Technology Demonstration Component

NATIONAL INNOVATIONS ON CLIMATE RESILIENT AGRICULTURE

ANNUAL REPORT
2016-17

भाकृअनुप
ICAR

ICAR-AGRICULTURE TECHNOLOGY APPLICATION RESEARCH INSTITUTE, ZONE-IX

Division of Agricultural Extension

Adhartal, Jabalpur–482 004 (Madhya Pradesh)

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PREFACE

Climate Change has emerged as the most prominent global environmental problem, mainly caused by the increased concentration of greenhouse gases (GHGs) in the atmosphere. Globally the problems of rising temperature, melting of glaciers, rising of sea-level leading to inundation of the coastal areas, changes in precipitation patterns leading to increased risk of recurrent droughts and devastating floods, threats to biodiversity, an expansion of pest and a number of potential challenges for public health are being experienced. Climate change poses a major challenge to Indian agriculture because of the dependence of the agricultural system on the nature.

Indian agriculture being the backbone of the Indian economy is on decreasing trend apropos contribution to our national GDP. Though around 55 percent people derive their livelihood from this sector. In fact, agriculture is the mainstay for the farmers and farms women in the states like Madhya Pradesh, Chhattisgarh and Odisha. Therefore, it was felt need for implementation of the NICRA activities in the region to educate the farmers and save their farming through climate vulnerability.

KVKs are working as catalyst for promoting climate resilient agriculture through technological interventions at the district level. It aimed at educating the farmers on the changing climate situation and providing the technical skill for using the coping and mitigation strategy in the harsh weather situation. Basically, NICRA KVKs identify the need and problems of the farming communities related with climate change and make endeavour to solve the same through available technologies using various extension methods viz., training, demonstrations, exhibitions, farmers' fairs, field days and farmers friendly literature. All the activities are finalized with the presence of the experts and documented as Action Plan for the concerned year well in advance keeping in view the past experiences at the farmers' fields.

Annual Report 2016-17 is the compilation of activities reported by 17 NICRA KVKs working under ICAR-ATARI, Zone IX. All the officers and staffs of the NICRA KVKs deserve appreciation. We sincerely thank to all the Vice Chancellors, Chairman (NGO KVKs), Director of Extension Services and other concerned Senior Officials of the host organizations for their support to the NICRA KVKs activities.

Our team expresses profound gratitude to Deputy Director General (Agril. Extn.), for giving thrust to the NICRA KVKs in all ICAR programmes with full support. Project team expresses hearty thanks to Director, CRIDA and entire TDC-NICRA team members for their full hand support. Our team is highly grateful to Dr. Anupam Mishra, ICAR-ATARI IX, for his regular guidance and support in better implementation of these programmes in KVKs through Zone IX.

(S.R.K. Singh)
Nodal Officer

EXECUTIVE SUMMARY

ICAR-ATARI, Zone IX monitors the performance of 17 NICRA KVKs namely Balaghat, Chhattarpur, Datia, Guna, Morena, Satna, Tikamgarh, Morena, Ratlam and Jhabua in Madhya Pradesh, Bhatapara, Bilaspur, Dantewara in Chhattisgarh, Kendrapara, Ganjam, Jharsuguda, Sonepur and Kalahandi in Odisha. These KVKs are conducting the field activities as per the approved action plan by ATARI, Zone IX & CRIDA, Hyderabad.

During 2016-17, under Natural Resource Management module, a total of 1155 farmers benefited covering area of the 525.38 ha area in all activities. Detailed activities included renovation of eleven old farm ponds two new check dam were constructed, 513 farmers are benefited through in-situ moisture conservation practices and covering 176.0 ha area. Green manure applications were followed by 77 farmers and 83 farmers used zero tillage technology for using residual moisture etc.

Under Crop Production module, total 2489 demonstrations were conducted on 767.8 ha area focused on drought tolerant varieties, advancement of planting dates of rabi crops to escape terminal heat stress, etc. in chickpea, wheat, barley, green gram, pigeon pea and vegetable crops.

Under Livestock and Fisheries module, 2528 farmers were benefited covering the 5566 units during the year 2016-17. Out of 5566 Unit, 2664 animals were vaccinated to boost immunity through prevention, 890 animals were de-wormed and health check-up were covered to 1007 animals.

Under Institutional interventions module, 2220 farmers benefited covering 351.7 ha area. Out of 2220 farmers, 526 farmers benefited through custom hiring service, 228 farmers by community nursery and 431 farmers through climate literacy through a village level weather station, also 533 farmers benefited under seed bank.

Under Capacity building through 223 courses, 5524 farmers benefited which comprised 4255 male and 1269 female.

In order to create awareness among the farmers in region, various extension activities were organized by KVK at the farms and the farmer's fields. A total of 7487 farmers benefited of which 1118 farmers through Field day, 1487 farmers by agro advisory services and 311 farmers benefited through Exposure Visit during the year.

The testimony of the success of NICRA activities is the number of visitors including dignitaries to the custom hiring centres at NICRA village. Also wide publicity by the print and electronic media as well as through ICAR website and CRIDA newsletter.

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INTRODUCTION

Climate change has significant impact on production, productivity as well as gross domestic products of the Indian Subcontinents. Most significant effect of climate change could be observed by the deficit rainfall during sub monsoon period which is major rainy period in India. Estimates say that Indian GDP may face by 1.5% deficit due to changing climatic scenario affecting the agriculture.

Indian agriculture is contributing around 15 % in the country's GDP. However, climate change is affecting the agriculture in the tune of 4-9 percent. Significant impact is being observed on wheat, rice and sorghum. It is projected that by 2030, there may be 10 percent decline in the production of major staple food crops due to rice and wheat. Though, it is also speculated in potato, soybean, chickpea and mustard crops which shows positive yield with increase level of Green house gases.

According to Nature Climate Change - an American Journal, in coming years wheat productivity may decline by 4.1 to 6.4 per cent. At present, globally there are 700 million tones production of wheat.

Climate change caused by the increased concentration of greenhouse gases (GHGs) in the atmosphere, has emerged as the most prominent global environmental problem. Most of the countries including India are facing the problems of rising temperature, melting of glaciers, rising of sea-level leading to inundation of the coastal areas, changes in precipitation patterns leading to increased risk of recurrent droughts and devastating floods, threats to bio-diversity, an expansion of pest and a number of potential challenges for public health .Climate change poses a major challenge to Indian agriculture because of the critical dependence of the agricultural system on climate and because of the complex role agriculture plays in rural and national social and economic systems.

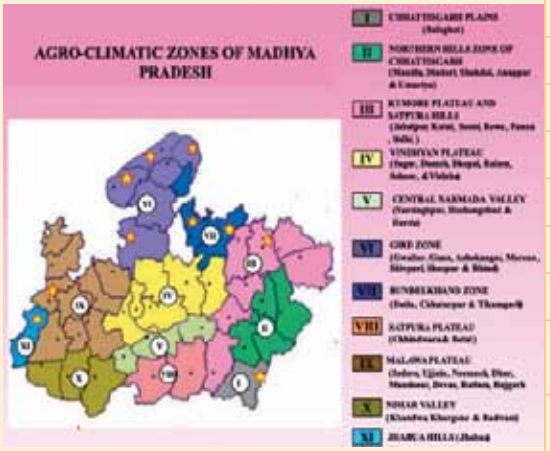
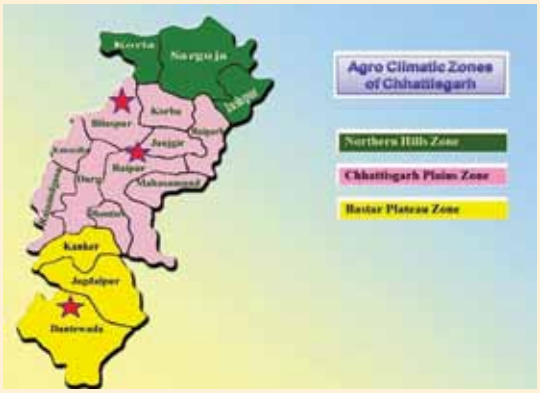
Climate change has the potential to both positively and negatively affect the location, timing, and productivity of crop, livestock, and fishery systems at local, national, and global scales. It will also alter the stability of food supplies and create new food security challenges for the India as the world seeks to feed nine billion people by 2050. Indian agriculture exists as part of the global economy and agricultural exports have outpaced imports as part of the overall balance of trade. However, climate change will affect the quantity of produce available for export and import as well as prices.

The cumulative impacts of climate change will ultimately depend on changing global market conditions as well as responses to local climate stressors, including farmers adjusting planting patterns in response to altered crop yields and crop species, seed producers investing in drought-tolerant varieties, and nations restricting trade to protect food security. Adaptive actions in the areas of consumption, production, education, and research involve seizing opportunities to avoid economic damages and decline in food quality, minimize threats posed by climate stress, and in some cases increase profitability. Hence there is a strong need to use modern science along with indigenous wisdom of farmers to enhance climate resilience in Indian agriculture

Besides undertaking research to develop location-specific climate resilient agriculture technologies there are needs to make immediate efforts to disseminate and demonstrate the scientific production technologies to farmers' field in more vulnerable region. In order to deal with climate change in right perspective, it has therefore, been planned to organize extensive farmers' participatory approaches and demonstrations of location-specific climate resilient agricultural technologies/ package of practices developed by ICAR and SAUs as well as successful ITKs on farmers, in 17 most vulnerable

districts of ICAR-ATARI, Jabalpur as part of National Innovations on Climate Resilient Agriculture (NICRA).

The technology demonstration components of NICRA envisages identifying climate vulnerabilities to agriculture in selected village in each of the 17 district based on climate related problem, farmers experience, perceptions and preparing and implementing, adaptation and mitigation strategies following a bottom to top approach. The focus of the programme is not only to demonstrate the climate resilient agriculture technologies but also to continued adoption of such practices in sustainable manner. One village from each district was selected on basis of concerned KVK of district.

State	District	Agro Climatic Zone	Climatic vulnerability
Madhya Pradesh			
	Balaghat	Chhattisgarh Plain Zone	Drought
	Guna	Girid Zone	Drought
	Morena	Girid zone	Drought
	Datia	Bundelkhand Region	Drought
	Tikamgarh	Bundelkhand Region	Drought
	Chhattarpur	Bundelkhand Region	Drought
	Jhabua	Jhabua hills	Drought
	Satna	Kymore, Plateau & Satpura Hill Zone	Drought
	Ratlam	Malwa plateau	Drought
Chhattisgarh			
	Bhatapara	Chhattisgarh Plain Zone	Drought
	Bilaspur	Chhattisgarh Plain Zone	Drought
	Dantewada	Bastar Plateau Zone	Soil erosion and heavy rainfall
Odisha			
	Kendrapara	East and south eastern coastal Plain Zone	Flood and cyclone
	Jhasuguda	Western Central Table Land zone	Drought and flood
	Sonepur	Western Central Table Land zone	Drought and flood
	Ganjam-I	North eastern Ghat zone	Drought
	Kalahandi	Western undulating Zone	Drought

2

NATURAL RESOURCE MANAGEMENT MODULE

The sustainable use and management of natural resources demands an inter-disciplinary approach and sound knowledge on each specific resource, as well as on the ecological, economic, and social perspectives related to their use. It also calls for greater coordination at the global level. Natural resource management is one of the applications of ecology that looks into the sustainable management of not just individual ecosystems but entire landscape systems and functions. It identifies and highlights the prospects for institutional, technological, and policy innovations for community-based management of resources to reduce poverty, enhance food security, and ensure biodiversity and watershed management. It helps in answering climate a related problem which hinders the agriculture growth. Enhancing the available water through surface and sub-surface storage structures is one of the means of creating resilience at the local level for agricultural systems. This form of infrastructure development plays much more important role in low to medium rainfall. NICRA KVK's rainfall variability and occurrence of intense rainy events are considered to be high.

In Zone-IX, under Natural Resource Management (NRM) module, different technologies demonstrated in an area of 525.38 ha are by involving 1155 farmers on specific interventions in NICRA villages. In Madhya Pradesh, total 821 farmers were benefited and total 432.9 ha area covered, followed by Chhattisgarh 66.48 ha area by involving 180 farmers and 26.01 ha area in Odisha which covered the 154 farmers.

Salient achievements:

- Total 11 old farm ponds were renovated through de-silting for life saving irrigation to corps and ground water recharge.
- Two new check dams were constructed / renovated.
- Eight open wells were renovated and one ring well-constructed.
- Total 513 farmers were benefited through in-situ moisture conservation practices and covering 176.0 ha area.
- In water harvesting and recycling for supplemental irrigation, total 145.68 ha area covered and 262 farmers were benefited.
- By green manure applications, total 77 farmers were benefited.

2.1 In-situ moisture conservation

In Madhya Pradesh, for in-situ moisture conservation, ridge and furrow method of sowing was used covered 47.91 ha area involving 152 farmers in short duration variety of soybean crop (JS 9560) over the conventional practice and results in better germination, plant population, better growth and moisture availability during dry spell (10-15 days) resulted as 15.35 q/ha with Rs. 29550/ha net return which was 8 per cent higher production. Besides, 42 farmers and 112 farmers have adopted Broad bed furrow (BBF) method and summer deep ploughing method in 16.70 ha and 48.20 ha area respectively and result showed their yield increased upto 19.25 q/ha that increasing of JAKI-9218 variety of chickpea with earned income of Rs.63975 (B:C Ratio 3.82). Under in-situ moisture conservation, activity on use of green manuring of dhaincha (*Sesbania spp*) cultivation by 38 farmers for 17.2 ha area proved beneficial in terms of highest B: C ratio of 3.07. Also 15 farmers have adopted line sowing technique in sesame which covered four ha area and followed by sowing across slope in groundnut by involving 10 farmers which covered four ha area with net income with (B: C Ratio 2.59) earned Rs. 27615/ ha. Also direct seeded rice was demonstrated at 5 farmers fields which covered only two ha area.

