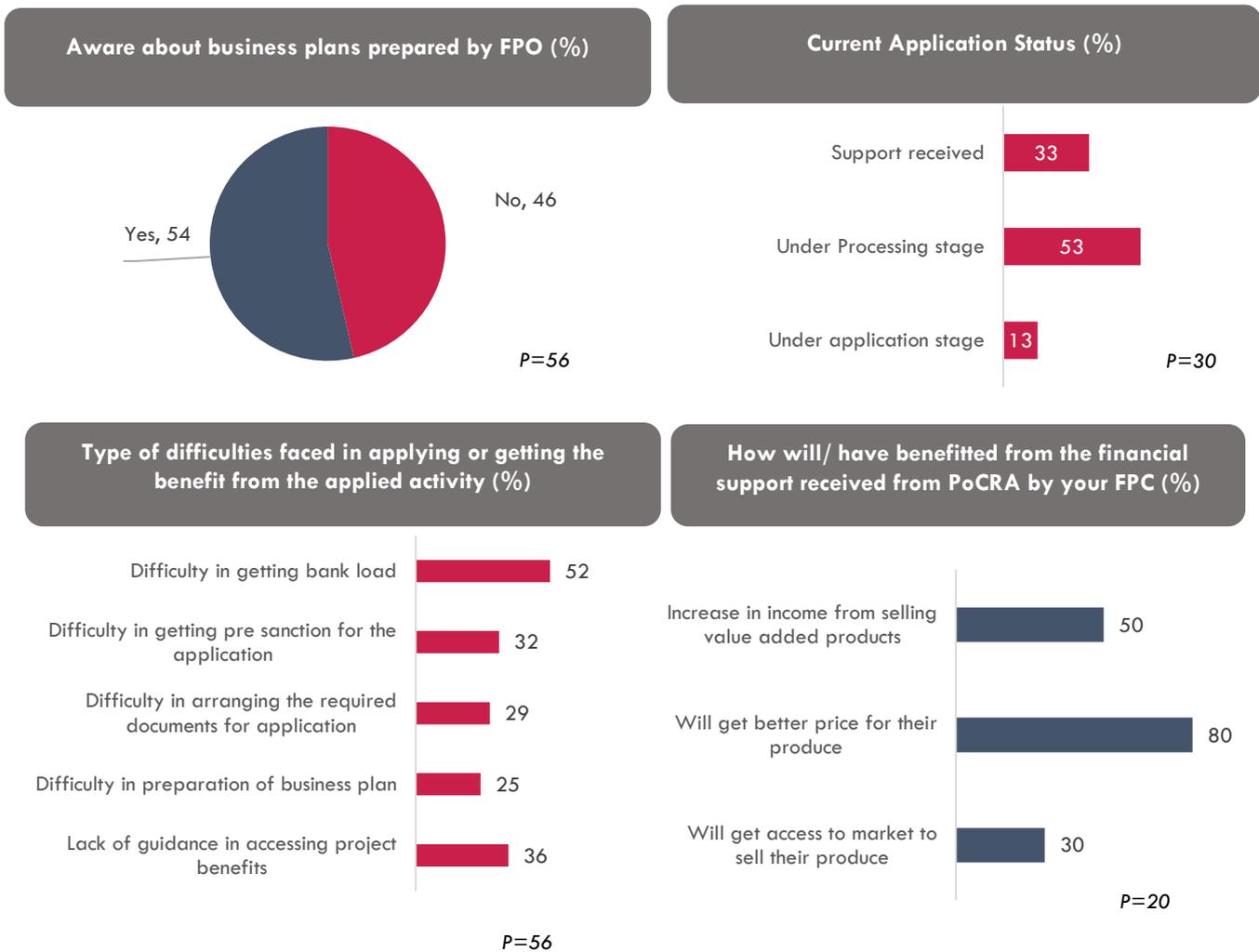


Figure 30: Business plans, application status, difficulties faced & benefits received by FPO from PoCRA

Challenges faced by FPO: The major challenge faced by the FPOs was of the lack of working capital/finance for their activities. Respondents reported that the requirements set by the banks were stringent and often unattainable and hence they could not get access to the loans. Further, many operational challenges were also mentioned by the FPO members. They included lack of storage facility and lack of experience in marketing their produce. Some FPOs also mentioned that the quality of produce they receive from farmers is sometimes not of good quality and they struggle in selling it further. Transportation is another challenge that FPOs are facing – one from the end of aggregation of produce and then for selling it in the markets.

“We face the challenge of getting loans, banks don’t trust us for big projects. Local banks are still more friendly than the big, nationalized banks”: Director, FPO

Business management training: Most of the respondents had received business management training from organisations like NABARD, WOTR, PD ATMA, Grand Thornton, NBSC Company and Nisarg Agrotech.

Special activities for women: Some respondents shared specific activities for women include selling of vegetable produce, sericulture trainings. Few respondents shared their plan of initiating activities like packaging, horticulture and livestock to be started specifically for women. The most common initiative reported by the FPO members to increase women participation was of organizing awareness camps for them. Awareness campaigns included opportunities in organic farming, sericulture, livestock rearing and processing industry. One of the FPOs reported of purchasing goats only from women farmers and selling them in the market.

As reported by PS Agribusiness, in compliance with the environmental safeguards it is ensured that tree covered areas are not chosen while selecting a site for developing infrastructure. Also it is ensured that no infrastructure is built on the banks of water sheds.

Raising finance: With respect to the current finance sources for the FPOs, most farmers reported that they arrange funds from members only. Few respondents shared that they had availed loans from banks and other organisations. The documentation requirements and initial banking costs were reported to be the biggest hurdles faced by the respondents in accessing loans.

“The problem is that if we want the loan then the plot must be in the name of Company, this is a very costly process and took 1 lakh cost with additional registration cost. Some farmers lose trust in us due to such problems.”
- Director, One Way Farmer Producer Company

Experience with PoCRA: Most of the PoCRA supported FPO representatives were happy with the grant application process so far. Some respondents shared that their FPOs have received machinery support, capacity building, market linkage from PoCRA. Most of them were assisted by PoCRA officials including Agriculture Assistant, Cluster Assistant, Taluka Agriculture Officer in filing their application. Few were also supported by NABARD. Few respondents suggested that the grant amount should be given 100% in advance, rather than after the completion of work.

Expectations by FPOs: The FPO representatives were enquired about the further and additional support which is expected from PoCRA. The common theme that emerged was infrastructural support from the project such as help in building warehouses, cold storage and godowns to safely store their produces. Value chain development and marketing infrastructure are two critical areas of investment required on which the FPOs requested technical support. Respondents also reported that they also expected support from the project and the government to nudge to the banks, for them to get loans for their projects as banks were reluctant to loaning them money for their activities. They also expected the banks to extend their limit of financing the project from the existing levels.

Also, the FPOs requested for capacity building support from the project for aspects related to - marketing of their produces, providing market linkages to the FPCs and starting of different activities which are harmonious with their current activities (such as seed processing). The experts based on their field visits highlighted that there is value in developing clusters of crop/fruits and support FPOs in setting up aggregation and value addition. This would be helpful in expanding horticulture activities under the project. As most of the fruits and vegetables are perishable, only good production may not translate into higher profits unless value chain development of storage, processing and markets are developed.

6.6 PoCRA supported SHG beneficiaries

Another key component of PoCRA is to support SHGs in promoting primary processing and supply of agriculture inputs and equipment. To understand the status of SHGs that will be/are supported by PoCRA, 40 members of different SHGs, 2 from each district, supported under PoCRA were surveyed

20 respondents belonged to SHGs formed between 2012-2014. The other 20 respondents belonged to SHGs established between 2016-2018.

Type of SHG Member and Frequency of Savings of SHGs: 65% of the respondents were only members while 35% of the respondents were either President/Secretary of the SHG. More than 70% of respondents acknowledged that their SHG does monthly saving. Average SHG saving was reported to be less than INR 10,000 for 9 respondents, INR 10,000 to INR 30,000 by 12 respondents and between INR 30,000 – INR 50,000 by 14 respondents.

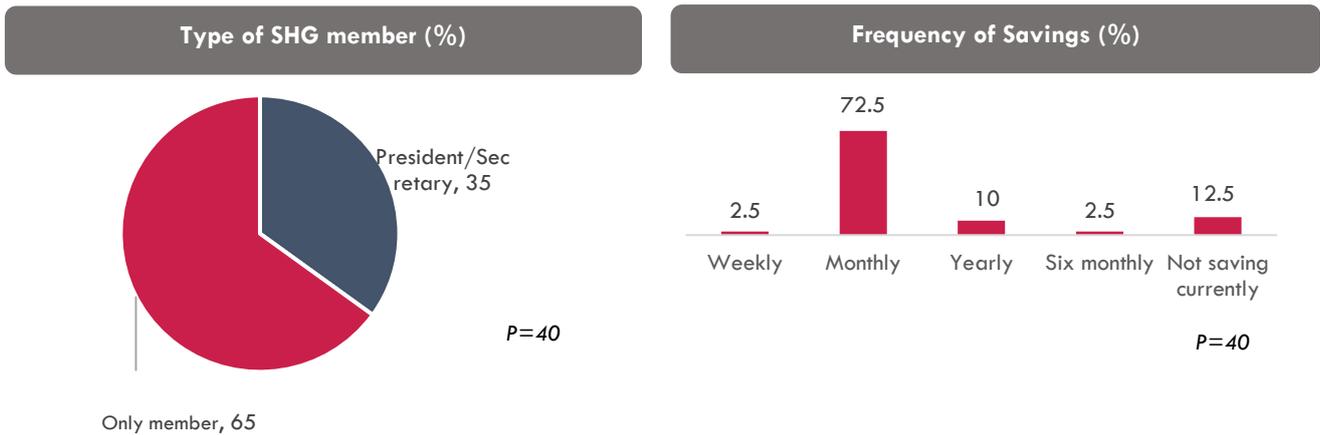


Figure 31: Profile of SHGs surveyed

Training Received: Only 13 respondents out of 40 (33 %) acknowledged receiving training through their SHGs. The topics of training included Agriculture Planning, Horticulture, Cost reduction in agriculture, fisheries, farm equipment on rent, intercropping, maize production, seed production and water systems. When the 13 respondents were asked if they have received training on business establishment, 9 of them responded in affirmation. The source of training on business establishment was the Agriculture Department for 6 respondents, 2 got trained from FPC and 1 was trained by project officials.

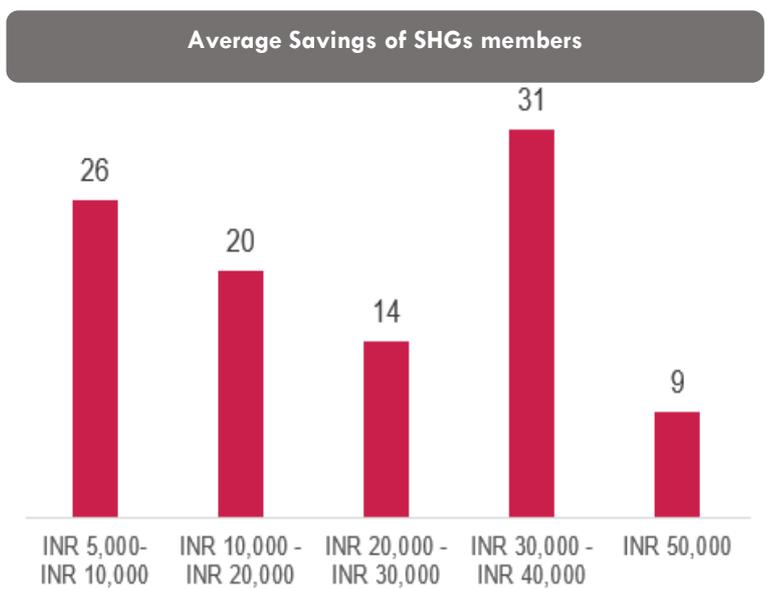
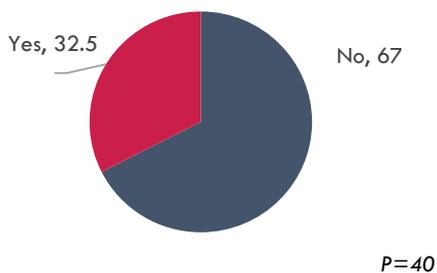
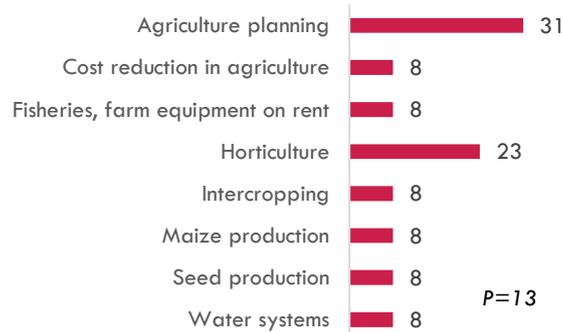


Figure 32: Average savings of SHGs Members

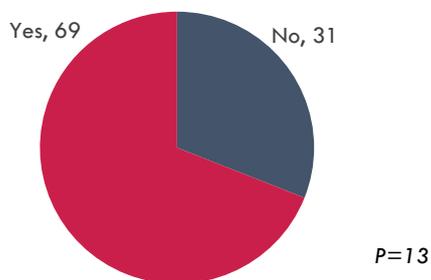
If received Any training (%)



Topics of training (%)



If received training on business establishment (%)



Source of training on business establishment (%)

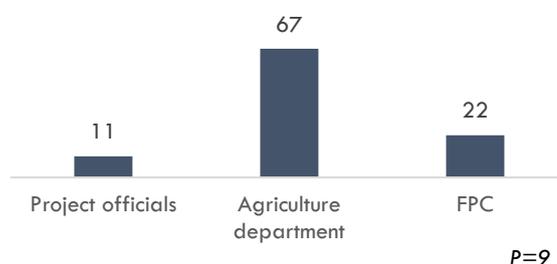


Figure 33: Training review of SHGs

Income Generating Activities: 65% respondents acknowledged that their SHG is involved in income generating activity. The income-generating activities included farm equipment for rent as a custom hiring centre (65%), tractor business (19%), marketing and selling of agriculture produce (8%) including banana marketing (8%).

Services received from SHGs: On enquiring about the services received by the SHG members from their SHG, 68% respondents acknowledged that they received agri-equipments and tools as a service from SHG. 38% member purchased seeds from SHGs. 35% had purchased other inputs like chemical fertilizers. 28% had received marketing support in selling their agriculture produce. 13% respondents had received no service from their SHG.

Application to PoCRA for Financial Support: 53% respondents shared that their SHG have received support from PoCRA. 25% of them had their application under processing stage. 23% of them were in the application stage. When asked if they faced any difficulty in applying for the project benefit, only 15% reported of facing difficulty in application. Lack of guidance in accessing project benefit and difficulty in getting bank loan were two major difficulties faced. One of them also reported difficulty in preparation of the business plan. All SHGs who received financial support from PoCRA set up a custom Hiring Centre for agri-equipments from that support. Profit between the range of INR 10,000 – INR 7 lakhs (Average INR 2.24 lakhs) was reported by 7 SHGs by setting up such Custom Hiring Centres. SHG related project activities have picked up recently. 68 % of SHG beneficiary respondents reported that they have rented agriculture equipments through SHG run custom hiring centres during CM IV as compared to only 18% respondents acknowledging the same during CM II.

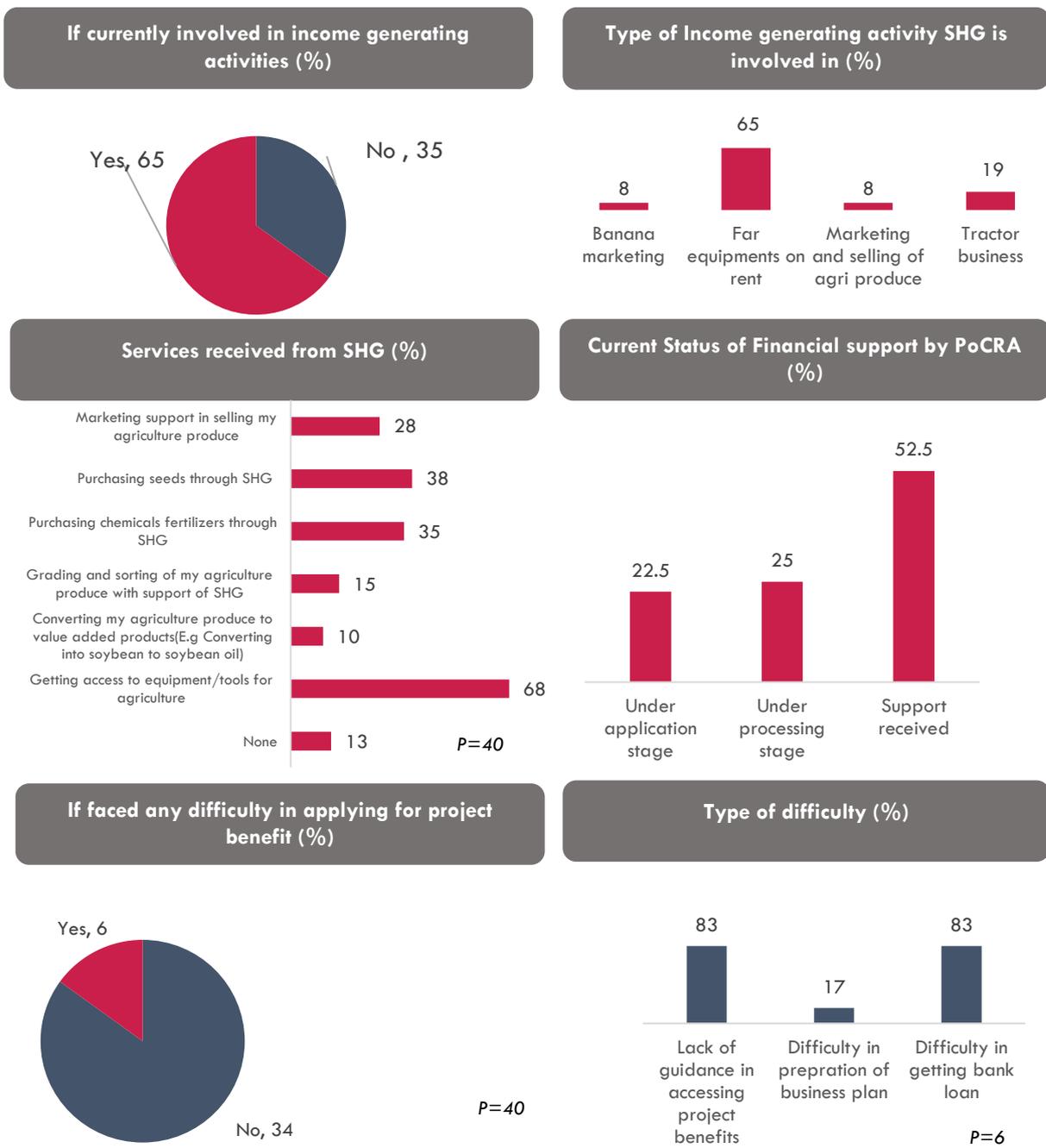


Figure 34: Review of financial and business planning of SHGs

6.7 Satisfaction on different project parameters

This sub-chapter presents the findings on of the feedback of the beneficiaries on the micro-planning process and also the perception of the beneficiaries about different parameters related to the implementation of PoCRA. This section provides further insights on how the beneficiaries feel about different activities under PoCRA, the process of getting benefits under PoCRA, satisfaction from the support received from VCRMC members and also satisfaction from the support received by project staff.

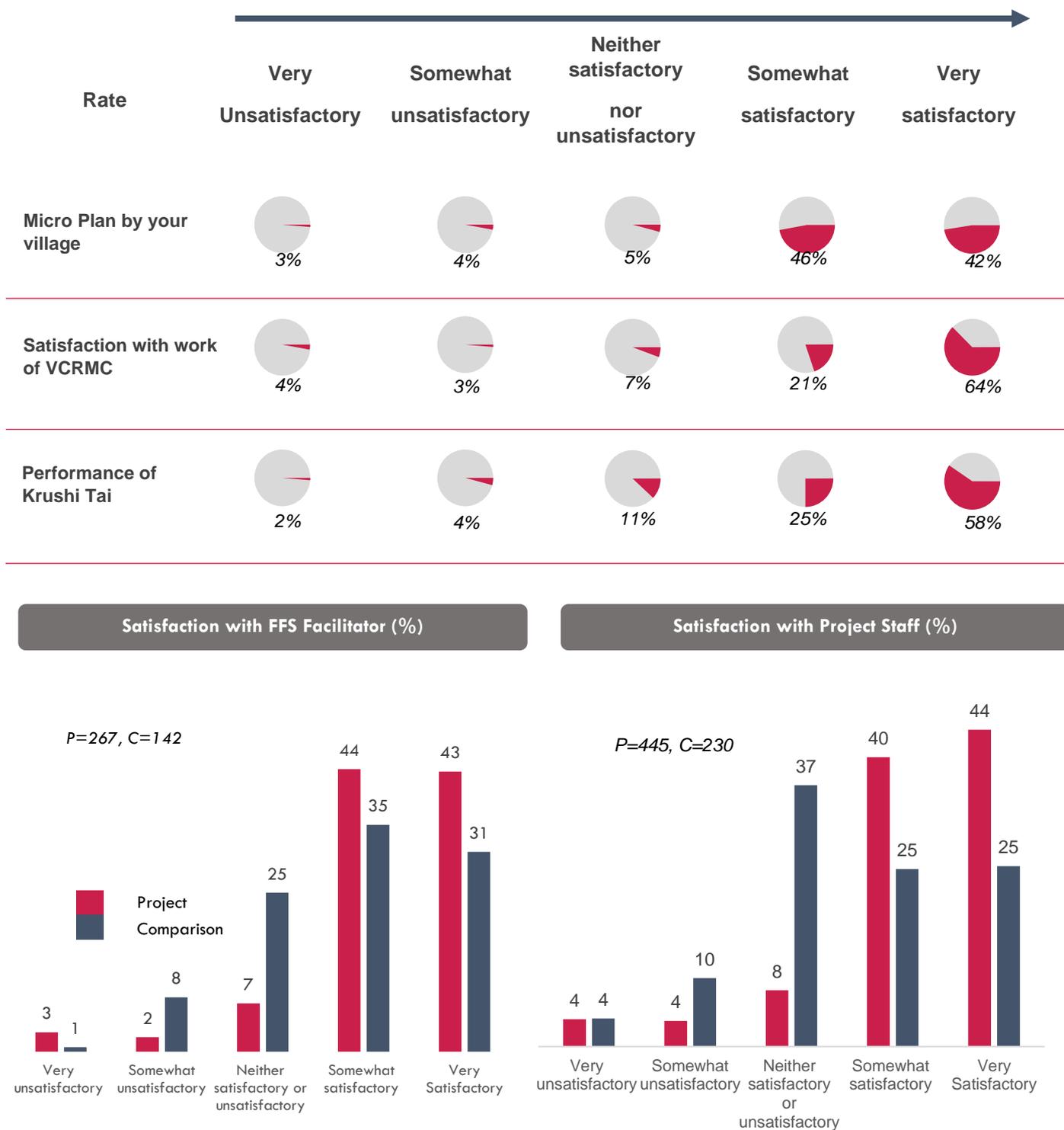


Figure 35: Review of Project Parameters

Satisfaction with Micro planning

Feedback of beneficiaries from PoCRA villages was taken understand their satisfaction with the micro planning process conducted in their village to decide the watershed management activities to be done in their village. On enquiring about the awareness of village level micro planning under PoCRA project, 61% respondents acknowledged to be aware of the same. Of the ones who were aware of the process, 73% of them or their family members had participated in the process of micro-planning. 60% of the respondents from Phase I project

villages were aware of water budgeting process. Of these, 94% of the respondents found the water budgeting process to be very useful.

Further, 88% of the project beneficiaries (aware of micro planning) acknowledged the micro-planning in the village to be satisfactory in terms of addressing their needs for improving water harvesting and climate resilience. Out of these, 46% found it somewhat satisfactory and 42% were very satisfied with the process. 7% were not satisfied while 5% were indifferent about the micro-planning of the village.

Satisfaction with VCRMC

85% of the project beneficiaries reported to be satisfied with the functioning of their village VCRMC. Out of these, 21% found it somewhat satisfactory and 64% were very satisfied with the process. 7% were not satisfied while 8% were indifferent about the micro-planning of the village. When asked if VCRMC committee members represent all sections of society from their village, 78% agreed, while 17% were *not sure* about the same.

Satisfaction with Performance of Krushi

Performance of Krushi Tai was also quite satisfactory with 83% of the beneficiaries satisfied with her performance and support provided. 58% of these were *very satisfied* with her support. 11% did not give any affirmative response while 6% respondents reported to be dissatisfied.

Satisfaction with Performance of FFS Facilitator

Satisfaction with performance of FFS Facilitator was observed to be much higher in PoCRA villages (87%) as compared to non-PoCRA villages (66%). There were 5% cases who were not satisfied by FFS Facilitator in PoCRA villages, this was 9% in Comparison villages.

Satisfaction with the support received from Project Staff

Beneficiary satisfaction with the support received from projects staff is significantly higher in PoCRA villages (84%) as compared to that in similar non-PoCRA villages (50%). As also observed through other findings, PoCRA staff has been proactive and has been a key factor for motivating the eligible beneficiaries to apply and get benefits under PoCRA project.

Satisfaction from the work of FFS facilitator was also found to be high with 87% of PoCRA beneficiaries being satisfied with their work.

Satisfaction with the process of accessing project benefits

Satisfaction with the process of accessing project benefits was observed to be higher in PoCRA villages (86%) as compared to non-PoCRA villages (78%). This has been also substantiated from the qualitative findings as use of technology for implementation of PoCRA has helped to increase transparency and accountability.

Awareness about Project Information Boards

When the project beneficiaries were asked if they are aware of various project information boards in their village, 81% acknowledged of being aware of Project information board and 57% of the project respondents were aware of VCMC Board. Only 39% of the beneficiaries were aware of the Board detailing activities under the project. Though only 17% were aware of the board presenting the water balance activity details of your village. Further, 48% of the project beneficiaries had visited PoCRA's YouTube channel. Very few respondents (8%) acknowledged being part of an exposure visit under the project. On similar lines, 13% of the respondents acknowledged of attending training under PoCRA. The broad topics of training included farmer field schools, agriculture cultivation practices like inter-cropping, protective irrigation, soil and pest management, soil testing amongst others.

Benefits received from other Government Schemes: It can be seen from the table below that most of the project (71%) and comparison village respondents (67%) acknowledged to have benefitted from Pradhan Mantri Fasal Bima Yojana. Apart from that, other schemes that respondents have benefitted from including

Kisan Samman Yojana (P-22%, C-31%) and Pradhan Mantri Kisan Sampada Yojana (7%) and Pradhan Mantri Krishi Sinchai Yojana (P-4%, C-7%) and MGNREGS (P-5%, C-6%). The proportion of beneficiaries acknowledging receiving benefits on other government schemes was similar across PoCRA and non-PoCRA villages.

