

Impact Assessment of Jeetega Kisaan



A DCM SHRIRAM FOUNDATION PROGRAM



About Impact Assessment - Objectives and Design

Timeline

TTC led assessment preparatory work and field data collection for the assessment was completed between January-February 2023.

The data cleaning, compilation, analysis and report preparation was completed in March 2023.

Objectives

- Understand the project context through a secondary literature review

Assess the project management arrangements, outcomes and their impact on overall improvements in agricultural skills among the farmers

Evaluate the impact of the project on agricultural practices and farmers' income

Document the lessons learned and provide recommendations for the next phase of the program

Study Design

The assessment employed a quasi-experimental design wherein data was collected from project/intervention and control villages. A comparison was drawn between agricultural knowledge, practices and yield between these two groups to capture project's impact.

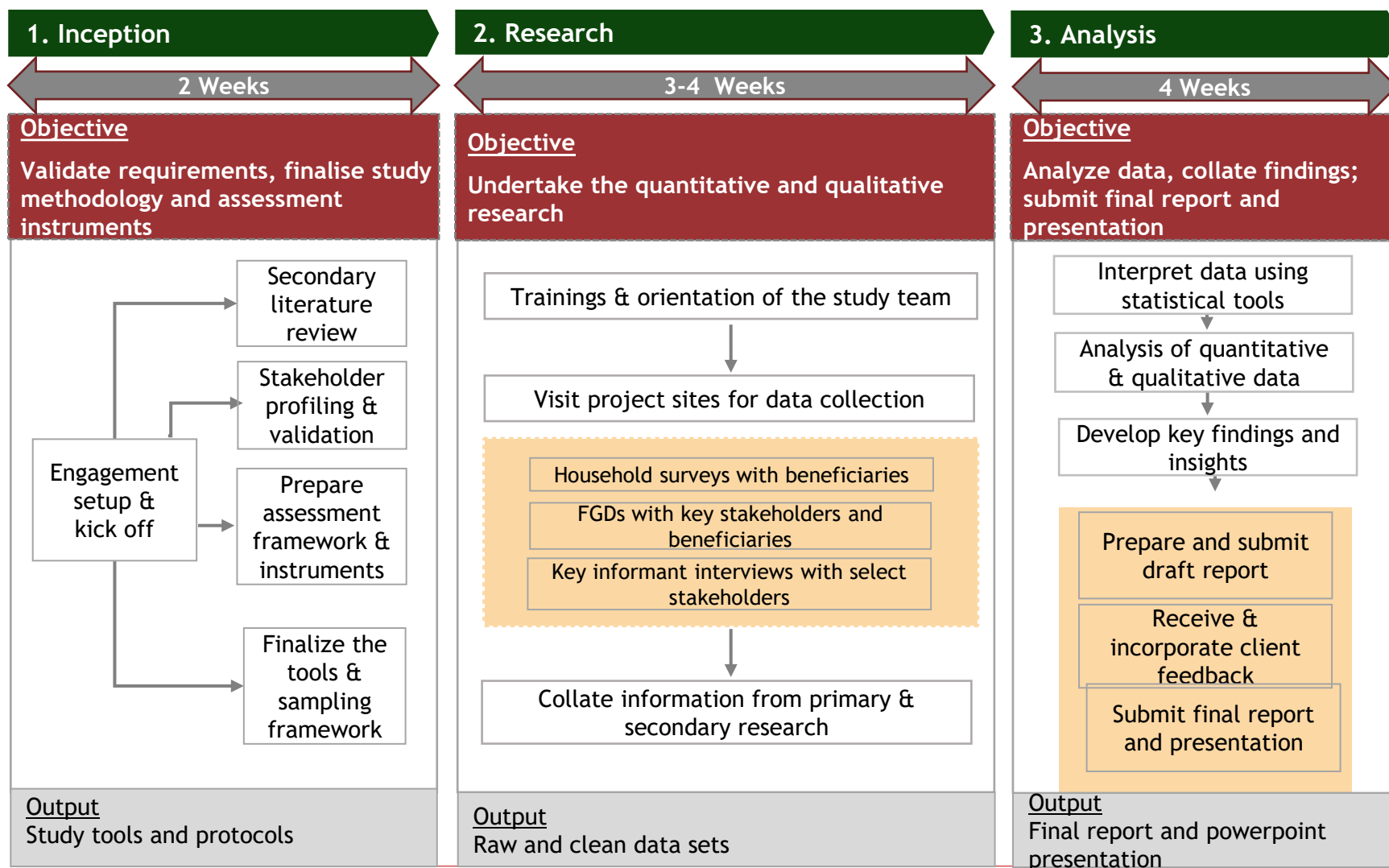
For data collection a mixed-methods approach combining quantitative and qualitative data collection techniques was adopted

