National Innovations in Climate Resilient Agriculture
Technology Demonstration Component

Annual Report 2023-24

Name of KVK:Puri

Nature of Climatic Vulnerability:Flood
Name of Adopted Villages:Jatipur
Brief description of the villages: Village- Jatipur of block Purisadar is consisting 72 households with geographical area of 77 ha. Nearly 85- 90% of the villagers used to get their livelihood from Agriculture and dairy. Flood due to South-West monsoon during kharif is the prime climatic constraint against agricultural productivity followed by the socio-economic condition of the villagers. They mostly grow crops like-summer paddy, brinjal and leafy vegetables in backyard.

Name of PI/Co-PI/Associated Scientist/SRF:
PI-Dr. Surya Narayana Mishra, Senior Scientist & Head, KVK, Puri
Co-PI-Dr. DipsikaParamjita, Scientist (Ag Engg), KVK, Puri
SRF- Mr. Pranaya Pradhan, KVK, Puri

I. Module I: NRM

Table. Performances of demonstration of in-situ moisture conservation technologies

Technology demonstrated		No. of farmers	Area (ha)	Yield (q/ha)	Economics of demonstration (Rs/ha)		
					Gross Cost	Net Return	BCR
Green manuring (dhaincha) in rice		10	2	44.1	48800	39400	1.80
Brown manuaring in rice							
Summer Ploughing in rice							
Azolla in Paddy							
Zero Tillage in wheat / Maize/ Others crops							
Repair of bund							
Horticultural production through land embankment development		17	0.22ha	408	334045	277955	1.83
Organic mulching in vegetables							
Mulching	Chilli	4	0.24	142	163000	278900	2.71
	Pointed gourd	2	0.24	continuing			
Any intervention not covered in above	Community Vermicompost unit	17	5units	45q	21290	31210	2.46
Total		**50**	**2.7/5 nos**				

Photos

Green manuring (dhaincha) in rice

Horticultural production through land embankment development

Mulching In Chilli

Community Vermicompost unit

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	10	0.2	37.0	205000	165000	1.8
Renovation of canal						
5% Model						
Bora bandh						
Renovation of Well for irrigation						
Bund making leveling in paddy field						
New water harvesting structure						
Raising of land embankment for sequential paddy – cum - fish farming	17	6.8	26	160000	143105	1.89
Ground water recharge						
Desiltation of defunct water harvesting structures						
Renovation of irrigation channel						
Newly Check dam						
Renovation of common pond						
Any intervention not covered in above						
Total	**27**	**7.0**				

Photos

Raising of land embankment for sequential paddy – cum - fish farming

Table. Performance of artificial ground water recharge technologies demonstrated

Technology demonstrated	No. of farmers	Area (ha)	Output (q/ha)	Economics of demonstration (Rs./ha)		
				Gross Cost	Net Return	BCR
Field bunding for rice	17	6.8	54	50175	47025	1.93
Water management through bunding of rice						
Ground water recharge through SRI by sub-soiler						
Any intervention not covered in above						
Total	**17**	**6.8**				

Table. Performance of different water saving irrigation methods

Technology demonstrated	No. of farmers	Area (ha)	Output (q/ha)	Economics of demonstration (Rs./ha)		
				Gross Cost	Net Return	BCR
Irrigation system (micro Irrigation system)						
Application of biofertilizer in rice/crops						
Community Vermi-compost from biodegradable wastes	17	5 units	45q	21290	31210	2.46
Production of crops on farm bund	17	0.2	408	334045	277955	1.83
RBF in crops						
LEWA in crops						
Sprinkler irrigation in crops						
Any intervention not covered in above						
Total	**34**	**0.2/5 nos**				

Table. Performance of other demonstrations

Technology demonstrated	No. of farmers	Area (ha)	Output (q/ha)	Economics of demonstration (Rs./ha)		
				Gross	Net	BCR

				Cost	Return	
Demonstration of mulching in chilli	4	0.24	142	163000	278900	2.71
Demonstration of trellis in Bittergourd	10	0.8	149.8	186694	187806	2.00
Others if any						
Total	**14**	**1.04**				

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 (%)
Desilting Pond					
New Pond created					
Pond Renovation	3	3000	15	3	100
Canal					
Checkdam					
5% model					
Pyne					
Well					
Inlet Channel					
Desiliting drainage channel					
Bora bandh (Temporary check dam)					
Repaired well					
Jalkund					
Small ditches for jute retting					
Landshaping and rain water harvesting structure					
Others if any					
Total	3	3000	15	3	100