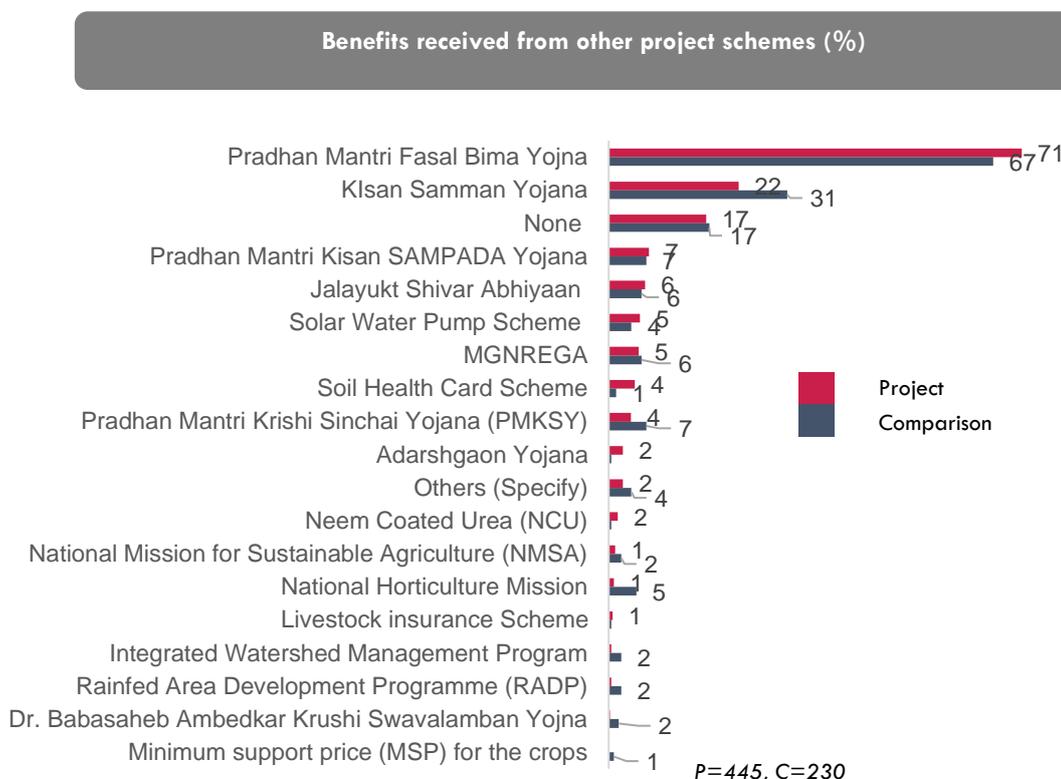


Figure 36: Benefits received from other project schemes (%)

6.8 PoCRA beneficiaries from an inclusivity lens

This section presents the analysis of PoCRA beneficiaries from an inclusivity lens and also when compared to similar non PoCRA beneficiaries.

6.8.1 Social Profile

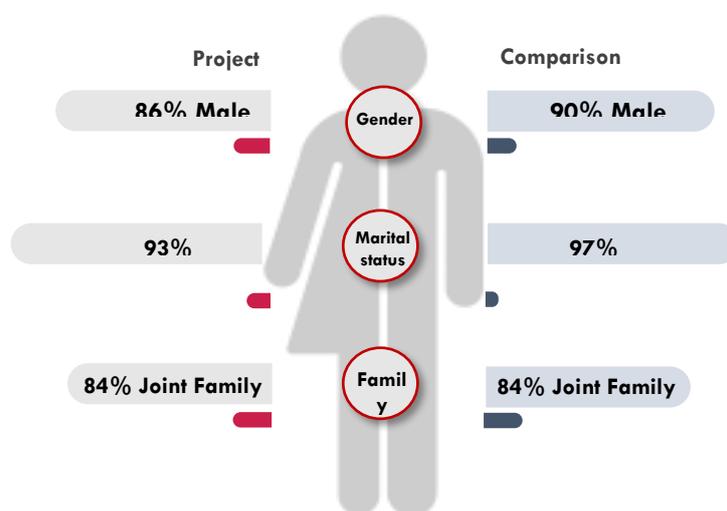


Figure 37: Social Profile of Beneficiaries surveyed

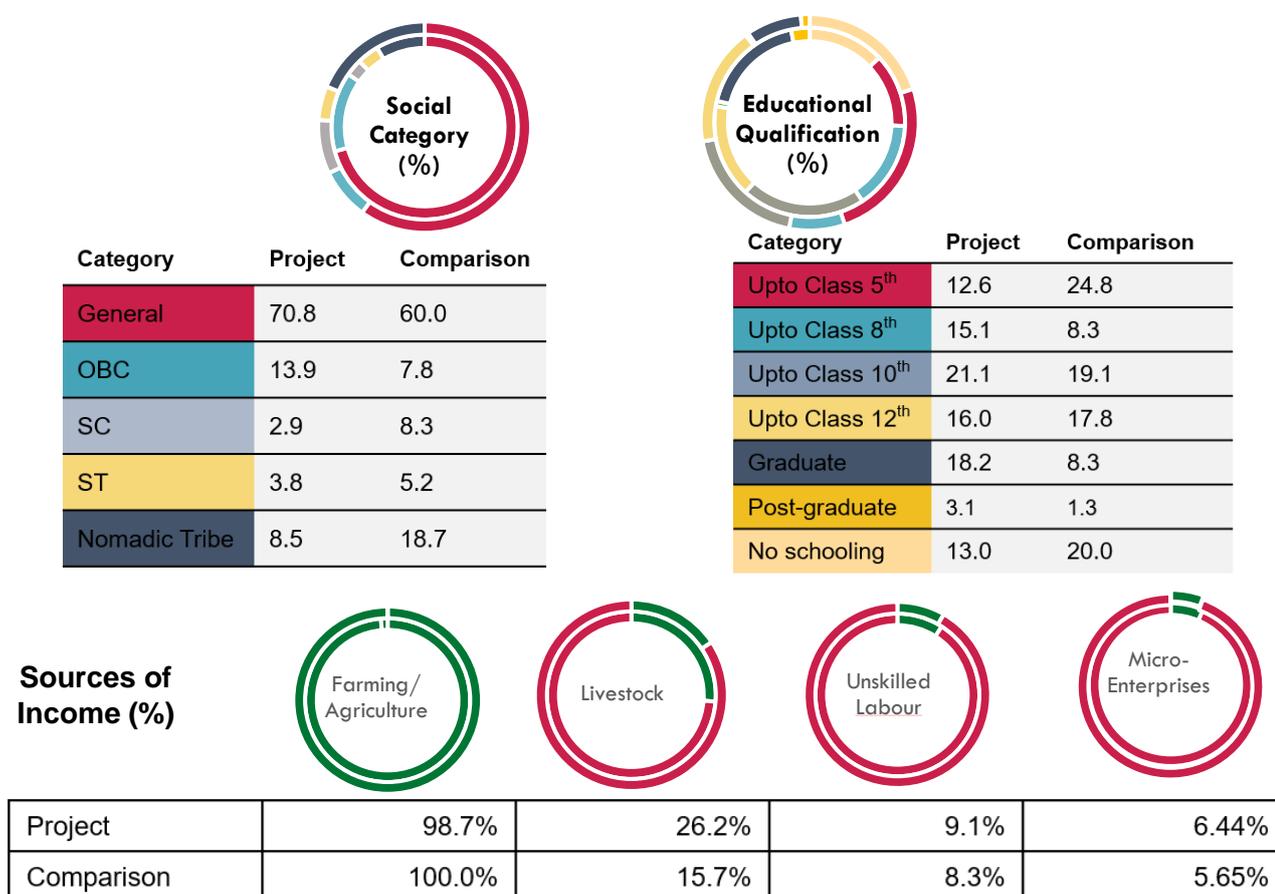
Gender: Maximum number of direct beneficiaries are male members in both PoCRA and non-POCRA villages. It was observed that having land on the beneficiary's name is one of the eligibility criteria to apply for most of the agriculture-based schemes including PoCRA. This prevents women to be direct beneficiaries.

Marital Status: More than 90% of beneficiaries (across project and comparison arms) were married. The sample also included 6 widows (1.35%) in project villages and 1 (0.4%) in comparison villages. Approximately 6% of the sampled beneficiaries in project villages and 2% in comparison villages were unmarried single individuals.

Family Type: Majority of the respondents (84%) lived in a joint family in both project and comparison villages. The remaining 16% of the respondents in both villages belonged to nuclear families.

The general profile of the sampled beneficiaries is a married male living in a joint family.

From the infographic below, some insights on the profile of beneficiaries are as follows:



Inner circle represents project category and outer circle represents Comparison category in all circles. (P=445, C=230)

Figure 38: Social and Educational Profile of the Beneficiaries surveyed (contd)

Social Category: The sampled beneficiaries in PoCRA villages majorly belonged to the general category. This was followed by almost 14% beneficiaries belonging to OBC category and 9% belonging to nomadic tribes.

Educational Qualification: The educational qualification of the surveyed beneficiaries is quite diverse with approx. 8-25% of the sampled beneficiary having studied primary, secondary, higher secondary and graduate-level studies each. Approximately 13% of sample beneficiaries in the project and 20% in comparison villages have not undergone any schooling. As we have significant percentage of project beneficiaries with low

education qualification, ensuring a support system to help to apply for project benefits (through DBT app and other technology platforms) becomes vital.

Sources of Income: Farming is one of the major sources of income of all sampled beneficiaries. Apart from the significant sample with sources from Livestock, unskilled labour and micro-enterprises, there were also few households with the source of income from skilled work (3.8% in project and 2.1% in Comparison) and Salaried jobs (5.3% in Project & 2.1% in Comparison)

The average annual household income in individual category beneficiaries in project and comparison are comparable with INR 173049 in case of the project and INR 172359 in case of comparison.

Table 7: Average Income of respondents, Category wise

Average Income	N	Mean Income (INR)	SE	95% CI	
Project	445				
Individual	266	173049	122337	148758	197340
Community	179	222654	22843	177575	267731
Comparison	230				
Individual	142	172359	20130	132563	212155
Community	88	154147	23755	106930	201365

6.8.2 Agriculture Profile

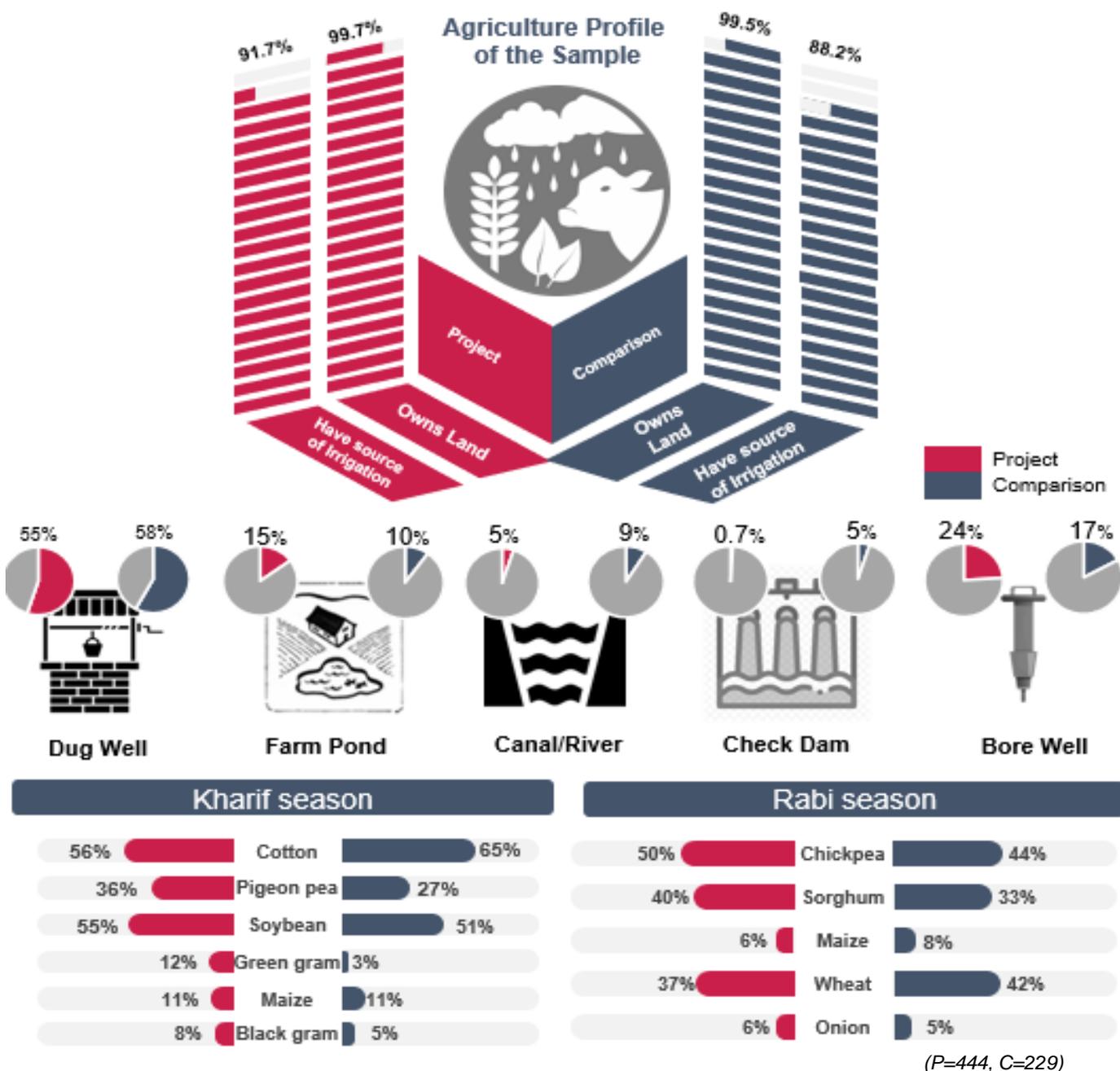


Figure 39: Agricultural Profile of the Beneficiary respondents

It can be observed from the agriculture profile of beneficiaries that

Land Ownership: Almost all the sampled beneficiaries own land, i.e. 444 out of 445 in project villages and 229 out of 230 in comparison villages. Of the farmers who owned land, approximately 3/4th of the farmers have less than or equal to 5 acres of land (72.9% in Project villages and 78.6% in Comparison villages). The average land holding classified in different categories is summarized below.

Table 8: Type of beneficiary

Type of beneficiary	Project (Land Size in acres)	n	Comparison (Land Size in acres)	n
1 Individual category	5.17	265	5.00	141
1a DBT- applied and pre sanction received	4.22	59	4.47	19
1b DBT -Disbursement received	5.62	90	4.9	116
1c FFS Host farmer	5.87	29	8,5	3
1d FFS Guest farmer	5.11	87	8,25	4
2 Community beneficiaries	5.99	179	4.92	88
2a NRM	6,75	32	4.98	75
2b Community Farm Pond	7.35	51	4.57	13
2c FPO	5.70	56		
2d SHG	4.05	40		

Irrigation Source: Approximately 90% of the sampled farmers who own land in project and comparison villages (407 out of 444 in Project Villages and 202 out of 229 in Comparison) have one or more sources of irrigation.

The most common source of irrigation amongst the sampled population is dug well (55% in project and 58% in comparison villages), followed by borewell (24% in project and 17% in comparison villages). A substantive number of the sampled population, 15% in project and 10% in comparison village have a farm pond as a source of irrigation in their farms. Only a few farmers had canal, check dams as a source of irrigation in both project and comparison villages.

Crops Grown in Various Seasons: Out of the total sampled population with land (444 in project villages and 229 in Comparison villages), almost all beneficiaries have taken crop in Kharif season. However, there are significant variations in their cropping decisions across other seasons – Rabi, Summer and Annual. Some details are as follows:

- **Kharif Season:** 97% in Project villages and 99% in Comparison Villages take up a Kharif season crop on their land. The ones who didn't take kharif crop were the ones those who have all their land under an annual crop and thus not taking a seasonal crop. The most common Kharif crops amongst the sample included Cotton, Soybean and Pigeon pea, followed by Greengram, Maize, Blackgram, Ginger, Millets and Garlic.
- **Rabi Season:** 85.8% of the project sample and 82% of the comparison sample take a Rabi crop. There are approximately 40-60 farmers in project and comparison sample who do not take my crop in the Rabi season. Chickpea, Sorghum and Wheat are most commonly grown crops in the Rabi season. Onion, Maize, Groundnut and Millets are other commonly grown crops by the sample population.
- **Summer Season:** There is a significant difference in the cropping decision of Summer Crop, with 8% of the farmers in project villages and only 4% of the farmers in comparison villages take up a summer crop. Vegetables like Cauliflower, Chilies, Capsicum, Onions, Tomatoes and Beetroot are most commonly grown in summers.
- **Annual Crop:** 13% of project sample and 10% of the comparison sample take up an annual crop. Sugarcane, Turmeric, Banana, Pomegranate, Guava, Sweet Lime, Orange and Grapes are popular crops sown annually.

Land under certified seeds

Promoting certified varieties of climate resilient seeds is an important objective of PoCRA. Toward this end, we enquired how much of the area cultivated by the farmers was sown using certified seeds. This was asked for each crop separately. The area under certified seeds was observed to be relatively higher in PoCRA villages

as compared to non-PoCRA villages. Area under cultivation using climate resilient certified seed varieties for chickpea was 68% in project area as compared to 62% in comparison area. Similarly land under certified seeds was higher in project area (68%) for pigeon pea as compared to comparison villages. The overall percent of land under certified seeds for these three crops is 66% in project area and 61% in comparison area. The percentage of land under certified seeds is found to higher in the current round as compared to overall 44% in project areas in CM II.

Table 9: Land under climate seed varieties for specified crops in study area

Crop	Land under production (acres)		Land under climate resilient seed varieties (acres)		%Land under climate resilient seed varieties	
	Project	Comparison	Project	Comparison	Project	Comparison
Soybean	2170	1033	1369	646	63	63
Pigeon pea	1695	587	1160	344	68	58
Chickpea	2083	974	1420	604	68	62
Overall	5948	2594	3949	1594	66	61

Training and adoption of Agri-technology

Apart from farmers of FFS, all beneficiaries were asked if they had received training on any of the climate resilient agriculture technologies that PoCRA intends to promote. This was asked across project and comparison arm. It was found that 83.4% farmers from project area and 55.3% from comparison area had attended training session on any of these agricultural technologies. 48% of the respondents from PoCRA villages said they had received training from sources other than PoCRA while 58% reported receiving training from PoCRA interventions. In case of comparison villages, no one had received training through PoCRA, while 55% had received training from other sources. 97.5% of beneficiaries from project arm and 97% from comparison arm acknowledged to have adopted at least one of the technologies which are to be promoted by PoCRA.

The highest adoption of technology in comparison villages was observed for land preparation (92%), use of machinery/agriculture tools in farming (89%) and use of improve seeds (76%). These technologies also had the highest adoption rates in PoCRA villages. Technologies for which the adoption rate in PoCRA villages was substantially higher than that in comparison villages included incorporation of biomass, integrated pest management, mulching, seed treatment, integrated nutrient management and use of improved seed varieties.

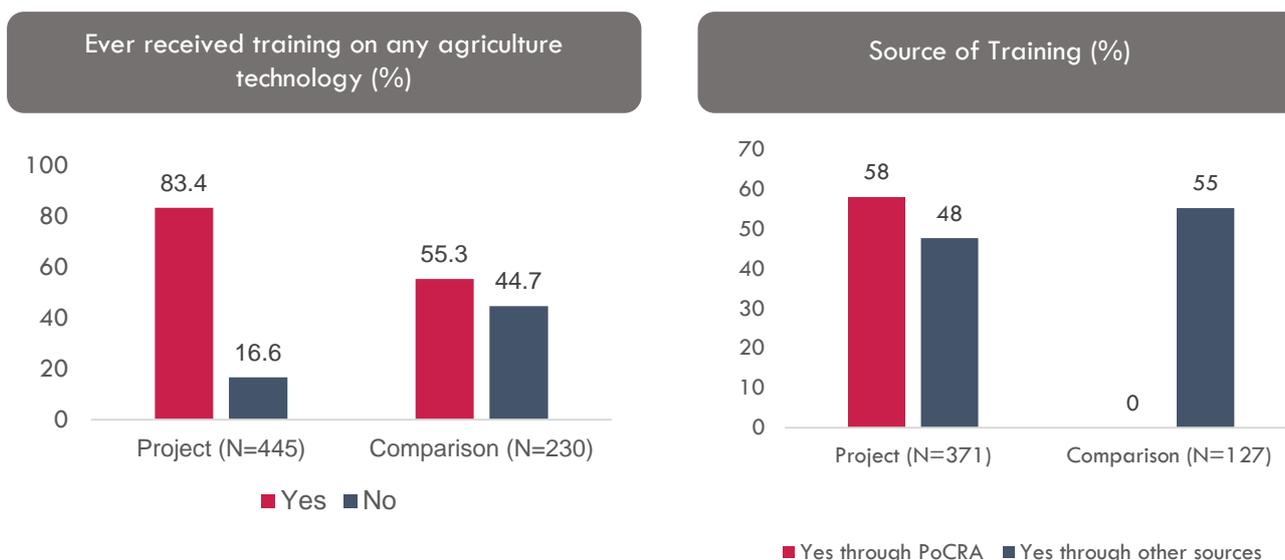


Figure 40: Training on any agriculture technology

It can be seen that the percentage of beneficiaries who have adopted atleast one technology after receiving training is higher in PoCRA villages (59.5%) as compared to that in comparison villages (22.1%). The adoption rate is observed to have increased in project villages as compared to CMII round. It was only 36% who had adopted after training in case of CMII in project villages, which has increased to 59.8%.

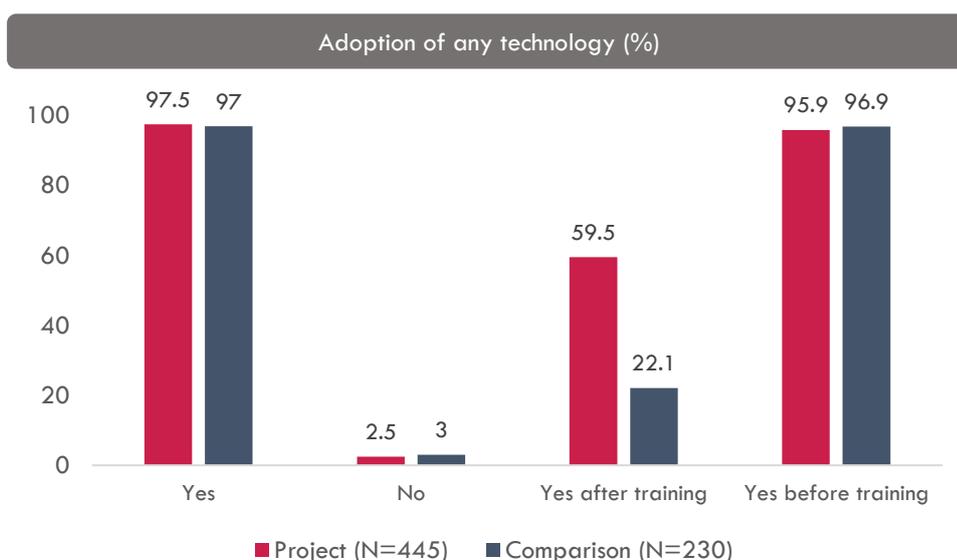


Figure 41: Adoption of any technology

6.9 Feedback on VCRM Functioning

As part of the concurrent monitoring, focus group discussions were conducted with the members of the VCRMCs from the sampled project villages to get their feedback on project implementation and to comment on its formation and functioning. 11 out of 28 VCRMCs (in which FGDs were conducted) did not have a functional VCRMCs since it was dismantled prior to the panchayat elections. An administrator was managing the work in the meantime. Even in these 11 cases, FGDs were held with the erstwhile members of VCRMC to get their feedback on the project.

As per the project guidelines, the VCRMC should comprise of 13 members, and the number of members required from different categories including gender, social categories, landholding is pre-defined. 19 VCRMCs were

observed to have followed the required composition. The common reasons for deviations were no members from FPOs/SHGs in VCRMCs, interested residents not available from the required category e.g. no interested resident from general category as most of the residents in the village are from general category. This was because some villages have 90-95% of SC village population and in some villages, there is 100% NT population.

As per the project guidelines, the VCRMC should comprise of 13 members, and the number of members required from different categories including gender, social categories, landholding is pre-defined. The 28 surveyed VCRMC's overall had 333 members out of which 18.9% (59 members) were SCs, 3% (10 members) were STs, 17.7% (56 members) were NT/VJNT and 39% (130 members) were women members.

Frequency of meetings: Most of the meeting dates are decided in the last meeting of VCRMC. Meetings are mostly held once in a month.

Documentation: In most of the VCRMCs that were interviewed: registers of stock, minutes of the meeting and other operational components is maintained by Agriculture assistant. In some cases, it is done by the Cluster Assistant. Some VCRMCs were aware of the stock and flow; and the update on their registers, although there were few cases where they did not have much idea about accounts and record management, and it was independently maintained by Agriculture Assistant. Half of the VCRMCs were keeping complaint registers. One of the VCRMC members had mentioned that they usually resolve the issue verbally and do not need to register the complaint. Two VCRMCs shared that they were not happy with the regularity of Agriculture Assistant to their village but haven't been able to resolve the issue.

Financial transactions: Most of the VCRMC members (17 VCRMCs) have not done any financial transactions themselves. One of these VCRMCs reported that they had done only a single transaction (and not for any other purpose apart for this) which was to pay Krushi Tai. The most common reason cited by the respondents has been that no funds were received by the committee. Some committee members highlighted that all financial transactions were suspended due to lockdown due to the pandemic.

Capacity building training sessions attended: Most of the VCRMCs had undergone an initial training that introduced them about different components of PoCRA and role of VCRMC, however some have not undergone any training sessions under the project. Few of the members have received training through online sources. While most of the VCRMC members mentioned training pertaining to agriculture and irrigation technologies, most VCRMCs have only attended one training at the start of the project on PoCRA and information about the project.

Participation of women: Most of the women respondents positively replied that they are involved in the VCRMC meetings and they are involved in the decision-making process and work of VCRMC. However, when probed further about how they are involved, responses were not detailed, and women present in the discussion were not able to share their experience themselves, highlighting a gap in their understanding and participation. Some respondents also reported that women were not aware of their roles. It was also found that many women members were not able to attend the training sessions. On investigating the reason for the low attendance of women, some of the shared domestic work and farming work that they prioritize over these meeting. It is proposed that separate training sessions on the project and its components should be organized separately for women VCRMC members as per their availability, which is usually in the afternoon hours. One of the Agriculture Assistant highlighted the difficulty in filling female quota in the VCRMC and further mentioned that in few cases females have participated in the VCRMC due to the requirement compulsion, and it is usually their husband who work on their behalf in the committee. It was understood that these is an impediment for the women to participate because many women who are active and interested may not have land under their name and thus do not qualify as farmers for the committee.

Approvals to Individual Grant Applications: It was reported that sometimes VCRMC members are not able to sanction the application due to non-availability of all members for the meeting. While there are no guidelines

for all members to be present, but the application requires signatures of all the VCRMC members. This has caused the delay a few times.

Two VCRMCs shared that many applications from their village get rejected at the SDAO level but they are never informed of the reasons for rejection. This makes it very difficult to resolve the issue and farmers get demotivated in applying again. Also, many VCRMC members had pointed out that matching grant is not being provide for certain assets (namely Drip irrigation, Sprinkler irrigation, Motor pumps, pipes, Farm Ponds amongst others), because of high number of applications received for these activities at taluka level. The members wanted these project benefit categories to re-opened, especially pipes, drip irrigation and farm ponds and the PoCRA project should allow farmers to apply for the benefit they would like to receive.



Picture 5: Snapshots of VCRMC Focussed Group Discussions

Motivating farmers who have got pre-sanctions but have not started work: Some of the steps were taken to motivate farmers who have received pre-sanction but have not started work yet:

- Awareness of the project and benefits pertaining to the same was explained to the people who had received pre-sanctions. Also, they were encouraged to complete the activity/purchases for which they got their pre-sanctions.
- The guidance was provided to those who had got pre-sanctions as to how to proceed with their activity in face of difficulties they faced. Most of them were encouraged to take up a loan to complete their activities/purchases and were assured that once the work is complete, the money will be returned to them via grants.
- One of the respondents also explained that the people who received pre-sanctions for activities like shadenet and polyhouse were also sent for capacity building related to these activities.
- Some VCMC members reported that they had sent written orders to the people who had got pre-sanctions, informing them of the loss of opportunity by the farmer if activity/purchases were not completed.