About Impact Assessment - Sampling

- At a confidence level of 95% and degree of accuracy at 0.05- a sample of 270 farmers was estimated to derive statistically significant results. Thus, a total sample of 335 farmers was drawn inclusive of **242 intervention farmers and 93 control farmers from the villages.**
- Selected project villages:** Mandaliya, Jodhpura, Baniyani, Daulatpura, Bakshpura, Deeppura, Heerapur and Sohanpura
- Selected control villages:** Ramnagar, Mohanpura and Arliya.
- Qualitative data collection:** Purposive sampling was adopted to select farmers and their family members for IDIs and FGDs and other stakeholders including agri entrepreneurs, representative of agricultural universities and KVK and ISAP team.

Respondent and type of interaction	Project Villages	Control Villages
Surveys with farmers	242	93
IDIs with farmers	11	4
FGDs with farmers	8	3
FGDs with family members	5	2
KII with FPO members	4	-
FGD with FPO members	1	-
KII with officials, representatives and agri entrepreneurs	4	-
KII with project staff	2	-

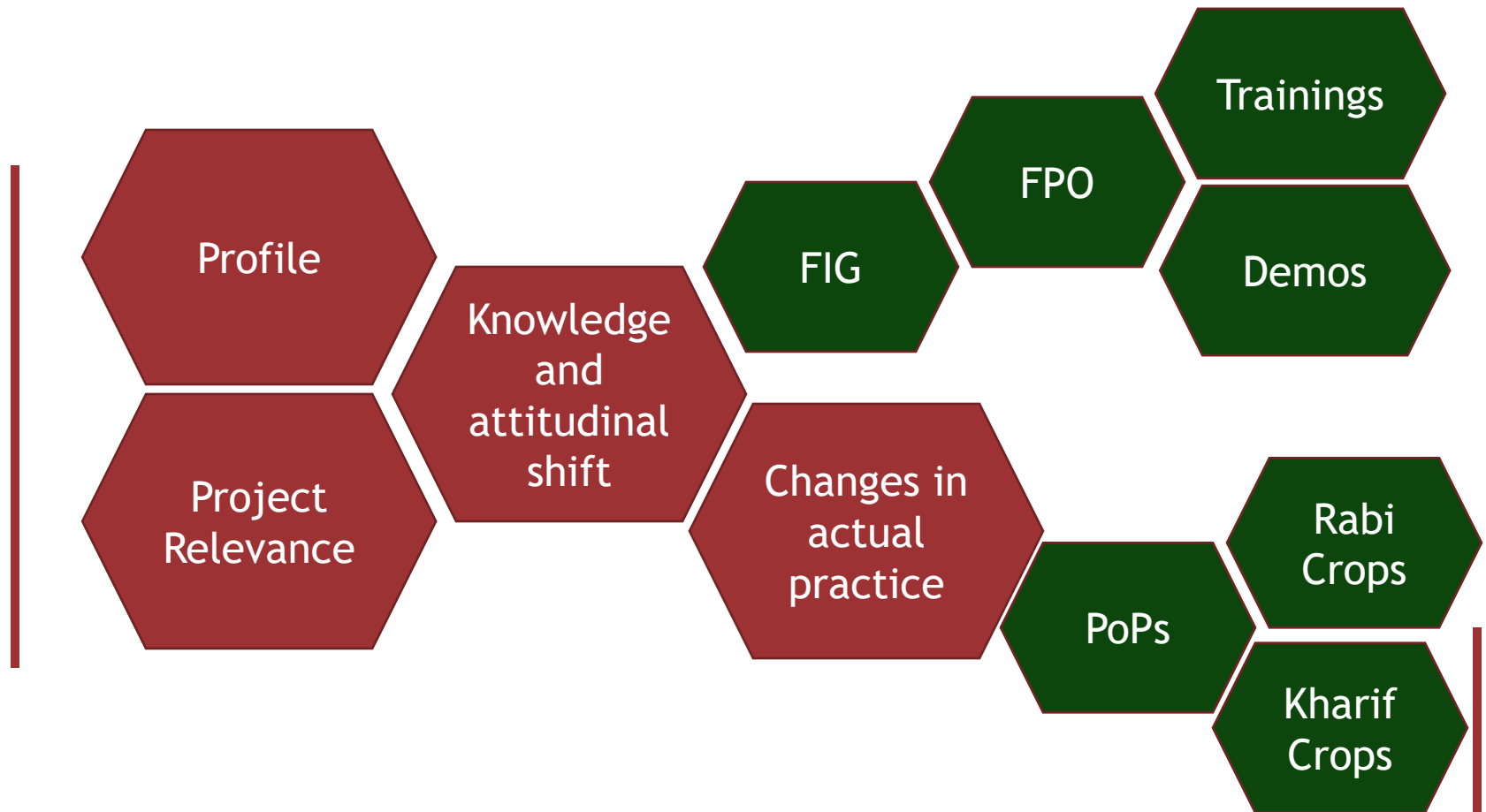
About Impact Assessment -3 Methodology





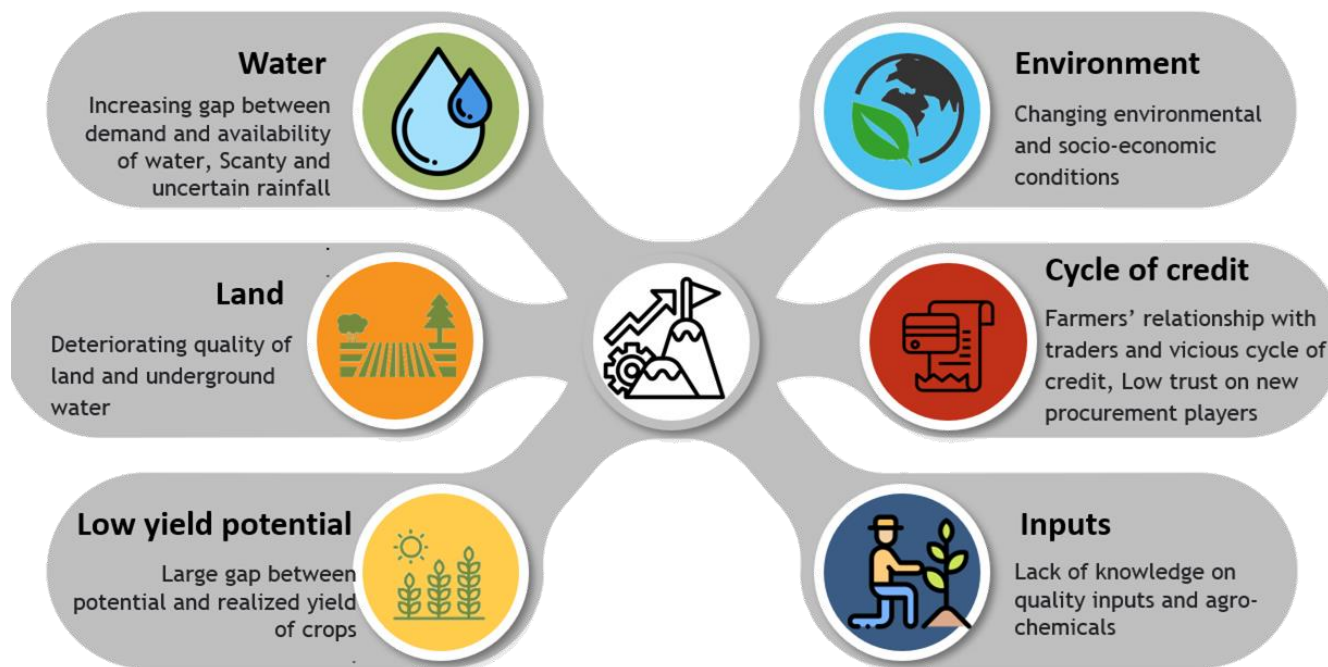
Key Findings

Key Findings - Structure



Project Relevance

Jeetega Kisaan holds particular significance in the context of project location Kota. The district mirrors the **challenges** faced by the agriculture sector in Rajasthan.



]The project set out to accomplish all the above and envisioned a scenario where farmers had more irrigated and cultivable land, adopted state of the art agricultural techniques towards increasing their productivity and profitability. Thus, the project had high relevance for the farmers.

