

National Innovations on Climate Resilient Agriculture Technology Demonstration Component

Annual Report 2021-22

Name of KVK: Bhadrak

Nature of Climatic Vulnerability: Frequent flood

Name of Adopted Villages: Fatepur

Brief description of the villages:

Name of the village	Fatepur
District	Bhadrak
Block	Dhamnagar
No. of households	212
Total cultivated area (ha)	310ha
Major soil types	Older alluvial soils, clay loam, high water holding capacity
Mean annual rainfall (mm)	1427 mm
Climate vulnerability	Regular Flood, erratic rain, lowlying areas with prolonged water stagnation

Name of PI/Co-PI/Associated Scientist/SRF:PI- Dr. Aurovinda Das

Co-PI- Dr. Jyotshnarani Maharana

SRF- Ms. Bhanumati Dhinda

I. Module I: NRM

Table. Performances of water harvesting and recycling for supplemental irrigation

Technology demonstrated	No. of farmers	Area (ha)/Unit	Output (q/ha)	Economics of demonstration (Rs/ha)		
				Gross Cost	Net Return	BCR
Renovation of pond for fish production and irrigation	25	0.4 ha	175 (vegetables)	85,000	1,15,000	2.35
Total	25					

Enclosed 2/3 photos



Repair and renovation of community pond

Table: KVK wise rainwater harvesting structures developed

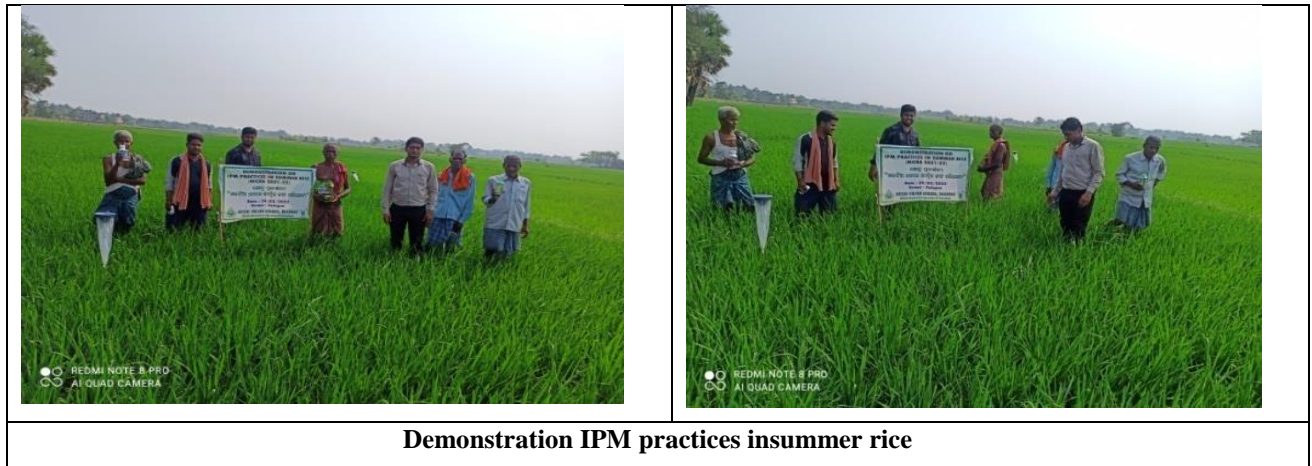
RWH structures	No.	Storage capacity (cu.m)	No. of farmers	Protective irrigation potential (ha)	Increase in cropping intensity (%)
Pond Renovation	1	5280	25	8	12
Total	1	5280	25	8	12