“Due to Covid-19, the farmer in the village is in financial difficulties. He cannot buy the asset even after receiving pre sanction due to financial constraints. The farmers who uploaded the bills did not get grant on time due to Covid-19, so other farmers who have received fresh pre-sanctions are not ready to purchase the assets fearing delays in grants to be received. About two thousand farmers have applied. 700-800 farmers have received grants, some have 200 to 300 files pending” - VCRMC Member

Reach to Poor and Marginalized Farmers: Most of the respondents in the VCRMC discussion shared that the poor and marginalized farmers are not able to avail benefits under the project because:

- Some VCRMC members mentioned that even for activities like goat and poultry rearing, the beneficiary should have some land to keep them. Many poor and marginal farmers do not have the same, hence are not able to access these benefits.
- It is well known that the matching grant is transferred only once the activities are completed. Since most of the poor and marginalized farmer are neither able to raise credit nor have the money needed for the execution of initial work, they are not able to apply for the benefits of the project.
- Some also reported there are instances where after spending money on the initial works, the potential beneficiaries do not get pre sanction, hence get demotivated to apply for the project benefit again.

When asked about feedback on PoCRA as compared to other similar government schemes, it was widely acknowledged that PoCRA has a much faster, efficient and transparent process for accessing its benefits. The project also provides a proportionately higher amount of matching grant/incentive than other agriculture schemes available in the region. Both these factors make the farmer who receives PoCRA benefits much better off than the farmer who does not. For the further improvement of the project, it was suggested that the amount of matching grant per beneficiary should be reduced and the aim of the project should be to reach larger number of eligible framers in the region. It was also suggested that higher matching grant should be provided to farmers with lower land holding or poor economic condition as opposed to farmers with higher land holding or better economic condition.

‘A lot of work was done through the committee to bring together the eligible farmers in the village and to make them aware of the benefits under the project. In it, special meetings were organized for the farmers and they were guided by the seniors about the plans of the PoCRA project and how to avail the benefits. This information is also passed on to others through each member of the committee. What are the criteria for availing the benefits for the farmers in the PoCRA project, how much is the matching grant and how to avail the farmers. We say all these things through meetings or other means’

“The groundwater level in the village has increased since the start of the PoCRA project. The project has benefited from farm pond development, which has increased the area under irrigation and helped in raising the ground water level. The irrigated area has enabled farmers to grow new crops, the project has increased the water level by 30 to 40 per cent in the village. The increase in groundwater level due to the project has greatly benefited all the farmers”

6.10 Feedback on functioning of Krushi Tai (Village level)

Almost all the Krushi Tai's (22 out of 23 interviewed) who were interviewed were working for the first time in any project. Many of them were able to tell about the objectives of the project, however a significant (11 out of 23 Krushi Tais interviewed) were not aware of overall project objectives. The project objectives mentioned by the Krushi Tai's were increasing farmers' income, building climate resilience in farming, support in SHG formation, water management and irrigation improvement.

The major motivation factor for Krushi Tai to work under the project was encouragement from gram Panchayat and other officials. Few were self-motivated and wanted to help farmers. Some of them were keen to learn advance farming techniques and thus took the responsibility of Krushi Tai.

Most of the Krushi Tais (21 out of 23 Krushi Tais) see their role in mobilizing farmers, disseminating information regarding the project and guiding farmers regarding the project and farm-related activities. Most of the Krushi Tais (16 out of 23 Krushi Tais) acknowledged that they have not undergone any training under the project. However, few have received training periodically. Some respondents had also gone to exposure visits under the project. Only a few surveyed Krushi Tai's acknowledged to have participated in Project's Micro-Planning (2 out of 23 Krushi Tais). While some Krushi Tais were aware of different aspects of the project including Grievance box, prioritization criteria, there was an equal number who were not aware.

Krushi Tais particularly saw their role in mobilizing women farmers. Most of them did not face any challenge in doing this. Few of them shared that they are facing difficulty in mobilizing farmers especially women farmers to apply for project benefits and to participate in FFS sessions and other community activities pertaining to the PoCRA Project. All Krushi Tais stated that they receive support from their family in fulfilling responsibilities as Krushi Tai. Assistance was in the form of travel and help in arranging meetings.

While the frequency of meetings varied with each responder, it was observed that interaction with Krishi Tai happened at least once a month. Almost all the FFS Facilitators stated that whenever they visited the villages, Krishi always met them and accompanied them during the whole visit.

Most of the respondents stated that to improve the interactions and better involvement of Krishi Tais, they should be given more trainings focused on capacity building and refresher trainings. These training could be given in either online mode or in-person mode but since online mode reduces the requirement of travelling, it'll be preferred to give these trainings online. Emphasis was also laid upon timely payments of honorariums and increase in the amount as well for better involvement of Krishi Tais.

"20-22 times Krishi Tai is communicated by phone call. Also, after coming to the villages, Krushitai meets with them in person, holding meetings, etc. Krushitai plays a major role in the work." CA

When Krushi Tais were asked about the activities undertaken by them to mobilize farmers in their village to receive benefits under PoCRA, most of them shared that they talk to the women in their villages, sometimes going door-to-door and share information about PoCRA and the potential benefits from the project. There were few cases (3 Krushi Tais) who said they were not able to work due to Corona or were not clearly aware of their duties.

Most of the Krushi Tais (17 out of 23) were not aware of the indicators on which their work is reviewed. Of the ones who said they know, they said they are evaluated on number of farmers they are able to mobilize, number of meetings they are able arrange as the most common response. 16 out of 23 Krushi Tais were aware that their work is monitored by Agriculture Assistant. Only 8 out of 23 Krushi Tais were aware that VCRMC is responsible for their monthly remuneration that is supposed to be paid quarterly. Also only, 9 out of 23 Krushi Tais have received their first remuneration as Krushi Tai. It is suggested that it should be ensured that remuneration of Krushi Tais is paid timely to keep them motivated.

6.11 Feedback on other key aspects related to PoCRA

Capacity Building Initiatives by PMU

A varied response was obtained from different stakeholders, each one emphasizing the roles of the following components of capacity building trainings. Some of the capacity building sessions that Agriculture Supervisors, Agriculture Assistants and Cluster Assistants felt the need to attend included on new agriculture technologies, especially shade-net, orchard plantations, soil conservation and DBT. It was reported that capacity building programmes were organized related to introducing project staff about PoCRA and its components, water balancing and latest climate resilient technologies. During it the lockdown and the initial unlock period the trainings were reported to be conducted online.

Especially by many VCRMC members, it was felt refresher courses on its set-up and functioning is required. Assistance and training in developing DPR report for NRM activities under PoCRA was also asked for.

“Training related to NRM works is important. Online training has been done and it has definitely benefited. Regular capacity building sessions on new technologies are important. Training on NRM works is important because ground water level in Marathwada is not good.” -_CA

Some Agriculture Assistants pointed out that guidelines to different project components are dynamic and keep changing from time to time and thus a six-monthly refresher training for all technologies will be useful.

Project Specialist felt the need for training on civil works in the FPO component. These include the construction of the building, shade component. They also demanded the offline tender up to 65 lakhs and SHG/FPC training for capacity building regarding the terms and conditions for procurement as per procurement manual.

Agro-met services

Almost all respondent stakeholders had positive feedback regarding the Agromet advisory services provided by PMU NDKSP, reporting that these services were helpful in farming, pest management and planning further activities in farming. The agro-met information reaches farmers using WhatsApp groups, text messages. In some cases, social media, print out of the advisory, through Krushi Tai, written on the Gram Panchayat Board are methods used for dissemination. Most facilitators reported that farmers have benefited by advisory services, as they can manage pesticide spray and can prepare for adverse situations. One facilitator reported that the information through agro-met services is usually not accurate and often rains do not come when the advisory has predicted.

Feedback on DBT application

Most of the respondents reported that while the application in itself is good, network issues hamper its working. Since the network speed is slow sometimes, it takes a lot of time to upload documents/photos related to the project and thus cause further delay. Other feedback included that there should be an option for re-uploading documents if a person has uploaded the wrong set of documents and be able to edit information fields if they filled wrong information in them.

“It is a good application to fill the information. Since Aadhar card is linked in DBT App, the farmer does not have any problem in getting any information about himself and since the whole process is online, the farmers get the matching grant on time and also get a lot of time to plan the work. Accessibility of the application is good but sometimes files are not uploaded due to lack of network. The application should be offline”: Cluster Assistant

The main difference acknowledged by the SDAOs and DSAOs about PoCRA as compared to similar government schemes/projects was that the target or the beneficiary limit is not decided by the project, but it is decided as per the need of farmers in the village (ground level demand). Also, the comprehensive approach (with different key components) adopted by the project is the main reason for the project is different from all the parallel schemes of the government.

“The DBT based approach infuses transparency in the project is most liked by the stakeholders” - SDAO

Awareness of Environmental Safeguards

Most of the respondent stakeholders said they were aware of the environmental safeguards to be followed while implementing project activities and said were followed.

“The idea is not to harm the environment while doing community or individual work. In the FFS, the farmers are given information on how to maintain the balance of the environment through the agricultural school instructors and coordinators.”: CA

Majority of respondents indicated that they knew as part of the community works, they are not supposed to disturb/disrupt the environmental resources around the project site.

“In order not to harm the environment, community work should be done on barren land, trees should be planted, afforestation should be done at the time of removal of trees in nala deepening. Water conservation works should be done, a tree planted by each family should be protected for three years so that the environment will be protected.” CA

While community work is being executed, care should be taken not to cut down trees or disturb natural water bodies, plant as many trees as possible and choose a barren land for project activities wherever possible.

“If trees are cut down without permission, a penalty is levied by the Gram Panchayat”: CA

“Yes, very strict rules are followed at village and cluster level to ensure environment safety. If a tree has to be cut down, farm ponds are built in another place without choosing that place. Or barren lands are used to make farm ponds. So that water is available on the barren land there as well as trees are planted.: CA

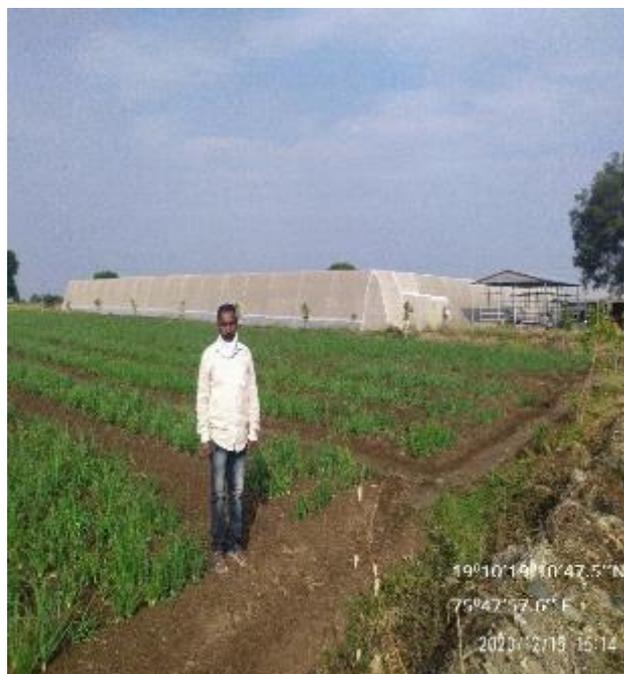
Most of the respondents reported that they complied with the environmental safeguards as a part of the implementation of village/cluster development plan.

6.12 Success Stories

A. Protective cultivation for achieving climate resilience and increased income through vegetable crops and Sericulture

Needs and Challenges: Mr. Angad Vishvambhar Kakad, is a young and innovative farmer from Nipani Jawalka village, Georai Taluka, Beed. He is a postgraduate in Arts and currently pursuing PhD. in modern history. He owns 4.47 acres of land in the village. He, like other farmers in the area, was doing conventional farming. The traditional crops grown by him were the Cotton in Kharif and Jowar in Rabi season. Due to the uncertainty of climate and low income from the traditional crops he decided to try new crops grown in protective cultivation.

Action through PoCRA: Being an aspiring PhD candidate, he researched on the new technologies used for protective cultivation and he found that the shade net technology will help him in building resilience with climate change. He has constructed the shade net on 1 acre of the area in his village. Mr. Angad being the member of VCRMC in the village was aware of the benefits that can be availed from PoCRA for protective cultivation. Angad contacted the PoCRA team in the village and applied for the activity of Shade net. The application for shade net was done on his own by him. As soon as he got pre-sanction he started working on the construction of the shade net. The initial cost of investment was quite high for shade net. Angad had to adjust the money from his savings of seven lakhs for the construction of shade net. The total cost as per the estimate was INR 23 lakhs, thus he was still short of INR 15 lakhs. He convinced the contractor to wait for the payment until the grant is received from PoCRA. The contractor got convinced with reference to PoCRA and initiated work. After several rounds of post-work verification and scrutiny by different officers such as Agri Assistant, Agri Supervisors and Taluka Agri Officer, his work was sanctioned for grant of Rs 15.97 lakhs. As soon as the grant was received, he paid all the pending dues of the contractor. Now he was ready to take new crops in his field and fight against the adversaries of weather and climate. The sources of irrigation for cultivation in shade net are the Community Farm Pond, Well and Borewell.



Picture 6: Mr Angad Kakad next to the shade net constructed under PoCRA

"I am happy that the grant was received in only 7 days in my bank account after the final visit of officials"- said the farmer

Benefits received: He tried the cucumber crop as his first try and was also quite successful at it. The total production of cucumber was 15 tons in a short span of 2 months only, which he sold at the rate of INR 10 per Kg. Cumulatively, he earned INR 1.5 lakhs from the cucumber production.

"The merchants came at my doorstep to purchase my produce, thus saving my time and money for the transportation of produce," said the farmer

Still, he believes that excessive rain in Kharif 2020 made soil retain more moisture and therefore there was the effect on the crop, otherwise the production would have lasted for a greater number of days. He has freshly cultivated bell pepper in his farm and this production has also entered the cycle of the first production. He is harvesting the bell pepper of volume 5 quintals every week. Here too the merchants are purchasing his produce on his field saving his valuable time and cost of transportation. He is expecting a total income of INR 7-8 lakhs till June 2021. He has also applied for sericulture activity under the PoCRA on 1 Acre area. The grant is yet to be received by him.

The farmer also added, "It is only said that the work is paperless but there is a lot of paper documentation involved such as estimates, bill upload and other documents."

This big structure -shade net- constructed under the PoCRA has also become the talk of Georai block and the farmers are also trying to know more about the protective cultivation techniques that they can adopt. This construction of shade net has added the crown of a progressive farmer on Angad Kakde's head.

B. Change in cropping pattern to reduce the drudgery and increasing the income opportunities

Needs and Challenges: Smt. Shivshelabai Bhagwat Lokhande is a general category woman farmer owns 1 hectare of land in the Jalgaon Majra village of Georai block of Beed District. She has been practising traditional farming of cotton and soybean as major crop and *bajara* as a secondary crop. Her income was hardly up to INR 50K per year from farming.

Actions through PoCRA: She has cultivated horticulture plants on 1.25 Acres of land in Kharif of 2019 through PoCRA individual benefit category. She decided to change the cropping pattern as she came to know about the good market for guava and other fruit crops in Aurangabad and Beed. All the process such as application, registration was done by her son, who further took help from CA and AA in the village. At the same time, she also applied for the drip irrigation benefit to be used in the horticulture plantation. She received pre-sanction for both horticulture plantations and drip irrigation. She purchased 600 saplings of guava from an approved nursery in Jalana and all 600 plants were planted by her in the field. The layout for pit digging was given to professional labours who were trained in pit digging. All care was taken to avoid the errors while pit digging for the plant. The total cost for the horticulture plantations was about INR 60000 and for the drip, it cost about INR 20000. She arranged money from a private money lender at the interest rate of 3%.



Picture 7: Smt Shivshelabai with team of reviewers in her horticulture plantation

Benefits received: The total subsidy received by her was INR 68,000 in her bank account. After receiving the money from PoCRA, all the debts of moneylender were cleared. She is expecting that the Guava yield will be harvested from November 2021 and she will get the income of INR 40-50 K in the first cycle. She adds that

currently trees are small, and production will gradually increase and thus improve the yield. She is also expecting the income of INR 20-30 K from the remaining piece of land other than horticulture through soybean. She found the process of application and grant receiving quite hustle free and transparent. This means that she would be expecting an approximate increase of 50% in her income in the first year itself with PoCRA's support.

"Process of grant receiving is very simple and it took less than a month to get a grant in my bank account"- said Smt. Shivshalya

Besides the increase in income, she perceives the benefit of reduction in drudgery of family members especially for cotton crop in which lot of labour work is involved such as cotton picking, weeding, and spraying. She believes that the horticulture crop has less labour involved as well as water can be saved through the drip which is compulsorily given with horticulture crop. She also mentions benefit such as not going to fields for watering the crops too often especially during the night since the water can be given in daytime with the help of drip irrigation.

Shivsalya's dedication and successful plantation of horticulture made her one of few female farmers with horticulture plantations in the area. Many neighbouring farmers are visiting the orchard to know more about the horticulture plantations done by Lokhande Family. She feels proud as other farmers come to her field for exposure visits. This has also increased her social status among the farmers.

C. Water security through pond deepening and indirect benefit of the project through silt application excavated from the pond (NRM)

Needs and Challenges: The Goregaon village in Sengaoon Tehsil of Hingoli district is a very typical village of Marathwada where the water scarcity has been an issue since decades. The tank centrally located in the village was constructed in the Nizam era and was the main source of water supply to cattle and other domestic purposes. People say that it was the last desilted in the famine of 1972. There was the demand for desilting and repair of the tank from the community in the village. The original size of the pond was only 60 X 60 square meters, so it was decided to excavate the adjacent land to increase the water storage capacity.

Actions through PoCRA: It is the PoCRA component of 'Rejuvenation of Existing Structures' which has changed the water table drastically through its tank deepening activity. In addition to this, the silt excavated from the pond was applied by the farmers in their field which increased produce up to 25%.

The new area for excavation was decided to be 120x120 sq m, after discussion amongst the community members. After all the process of scrutiny and meetings, VCRMC approved the application for rejuvenation of pond in the village under PoCRA and the estimate of worth INR 7,33,000/- was approved. The work started in March 2020 and was completed in the only span of one and half month. The excavation was carried out by using all the technical parameters used in levelling and surveying of the civil work. The total excavated quantity was 25000 Cubic metres out of which 5000 Cubic metres were only silt. The Murum and rock excavated were used to shape and resize the bunds of the tank.



Picture 8: Rejuvenated farm pond in Sengaoon

“The environmental safeguards were strictly followed in the desilting work. Despite some opposition from community members, we protected an old tree in the middle of the tank and did not allow to cut it”- Agri Asst. Mr Kale

Benefits received: The perceived benefits of the deepening and desilting were that the borewells and wells in the village fully operational till January 2021 which earlier used to dry up by January and the yield has also increased from well in the radius of 2 km from the tank.

Besides this, the farmers also carried out the silt to their farms through personal hiring of tractors and vehicles. The farmers were aware of the fertile silt which can increase the fertility of their land and support them in carrying out sustainable farming. Total 17 farmers carried 5000 Cubic metres of the silt to their farm on their expenses.

One of the farmers named Digambar Khillari carried 450 trips to his farms by tractor, at 2.5 km, on own expense. He shared his experience saying that he had only 8 quintals of soybean per acre in Kharif 2019, but now he produced around 11 quintals of Soybean per acre in his land in Kharif 2020, thanks to the silt applied from the desilting activity carried out under PoCRA. He used his savings to transport the desilt knowing the benefits of silt application. He is also expecting the increase in chickpea production to 10 quintals per acre as against 7-8 quintals per acre before application of silt.

Improved access to farm equipments through PoCRA supported FPOs

Context

The farmer producer company “Ajinta Verul Farmer Producer Company” of Chikangaon village in Ambad taluka of Jalana district which was established by farmers part of Chhatrapati Farmer Producer Group and was formed in 2007. The company is registered in Chikangaon but operates from Kingaon village. Before getting support from PoCRA, the FPC was engaged in farm produce aggregation and provision of farm inputs to farmers.

The members of this FPC are also involved in other activities being carried out in convergence with CSOs and NABARD. Members of twenty farmer groups (formed through ATMA) are members of this FPC. These farmer groups are engaged in vegetable production and the FPC purchases their produce to further sell it Jalana city. The FPC sells its produce to residents of housing societies and colonies in Jalana and sometimes even through stalls. These farmer groups were supported by WOTR NGO by helping them to install subsidised (50% subsidy) drip irrigation system. Further, 26 members of this FPC are involved in milk business and supply 600 litres of milk daily to the Mother Dairy.

Challenges faced by the FPO

The FPC had initially faced the challenge of not being able to mobilize enough members and raise funds through their members. This issue was addressed with the support of agriculture department officials by organizing meetings with farmers for informing them about the importance of joining and investing in the FPC. After this, 301 farmers contributed 1000 each and promoters contributed 2000 each. Also, initially the FPC faced problems with documentation, to resolve which a professional CEO was appointed by the FPC

Support through PoCRA

After knowing about the opportunity to get support from PoCRA, the FPC applied for matching grant for establishing a Custom Hiring Centre in February 2019 and received the grant of 60% of the total project amount i.e. INR 12,00,000 in May 2020. The company’s own contribution was INR 8,00,000 which was raised through members contribution. The major farm equipments purchased with PoCRA support as part of this custom hiring centre were viz. 1 tractor, 1 thresher, 1 BBF machine, 1 V pass, 1 cultivator and 1 reversible plough. The FPC now has 311 members, including 26% female members. The members of the FPC reside approximately in and around 30kms.



Picture 9: Board members of Ajintha Verul Farmer Producer Company

Members of the FPC are given priority to rent equipments through FPC (over non-members). The hiring of support staff is done by FPC as per demand and on first come first serve basis. FPC members have decided and fixed the rates on which the equipments are given on rent. The FPC representative reported that there is lot of demand for the equipment of CHC. The rent rates of various equipments are mentioned below:

Table 10: Rent rates of various equipments

Equipment	Rate for Members	Rate for other farmers
Tractor (45 HP)	800 Rs/Acre	1000 Rs/Acre
BBF Machine	500 Rs/Acre	1000 Rs/Acre
Thresher	50 Rs/qtl	90 Rs/qtl
V- Pass	500 Rs/Acre	700 Rs/Acre
Cultivator	500 Rs/Acre	700 Rs/Acre
Reversible Plough	1000 Rs/Acre	1200 Rs/Acre

The FPC had organized a public meeting in the village vicinity to spread awareness about their CHC. Taluka Agriculture Officers were also present in this meeting to support the FPC.

Future plans

It was understood that the FPC has ambitious growth plans. The company has not shared its current profit amongst the promoters or the members and have invested them in expanding their operations. The company has purchased 4 Guntha of land in the Kingaon village where they plan to set up a animal feed manufacturing unit. They have also planned to set a dal mill as well as floor mill, for which they have already applied under PoCRA. Further, the FPC is also planning for collective marketing of maize produce and setting up a maize husk processing unit. The FPC also wants to purchase 2 guntha land in Jalana to set up a vegetable market.

Benefits realized after CHC establishment

Post establishment of PoCRA supported CHC, the FPC members in the vicinity are now able to get the farm equipment on time for carrying out the day to day and seasonal farm operations such as intercropping

operations, transport of heavy farm inputs such as manure, fertiliser bags as well as feed for animals. Also, the small and marginals have benefitted as they are able to cultivate the land on time with the help of tractor and plough on rent. Before establishment of the CHC, getting equipments on rent was a challenge for them. The FPC chairman reported the production of the farmers accessing these farm equipments has increased and also their income has increased between 10-15 %. The CHC of the FPC had turnover of around 7,50,000 in the year 2020-21 and had a net profit of 69,800 as reported by the chairman of FPC.

Improved climate Resilience by protective irrigation through community Farm Pond

Needs and Challenges: Four farming households with land belonging to Bhaskar Eknath Kafare, Sumanbai Tejrao Ghadge Anusayabai Karbhari Tupe, Laxmibai Murlidhar Tupe and Parwatibai Bhaskar Kafre in Village Tupewadi, Jalana taluka, Jalana district sought to take benefit from PoCRA. They have an aggregate of 12.5 acres of land and all four households have been practicing traditional rain-fed techniques to pursue their livelihood through farming. Uncertain climate conditions and very much low income from traditional crops are major issues faced by farmers in this region and quite so by these four farming households. The traditional crops cultivated by them includes cotton. The village has a long history of producing seeds of vegetable crops on large scale. Keeping this thing in mind the farmers came together and they sought the benefit of a community farm pond in the village when they got aware of the benefits that can be taken for PoCRA. This was instrumental in addressing their need for critical irrigation.



Actions through PoCRA: The second son of Bhaskar Eknath Kafre assisted them to apply for community farm pond activity under PoCRA. The application was submitted for a community farm pond of the size 34x34x4.7 meters. After getting pre-sanction from the officials the work was started with the help of Poclain excavator machine. Excavation of the soil and lining of the farm pond together took a total of 15 days to be done. Farmers decided and increased the depth of the farm pond when it was under construction. Payments to the Poclain (excavation) machine owner and partial credit to the polythene bought for the pond was given by the family itself. All families gave a proportionate contribution to the contractor on mutual understanding and also decided the usage of water through dialogue.

Picture 10: Community farm pond

The farm pond was ready to use in January 2020. Eventually, farmers started filling the water in the farm pond through their well. The total cost of the farm pond was reported to be INR 3,45,000. This included the cost of excavation at approx. INR 1,45,000, cost of polythene at INR 2,00,000. Apart from this, there were other sundry expenses like the cost of diesel. The money was arranged by the farmers from the profits incurred from selling the cotton produce. The total subsidy as per the PoCRA guideline is expected to be INR 3,25,000 which was credited into their accounts in February 2020. The farmers spent more money on increasing the depth of the pond than estimated.

Benefits received: The farm pond has got promising results for these households. There was no Rabi crop previously taken by all the farmers due to shortfall of water, but now 4.5 acres of land have been brought under cultivation by these farmers. They have introduced crops such as wheat, maize and vegetable seed production. Besides this, the farmer Bhaskar Kafre applied for the Shade net activity from PoCRA and completed the construction of the same. In this shade net, he has cultivated the tomato, sponge Gourd and bell pepper (for seed production only). The subsidy also waits for the same. He is expecting to make around INR10 lakhs per year from shade net, thanks to the availability of sustainable water harvested in the farm pond constructed under PoCRA. Also, the farmer Dnyaneshwar Bhaskar Kafare has taken the Shade-net of 0.5 acres for cultivation of vegetables which is also irrigated by the same farm pond.



Picture 11: Bhaskar Eknath Kafre next to his shade net

“We have invested 12 lakhs rupees in the construction of Shade net only because of the belief in PoCRA and we are thankful to them. We have been able to achieve our dream to become a seed producer because of having a sustainable source of irrigation”- said the son of Bhaskar Eknath Kafare.

6.13 Field Visit Observations by Experts

Field visit report by Agronomy Expert

Five PoCRA villages in Hingoli district were visited. These included -Khanapur Chitta, Ambada, Kahnergaon Naka- Mohpe in Hingoli block and Goregaon, Mazod, Chandi **Khurd** in Goregaon Gat gram panchayat in Sengaoon blocks. At present, the project activities are being implemented effectively in different clusters on various issues to improve the livelihood of the small/marginal farmers by improving agricultural productivity. This has been possible by providing technical inputs as well as financial assistance in terms of the items required/structures created /to be created for rainwater harvesting in agriculture as per the Maharashtra government guidelines, circulated to the implementing agencies i.e. department of Agriculture.