Project Relevance - Observations

Observation

- It can be said that farmers unequivocally considered Jeetega Kisaan relevant and beneficial to their agricultural context but they also expressed the need for more support to bring a lasting change in the agricultural scenario. This is possibly true for all developmental initiatives which are time-bound and have a defined scope. These initiatives make a dent to some pressing problems in the communities but to bring a sustained change more intensive engagement with in-built community ownership and sustainability aspects are required. These have been discussed in the later sections of this report.
- Further it was observed that more medium and most importantly small and marginal farmers considered the project relevant to their needs. Thus, project was successful in reaching out to more marginalised farmers

Knowledge and attitudinal shift - FIGs

- Perceived benefits of FIGs: Of those 25% who remembered names of their FIGs, all reported that there were benefits of being a member of FIG in terms getting information from ISAP team about project activities such as trainings, exposure visits, FPO formation and procurement of inputs.

Observation

- FIG membership was not proportional to village population. Project activities were aimed only FIG members, thus, it reached out to only limited population in the village.
- Farmers were not able to remember key aspects of FIG meetings, its membership, selection process, mandate, frequency of meetings among the sampled respondents was low.
- All those respondents (25%) who were aware of FIGs names expressed that its membership was useful in terms of better access to project activities such as trainings, exposure visits, FPO formation and procurement of inputs.
- There was a lack of clarity on selection criteria and standard procedure for selecting members of FIGs, it was driven implementations team's ease and convenience sampling in selecting farmers who were open and willing to join.
- Since FIGs were not strengthened as a community collective, they were not effective in reaching out to non-project farmers. This restricted project reach to only target farmers and as a result village level transformation could not be achieved.

Knowledge and attitudinal shift - FPO formation

Observation

- Awareness around FPOs was high among the respondents, despite it being in a nascent stage. They saw immense potential in the FPO benefitting them in terms of input procurement, knowledge sharing and market linkage. Thus, there is a high demand in the area for FPO like institution.
- Since the FPO is in a nascent stage, it has not been able to establish market linkages.
- About 50% respondents were aware of FPO BoDs and 9% were its shareholders. This establishes strong and rapid traction of FPO in the study area.
- About 50% respondents also noted that having an FPO at the village level is beneficial in terms of input procurement. This was also an impressive feat.
- The interactions with CEOs and BODs revealed that they were aware of the purpose and functions of FPO but going forward they need greater involvement, more capacity building and handholding around business planning, budgeting, marketing and overall management.

