

National Innovations on Climate Resilient Agriculture Technology Demonstration Component

Annual Report 2021-22

Name of KVK: KVK, Kendrapara

Nature of Climatic Vulnerability: Flood & Cyclone

Name of Adopted Villages: Gajapitha & Birindola

Brief description of the villages: These two villages situated in the bank of Baghuni River, a subsidiary of the Mahanadi, Flood is the regular phenomenon.

Name of PI/Co-PI/Associated Scientist/SRF:

- i) Dr. Surya Narayan Mishra (SSH & PI, NICRA)
- ii) Sri Prabhanjan Mishra (Co-PI, NICRA)
- iii) Sri Matru Prasad Mohanty (SRF, NICRA)

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	13.5 t/ha Biomass			
Brown manuring in rice						
Summer Ploughing in rice	30	12	-	-	-	-
Azolla in Paddy	10	0.8	-	-	-	-
Zero Tillage in wheat / Maize/ Others crops						
Repair of bund						
Horticultural production through land embankment development	15	1	-	-	-	-
Organic mulching in vegetables	-	-	-	-	-	-
Mulching in brinjal (Variety – VNR 212)	10	0.4	317 qt.	142000	175000	2.23
Any intervention not covered in above						
Total	65	13.4				

Mention the variety and Enclosed 2/3 photos



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	39.5	143000	228000	2.59
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						
Ground water recharge						
Desiltation of defunct water harvesting structures						
Renovation of irrigation channel						
Newly Check dam						
Renovation of common pond						
Hand Boring (Live saving irrigation in vegetables)	15	1.5	225	37000	59000	2.59
Total	50					

Enclosed 2/3 photos

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	20	4	-	-	-	-
Water management through bunding of rice						
Ground water recharge through SRI by sub-soiler						
Any intervention not covered in above						
Total	20	4				

Enclosed 2/3 Photos

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						
Vermi-compost from biodegradable wastes	15	15 units	5.0 q/unit	2500/unit	5000/unit	3.2
Production of crops on farm bund						
RBF in crops	10	0.8	180 q/ha	63000	81000	2.28
LEWA in crops						
Sprinkler irrigation in crops						
Any intervention not covered in above						
Total	15	15				

Mention the variety and Enclosed 2/3 photos



Table. Performance of other demonstrations

Technology demonstrated	No. of farmers	Area (ha)	Output (q/ha)	Economics of demonstration (Rs./ha)		
				Gross Cost	Net Return	BCR
Vegetable seedling production under low cost poly tunnel	25	0.01	88 % of survival rate of seedlings	-	-	-
Demo 2						
Others if any						
Total						

Enclosed 2/3 photos





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	02	3000	35	3	100
Canal					
Checkdam					
5% model					
Pyne					
Well					
Inlet Channel					
Desilting drainage channel					
Bora bandh (Temporary check dam)					
Repaired well					
Jalkund					
Small ditches for jute retting					
Landshaping and rain water harvesting structure					
Total	2	3000	35	3	100

Enclosed 2/3 photos

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
Crop 1								
Crop 2								
Crop 3								
More if any								
Total								

Mention the variety and Enclosed 2/3 photos

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
Crop 1								
Crop 2								
Crop 3								
More if any								
Total								

Enclosed 2/3 photos

Table. Performance of different flood tolerant varieties

Technology demonstrated (Crops with varieties)	No. of farmers	Area (ha)	Yield		% increase	Economics of demonstration (Rs./ha)		
			(q/ha)			Gross Cost	Net Return	BCR
			Demo	Local				
Cultivation of flood tolerant rice variety Swarna Sub-1	10	4	43.8	32.9	33.1	47500	31340	1.65
Cultivation of flood tolerant rice variety CR 1009 Sub-1	25	10	44.2	34.3	28.8	47500	32060	1.67
Total	35	14						

Mention the variety and Enclosed 2/3 photos



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 1								
Crop 2								
Crop 3								
More if any								
Total								

Mention the variety and Enclosed 2/3 photos

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								
Sowing of rice/ wheat / Maize with ZTD machine								
Others if any								
Total								