On 21.12.2020 afternoon, visited PoCRA office, Hingoli and discussed about the overall progress of the various activities, being carried out in different PoCRA adopted villages in various blocks of the Hingoli district. Afterwards, visited the Shetki Shyala (Farmers Training School) at Khanapur Chitta village (Hingoli block) and reviewed the training activities being performed by them. Enquired regarding the impact of the trainings imparted by them on the implementation of certain farm activities through field visits and discussion with the targeted farmers. On 22.12.2020 early morning, met Shri B.S.Kachve, SDAO Hingoli Subdivision and discussed the project activities/outcomes and the problems/issues faced by the farmers while implementing the project in different areas in the subdivision of his jurisdiction. He highlighted the issue that in case of any errors in the implementation process, the responsibility of the error goes only to the highest official, which should not be the case. Other suggestions provided him included having mechanisms to control environmental pollution, development of storage structures, farm processing unit at village levels and establishing marketing linkages for the perishable produce. On 23.12.2020 till forenoon, visited Ambada, Kahnergaon Naka- Mohpe villages and reviewed the PoCRA projects activities and constraints, if any, through discussion with the beneficiaries/farmers of the above identified villages.

Village wise brief information

- The total geographical area of the village Khanapur Chitta (Hingoli block) is about 547.9 ha. The total population of this village is 1274 with the total household of 235 in numbers. Due to the introduction of irrigation water by different sources, the total irrigated area has been brought to the extent of 500.58 ha. The area under non-agriculture use is 29.7 ha, barren land 8.89 ha and permanent pasture 9.5 ha.

- The village Goregaon is one of the Gat-gram panchayat, located in Sengaoon block. The total geographical area is around 3776 ha. Total population is 9900 with a population density of 262 people per sq. km. The total number of households is 1967. The schedule caste population is 54.1 %. About 54% of the total population is engaged in main/marginal work and they are also engaged in the agricultural sector. The literacy rate is quite high (80%).
- The village Mazod is also falling in Goregaon Gat-gram -panchayat. Its total geographical area is 851.23 ha. The total population of this village is 2375, out of which 53% is male and 47% is female. The working population is 58.8%. With regards to the caste distribution of the people, schedule caste 37.4%, schedule tribe 0.1% and rest is general and other backward community. Earlier the major activities which were carried out in this village by the state agriculture department were on Jal Sivar Yojana, through which CNB activities (Cement Nala Bandara) were highly effective on increasing water resources.
- The village Chandi Khurd is located 29 km away from Hingoli district. The total geographical area is 854.05ha. Total population is 1102 with 229 total households. Though the total geographical area is quite high, the land topography is very much undulating. The market facility is available in Goregaon village. Due to good transport facility, they are sending the perishable farm produces in the local market at village Goregaon.
- In Ambada village (Hingoli block), the farmers are dependent on rainfed crops as the location of this village is at a higher elevation. Due to higher elevation, the maximum rainwater is drained out in nala and without any water resources structures; most of the rainwater goes into Painganga River which is 20 km away from this village.
- The total geographical area of the village Kahnergaon Naka-Mohpe(Hingoli block) is 473.38 ha. Total population as per 2011 population census is 3211 with 634 houses. With regards to caste distribution, about 29.8% of the total population is in scheduled caste category, 1.59% in ST category and rest are in OBC and general category. The total number of workers is 1191. The literacy rate is 83.85%. This village is well connected by bus and rail. Due to good transport facilities, the farm produces are being sent to the main market at Hingoli and receive good prices of their farm produce.

Major crops grown:

The major kharif field crops of the selected villages are soybean, red gram, green gram, black gram, jowar, maize, turmeric and cotton. The major rabi season crops are chickpea, wheat, rabi jowar, maize. During summer season, the farmers are growing summer groundnut under irrigated condition as well as annual cash crop like sugarcane in small areas. Recently the horticultural fruit crops have also been planted by the farmers in an area where the water resources structures are created through PoCRA project but the fruit-bearing has not yet started except in guava, very limited fruits have come up and these fruits are being sold in local market only.

- On interacting with farmers of Khanapur Chitta about the cropping patterns being followed, they informed that, earlier the farmers were growing cotton crop with a total area of about 400 acres but at present, the cultivated area of the cotton crop has been reduced considerably (5-6 acres) due to infestation of pink bollworm. Now the farmers are growing turmeric under pressurized irrigation system which has been provided under the PoCRA project. They were growing this crop with surface irrigation system earlier, but due to supply of drip and sprinkler (pressurized irrigation system) with fertigation, they are covering double the area with the same amount of irrigation water. The advantage of the drip system is that the fertilizer and irrigation water are placed in an effective root zone area and the utilization efficiency of both components are being improved substantially.
- In village Chandi Khurd, where the community water reservoir has been constructed through PoCRA project, one farmer has planted custard apple, guava, and lemon in 15 ha of land recently and within 3-4 years period, he may earn more income once the crops started fruiting.
- Last year in Goregaon village, one of the farmers had grown three crops viz. turmeric (May-Jan), watermelon (February-April) and green chilli (May-July) in a year under plastic mulch with drip irrigation and earned a significant amount of farm income through this cropping systems. If such high value cropping system in PoCRA adopted villages are taken up on a large-scale basis, the productivity of each crop and overall farm income on large scale basis can be achieved in future.
- In village Ambada the soybean, red gram, green gram, black gram, turmeric are the major Kharif crop of this village. The maize, jowar and cotton are also being grown by the farmers but in limited areas. During rabi season, they are growing chickpea and wheat crop.

- In the village Mohpe, the fodder crops are also being grown by the farmers to provide green fodder and feeds to the cattle as open well water is available in ample quantity for growing suitable crops throughout the year. The availability of water during summer season is due to subsurface flow water from Painganga river which is 2 km away from the open well.

Understanding the complete cycle for the key crops:

Total duration of the soybean crop is 105 to 120 days. It is being sown in second to third week of June as the onset of the normal monsoon period is 11-16 June every year. However, the sowing dates fluctuate frequently every year. During Kharif season 2020, this crop was sown in proper time due to receipt of good amount of rainfall. The soybean crop is generally harvested in the second week of October every year, however during this year the crop was damaged due to receipt of rainfall in last of September and the first week of October as the crop during this period was fully matured and ready for harvest. The cotton crop duration is 180-210 days under rainfed condition. Under the rainfed condition, the cotton crop, which is grown in light to medium soil types, suffers from moisture stress from the first-second week of October onwards where the crop is in boll development stages. Under such moisture stress condition, the cotton farmers get a very low return. Every year the pink bollworm causes severe damage to cotton crop. While discussion, the farmers' expressed that they may not increase the cotton area in next year due to receipt of low return. Similar is the case with red gram having a crop duration of 160-170 days. This crop also suffers from moisture stress, and humid climate at maturity. The green gram and black gram are short duration and mature within 70-80 days period and is taken as intercropping with appropriate ratio with cotton and red gram. The farmers harvest good yield from these crops, provided all the major crops production technologies are adopted by the farmers.

During this year, the crop performance was very good, but they could not harvest in proper time due to continuous monsoon rain during September 2020. The turmeric crop is the long duration (8-9 months), and it is grown by the farmers who are having sufficient irrigation water. The kharif jowar and maize are also popular and takes about 110-125 days for maturity. The summer groundnut is highly profitable crop, grown during January- February to May every year where the water resources are available in ample amount. Summer fodder crops are also grown by the farmers but in limited areas.

Crop-wise situation and profitability:

In selected villages of Hingoli and Sengaoon blocks (district Hingoli), all kharif season crops were harvested except Turmeric and red gram, they were entering into maturity stages. According to the farmers version, the soybean crop was damaged due to heavy rains in September and second week of October 2020 and the seed quality was badly damaged, which may not be used in next kharif season. I suggested the farmers to take summer soybean under irrigation, which may be used during next kharif season. The suitable soybean variety for the summer season is JS-20-116 and JS-2098, the germination percentage is very high 85-90 %. These varieties are non-photosensitive, developed by MAU Parbhani. One of the farmers from village Varput (Parbhani district) is growing summer soybean and selling as a certified seed to the farmers as well as the other seed supplier agencies @ Rs.10,000 per quintal. The kharif season soybean seed cost is only Rs.5000 per quintal, which is also low quality and the germination is poor. Hence the farmers should take initiative to take seed multiplication programme of soybean if they have a significant amount of irrigation during rabi and summer season.

The red gram crop of this area was in pod development to seed maturity stage but due to cloudy weather as well as high day and nighttime temperature than the normal temperature; the crop has been affected severally. Generally, the farmers harvest 4-5 quintal per acre yield of this crop but this year as per their version, they may hardly harvest 1.5 to 2 quintal per acre. In the case of turmeric, they harvest about 40 quintals from one-acre area under irrigated condition. They sell their produce in local market rate @ Rs.5100-5500 per quintal (average is Rs.5300 per quintal). From one acre area, the total gross return comes around Rs.2,12,000. The total expenditure is around Rs.35000-40000 per acre (average is Rs.37500). Hence the cultivation of turmeric crop in the irrigated condition is highly profitable and the net profit comes to Rs.1,35,500.

Implementation of the pressurized irrigation system with financial assistance from PoCRA project in most of the villages has shown very good impact on the productivity of the crop as well as other field crops. This year, all the Kharif season crops were quite good and the farmers have harvested good yields except the red gram which was damaged due to foggy weather during pod development stages. Due to the adverse climatic condition this year, the yield of red gram on an average may come to 2 q/acre under rainfed and 5 q/acre under the irrigated condition. In case of soybean adoption of the BBF technique was highly effective in medium

to the heavy soil soybean crop. In the BBF technique, one of the farmers harvested 8 q/acre soybean yield as against 5 q/acre in the traditional method of sowing.

Irrigation Situation:

In **Khanapur Chitta** village, the open wells with a depth of 40-50ft and the borewell with a depth of about 300ft, which are available for irrigation, are not yielding sufficient irrigation water to grow rabi crops extensively. The available water in the open well is very much exhausted every year in the month of December itself and hence the rabi crops which are continued up to March- April month, suffers from lack of irrigation water from the open well. So, it is highly essential to develop water conservation structures on a large-scale basis to increase the water yield from wells and cropping intensity/ productivity of the rabi crops.

When we visited the field, the farmers were irrigating turmeric by drip irrigation and chickpea by sprinkler irrigation method but the amount of water they were applying was not being measured. In case of Turmeric, the rhizome was damaged due to more soil moisture in the root zone, though the turmeric was planted in BBF and adopted paired row planting. So, it was not properly informed by the concerned official on the quantity of irrigation water to be given to the Turmeric and chick-pea. The amount of water to be given is based on ET-crop as well as stage-wise crop coefficient and the discharge rate of sprinkler/emitter. Such information should be percolated by the officials, who are responsible to give technical knowledge to the farmers through FFS on irrigation water requirement of different crops. Other vegetable crops like tomato, onion was also being irrigated as per the physical appearance of soil moisture at the surface layer which is not a scientifically sound technique of quantification of irrigation water.

After harvesting the kharif season crops like soybean, cotton, now the farmers have taken chickpea, wheat, and to some extent vegetable crops like tomato, onion. Presently (during the field visit) the chickpea was in flower initiation stage and wheat was in tillering initiation stage. Farmers are using the sprinkler system for irrigation, which has been provided from the PoCRA project. However, the amount of irrigation water supplied to these crops is not based on the requirement of irrigation water, since the harvested rainwater is precious in such rainfed zone areas. Similarly, the onion and other vegetable crops which are being irrigated through drip system are also not being properly followed. Hence adequate knowledge on the calculation of water through drip system and the sprinkler system is highly essential to economize both important inputs in agriculture.

Water Harvesting Structures:

Due to creation of limited water resources structures through PoCRA project, the major cropped area is under irrigation. The farmers are exploiting open well water and groundwater for irrigation. Thus, it is highly essential to develop more water harvesting structures on participatory mode and use pressurized irrigation system for growing rabi crops. To meet out the water demand in future, the recharge structures like percolation tank, construction of Cement Nala Bandhara across the drainage nala can improve water storage capacity and will reduce groundwater depletion rate in future. Through PoCRA project, about 35 farmers have already received motor pumps, drip and sprinkler sets for irrigating their field crops. Some of them are using for irrigation in village Khanapur Chitta.

- In **Goregaon gat-gram Panchayat** the major work under PoCRA project was done on the development of a community pond with a total cost of Rs.6.78 lakh. Before PoCRA intervention, the pond was deposited with a lot of soil sediments. The water storage capacity was also considerably reduced. Before the onset of monsoon, the soil sediment @ Rs.30/cubic meter rate was excavated after following all guidelines of the state and increased the capacity of the community pond with the size of 120m x140mx 2.0m (33600 m³ capacity). The storage capacity was further increased by increasing embankment height of the pond. The farmers of the villages used the desilted soil from the pond in their cultivated area. Due to rich in nutrients of the desilted soil, the soil properties of the cultivated land were improved, and they saved 20-25% nutrients during Kharif 2020 as the farmers reported while discussing with them on the utilization of disposable fertile soils. The water yield ratio of the community pond has also been increased by about 22% as the receipt of monsoon rainwater was 22% higher than the normal rainfall of 838.2 mm (Sengaoon block). The villagers have got a lot of benefit from this pond this year. In subsequent years they may use the harvested rainwater for domestic and livestock activities. Similarly, in the catchment area of the pond, the existing available wells are also sufficiently recharged, and the farmers have increased the rabi cropped area. The open well water level is shallow with a depth of 15 ft depth and sufficient water is available for rabi crops. Earlier they were growing rabi crop with hardly one pre-sowing irrigation in chickpea and harvesting very low yield but now they will enough water for better irrigation. In case of bore well water, the depth was 300ft during December last year, but it is now at shallow depth (150-

175ft). In future, if such type of programme is implemented in other areas, the farmers will get substantial benefit from this PoCRA project.

- In Chondi Khurd village the secondary water reservoir of 100mx100mx4.5m dimension was constructed with the financial assistance of Rs.16.0 lakh from PoCRA project. One of the interviewed farmer Mr. Shivaji Timajirao Mutkule himself invested Rs 4.75 lakh for installation of solar panel which was connected to electric motor pump as stand by and use the same at the time of non- availability of electric supply. The electric supply for irrigating the field crop is available only for 6hr/day which is not enough to cover the entire area during the dry period. In the command area of the secondary reservoir, recently he has planted custard apple in 6 ha, guava in 1 ha and lemon in 1 ha and rest of the area he is using for Kharif crop like black gram as the soil is very light. This year he has harvested 15 quintals of black gram. During this rabi season, about 7 acres of the cultivated area (medium type of soil) is under wheat and chickpea and using the water through sprinkler irrigation. However, in case of all horticultural crops, he is using drip irrigation. But the quantity of water to be applied is not maintained due to lack of sufficient knowledge on quantification of water, being delivered to the crops. In this pond, the farmers have been doing fish



Picture 13: Desilted community farm pond under POCRA Project at Goregaon Picture 12: Farm Pond in Village Chondi KHURD

farming also with Rohu, Mrigal. Since this is the first-year experience on fisheries, they may earn more income out of this developed water reservoir in next year. As and when the water from the pond is decreased to a minimum depth, he brings the water through pipelines from another minor irrigation dam which is about 2-2.5km away from this reservoir and meeting the water requirement of such integrated farming system approach.

In **village Mazod**, the construction of the Cement Nala Bandhara has been done against the drainage channel with the financial assistance from PoCRA project. We measured the structural details of the system and checked the details with the recorded document, it is comparable. The width of the constructed bandhara was 9.25m, height 1.65m towards the lower side and 2.90m towards the upper side of the wall. Due to the construction of such bandhara, the farmers have increased their cropped area, and the well water was available at shallow depth with sufficient quantity, unlike other non-developed areas. The farmers of both sides of the nala/bandhara were highly benefitted due to this structure. Due to heavy rains (100 mm) in a single day in September 2020, the soils of the corner was washed away and deposited at the lower side of cement nala bandhara (shown in photo). Two types of such construction activities have been done in this village and farmers have benefited from this project. The construction cost of each section was Rs 4.5 lakh. Visited another C&B and measured the details of the constructed C&B structure. The dimension of this structure is 18.0 m width, 1.0 m height, and 2.15 m base width. The total construction cost is 8.00 lakh. In this village, 2-3 such C&B has already been completed under Jal Sivar Yojana Project of Govt of Maharashtra and the farmers have been taking a lot of advantage from these structures with respect to water utilization in agriculture and domestic sector. Visited another location in the same village where the dug well was constructed in the farmer's field with the financial assistance from PoCRA project. For this work, the PoCRA provided Rs.4.75 lakh and the farmer (Smt. Dagdabai namdeo Dhavle) spent Rs 2.50 lakh. The depth of the well is 45 ft, and the diameter is 30ft. There is a provision of recharge shaft of about 30ft depth. During the rainy season, the open well was recharged and increased the water availability for use during rabi season. If the open well water is not sufficient to cover more area, then the farmer is bringing borewell water through the pipeline and pouring into the well for subsequent use. This year, the farmer has increased the water availability for irrigation and brought

more area under cultivation during rabi season as well as shared open well water to other farmers. Visited another farmer's field (Smt. Sunita Shradanand Khillar), where the farmer has planted about 850 guava saplings through PoCRA project. She is receiving technical support from horticulturist. She has an irrigation water supply system through open well and small pond through which the well water is being recharged and increases water availability for irrigation throughout the year. The fruit crop is being irrigated through the drip system. The guava is being sold by the farmer in local market @Rs.50 per kg due to limited fruit yield as the guava plant is hardly 2 years old. In the subsequent year, she may dispose of all the produce through auction once the large quantity of the produce is available in the field.

In village **Ambada (Hingoli block)** the irrigation facility is very much meagre. The existing wells are not having sufficient water. They are giving very limited water to the rabi crops and hence the yield of the rabi crop is very low. Now about 80 people have received financial help from PoCRA to purchase sprinkler and drip sets. With the help of these systems, they are bringing 50% more area under irrigation with same water resources available from their available open well. The aquifer is having basalt rocks, due to which the water yield in this area is very low.



Picture 14: Open well with various type of Pump installed and being used for irrigation through drip and sprinkler irrigation system at village Kanergaon -Naka Mohpe (Hingoli Taluka).

The village **Kanergaon -Naka Mohpe** is located near the bank of river Painganga and the availability of water is significant throughout the year due to construction of a check dam across the river. All the farmers are cultivating their land with high-value cash crop also as most of the open wells are being recharged heavily when the farmers use the groundwater during rabi season. In this village, 50-60 sprinkler sets have been given to the farmers from PoCRA project for irrigating rabi crops (wheat, chickpea) as well as Kharif crops. So the farmers have been cultivating the commercial crops, besides seasonal cereals, oilseeds and pulse crops. One of the farmers is using well water for his crops during both the season. The open well depth is 35ft and diameter is 15 ft only. There are 4 electric motor pumps, and two diesel pumps, being used for irrigation, still the water table is at shallow depth (see below photo). So, the influx of groundwater from the surrounding area is very high due to subsurface flow of Painganga river water which is 2 km away from this village.

Training imparted at Farmer's training school:

At village **Khanapur Chitta** and Goregaon Gat Panchayat discussed with Agricultural assistant/ Cluster Assistant/ Agriculture Supervisor about the status of the training programme being organized by inviting the subject matter specialists from KVK Hingoli, state department officials. In each training schedule, they invited 25-30 farmers. The SMS of the several disciplines imparted training on a package of practices on soybean, cotton, turmeric, chickpea, wheat, red gram, vegetables, fruit crops, other oilseed and minor pulse crops. Both the official informed that, additional in-depth training was given to the farmers on seed treatments, weed management, pest control measures, and water management with major emphasis on pressurized (drip and sprinkler) irrigation system as the rabi crops are irrigated through these set up. Training on livestock management was not given to the farmers intensively as the veterinary officers are posted in different areas and they are not frequently visiting and solving the livestock management issues. When we enquired about the food processing technology, the expert involved gave in-depth training on preparation of various by-products. In the training, the major emphasis was given on preparation of turmeric powder as this crop has replaced the cotton crop due to the installation of water resources structures and implementation of the drip system. Similarly, onion is a high-value cash crop and the price of the produce in the market is highly venerable. Considering the constraints of these issues, we suggested to the officials to propose purchase of solar dryer through which the fresh produce can be dried and preserved for a long period and sold as dried onion or its powder in the

market as well as exported in other countries. FPO is also playing a major role in marketing the by-products of the farm produce.

Other main livelihood activities of the village residents:

The supplementary agricultural enterprises like dairy farming, goatery, preparation of value-added products, self-help group were not well established to generate more income from the farm and improve the livelihood of the farmers. Agriculture is the only main enterprise of the farmers of the identified village through which they earn very limited income from the farm produce.

Scenario and challenges in marketing of the produce:

The Hingoli marketplace is 12-15 km away from the village. The farmers are selling their farm produce at Grain Market/APMC (Agriculture Producing Marketing Centre) as per the minimum support price of the farm produce; however, they never receive the whole amount of their farm produce at once. They get the only partial amount and after three-four months they receive the remaining amount. Since the farmers require money immediately to meet the daily needs of the family as well as to pay back the borrowed money from the financial institutions, they give the farm produce to the middleman with less rate than the minimum support price. In case of perishable produce particularly vegetable crops, they also dispose at the lower market rate as the storage facilities at the village level is almost negligible. To avoid such distress sale of the farm produce there should be an adequate number of farm storage structures at village level as well as small industries to make the by-product of the perishable produce. The vegetable growers association and adequate marketing network at the village level is urgently required to avoid any damage of the farm produces. The FPO is also available in Hingoli where the produce is supplied to them and all the produce are transmitted to bigger cities or in nearby industries for immediate dispose of produce. In the nearby village, one of the Turmeric processing units i.e., Goda Farm is established, and the farmers are sending the fresh turmeric to the processing unit and getting more income.

Key risk in farming faced in recent year (water scarcity/excess and pest infestation):

The major constraints in crop production are scarcity of irrigation water and frequent long dry spell due to erratic distribution of rainfall during kharif season. In these villages, the farmers have reduced the cotton crop area due to heavy infestation of pink bollworm during the last 2-3 years. During the year 2011-12, the arhar yield in Sengaoon taluka was only 510kg/ha, and in the year 2016-17, it was increased to 1385.7 kg/ha. So due to the creation of water resources structures in future, there will be an increasing yield trend of all crops. However, during this Kharif 2020, the crop was adversely affected due to climate change parameters in December 2020. Similarly, in case of soybean, the yield was 1229kg/ha in 2011-12, but in the year 2014-15 and 2015-16 the yield was hardly 265.9 and 656.0 kg/ha, respectively due to moisture stress during Kharif season. But during the year 2016-17, the yield again improved to 1237 kg/ha. In case of cotton and chickpea, the yields were very low as these crops were grown under rainfed conditions and with supplement irrigation in respective crops. This year, due to a good amount of rainfall, the farmers may harvest a very good yield of chickpea. The total area of chickpea has also increased due to the availability of irrigation water in PoCRA project areas. So, in the agriculture sector, the rainfall distribution pattern and temperature plays a very important role for harvesting potential yield of selected crops. With respect to the changes in cultivated areas of important Kharif and rabi crops in Hingoli district, there is a significant increase in the cultivated area of soybean from 2,15,800 ha during 2018-19 to 2,50,300ha during 2019-20. A similar trend has been noticed in red gram, but the area under cotton crop has been declined from 83681 ha in 2018-19 to 47,000 ha during 2019-20. In rabi season, chickpea and wheat are the major crops. This year the cultivated area has increased because of development of water resources and availability of pressurized irrigation system (drip and sprinkler) on the subsidized rate to the farmers. Earlier the farmers were irrigating the rabi crops by flood irrigation and the area covered was limited but this year due to introduction of pressurized irrigation system they are covering more area under irrigation. At the same time, they are getting more water from the well due to recharge structures created at the micro-level basis.

Key Observations

- In the villages visited, many farmers had replaced the major kharif crop i.e. cotton was replaced by turmeric crop. Since the farmers were not receiving satisfactory seed cotton yield due to severe attack of the pink bollworm every year, they preferred to grow turmeric crop and irrigated frequently through drip system. Due to implementation of drip system with fertigation and BBF planting system, the applied water

and fertilizer were placed in the effective root zone and increased water and fertilizer use efficiency. With the results, the farmers harvested very high turmeric yield as compared to rainfed turmeric crop yield.

- In heavy clay soils where the drainage coefficient is low, the water logging had been damaging kharif soybean and cotton crop in flat bed methods of sowing. Adoption of BBF planting in both the crops has improved the crop yields as adequate drainage of excess rainwater through small furrows improved soil aeration in root rhizosphere as compared to flatbed sowing. In case of chickpea, they were applying irrigation water through flood method and most of the standing crops were damaged due to fusarium wilt. But irrigation through sprinkler method (sprinkler system provided through PoCRA project) has considerably reduced crop damage due to fusarium wilt.
- Farmers face issues in selling produce via APMC markets as do not receive the complete payment on time when they try to sell to the APMC market as per MSP. However, the middleman gives whole amount at once though it is less than MSP. So, there is huge financial loss to the farmers.
- Many SHGs are also not functioning effectively and need adequate attention so as to enhance farm income through subsidiary enterprises.
- Due to untimely receipt of the rainfall, the quality of the soybean seed for next kharif season is not satisfactory. They are advised to produce good quality seed during summer season wherever it is feasible as growing of summer season soybean requires sufficient irrigation water.

Key challenges observed related to farming:

- One of the major problem and the challenge is to control pests and diseases in crops such as cotton as the pest infestation is very severe. The farmers are spending a significant amount of money on pesticides application due to which the cost of production is increased every year. In other field crops, the pest's infestation also occurs but with relatively low intensity.
- Lack of availability of farm mechanization facilities to complete the farm activities like sowing, inter-culture operation, pesticide application, fertilizer injector at the root zone, crop harvesting is a challenge. This is because the available farm labour is not sufficient to finish the assigned field jobs in stipulated time.
- Supply of electricity for 24 hours to operate the electric motor pump for irrigating field crops and other farm implements is necessary as the present trend of electric supply for 6 hours in a day is not enough to finish the assigned farm activities
- For the marketing of the produce, weekly market/ bazaar are scheduled at the village where perishable farm produce has to be disposed off with earnings. No marketing network is available at the village level and the perishable farm produce is damaged within a short period hence the farmers are not generating more income from the available landholdings.
- Seed hub are limited, which needs adequate attention to initiate at the village level on large scale basis for providing good quality seeds to the farmers in proper time.
- Sharing of water from the developed water resources structures are big issues among the farmers. In village Ambada about 30 private wells are available but they are not providing the well water to the needy farmers due to lack of sufficient water in the existing well during rabi season.
- The major problem for monitoring the technical activities and observations for acquiring a significant outcome of the project is due to lack of manpower. In one of the block (Hingoli), the cluster assistant (CA) who is monitoring and providing information to the head office at Hingoli has to cover 14 villages with his motorcycle. He is spending a significant amount of money from his salary and hence the provision of travel allowance may be made by the competent authority to compensate this unbearable expenditure.

Key suggestions

- The observation on ground water fluctuation from the observation wells / piezometer at frequent interval is highly essential to see any changes on ground water level in the developed water resources areas. The fluctuation with respect to rise in ground water table will be useful to quantify the amount of water recharged into the ground and increased the water availability to the field crops.
- As part of the FFS sessions capacity of the framers should be built to know and measure the water applied for irrigation of the crops. Demonstrations and videos regarding the same should be shared with farmers.
- Use of plastic mulch in drip irrigation system may be advocated in different field crops in both the seasons as well in summer season to save significant amount of harvested rainwater.