Knowledge and attitudinal shift - Trainings

Observation

- Of the sampled respondents 70% respondents were aware of the training while remaining 30% were not aware of and/or reported not participating in trainings conducted under Jeetega Kisaan. There were only 11% respondents who had attended four or more trainings.
- In terms of adoption those who had attended four or more trainings reported that better adoption of all practices at final level. The finding shows that the likelihood of adoption of farming practices among those farmers who would have attended more trainings is high. Similarly, respondents who attended trainings and had demonstration plots also showed better adoption of training practices and progressed to final level of adoption except for availing extension services. Thus, for high touch respondents who have had intensive engagement with the project adoption was better.
- The above was not true for low touch farmers who had attended less than four trainings. Although these respondents reported better adoption of seed treatment before sowing, irrigation at proper scheduling, micro-nutrients, fertilizer application and pesticide usage. But their adoption was limited to preliminary or action level. For critical components viz., use of seeds, seed rate, conversion to IFS, adopting MIS and seeking consultations the adoption remained low.
- The findings of the survey, IDIs and FGDs pointed towards the need for improving training pedagogy and logistics as a large proportion of respondents rated them as fair/average. Possibly, inclusion of participatory methods, audiovisual aids and hands on exercises would have made the trainings more impactful.
- Organised or systematic follow-up or handholding support post the training was missing, had it been in place, it would have ensure better recollection and adoption of practices promoted during the trainings.

Knowledge and attitudinal shift - demo plots

Sharing of crop demo learnings with fellow farmers: The survey findings showed that only 16% respondents who were beneficiaries of demonstration plots had one or more fellow farmer visit their plot for cross learning. This was substantiated during IDIs and FGDs wherein when respondents were enquired about if other farmers came and visited the plot or adopted the practice most of them said no or simply said my relative or friend came and visited.

Observation

- The participation in crop demonstrations was very high (more than 80%) among sampled respondents. Not only this, respondents who were beneficiaries of crop demonstration plots were vocal about its benefits and in fact reported changing their agricultural practices after receiving technical inputs under the project.
- The changes reported by the respondents included deep tilling in summers, use of improved, hybrid and hybrid improved seeds, greater adoption of pre-sowing seed treatment and line sowing at fixed distance.
- About 24% respondents also reported soil testing and using its findings to guide their agro-chemical usage. The findings revealed that crop demonstrations were successful and effective in bringing a change in beneficiaries' practices. This is a significant achievement of the project.
- Sharing and showing crop demonstration to other project and non-project farmers had a low pick up. Only 16% respondents mentioned that one or more fellow farmer came to see their demo plots. Thus, there was a dearth of organised efforts to expand or replicate practices of crop demo among other project and non-project farmers.

Change in practices - PoP - Rabi crops (Wheat)

Agricultural practices	PoP recommendation	Adoption in project village	Adoption in control villages	Observation
Seed Type	Hybrid and improved	94% adopted hybrid and improved seeds	100% adopted hybrid and improved seeds	The adoption was better in control villages.
Seed variety	Raj-3765, Raj-4037, Raj-4079, Lok-1, Raj-3077, Raj-3777, HI-1544, Shriram super-111, Shriram Super-231, Shriram super-252	92% adopted the recommended varieties namely Raj-4037, Raj-4079, Lok-1	90% adopted the recommended varieties viz., Raj-4037, Raj-4079, Lok-1	The adoption was better in project villages.
Seed sowing rate	78.125 kg/acre	74.67kg/acre	74.37 kg/acre	No significant difference in adoption among project and control villages.
Fertilizer application	NPK - 75:18.75:25/acre	Urea - 95 kg/acre DAP - 60 kg/acre Potassium - 0	Urea - 92.5 kg/acre DAP - 60 kg/acre Potassium - 0	The adherence to PoP was not there in project or control villages.
Irrigation	4-6 cycles for heavy soil 6-8 cycles for light soil	5 cycles	4 cycles	The adherence to PoP was better in project areas.

Change in practices - PoP - Rabi crops (Mustard)