II. Module II: Crop Production

Table. Performance of different drought tolerant varieties

Technology demonstrated Crops with varieties	No. of farmers	Area (ha)	Yield(q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Pumpkin, Arjun	10	0.2	246.3	193	27.61	1,00,758	145542	2.44
Total	**10**	**0.2**						

Photos

Pumpkin var. Arjuna

Table. Performance of different salt tolerant paddy varieties

Technology demonstrated (Crops with varieties)	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
CR Dhan 412	4	0.4	41.6	35	18.85	44644	40636	1.91
Total	**4**	**0.4**						

Table. Performance of different flood tolerant varieties

Technology demonstrated (Crops with varieties)	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Paddy, CR Dhan 508	7	1.4	46.2	40.5	14.07	53000	47855	1.90
Paddy, CR Dhan 506,	9	2.7	43.4	39.8	9.04	53000	41742	1.78
Paddy, BinaDhan 11	17	3.7	54.0	44.0	22.72	50175	47025	1.93
Total	33	7.8						

Photos

CR Dhan 508

CR Dhan 506

Bina Dhan 11

Table. Performance of advancement of planting dates in different crops

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Crop I								
Total								

Table. Performances of water saving technologies

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Water saving technology through SRI								
Aerobic Rice								
Direct seeded brown manured rice								
DSR	25	5.0	51.8	47.9	8.14	48200	45040	1.93
Sowing of rice/ wheat / Maize with ZTD machine								
Others if any								
Total	**25**	**5.0**						

Performance of Community nurseries

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Crop I								
Total								

Table. Performance of different location specific intercropping systems

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Crop I + Crop 2								
Total								

Table. Performance of different crop diversification in NICRA villages

Technology demonstrated	No. of farmers	Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Sweetcorn , Misthi	10	0.5	104	89	16.8	75300	80000	2.06
Marigold, Seracole	05	0.4	98.7	-	-	232444	261056	2.12
Kitchen garden (unit size – 240sqm)	20	0.48	1.61q/unit	0.77q/unit	109	10400	7550	1.72
Cowpea	05	0.4	139.8	116.7	19.79	145128	204372	2.40
Total	35	1.38						

Photo

Seasonal marigold

Kitchen garden

Table. Performance of other demonstration under crop production module

Technology demonstrated	No. of farmers	Area (ha)	Yield(q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Demonstration of self propelled 8-row Rice Transplanter	05	2.4	50	47.2	5.93	42120	37880	1.89
Total	05	2.4						

Photo

Self propelled 8-row Rice Transplanter

III. Module III : Livestocks and Fisheries

Table. Performance of different fodder demonstration in community lands

Technology demonstrated	No. of farmers	Unit/ Area (ha)	Output (q/ha)		% increase	Economics of demonstration (Rs/ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Hybrid Napier, CO5	5	0.4	185	-		12500	7600	2.64
Total	**5**	**0.4**						

Photo

Hybrid Napier, CO5

Table. Performance of improved fodder

Technology demonstrated	No. of farmers	Unit/ Area (ha)	Yield (q/ha)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Azolla (A. caroliniana)	10	10 units (2mX1.2mX0.3m)	102	87	17.24	90000	62000	1.69
Total	10	10 units						

Photo

Azolla (A. caroliniana)

Table. Performance of various vaccination camps organized

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
Vaccination camp against FMD Cattle & PPR against goat	60	145 nos. dairy cows	648 litres/cow	540 litres/cow	20.00	20000	9160	1.45
Vaccination for PPR in goat and Ranikhet in Poultry.	20	365 nos poultry chicken	2.3q/unit (60 birds)	1.4q/unit (60 birds)	64.3	60800	42700	3.36
Deworming	25	18 nos. goat kids	-	-	-	--	-	-
Mineral mixture	25	25 nos	486 litres/cow	450 litres/cow	8.0	12650	7600	1.6
Proper De-worming								
Vaccination camp against other diseases								
Others if any								
Total	130	553						

Photo

Vaccination for PPR in goat and Ranikhet in Poultry

Vaccination camp against FMD Cattle & PPR against goat

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 Cost	Net Return	BCR
IMC & Chinese carps 1 (Individual farmer)	13	0.3	37.0	27.2	36	205000	165000	1.8
IMC & Chinese carps 2 (Community based)	17	6.8	3.82	-		23530	21045	1.8
Total	30	7.1						