- In secondary reservoir, where integrated farming system is adopted, use of evaporation retardant or planting of wind break trees on the embankment of the water reservoir may be introduced as 18 % of the harvested water is evaporated into the atmosphere and enters into hydrologic cycle.
- The farmers are not receiving good market price of the vegetable particularly tomato, onion during peak supply period. Hence matching grant for assets like solar dryer may be provided to farmers or should be made accessible through custom hiring centres CHC so that farmers can use them increase the shelf life of their produce and to prepare value added products.
- Assessment of crop moisture stress through remote sensing may be introduced and actual water demand may be computed in canal command area as well in small water shed area. Similarly the intensity of pests and type of pests / diseases may be monitored through the available equipment under precision / smart agriculture project.

Field visit report by GHG Expert

A field visit was undertaken in different villages of the **Jalna** and **Beed** during 18th to 20th January 2021. During the visit, interaction and interviews were done with farmers.

1. Jalna District (Villages: Tapovan, Tupewadi and Mandeolgaon)

Three villages were visited in the Jalna district – *Tapovan* (20°2'49" N; 75°51'54" E); *Tupewadi* (20°0'41"N, 75°51'33"E) and *Mandeolgaon* (19° 56' 48.48"N, 75° 51' 43.56"). All three villages visited in the Jalna district, mainly produce seeds of different crop varieties. Farmers of these villages grow sweet potato, onion, eggplant, watermelon, jowar, garlic, banana, cotton, wheat, tur, marigold flower etc. Seed producers produce seeds of different varieties of tomato, chilli, pikador Simla Mirch, bitter guard and sponge guard. Farmers of these villages are producing seeds since 2000 and currently, there are more than 200, seed-producing farmers, in each of these three villages. All seed producing farmers' use shade net. Farmers have received support in the village for construction of shade nets.

70-80 kg of tomato seeds are produced from 0.5-acre land area, 50 kg chilli and bitter guard seeds are produced from 0.5-acre land area and 30-35 kg of picador seeds are produced in 0.5-acre land. Farmers produce three different seed crops in a year with the shade net. Farmers sell the seeds to different seed companies like East-West Cropping, Sygneta, Myco, Krishidhan, Anand Agro etc. All these companies have their local seed collection office at Deulgaon Raja, about 30 km from the three villages. Tomato seeds are sold at INR 10,000 to 14,000 per kg, while seeds of vegetables are sold at INR 5000 to 8000 per kg and picador seeds are sold at INR 11,500 per kg. Farmers need to spend about INR 2 to 2.5 lakhs per seed crop, of which major cost is towards the labour. Around 15 labourers are required for 30 days for each seed crop production over 0.5-acre lands. Each labour is paid INR 250/- per day and INR 1000/- also required on each day for the transportation of labour. The major challenge of the seed farmers of these villages is the availability of labour.

Farmers apply different kinds of fertilizers like DAP, 19-19-0, 12-61 at 8 days interval after 20th day of seeding throughout the cropping period of 3-4 months. Neem seed compost is applied to soil during the land preparation. Farmers used diesel pump sets for watering of the plants. Generally, 5000 lt of water is applied for watering the soil every 4 days interval. However, additional 5000 lt water is sprinkled during April-May to cool the environment inside the shade net.

Before the PoCRA project scheme, farmers used to undertake loan from the seed companies to develop the shade net and accordingly their annual profit used to get affected. Farmers used to build the shade net with as much low cost as possible, as a result, the shade nets used to get damaged in 2-3 years. Farmers have developed shade net under the PoCRA with 100% subsidy of the estimated amount through DBT. However, for the construction of each shade net, farmers' paid INR 2,50,000/- above the estimated amount towards the construction cost. The shade nets established under the PoCRA are better than the earlier one and are expected to be stable for at least five years. Under the PoCRA, some farmers have also collectively built community farm pond which has helped them to undertake one extra seed crop during the summer season and helped to increase their annual profit from the shade net. However, the seed farmers' of the area has a problem related

to the insurance of the crop, if the quality of the seed is not up to the standard of the seed companies then the farmers could not sell their seeds to the companies and it leads to a huge loss for the farmers.

It was noticed that farmers of these villages traditionally burnt the crop residues after the seed production and use the cotton crop residues for household cooking purposes. Further, there is no specific guideline followed for the disposal of the damaged nets of the shade net. Generally, the nets are changed in every three years and they are disposed of without following any guideline. The farmers do not follow any specific guideline in disposing of the empty containers of pesticides and fertilizer bags. The farmers of these villages have no scientific training on the crossing, they only use their traditional knowledge. The farmers' also lack the knowledge and status of their soil health, they follow the advice by the seed companies only.



Picture 15: Shadenet constructed with PoCRA support – Tapovan Village

Farmers may get better price of their produce if environmental (including climate change) benefits are added to their produce through proper training of the farmers and government policy initiatives.

2. Beed District (Villages: Padurachiwadi, Rui and Dhanora)

Padurachiwadi (19°12'5\"/>



Picture 16: PoCRA Community Pond and Pikador Shimla Mirch seed cropping inside the PoCRA supported shadenet at Tupewadi village

farmer Shri Laksman Nana Ambhole was interviewed. A shade net was under construction on 1 acre of his barren land. The shade net was developed under the PoCRA scheme. He mentioned that the estimated cost of the shadenet was INR 8 lakhs and he will get 50% amount from the PoCRA after completion of the construction activities. The farmer planned to develop a vegetable nursery under the shade net. However, during the interview, it was found that the farmer does not have any previous experience of maintaining vegetable nursery and selling the seedlings to the market. He has noticed that farmers in his village and around purchase vegetable seedlings from different sources and there is no local nursery available. Expecting a good market of vegetable seedlings in the area and as he was having a barren land, the farmer had applied for shade net through matching grant support from PoCRA. Presently, the farmer is growing cotton in 9-acre land and custard apple in 2-acre lands. Annually, 3 quintal of cotton is produced from one acre and he is getting 1.5

lakh worth of custard apple for the last two years. He has invested the money for the shade net from his saving without any bank loan.

The farmer and the agriculture assistant present there mentioned that all the concrete construction activities are to be borne by the farmer. The farmer is aware that all material should be BIS certified as per PoCRA guidelines and he is constantly checking all the materials used for the construction of the shade net. It was also noticed that the agriculture supervisor and Assistant Agriculture Officer of the area are also supervising the construction activities as they visited the area separately without prior information during the ongoing discussion with the farmer.

Two shade nets are sanctioned in the village and the construction of the other one has not yet started. The agriculture supervisor mentioned that the COVID lockdown has severely affected the PoCRA activities in the area and the activities are gradually going back to the pre-lockdown level. However, it is of concern that the farmer without having any training on nursery maintenance have invested in the development of the nursery for which presently, he is not having any planned business model.

In Rui and Dhanora villages several activities of PoCRA were noticed starting from the support from the project for horticulture crop, irrigation pipe, tarpaulin lining of the farm pond, shadenet development to community pond development. One farmer from the Dhareora village is developing a shadenet from through PoCRA's support (19°09'42" N, 75°53'52 E). The construction activity of the shadenet is almost complete, only a few activities remain, which will be completed in another weeks' time (from the day of visit to the village). The shadenet is being developed over 0.5-acre land with an estimated cost of 14 lakhs and the farmer will get 75% subsidy after completion. The farmer has planned to undertake vegetable farming with three crops each year and expected to have 6-7 lakh annual profit. The farmer has taken a 50% bank loan from the IDFC bank, Nashik branch to meet the initial cost of the shadenet. The nearby market for the vegetables is in Beed and Aurangabad. However, the farmer does not know the soil quality and he is not having the soil health card. After enquiring with about 10 farmers of Rui and Dhanora, it was noticed that none of them have the soil health card and their soil had never been tested in the past. They follow the advice of agriculture officers of the area to grow any crop variety.

Earlier, the farmer used to grow cotton in the same area of the under-construction shadenet. There is 1:1 profit for cotton, but as there is much better profit in vegetable, which is the reason the farmer is shifting towards vegetable crop. Again, earlier he used to have one crop (cotton) annually, but with the shade net, there is a probability of growing at least three crops in a year on the same land. Presently, the farmer burns the crop residues of the cotton crop; however, he has the plan to develop compost with the crop residues of the vegetable crops to be grown in the shadenet. Presently, the farmer burns the empty plastic bottles of the pesticides to manage them, and he will continue the same in future.

Sweet lime plantation has been undertaken with support of PoCRA. Sweet lime is being planted with Onion and Mung. Sweet lime starts fruiting from 3rd year after plantation and last for 14 years. Two community farm ponds are developed in the village and tarpaulin lining was done in one of the farm pond (19°09'17" N, 75°53'36"E). Fish cultivation is being undertaken in the farm pond. About 2 ton of fish is produced from the 1-acre community farm pond annually with 20 kg of spawn. But the farmers of the area have no formal training of pisciculture and as the area belongs to, there is no commercial market of fish. Farmers' are looking for some governmental initiative towards pisciculture using the farm ponds.

The farm pond scheme has already discontinued in PoCRA, however, villagers of all three villages are showing their interest for few more community farm ponds in the area, as it is supporting them to undertake at least two crops in a year. Farmers are looking for more in hand training on different farming activities although they are regularly attending the online training courses of PoCRA.



Picture 17: Intercropping with sweet lime cultivation

Key challenges and proposed solutions

1. Farmers have regular practice of post-harvest burning the crop residues of almost all crops they grows. This has potential to reduce the GHG benefit being derived from PoCRA project. Awareness of farmers on the negative environmental impacts of crop residue burning need to be improved. As part of FFS or through other relevant measures, farmers need to be trained on development, application and benefits of compost. Framers should also be encouraged to do these activities in groups to reduce their drudgery.
2. It was also noticed that the farmers burn the empty plastic bottles of pesticides. This released harmful chemicals to the atmosphere. As part of FFS or through other relevant measures, awareness of framers should be built to inform them about the hazardous impact of burning pesticide bottles. A collection chain of empty bottles needs to be developed at village level along with the pesticide companies. Damaged shadenet may also be recycled through the involvement of manufacturing companies.
3. The seed farmers generally follow their traditional practice for germination. Many farmers were found to have no knowledge or have training on proper techniques of germination. Knowledge of farmers on proper techniques on germination need to be improved as scientific training can boost their production and profit.
4. Majority of framers had no knowledge about their soil quality and the actual requirement of fertilizer for their soil. The project should facilitate farmers and provide them support to conduct soil testing (at least starting with cluster of farmers with relatively similar land). This should be stressed during the FFS sessions and through other relevant platforms. Appropriate soil testing can help farmers to sustainable use of fertilizers.
5. The farmers had reported of benefitting from the farm pond activity and few of them even started pisciculture in the farm pond in addition to use the water for irrigation. However, as the scheme presently discontinued under the PoCRA, farmers are not able to undertake fresh application for Farm Pond. However, in some of the visited villages farmers showed their interest in farm pond or community farm ponds looking at the success of other farmers from farm pond scheme. This decision of discontinuing farm pond activity should be reviewed. It is suggested that there should be flexibility at the district level to allow this activity wherever feasible and considering relevant factors.

Observations by Agribusiness Expert

Farmer Producer Organisations (FPOs) – Field observation

Agribusiness expert had interacted with representatives of a few FPOs which had or were in the process of receiving support through PoCRA to expand their activities. The discussion aimed to get insights on the process of getting support through PoCRA and identify the challenges faced by these FPOs. Recommendations to address these challenges have also been provided as part of this report. The brief details of these FPCs (which whom telephonic interaction was done) and their PoCRA support status has been listed below:

1. **Malojiraje Farmer Producer Company** – This FOC is based in Khuldabad, Vaijapur, Aurangabad. The current activities undertaken by the FPC include silage and milk packaging. The FPC has now received matching grant through PoCRA. Its representative, Swati Deepak Chavhan reported about the teething challenges in completing the paperwork but acknowledged that later the process was very smooth and FPO received good support from PoCRA.
2. **Pinakeshwar Farmer Producer Company** – This FPC is located in Vaijapur, Aurangabad. Key activity done by the FPC is maize trading. The FPC has applied for support through PoCRA and is yet to receive disbursement. The FPO management very well understands that delay in disbursement was due to COVID and was appreciative of PoCRA support.
3. **Munjal brothers Farmer Producer Company**- This FPC is in Ambad, Partur, Jalna. The key activities undertaken by it are vegetable aggregation and trading and it also has an oil mill. This FPC had received matching grant through PoCRA. Representative of the FPC, Mr Rakesh Munjal reported that they too faced initial challenges in completing paperwork. They acknowledged the remaining process to be smooth and have received good support from PoCRA.
4. **SVR Krushi Mitra Producer Company** in Latur in involved in trading of garm and soyabean trading and also had a custom hiring centre. The FPC representative, Mr. Vinod Ghule acknowledged of receiving matching grant through PoCRA's support.
5. **I-Watch Farmer Producer Company** in Osmanabad is engaged in sericulture. The FPC representative, Mr Balaji Pawar reported that bank loan sanction is pending for the support applied through PoCRA. He and his FPC have a clear vision of expanding their business and their only constraint is working capital. He suggested that Government should provide support to build silkworm rearing houses to take it to a big scale.

During the interactions it was found that all the above FPOs are legally complaint and have very well identified their activities.

Key observations, Challenges and Recommendations:

- **Business plan:** Though the FPCs had some idea regarding their business plan, but they lacked capacity on making detailed business plan which is very much required for business planning and growth of the company over the years. Directors had limited capacity to develop business plan. Understanding on break even and timeline for its achievement was not found to be very clear.
Recommendation – A visioning exercise with the board and selected members should be organized so that core members are very clear on their vision and mission the FPO. PoCRA should help FPO management develop a business plan. This can be done by taking services from expert organisations that do business planning for small businesses and FPOs.
- **Lack of capacity of Board members:** It was observed that the board and Director/CEO lacks capacity on business development. Directors are not very clear on their five-year plan and how it can be achieved.
Recommendation: As also recommended previously, it is suggested that SIYB (Start and Improve Your Business) training for Board and top management team should be organized.

The SIYB programme (conceptualized and implemented by ILO) is structured into four separate training packages, which are designed to respond to the progressive stages of business development.

- Generate Your Business Idea (GYB) is intended for people who would like to start a business, and who, through the training, develop a concrete business idea ready for implementation.
- Start Your Business (SYB) is for potential entrepreneurs who want to start a small business and already have a concrete business idea. The programme is a combination of training, field work and after-training support, and helps participants assess their readiness to start a business and to prepare a business plan and evaluate its viability.
- Improve Your Business (IYB) introduces already practicing entrepreneurs to good principles of business management. Its six modules (marketing, costing, buying and stock control, record keeping,

planning for your business, and people and productivity) can be taught individually or all combined in a full course.

- Expand Your Business (EYB) enables growth-oriented small enterprises to develop a business growth strategy through training interventions. The SYB and IYB packages also include the SIYB Business Game, a practical simulation tool to help participants understand the realities of starting and running a business. The EYB Business Game simulates an expanding business during training to help participants experience the impact of strategic decisions on their business operations.

- **Market linkages** – The interviewed FPOs rated Market linkage as one of the major challenges faced by them. The FPOs face challenge in both wholesale and retail markets. In Wholesale markets, FPOs are not able to compete their larger competitors on pricing whereas in retail market brand image offers challenge. The market strategy is mainly focused on demand driven. Demand creation for their core product is not being done.

Recommendation – It is suggested that FPOs dealing with same commodities should aggregate their product and market as one brand. This will allow them to compete with competitors in a better way. FPOs should align themselves to create synergy and should not act as competitor for each other.

- **Taxation** – FPOs reported that they are dependent of legal consultant for filing taxes and meeting compliances which is a costly affair for them. If FPO miss the deadline of the compliance, that has penalty/late fee implications.

Recommendation - Board members or key members of the FPOs should be trained or handheld for some time to manage tax compliances so they may file taxes themselves and their dependency on legal advisor is comparatively less.

- **Working capital** - FPOs lack working capital. FPO directors do not have capacity to make bankable proposals and hence keep on struggling with the problem of low cash flow.

Recommendation - Capacity of FPO management should be built in a way that they make bankable proposal and get loans from bank or other financial institution. SIYB programmes and capacity building programmes on business management or financial management would be helpful for the FPCs in developing bankable proposals.

- **Lack of warehouse facility** – FPOs dealing with non-perishables (Fruits and vegetables) reported lack of warehouse facilities to store their produce for taking advantage of price escalation in future.

Recommendation: One FPO director suggested that government should build community warehouses so that farmers can store their produce for future markets.

- **Challenges in transportation of finished product** – It was understood that many FPOs operate at a level where they are not able to deploy transport facility to an efficient level because many times the quantity of produce that needs to be transported is very small.

Recommendation – For reach economies of scale, it is suggested that support from agriculture department or project staff should be provided to inform farmers about the FPCs and encourage them to join them (the ones who are complying to all government guidelines. Also, the FPOs can be provided matching grant through the project for procuring small capacity rural transport vehicles and reefer vans to transport perishables.

Field Visit report by Agro-Economics Expert

Status of Intervention under PoCRA: Field Observation

During the late December 2020, three villages namely Kumbhephal, Gaikwad Jalgaon and Nipani Javalka in Aurangabad and Beed district, were visited to get insights on implementation of PoCRA at ground level.

Natural Resource Base and its Usage

The total geographical area of village Kumbhephal is 1326 hectares, A considerable proportion i.e. about 46 per cent is under non-agriculture use. The non-agriculture land is put to human settlement and industrial usage. The agriculture operation takes place on about 28% land. The forest land constituted about 8% share in the total geographical area of the village. A substantial area i.e. about 17% was currently fallow. The total geographical area of the villages Gaikwad Jalgaon and Nipani Javalka villages was 850 and 1324 hectares respectively. A larger proportion of the total geographical area of these villages, approximately 92% was used for agriculture production.

Agricultural Practices: It is observed that the farmers were allocating a major share of the total cropped area across the villages for soybean crop production which ranged between 46%- 60% of the total cropped area. After this allocation farmers were using a considerable proportion to the wheat crop in Kumbhephal and Gaikwad Jalgaon i.e. around one-fifth with one percentage point difference. In Nipani Javalka village, the farmers were growing pulses on about 19% of the total cropped area. They were also growing bajra and Jowar on 7% area of the total cropped area (Table 1). It can be noted that farmers put the limited size of land under various crops keeping view their household requirement and environmental and agronomic factors. It has emerged from the field verification and available information that there were considerable changes in cropping pattern in the area. There was a sharp decrease in area cotton production. It can be attributed to climate variability. Interestingly, there is an emergence of certain crops like fruit crops and vegetables that happened because of the PoCRA intervention in terms of resource regeneration and provision farm inputs to the farming community in the project villages¹². The other cash crops like vegetables and wheat have also emerged.

Table 11: Tentative Cropping Pattern in Selected Villages

Crops	Proportionate Allocation of Area Under Different Crops		
	Kumbhephal	Gaikwad Jalgaon	Nipani Javalka
Wheat	21.58	18.50	0
Maize	1.75	4.45	3.45
Bajra/ Juar	6.79	8.40	7.45
Soybean	45.78	59.52	54.42
Pulses	12.75	2.88	19.52
Cotton	3.45	2.80	3.45
Vegetables	3.45	1.01	4.50
Sericulture	0	0	1.15
Other	4.45	3.45	6.06
Total Cropped Area (Ha.)	545.00	790.00	1100.00

Source: Village Record and Field survey

It has emerged from foregoing discussion and field verification that the project implementation has considerable implication in crop diversification and optimum use of resources that can help in improving the rural economy in general and living conditions of the rural households.

Distribution of landholdings: Under the present project intervention, the distribution of landholding determines the number of target groups. As per the guidelines of PoCRA, the landless, marginal and small farmers are beneficiaries of project intervention. In the villages visited, most farmers were from marginal and small-holder

¹² Community responded that there was a substantial decrease in the area under cotton during recent years. The changes in cropping pattern were because of the climate variability. In certain village, cotton is at the verge elimination

categories. In Kumbhephal village the proportion of these farmers was about 90% followed by Nipani Javalka and Gaiwad Jalgaon (Table 2). When we look at the gender-wise distribution of landholding, it can be noticed that female farmers are limited, i.e. about 20%, 9 % and 30% in Kumbhephal, Gaikwad Jalgaon and Nipani Javalka respectively. The fact of this unequal distribution due to the traditional systems of inheritance property rights. In such a scenario, it can be noticed that these villages need more attention under the present intervention for improving their living conditions. As per the guidelines of the project, the landless households or the ones having a negligible size of holdings were neglected in getting the benefits from the project interventions.

During the interaction with village communities, interesting facts have emerged with respect to eligibility for getting the PoCRA intervention. Certain households have bifurcated their landholding between wife and husband to receive PoCRA project benefit. Thus, in certain cases, female become the landowners. It can be considered as favourable gender implications of the PoCRA intervention¹³.

Table 12: Gender-wise Distribution of Land Holding in the selected villages

Categories of Farms	Kumbhephal			Gaikwad Jalgaon			Nipani Javalka		
	Male	Female	All	Male	Female	All	Male	Female	All
Marginal	69.13	65.45	68.40	3.48	87.50	10.61	55.26	61.54	56.73
Small	21.03	15.45	19.93	70.43	12.50	65.52	23.68	33.65	26.01
Others	9.84	10.00	9.87	26.09	0.00	23.87	21.05	4.81	17.26
All	447.00	110.00	557.00	345.00	32.00	377.00	342.00	104.00	446.00

Source: Village Record

Cost of Production of Major Crops: This analysis helps in understanding the profitability of a particular crop grown by the farmers. It provides insights on the increasing profitability through agriculture.

Table 13: Cost and Returns(tentative) of Cultivation of selected Crops

Particulars	Major Crops					
	Wheat	Tur	Bajra	Cotton	Vegetable (Brinjal, cucumber)	Vegetable (Capsicum, Chilly, etc.)
Machine	3500	3600	1500	1500	1200	1500
Animal	0	1500		2000	1500	2000
Human	2500	3000	200	6000	2000	5000
Seed	2000	300	400	1500	5000	12000
Fertilizer	400	3600	500	4400	8000	12000
FYM	1200		0		15000	20000
Pesticise/ Insecticides	2000	3000	0	2000	2000	8000
Irrigation	1667	1500	300	500	4000	6000
Harvesting	2000	1500	1500	0	15000	18000
Packing Material	1500	700	450	300	1250	2000
Transportation Cost	1600	560	800	800	3750	4000
Marketing Cost	1500	750	150	1500	2500	3500
Total Cost	19867	20010	5800	20500	61200	94000
Total Revenue	34000	39900	10800	40000	120000	175000
Net Returns	14133	19890	5000	19500	58800	81000

¹³ It is noted during the discussion with certain households in Kumbhephal village.

Source: Field visit interactions

The analysis shows that the net returns are positive in case of all crops, but these are varying considerably. But returns in case of vegetables of all kinds were considerably higher as compared to cereal and other crops. Thus, the promotion of such crops should be promoted by PoCRA to increase the income of framers (Table 10). The analysis also suggests that how and which crop can be promoted in the given resource scenario.

1. Project Activities Implemented

With the support from PoCRA in these villages, about ten types of activities were implemented (Table 11). In Nipani Javalka village, sericulture was adopted with PoCRA's support though by a very limited number of farmers. It observed that most of the households were associated with irrigation facilities that considerably helped in crop diversification. The promotion of the micro irrigation facilities has given desirable signals not only in the farm sector but played an important role in the development of animal husbandry. The provision of seed and other input distribution to the farmers has also yielded desirable results¹⁴.

Table 14: Activities Implemented in the Selected villages

Activities	Kumbhephal	Gaikwad Jalgaon	Nipani Javalka
Shade Net House	√	√	√
Construction of Farm Ponds	√	√	√
Sprinkler	√	√	√
Drip Irrigation	√	√	√
Water Pumps	√	√	√
PVC Pipes	√	√	√
FFS	√	√	√
Horticulture	√	√	√
Sericulture			√
Tractor	√	√	√
Farm Implements	√	√	√

Source: Field Verification and interaction with project staff.

It is found during the field interactions that the provision of certain farm implements/assets have been suspended by the project authority. But the farmers reported that they are interested, and the scheme should continue. In case, some problems in the implementation may be corrected through institutional intervention¹⁵.

2. Case Studies

This is one of the important tools for an empirical investigation of any development intervention. This section deals with certain case studies across the selected villages, focusing on PoCRA implementation.

Case I

The case focuses on the agricultural operations and related issues on the farm owned by Mr. Paras Nath Kishan Rao Gujhe. He belongs to Kumbhephal village. He is availing the facilities provided under the project. Before the project intervention, he was falling in the category of the semi-medium category of farm holdings. To be eligible to take benefits from PoCRA, one of the criteria was the farmer should be either marginal or small. To be eligible, he bifurcated his holding in the name of himself and his wife and both they now fall in the small-holder category. With the provision of installed well, the farmer availed farm pond during 2018-19. Both of them (wife and him) collectively applied for the benefit. He has also uptake horticulture activities in his farmland. He has planted sweet lime and guava plants. They have allocated some land to rainfed crops like pulses (Arhar), soybean. During, rabi crop season, wheat and vegetables are grown. The new cropping pattern includes wheat and other cash crops including vegetables. He reported that in the next 2-3 years, fruit production from his horticulture plantations should

¹⁴ It is emerged during the group discussion with the group of famers in the villages.

¹⁵ This issue was raised by different groups of farmers.

start. He has followed the mix-cropping pattern (see Figure). Because of fluctuation in the aquifer, the farmer stores the water in a farm pond to have assured irrigation in rabi season.



Picture 18: Farm Pond and Horticulture Plantations of Mr. Paras Nath Kishan Rao Gujhe, Kumbhephal village

Case Study II



Picture 19: Fields of vegetable plantation

Sh. Datarye Jaganath Sakhare had taken benefit of PoCRA since 2020 with activities pertaining to farm pond and other related irrigation equipment. He reported that before getting support from the project, he was using traditional ways to grow rainfed crops such as bajra, arhar, jowar, cotton. After getting access to irrigation facilities available through PoCRA, his agricultural practices have drastically changed. He has started cultivating wheat and other cash crops like vegetable of various varieties and the area under cotton cultivation has decreased.

It was observed that the farmer was following ridge and flow irrigation (Nagmodi). The farmer reported that farm production is not a problem, but the marketing of farm produce is still a major challenge. It was also understood that the farmer required capacity building support for input application.

3. Key Observation

The key observations from the field visit have been detailed below. Certainly, these observations give some insights that may help in making the program more efficient.

- 1. Clearing the eligibility to apply for PoCRA Activities:** During the field investigation, it is noted that many rural households prefer to avail the benefits of the project, usually bifurcate their land amongst household members to lower the size of their landholding. This has indirectly helped to have land ownership on the name of women members of the farming households.
- 2. Growing Benefits from the PoCRA:** During the group discussion and field verifications, it is observed that crop diversification has increased due to PoCRA's intervention wherever farmers had improved access to irrigation facilities. The cash crops are replaced by traditional cropping pattern. This has

changed the socio-economic and political scenario in rural areas especially backward areas. The cash crops like fruit trees planted during recent years will start yielding benefits in 2-3 years. Therefore, improved income levels of such beneficiaries can be expected in the coming years.