Table -2.1.1: KVK wise technology demonstrated under in-situ moisture conservation in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Yield (q/ha)	Economics of demonstration (Rs/ha)			BCR
						Gross Cost	Gross Return	Net Return	
Ratlam	Sowing of Soybean in Broad Bed and furrow system	JS-9560 seed	10	4	15.1	16500	45300	28800	2.74
Ratlam	Sowing of Soybean in Ridge & Furrow method of sowing	JS 9560 Seed	10	4	15.35	16500	46050	29550	2.79
Ratlam	Sowing of Chick pea in BBF Method	JAKI 9218 seed	5	2	19.25	22650	86625	63975	3.82
Ratlam	Sowing of Chick pea in Ridge & Furrow method of sowing	JAKI 9218 seed	1	0.4	19.75	22650	88875	66225	3.92
Balaghat	Summer deep ploughing	Farm machinery & implements	24	9.6	72	36750	100560	63810	2.73
Datia	Summer deep ploughing	JS-9560 seed	18	3.6	18.63	20756	40986	20230	1.97
Datia	Ridge and furrow sowing method	JS-9560 seed	8	3	19.42	20756	42724	21968	2.05
Datia	Broad Bed and Furrow method	JS-9560 seed	7	2.7	20.32	20756	44704	23948	2.15
Jhabua	Ridge and furrow in Maize	Seed & Pesticide	11	4.4	29.47	14750	35367	20617	2.4
Jhabua	Ridge and furrow in Soybean	Seed	10	2	15.65	18800	46950	28150	2.5
Jhabua	Across slop sowing in Ground nut	Seed	10	4	12.85	17360	44975	27615	2.59
Jhabua	Summer deep ploughing (Soybean)	Farm machinery & implements	50	20	13.95	18800	42450	23050	2.23
Morena	Green Manuring of dhaincha (*Sesbania spp*)	Dhaincha seed	20	10	55.45	35500	109306	73806	3.07
Morena	Green Manuring dhaincha (*Sesbania spp*)	Dhaincha seed	6	2.4	22.3	24500	81820	57320	3.3
	One harrowing + two ploughing and planking sowing in line with seed cum fertilizer Drill	RH-749 seed	6	2.4	23.75	24500	87250	62750	3.56
		NRCDR-2 seed	6	2.4	23.25	24500	85050	60530	3.47
Satna	Ridge and Furrow technique in Pigeon pea	Pigeon pea seed	12	2.6	6.1	13200	21350	8150	1.61
Satna	Ridge and Furrow technique in Black gram	Black gram seed	17	4	4.9	9350	19100	9750	2.04
Satna	Ridge and Furrow technique in Green gram	Green gram seed	16	3.8	6.2	10800	25800	15000	2.3
Satna	Ridge and Furrow technique in Soybean	Soybean seed	8	3.2	11.1	15200	34500	19300	2.2

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Yield (q/ha)	Economics of demonstration (Rs/ha)			BCR
						Gross Cost	Gross Return	Net Return	
Satna	Direct seeded Rice	DSR	5	2	29.1	9800	20500	10700	2.09
Satna	Line sowing technique in Sesame	Seed drill	15	4	31.2	10250	22330	12080	2.17
Tikamgarh	Deep summer ploughing (soybean)	MB plough	20	15	14.12	18500	45184	20916	2.42
Tikamgarh	Ridge and furrow method of sowing in soybean	Implement	10	5	14.12	18500	45184	20916	2.42
Tikamgarh	Ridge and bed planting method of sowing black gram	Planter	10	5	13.37	19000	80220	61220	4.2
Tikamgarh	Ridge and bed planting of sowing in chickpea	Planter	25	5	16.51	12000	66040	55400	5.5
Guna	BBF planting method Soybean	Soybean seed	20	8	16.7	24284	56512	32248	2.33

In Chhattisgarh, under in-situ moisture conservation, summer deep ploughing was demonstrated at 40 farmers in 14 ha area of paddy and result showed that yield was increased upto 41.85 q/ha with Rs.24900/ha at the selected farmers plots. Besides, six farmers have adopted vermi-compost unit in 0.5 ha area proved beneficial in terms of highest B: C ratio of 2.63 and 10 farmers using harrowing with rotavator in 4 ha area of rice (var. MTU1010) and yielded significantly higher yield (33.49 q/ha) as compared to local check (30.64 q/ha) and 10 farmers adopted line sowing with seed cum fertilizer drill var. Indira Barani Dhan-1 which covered 4 ha area.

Table -2.1.2: KVK wise technology demonstrated under in-situ moisture conservation in Chhattisgarh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Yield (q/ha)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Bhatapara	Deep Summer Ploughing crop-Paddy Crop-Paddy (Var.-Rajeshwari)	DAP	15	4	41.85	35777	60677	24900	1.7
Bilaspur	Deep Summer Ploughing Crop(paddy)	Seeds variety-sahgahi, swarana sub-1, Indra Rajeshwari	25	10	35	30840	49350	18510	1.6
Bilaspur	Vermi-compost	Vegetable seed	6	0.5	4	15200	40000	28000	2.63
Dantewada	Harrowing with rotavator followed by rice var. MTU1010	MTU1010 seed	10	4	33.49	25258	49230.3	23972.3	1.94
Dantewada	Line sowing with seed cum fertilizer drill var.	Indira Barani Dhan-1	10	4	25.44	22560	37396.8	14836.8	1.85

In Odisha, under in-situ moisture conservation, 20 farmers have adopted ridge and furrow method in 4.0 ha area of cowpea and result showed that the farmers earned a income of Rs. 79800 /ha and proved beneficial in terms of highest B:C ratio of 3.4. Ten farmers have adopted plastic mulching in brinjal (VNRB-5) in one ha area and result showed that the farmers yield was significantly higher (325 q/ha) and earned of Rs. 135000/ha and proved beneficial in terms of highest B:C ratio 3.25 also demonstration on green manuring of dhaincha (*Sesbania sp.*) for soil reclamation which covered 12 ha area by involving 39 farmers and 8 farmers have adopted summer ploughing by MB plough for moisture conservation in Paddy which covered 2 ha area and also one demonstration on vermicompost pits were dug at the fields of 10 farmers in order to prepare good quality manure.

Table 2.1.3: KVK wise technology demonstrated under in-situ moisture conservation in Odisha

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Yield (q/ha)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Ganjam-I	Moisture conservation in Paddy – Summer ploughing by MB plough	Ploughing by MB plough	8	2	41.8	34000	58520	24520	1.72
Ganjam-I	Soil health management	seed	4	2	42.4	35000	59360	24360	1.7
Jharsuguda	In-situ moisture conservation through ridge and furrow method in cow pea.	Seed	20	4	76	32500	112300	79800	3.4
Jharsuguda	Green manuring paddy by Dhaincha	Seed	20	6	47	22300	56400	34100	2.52
Kendrapara	Green manuring of Dhaincha (Sesbania sp.) for Soil Reclamation	Dhaincha seed	15	4	46.5	33000	65000	32000	1.97
Kendrapara	Poly Mulching in Brinjal	Brinjal seed var. VNRB-5, Polythene	10	1	325	60000	195000	135000	3.25


Deep ploughing demonstration

Ridge and furrow method of sowing

2.2 Water harvesting and recycling for supplemental irrigation

Demonstration of water harvesting and recycling for supplemental irrigation was conducted on 262 farmers which covered 145.68 ha area. Out of these, in Madhya Pradesh total 36 farmers have achieved a significant progress in rainwater harvesting structure (2 farm ponds of size 150*150*5m^3) for village community due to which water level are increasing in surrounding areas. Also rainwater harvesting through check dam was done benefitted 109 farmers which covered an area of 68.50 ha in the village and recharged the surrounding area. In addition, 28 farmers have demonstration on related activities to water harvesting and recycling for supplemental irrigation which covered 20 ha area under and observed maximum B: C ratio 3.15 of bund making in paddy crop through this intervention.

Table -2.2.1: KVK wise technology demonstrated under Water harvesting and recycling for supplemental irrigation in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Measurable indicators of output* [yield (q/ha.) & others]	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Balaghat	Bund making	-	8	4	46.3	20668	65283	44615	3.15
Morena	Farm pod 70x50 Meter (7) repairing and maintenance in storage of water use in Rabi crop irrigation	Pearl millet	10	4	24.3	19200	41500	22390	2.16
Morena	Raised bed sowing	Wheat – 1203 seed	10	4	55	39100	95385	56275	2.43
Morena		Pearl millet- seed	6	2.4	21.1	25500	76740	51240	3
Morena		Mustard RVM-2 seed							
Morena		Pearl millet- seed	6	2.4	22.25	25500	81650	56150	3.2
		Mustard RH-749 seed							
Morena		Pearl millet seed	6	2.4	21.8	25500	80120	54620	3.14
		Mustard NRCDR-2 seed							
Tikamgarh	Renovation of old wells	Convergence	2	2		30000	60000	30,000	2
Datia	Poly bag Check Dam	Convergence	14	5	8.65	17520	30275	12755	1.72
Datia	Poly bag Check Dam		13	6	17.58	19530	52740	33210	2.7
Datia	Renovated Check Dam		10	5	18.53	20756	40766	20010	1.96
Datia	Renovated Check Dam		8	4.5	18.1	19530	54300	34770	2.78
Datia	Farm Pond		5	7	18.58	20756	40876	20120	1.96
Datia	Open Well Recharge		10	12	52.36	34250	79849	45599	2.33

In Chhattisgarh, 89 farmers have achieved a significant progress in rainwater harvesting through stop dam, ring well, open well and irrigation pond renovated which covered 31.98 ha area and earned the highest income of Rs 25403/- .

Water harvesting through poly bag check dam

Renovation of defunct water harvesting

2.3 Improved drainage in flood prone areas

In Madhya Pradesh, under improved drainage in flood prone area saved not only irrigation but also contributed to good plant stand and vigorous root growth which covered 32.8 ha area by involving 61 farmers and achieved a highest yield 51.50q/ha sowing wheat after pigeon pea in Morena KVK and one demonstration on drainage channel in paddy crop which covered 4.2 ha area by involving eight farmers result shows that increasing their yield 48.5 q/ha with net profit Rs. 45485/ha.

Table -2.3.1: KVK wise technology demonstrated under improved drainage in flood prone areas in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Measurable indicators of output* [yield (Q/ha.) & others]	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Morena	FIRB sowing method	Green gram (TJM-3) seed	10	4	9.8	21500	60800	39300	2.82
Morena	FIRB sowing method	Black gram (PU-35) seed	10	4	8.9	22000	55625	33625	2.52
		Cow pea (PL-1) seed	1	4	12	23500	50000	26500	2.12
		Cow pea (PL-2) seed	1	0.3	11.5	23500	47875	24375	2.03
		Cow pea (PL-3) seed	2	1.5	13.5	23500	56375	32875	2.39
		Cow pea (PGCP-14) seed	1	1.4	11	23500	45700	22200	1.94
		Cow pea (RC-101) seed	1	1.4	14	23500	59500	36000	2.53
Morena	FIRB sowing method	Cluster bean (HG-365) seed	5	2	20.2	22500	65600	43100	2.91
Morena	FIRB sowing method	Pigeon pea (ICPL -88039) seed	8	4	23.5	32600	120687	88087	3.7
Morena		Pigeon pea (Pusa-991) seed	2	1	21.8	32600	112275	79675	3.44
		Pigeon pea (Pusa-992) seed	2	1	22.1	32600	113612	81012	3.48
	FIRB sowing permanent bed	Wheat after pigeon pea	10	4	51.5	33500	101887	68387	3.04
Balaghat	Drainage channel	Paddy crop	8	4.2	48.5	22900	68385	45485	2.9

2.4 Artificial ground water recharge

In Madhya Pradesh, low cost technology of tube-well recharging was demonstrated to 27 farmers resulted the income of Rs. 66225 /- and BC ratio was observed 3.92 and also 9 farmers demonstrated on different technology like deepening of tank and de-siliting of open wells. In Odisha, technology demonstrated on construction of open well (6 no.) for the cultivation of vegetable during *rabi* and summer by involving 42 farmers.

Table -2.4.1: KVK wise technology demonstrated under artificial ground water recharge in madhya pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Measurable indicators of output* (Yield a/ha & Other)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Ratlam	Recharging of tube well and dug well	25% convergence	27	20	35	22650	88875	66225	3.92
Morena	Improve variety hybrid brinjal	Brinjal hybrid seed	2	0.5	150	30500	90000	59500	2.95
Morena	Improve variety hybrid chilli	Chilli Seed	2	0.5	85	41000	127500	86500	3.1
Guna	De Silting of open Wells to improve irrigation water discharge capacity	-	2	2	11	39700	92400	52700	2.32

2.5 Water saving irrigation methods

Sprinkler irrigation in raised bed planting was demonstrated at 25 farmers fields covered 16 ha area using MP4010 variety of wheat resulted the yield as 55.0 q/ha and net income of Rs. 66875/ha. Also drip irrigation in chilli was demonstrated and result showed the yield of 163 q/ha which increased farmers' income by 30% which covered 14.1 ha area by involving 58 farmers.