Harvesting of fish

Harvesting of prawn

Table. Performance of livestock demonstration in NICRA adopted villages

Technology demonstrated	No. of farmers	Unit/ No. / Area (ha)	Measurable indicators of output* (kg/bird)		% increase	Economics of demonstration (Rs./ha)		
			Demo	Local		Gross Cost	Net Return	BCR
Rhode Island Red	8	200	1.8 kg	1.3 kg	38.46	535	825	2.54
Kuroiler	8	200	3.6kg	1.5kg	140	535	935	2.74
Total	8	400						

***Calculation based on 6-month-old bird (per bird)**

	
Rhode Island Red Poultry bird	**Kuroiler Poultry bird**

Table. Performance of improved shelters for poultry and dairy animals

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**	**Gross Return**	**Net Return**	**BCR**
Portable poultry housing system	8	8	10% (Disease occurrence)	23% (Disease occurrence)	56	15000	31000	16000	2.06
Total	8	8							

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**		
Seed bank	1	CR Dhan 506, CR Dhan 508	3.5q	Grain storage bin has been used	6	1 unit (5 storage beans)
Fodder bank	1	Hybrid Napier	210 q	-	5	0.4 ha
Commodity groups						
Custom hiring centre	1	Farm Machineries	8 nos	-	47	61.8 ha
Apiary unit	1	Bee box installed in the bund	2 nos		17	01
Community mushroom unit	1	Paddy straw mushroom Production	23.4q @1.2 kg/bed (PSM)	Community based (1950beds) per	17	01

				year		
Climate literacy through a village level weather station						
Total	1		236.9q / 10 nos		92	62.2ha / 3 units

Photos

Harvesting of mushroom

Honey bee

V. Village Climate Risk Management Committee (VCRMC)

To accomplish the objectives of NICRA-TDC project in Jatipur village, Village Climate Risk Management Committee (VCRMC) was constituted comprising of ten male and five female members. These people are implementing the project work with their active participation and strong support under the guidance of KVK scientist. A fort nightly meeting is being conducted for smooth facilitation of NICRA activities in the village. In each meeting members discuss about future activities and impact of the previous activities. Apart from that the members are actively participating in the management of grain bank, custom hiring centre and community fish farming, community vermicompost unit and community mushroom unit etc. The members also facilitate the selection of appropriate beneficiaries and site for implementation of the proposed programme. The committee enable farmers in timely completion of farm operations. The committee also tries to convergence with DRDA, irrigation department and other line department to take up various developmental activities in the village.

VI. Custom Hiring Centres:

The farm implements available at the CHC are Electric & Diesel water pump, power weeder, Power sprayer, Battery sprayer, Rice mill, Self propelled Paddy Reaper, pulverizer, post hole digger and drum seeder. These implements are provided on rent basis to the villagers and farmers of side by villages for different farm operations. The rent amount is very nominal and the VCRMC is managing the CHC.

Table. Revenue generated through Custom hiring Centres (CHCs) and VCRMC in KVKs

Name of KVK	Revenue generated (Rs.)	
	From CHC during the year	Total fund under VCRMC as on 31.03.2024
Puri	7100/-	6500/-
Total	**7100/-**	**16,500/-**

VII. Capacity Building

Thematic area	Topic of the training	No. of Courses	No. of beneficiaries		
			Male	Female	Total
Natural Resource Management	Scientific pond management	1	25	5	30
Natural Resource Management	Use of mulching in vegetable crops	1	24	6	30
Crop Management	Technology of DSR	1	26	04	30
Nutrient Management					
Integrated Crop Management					
Crop Diversification	Package and practices of sweetcorn	1	26	4	30
Resource conservation Technology					
Pest and disease management	IPM in paddy	1	24	6	30
Nursery raising					
Employment Generation	Paddy straw mushroom cultivation	1	8	22	30
Nutrition garden					
Repair & Maintenance of farm machinery & Implements	Operation & maintenance of 8-row Rice Transplanter	1	28	02	3
Integrated Farming System	Integrated farming system in relation to climate change	1	30	0	30
Livestock and Fishery Management					
Fodder and feed management					
Lac cultivation					
Farm implements and machineries					
Value addition					
Employment generation					
Others if any					

VIII. Extension Activities

Name of the activity	Number of Programmes	No. of beneficiaries		
		Male	Female	Total