Mention the variety and Enclosed 2/3 photos

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
Vegetable seedlings raising under low cost polytunnel	25	0.01	44000 nos. of seedlings	11000 nos. of seedlings per annum	300	-	-	-
Crop 2								
Crop 3								
More if any								
Total	25	0.01						

Mention the variety and Enclosed 2/3 photos

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
			Rice – Blackgram paira cropping	10		4	54.6 (REY)	39.4
Crop 3 + Crop 4								
More if any								
Total	10	4						

Mention the variety and Enclosed 2/3 photos



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
Cultivation of Sweet corn F1 variety - Sugar-75	10	1	110	-	-	58200	91800	2.6
Cultivation of colocassia variety - Sankhasaru	10	0.4	200	175	14	79700	80300	2.1
Cultivation of pointed gourd variety - Swarna Aloukik	10	0.4	125	98	27	129300	207010	2.6
Cultivation of ridge gourd variety - Estilo	10	0.4	200	175	14	94400	45600	1.5
Cultivation of Cucumber Variety -Malini	10	0.4	300	260	15	109400	70600	1.6
Cultivation of Pumpkin variety - Arjuna	10	0.4	300	280	7	64800	115200	2.7
Cultivation of greengram var IPM-2-14 in post flood situation	20	8	5.2	3.9	33.3	18000	13200	1.75
More if any								
Total	80	11.0						

Mention the variety and Enclosed 2/3 photos



Vaccination for PPR in goat and Ranikhet in Poultry.								
Deworming	35	1 no	-	-				
Mineral mixture								
Proper De-worming								
Vaccination camp against other diseases	35	1 no	-	-				
Total								

Enclosed 2/3 photo

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
Stocking of IMC Yearlings	10	0.2	39.5	28.75	37.5	143000	228000	2.59
Cat Fish 2								
More if any								
Total	10	0.2						

Enclosed 2/3 photo

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
Shirohi Buck	01	01	-	-		-	-	-
Black Bengal buck	02	04	-	-			-	-
Kadakhath*	15	300	1.6kg	1.0kg	60	225	495	3.20
Kruailour poultry*	20	400	3.2 kg	1.0 kg	220	225	415	2.85
Whitekin duck*	10	200	1.5 kg	0.8 kg	100	125	275	3.0
Khaki campbell duck*	10	200	1.4 kg	0.8 kg	78	125	225	2.8
Total	55	1105						

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

Enclosed 2/3 photo



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)		% decrease	Economics of demonstration (Rs./ha)			
			Demo	Local		Gross Cost	Gross Return	Net Return	BCR
Improved Goat Housing System	3	3	8% (Disease occurrence)	21% (Disease occurrence)	62	-	-	-	-
Improved Cow Shed	2	2	7% (Disease occurrence)	23% (Disease occurrence)	69	-	-	-	-
Portable poultry housing system	5	5	12% (Disease occurrence)	23% (Disease occurrence)	48	-	-	-	-
Total	10	10							

Enclosed 2/3 photo





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	Swarna Sub 1 Rice	10 q	-	25	01
Fodder bank	1	Hybrid Napier	200 q	-	30	01
Commodity groups						
Custom hiring centre	1	Farm Machineries	-	-	-	-
Small scale income generation activity	1	Mushroom Production	1.2 kg/bed (PSM) 1.4 kg/bed (Oyster mushroom)		25	02
Climate literacy through a village level weather station						
More if any						
Total						

Enclosed 2/3 photo



V. Village Climate Risk Management Committee (VCRMC)

A VCRMC has been formed by taking members from the village who are actively participating in the decision-making process of NICRA activities in the village. The VCRMC meeting is being conducted monthly for smooth facilitation of NICRA on going activities in the NICRA village. In every meeting the members are discussed about the last month activities along with coming month activities to be taken up in the villages. Apart from that the members are actively participating in the management of grain bank, fodder bank, community plantation, Community nursery, CHC etc. The members also facilitate the selection of appropriate beneficiaries and site for implementation of the proposed programme.