Table -2.5.1: KVK wise technology demonstrated under water saving irrigation method in Madhya Pradesh

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmer	Area (ha)	Measurable indicators of output* (Yield a/ha & Other)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Ratlam	Water saving irrigation method	Garlic seed	1	0.4	75	105000	337500	232500	3.21
Ratlam	Check basin method of irrigation	Check basin method of irrigation	1	0.4	65	105000	297000	192000	2.82
Balabhat	Cucurbits	Seed	1	0.2	286	96000	286000	190000	2.97
Balaghat	Chilli	Seed	2	0.4	194	78000	291000	213000	3.73
Balaghat	Colocasia	Seed	2	0.2	214	60000	214000	154000	3.56
Datia	Sprinkler Method of Irrigation	Chick pea seed	10	2	7	25418	63000	37582	2.47

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmer	Area (ha)	Measurable indicators of output* (Yield a/ha & Other)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Datia	Sprinkler Method of Irrigation	Field Pea seed	10	4	7	24563	49566	25003	2.01
Jhabua	Vegetable production with stacking & Drip irrigation	Seed, micronutrient, pesticide	10	2	193.60	39600	154880	115280	3.91
Jhabua	Irrigation through glucose bottle (Kitchen gardening)	Seed, micronutrient, pesticide	23	5	151.0				
Morna	Sprinkler irrigation Raised Bed Sowing method	Wheat MP-4010 seed	5	10	55	32500	99375	66875	3.05
Tikamgarh	Drip irrigation in chilli	Chilli seed	2	1	163	40000	293500	253500	7.33
Guna	Water saving irrigation methods	Water saving irrigation system in Sugarcane + Coriander crop	4	4		48300	11200	63700	2.31

In Chhattisgarh, technology demonstrated on drip irrigation covered 8 ha area by involving 15 farmers and result showed that yield of tomato has increased upto 352 q/ha and net profit income Rs. 171150/ha from drip irrigation system which observed BC ratio 3.72. In Odisha, demonstration conducted in 2 ha area of maize crop by involving 5 farmers in ridge and furrow method with increasing the yield of maize crop has 42.1 q/ha of the net income 22300 Rs./ha which observed BC ratio 2.13.

Table -2.5.2: KVK wise technology demonstrated under water saving irrigation method

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmer	Area (ha)	Measurable indicators of output* (Yield a/ha & Other)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Chhattisgarh									
Bilaspur	Sprinkler irrigation	-	5	2	18	20000	27450	7450	1.37
Dantewada	Drip Irrigation	Chilli seed	4	3	120	32850	124000	171150	3.72
Dantewada	Drip Irrigation	Tomato seed	6	3	352	64120	225665	161545.8	3.51
Odisha									
Ganjam-1	Sowing of Maize in Ridge & furrow method	Seeds, pesticides	5	2	42.1	19800	42100	22300	2.13

Micro sprinkler and drip irrigation system in green shade net

Irrigation in field pea through Sprinkler

2.6 Conservation tillage

In Madhya Pradesh, technology demonstrated under zero tillage in wheat which covered 59.8 ha by involving 66 farmers. Results showed that increasing their yield 40-45 q/ha. Similarly in Odisha, demonstration conducted which covered 5 ha area by involving 17 farmers result shows that yield of black gram increased 4.80 q/ha with net income 8800 Rs/ha.

Table -2.6.1: KVK wise technology demonstrated under conservation tillage

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Area (ha)	Measurable indicators of output* (Yield a/ha & Other)	Economics of demonstration (Rs./ha)			BCR
						Gross Cost	Gross Return	Net Return	
Madhya Pradesh									
Tikamgarh	Zero tillage in wheat	Improved variety late sown irrigated	30	15	41.87	21000	67000	45000	3
Balaghat	Wheat	Seed of wheat	6	4.8	40.8	28680	63240	34560	2.2
Guna	Soybean	Hand Wheel hoe	30	40		22500	56000	33500	2.48
Odisha									
Ganjam-1	Sowing of Black gram by seed cum fertilizer drill under zero tillage condition	Seeds, Tractor hiring, pesticides	17	5	480	10400	19200	8800	1.85

Demonstration on Zero tillage

3

CROP PRODUCTION MODULE

Introducing drought, salt and flood tolerant/ resistant varieties, advancement of planting dates of *rabi* crops in areas with terminal heat stress, water saving paddy cultivation methods (SRI, aerobic, direct seedling), community nurseries for delayed monsoon, location specific intercropping systems with high sustainable yield index, introduction of new crops/ crop diversification, custom hiring centres for timely planting.

In Zone-IX, under crop production module, different technologies were demonstrated in 767.90 ha area involving 2490 farmers. In Madhya Pradesh, total 1819 farmers were benefited covering 588.4 ha area, followed by Chhattisgarh 89.6 ha area involving 245 farmers and 89.9 ha area in Odisha which covered the 426 farmers, respectively.

Salient achievements

- Under this module, total 894 farmers benefited using drought / temperature tolerant varieties under crop production and covered 310.4 ha area.
- Total 72 were benefited by demonstration conducted under water saving in paddy through SRI and DSR method.
- Under advancement of planting dates of *rabi* crops in areas with terminal heat stress covered 117.9 ha area by involving 385 farmers.
- Total 156 demonstrations conducted under custom hiring centers for timely planting and covered 78.3 ha area.

3.1 Introducing drought / temperature tolerant varieties

Under crop production module, introduction of drought resistant varieties of black gram, pigeon pea, wheat, gram and cluster bean were demonstrated in NICRA villages by involving 96 farmers in 28.4 ha area. Results shown that drought tolerant paddy varieties like Indira Barani was demonstrated in 4 ha areas of 20 farmers field and showed the highest yield (51.1q/ha) with BC ratio 3.32 with maximum increase yield (33.16%) as compared to local check in Madhya Pradesh. In Chhattisgarh, drought tolerant wheat variety like Ratan was demonstrated in 1.2 ha areas at three farmer fields. Results showed that the yield of 22.7q/ha with BC ratio 3.09 with yield increase of 12.37% as compared to local check. Short duration varieties of soybean, sesame, cow pea, pigeon pea, green gram, field pea and wheat were demonstrated involving 111 numbers of farmers in 42.2 ha area. In short duration variety of black gram, PU-35, Shekhar-2 showed the yield as 17.5 q/ha with BC ratio 4.68 along with yield increase of 39 % in Madhya Pradesh. In Chhattisgarh, 11.5 ha area covered by involving 20 farmers under this activity. Weed management practices were demonstrated in pigeon pea and wheat involving 54 farmers in 21.6 ha area. Weed management in pigeon pea was demonstrated in 4.8 ha area of 12 farmers field and showed that the yield of 24.1q/ ha and BC ratio 3.75. Early maturing varieties of green gram, pigeon pea, black gram were demonstrated involving 52 numbers of farmers in 20.4 areas. Early maturing pigeon pea varieties like TJT-501 was demonstrated in one ha area of 25 farmers of farmers field and showed that the yield (14.8 q/ha) urn 3.2 with maximum increasing (60.89%) as compared to local check in Madhya Pradesh. Low water requiring varieties of wheat, mustard, chickpea, sesame and pigeon pea were demonstrated involving 231 farmers in 80 ha area. In chickpea JG16 variety was demonstrated in 12 ha area of 25 farmers showed the yield of 16.51 q/ha and BC ratio 5.5 with yield increase of 11.55% as compared to local check in Madhya Pradesh. In addition, some demonstrations on high yield and yellow mosaic resistant variety of gram and temperature tolerant were laid out involving 187 numbers of farmers in 69.8 ha area in Madhya Pradesh. In Chhattisgarh which covered 25.6 ha area by involving 66 farmers.

Table -3.1.1: KVK wise technology demonstrated under introducing flood/drought/temperature tolerant varieties in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Satna	Crop substitution-rain fed paddy substituted with early maturing crop black gram	Variety-IPU-94-1, Seed treatment with Thiamethoxam (1gm/kg seed), organic manure 2 t/ha,, , NPKS 20:50:20:20 Kg/ha, weed control by Imazathapyr@100gmai/ha One packet/10kg seed of each bio fertilizer,	17	4	7.8	3.1	15465	27640	12175	1.7
Satna	Introduced early maturing crop Green gram	Variety-PDM-139, Seed treatment with Thiamethoxam (1gm/ kg seed), organic manure 2 t/ha, weed control by Pendimethalin@1000mlai/ ha, NPKS 20:50:20:20 Kg/ ha One packet/10kg seed of each bio fertilizer,	16	3.8	7.8	3.5	14300	31200	16900	2.1
Satna	Early maturing Drought escape var. of sesame	Variety-JTS-08, Seed treatment with carbendazim (2gm/kg seed), organic manure@4t/ ha, weed control by Pendimethalin@1000mlai/ ha, NPKS 60:40:20:20 Kg/ha, ,	15	4	5.1	2.7	15225	23620	8395	1.5
Satna	Early maturity variety with transplanted of pigeon pea TT-401	Variety- TT-401, organic manure 2t/ha, Imazathapyr@100gmai/ha, NPKS 20:50:20:20 Kg/ha, one spray Bio-pesticide @2.5 l/ha, and one spray with Imidacloprid @125 ml/ha	12	2.6	8.9	3.3	15800	31150	15350	1.97
Satna	Integrated crop management in mustard- Sowing of mustard in first week of October	Variety-RH-749 organic manure 2 t/ha, NPKS 60:40:20:20 Kg/ha, One packet/10kg seed of each bio fertilizer, one spray Imidacloprid@150ml/ha	20	8	10.2	5.6	14350	30600	16250	2.1
Satna	Substituted existing var. of chick pea –JG-315 with heat tolerant variety JG-14	Variety-JG-14, organic manure 2t/ha, DAP100 and Sulphur 20 Kg/ha, One packet/10kg seed of each bio fertilizer, soil application of Trichoderma@5Kg/ha, pheromone traps@10/ ha, one spray of Trizophos@1000ml/ha,	5	1.6	7.5	4.2	17224	35000	17776	2.03
Satna	Introduced low water requiring variety-JW-17 in place of traditionally grown variety WH-147	Variety- JW-17, organic manure 4t/ha, NPK 60:20:20 Kg/ha, One packet/10kg seed of each bio fertilizer, Seed treatment with Chlorpyriphos@ 3ml/kg seed,	14	4	22.68	28.74	18325	43125	24800	2.35

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Satna	Introduced early sown variety of wheat JW-3020 to harvest conserved moisture	Variety- JW-3020, organic manure 4t/ha, NPK 60:20:20 Kg/ha, One packet/10kg seed of each bio fertilizer, Seed treatment with chlorpyriphos@ 3ml/kg seed,	8	3.4	25.3	14.22	19870	44293	24423	2.23
Satna	Introduced low water requiring crop barley variety-JB -1 in place of traditionally grown variety WH-147	Variety- JB- 1, organic manure 4t/ha, NPK 60:20:20 Kg/ha, One packet/10kg seed of each biofertilizer, Seed treatment with chlorpyriphos@ 3ml/kg seed,	14	3	16.5	12.41	15470	22289	6819	1.44
Morena	Replacement of Long duration Variety by short duration variety	Pigeon pea (PUSA 991) seed	8	4	23.5	18.2	32600	120687	88087	3.7
Morena	Long duration variety effected by frost and hail storm	Pigeon pea (PUSA 991) seed	2	1	21.8	19.2	32600	112275	79675	3.44
Morena	Long duration variety effected by frost and hail storm	Pigeon pea (PUSA 992) seed	2	1	22.1	18.5	32600	113612	81012	3.48
Morena	Weed management of pigeon pea use of herbicide imazethpyr + imazamox @ 70g a.i./ha	Pigeon pea seed	12	4.8	24.1	18.8	33300	124062	90762	3.75
Morena	Drought tolerant YMV resistant variety maturity 90 days	Blackgram (shekhar) seed	10	4	8.9	6.8	22000	55625	33625	2.52
Morena	Short duration of cow pea drought tolerant maturity 60-65 days	Cow pea (PL1) seed	1	0.4	12	8.3	23500	50000	26500	2.12
Morena	Short duration (60-65 days) of cow pea drought tolerant	Cow pea (PL2) Seed	1	0.3	11.5	7.5	23500	47875	24375	2.03
Morena	Short duration (60-65 days) of cow pea drought tolerant	Cow pea (PL3) Seed	2	1.5	13.5	9.7	23500	56375	32875	2.39
Morena	Short duration (60-65 days) of cow pea drought tolerant	Cow pea (PGCP-14) Seed	1	0.4	11	8.5	23500	45700	22200	1.94
Morena	Short duration (60-65 days) of cow pea drought tolerant	Cow pea (RC-101) Seed	1	0.4	14	9.3	23500	59500	36000	2.53
Morena	Early maturing 60-65 DAYS variety suitable for rain fed conditions, YMV disease resistant	Green gram TJM-3 Seed	10	4	9.8	7.3	21500	60800	39300	2.82
Morena	Early maturing 115-120 DAYS Drought tolerant variety	Cluster bean (HG-365) Seed	5	2	20.2	16.8	22500	65600	43100	2.91
Morena	Improve variety BH-959 drought tolerant	Barley (BH-959) Seed	13	5.2	52.49	41.42	29050	90375	61685	3.12