- 3. Delayed Reimbursement of the infrastructure cost:** The current process to avail individual benefits under PoCRA requires the beneficiaries to invest upfront and the matching grant is provided after the installation and accomplishment of project activities. In such circumstances, it becomes difficult for poor farmers to arrange funds from their own sources. Also sometimes, it takes substantial time to get reimbursement. This can also lead to a risk of increased indebtedness among the beneficiaries.
- 4. Restriction on Project Activities:** It was also understood during the field interactions that matching grant for some activities were not being provided and was put on hold by the project, though there was still demand in the community for these assets. This issue needs to be looked into.
- 5 Provisions of effective agricultural extension services:** During group discussion, the farming communities raise the issue relating to agriculture extension services. It was also understood that they have limited knowledge on input application which has also resulted in high pesticide and fertilizer application on the field thus increasing the production cost. This aspect needs to be focused during the FFS and through other appropriate avenues. .
- 6 Gender Implication of the Project:** From the foregoing discussion, there are considerable and interesting gender implications. The procedure and provisions of project implementations compelled the household heads and other decision-makers to make the female as the owner of landholding. Such incidences are limited but it is positive from a gender point of view. The project intervention has improved household income and employment opportunities. Thus, female members in the household have also benefited from the overall improvement in living standards.
- 7 Lack of effective agriculture markets:** It is observed that lack of agriculture marketing system has made farm economy unviable. The markets are generally located at a long-distance ranging 5 to 50 km with inefficient transport facilities. Improving market linkages is critical to increase the income of farmers.

4. Key Suggestions

Key suggestions based on the above filed observations have been mentioned below.

- i. This year rainfall has been normal, but climate variability still exists along with rampant exploitation of ground water causing depletion of the aquifer. To deal with this challenge the rejuvenation of defunct water sources needs to be done on priority basis as part of the community works under PoCRA. Community works have not still picked up pace as would be expected so that the project can achieve its intended results. Bottlenecks in their implementation must be addressed to speed up their implementation.
- ii. Largely, the success of farm operation is determined by energy and this resource is also limited. However, we should search for an alternative source of energy for crop production. The promotion of solar energy system can be the best alternative of energy, that needs to be explored.
- iii. The infrastructure systems especially irrigation structure like farm ponds and major farm implements can be provided to the farmers in joint ownership in case they have a limited size of landholding and poor economic position.

- iv. There is an urgent need to strengthen the capacity building program at a larger scale that can be useful to the farming community. The local public institutions like KVKs, Agriculture Universities, NGOs should be approached to provide technical advice to the farmers.
- v. There is an urgent need to strengthen the agriculture markets at the local level. FPO/FPC support component should be prioritized and farmers collectives should further promoted by the project to improve market linkages.
- vi. It should be deliberated to find effective ways to reduce wage discrimination among female workers.

6.14 COVID Impact on PoCRA

The economic distress due to COVID-19 and its induced restrictions has had a great impact in India. A study (Wharton , 2020) found that people in rural India were hit the hardest—with incomes down 88% for rural households compared with 75% for urban households. The lockdown-induced movement restrictions prevented them from stepping out of their house for work and halted infrastructure and manufacturing activities leading to unavailability of both skilled and unskilled jobs.

COVID Impact on Implementation of PoCRA

Like severe impact of the COVID 19 pandemic on all activities, implementation of PoCRA was also largely effected due to the pandemic. The effect was at its peak during the lockdown period, with many of the project activities halted/ at a slow pace but the project adapted and picked up pace with easing of government guidelines. Most of the stakeholders reported common impacts of COVID 19 including suspension of meetings, delay in grant disbursements, delays in the processing of applications, stop of community and individual works, limited or no access to markets and postponement of Farmer Field Schools, low attendance in FFS sessions. Some payments to contractual staff also got delayed in this time period.

Most of the FFS coordinators interviewed reported that FFS had to be stopped during the lockdown period. In areas where FFS have conducted the attendance was reported to be very low. Fear of getting exposed to COVID-19 amongst farmers and facilitators was the reason for low attendance and cancellation of FFS.

Since FFS were closed, many facilitators faced problem in providing information through online sources as most farmers do not possess a smartphone.

“I am retired, and I was scared to go on the field due to corona at age 62. Many times when I tried, I had to come back because of corona patients in the villages.” - FFS Coordinator

However in two instances in project villages it was reported that the daily operations did not get much affected as most of the activities continued to be conducted while following COVID-19 related protocols and restrictions.

Most of the FPO respondents reported that the operations related to the FPO/FPCs projects were impacted during COVID-19 pandemic and lockdown. They reported that the works and processes related to the activities were suspended and since markets were closed during the lockdown, they couldn't sell their produces. However, one FPO made profits by selling the produce at a higher rate in the market during COVID.

“The vegetables procured were unable to sell in corona, therefore there was a loss.”: Chairman, FPC

The processing of matching grant applications had also slowed due to the pandemic. Also, as income of many farmers had reduced, many who had received pre sanction were reluctant to initiate their activity implementation.

Campaigns/Special efforts by PoCRA to build resilience against COVID-19

Most of the stakeholders acknowledged how PoCRA had adapted its implementation with use of technology i.e. online sessions and webinars through zoom/MS teams/mobile. The opening of offices and travel was resumed as per the state government guidelines. Further regular online meetings for project monitoring and webinars for capacity building were conducted with DSAOs, SDAOs, project specialists, TAOs, AA, Cas and other project staff to take forward the project activities. DSAOs and SDAOs reported to campaigns in collaboration with ATMA regarding training on horticulture practices. Also, webinars on organic farming with support of scientists from KVK were organized and social distancing was ensured during the trainings. Other key webinars (broadcasted through zoom and YouTube) organized were on water balance, interactions with Krushi Tai's, for taking forward FPO/SHG activities and interactions with farmers regarding FFS and the useful climate resilient agriculture technologies.

Further, there were also instances where stakeholders reported that no special efforts/campaigns had taken place to build resilience against COVID-19 pandemic. All the efforts/measures were taken locally by the villages, through action by Gram Sabha elected members, who are also de-facto members of VCRMC committee.

Although some respondents amongst Cluster Assistant and FFS Facilitators and Coordinators reported that special campaigns were indeed run by PoCRA on use of mask and sanitizers and to adhere to social distancing protocols which conducting project related activities. They also added that all activities that were conducted during the lockdown period and follow up period, proper social distancing norms and precautions were followed.

Some FFS Coordinators shared that farmers were made aware of the preventive measures against COVID 19 and were advised to use masks, sanitizers and practice social distancing during FFS sessions. Farmers were also provided with masks and sanitizers. Few coordinators shared that there was a webinar conducted by SDAO informing on the precautions to be adhered to during the times of the pandemic. The session included discussion on technologies like BBF technology, Soil health management, organic farming amongst others.

"We have created a series of Climate Resilient Agriculture technologies with the help of PoCRA & KVK. In this series, we have also developed a section on awareness about the COVID-19" FFS coordinator, Undri

Expectations from PoCRA for building resilience against COVID-19

Feedback was also received regarding further expectation from the project to build resilience against COVID 19. It was suggested that focus should be given to expedite the works which need to be pre sanctioned. The project staff should be provided with masks and sanitizers so that they can ensure safety protocols. Some project staff also suggested that they should be provided medical insurance to insure them against COVID related morbidity. It was also suggested that works under PoCRA should be resumed at the pre COVID levels at the earliest feasible and pending matching grants should be released and pending applications should be sanctioned.

7. Key Observations, Challenges & Solutions Suggested

Key Observations based on fourth round of concurrent monitoring have been summarized as below:

1. Individual benefits related to increasing the water availability are observed to be very popular amongst the farmers. Micro Irrigation options and horticulture are two most popular activities under the Individual benefits under PoCRA. Micro-irrigation systems like drip and sprinkler are considered extremely relevant by the farmer for water saving measures. Horticulture is considered promising though high amount of initial care required.

2. Awareness of individual benefits under PoCRA related to water availability/accessibility like pumps, pipes, drips, sprinkler, farm ponds etc. is high. Though awareness related to NRM works and FPO/SHG support interventions was observed to be limited.
3. Overall, satisfaction of beneficiaries from the support received by PoCRA is high. High percentage of beneficiaries have reported to be satisfied with the support from project staff, FFS facilitator, functioning of VCRMC members, performance of Krushi Tai and with the process of accessing project benefits.
4. Satisfaction with project staff and with process of availing project benefits is observed to be higher in PoCRA beneficiaries as compared to beneficiaries of similar programmes.
5. Polyhouse and shade-net activities were considered to be highly productive and worthy by farmers who have invested and built one. Many others who have seen such polyhouses and shade-nets in and around their village finds them useful but high investment costs in setting up such activities is a major bottleneck and therefore is especially lesser relevant amongst small farmers.
6. Almost all individual activity beneficiaries who had received disbursement for drip, sprinkler, pipes, pumps, horticulture plantation and shade net house acknowledged that they have benefited from these assets. These assets have benefited them in various ways including increasing their water availability, increasing area under cultivation, changing their cropping pattern and most importantly increasing their income.
7. Almost all project stakeholders/staff spoke highly of PoCRA. They were of the opinion that efficient use of technology has helped to make PoCRA more transparent and effective as compared other agriculture projects and government programmes.
8. Project staff continues to remain the most prominent source of information about PoCRA. They are also observed to be a key motivation factor to encourage eligible beneficiaries to access project benefits which is not observed in non-PoCRA villages. Majority of applicants have taken support from e-sewa kendra to apply for project benefits.
9. Cotton, Chickpea and Intercropping of Soybean and pigeon pea were the three most commonly demonstrated crops in FFS Session.
10. For the technologies demonstrated in FFS, highest adoption rate has been found for technologies including spraying techniques with safety measure, seed treatment with bio-fertilizers, foliar application of 2% DAP, preparation of pesticide formulations and spraying, nipping of apical bud, Intercropping and use of climate-resilient varieties (68%).
11. The technologies reported to be most beneficial by FFS participants included foliar application of 2% DAP, preparation of pesticide formulation and spraying and seed treatment with bio-fertilizer.
12. More than 90% FFS participants reported that they have benefitted from participating in FFS. More than 70% of participants acknowledged to have attended all FFS sessions
13. As also observed during expert visits, farmers have limited knowledge on amount of water that should be applied for each crop. Capacity of the farmers need to be built on the same through FFS sessions and other methods.
14. NRM works under PoCRA were found to be implemented in only in 3 villages. These works included Earthen Nala bunds and compartment/graded bunding. Thrust needs to be given by the project to expedite the implementation of NRM works. Most of NRM work beneficiaries were satisfied with the quality of NRM asset constructed under PoCRA
15. During the expert visits it was observed that implementation of only individual works would not be sufficient for improving water balance and controlling the aquifer depletion. Along with them, NRM works focused on water harvesting and rejuvenation of old dysfunctional NRM structures water should be done at an equal speed to maintain the water balance.
16. All the community farm beneficiaries acknowledged that they have benefitted from the construction of their CFP. The realized benefits include increase in production, increased water availability for protective irrigation, change in cropping pattern and increase in income.
17. Most of the FPOs which have received support from PoCRA are involved in the aggregation of agriculture produce and their marketing. Getting access to equipment and tools for agriculture and marketing support in selling their agriculture produce are key services received by the members from their FPO.
18. Most of the PoCRA supported SHGs have set up a Custom Hiring Centre for lending agriculture equipment after receiving support from PoCRA.
19. VCRMCs were non-functional some of the project villages due to pending Gram Panchayat Elections. However, most of the VCRMCs were aware of their role and were observed to meet regularly to fulfil their roles and responsibilities. Refresher training and regular capacity building support should be

provided to the VCRMCs to ensure that they are able to fulfil their roles and responsibilities. Regular monitoring and handholding support should be provided to improve record management within the VCRMC.

20. Most of the Krishi Tais were working on a project for the first time. Their capacity needs to be built to improve their understanding about the project and their roles and responsibilities. All of them were receiving support from the family in discharging their duty.
21. Most of the stakeholders reported that farmers have benefited by advisory services, as they are able to manage pesticide spray and can prepare for adverse situations.
22. Percentage of area under certified seeds for soyabean, chickpea and pigeon pea has improved in the PoCRA villages in the current round as compared to the previous rounds.

The key challenges in the implementation of PoCRA and recommendations to address them are summarized in the below table.

Table 15: Challenges, Recommendations and Way Forward

Challenges	Recommendations/ Way Forward
1 Individual Farmer matching Grant Activities	
<p>1.1 <u>Financial constraints</u> faced by small and marginal farmers in investing upfront to access project benefits remains a continuous challenge. This challenge has been further magnified due to COVID-19 as it has severely affected income of farmers.</p> <p><u>A very low percentage of beneficiaries are able to get access to institutional finance to purchase project assets.</u></p>	<ul style="list-style-type: none"> • Support should be provided to beneficiaries so that they can access institutional finance • Ways should be explored by which the applicants having pre-sanction are provided partial disbursement or vouchers through which they can purchase assets from empaneled suppliers • It can be explored to develop tie ups with financial institutions so that they would provide loans to the beneficiaries based on the received pre-sanction
<p>1.2 <u>The most vulnerable and needy farmers are still facing challenge in accessing individual activity benefits</u></p>	<ul style="list-style-type: none"> • It should be considered to provide matching grant based on the land holding and economic status of the beneficiaries. • Beneficiaries with smaller landholding or higher vulnerability should be provided higher matching grant • Some project staff suggested that the matching grant amount can be reduced and instead the project should aim to reach out to higher number of beneficiaries
<p>1.3 Some of the activities as part of the project were reported to be closed (like pipes, motor, open dug well, community farm pond, goat rearing) though there is still demand amongst the farmers for these assets.</p>	<ul style="list-style-type: none"> • It is suggested that the project should reassess if any of the closed activities can be resumed. It is suggested that, if feasible, decision for resuming can be decentralized, based on ground water levels.
<p>1.4 Challenges in understanding and implementation of individual activities due to changes in project guidelines.</p>	<ul style="list-style-type: none"> • Refresher training or six-monthly trainings should be conducted with project staff to keep them updated with the revised project guidelines
<p>1.5 Some horticulture and cash crop farmer-beneficiaries highlighted the lack of <u>appropriate market for their produce</u>.</p> <p>In some cases, they have to sell their produce at much lower prices to the local middlemen.</p>	<ul style="list-style-type: none"> • Assets related to developing storage infrastructure should be promoted. Similarly assets related to value addition/ increasing shelf life of these assets should also be promoted along with small units to make the by-product of the perishable produce.
<p>1.6 Cases of delay in processing of disbursements were reported to be a key demotivating factor for the applicants</p> <ul style="list-style-type: none"> • This issue was understood to have intensified due to COVID-19 	<ul style="list-style-type: none"> • The project should try to minimize the cases with delay in payment (with respect to the set timelines). Cases for delay should be tracked and addressed on priority.

<p>1.7 <u>Other relevant activities should also be included in the Individual matching grant component of the project</u></p>	<p>The specific activities or benefits that were suggested to be included under individual activities supported through POCRA are listed below</p> <ul style="list-style-type: none"> • Matching grant for developing storage facilities. Since there is a substantive onion production in the region, many AAs, CAs and ASs suggested to set up onion warehouses through PoCRA. • Matching grant for forest plantations such as bamboo, chandan and teak. • Matching grant for farm equipments and machines that help in mechanization of agriculture activities. The machines that are in demand include harvester, sowing machine, tillage machine, planting machine, fodder cutting machine and tractor amongst others. • Matching grant for solar energy motor pumps as they would help to reduce reoccurring cost and reduce carbon emissions. AAs and CAs reported that there is problem in reliable electricity availability in the region because of which farmers have to fetch water from far off to irrigate their fields, many a times during a night-time. Solar energy pumps would also help to reduce farm drudgery. • Matching grant for micro processing units. This may include seed processing and pulse processing units. • Matching grant for farm sheds and fencing which would help to save crops from damage due to heavy rains
<p>1.8 <u>Workload on project staff</u> is a continuous challenge, which results in a delay in approvals of the grant application.</p> <ul style="list-style-type: none"> • AAs on average have 5 villages (range 2-12) and CAs have 10 villages (range 6 -15), thus lowering their response time in conducting verifications and assistance in the application process 	<ul style="list-style-type: none"> • The number of villages under CAs/AAs with high number of villages should be reduced. • Hardship allowances and extra travel allowance can be provided to field staff working in difficult terrain or having high workload • Need to build the capacity of Krushi Tais to assist AA and CA in application assistance to the farmers
<p>1.9 <u>Many farmers are not aware of the amount of water that should be used for irrigation per crop.</u> During expert visits it was observed that farmers were using drip and sprinkler system for turmeric and chick-pea respectively, but they were not aware of the volume of water that they must irrigate with. This led to damage of crop due to soil moisture in the root zone</p>	<ul style="list-style-type: none"> • Capacity of framers should be built on irrigation practices through FFS and other suitable platforms.
<p>1.10 Some problems in the <u>Online application DBT portal still persist</u></p> <ul style="list-style-type: none"> • Difficulty in application in places where internet connectivity is poor • In case of the wrong upload of the document, the entire form has to be refilled • Issues in recording GPS in fields during spot verification and in remote locations 	<ul style="list-style-type: none"> • The offline application module should be strengthened. Also, the application needs to be further improved to be conducive to work in low-speed internet connectivity and areas with poor internet connectivity. • It is suggested that there should be a provision for re-uploading of a document in case a wrong document is uploaded.
<p>1.11 The difficulty faced by <u>landless households</u> in goat rearing activity</p>	<ul style="list-style-type: none"> • In case this activity is resumed in future, better ties required with market players and the aggregation

<p>Challenges faced in buying and selling of goats, especially in cases where villages are far from the block market.</p> <ul style="list-style-type: none"> Challenges with quality of goats. E.g, the quality of goats procured from the Maharashtra Kharedi Kendra in Jalna not up to the mark as many died soon after being sold to farmers due to <i>Laalya Khurkut</i> disease (as were not vaccinated), causing losses to the project and the farmers. 	<p>network. It might be important to think of a strategy of the cluster development to have a better-organized market and business planning.</p> <ul style="list-style-type: none"> The procurement centres should be selected carefully, to ensure quality of the goats procured. Farmers may be given certain flexibility in buying the goats on their own, with relevant paperwork.
<p>1.12 Challenge faced by farmers on applying on own through DBT application E.g in Chinchkhed village, Ambad taluka, Jalna it was observed that applicants had to pay INR 100 per application at e-sewa kendra. The eSeva Kendra operator persuaded them to fill more applications as it meant earning more money by the operator.</p>	<ul style="list-style-type: none"> Capacity building sessions for the farmers should be organized by CA/AA on how to fill DBT application forms. A more formal and reasonable application process should be developed to help farmers to apply for PoCRA. E.g, a resource person/Krushai Tai for each village should be trained and can help farmers to apply on a nominal fee
2 Farmer Field Schools	
<p>2.1 <u>Relatively low attendance of farmers regularly</u> in farmer field schools, especially of women farmers. This issue was further amplified due to COVID-19, because of which issues are being faced</p>	<ul style="list-style-type: none"> More focus needs to be given in mobilizing farmers to attend FFS session. All project stakeholders including VCRMC members, CA and AA should have a more proactive role in mobilizing farmers to attend FFS session Suitable incentives should be provided to framers to attend FFS sessions. This could include a small kit with cap, pen along with tea arrangements and agri inputs (possible to be given). Suitable timing of the FFS for men and women farmers are different and so variable timings should be attempted for both the groups. Family members of the women participating in FFS should also be informed about the benefits of learning new agriculture technologies in improving their HH income
<p>2.2 Difficulty in <u>finding the host farmer</u> ready for a certain crop demonstration. Issues were also reported by host framers due to non-payment of honorarium.</p>	<ul style="list-style-type: none"> Exposure visits to progressive farmers plots act as a motivator for farmers to act as host farmers. Timely payment of honorarium or conveying the status of honorarium can help in keeping the rapport of the FFS and its host farmers positive amongst the farmers.
<p>2.3 Lack of awareness of framers regarding effective use of crop residue and disposal of bottles/containers with pesticides During expert field visit it was observed that most of the farmers were burning their crop residue and simply throwing away the pesticide bottles</p>	<ul style="list-style-type: none"> As part of FFS sessions capacity of farmers should be built on effective use of crop residue for developing organic fertilizers and correct way of disposal of pesticide bottles.
<p>2.4 Quality of FFS sessions need to be improved, instead of targeting a high number of FFS sessions (suggested by a few SDAOs).</p>	<ul style="list-style-type: none"> It was proposed if the number of FFS can be reduced while adding more crop related sessions in each FFS. This will help the farmers to understand different stages of crop growth and the measures to be taken in each case. More focus needs to be given on capacity building of FFS facilitators.
<p>2.5 The problem of quality of guidance received by farmers from FFS facilitator still persistent.</p>	<ul style="list-style-type: none"> The retired staff of Agri department or the current staff may be involved with some hardship allowance or extra payment to increase the effectiveness and quality of sessions

<p>2.6 Challenge in filling FFS application while administering the session s</p> <ul style="list-style-type: none"> The FFS app requires the facilitators to enter detailed information during the session, which results in loss of concentration and eye contact with farmers 	<ul style="list-style-type: none"> The information to be entered in FFS session should be reviewed. FFS facilitators should be allocated separate time after the session and should be encouraged to fill the information (whatever possible) after the session.
<p>2.7 Few cases were reported that inputs for the FFS sessions like pheromone traps and BBF marker were not received on time</p>	<ul style="list-style-type: none"> The FFS app can have mechanism to collect information (reported by participants or FFS facilitator) regarding inputs are not available/other feedback per FFS session. Action can be taken accordingly by the project to ensure timely inputs for each session
<p>3 Community Benefits</p>	
<p>3.1 Community NRM works are still not being implemented at large scale NRM works were observed in only three of the PoCRA villages</p>	<ul style="list-style-type: none"> More efforts need to be put in by the project to expedite the implementation of community works. Workshop with key stakeholders should be conducted to identify the key impediments and practical solutions and realistic times should be set for their implementation Micro planning and community works should be planned or priority basis for second and third phase villages.
<p>3.2 Limited understanding of VCRMC committees of their role in planning of community work in the village</p>	<ul style="list-style-type: none"> It is critical to train VCRMCs in planning and developing of Detailed Project Reports (DPRs) for NRM Benefits. Proper capacity building is also required for understanding the processes and role of VCRMC in applying for NRM benefits.
<p>3.3 Individuals are not inclined to sharing personal water resource or land with others in community initiatives</p>	<ul style="list-style-type: none"> The project may require investments into behaviour change for understanding the benefits of community work so that farmers do not feel they are at a loss in case of contributing to a community asset.
<p>3.4 Lack of awareness amongst farmers about the benefits of NRM structures Few framers perceive that soil and water conservations works might lead to soil erosion and productivity of the land might reduce</p>	<ul style="list-style-type: none"> Awareness needs to be created in farmers about the benefits of NRM assets- both at community and individual level FFS sessions can be used as platform to spread awareness on benefits of NRM structures Key members of the community should be taken for exposure visit to places where NRM structures have benefitted the nearby farmers.
<p>3.5 Cases are reported of disputes within CFP applicants regarding the distribution of water from ponds and logistical arrangements of distributing water in case of Community Farm Pond</p>	<ul style="list-style-type: none"> VCRMCs, AAs and CAs should help to ensure that the beneficiaries who apply for Community farm pond have prior understanding and plan of distribution of water resource amongst them in different seasons.
<p>4 PoCRA supported FPOs and SHGs beneficiaries</p>	
<p>4.1 Majority of FPOs are still facing difficulty in availing bank loans.</p>	<ul style="list-style-type: none"> Technical support (with help of expert agencies) should be provided to the FPOs to develop a bankable busines plan so that banks would be ready to provide them loans Facilitation support should be provided to the FPOs so that they can avail bank loan. The project should look for bank partnerships in this regard.
<p>4.2 Lack of working capital for their activities is a key challenge faced by most FPOs</p>	<ul style="list-style-type: none"> Facilitation support should be provided to FPOs to develop a sound business plan and for getting loans from the bank Representatives of FPOs should be provided professional training and exposure visits to build their capacity to run their FPO effectively

	<ul style="list-style-type: none"> • Support should be FPOs to enhance the farmer membership base and the membership fee from the members.
4.3 Delay in approvals/technical sanction due to limited understanding of procurement and Agribusiness PSs in civil work estimation and following its technical language (related to construction of Godown and Warehouse for an FPC)	<ul style="list-style-type: none"> • Support from professional from civil engineering background should be provided for technical verification of civil works such as godowns and warehouse.
4.4 Lack of capacity of PS Procurement to understand the scope of procurement activities was reported in a few cases	<ul style="list-style-type: none"> • More trainings related to scrutiny; techno-feasibility of projects should be provided to PS procurement on regular intervals
5 Other Key Challenges	
5.1 It was observed that project stakeholders like Krushi Tai's and host farmers were not getting their honorarium on time	<ul style="list-style-type: none"> • To keep them motivated, it should be ensured that these stakeholders get their honorarium on time.
5.2 Capacity of the women members of the VCRMC need to be strengthened so that they can effectively discharge their duty Some women are also constrained to not actively participate because of no land under their name even though they are actively involved in the farming business of their household.	<ul style="list-style-type: none"> • Follow up training sessions should be organized for women VCRMC members in case a significant number of members were not able to attend the training sessions •
5.3 Understanding of Krishi Tai regarding the project and their roles and responsibilities need to be improved.	<ul style="list-style-type: none"> • Capacity building training and refresher training need to be conducted for Krushi Tais so that they understand the project and their roles and responsibilities well. • Better coordination between CAs/AAs with Krushi Tai can help in both supporting each other on their role.
5.4 Capacity of VCRMCs regarding maintain records and utilization of funds need to be improved Most of the VCRMCs have unspent amount of financial budget provided to them under PoCRA. Reasons included non-awareness, and non-usability to any relevant expenditure that is identified by the VCRMC.	<ul style="list-style-type: none"> • Capacity building of VCRMC on record maintenance and its regular monitoring should be done • Certain expenditure around stationary should be allowed to AAs and CAs instead of only VCRMCs.

8. Progress Monitoring Based on Results Framework Indicators

Overall Project Report Card

Table 16: Overall Project Report Card

Indicator Nor ¹⁶	Indicator	Measurement technique and data source	Progress at CM Round 4
5	Number of farmers reached with agricultural assets or services (% of female)	The data of the number of farmers reached with assets or services has been collected from the project MIS, associated applications, and relevant project personnel from PMU. The number of direct beneficiaries of the PoCRA includes:	Total number of farmers/beneficiaries reached through the project till 30st September 2020 is 7,23,773 (18.23 % of them are females i.e. 131972) Webinars were conducted in all 15 districts of Maharashtra with the following participants count. Krishi Tai – 7662 participants; FPO- 20445 participants, Water Balance related training - 2945 participants; FFS- 4125 participants
		1. The data on individual grant beneficiaries have been taken from the DBT portal	Total Disbursement online- 75328 (13794 Female and 61534 Male) Total Registrations till date- 365158 (288250 males and 76908 females)
		2. The data of beneficiaries of FFS has been taken from the FFS application	Total Number of FFS participants till date are 224652 (6.96 % of them are female). The total number of Guest farmers are 214407 and host farmers were 10245. (Added with previous CM data)
		4. People who have availed trainings under the program.	3048 trainings including VCRMC (with participation from 23836 male and 21175 female); 45 workshops (with participation from 1674 males and 415 females) and 41 exposure visit (with participation from 453 males and 299 males) have been conducted. Following events were conducted in Lockdown Besides this the 1926 Krishi Sanjivani Saptah events with male participation of 22910 and female participation of 8998 were conducted. 1684 Skill development and tribal development training event with male participation of 37267 and female participation of 5294 were conducted.