VI. Custom Hiring Centre:

The farm implements available at the CHC are diesel water pump, power thresher, power tiller and sprayer. These implements are provided on rent basis to the villagers for different farm operations. The rent amount is very nominal and the VCRMC is responsible for operating of 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 31.03.2022
KVK, Kendrapara	Rs. 21,266/-	Rs. 21,266/-
Total	Rs. 21,266/-	Rs. 21,266/-

VII. Capacity Building

Thematic area	Topic of the training	No. of Courses	No. of beneficiaries		
			Male	Female	Total
Natural Resource Management	Mulching in vegetables	1	12	13	25
	Raising techniques of seedlings under low cost poly house	1	17	8	25
Soil Health Management	Green manuring to improve soil fertility	1	14	11	25
	Production technology of vermicompost	1	18	7	25
Crop Management					
Nutrient Management					
Integrated Crop Management	Scientific cultivation flood tolerant rice variety CR 1009 sub 1	1	20	5	25
	Management of Rice-blackgram pair cropping system	1	18	7	25
	Cultivation of cucurbits in grow bag and trellis system	1	13	12	25
	IPM module for management of major pest of rice	1	19	6	25
Crop Diversification					
Resource conservation Technology					
Pest and disease management					
Nursery raising					
Employment Generation					
Nutrition garden					
Repair & Maintenance of farm machinery & Implements					

Integrated Farming System					
Livestock and Fishery Management					
Fodder and feed management	Azolla cultivation for supplementary feed of poultry & cattle	1	19	6	25
	Feeding management in composite carp culture	1	17	8	25
Lac cultivation					
Farm implements and machineries					
Value addition	Manufacture of jute handicrafts	1	14	11	25
Employment generation	Round the year mushroom cultivation	1	18	7	25
	Backyard poultry rearing	1	16	9	25
Pond management	Scientific pond management in pisciculture	1	16	9	25
	Yearling stocking for yield enhancement	1	15	10	25



VIII. Extension Activities

Name of the activity	Number of Programmes	No. of beneficiaries		
		Male	Female	Total
Agro advisory Services	12	-	-	250
Awareness	2	142	43	185
Diagnostic visit	82	313	132	445
Exposure visits	1	14	-	14
Field Day	4	128	72	200
Group Discussion	6	86	32	118
Method demonstrations	12	80	43	123
KMAS Services	4	-	-	157
Farmers day	-	-	-	-
SHG	2	-	28	28
Campaign	1	38	12	50
Popular extension literature	4	-	-	250
Animal Health Camp	1	42	32	74
World earth day	-	-	-	-
Krishak Chaupal	-	-	-	-
Kishan Gosthi	1	17	5	22
Woman health and nutrition	1	-	25	25
Technology week	-	-	-	-
NICRA Workshop at ATARI, Kolkata	1	-	-	-
Others if any				
Total	134	860	412	1941





IX. 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
Kendrapara	2021-22	36	36	36	120

Enclosed 2/3 Photographs

X. Convergence with Other Ongoing Development Programmes

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

KVK	Development Scheme/Programme	Nature of work	Amount (Rs.)
Kendrapara	Horticulture Department, Kendrapara	Post flood potato cultivation	46,000
	District fishery department	Construction of new pond	2,00,000
	National Institute on Natural Fiber and Engineering Technology (ICAR – NINFET), Kolkata in collaboration RIDE – NGO, Kendrapara	10 days training programme on “Manufacture of jute handicrafts” at NICRA village Gajapitha with 40 nos farm women from 27.12.21 to 05.01.22	1,20,000
	NRGES	Construction village road	4,00,000

Enclosed 2/3 Photographs

XI. Dignitaries visited NICRA Villages during 2021-22

Name of KVK	Name of VIPs/Experts	Date of visit
Kendrapara	Dr. Sumant Kundu, Principal Scientist, ICAR- CRIDA, Hyderabad	11.10.2021
Kendrapara	Dr. Amit Phoglosa, JD,DEE,OUAT,Bhubnaeswar	11.10.2021
Kendrapara	Dr. L.N.Nayak, Principal Scientist, ICAR-NINFET, Kolkata	05.01.2022
Kendrapara	Sri Ashok Kumar Acharya, DDM, NABARD, Kendrapara	16.02.2022
Kendrapara	Sri. Malaya Mitra, LDM, Kendrapara	16.02.2022
Kendrapara	Mrs. Satyabhama Pradhan, District Coordinator, Odisha Livelihood Mission, Kendrapara	16.02.2022
Kendrapara	Mr. Rama Chandra Jena, Additional Secretary to Dept. of Agriculture & Farmer Empowerment	13.03.2022