Agricultural practices	PoP recommendation	Adoption in project village	Adoption in control villages	Observation
Seed Type	Hybrid and improved	100% adopted hybrid and improved seeds	100% adopted hybrid and improved seeds	The adoption was same in project and control villages.
Seed variety	Girraj, R.H.- 749. N. R. C.D.R. 2, Pusa Vijay Divya-33 R. C.H.B, R.S. B.Sc. 50, R.H.- 725, Rs. H.-406. R.S. G.S. N.S. - 229, Rs. G.S. N.S. 298., C.S.-54 and C.S. , P.M.- 25. P.M.-21 P.M.-28. Pusa Tarak, P.R. 2006-1 , C.S.- 56, NRCHB 101, R.S. G.S. N.S. 145, R.S. G.S. N.S. -236, R.S. VM 2. PM - , P.M.- 22. P.M.-24, R.L.C.-1, R.L.C.-2, R.L.C. -3, PM-29, PM-30, PM-31	92% used pioneer 45S46 variety.	89% adopted pioneer 45S46 variety.	The adoption was not consistent with PoP in control or project villages.
Seed sowing rate	As per the PoP the seed sowing rate/bigha should be 2.5 kg/acre	The average seed sowing rate was about 2.5 kg/acre in project villages.	The average seed sowing rate was about 2.5 kg/acre in control villages.	No significant difference in adoption among project and control villages.
Fertilizer application	The PoP recommended application of urea (56.75 kg/acre for non-irrigated and irrigated crop). It also recommended application of SSP and Muriate of Potash.	In project villages urea was applied at the rate of 55kg/acre. SSP and muriate of Potash were not being used.	In control villages urea was applied at the rate of 57.5 kg/acre. SSP and muriate of Potash were not being used.	Urea application was as per PoP in project and control villages but for other fertilizers the adherence to PoP was not there.
Irrigation	2 cycles	1.8 cycles	1.7 cycles	The adherence to PoP was better in project areas.

Change in practices - PoP - Rabi crops (Wheat)

- Further, a comparison between high touch (respondents who were beneficiaries of Rabi demonstration plots, N=73) and low touch (remaining project farmers, N=93) was also drawn with control farmers. Adoption did not seem to be better in high touch farmers.
- An analysis of respondents who attended four or more trainings (18, 11%, N=169) and those who had attended four or more trainings and demo plots (13, 8%, N=169) showed that there was no evidence of better adoption among these farmers.

Observations

- The survey findings reveal that adoption of practices as recommended in PoP in relation to seed type, seed variety and seed sowing rate was high and similar among both project and control villages. Thus, current practices of farmers in these areas cannot be attributed to the project.
- It was also seen that fertilizer application practices in both project and control villages were not in line with PoP. This shows need for more engagement in this area with farmers.
- The adoption of irrigation practices in line with PoP were better among project areas than control areas. This was a definite success as farmers during qualitative data collection shared that they improved their irrigation practices after coming into touch with the project.
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Change in practices - PoP - Rabi crops (Wheat)

Observations

- The adoption of irrigation practices in line with PoP were better among project areas than control areas. This was a definite success as farmers during qualitative data collection shared that they improved their irrigation practices after coming into touch with the project.
- A comparative analysis of wheat related agricultural practices among high touch and low touch farmers exhibited that adoption of practices such as seed type, seed sowing rate was either better in low touch farmers or was similar.
- Both high touch and low touch farmers were adopting PoP recommended practice for urea application. However, among both groups the practice of DAP and potassium application was not being followed in accordance with PoP.
- The only practice where high touch farmers fared better than low touch farmers was irrigation, where the prior used more irrigation cycles as compared to the latter. Therefore, high project engagement did not ensure proper adoption of good practices among respondents.
- An analysis of respondents who attended four or more trainings (18, 11%, N=169) and those who had attended four or more trainings and demo plots (13, 8%, N=169) showed that there was no evidence of better adoption among these farmers.

Change in practices - PoP - Kharif crops (Soyabean)

Agricultural practices	PoP recommendation	Adoption in project village	Adoption in control villages	Observation
Seed Type	Desi, hybrid, and improved	100% used hybrid and improved varieties	95% adopted hybrid and improved varieties	Adoption was better in project villages.
Seed variety	PK 472, JS 335, NRC37, JS 9305, JS 9560	32% used PoP recommended varieties	36% used PoP recommended varieties	Adoption of seed variety was better in control areas
Seed sowing rate	50 kg/acre	Average seed sowing rate was 46.25 kg/acre in project villages	Average seed sowing rate was 47.5 kg/acre in control villages	Adoption was closer to the PoP in control villages
Fertilizer application	NPK - 12.5:25:25 kg/acre Use of Mn, Sulphur, Zinc, MNSO ₄ , ZNSO ₄	Fertilizer application for NPK was not adopted in project areas	Fertilizer application for NPK was not adopted in control areas	Adoption was not as per PoP in both project and control villages
Irrigation	There should be no shortage of water at the time of flowering and formation of grain in the pod.	Irrigation times was 0.26 in project villages	Irrigation cycle was 0.11 in control villages	Irrigation times were more in project villages than control villages, this could be attributed to PoP