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Morena	Weed management of pigeon pea imezathaypr + imezamox @70g a.i./ha	Pigeon pea Seed	12	4.8	24.1	18.8	33300	24062	90762	3.75
Morena	Weed management of wheat crop sulpho sulphuran 25g a.i./ha at 25-30 DAS	Wheat Seed	4	1.6	55.5	44.8	34562	109787	75225	3.17
Morena	Weed management in wheat crop 2, 4-D @ 1250g/ha at 25-30 DAS	Wheat Seed	10	4	53.5	46.7	33150	101937	68787	3.07
Morena	Weed management in wheat crop sulpho sulphuran+met sulphuran at 25-30 DAS	Wheat Seed	6	2.4	56.8	49.3	34312	112250	77938	3.27
Ratlam	Restricted Irrigation required Variety of Wheat	HI-1531 Seed	5	2		26.3	23560	39450	15890	1.67
Ratlam	Farmer practices	Lok-1 Seed	1	0.4		20.75	23560	31125	7565	1.32
Tikamgarh	Short duration variety of soybean JS 95 60	Soybean variety JS 95 60 Seed	10	5	14.12	10.3	18500	45184	20916	2.42
Tikamgarh	MYMV registrant variety of black gram IPU-94-1	Black gram variety IPU 94-1 Seed	10	5	13.37	11	19000	80220	61220	4.2
Tikamgarh	Low water requirement crop(kharif) Sesame	Sesame variety TKG 308 Seed	10	5	6.5	3.2	8500	38000	29500	4.5
Tikamgarh	Low water requirement crop(Rabi) Mustard	Mustard variety Rohani Seed	100	25	16	11	14000	56000	42000	4
Tikamgarh	Low water requirement & thermal resistant crop chickpea variety JG-16	Chickpea variety JG-16 Seed	25	12	16.51	14.8	12000	66040	55400	5.5
Tikamgarh	Limited Irrigation and late sowing wheat –GW 366	Wheat variety GW-366 Seed	30	15	41.87	37.5	21000	67000	45000	3
Balaghat	variety Indira Barani Drought tolerant and early variety	Seed	20	4	51.4	38.6	21800	72474	50674	3.32
Balaghat	Pigeon pea Var TJT-501 Early var	Seed	25	1	14.8	9.2	22000	71040	49040	3.2
Balaghat	Hi-1500 (Amrita) – Rainfed-no irrigation	Seed	5	2	18.8	-	10800	30550	19750	2.82
Jhabua	Short duration variety JS 9560	Seed, pesticide	11	2.4	15.9	12.85	18800	47700	28900	2.54
Jhabua	Short duration variety JS 2034	Seed, pesticide	4	0.8	15.75	12.85	18800	47250	28450	2.51
Jhabua	Blackgram var. IPU 94-1	Seed, pesticide	11	4.4	7.25	5.2	13925	36250	22325	2.6

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Jhabua	Pigron pea (JKM-189)	Seed, pesticide	11	4.4	11.5	8.9	18750	46000	27250	2.45
Jhabua	Wheat var. (HI -1544)	Seed	10	4	26.75	21.5	17800	42800	25000	2.4
Jhabua	Mustard	Seed, Pesticide	10	4	12.6	8.2	14250	37800	23550	2.65
Jhabua	Gram (JG-130)	Seed, pesticide	20	8	12.35	10.05	16900	37050	20150	2.19
Jhabua	Maize(hybrid)	Seed, pesticide	13	5.2	31.2	23.75	17500	37440	19940	2.14
Datia	Temp. Tolerant Variety	RVW-4106 Seed	15	6	54.63	45.25	34250	83310	49060	2.43
Datia	Temp. Tolerant Variety	JG-16 Seed	10	2	18.54	14.35	25418	64855	39437	2.55
Guna	JS 95-60 BBF Sowing method	JS 95-60 Seed	60	24	10.03	6.44	16157	22558	6400	1.35
Guna	Late sown and drought tolerant variety Sekhar 2	Shekhar 2 Seed	20	4	10.01	5.8	11325	23212	11877	1.98
Guna	High yield and yellow mosaic resistant variety TM 37	TM 37 Seed	20	4	10.23	8.61	11667	73185	61517	6.23
Guna	Drought tolerant varieties Gwar (HG884)	HG884 Seed	12	2.4	14.8	11.9	12260	26640	14380	2.2
Chhatarpur	Introducing of short duration varieties Sesame	Sesame var. TKG-55 Seed	40	16	4	3	12322	38000	25678	3.08
Chhatarpur	Short duration Black gram	Variety- PU-35, Shekhar-2 Seed	20	7	17.5	6.8	15880	74400	58520	4.68
Chhatarpur	Rainfed timely sown variety wheat	Variety- HI-1531 Seed	20	8	27	18.5	24000	36400	12400	1.51
Chhatarpur	Suitable for Rainfed / restricted irrigation Barley	Variety- JB-58 Seed	20	8	25	18.6	25000	40640	15640	1.62

Table -3.1.2: KVK wise technology demonstrated under introducing flood/drought/temperature tolerant varieties in Chhattisgarh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Bilaspur	Drought tolerant Improved cultivation technique of pigeon pea	Rajiv lochan Seed	10	2.5	12.8	8.5	23800	64842	39042	2.51
Bilaspur	Short duration variety with rhizobium culture and guucho	ICPL 88039 Seed	15	10	10.5	8.5	26200	53025	26825	2.02
Bilaspur	Drought tolerant variety Sahbhgi with SRI Marker	Sahbhagi seed with SRI marker	6	2.4	28.13	20.5	25160	39663	14503	1.58
Bilaspur	Flood tolerant improved Paddy variety	Swarnna sub -1seed	14	4.8	32.6	20.5	23880	45966	220861	1.92
Bilaspur	Direct Seeded Rice	Indira rajeshwri seed provide with seed drill	7	2.8	31.8	20.8	24020	44020	44838	1.86
Bilaspur	Crop diversification	Urd Azad 3 seed	10	4	8.94	6.86	15017	44700	29683	2.98

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha.)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Bilaspur	Soyabean	JS -9752 seed	5	1.5	12.8	-	25885	64000	38115	2.47
Bhatapara	Drought tolerant variety of wheat- Ratan	Ratan seed DAP 125 Kg per ha	3	1.2		20.2	11400	35185	23785	3.09
Dantewada	Rice (Sahbhagi)	Seed	10	4	31.8	24.25	19560	46746 .0	27186	2.38
Dantewada	Rice (MTU 1010)	Seed	10	6	35.6	25.23	19560	52332	32772	2.67
Dantewada	Rice (Indira Barani Dhan-1) SRI Methods	Seed	15	4	37.4	26.43	18615	54978	36363	2.95

3.2 Advancement of planting dates of *rabi* crops in areas with terminal heat stress

Advancement of planting dates of *rabi* crops and terminal heat stress varieties were selected for different location of cereal, pulses, oilseed and horticultural crops were taken for frost escaping and reduce the temperature increase losses in February and March covering total 117.9 ha area involving 385 farmers. In Madhya Pradesh, 231 farmers benefited by 100.0 ha area demonstration followed by Chhattisgarh 4.0 ha area involving 12 farmers. Besides, 142 farmers were benefited by 13.9 ha area demonstration in Odisha.

Table -3.2.1: KVK wise technology demonstrated under advancement of planting dates of rabi crops in areas with terminal heat stress in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Satna	Integrated crop management in mustard- Sowing of mustard in first week of October	Variety-RH-749 organic manure 2 t/ha, NPKS 60:40:20:20 Kg/ha, One packet/10kg seed of each bio fertilizer, one spray Imidacloprid@150ml/ha	20	8	10.2	5.6	14350	30600	16250	2.1
Satna	Introduction of new variety in Gram- Sowing of chick pea in Second week of October	Variety-JG-14, organic manure 2t/ha, DAP 100 and Sulphur 20 Kg/ha, One packet/10kg seed of each biofertilizer, soil application of Trichoderma@5Kg/ ha, one spray of Triazophos@1000ml/ha,	5	1.6	7.5	3.8	15530	35000	19470	2.2
Morena	High yielding variety suitable for late sowing suitable for pigeon pea-wheat cropping system in zero till seed drill sowing method	MP-1203	10	4	51.5	46.2	30500	101887	71387	3.34
Morena	Dry sowing by zero till seed drill	MP-1203	2	1	52.1	46.2	30500	102687	72187	3.36
Morena	Traditional sowing method	MP-1203	10	20	-	46.2	38500	91175	52675	2.36

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Ratlam	Drought tolerant Mustard Variety	Variety RH-406	5	2	17.55		16900	56160	39260	3.32
Tikam-garh	Wilt resistant variety chickpea	Chickpea variety JG-16	25	12	16.51	14.8	12000	66040	55400	0.84
Tikam-garh	Mustard	Rohani	100	25	16	11	14000	56000	42000	0.75
Balaghat	Wheat-Thermoinsentive	Seed JW-3211	0	0	38.4	24.8	27300	62400	35100	2.2
Balaghat	Chickpea	Seed var. Jaki-9218	0	0	14.4	12.3	19700	79200	59500	4.02
Balaghat	Lentil	Seed var JL-3	0	0	8.4	5.2	13800	34400	20640	2.4
Balaghat	Wheat limited irrigation	Seed var HI- 1544 (Purna)	0	0	32.8	20.4	25800	53300	27500	2.06
Datia	timely Sowing of Mustard (IInd Fort Night of October)	RVM-2	38	20	19.56	16.42	18536	62592	44056	3.37
Guna	Green fodder	Rizka(LL composite 3)	15	6	185.75	128.6	10300	42600	35450	4.14

Table -3.2.2: KVK wise technology demonstrated under advancement of planting dates of rabi crops in areas with terminal heat stress

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Chhattisgarh										
Bilspur	Line sowing of chickpea	Variety JG-74	12	4	9	6.5	18700	36000	17300	1.92
Odisha										
Kendrapara	Improved cultivation practices of green gram	Green gram seed var. TARM-1	15	4	6.7	4.6	15400	31000	15600	2.01
Kalahandi	Planting of rabi vegetable crops with terminal heat stress	Brinjal C.v- VNR- 218, 212	38	1.2	212	134	37150	159000	121850	4.27
Kalahandi	Planting of rabi vegetable crops with terminal heat stress	Tomato C.v- Utkala kumari	33	2.2	173	105	38020	173000	134980	4.55
Kalahandi	Cultivation of drought tolerant chilly	Chilli C.v- Agnirekha	43	1.5	20	12.8	42550	160000	117450	3.76
Ganjam-I	Growing of short duration Greengram variety TARM-1 to avoid YMV incidence during high temperature	Seed, Rhizobium, Pesticides	13	5	5.8	4.6	16800	29000	13800	1.73

3.3 Water saving paddy cultivation methods (SRI, aerobic, direct seeding)

Water saving paddy cultivation through DSR, aerobic, direct seedling etc were demonstrated in 16.4 ha area of 47 number of farmers fields and shows that direct seeding by seed drill of paddy varieties like

Indira Barani was demonstrated on farmer field and showed the yield of 51.4 q/ha and BC ratio 3.3 with yield increase of 33.16% as compared to local check in Madhya Pradesh followed by Chhattisgarh, total 37 farmers which covered 12.4 ha area and shows that sahabhahi variety of paddy was demonstrated on farmer field and showed that the yield (32.37q/ha) BC ratio 2.15 with yield increase of 44.12% as compared to local check.

Table -3.3.1: KVK wise technology demonstrated under water saving paddy cultivation method (SRI, aerobic, directs seeding)

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Satna	Direct seeded Rice	DSR	5	2	29.1	-	9800	20500	10700	2.09
Balaghat	Direct Seedling by Seed Drill	Seed of Indira Barani	-	-	51.4	38.6	21800	72474	50674	3.32
Datia	Direct Seeded rice	P-1121seed	5	2	46.52	42.51	34860	93040	58180	2.66
Chhattisgarh										
Bilaspur	Direct Seeded Rice	Indira Rajeshwri provide with seed drill	7	2.8	31.8	20.8	24020	44020	44838	1.86
Bhatapara	DSR	MTU-1010, DAP 125 Kg per ha	5	1.6	29.95	26.1	30550	43428	12878	1.42
Bhatapara	DSR	Rajeshwari, DAP 125 Kg per ha	15	4	41.85	39.04	35777	60677	24900	1.7
Dantewada	DSR	(Sahabhagi) seed	10	4	32.37	22.46	21826	47040	25214	2.15

Systematic rice intensification demonstration in field

3.4 Water saving through SRI

SRI method is very useful under low rainfall condition and also required less water than traditional transplanting method and showed the yield of 56.4 q/ha with BC ratio 3.2 yield increase of 28.18% as compared to local check in Madhya Pradesh. SRI in Chhattisgarh covered total 4 ha area involving 10 farmers under this activity.