XII. Success stories of NICRA Village Farmers with photographs

Crop diversification by tuber crop

Flash flood is a regular phenomenon in river bank area of NICRA village. Generally farmers are cultivated cucurbitaceous crop like pumpkin, watermelon etc. after flood. The income from the crop is not satisfactory due to lower market price and monkey menace. In this context KVK, Kendrapara motivated the farmers to take up the cultivation of cash –cum-tuber crop sweet potato under crop diversification. Accordingly Shree Bhadra variety sweet potato vines (36000 nos) for one acre area arranged for four nos of farmers of NICRA village. They planted the vines just after the flood. In this demonstration of crop diversification, excellent growth of the crop was observed due to siltation in the sandy loam soil in post flood condition. Entire land was covered with green colour vines, which ultimate lead to higher yield of the crop. The beneficiaries were able to get handsome net return of Rs. 94,000/-per ha from sweet potato, in comparison to Rs. 56,000/- per ha from cucurbitaceous crop. The crop diversification from cucurbitaceous crop to tuber crop sweet potato under post flood situations in river bank area are well accepted by the farmers of NICRA village.



Crop intensification in post-flood situation: a boon to flood affected area

The natural calamities like flood and cyclone hit worse the coastal farmers of Odisha. In Kendrapara district, climatic vulnerability like flood mostly affected agricultural crops in the riverside cultivation area of Marshaghai block. To combat the adverse effect of flood, under NICRA project, KVK Kendrapara demonstrated crop intensification in post-flood situation at NICRA village of Marshaghai. Under crop intensification, intensification was done, both, through time and space.

Demonstration was done on mixed cropping of toria and coriander (seed purpose). The common goal of mixed cropping is to produce a greater yield on a given piece of land by making use of resources that would otherwise not be utilised by a single crop. Mixed cropping reduces the risk of crop failure, instability of crop production, better utilisation of farm resources, maintains soil fertility and ultimately gives additional income to the farmer.

Keeping these things in view, demonstration on toria + coriander was conducted wherein toria was taken as main crop and coriander was taken as mixed intercrop.

Full seed rate of toria (8kg/ha) with half seed rate of coriander (10kg/ha) was used for sowing of the crops in the system. Previously, only toria was grown by farmers where monocropping was replaced by mixed intercropping. As a result, there was efficient utilisation of soil moisture under post-flood situation and extra income was assured. The demonstration was compared with the farmer's practice of growing sole toria in which farmers realised 8.5 q/ha yield of toria whereas, in the mixed intercropping system, farmers obtained 9 q/ha toria along with 6 q/ha of coriander seeds. As a result, farmers got an extra income of Rs 23,500/ha by adopting crop intensification over sole cropping.



XIII. Newspaper coverage

XIV. Publication

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

Name of KVK	FINAL RE				Expenditure	Closing Balance 31.03.2022
	Contingencies	TA	NRC	Total		
Kendrapara	19,40,000	26,000	-	19,66,000	19,66,000	NIL

XVI. Awards/Recognition etc. (with photos)

Best Innovative Farmer Award for NICRA

1. Zero energy drip irrigation system for newly established arecanut plantation
2. Cultivation of cowpea in grow-bag with drip irrigation under pendal system for flood prone areas

PABITRANAYAK

At: Gajapitha P.O: R.K. Patna
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 Dist: Kendrapara PIN: 754244 (Odisha)
 Phone: 8018680404 Mobile: 7326072026







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

Table. Performance of flood tolerance technology for cucurbits cultivation

Technology demonstrated	No. of farmers	Area (ha)	Yield		% increase	Economics of demonstration (Rs./ha)		
			(q/ha)			Gross Cost	Net Return	BCR
			Demo	Local				
Grow Bag (Bitter gourd)	10	10 units	250	--	99200	100800	2.01	
Grow Bag (Long yard bean)	10	10 units	120	--	79600	64401	1.8	
More if any								
Total	20							