Change in practices - PoP - Kharif crops (Paddy)

Agricultural practices	PoP recommendation	Adoption in project village	Adoption in control villages	Observation
Seed Type	Desi, hybrid, and improved	100% used hybrid and improved seeds	100% used hybrid and improved seeds	The adoption was in line with PoP and same in project and control villages.
Seed variety	Pusa Sugandha - 4 (P 1121), Pusa Sugandha - 5 (P 2511) 1, Pusa Sugandha - 6 (P 1401), Pusa Basmati 1509, Pusa Basmati 1, Pusa Basmati 1637	70% used the recommended varieties	80% used the recommended varieties	The adoption was better in control villages.
Seed sowing rate	15-18.5 kg/acre	10.75 kg/acre	10.25 kg/acre	The adoption in project villages was closer to PoP.
Fertilizer application	Urea, DAP, superphosphate, NPK, decomposer: 50:75:25:27.5 kg/acre Use of Mn, Sulphur, Zinc, MNSO ₄ , ZNSO ₄	Urea use was 88.25 kg/acre and DAP use was 55 kg/acre	Urea use was 90 kg/acre and DAP use was 57.5 kg/acre.	The fertilizer use was not in line with PoP in both project and control villages.
Irrigation	PoP does not comment on this.	Irrigation was done 8.5 times	Irrigation was done 7 times	The irrigation time were more in project villages than control

Change in practices - PoP - Kharif crops (Soyabean)

Observations

- In case of Soyabean the seed type adoption as per PoP was better in project areas than control areas.
- The seed variety adoption as per PoP however was better in control villages.
- The fertilizer application was not as per PoP in both control and project villages. In fact, respondents were not using NPK at all.
- The irrigation cycles were more (0.26 times) in project areas as compared to control villages. Better irrigation and following correct schedule of watering can be attributed to PoP adoption.
- The comparison of agricultural practices between high touch and low touch farmers showed that in terms of seed type adoption and seed sowing rate the prior performed better.
- Adoption of practices like seed variety and irrigation was better in low touch farmers.
- The farmers supposedly having the highest exposure to project activities did not report better adoption of PoP. In case of Soyabean cultivation as well, high engagement or involvement in the project did not warrant better adoption of practices.

Change in practices - Irrigation

- Survey findings revealed that for all crops respondents in project villages were ensuring more irrigation. Thus, they had recognized the importance of adequate irrigation of crops.
- During the survey, a comparison between access to drip and sprinkler irrigation systems was also done. It was seen that in project villages only four farmers were using drip and sprinkled irrigation systems. Here again the project has not been able to promote use of these systems among the larger universe of 900 farmers.
- Two project villages reported having water harvesting structures developed by an earlier project of DCM.

Observations

- The above findings reveal that respondents in project villages had an explicit recognition of importance of adequate irrigation for increasing productivity of crops.
- However, as per stated mandate of the project it could not promote the of efficient irrigation among the project farmers at a larger scale.

Changes in practices - Crop diversification

Observations

- The survey findings show that cropping pattern has changed in the project areas with increased adoption of key rabi and kharif crops for which PoPs were promoted.
- The adoption of vegetables like coriander and garlic has marginally increased.
- Through demonstrations the project has successfully reached out to a few farmers in terms of adoption of fruit and vegetable cultivation. However, traction of these practice among other project and non-project farmers remains low.
- The project had a lot of potential in terms of promoting crop diversification but activities such as FIG meetings and demonstration plots could not be used effectively to share the benefits of crop diversification among a large number of farmers.
- This was validated during qualitative interactions wherein many farmers confirmed that they were not growing Zaid crops, fruits and vegetables.