II. Module II: Crop Production**Table. Performance of other demonstration under crop production module**

Technology demonstrated	No of farmers	Area (ha)	Yield(q/ha)		% increase	Other parameters		Economics of demonstration (Rs./ha)		
			Demo	Local		Demo	Local	Gross Cost	Net Return	BCR
Foliar spray of water soluble fertilizers in greengram	20	6	3.75 (crop partly damaged by rain)	3	24.9%	No of pods/plant-24.5	No of pods/plant19-2	17057	5462	1.32
Heat tolerant brinjal(var-Akshita)	25	0.2	320	290	10	No of fruits/plant-22	No of fruits/plant -18	120300	198300	2.6
Heat tolerant chilli (var-Daya)	25	0.2	102	90	13	No of fruits/plant -120	No of fruits/plant -108	56700	47050	1.85
IPM practices for summer rice	10	1	43.2	36.4	18.68	Dead Heart-6.31% Leaf Damage-10.5%	Dead Heart-13.6% Leaf Damage -18.2%	45700	34200	1.26
IPM for YMV management in greengram	10	1	6.25	5.5	13.63	No of whitefly/plant-7.3	No of whitefly /plant-14.5	18200	19300	2.06
Use of plant growth regulator in cucurbits	20	1.6	80	68	17%	Node at which first flowers appears-9 th	Node at which first flowers appears -15 th	66100	13900	1.21
Pest management in brinjal	10	2	320	290	10.34%	Fruit & shoot borer-0.5/plant	Fruit & shoot borer-2/plant	12000	260200	2.67
						Mean damaged fruit/plant -1.67%	Mean damaged fruit/plant-2.11%			
Leafy vegetables – income generating (Amaranthus)	25	0.1	87	70	24	No of leaf/plant-14	No of leaf/plant-10	87090	22300	1.3
Leafy vegetables – income generating(Ipomea)	25	0.1	90	75	20	No of leaf/plant -30	No of leaf/plant-19	90600	25200	1.36

Hermetic storage bags for safe storage of grain	50					Storage pest-0%,	Storage pest 12%,			
Income generation activities (Mushroom production technology etc)	40		0.8 kg/bed	-	-			6000/family	5900/family in 3 months	2
Total	260	12.2								

Mention the variety and Enclosed 2/3 photos





Use of Hermetic storage bag for safe storage of grain/seed



Demonstration on leafy vegetables as income generating activity



Demonstration on mushroom production technology



Application of plant growth regulator in vegetables

III. Module III : Livestocks and Fisheries

Table. Performance of composite and cat fish in the renovated ponds

Technology demonstrated	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output* (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross return	Net Return	BCR
Fish production in community tank	32	04/02	Yield:31.25	21.5	45.34	2,25,000	123000	2.2
Round the year yearling production	16	04/0.4	Yield:32	17	88.2	1,62,000	97800	2.5
Total	48					3,87,000	220800	

Enclosed 2/3 photo



Fish production in community tank

Table. Performance of livestock demonstration in NICRA adopted villages

Technology demonstrated	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output* (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Backyard poultry –Rainbow rooster	15	15	1200g/bird (3month)	450 g	166	120/bird	180/bird	2.9

Enclosed 2/3 photo



Backyard poultry –Rainbow rooster

IV. Module IV: Institutional Intervention

Table. Details of the various institutional interventions

Interventions	No.of KVKs	Details of activity			No. of farmers	Unit/ No. /Area (ha)
		Name of crops / Commodity groups / Implements	Quantity(q) / Number / Rent / Charges	Technology used in seed / fodder bank & function of groups		
Custom hiring centre	1	Power weeder, Seed cum fertilizer drill, Diesel pump set, Sugarcane bud chipper, Rain gauge, Digital weighing balance.				
Total						

V. Village Climate Risk Management Committee (VCRMC)

A village level committee was constituted in NICRA village Fatepur, Dhannagarblock for the identification of the constraints in various typologies for the preparation of action plan during the year 2021-22. Group discussions were organized to discuss the intervention to be made during 2021-22.



Village Climate Risk Management Committee (VCRMC)

VI. Custom Hiring Centers:

Photographs of Farm implements and Machinery at NICRA Adopted village





Custom hiring center

Transport of equipment to NICRA Village

Use of Agricultural sprayer



Seed cum fertilizer drill

VII. Capacity Building

Thematic area	Topic of the training	No. of Courses	No. of beneficiaries		
			Male	Female	Total
Crop Management	Use of plant growth regulator in vegetable crops	1	5	25	30
Integrated Crop Management	Integrated crop management in greengram	1	11	19	30
Livestock and Fishery Management	Production of table sized fish	1	13	17	30
Income generating activity	Mushroom production technology	1	9	21	30

Enclosed 2/3 Photographs



Training on integrated crop management in greengram



Capacity building training on mushroom production technology



IPM in summer rice



Use of plant growth regulator in vegetable crops



Production of table sized fish in community tank

VIII. Extension Activities

Name of the activity	Number of Programmes	No. of beneficiaries		
		Male	Female	Total
Awareness program on soil testing	1	44	56	100
Diagnostic visit	3	45	30	75
Exposure visits	1	14	6	20
Group Discussion	9	104	121	225
Scientist visit to field	40	124	151	275
Total	54	331	364	695