¹⁶ as per PoCRA Results Framework

			As well as 1701 events of Vikel te Pikel were conducted in which 8354 males and 3257 females participated Webinars were conducted in all 15 districts of Maharashtra with the following participants counts. Krishi Tai – 7662 participants; FPO- 20445 participants; Water Balance- 2945 participants FFS- 4125 participants
6	<i>Farmers adopting improved agricultural technology promoted (% of female)</i>	This indicator has been tracked based on the beneficiary survey conducted as part of the concurrent monitoring. The surveyed beneficiaries will be enquired if they were adopting at least any of the improved agriculture technology which is promoted under the project.	Adoption of any agriculture technology was observed to be 97.5% in beneficiaries in project arm and 97% in beneficiary beneficiaries in comparison arm. <i>Though it is to be noted that the sample frame for concurrent monitoring are the farmers who have benefitted from PoCRA and similar schemes in comparison area. This would not be comparable with the sample in the evaluation surveys i.e. baseline, midline and endline. Also, the sample size covered in concurrent monitoring is very less as that compared to evaluation surveys.</i>
7	<i>Area provided with new/improved irrigation or drainage services (in ha)</i>	The data of the area with new or improved irrigation services and drainage services through individual activities under the project has been taken from the DBT portal report. The data of community-level new/improved irrigation services has been taken from Project Specialists of the project districts.	Area provided with 1. Sprinkler and Pump together- 299 Ha, 2. With water pumps only - 18765 Ha, 3. With only pipes is 15498 Ha. 4. Sprinklers area covered- 17203.6 Ha 5. Drip area – 13128.6 Ha Total Area –64894 ha
		Total area under Irrigation Projects= IP (Irrigation Project) ₁ *Area under irrigation project+ IP (Irrigation Project) ₂ *Area under irrigation project+ IP (Irrigation Project) _n *Area under irrigation project	
8	<i>Surface water storage capacity from the new farm and community ponds (in 1,000 m3)</i>	The data of individual-level farm ponds will be taken from the DBT portal report. The data of community farm ponds have been taken from DBT Portal.	15848 (1000 m ³)
		Total Water storage capacities of new Farm Ponds = FP (Farm Pond) ₁ *Storage capacity of FP+ FP ₂ *Storage capacity of FP+.....+ FP _n *Storage capacity of FP	

		Total Water storage capacities of new Community Ponds = CP (Community Pond) ₁ *Storage capacity of CP+ CP ₂ *Storage capacity of CP+.....+ CP _n *Storage capacity of CP	
10	<i>Oilseeds (soybean), Pulses (pigeon, chickpea) production area under cultivation w/ certified seeds of improved varieties (share in %)</i>	The percentage area under cultivation for oilseeds (soybean) and pulses (pigeon, chickpea) <i>using certified seeds of improved varieties</i> <i>has been assessed based on the beneficiary survey as part of concurrent</i> <i>monitoring.</i>	% of the area under cultivated using climate-resilient certified seeds – <ul style="list-style-type: none"> • Soybean: 63 % in Project and comparison • Chickpea: 68% in project and 62% in comparison • Pigeon pea: 68% in project and 58% in comparison Though it is to be noted that the sample frame for concurrent monitoring are the farmers who have benefitted from PoCRA and similar schemes in the comparison area. This would not be comparable with the sample in the evaluation surveys i.e. baseline, midline and endline. Also, the sample size covered in concurrent monitoring is very less as that compared to evaluation surveys.
14	<i>Number of approved participatory mini watershed plans implemented / under implementation</i>	This indicator will be reported as an absolute number of participatory mini watershed plans approved by Gram Sabha. The information is collected by the microplanning agencies from the offices of the SDAOs. The microplanning agencies submit the validated mini watershed plans to the PMU where the data is recorded by the M&E specialist.	Number of approved participatory mini watershed plans implemented / under implementation are 533 till 30th September 2020 out of 533 villages in which implementation was done in year 1

9. Insights from PoCRA MIS data

This section presents the analysis of the project's MIS data from 1st October 2019 to 30th September 2020 for the registrations, applications and disbursements under DBT. For the rest of the sub-sections under MIS, data is presented from the start of the project to 30th September 2020. This would help to understand the current implementation status of the project and draw insights from the same.

Review of Applications and Registrations so far

As per the PoCRA MIS Data, the total applications received by PoCRA in this time period are 2,01,478. The graph below shows the district wise distribution of the same. Jalna has the highest number of applications (23%), followed by Aurangabad (22%), Osmanabad (13%) and Beed (12%). Latur (7%), Nanded (7%) and Hingoli (7%) have minimum number of registrations.

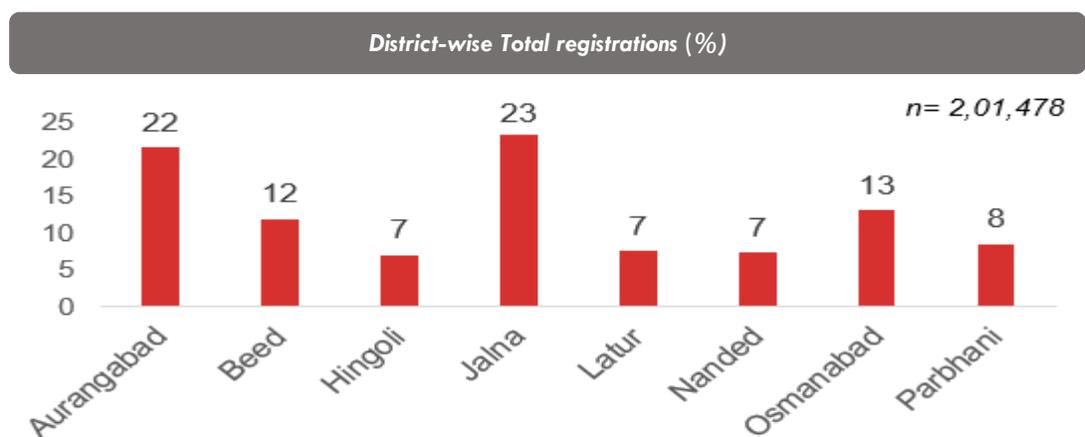


Figure 42: District wise registrations

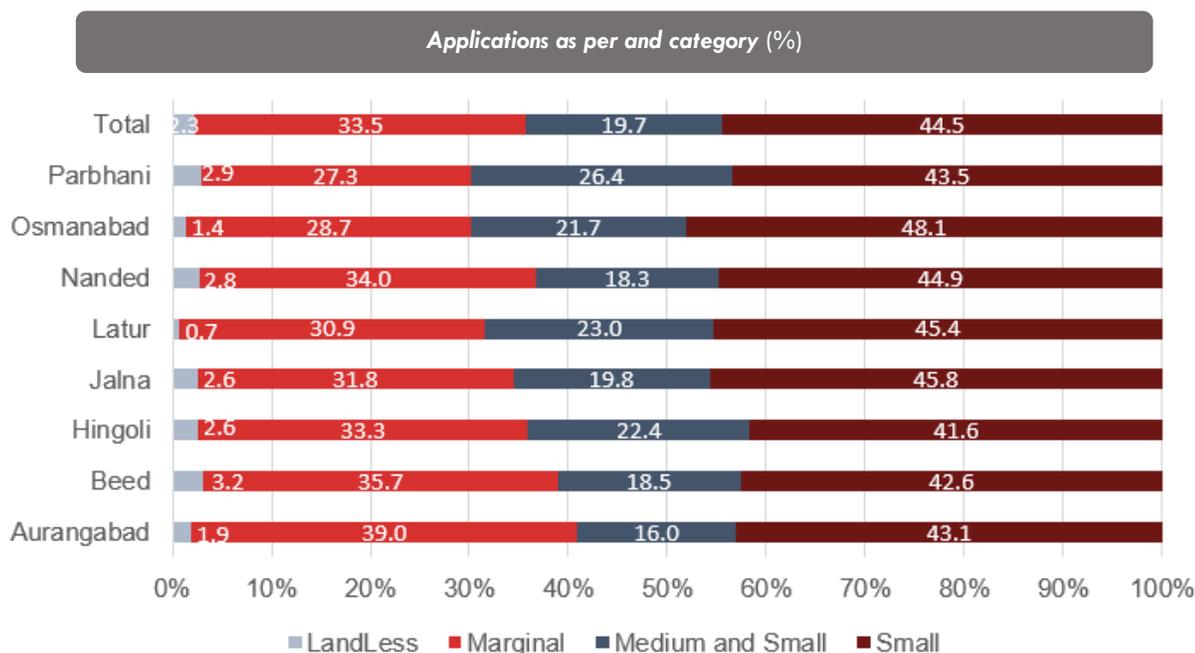


Figure 43: Percentage of Applications per land category

On analysing the number of applications as per land category, maximum applications have come from small farmers followed by marginal farmers. A critical shift to note here is that medium and large farmers have rose to 19.7% from 10% in the CMII period while the applications from landless farmers has reduced to 2.3% from 14.31% in CMII. There could be multiple reasons for it. There are many project activities in which large farmers were initially not eligible but are now eligible to apply in this cycle. Secondly, most landless and marginal farmers have raised concerns of availability of disposable income to invest in project activity. This could have worsened during the lockdown and restrictions caused due to COVID-19 pandemic.

The below table presents the activity wise percentage pf applications received. Maximum applications are received for drip irrigation (18.2%), Sprinkler Irrigation (16.7%), Farm mechanization (11.9%), Water Pumps (11.6%), Horticulture plantation/ agro-forestry (11.4%) and Pipes (11.4%). This is in line with the findings from the stakeholder feedback.

Table 17: Activity wise percentage pf applications received

Activity	No. of Applications	% of applications (from total)
Drip irrigation	87079	18.2
Sprinkler irrigation	80031	16.7
Farm mechanization	56873	11.9
Water pumps	55278	11.6
Agroforestry/Horticulture Plantations/Bamboo Plantations	54345	11.4
Pipes (HDPE/PVC)- 600 mt	54575	11.4
Construction of open dug well	23189	4.8
Construction of Farm Ponds/Farm pond lining	11883	2.5
Shade net house	9744	2
Sericulture	6825	1.4
Community Farm ponds	6064	1.3
Small ruminants	6169	1.3
Production of foundation & certified seeds of climate resilient varieties	5707	1.2
Backyard poultry	4402	0.9
NADEP Compost Unit /Vermi Compost/Organic Compost Unit	3683	0.8
Recharge of Open dug wells	3455	0.7
Inland fisheries	2385	0.5
FFS Host Farmer Assistance	2086	0.4
Poly tunnels/Polyhouse	1726	0.4
Apiculture	1269	0.3
Planting material in polytunnels	1009	0.2
Promotion for BBF Technology	302	0.1
Well Recharge	86	0
Grand Total	478165	100.0

The graph below highlights the district wise number and amount of disbursements made. As can be studied from the graph, the highest number of disbursements were made in Aurangabad with a total of 24,307 in number, worth INR 11,087 lakhs. The lowest number of disbursements were made in Nanded with only 2,899 number of disbursements, worth INR 713 lakhs. A total of 68000 disbursements have been made, with a total amount of INR

27,004 lakhs. Interestingly, approximately 41% of the total disbursed amount has been made in the district of Aurangabad.

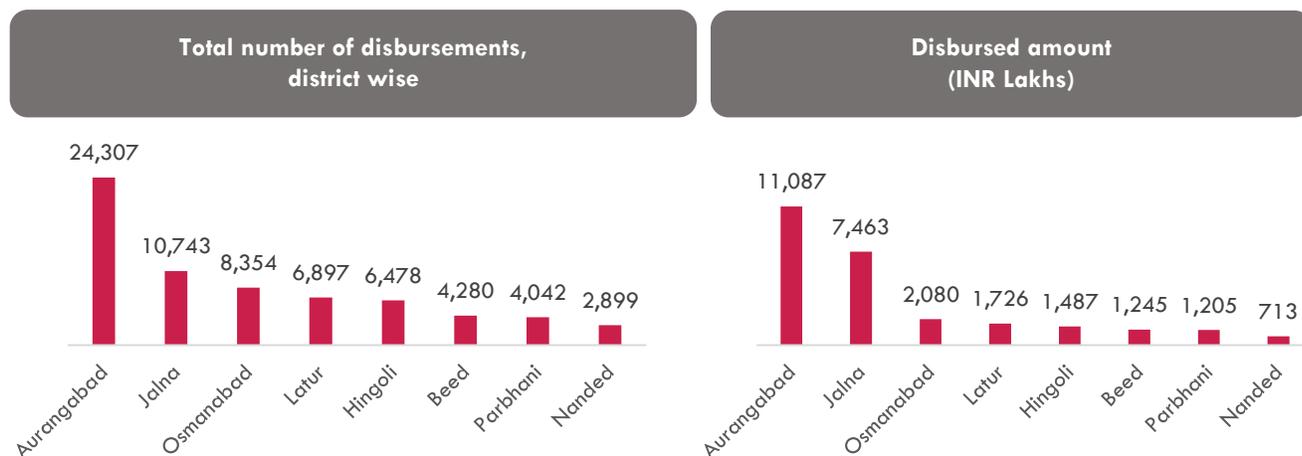


Figure 44: District wise number and amount of disbursements

The table below highlights the activity wise disbursements. Maximum number of disbursements were made for Water pumps (25.5%), Sprinklers (21.2%), pipes (18.3%) and drip irrigation (15.6%). However, the total amount disbursed under the activity is highest for drip irrigation (27.4%) and Community farm ponds (20.6%).

Table 18: Activity wise disbursements

Activity	No of Disbursements	% of Total Disbursements	Disbursed Amount (in Lakh INR)	% of disbursed amounts
Agro-forestry	22	0.0	1.72	0.0
Backyard poultry - For Landless Person	4	0.0	.47	0.0
Community Farm Ponds	2161	3.2	5559.38	20.6
Construction of Individual Farm Pond	1022	1.5	994.91	3.7
Construction of open dug well	19	0.0	29.04	0.1
Drip irrigation	10625	15.6	7409.57	27.4
FFS Host Farmer Assistance	668	1.0	22.50	0.1
Inland Fisheries	73	0.1	34.76	0.1
NADEP Compost Unit (10X6X3 Ft)/Vermicompost/Organic Input production unit	29	0.0	2.13	0.0
Pipes (HDPE/PVC)- 600 mt	12466	18.3	2529.46	9.4
Horticulture Plantations	4063	6.0	1892.56	7.0
Planting material - Polyhouse/Shadenet	14	0.0	53.29	0.2
Polyhouse	9	0.0	94.76	0.4
Production of foundation & certified seeds of climate resilient varieties	3537	5.2	258.95	1.0
Recharge of Open dug wells-Other (Heavy Land with Concrete well)	4	0.0	.42	0.0
Farm mechanization	14	0.0	20.32	0.1
Sericulture	140	0.2	79.09	0.3

Activity	No of Disbursements	% of Total Disbursements	Disbursed Amount (in Lakh INR)	% of disbursed amounts
Shadenet house (GI Pipes)	263	0.4	2410.12	8.9
Small ruminants	1066	1.6	483.10	1.8
Sprinkler Irrigation	14446	21.2	2550.28	9.4
Water pumps	17350	25.5	2576.46	9.5
Well Recharge	5	0.0	.55	0.0
Grand Total	68000	100.0	27004.65	100.0

Further based on the MIS data, the time taken for processing these disbursements was also analyzed. The table studies the amount of time it takes from the request for application submitted to the payment disbursed. There are three dates tracked – Date of submitting the request, Date of Start of Process and Date of Payment Disbursed. The maximum number of days are spent between payment requested and the process to initiate. It took on an average 95 days, with an average day in Beed at 119 and in Parbhani to be at 107 days. The time from start of process to payment being done ranged from 4 to 5 days in all the districts.

One can therefore infer the average number of days for any applicant to put in request and receive the disbursement comes to be 100 days. It is important to note that the minimum number of days that an application took from date of payment requested to reimbursement is approximately 3 in all the districts, while the maximum number of days it took is as high as 548 days. This highlights the extreme variation in the processing time of an application for disbursement of funds. The data for this period is specifically shows a longer time in processing of payments. This is corroborated from the field observation as well. Most of the officials reported the pandemic and its associated restrictions as the cause of the longer processing time.

Table 19: Number of days taken in the application processes for disbursements

Row Labels	Average days - Payments requested to payment process	Average days - Payment process to Payment done	Average days - Payment requested to payment done	Max days - Payment requested to payment done	Min days - Payment requested to payment done
Aurangabad	87	5	91	457	3
Beed	119	5	124	435	5
Hingoli	89	5	93	450	4
Jalna	108	5	112	548	5
Latur	83	5	87	466	4
Nanded	89	5	94	385	4
Osmanabad	98	4	103	482	3
Parbhani	117	5	122	504	6
Grand Total	95	5	100	548	3

VCRMC Formation

The two tables below show the status of VCRMCS formed in the three phases of the project and the appointment of Krushi Tai. So far, 98% of the villages have already formed VCRMC committee, with almost 100% in Aurangabad and Beed and close to 95% in Nanded. The appointment of Krushi Tai is however at 70% with 74% in Aurangabad, Hingoli and Jalna district and only 61% in Osmanabad.

Table 20: Status of VCRMCs formed, phase-wise

District	Status of VCRMC formed											
	Phase-1			Phase-2			Phase-3			Total		
	Village	Gram Panchayats	VCRMC formed	Village	Gram Panchayats	VCRMC formed	Village	Gram Panchayats	VCRMC formed	Village	Gram Panchayats	VCRMC formed
Aurangabad	77	59	59	194	135	134	135	106	106	406	300	299
Beed	58	51	51	218	162	162	115	107	106	391	320	319
Hingoli	39	33	33	129	102	102	72	60	59	240	196	194
Jalna	67	55	55	188	162	162	108	93	82	363	310	299
Latur	94	79	77	144	124	124	44	44	44	282	247	244
Nanded	70	61	58	215	189	189	99	96	80	384	346	327
Osmanabad	48	43	43	137	117	117	102	98	94	287	258	254
Parbhani	84	76	76	145	127	126	46	43	39	275	245	241
Grand Total	537	457	452	1370	1118	1116	721	647	610	2628	2222	2177

Table 21: Status of VCRMCs formed and Krushi Tai's appointed

District	Status of VCRMC formed			% of GPs with VCRMC formed	Krishi Tai appointed	% of villages with Krushi Tai Appointed
	Total					
	Villages	Gram Panchayats	VCRMC Formed			
Aurangabad	406	300	299	99.67	302	74.38
Beed	391	320	319	99.69	269	68.80
Hingoli	240	196	194	98.98	178	74.17
Jalna	363	310	299	96.45	267	73.55
Latur	282	247	244	98.79	160	56.74
Nanded	384	346	327	94.51	320	83.33
Osmanabad	287	258	254	98.45	176	61.32
Prabhani	275	245	241	98.37	188	68.36
Grand Total	2628	2222	2177	97.97	1860	70.78

Farmer Field Schools Demonstrations

The table below presents the implementation status of FFS across the years. The total number of Farmer Field Schools established in Rabi and Kharif Season of 2018 are 1434 and the total number of Farmer Field Schools established in Rabi and Kharif season of 2019 are 5010. The total number of Farmer field Schools in Kharif 2020 are 492. It can be analysed that the number of FFS sessions conducted in Kharif season has increased in the current time period as compared to previous years, despite the restrictions caused due to the Pandemic. The range of total incidences across the districts ranged from 7.6% in Jalna to 16.1% in Beed in 2020. The maximum FFS sessions were conducted in Beed, Nanded and Aurangabad and the least sessions have been conducted in Latur and Hingoli.

Table 22: Status of Farmer Field Schools conducted

District	FFS – 2018				FFS - 2019				FFS-2020	
	Kharif	Rabi	Total	% of Grand Total	Kharif	Rabi	Total	% of Grand Total	Kharif	% of Grand Total
Aurangabad	154	16	170	11.9	472	205	677	13.5	614	15.1
Beed	116	0	116	8.1	504	216	720	14.4	656	16.1
Hingoli	78	39	117	8.2	315	154	469	9.4	311	7.6
Jalna	134	67	201	14.0	489	224	713	14.2	595	14.6
Latur	178	79	257	17.9	335	185	520	10.4	313	7.7
Nanded	140	63	203	14.2	530	249	779	15.5	627	15.4
Osmanabad	94	47	141	9.8	355	121	476	9.5	471	11.5
Parbhani	164	65	229	16.0	450	206	656	13.1	492	12.1
Total	1058	376	1434	100.0	3450	1560	5010	100.0	4079	100.0

The Impact of FFS demonstrations can be seen in the increase in yields of the crops. The FFS Plot usually witnessed an increase of 15-25% as compared to control plot. However, there are two strong anomalies. It was as high as 93% increase in case of ground nut. It was also negative i.e. (-) 2% in case of Black gram. This may require more technology revisions in case of black gram.

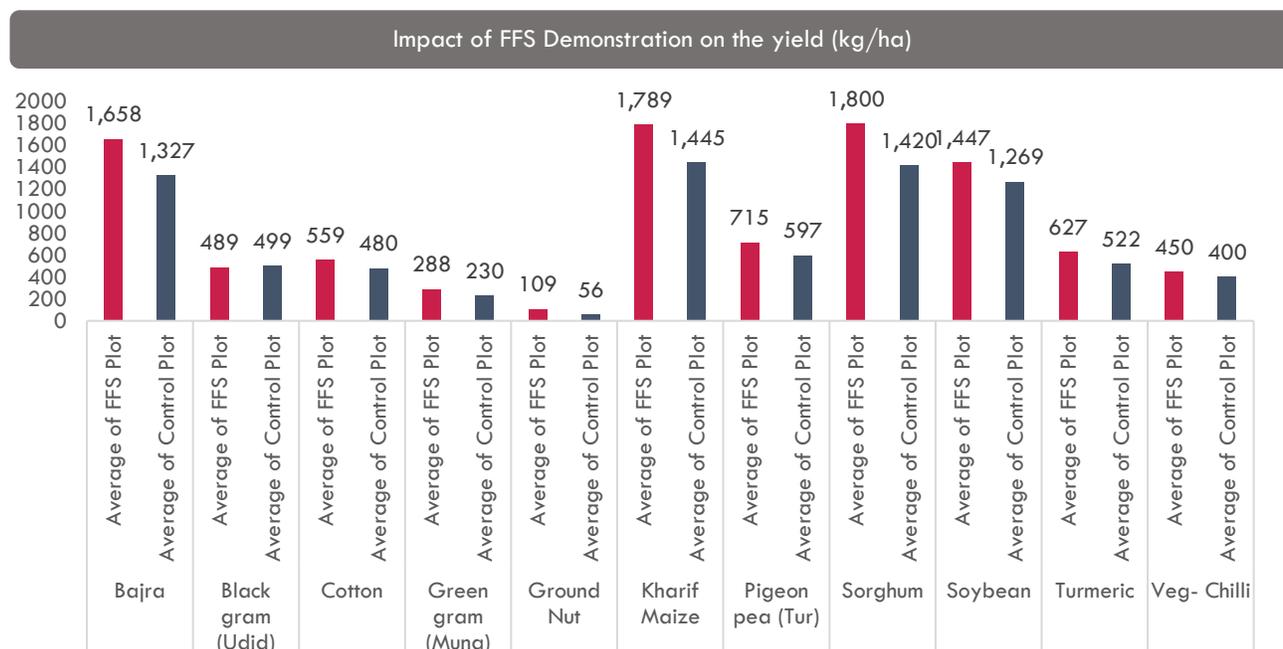


Figure 45: Impact of FFS Demonstration on the yield

The figure below highlights the average increase in the yield of crops in FFS Plot.

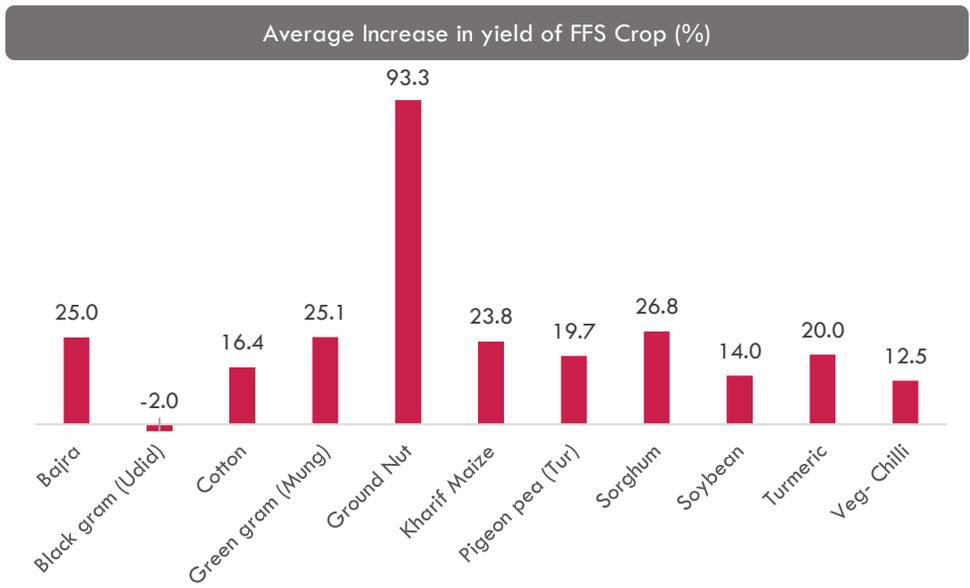


Figure 46: Average Increase in yield of FFS Crop

The details of FFS plots where soil testing has been conducted has been presented above. As evident, 144 out of 267 (54%) plots, where soil testing was conducted were for cotton demonstration. Around 44% of the plots were growing Soybean. Other crops that were being grown in the plots tested for soil included pigeon pea, rabi- jowar, bajra, vegetable-onions.

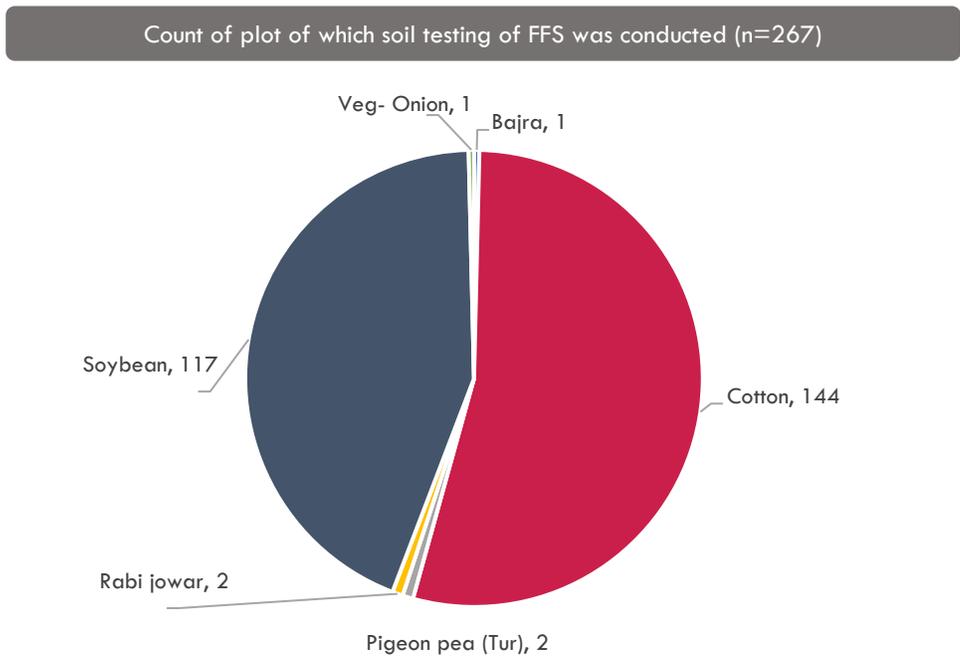


Figure 47: Count of plot of which soil testing of FFS was conducted

The below table presents the findings from the soil testing. The average value of Nitrogen (N), Phosphorous (P), Potassium (K), Sulphur (S), Iron (Fe), Magnesium (Mn) from the tests have been reported. The green highlights the highest and red indicates the lowest incidence of these values.