Impact

Impact - Yield (Project Vs Control)

Crop	Project Villages (Maximum production quintal/acre)	Project Villages (Minimum production quintal/acre)	Control Villages (Maximum production quintal/acre)	Control Villages (Minimum production quintal/acre)
Wheat	25	17.5	22.5	15
Mustard	12.5	5	10	2.5
Paddy	27.5	10	22.5	10
Soyabean	12.5	3.32	8.75	2.5

Observations

- The table above shows that for all the crops the yield in project areas is higher than control villages. The difference can be attributed to improved knowledge and practices of farmers particularly those of seed treatment and adequate irrigation.

Impact Yield (Project vs Control)

Crops	Project vilage Avg yield (Quintal/acre)	Control village Avg yield (Quintal/acre)
Wheat	21	20.32
Paddy	19.5	17.72
Mustard	8.75	8.25
Soyabean	7.6	7

Observations

- The table above shows that for all the crops the yield in project areas is higher than control villages. The difference can be attributed to improved knowledge and practices of farmers particularly those of seed treatment and adequate irrigation.
- Therefore, it can be said project has brought in an increase in yield among the farmers. However, the potential of increasing the yield could have been increased had more farmers adopted good agricultural practice promoted by the project.

Impact Yield - (Baseline vs Endline)

Crops	Avg yield per acre (Quintal/acre) Baseline	Avg yield per acre (Quintal/acre) Endline
Wheat	15.37	21
Paddy	18.08	19.5
Mustard	7.13	8.75
Soyabean	8.16	7.6

Observations

- The production rates of wheat, paddy and mustard were higher at endline than baseline. The increase in wheat and paddy production is substantial.

Impact - Cost of cultivation

Crop	Avg cost of cultivation per acre in project villages in INR	Avg cost of cultivation per acre in control villages in INR
Wheat	33,571	32,597
Mustard	18,870	18,437
Paddy	28,646	28,737
Soyabean	18,010	18125

Observations

- As depicted in the table, the cost of cultivation for wheat and mustard are higher in project villages possibly due to higher no of irrigation cycles adopted in these crops.
- The cost for cultivation of paddy and soyabean is marginally lower in project villages than control.
- Therefore, it can be said that cost of cultivation in project areas has increased only marginally for two crops wheat and mustard.

Impact - Net income (Project vs Control)

Crop	Average net income per acre in project villages in INR	Average net income per acre in control villages in INR	% increase in income
Wheat	16987.5	16290	4.1
Mustard	32647.5	32105	1.7
Paddy	29895	24920	16.64
Soyabean	23607.5	21552.5	8.70

Observations

- As can be seen in the table the average net income per bigha for all crops in project areas is higher than control area.
- The difference is significant in case of rice and soyabean. Since the productivity of these crops was higher in project areas, the net income is also showing an increase compared to control villages.
- It can be surmised that project has contributed to increasing the net income of farmers due to its intervention.

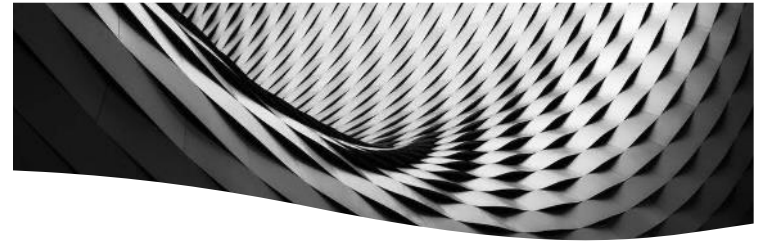
Impact - Net Income

Crop	Avg net income in per acre in INR at baseline	Avg Net Income in INR per acre at endline	% increase income
Wheat	12433.23	16987.5	26.80
Mustard	26621.7	32647.5	18.45
Paddy	27725.7	29895	7.25
Soyabean	25362.53	23607.5	-7.43

Observations

- The net income of wheat, paddy and mustard were higher at endline than baseline. The increase in wheat and paddy production is substantial.

Thank you



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