Enclosed 2/3 photographs



Awareness program on soil testing



Diagnostic visit



Exposure visit programme



Group discussion with NICRA village farmers



Scientist visit to field

XII. Success stories of NICRA Village Farmers with photographs

Leafy vegetables for income generation under NICRA programme in Bhadrak

The village Fatepur was identified for NICRA- TDC for the year 2021-22. The village is affected by frequent floods. The vegetable crops are damaged by flood water. Mostly vegetables are grown after recession of flood during late rabi and summer season. But the

water is scarce during summer season. The medium irrigated land during summer 2022 was selected for demonstration when farmers were facing the problem of low income and water scarcity. The farmers practice was to grow leafy vegetables of local variety in small patches. Therefore the demonstration on income generation by leafy vegetables was conducted during 2021-22. Leafy vegetables like Amaranth, Ipomoea were given for demonstration. A total of 25 farmers have conducted demonstration on leafy vegetable. Within a small period of 2 months farmers could harvest the crop and get a net income of Rs22000.00 from Amaranthus and Rs 25000.00 from *Ipomoea aquatica*. The cultivation of leafy vegetables in summer season during peak water scarcity was remunerative for the farmers.



Economics of the technology:

Technology demonstrated	No. of farmers	Area (ha)	Yield(q/ha)		% increase	Other parameter		Economics of demonstration (Rs./ha)		
			Demo	Local		Demo	local	Gross Cost	Net Return	BCR
Leafy vegetables – income generating (Amaranthus)	25	0.1 ha	87	70	24	No of leaf/plant-14	No of leaf/plant-10	65000	22000	1.3
Leafy vegetables – income generating (Ipomea)	25	0.1 ha	90	75	20	No of leaf/plant-30	No of leaf/plant-19	65000	25000	1.36

Use of Hermetic storage bag for safe storage of black gram

In the identified NICRA village, Fatepur of KVK, Bhadrak pulse like green gram and black gram are important pulse crop of irrigated medium land and low land respectively. The pulse seed crop is affected mainly by pulse beetle *Callosobruchus maculatus* during storage in normal gunny bags which is the farmers practice. Adult and grub of pulse beetle feed on the grain by making a small hole. Infested stored seed can be recognised by the white egg on the seed surface and round exit holes with flap of seed coat. Demonstration on Hermetic

storage bag was conducted during 2021-22 including 50 beneficiaries. No pulse beetle incidence was seen in hermetic storage bag while 12 percent marked in farmer practice.



Integrated pest management practices in summer rice under NICRA programme in fatepur village, Dhamnagar.

Under NICRA programme, KVK, Bhadrak, adopted one village i.e. Fatepur, Dhamnagar during 2021-22. After the baseline survey it was found that the farmers are practicing chemical method of pest management in rice cultivation. They are applying pesticides at higher doses and unaware about the IPM practices in rice. As per the discussion taken in the village, 10 nos of farmers were selected for demonstration of IPM practices in summer rice in 5 acre.

The objective of the demonstration was to minimize the pest population with higher net return in summer rice by adopting the IPM strategy. The input like chlorantraniliprole 0.4G, Pheromone trap lure, BT, Neem oil, Lambda cyhalothrin, Trichocard were provided as IPM components under this demonstration. Under IPM practices in summer rice demonstration dead heart percentage was minimized to 6.31 % against 13.6% of local practice the net return obtained from the demonstration was 12200 per ha. After successful demonstration of the technology farmers were advised to take up it in kharif rice also motivating other farmers to adopt the technology

Economics of the technology before and after NICRA intervention during summer 2021-22

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Other parameter		Economics of demonstration (Rs./ha)		
			Demo	Local		Demo	local	Gross Cost	Net Return	BCR
Demonstration on IPM	10	2.5	43.2	36.4	18.68	Dead heart-	Dead heart	45,700	12,200	1.26

practices in summer rice						6.31%	13.6%			
						Leaf dama ge 10.5%	Leaf damag e 18.2%			

XV. Expenditure Statement of NICRA-TDC Budget during 2021-22

Name of KVK	FINAL RE				Expenditure (Rs)	Closing Balance 31.03.2022
	Contingencies (Rs)	TA (Rs)	NRC (Rs)	Total (Rs)		
KVK, Bhadrak	3,82,000	8,000	1,57,000	5,47,000	5,47,000	0