Table -3.4.1: KVK wise technology demonstrated under water saving through SRI

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Satna	Introduction of new variety in paddy , System of Rice Intensification	Variety- Pusa Basmati-1509 organic manure 4t/ ha, NPK 60:20:20 Kg/ha, Seed treatment with salt solution@ 10%, one spray of Triazophos@ 1000ml/ha, one spray of Propiconazole 1ml/L of water	15	6	32.6	19.6	19565	42270	22705	2.1
Balaghat	SRI	Seed of MTU 1010	-	-	56.4	44	24800	79524	54724	3.2
Chhattisgarh										
Dantewada	SRI	Variety (Indira Barani dhan-1)	10	4	39.28	26.21	24531	62858	38278	2.35

3.5 Frost management

Frost management was demonstrated in 46.10 ha area of 127 farmers. Frost resistant variety of Coriander RCR – 436 was demonstrated in 4 ha area of 20 farmer and showed the yield of 17.82 q/ ha and BC ratio 3.96 as compared to local check in Madhya Pradesh. The practice was also followed in Chhattisgarh and covered 0.5 ha area involving 8 farmers.

Table -3.5.1: KVK wise technology demonstrated under frost management Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Morena	High yielding aphid tolerant suitable for Semi irrigated condition timely sowing	Mustard NRCDR-2 seed	18	7.2	23.25	19.5	24500	85050	60550	3.47
Morena	High yielding aphid tolerant suitable for Semi irrigated condition timely sowing	Mustard RH-749 seed	18	7.2	23.75	19.8	24500	87250	62750	1.56
Morena	High yielding , aphid tolerant suitable for Semi irrigated condition timely sowing	Mustard RVM-2 seed	18	7.2	21.1	17.8	25500	76740	51240	3
Tikamgarh	Fumigation (chickpea)	Technical Advice	25	12	16.51	14.8	12000	66040	55400	5.5

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Guna	Drought and thermo tolerant variety of Gram RVG 202	Chickpea var. RVG 202 seed	20	8	16.75	14.22	20825	45440	25200	2.18
Guna	Frost registrant variety Coriander RCR - 436	Coriander var. RCR – 436 seed	20	4	17.82	15.12	20865	95145	74312	3.96

3.6 Community nurseries for delayed monsoon

To combat the situation of delayed monsoon, intervention of staggered community nursery for horticultural crops has become very popular in Madhya Pradesh. Seedlings of 25-30 days age are transplanted in July so as to complete flowering of photosensitive varieties before October and harvesting by mid November to facilitate taking up of timely sowing of *rabi* crops. Such a practice ensures optimum performance of both *kharif* and *rabi* crops vegetable crops like cauliflower, cabbage, chilli and tomato. Staggered nursery development when used for these interventions were carried out in 5.4 ha area of 63 numbers of farmers. Among all the demonstration the community nursery was the most promising one which showed highest increase in yield as well as economic return in Madhya Pradesh followed by Odisha which covered 5 ha area by involving 43 farmers under this activity.

Table -3.6.1: KVK wise technology demonstrated under community nurseries for delayed monsoon

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Datia	Tomato	Pusa -120 seed	7	0.1	185.36	156.35	55638	185360	129725	3.33
Datia	Cauliflower	Pusa Aghani seed	6	0.1	165.42	142.58	58963	198504	139541	3.36
Datia	Cabbage	Nilima-1 seed	3	0.1	195.63	165.48	54899	195630	140731	3.56
Datia	Chilli	Pusa jwala seed	4	0.1	124.56	90.46	53689	180920	127231	3.36
Odisha										
Kalahandi	Vegetable Seedling	Seed, micronutrient	43	5	26	14.5	8700	25600	16900	2.94


Community vegetable nursery


Community vegetable nursery


Community vegetable nursery

3.7 Custom hiring centers for timely planting

In this intervention, total 114 farmers which covered 60.30 ha area and result showed that sowing of wheat (MP4010) after pigeon pea in zero tillage method, the yield obtained was 52.5q/ha with BC ratio of 3.34 as compared to local check in Madhya Pradesh. In Chhattisgarh 42 farmers benefited through covering 18 ha area.

Table -3.7.1: KVK wise technology demonstrated under custom hiring centres for timely planting

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Morena	Use in zero till seed drill sowing method	After pigeon pea Wheat (MP4010) seed	20	15	52.5	48.5	30500	101887	71387	3.34
Morena	Use in zero till seed drill sowing method	Barley (RD- 2786) seed	13	5.2	52.49	41.42	29050	90735	61685	3.12
Morena	Raised bed planter sowing	Cluster bean seed	20	15	20.2	16.8	22500	65600	43100	2.91
Tikamgarh	MB Plough/BBF	MB Plough/BBF	10	5	14.12	10.3	14.12	18500	45184	2.09
Jhabua	Ridge & furrow in soybean	Seed	21	8.4	15.8	12.85	18800	47700	28900	2.52
Datia	Ridge and Furrow Seed Drill	Soybean/JS-9560 seed	8	3	19.42	14.25	20756	42724	21968	2.05
Datia	Broad Bed and Furrow Seed Drill	Soybean/JS-9560 seed	7	2.7	20.32	14.25	20756	44704	23948	2.15
Datia	Seed cum Ferti. Drill	Wheat/ RVW-4106 seed	15	6	52.63	45.25	34250	80261	46011	2.34
Chhattisgarh										
Bilaspur	Used seed cum Fertilizer drill	Wheat Ratan seed	13	5	16.5	12.5	18500	25163	6663	1.36
Dantewada	Line sowing with seed cum fertilizer drill	var. Indira Barani Dhan-1 seed	18	10	29.39	22.15	16425	43189	26762	2.62
Dantewada	Paddy Transplanted	(MTU1010) Rice	11	3	33.25	25.9	17350	48877	31527.5	2.81

3.8 Location specific intercropping systems with high sustainable yield index

Various intercropping systems were demonstrated in regions which are prone to drought. Intercropping systems are considered as one of the important adaptation mechanism for variable rainfall situations. The demonstrations were carried out in 97.8 ha area of 262 number of farmers' fields in Zone IX. In Madhya Pradesh, total 175 farmers involved which covered 47.8 ha area. Of all these intercropping, relay cropping system of mustard+ berseem was found best which was undertaken at 20 farmers fields with BC ratio 6.48. However, in Chhattisgarh, total 10 farmers involved which covered 2 ha area. In Odisha, total 77 farmers involved which covered 48 ha area and showed that intercropping system for sustainable production of Cotton + local pigeon pea found B:C ratio of 3.3 by involving 52 farmers and covered 36 ha area.


Intercropping of wheat with mustard


Intercropping of maize with soybean

Table -3.8.1: KVK wise technology demonstrated under location of specific intercropping systems with high sustainable yield index

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Satna	Wheat +Mustard	Seed with treatment	60	2	14.41	9.56	171550	24396	7246	1.43
Morena	Relay cropping system mustard+ berseem	Mustard (NRCDR-2) seed	10	4	21.8	19.3	25500	80120	54620	3.14
Morena	Relay cropping system mustard+ berseem	Berseem (BB-3) seed	10	4	9	-	12500	81000	68500	6.48
Balaghat	Chick pea + Coriander	Seed of Chick pea & Coriander	5	2	16.6	-	21000	57441	36441	2.74
Balaghat	Chick pea + Coriander	Chick pea seed	0	0	15.1	10.6	19000	47691	28691	2.51
Balaghat	Chick pea + Coriander	Coriander seed	0	0	1.5		2000	9750	7750	4.87
Balaghat	Paddy + pigeon pea + colocasia	Seed of Paddy + pigeon pea+Colocasia	5	2	58.06		29500	88224	58484	3.24
Balaghat	Paddy + pigeon pea + colocasia	paddy	0	0	54.06	-	26000	76224	50224	2.93
Balaghat	Paddy + pigeon pea + colocasia	Pigeon pea	0	0	1.6		2000	7200	5200	3.6
Balaghat	Paddy + pigeon pea + colocasia	Colocasia	0	0	2.4		1500	4800	3060	3.2
Jhabua	Intercropping Soybean+Maize	Seed, pesticide	5	2	17.76	12.85	19000	53280	34280	2.8
Jhabua	Intercropping Soybean+Pigeonpea	Seed, pesticide	5	2	20.62	12.85	19650	61850	42200	3.15
Jhabua	Intercropping Wheat+ Mustard	Seed, pesticide	5	2	30.42	21.5	17950	16350	30720	2.71
Jhabua	Intercropping Gram + mustard	Seed, pesticide	5	2	16.3	10.05	17150	48900	31750	2.85
Guna	Thermo tolerant variety of Wheat HI – 8663 Suitable for limited irrigation	HI – 8663	60	24	44.3	34.1	21275	52932	31587	2.49

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Odisha										
Kalahandi	Intercropping system for sustainable production	Cotton + local pigeon pea seed	52	36	10.4	8.7	12450	41200	28750	3.3
Kalahandi	Intercropping system for sustainable production	Paddy + pigeon pea seed	15	11	20	15	8530	25000	16470	2.93
Jharsuguda	Intercropping of marigold with cauliflower	Marigold seedling	10	1	164	137	61200	196800	113600	3.2

3.9 Others

Besides above described, there are some other demonstrations in various aspects mentioned in the table (table-3.9.1) which was carried out in different NICRA adopted villages involving 531 farmers. Among all the demonstration cultivating contingency crops like brinjal, cauliflower, mushroom and short duration tomato, onion, soybean and pigeon pea were remunerative. A total of 346 farmers involved covering 57.1 ha. Area in Madhya Pradesh. Besides, 21 farmers were benefited by 5.5 ha demonstration in Chhattisgarh. Similarly in Odisha, 164 farmers which covered 23.0 ha of demonstration.

Table -3.9.1: KVK wise other technology demonstrated under crop production module

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Madhya Pradesh										
Morena	Brown manuring daincha pearl millet	Sesbenia (dencha)	10	5	-	10.2	18000	30200	12200	1.67
Morena	Brown manuring daincha pearl millet	Brown manuring Pearl millet	10	5	25	-	18500	42000	23500	2.27
Balaghat	Brinjal	Seed of var. PBH-5	5	0.4	266	180	79000	179748	100748	2.27
Balaghat	Tomato	Seed of var. Arka Rakshak	5	0.2	360	248	88000	320842	238842	3.64
Jhabua	Crop diversification	-	5	1	456.9	310.5	69500	228450	158950	3.29
Jhabua	Chilli	Seed	22	3.4	173.5	129.8	45400	104100	58700	2.29
Jhabua	Okra	Seed	33	3	102.4	65.75	40150	122880	82730	3.06
Jhabua	Bottle Gourd	Seed	33	3	193.6	151	39600	154880	115280	3.91
Jhabua	Onion	Seed	5	2	176	136.5	29500	88000	58500	2.98
Datia	Soybean	JS-95-60 seed	15	5.6	18.45	14.36	20756	36900	16144	1.77

KVK	Technology demonstrate	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Area (ha)	Yield (q/ha)		Economics of demonstration (Rs./ha)			BCR
					Demo	Local	Gross Cost	Gross Return	Net Return	
Datia	Sesame	TKG-306 seed	22	10	5.23	4.12	12563	20920	8357	1.66
Datia	Pigeon pea	P-992 seed	13	6.5	20.53	16.45	30563	102650	72087	3.35
Chhattisgarh										
Bilaspur	Vegetable production Tomato	Var- Desi raja seed & Trichoderma	5	1.5	100	75	50000	175000	125000	3.5
Bilaspur	Brinjal cultivation	Var-VNR-218 seed & Trichoderma	8	2	80	56.2	40000	125000	85000	3.1
Bilaspur	Improved Chilli cultivation	Var-NS-238 seed & Trichoderma	8	2	60	66.6	50000	160000	110000	3.2
Odisha										
Kendrapara	Demonstration of Off season cauliflower	Cauliflower seed Var. Super white	4	1	80	60	37000	1,10,000	73,000	2.97
Kendrapara	Demonstration of stress tolerant Tomato var. Swarna Sampad	Tomato Seed var Swarna Sampad	5	1	419	264	70000	209500	139500	2.99
Kendrapara	Demonstration of paddy straw mushroom var. Volvariella volvaceae and Volvariella diplasia	Mushroom spawn.	25		1.2	0.8	60	168	108	2.8
Kendrapara	Demonstration of Oyster mushroom var. Pleurotus sajorcaju and Pleurotus florida	Mushroom spawn.	25		1.8	1.2	30	80	50	2.66
Jharsuguda	Crop diversification by of Hybrid Maize	Hybrid Maize Seeds	20	4	38	23	42300	171000	128700	4
Jharsuguda	Up-scaling of Paddy var-Pratikshya	Paddy seed Pratikshya	20	6	48	44	21500	57600	36100	2.6
Jharsuguda	Demonstration on Green gram variety-TARM-I	Green gram seed variety-TARM-I	20	5	7.45	6.7	25520	40975	15455	1.6
Jharsuguda	Mulching in vegetables	Polythene	10	1	186	128	58000	223200	165200	3.8
Jharsuguda	INM in Cauliflower	Micronutrient-Boron	10	2	192	131	62500	230400	167900	3.6
Jharsuguda	Application of neem cake in Cauliflower	Neem cake	10	1	197	146	65500	236400	170900	3.6

4

LIVESTOCK AND FISHERIES MODULE

Livestock and fisheries are the regular source of income of the farmers and farm women. Under this module, the interventions were conducted on use of community lands for fodder production during drought/floods, improves fodder/feed storage methods, preventive vaccination shelters for reducing heat stress in livestock, management of fish ponds/tanks during water scarcity and excess water, etc.