The nitrogen values in soil of the Latur district are high and appropriate measures should be taken by the concerned officials in informing the farmers about the same. In the rest of the districts, the available nitrogen is low to medium. The phosphorus is very low in Osmanabad and Jalna district and in the rest of the districts, it is medium to slightly high. The available potassium is on the higher side in all districts except in the Jalna district it is quite low. With respect to soil nutrient status of secondary and micro-nutrients, the majority of the soils are low to medium in the category and need adequate measures to avoid nutrient deficiency in soils for maintaining soil health for sustainable crop production in both Kharif and rabi season.

Table 23: Count of plots of which soil testing of FFS was conducted

Row Labels	Aurangabad	Beed	Jalna	Latur	Nanded	Osmanabad	Parbhani
Average of Nitrogen (N)	36.0	56.6	126.0	1695.2	221.3	32.3	217.3
Max - N	187.5	274.8	126.0	39375.0	351.4	37.5	245.9
Std Dev - N	66.8	77.7		7003.5	112.7	7.4	22.5
Average of Phosphorous (P)	52.0	26.2	5.0	45.3	15.7	4.7	38.6
Max - P	190.9	59.2	5.0	538.0	19.4	5.0	253.0
Std Dev - P	39.3	10.3		109.7	4.6	0.5	80.4
Average of Potassium (K)	501.2	410.0	27.0	539.3	488.3	354.9	534.4
Max - K	1378.2	961.1	27.0	2228.5	739.0	446.8	727.8
Std Dev - K	235.6	149.3		373.9	287.2	130.0	137.0
Average of Sulphur (S)	0.2	18.1		22.0	17.3	1.0	13.9
Max - S	2.3	187.8	0.0	55.0	22.1	2.0	55.0
Std Dev - S	0.5	36.7		18.3	6.1	1.4	15.5
Average of Zinc (Zn)	0.6	0.2	0.0	2.2	1.4	1.2	1.3
Max - Zn	1.8	1.7	0.0	16.7	3.0	1.2	5.0
Std Dev - Zn	0.4	0.4		2.4	1.3		1.5
Average of Boron(B)	0.1	0.3	0.0	2.9	0.3	0.5	1.0
Max - B	1.1	2.7	0.0	7.0	0.3	1.0	5.0
Std Dev - B	0.2	0.6		2.2	0.1	0.7	1.5
Average of Iron (Fe)	1.0	1.8	0.0	9.2	3.0	1.8	10.1
Max - Fe	2.7	10.9	0.0	19.2	3.2	3.7	14.2

Std Dev - Fe	0.6	3.1		4.5	0.2	2.6	2.5
Average of Manganese (Mn)	9.2	3.6	0.2	13.9	3.9	4.2	15.7
Max - Mn	60.4	19.6	0.2	25.6	5.2	5.3	21.7
Std Dev -Mn	9.2	5.7		6.0	1.2	1.5	3.6
Average of Copper (Cu)	1.3	0.8	0.1	3.8	1.2	0.9	3.5
Max - Cu	6.2	4.1	0.1	6.2	2.2	0.9	6.0
Std Dev - Cu	1.7	1.3		1.3	0.8	0.1	1.2

Status of supported to FPOs and SHGs under PoCRA

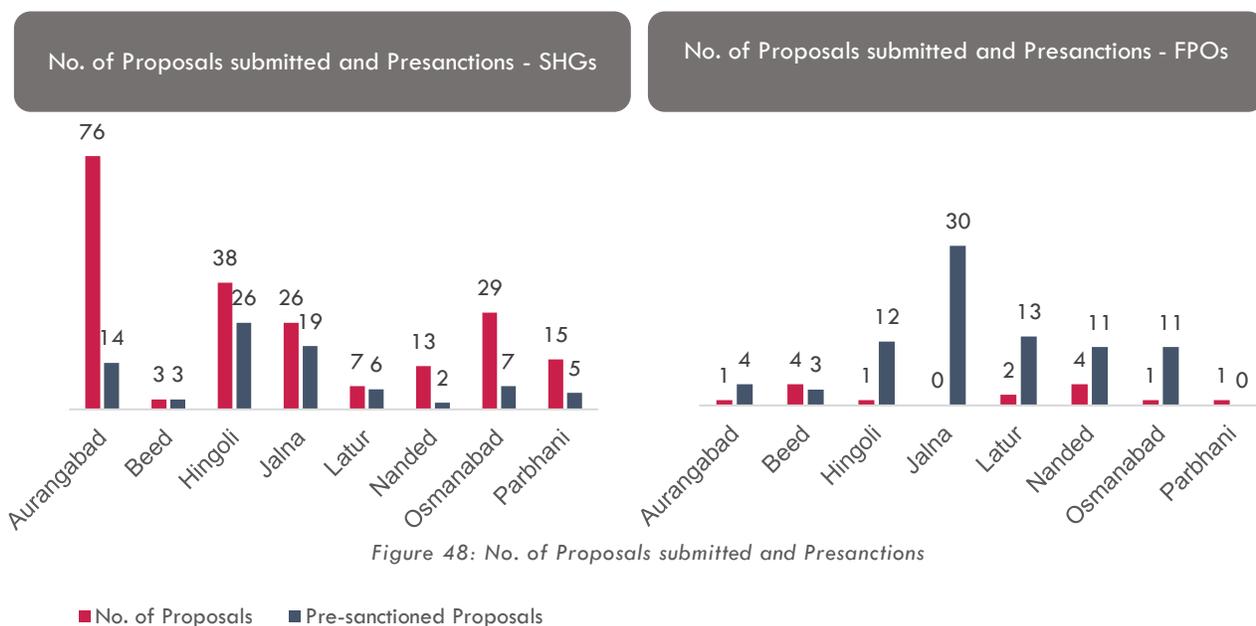


Figure 48: No. of Proposals submitted and Presanctions

This sub section presents the FPO/SHG support status during the aforementioned period of concurrent monitoring. The figure below highlights the number of proposals that were identified, pre-sanctioned of the FPOs and SHGs. The highest number of proposals came from Aurangabad (76) in case of SHGs and Nanded (4) in case of FPOs. The highest number of pre-sanctioned proposals are from Hingoli (26) in case of SHGs and in Jalna (30) in case of FPOs. The high amount of presanctions from Jalna can be informed by the fact that maximum submission of proposals was from Jalna in the previous reporting period.

Promotion of production of climate resilient seed varieties is an important component of the PoCRA project. The table throws light on the number of growers, registered area and estimation of seed production, district wise. Highest seed producing districts are Parbhani (2889 quintals), Hingoli (2489 Quintals) and Latur (1457 quintals). They also have the highest number of growers and registered area under them. Aurangabad has the lowest seed production with only 35 quintals of production from 53 growers.

Table 24: Number of growers, registered area and estimation of seed production

District	Registered Area	No. of Growers	No. of Villages	Source Seed Distribution (Quintal)	Source Seed Cost (INR)	SCA/MSSCL Expenses (INR)	Total INR
Parbhani	3954	1914	56	2889	21464716	191880	23383596
Hingoli	3319	1239	22	2489	13828920	2906600	16735520
Nanded	770	488	48	578	4273500	29280	4302780
Latur	1976	902	19	1457	10790862	957970	11748832
Osmanabad	652	324	69	481	3565109	303370	3868479
Jalna	619	420	108	430	3195370	300900	3496270
Beed	1492	743	2	1083	8050360	735730	8786090
Aurangabad	55	53	20	35	260940	24030	284970

Soil and Water Conservation works

The graph presents the status of the soil and water conservation works in 2020-21. The number of soil and water conservation works were highest in Osmanabad (112), followed by Jalna (50) and Nanded (44). Hingoli and Beed had no soil and water conservation work reported in the period of 2020-21. The highest area under soil and water conservation work is also in Osmanabad (2974.9 ha), followed by Nanded (2555.7 ha) and Latur (2201.2 ha) Jalna, despite having 50 NRM works have only 917 ha under soil and water conservation, perhaps due to smaller size of the projects.

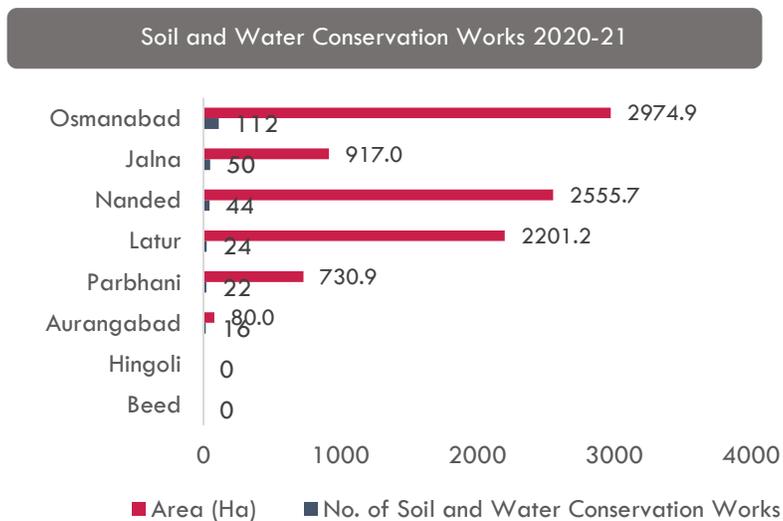


Figure 49: Soil and water conservation works 2020-21

10. Annex

List of Sampled Villages

Sampled Project Villages

Village	Census Code	Taluka	Sub-division	District
Waregaon	548733	Phulambri	Aurangabad	Aurangabad
Chorwaghalgaon	549160	Vaijapur	Vaijapur	Aurangabad
Fajalpur	549331	Gangapur	Vaijapur	Aurangabad
Gondegaon	548446	Soegaon	Sillod	Aurangabad
Banoti	548457	Soegaon	Sillod	Aurangabad
Mhasla	547672	Badnapur	Jalna	Jalna
Tupewadi	547678	Badnapur	Jalna	Jalna
Warud bk	547297	Bhokardam	Jalna	Jalna
Pathar Deolgaon	547697	Badnapur	Jalna	Jalna
Chinchkhed	547786	Ambad	Partur	Jalna
Chichkhandi	559988	Ambejogai	Ambejogai	Bid
Mohadi	546551	Jintur	Parbhani	Parbhani
Bondargaon	546968	Sonpeth	Parbhani	Parbhani
Hiversinga	559077	Shirur (KAsar)	Bid	Bid
Jalgaon (majra)	559211	Georai	Manjlegaon	Bid
Pandhargaon	547061	Gangakhed	Parbhani	Parbhani
Goregaon	545789	Sengoan	Hingoli	Hingoli
Bhatsawangi	545878	Hingoli	Hingoli	Hingoli
Ghodki	561255	Washi	Bhum	Osmanabad
Wadgaon(jagir)	561366	Kalamb	Bhum	Osmanabad
Ghatangri	561456	Osmanabad	Osmanabad	Osmanabad
Walgud	561464	Osmanabad	Osmanabad	Osmanabad
Aleshwar	561064	Paranda	Bhum	Osmanabad
Aluwadgaon	545181	Naigaon	Deglur	Nanded
Undri P.D.	545517	Mukhed	Deglur	Nanded
Hotal	545654	Deglur	Deglur	Nanded
Sindalwadi	560613	Ausa	Latur	Latur

Yelamwadi	560834	Nilanga	Latur	Latur
Kolnoor	560436	Jalkot	Udgir	Latur
Wangdari	560217	Renapur	Latur	Latur

Sampled Comparison Villages

Village	Census Code	Taluka	Sub-division	District
Borgaon Bajar	548544	Sillod	Sillod	Aurangabad
Georai Shemi	548647	Sillod	Sillod	Aurangabad
Nandgirwadi	548386	Kannad	Sillod	Aurangabad
Sagarwadi	547718	Badnapur	Jalna	Jalna
Lamanwadi	547956	Gahansawangi	Partur	Jalna
Dahiphal(chincholi)	559603	Beed	Bid	Bid
Dhardighol	546947	Sonpeth	Parbhani	Parbhani
Maharkheda	545778	Sengoan	Hingoli	Hingoli
Koregaonwadi	561730	Umarga	Osmanabad	Osmanabad
Panchgavhan	561417	Osmanabad	Osmanabad	Osmanabad
Kawadewadi	561259	Washi	Bhum	Osmanabad
Wakhrad	545387	Kandhar	Nanded	Nanded
Digras	544345	Kinwat	Kinwat	Nanded
Brahmawadi	560235	Renapur	Latur	Latur
Malewadi	561019	Udgir	Udgir	Latur

List of Key Experts visits/interactions

Name of Key Expert	Position	Date of visit	District	Block	Village visited
R.B Singandhupe	Agronomy Expert	21-12-2020	Hingoli	Hingoli	Khanapur Chitta
		22-12-2020		Sengaoan	Goregaon
					Chandi Khurd
					Majhod
		23-12-2020		Hingoli	Ambada
		Mohpe- Kanhergaon Naka			
Dalbir Singh	Agri Economist	14-12-2020	Aurangabad	Aurangabd	Kumbephal
		15-12-2020	Beed	Georai	Gaikwad Jalgaon
					Nipani Jawalka
Arindam Dutta	Environment Expert	19-12-2021	Jalana	Bhokardan	Tapowan
				Badnapur	Tupewadi
					Mandaulgaon
		20-12-2021	Beed	Georai	Padulachi wadi
					Rui
		Dhanora			
Deodatt Singh	Agribusiness Expert (Telephonic discussions with FPO representatives)	14-02-2021	Aurangabad	Vaijapur	Malojiraje Farmer Producer Company
		14-02-2021	Aurangabad	Vaijapur	Pinakeshwar Farmer Producer Company
		14-02-2021	Jalana	Jalna	Munjral brothers Farmer Producer Company
		15-02-2021	Latur	Latur	SVR Krushi Mitra Producer Company
		15-02-2021	Osmanabad	Osmanabad	I-Watch Farmer Producer Company

List of Stakeholder Interviewed

List of Agriculture Assistants Interviewed

Sr No.	District	Subdivision	Taluka	Village
1	Aurangabad	Aurangabad	Phulambri	Waregaon
2	Aurangabad	Vaijapur	Vaijapur	Chorwaghgaon
3	Aurangabad	Vaijapur	Gangapur	Fajalpur
4	Aurangabad	Sillod	Soegaon	Gondegaon

Sr No.	District	Subdivision	Taluka	Village
5	Aurangabad	Sillod	Soegoan	Banoti
6	Jalna	Jalna	Badnapur	Mhasla
7	Jalna	Jalna	Badnapur	Tupewadi
8	Jalna	Jalna	Badnapur	Pathar Deolgaon
9	Jalna	Partur	Ambad	Chinchkhed
10	bid	Ambejogai	Ambejogai	Chichkhandi
11	Parbhani	Parbhani	Jintur	Mohadi
12	Parbhani	Parbhani	Sonpeth	Bondargaon
13	Bid	Bid	Shirur (KAsar)	Hiversinga
14	Bid	Manjlegaon	Georai	Jalgaon (majra)
15	parbhani	Parbhani	Gangakhed	Pandhargaon
16	Hingoli	Hingoli	Sengoan	Goregaon
17	Hingoli	Hingoli	Hingoli	Bhatsawangi
18	Osmanabad	Bhum	Washi	Ghodki
19	Osmanabad	Bhum	Kalamb	Wadgaon(jagir)
20	Osmanabad	Osmanabad	Osmanabad	Ghatangri
21	Osmanabad	Osmanabad	Osmanabad	Walgud
22	Osmanabad	Bhum	Paranda	Aleshwar
23	Nanded	Deglur	Naigaon	Aluwadgaon
24	Nanded	Deglur	Mukhed	Undri P.D.
25	Nanded	Deglur	Deglur	Hotal
26	Latur	Latur	Ausa	Sindalwadi
27	Latur	Latur	Nilanga	Yelamwadi
28	Udgir	Udgir	Jalkot	Kolnoor
29	Latur	Latur	Renapur	Wangdari

List of Cluster Assistants Interviewed

Sr No.	District	Subdivision	Taluka	Village
1	Aurangabad	Aurangabad	Phulambri	Waregaon
2	Aurangabad	Vaijapur	Gangapur	Fajalpur
3	Aurangabad	Sillod	Soegoan	Gondegaon

4	Aurangabad	Sillod	Soegoan	Banoti
5	Jalna	Jalna	Badnapur	Mhasla
6	Jalna	Jalna	Badnapur	Tupewadi
7	Jalna	Jalna	Bhokardam	Warud bk
8	Jalna	Partur	Ambad	Chinchkhed
9	bid	Ambejogai	Ambejogai	Chichkhandi
10	Parbhani	Parbhani	Jintur	Mohadi
11	Parbhani	Parbhani	Sonpeth	Bondargaon
12	Bid	Bid	Shirur (KAsar)	Hiversinga
13	Bid	Manjlegaon	Georai	Jalgaon (majra)
14	parbhani	Parbhani	Gangakhed	Pandhargaon
15	Hingoli	Hingoli	Sengoan	Goregaon
16	Hingoli	Hingoli	Hingoli	Bhatsawangi
17	Osmanabad	Bhum	Washi	Ghodki
18	Osmanabad	Bhum	Kalamb	Wadgaon(jagir)
19	Osmanabad	Osmanabad	Osmanabad	Ghatangri
20	Osmanabad	Osmanabad	Osmanabad	Walgud
21	Osmanabad	Bhum	Paranda	Aleshwar
22	Nanded	Deglur	Naigaon	Aluwadgaon
23	Nanded	Deglur	Mukhed	Undri P.D.
24	Nanded	Deglur	Deglur	Hotal
25	Latur	Latur	Ausa	Sindalwadi
26	Latur	Latur	Nilanga	Yelamwadi
27	Udgir	Udgir	Jalkot	Kolnoor
28	Latur	Latur	Renapur	Wangdari

List of Krushi Tais Interviewed

Sr No.	District	Subdivision	Taluka	Village
1	Aurangabad	Aurangabad	Phulambri	Waregaon
2	Osmanabad	Bhum	Paranda	Aleshwar
3	Aurangabad	Sillod	Soegoan	Banoti
4	Hingoli	Hingoli	Hingoli	Bhatsawangi
5	Bid	Ambejogai	Ambejogai	Chichkhandi
6	Jalna	Partur	Ambad	Chinchkhed
7	Aurangabad	Vaijapur	Gangapur	Fajalpur
8	Osmanabad	Bhum	Washi	Ghodki
9	Aurangabad	Sillod	Soegoan	Gondegaon
10	Hingoli	Hingoli	Sengoan	Goregaon
11	Bid	Bid	Shirur (KAsar)	Hiversinga
12	Nanded	Deglur	Deglur	Hotal
13	Bid	Manjlegaon	Georai	Jalgaon (majra)

Sr No.	District	Subdivision	Taluka	Village
14	Jalna	Jalna	Badnapur	Mhasla
15	Parbhani	Parbhani	Jintur	Mohadi
16	Jalna	Jalna	Badnapur	Pathar Deolgaon
17	Latur	Latur	Ausa	Sindalwadi
18	Jalna	Jalna	Badnapur	Tupewadi
19	Osmanabad	Bhum	Kalamb	Wadgaon(jagir)
20	Osmanabad	Osmanabad	Osmanabad	Walgud
21	Latur	Latur	Renapur	Wangdari
22	Jalna	Jalna	Bhokardam	Warud bk
23	Latur	Latur	Nilanga	Yelamwadi

List of FFS Coordinators Interviewed

Sr No	District	Subdivision	Taluka	Village
1	Aurangabad	Aurangabad	Phulambri	Waregaon
2	Aurangabad	Sillod	Soegoan	Banoti
3	Aurangabad	Vaijapur	Vaijapur	Chorwaghalgaon
4	Aurangabad	Vaijapur	Gangapur	Fajalpur
5	Aurangabad	Sillod	Soegoan	Gondegaon
6	Bid	Bid	Shirur (KAsar)	Hiversinga
7	Bid	Manjlegaon	Georai	Jalgaon (majra)
8	Hingoli	Hingoli	Sengoan	Goregaon
9	Jalna	Jalna	Badnapur	Tupewadi
10	Latur	Latur	Renapur	Wangdari
11	Latur	Latur	Nilanga	Yelamwadi
12	Nanded	Deglur	Mukhed	Undri P.D.
13	Osmanabad	Bhum	Paranda	Aleshwar
14	Osmanabad	Osmanabad	Osmanabad	Ghatangri
15	Parbhani	Parbhani	Sonpeth	Bondargaon
16	Parbhani	Parbhani	Jintur	Mohadi
17	Parbhani	Parbhani	Gangakhed	Pandhargaon

List of FFS Facilitators Interviewed

Sr No	District	Subdivision	Taluka	Village
1	Aurangabad	Aurangabad	Phulambri	Waregaon
2	Aurangabad	Sillod	Soegoan	Banoti
3	Aurangabad	Vaijapur	Vaijapur	Chorwaghalgaon
4	Aurangabad	Vaijapur	Gangapur	Fajalpur
5	Aurangabad	Sillod	Soegoan	Gondegaon
6	Bid	Ambejogai	Ambejogai	Chichkhandi

7	Bid	Bid	Shirur (KAsar)	Hiversinga
8	Bid	Manjlegaon	Georai	Jalgaon (majra)
9	Hingoli	Hingoli	Hingoli	Bhatsawangi
10	Hingoli	Hingoli	Sengoan	Goregaon
11	Jalna	Partur	Ambad	Chinchkhed
12	Jalna	Jalna	Badnapur	Mhasla
13	Jalna	Jalna	Badnapur	Pathar Deolgaon
14	Jalna	Jalna	Badnapur	Tupewadi
15	Jalna	Jalna	Bhokardam	Warud bk
16	Latur	Latur	Ausa	Sindalwadi
17	Latur	Latur	Renapur	Wangdari
18	Latur	Latur	Nilanga	Yelamwadi
19	Nanded	Deglur	Deglur	Hotal
20	Nanded	Deglur	Mukhed	Undri P.D.
21	Osmanabad	Bhum	Paranda	Aleshwar
22	Osmanabad	Osmanabad	Osmanabad	Ghatangri
23	Osmanabad	Bhum	Washi	Ghodki
24	Osmanabad	Bhum	Kalamb	Wadgaon(jagir)
25	Osmanabad	Osmanabad	Osmanabad	Walgud
26	Parbhani	Parbhani	Sonpeth	Bondargaon
27	Parbhani	Parbhani	Jintur	Mohadi
28	parbhani	Parbhani	Gangakhed	Pandhargaon
29	Udgir	Udgir	Jalkot	Kolnoor

List of Agriculture Supervisor Interviewed

Sr No	District	Subdivision	Taluka	Village
1	Aurangabad	Sillod	Soegoan	Banoti
2	Aurangabad	Vaijapur	Gangapur	Fajalpur
3	Bid	Ambejogai	Ambejogai	Chichkhandi
4	Bid	Bid	Shirur (KAsar)	Hiversinga
5	Bid	Manjlegaon	Georai	Jalgaon (majra)
6	Hingoli	Hingoli	Hingoli	Bhatsawangi
7	Hingoli	Hingoli	Sengoan	Goregaon
8	Jalna	Partur	Ambad	Chinchkhed
9	Jalna	Jalna	Badnapur	Mhasla
10	Jalna	Jalna	Badnapur	Tupewadi
11	Jalna	Jalna	Bhokardam	Warud bk
12	Latur	Latur	Ausa	Sindalwadi
13	Latur	Latur	Renapur	Wangdari
14	Latur	Latur	Nilanga	Yelamwadi

Sr No	District	Subdivision	Taluka	Village
15	Nanded	Deglur	Naigaon	Aluwadgaon
16	Nanded	Deglur	Deglur	Hotal
17	Nanded	Deglur	Mukhed	Undri P.D.
18	Osmanabad	Bhum	Paranda	Aleshwar
19	Osmanabad	Osmanabad	Osmanabad	Ghatangri
20	Osmanabad	Bhum	Washi	Ghodki
21	Osmanabad	Bhum	Kalamb	Wadgaon(jagir)
22	Parbhani	Parbhani	Sonpeth	Bondargaon
23	Parbhani	Parbhani	Jintur	Mohadi
24	Parbhani	Parbhani	Gangakhed	Pandhargaon
25	Udgir	Udgir	Jalkot	Kolnoor

List of FPC representative interviewed

S.No	Village	Post	Name of FPC
1	Chikangaon	Chairman	Ajantha Verul Farmer Producer Company
2	Hingoli	Chairman	Anukaran farmer Producer Company LTD,Hingoli
3	Hiversinga	Chairman	Bhageshwar FPC
4	Malegaon	Chairman	Shetkari Mitra FPC
5	Mardi	Chairman	Munjaj Brothers FPC
6	Palaswadi	Secretary	Ghrushneshwar Agro Producer Company
7	Samudrawani	Director	I watch Farmer producer Company
8	Shegaon Khodke	Chairman	Khodke Agro Producer Company
9	Shiradhon	Director	Shivkranti Faarerist Producer Company
10	Sultanpur	CEO	Maloji Raje Shetkari Producer Company Private Limited
11	Akharvahi	Chairman	SVR farmer producer company
12	Mardi (Lohara)	Director	Sant Shiromani Maruti Maharaj Company
13	Shivni	Chairman	Shivneri Agri Producer Company
14	Yusuf Wadgaon	Director	SSK agri farmer producer company

List of Taluka Agricultural Officers Interviewed

Sr No.	District	Subdivision	Taluka
1	Aurangabad	Vaijapur	Vaijapur
2	Aurangabad	Vaijapur	Gangapur
3	Aurangabad	Sillod	Soegoan
4	Jalna	Jalna	Badnapur
5	Jalna	Partur	Ambad
6	Bid	Ambejogai	Ambejogai
7	Parbhani	Parbhani	Jintur
8	Parbhani	Parbhani	Sonpeth

9	Bid	Bid	Shirur (KAsar)
10	Bid	Manjlegaon	Georai
11	Parbhani	Parbhani	Gangakhed
12	Hingoli	Hingoli	Sengoan
13	Hingoli	Hingoli	Hingoli
14	Osmanabad	Bhum	Washi
15	Osmanabad	Bhum	Kalamb
16	Osmanabad	Osmanabad	Osmanabad
17	Nanded	Deglur	Naigaon
18	Nanded	Deglur	Mukhed
19	Nanded	Deglur	Deglur
20	Latur	Latur	Nilanga
21	Latur	Udgir	Jalkot
22	Latur	Latur	Renapur
23	Latur	Latur	Ausa

List of Project Specialists Interviewed

Sr. No	District	Project Specialists Participated in FGD
1	Parbhani	PS Agri Business
		PS HRD
		PS Procurement
2	Aurangabad	PS HRD
		PS-Procurement
		PS Agri
3	Nanded	PS AGRI
		PS HRD vacant
		PS-Procurement
4	Hingoli	PS-Procurement
		PS Agri Business
		PS HRD
5	Latur	PS HRD
		PS Agri
		PS-Procurement
6	Jalana	PS-Procurement
		PS Agri
		PS Agri Business
		PS HRD
7	Osmanabad	PS Procurement
		PS Agri
		PS HRD

		PS Agri Business
8	Beed	PS Agri Business
		PS Agri
		PS-Procurement
		PS HRD

List of Sub-Division Agriculture Officers Interviewed

S.No	District	Subdivision
1	Osmanabad	Osmanabad
2	Osmanabad	Bhum
3	Hingoli	Hingoli
4	Jalna	Partur
5	Jalna	Jalna
6	Aurangabad	Vaijapur
7	Aurangabad	Aurangabad
8	Aurangabad	Sillod
9	Beed	Majalgaon
10	Beed	Beed
11	Beed	Ambejogai
12	Latur	Udgir
13	Latur	Latur
14	Nanded	Nanded
15	Nanded	Deglur
16	Nanded	Kinwat
17	Parbhani	Parbhani

List of DSAOs Interviewed

Sr. No.	District
1	Nanded
2	Parbhani
3	Jalana
4	Beed (PD ATMA)
5	Latur
6	Aurangabad



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