Agro advisory Services				
Awareness				
Diagnostic visit	18	144	38	182
Exposure visits	1	36	4	40
Field Day				
Group Discussion	24	360	85	**445**
Method demonstrations	11	60	28	88
KMAS Services	12	32	16	48
Farmers day				
SHG	4	-	49	49
Campaign	4	72	24	96
Popular extension literature	4	-	-	2000
Animal Health Camp	1	37	23	**60**
World earth day	1	33	17	50
Krishak Chaupal	1	24	11	35
Kishan Gosthi	3	32	13	45
Woman health and nutrition	1	-	32	32
Technology week	-	-	-	-
NICRA Workshop at ATARI, Kolkata	1	-	-	-
Scientist visit to field	38	267	158	**425**
Others if any				
Total	124	**1097**	**498**	**3595**

X. Soil Health Card Prepared and Distributed

Table- SHC card distribution at NICRA adopted villages

KVK	Year	No of soil samples collected	No. of samples analysed	SHC issued	No of Farmers involved
KVK, Puri	2023-24	22	22	Soil has been tested in OUAT soil lab and report was provided to them.	55

X. Convergence with Other Ongoing Development Progrmmmes

Table: Convergence of Ongoing Development Programmes/Schemes in NICRA implementing KVKs

KVK	Development Scheme /Programme	Nature of work	Amount (Rs.)
Puri	Demonstration of Drone sprayer	Spraying of pesticides in Paddy by Drone sprayer	10,000/-
Puri	DFO	Monitoring and supply of fingerlings	20,000/-

Photo

Use of drone in paddy

XI. Dignitaries visited NICRA Villages during 2023-24

Name of KVK	Name of VIPs/Experts	Date of visit
Puri	**Dr. Suresh Kumar Chaudhari, DDG (NRM), ICAR, New Delhi**	**23.03.2024**
	Dr. A. Sarangi, Director, IIWM, Bhubaneswar	
	Dr. G. Pratibha, PI, NICRA, CRIDA, Hyderabad	
	Dr. S.K. Jena, Principal Scientist, IIWM, Bhubaneswar	

Visit of DDG (NRM) to NICRA village

XII. Success stories of NICRA Village Farmers with photographs

DEEP WATER RICE VARIETY CULTIVATION AS A CLIMATE RESILIENT TECHNOLOGY IN FLOOD PRONE NICRA VILLAGE OF PURI DISTRICT

Puri district of Odisha is worst affected by untimely heavy rainfall, cyclone, super cyclone, flood, flash flood etc. More than 70% of the district's geographical area are low-lying and become water-logged during monsoon season. Waterlogging affects the low land in kharif in village jatipur of Puri sadar block adopted by KVK under NICRA. Both semi deep and deep water ecology existing in the village in which water level rises to 75cm to one meter and remains for more than a month. Waterlogging environment is less receptive to better management because of the repeated submergence owing to flash floods and waterlogging. Waterlogging during the early phases of crop development inhibits tillering and increases plant mortality. Flooding stress causes substantial crop losses because it creates an anaerobic environment. Looking at this prioritized issue, a demonstration was conducted in deep water rice variety CR Dhan 506 and CR Dhan 508 involving 20 farmers. The maturity duration of CR Dhan 506 and CR Dhan 508 is 160 and 160-165 days respectively. Flood situation during august and cyclonic storm during October affects the Pooja variety taken up by the non NICRA farmer, whereas the newly introduced variety CR Dhan 506, CR Dhan 508 registered 43.4q/ha and 46.2q/ha respectively and the Pooja variety yielded 40.5q/ha. The net income of the farmers in case of CR Dhan 508 is Rs. 47855/-, which is Rs.9443/- more than the net income of pooja variety taken up by non nicra farmer. Seeing the results, farmers have stored the seeds of these deep water rice varieties in the seed bank of village for cultivation in kharif, 2024. Farmers are in a great relief getting a good Paddy variety suitable to their ecology.

XIII. Newspaper coverage

XIV. Publication : 04

XV. Expenditure Statement of NICRA-TDC Budget during 2023-24

Name of KVK	FINAL RE				Expenditure	Closing Balance 1.03.2022
	Contingencies	TA	NRC	Total		
Puri	870000	75000	85000	1030000	1030000	0

XVI. Awards/Recognition etc. (with photos)

XVII. Any other activities (not covered above) (with photos)