Under livestock and fisheries module, technologies were demonstrated involving 2472 farmers and 5349 animals also in 117.4 ha areas on specific interventions in NICRA villages. In Madhya Pradesh, total 2830 animals of 1690 farmers were benefited followed by Chhattisgarh by 839 animals of 478 farmers', whereas in Odisha 1680 animals of 304 farmers were benefitted.

Salient achievements

- Total 4517 animals of 2026 farmers were benefitted through preventive vaccination.
- Total eight demonstrations conducted under management of fish ponds / tanks during water scarcity as well as excess water conditions.
- Total 989 animals benefited under improved shelters for reducing heat stress in livestock.
- Total 86 farmers directly involved under use of community lands for fodder production during droughts / floods and covered 10.0 ha area.
- Total 207 farmers were involved in fodder/feed storage methods demonstrations covering area of 37.8 ha improved.

4.1 Use of community lands for fodder production during droughts / floods

This intervention initiated about fodder production during droughts/ floods of high yield variety (Barseem and maize hybrid) production in the field of 35 farmers covered 8.4 ha area. Results showed higher fodder production in Madhya Pradesh. Similarly in Odisha, demonstration under hybrid napier, maize hybrid production involving 17 farmers shows 21.15% increased yield of fodder production. Besides this, four demonstrations conducted on growing of maize fodder without land and soil, small fodder patch in water stagnant area, backyard rearing and composite pisciculture (3:4:4) ratio, monthly manuring with cattle dung, Urea, SSP and micronutrient and liming @ 50 kg / acre which covered 1.6 ha area of land by involving 51 farmers.

Table -4.1.1: Use of community lands for fodder production during droughts / floods

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Madhya Pradesh							
Balaghat	Barseem	Seed	5	2	3.5	2	75
Guna	Green fodder rijka variety L L composite 3	L L composite 3 seed	20	4	186.9	134.2	39.27
Morena	fodder production	Maize Hybrid seed	10	2.4	350	255	37.25
Odisha							
Kalahandi	Fodder cultivation in community land	Hybrid napier, Maize grass	17	1	3.78	3.12	21.15

4.2 Improved fodder/ feed storage methods


Demonstration on silage preparation

Interventions in improved fodder/feed storage methods initiated about fodder production (Jowar Charry, Berseem, Barley and Oat) which covered 16.8 ha area by involving 95 farmers. Results show that increasing the yield by 20-25% of fodder. Also one demonstration conducted on storage technology for fodder bank which covered 70 farmers with production of 460 tons. Demonstration also conducted on azolla production which coved 10 ha area by involving 10 farmers a significant improvement was recorded in the milk production of animals (9.30%). KVK demonstrated on feed supplement (100ml/day/buffalo and mineral mix. feeding 40-50g/day/buffalo) which covered 97 animals by involving 75 farmers. Results showed that a significant improvement was recorded in the milk production of animal (35%) due to above interventions in livestock.

Table -4.2.1: KVK wise technology demonstrated under improved fodder/feed storage methods in MP

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Datia	Green fodder Jwar Chari	Jwar chari seed	5	1	750	610	20.49
Jhabua	Azolla Production	Azolla culture, Plastic Sheet	10	10	2.35	2.15	9.3
Jhabua	Fodder production	Charry Seed	10	2	2.65	2.15	23.25
Jhabua	Fodder production	Berseem Seed	25	2.4			
Morena	Fodder production	Berseem BB-3	20	4	320	250	28
		Barley BH- 959	13	5	54.49	41.42	31.55
		Oat JHO-822	25	2.4	220	195	12.82

In Chhattisgarh demonstration was conducted on improved cultivation for fodder maize seed Afrian tall and azolla Production constructed pakka Structure for feed supplement which covered 11ha of land by involving 25 farmers result shows that increasing milk production of animal upto 20.32%. In Odisha one demonstration was conducted on silage preparation during lushy green grass for feeding cattle during lean period of summer which covered four farmers.

Table -4.2.2: KVK wise technology demonstrated under improved fodder/feed storage methods in Chhattisgarh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Bhatapara	Azolla Production for feed supplement of Poultry	Pakka Structure	10	10	1.01	0.83	20.32

4.3 Preventive vaccination

In this module, animal health camps, de-worming, feed management, fish management and vaccination were performed at farmer's field. These demonstrations benefited the 4517 animals of 2026 farmers which were directly involved in dairy and fish farming.

Vaccination of ETV in goats during AHC

Vaccination of FMD in Buffalos during AHC

Deworming in Buffalo calves

Preventive vaccination:

Under this intervention, animal health camps were organized in for enhanced public awareness towards healthy livestock which covered 1393 animals involving 660 dairy farmers. Similarly in Chhattisgarh, 263 animals of 145 dairy farmers were examined in animal health camps with District Veterinary Department of Chhattisgarh in the village improved the overall health of the livestock. Besides that, various vaccination camps were organized for FMD of cattle, ETV in goats, HS & BQ vaccine in cattle, PPR against goat, de-worming etc. in all the NICRA villages which covered 750 farmers by involving 1376 animals in Madhya Pradesh.

In Chhattisgarh and Odisha which covered 117 and 120 farmers by involving 525 and 841 dairy animals. Mortality rate reduced up to the extent of 85% and average increase in cattle milk yield upto 79.50% have been recorded after the vaccination camps organized and by nutrient management. For increasing the production and productivity, it is necessary to provide balance diet to animals. To teach better nutrient management, two demonstrations were conducted in Madhya Pradesh which covered 56 animals.

Table -4.3.1: KVK wise technologies demonstrated under preventive vaccination in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Balaghat	Animal Health camp	De-worming	194	449	2.5	2.0	25.00
Balaghat	Vaccination	FMD, HSBQ	84	140	2.25	2.0	12.50
Datia	Vaccination for FMD in buffalos	Vaccine	53	148	89	9.5	79.50
Datia	Vaccination for ETV in goats	Vaccine	34	198	98	13	85.00
Datia	De-worming in buffalo calves	Albendazole	18	40	93	21	77 .00
Guna	Training animal disease vaccination and management	Vaccination and management	52	128	6.80	4.90	38.77
Jhabua	Animal health camp	Deworming & Vaccination	132	400	4.50	19.25	76.62

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Morena	Feed supplement and Mineral mixture feeding	Liquid calcium feeding-100ml/day/buffalo and Mineral Mix. Feeding 40-50g/day /buffalo	25	25	9.5	7	35.71
Morena	Training animal disease vaccination and management	Dairy animals – FMD and HS vaccination	50	62	1920	1560	23.10
Ratlam	HS & BQ in cattle Vaccination	Deworming + Vaccine	418	600	625	535	28.56
	Deworming	Deworming Medicine	41	60	10	45	-
	Feeding of local specific Mineral mixture with vitamin supplement	MM + Vitamins	31	31	732	546	25.40
Tikamgarh	Vaccination (Animal health camp)	vaccination	150	160	5	40	87.00

In Chhattisgarh, one demonstration was conducted with involving 74 animals of 20 farmers and in Odisha, one demonstration was conducted which involved 18 animals and 8 farmers showed very promising results that average increase in cattle milk yield upto 35.71% have been recorded after feed supplement and mineral mixture feeding. Other than this, demonstration of rural backyard poultry Kadaknath rearing were carried out in five number of farmers fields by involving five animals resulted (Rs. 56,000/-) better performance in poultry birds. In Chhattisgarh one demonstration on poultry which covered 80 animals and one demonstration on castration which covered 20 animals of 10 farmers.

Table -4.3.2: KVK wise technologies demonstrated under preventive vaccination in Chhattisgarh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Ganjam-I	Deworming with fenbendazole @ 7.5mg /kg b.w	Medicines	28	86	980	810	21
Ganjam-I	Mineral mixture feeding (Agriminforte) @ 50 gram per day	Mineral mixture	8	18	1350	1140	18
Kalahandi	Vaccination to cattle and goat	HS vaccine, FMD vaccine, PPR vaccine and RD vaccination	47	480	3.2	2.7	18.51

4.4 Shelter and feed management

Improved ornamental bird was introduced through this intervention which showed very promising results (B: C ratio 5.8). Improved Poultry shed recorded low mortality rate as shady area reduced heat stress. Standard spacing in improved shed resulted better performance in poultry and dairy animals. Interventions to reduce heat stress for higher survivability of backyard poultry and dairy animals (964) were demonstrated of improved shelter by involving 87 farmers in Odisha.

Table -4.4.1: KVK wise technologies demonstrated under shelter and feed management in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase	Economics of demonstration (Rs./ha)			BCR
					Demo	Local		Gross Cost	Gross Return	Net Return	
Morena	Feed supplement and Mineral mixture feeding	Liquid calcium feeding-100ml/day/ buffalo and mineral mix. feeding 40-50g/ day/buffalo	25	25	9.5	7.0	35.71	8500	19000	10500	2.23

Table -4.4.2: KVK wise technologies demonstrated under shelter and feed management in Odisha

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase	Economics of demonstration (Rs./ha)			BCR
					Demo	Local		Gross Cost	Gross Return	Net Return	
Jharsuguda	Backyard poultry rearing for reducing heat stress	Poultry Chicks-Breed Banaraja	10	130	3.2	1.2	166	112	640	528	5.7
Kendrapara	Demonstration on Semi intensive poultry farming	Poultry chick Var. Banaraja, Polyshree, Naked neck	27	620	2.8	1.3	115.38	135	784	649	5.8
Kendrapara	Demonstration of Duck (Khaki camp bell)	Duckling var. of Duck (Khaki camp bell)	47	201	3	1.95	53.84	460	1020	560	2.21
Sonepur	Shelter for goatery	Scientific shed management	3	11							

4.5 Management of fish ponds

Demonstration on management of fish ponds/ tanks during water scarcity and excess water condition were done in about 4.7 ha by involving 65 farmers. In Madhya Pradesh, a total 5.4 ha area was covered by involving 7 farmers. In Chhattisgarh under this intervention 26 farmers have benefited and covered 2.4 ha area of land and in Odisha In three demonstrations conducted under this intention which covered total 2.3 ha of land covered involving 59 farmers. The fish like rohu, katla and mrigala were grown. The fish farming done in flood affected area and diversified farming provided additional income to farmers. Besides this, technical support also provided (10000) to those farmers which are engaged in fish farming.

Fish rearing and pond management

Table -4.5.1: KVK wise technologies demonstrated under Management of fish ponds in Madhya Pradesh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Datia	Composite Fish Culture in Harvested rainwater in farm ponds	Seed Catla, Rohu, Mrigal	03	03	18.30	8.88	100
Guna	Fish farming	Rohu, Katla, Mrigala	1	0.4	5.00	3.65	36.98
Morena	Training Maintenance of fish point , proper dose food ,grain and disease control of fish	Manuring should be checked or stopped during winter season. But lime should be used at regular intervals. Water exchange should be done at regular intervals.	3	2.0	15	12.00	25.00

Table -4.5.2: KVK wise technologies demonstrated under Management of fish ponds in Chhattisgarh

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Dantewada	Releasing of fingerlings in community pond	9000 fingerlings released species common carp	06	2.4	6	2.08	40

Table -4.5.3: KVK wise technologies demonstrated under Management of fish ponds in Odisha

KVK	Technology demonstrated	Critical input (Variety, Fertilizer / Chemicals doses,)	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output*		% increase
					Demo	Local	
Ganjam-I	Floating fish feed management with yearling rearing	Yearlings and feed	04	1.2	30.4	23.6	28.8
Kendrapara	Demonstration of IMC & intercropping of middle carp	IMC & middle carp, feed, medicine	10	1	32.4	22.5	44

4.6 Breed up gradation

The breed up-gradation is very important part of animal husbandry and fishery. In Madhya Pradesh, one KVK conducted one demonstration and benefited 23 farmers by replacing the low yielding local breed with lalit puri duck. Similarly in Odisha, breeds black Bengal goat provided to farmers by which total 2 farmers were benefited.

5

INSTITUTIONAL INTERVENTIONS MODULE

Strengthening the existing institutional interventions or initiating new ones relating to seed bank, fodder bank, commodity groups, custom hiring centre, collective marketing group and introduction of weather index based insurance and climate literacy through a village weather station and awareness developed benefitted 2220 number farmers of NICRA village in zone IX.

Salient achievements

- Climate literacy benefitted 431 farmers using village level weather station.
- Collective marketing benefited 150 farmers.
- A total of 228 farmers were benefited under commodity groups.
- Using fodder bank 75 farmers benefited.
- Seed bank benefited 533 farmers.
- Custom hiring centre benefited 803 farmers.

5.1 Seed bank:

Under institutional interventions activities on seed bank of paddy (MTU 1010), pigeon pea (ICPL 88039), green gram (PDM-139), mustard (RH-749), chickpea (JG-14), barley (JB-1) , soybean (JS-9560, JS-9305) and wheat (JW-3020) , respectively with a quantity of 20.5q, 40q, 3q, 2q, 0.75q, 2q, 0.43q and 13.12q of seed, which was distributed among 444 farmers. Result showed that KVK Morena have developed a seed processing unit which earned Rs. 8.00 lakh / year from pigeon pea, wheat and chickpea with a quantity of 40 q seed which distributed among 80 farmers for the Kharif season in Madhya Pradesh.

Table -5.1.1: KVK wise technologies demonstrated under seed bank in Madhya Pradesh

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Balaghat	Paddy seed	25-30 Rs/qt	Groups	MTU 1010, Indira Barani	20	18
Morena	Seed bank	Rs. 8.00 lakhs/ year	One society had been developed a seed processing unit.	Pigeon pea ICPL -88039, UPAS 120, PUSA 991,992 2001 Wheat MP-4010, RVW-4106 ,Chik pea JaKi -9218,	80	40
Satna	Green gram	20 Kg	Seed	PDM-139	05	0.2
Satna	Rice	250 Kg	Seed	Pusa Basmati-1509	15	2.5
Satna	Mustard	200 Kg	Seed	RH-749	10	2
Satna	Chickpea	75 Kg	Seed	JG-14	04	0.75
Satna	Barley	200 Kg	Seed	JB-1	10	2
Satna	Wheat	400 Kg	Seed	JW-3020	10	4
Guna	Soybean	-	1 group has developed	JS 93-05, 95-60,	160	436
Guna	Wheat	-	1 group has developed	JW 3173, HI 1544	60	912
Guna	Gram	-	1 group has developed	JG 6, JG130,	70	280

In Chhattisgarh, activates on seed bank of paddy and pigeon pea with a quantity of 10q and 50 q of seed, which was distributed among 45 farmers.

Table -5.1.2: KVK wise technologies demonstrated under seed bank in Chhattisgarh

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Bilaspur	Paddy	50	Storage	Sahbhagi / Rajeshwari	20	10
Bilaspur	Pigeon pea	2	Storage	Rajiv lochan /ICPL 88039	25	50

In Odisha, activity on seed bank of paddy and black gram with a quantity of 53q and 14 q of seed, which was distributed among 44 farmers.

Table -5.1.3: KVK wise technologies demonstrated under seed bank in Odisha

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Ganjam-1	Sahabhagi dhan	16	Seed production technique	seed	16	28
Kalahandi	Black gram	2	Farmers are trained how to manage the crop for seed production purpose. Rouging operation of the crop, field selection, drying method, maintenance of moisture % , storage technique	Fungicides	20	14

5 .2 Fodder Bank

Under institutional interventions, in Madhya Pradesh, activity on fodder bank of barseem, oat, barley and wheat with a quantity of 150q and 980 tons which was distributed among 75 farmers. Results showed that the seed production cooperative societies which working for farming community earned Rs. 8.00 lakh/year from fodder even in adverse condition.

Table -5.2.1: KVK wise technologies demonstrated under fodder bank in Madhya Pradesh

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Morena	Fodder bank	Rs. 8.00 lakhs/ year	seed production co. societies were registered and working for farming community	Barseem, Oat, Barley,	50	150
Guna	wheat		1 group	wheat straw	25	980

5. 3 Commodity Groups

Under this activity, in Madhya Pradesh, total 228 farmers involved in Village **Climate Risk Management Committee (VCRMC)** while was constituted after in-depth discussion with the villagers about the mitigation of the climatic vulnerabilities of the villages and the strategies to be adopted under NICRA. The members of the committee were selected by the villagers under the facilitation of KVKs where NICRA was being implemented. VCRMC is operational with a bank account in their name being jointly handled by the President of VCRMC and the programme coordinator/ KVK Head of the KVK concerned.

Table -5.3.1: KVK wise technologies demonstrated under Commodity Group

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Datia	Custom hiring centre	1	Farmers of NICRA village	Agricultural implements	5	08 implements
Morena	Commodity groups	1	One society had been developed a climate risk processing unit. in village level	All facility in maintenances climate seed, implement , fertilizers and other document	40	20

5.4 Custom Hiring Centre:

Under this activity, using different agricultural equipments like, MB plough, hand wheel hoe, seed-cum-fertilizer drill, Rotavator, Post-hole digger, Power sprayer, reaper, sprinkler set, leveller, ferti cum seed drill, multi crop thresher, FIRB seed drill, cultivator, harrow, thresher, power spray pump, dora, chaff cutter has been performing very well which helped 311 farmers and covered 243.14 ha area in timely completion of agricultural operations during the crop season being reported in Madhya Pradesh. In Chhattisgarh, 215 farmers which covered 141 ha area.

Table -5.4.1: KVK wise technologies demonstrated under Custom Hiring Centre in Madhya Pradesh

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Datia	M.B. Plough	Rs 10/hr	Soybean,	-	44	77.16
Datia	Leveler	Rs. 10/hr	Rice	-	15	8.5
Datia	Rotavator	Rs 20/Hr	Sybean, Black gram	-	10	4
Datia	Ferti cum seed drill	Rs 20/Hr	Mustard, Wheat, gram	-	27	16.8
Datia	Multi crop threser	Rs 50 /hr	Mustard, Soybean, Wheat	-	13	36.2
Datia	FIRB Seed drill	Rs 25/hr	Soybean	-	17	15.48

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Morena	Zero till seed drill, ridge bed planter, Leveller, M.B.Plough, Sprinkler set, Disc harrow, Power sprayer,	As per KVK approved rate	In-situ moisture conservation &use in difference NICRA activity	Wheat ,Barley, mustard, chickpea, Green gram, maize and soybean	100	0
Guna	MB Plough	1000	-	-	10	10
Guna	Hand wheel hoe	200	-	-	20	20
Guna	Seed cum Fertilizer –drill	1500	-	-	10	10
Guna	Rotavater	1500	-	-	10	10
Guna	Power sprayer	3000	-	-	20	20
Guna	Reaper	1500	-	-	10	10
Guna	Sprinkler set	100	-	-	5	5

Table -5.4.2: KVK wise technologies demonstrated under Custom Hiring Centre in Chhattisgarh

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Bilaspur	Paddy	8 ha		Reaper	20	130
Dantewada	Custom hiring centres for timely Ploughing /field preparation/ planting/ irrigation/threshing	14 Implements	Training organized for agriculture implements & there uses for crop production	All 14 implements are actively work under CHC	195	135

In Odisha 277 farmers covered 62 ha area in timely completion of agricultural operations during the year under report.

Table -5.4.3: KVK wise technologies demonstrated under Custom Hiring Centre in Odisha

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Ganjam-I	Sprinkler (2 Nos)	Rs. 10/- per pipe Per day	Irrigation	Implements	13	6
Ganjam-I	Power tiller	Rs. 40/- per hour	Ploughing	Implements	34	21
Ganjam-I	Power sprayer (1 nos.)	Rs. 20/- per hour	Disease control	Implements	14	11

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Ganjam-I	Diesel Water pump Set (2HP)	Rs. 30 /-per hour	Irrigation	Implements	11	5
Ganjam-I	MB plough	Rs 20 /- per hour	Tillage	Implements	9	4
Ganjam-I	Garuda Mini weeder	Rs 20 /-per hour	Weeding	Implements	14	4
Ganjam-I	Reaper	Rs. 100/- per hour	Harvesting	Implements	7	5
Ganjam-I	Power thresher cum	Rs. 20/- per hour	Threshing cum winnowing	Implements	12	0
Kendrapara	Power tiller	Rs. 200 per hr	Ploughing	Implements	35	1
Kendrapara	Power sprayer	Rs. 20 per hr without fuel	Disease controll	Implements	28	2
Kendrapara	Knapsack sprayer	Rs. 5 per hr	Disease Management	Implements	35	1
Kendrapara	Diesel Water pump set (3HP)	Rs. 20 without diesel	Irrigation	Implements	35	1
Kendrapara	Diesel Water pump set (3.5 HP)	Rs. 20 without diesel	Irrigation	Implements	30	1

5. 5 Collective marketing

Through collective marketing system related KVKs motivated farmers for collection of commodity and directly approach to mandi or marketing place where they get better maize , soybean, pigeon pea, wheat, barley, rice and mustard instate of individual sealing of commodity. Under this intervention, total 150 farmers were participated in as per market demand of different corps in Madhya Pradesh.

Table -5.5.1: KVK wise technologies demonstrated under Collective marketing

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Morena	Collective marketing	-	20	Maize ,soybean , pigeon pea wheat, barley, r ice and mustard	150	As per market demand

5.6 Climate literacy programmes

To overcome the vulnerabilities in relation to climate, technical awareness development programme including different improved production technologies with proper guideline and provided weather information to farmers through automatic weather station and ZARS of district. A total of 431 farmers involved in Madhya Pradesh and it observed that through this activity farmer increasing their knowledge using mass media technology.

Table -5.6.1: KVK wise technologies demonstrated under Climate literacy programmes in MP

KVK	Details of activity			Critical input (Breed / Variety / Medicine doses,)	No. of farmers	Quantity
	Name of crops / Commodity groups / Implements	Quantity / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups			
Balaghat	All crops/ Farmers	8 massage	Forecasting	-		-
Jhabua	Whether based KMS (Rain gauge, Stevenson screen (Max. Mini. Dry and Wet Bulb thermometer)	Twice in week		-	71	-
Morena			20	through KMS from IAAS services ZARS	200	-
Satna	Farmers advisory for Kharif crops to protect the crop from drought	-	Spray either 2% urea or DAP at the time of pod development stage to minimize losses due to dry spells	Message in hindi	37	-
Satna	Farmers advisory for rabi crops to protect the crop from frost	-	Do smoke in north and western side of plot, irrigate the field if possible by sprinkler irrigation	Message in hindi	39	-
Satna	Warning regarding raining at crop maturity stage	-	Farmers were advised to pick up/ lift their harvested crop to avoid the losses due to rains	Message in hindi	42	-
Satna	Warning in case of heavy rains	-	Farmers were advised to drain out excess water from their field	Message in hindi	42	-

6

CAPACITY BUILDING

Training has been considered a key component for updating the knowledge and imparting the new skill to the participants. There was great emphasis on the organizing trainings both for the farmers as well as for the trainers so that latest knowledge and skill could be maintained in the KVKs. In total, 223 courses benefitted 5524 participants including farmers and farm women and rural youth. These training not only improve the technical skill but it is also useful income generation, resource conservation technology, climate awareness etc. in farmer level.

Table-6.1: Capacity Building by NICRA KVKs

Title of the programme	Number of programmes	No. of Beneficiaries		
		Male	Female	Total
Agroforestry	2	46	5	51
Crop Diversification	11	209	67	276
Employment Generation	11	116	149	265
Farm implements and machineries	11	209	49	258
Fodder and feed management	2	43	18	61
Integrated Crop Management	52	925	287	1212
Information Conservation Technology	9	336	37	373
Integrated Disease Management	6	58	15	73
Integrated Farming System	1	16	4	20
Integrated Nutrient Management	9	151	69	220
Integrated Pest Management	8	153	27	180
Integrated Weed Management	6	133	21	154
Livestock Management	28	459	118	577
Natural Resource Management	25	586	114	700
Nursery Raising	7	170	29	199
Pest and Disease Management	16	309	88	397
Resource Conservation Technologies	6	95	35	130
Value addition	6	136	62	198
Vermicompost	7	105	75	180
Grand Total	**223**	**4255**	**1269**	**5524**

Seed and fertilizer distribution

Construction of Vermi compost tank

Participants in group programme

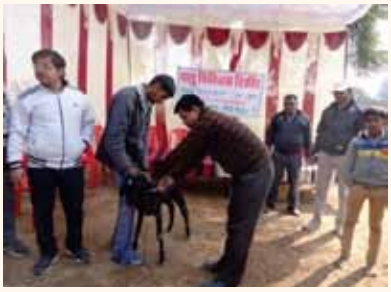
7

EXTENSION ACTIVITIES

In order to create awareness among the farmers in region and as a part of KVK mandate 445 different extension activities were organized by NICRA KVKs during 2016-17 which benefitted 7487 farmers in the district.

Thematic area	No. of activity	No. of Beneficiaries		
		Male	Female	Total Beneficiaries
Agro advisory services	196	1419	68	1487
Animal Health camp	5	348	29	377
Awareness campaigns	24	673	289	962
CBD crop breed demonstration	1	15	3	18
Crop production management	12	303	31	334
De-worming camp	1	43		43
Diagnostic Visit	28	200	62	262
Enterprises for self employment	4	14	26	40
Environmental Day	1	50	10	60
Exposure Visit	10	248	63	311
Farmer Scientists Interaction	2	40	11	51
Farmers fair participation	2	64	46	110
Field Day	33	830	288	1118
Group discussion	18	260	35	295
Income generating training programme	1	23	0	23
Information technology	5	112	10	122
Integrated farming system	7	99	28	127
Integrated crop management	2	43	0	43
Jai Vigyan Jai Kissan diwas	1	15	35	50
LPM	1	18	6	24
Management of horticultural crops	6	14	8	22
Method Demonstration	10	106	52	158
Motivation and awareness	3	103	50	153
Mushroom Cultivation	2	28	5	33
Natural Resource Management	5	32	6	38

Thematic area	No. of activity	No. of Beneficiaries		
		Male	Female	Total Beneficiaries
Parthenium week	1	10	30	40
Pest & disease management	4	28	7	35
Plant protection	3	42	7	49
Popularization and demonstration of improved technologies	6	180	15	195
Pradhan Mantari Fasal Beema Yojna	1	50	10	60
Use of Reaper	13	8	13	21
Krishak Sangosthi	2	104	3	107
Seed cum fertilizer drill	18	5	9	14
Soil health card	3	184	36	220
Speed Composting	2	22	4	26
Strengthen - kisan club	1	13	6	19
Strengthen - SHG	2	40	20	60
Swachh Bhart Abhiyan	2	50	60	110
Vegetable Production	3	54	12	66
Women Day	0	0	50	50
Workshop	1	32	9	41
Youth day	1	50	25	75
Other	2	31	7	38
Grand Total	**445**	**6003**	**1484**	**7487**


Animal Health camp


Exposure visit


Method demonstration of Oyster mushroom


Soil health card


Awareness campaigns


Swachha Bharat Campaign

8

STATUS OF CUSTOM HIRING CENTERS

KVKs wise custom hiring report during 2016-17

S. No.	Name of KVK	Area covered	Farmer covered	Income generated (Rs.)
Madhya Pradesh				
1	Datia	203.14	152	12240
2	Jhabua	50.0	167	10000
3	Morena	439.1	1011	104765
4	Ratlam	201.75	232	46825
5	Satna	68.0	123	34000
6	Tikamgarh	841.0	666	-
	Total	**1802.99**	**2351**	**207830**
Chhattisgarh				
7	Bilaspur	13	33	22000
8	Bhatapara	23.21	33	9300
9	Dantewada	135.1	184	23900
	Total	**171.31**	**250**	**55200**
Odisha				
10	Ganjam-I	56.0	114	10400
11	Jharsuguda	1.5	6	1850
12	Kendrapara	75.0	163	6425
	Total	**132.5**	**283**	**1867**
	G. Total	**2106.8**	**2884**	**281705**

1. KVK Datia, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	M.B.Plough	March 2011	180	77.16	1800	44
2.	Leveler	March 2011	34	8.5	340	15
3.	Rotavator	March 2011	10	04	200	10
4.	Ferti cum seed drill	March 2011	75	16.8	1500	27
5.	Multi crop thresher	March 2011	152	81.2	7500	39
6.	FIRB seed drill	-	36	15.48	900	17

2. KVK Jhabua, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Tractor mounted sprayer	Feb 2016	21	08	210	19
2.	Seed cum fertilizer drill with Ridge & Furrow attachment	Feb 2016	38	11	760	21
3.	Multi crop thresher	Feb 2016	42.45	18	8490	89
4.	Cultivator	Feb 2016	27	13	540	38

3. KVK Morena, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Zero till seed drill,	Feb 2012	165	85	10765	250
2.	Seed cum fertilizer drill	Feb 2012	148	32	3000	170
3.	Tractor drawn bad planter	Feb 2012	75	85	5000	120
4.	Multi crop turbo seeder	Feb 2012	165	25	2500	25
5.	Tractor drawn land leveller	Feb 2012	125	35	2500	22
6.	Disc Tractor drawn R.B. plough	Feb 2012	125	25	1200	45
7.	Tractor drawn disk harrow	Feb 2012	28	25	1800	40
8.	High Power sprayer aspee	Mar 2012	25	2.1	1000	24
9.	Power sprayer cum duster	Feb 2012	45	15	1800	140
10.	Hand sprayer	Feb 2012	58	15	1200	40
11.	Seed treated drum	Feb 2012	15	-	500	35
12.	Seed Cum Fertilizers drill with raised bed furrow	Mar 2012	80	70	70000	65
13.	Reaper (Laxmi tractor farm with complete assed)	Mar 2012	15	25	3500	35

4. KVK Ratlam, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Reversible plough (Hand Operated)	Mar 2016	244	51	9760	62
2.	Hand operated mini reversible plough	Mar 2016	10	2.5	250	3
3.	Seed grader cum Garlic bulk breaker	Mar 2016	116	1000 q.	4105	40

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
4.	Rotavator	Mar 2016	410	100	29200	75
5.	Ridge and furrow seed drill	Mar 2016	10	4	Ni	13
6.	Broad bed & furrow seed drill	Mar 2016	20	8	500	12
7.	Bed maker tawa cum garlic planter	Mar 2016	5	1	200	1
8.	9 tine Heavy duty cultivator	Mar 2016	70	35	2800	25
9.	Hand operated Fertilizer spreader	Mar 2016	1 Day	0.25	10	1

5. KVK Satna, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	MB Plough	Dec 2011	50	10	5000	19
2.	Seed cum fertilizer drill	Mar 2011	57	11.4	5700	23
3.	Harrow	Mar 2011	44	8.8	4400	17
4.	Cultivator	Mar 2011	189	37.8	18900	64

6. KVK Tikamgarh, Madhya Pradesh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Sprinklers set	Mar 2011	168	105	-	68
2.	Wheal hoe	Mar 2011	360	45	-	24
3.	Cheff cuter	Mar 2011	178	24	-	15
4.	Reaper	Mar 2011	20	34	-	30
5.	M.B. Plough	Mar 2011	90	234	-	69
6.	Rotavetar	Mar 2011	15	34	-	26
7.	Sprayer	Mar 2011	234	49	-	40
8.	Seed- cum-ferti-drill	Mar 2016	70	158	-	94
9'	Ridge bed planter	Mar 2016	25	78	-	104
10.	Seed- cum-ferti-drill	Mar 2017	156	50	-	156
11.	Ridge bed planter	Mar 2017	40	30	-	40

7. KVK Bilaspur, Chhattisgarh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Reaper	Mar 2011	13	8	13000	20
2.	Seed cum fertilizer drill	Mar 2011	18	5	9000	13

8. KVK Bhatapara, Chhattisgarh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Sprinkler Set	Mar 2011	2 days	03	600	4
2.	HDPE Pipe	Mar 2011	20 days	15	5380	22
3.	Seed Drill cum fertilizer	Mar 2011	2 days	-	1050	2
4.	Multicrop Thresher	Mar 2011	1 hr	2	250	2
5.	TD Leveller	Mar 2011	1	1.21	100	1
6.	Sprayer	Mar 2011	3 days	2	120	2

9. KVK Dantewada, Chhattisgarh

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Paddy transplanter	Mar 2016	11	1.6	1200.00	3
2.	Seed cum fert.Drill 9 Tynes	Jan 2012	27	10	1350.00	18
3.	Tractor Drawn Rotavator	Mar 2011	98	29.5	4900.00	37
4.	Tractor Drawn Land Leveller	Mar 2011	80	20	1000.00	12
5.	Tractor Drawn Thresher	Mar 2011	10	3	2700.00	5
6.	Moter Drawn Reaper	Mar 2011	23	6	2300.00	
7.	Tractor Drawn Cultivator	Mar 2011	194	53	9700.00	79
8.	Hand operated Paddy Weeder	Mar 2011	240	12	750.00	30

10. KVK Ganjam-I, Odisha

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Sprinkler (2 Nos)	Mar 2011	40	6.0	800	13
2.	Power sprayer (1 nos.)	Mar 2011	28	11	560	14
3.	Diesel Water pump Set (2HP)	Mar 2011	24	5.0	720	11
4.	MB plough	Mar 2011	20	4.0	400	09
5.	Garuda Mini weeder	Mar 2011	48	4.0	960	14
6.	Reaper	Mar 2016	24	5.0	2400	07
7.	Power Thresher cum Winnower	Mar 2016	62		1240	12
8.	Power tiller	Mar 2016	82	21.0	3320	34

11. KVK Jharsuguda, Odisha

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1	Power Tiller	Mar 2016	8	1.5	1850	6

12. KVK Kendrapara, Odisha

S. No.	Name of implements	Month & Year of Purchase	Operational performance		Income Generated (Rs.)	No. of Farmers benefited
			No. of hrs.	Area covered (ha)		
1.	Power tiller	Mar 2010	26.25	22	5250	35
2.	Power sprayer	Mar 2010	12.5	18	250	28
3.	Knapsack sprayer	Mar 2010	40	15	200	35
4.	Diesel Water pump set (3HP)	Mar 2010	22.5	8	450	35
5.	Diesel Water pump set (3.5 HP)	Mar 2010	13.75	12	275	30

9

MONITORING OF NICRA PROJECTS

Name of KVK	Name of NICRA Village	Name & designation of visitors	Date of visit
Balaghat	Koste	Dr. Sanjay Vaishampayan, Senior Scientist, DES, JNKVV, Jabalpur	
Balaghat	Koste	Sh. S.S. Maravi, Project Director ATMA, Balaghat	
Datia	Sanora, Barodi	Dr. S. R. K. Singh, Principle Scientist, ATARI, Jabalpur	12.08.16
Datia	Sanora, Barodi, kharag, Rajpur	Dr. Tushar Athare, Scientist, ICAR, ATARI, Jabalpur	22.10.16
Datia	Sanora, Barodi, kharag, Rajpur	Dr. Abhijit Dabhole, Member, Third party Evaluation Team of NICRA Project	30-31.01.17
Jhabua	Chapari	Dr. S R K Singh, Principal Scientist	25.09.16
Morena	Jigni	Shri Balveer Singh Dandotiya , MLA-Dimani, Morena	05.04.16
Morena	Jigni	Shri Rajkishor Bajpai , DRCS, Morena	05.04.16
Morena	Jigni	Shri Rustam Singh Ji, Miniter of Health and family welfare, Govt. of India	20.11.16
Morena	Jigni	Shri Munshi Lal, Chairman Kukut Nigam, M.P.	20.11.16
Morena	Jigni	Shri Subedar Singh, MLA Joura	20.11.16
Morena	Jigni	Dr. S.K. Malhotra, Agriculture Commissioner Govt. of India New Delhi	20.11.16
Morena	Jigni	Mr. Vijay Chourasia, Deputy Director Agriculture Morena	18.11.16
Morena	Jigni	Mrs. Geeta Inder Singh Harshana, President Zila Panchayat Morena	05.12.16
Ratlam	Amba	Mr. Anoop Kumar Singh, SDM , Jaora (Govt. of MP)	02.06.16
Ratlam	Amba	Dr. S. R. K Singh Principal Scientist (AE) I/C NICRA, ICAR- ATARI Zone-IX, Jabalpur	12.01.17
Ratlam	Amba	Dr. Gaikawad, Scientist NRC-Pomegranate, Solapur (MS)	12.01.17
Tikamgarh	Kanti	District Collector Smt. Priyanka Das	17.08.16

Name of KVK	Name of NICRA Village	Name & designation of visitors	Date of visit
Bilaspur	Kargahana	Dr. K.L. Shrivastav	07.02.17
Bhatapara	Bakulahi	Rajeswar Jonnalagadda	17-18.01.17
Bhatapara	Bakulahi	Dr. S.R.K Singh, Principal Scientist, ICAR-ATARI, Jabalpur	20.12.16
Dantewada	Hiranar	Dr. D.S. Thakur, Dean of College of Horticulture, Jagdalpur Dr. S. C. Yadav, Asst. Prof. S.G. CARS, Jagdalpur	11.09.16
Jharsuguda	Bhoimunda	Dr. M.P Nayak, Jt. Director, DEE, OUAT, BBSR	28.12.16
Kalahandi	Pipalpada	Dr. R.K. Pattanaik, Associate Dean, COA, Bhawanipatna	13.05.16
Kalahandi	Pipalpada	Mr. Laxaman Kumar Palta Singh, DDA, Kalahandi	13.05.16
Kalahandi	Pipalpada	Dr. Subhash Chandra Mohapatra, Joint Director, DEE, OUAT	28.11.16

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BUDGET ALLOCATED AND UTILIZED

HEAD-WISE BUDGET FOR THE YEAR 2016-17

(Rupees in lakhs)

S.No	Name of the ZPD/ KVK	BE			RE			Expenditure
		Operational expenses (Labour, skilled staff, POL, supplies etc.,) contractual services including RA/SRF etc.	NRC	Total	Operational expenses (Labour, skilled staff, POL, supplies etc.,) contractual services including RA/SRF etc.	NRC	Total	
1	ATARI	10	0.50	10.50	8.25	0.00	9.65	8.37793
2	Balaghat	10.4	0.60	11.00	9.60	0.00	10.08	6.24705
3	Bilaspur	12.5	0.60	13.10	10.65	0.00	11.13	10.38147
4	Chhatarpur	8.5	0.50	9.00	7.75	0.00	8.23	12.5551
5	Dantewada	9.4	0.60	10.00	8.65	0.00	9.23	9.22450
6	Datia	15.5	0.60	16.10	14.50	0.60	15.68	15.16990
7	Ganjam	14.5	0.60	15.10	13.00	0.00	13.58	5.57600
8	Guna	11.4	0.60	12.00	10.50	0.00	10.98	9.29711
9	Jharsugda	9.4	0.60	10.00	8.60	0.00	9.08	4.69545
10	Kandrapara	9.4	0.60	10.00	8.60	0.00	9.08	6.02263
11	Morena	10	0.50	10.50	9.20	0.00	9.68	4.65982
12	Raipur	11.5	0.50	12.00	9.60	0.00	10.08	8.26911
13	Satna	14.5	0.50	15.00	13.60	0.00	14.08	11.39268
14	Sonepur	9.5	0.50	10.00	8.75	0.00	9.23	6.01200
15	Tikamgarh	8.5	0.50	9.00	7.80	0.00	8.28	4.34278
16	Ratlam	13.5	0.50	14.00	12.60	0.10	13.18	11.13504
17	Jhubua	12.5	0.60	13.10	11.65	0.00	12.13	12.13000
18	Kalahandi	12.5	0.60	13.10	11.65	0.00	12.13	9.46867
	Total	**203.5**	**10**	**213.5**	**184.95**	**0.70**	**195.51**	**154.95724**

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किसानों का हमसफर
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