

Central Research Institute for Dryland Agriculture, Hyderabad
Annual Report (NICRA-TDC) – 2020-21

Name of the KVK and village: KVK, Kendrapara (Village: Ratanpur)

1: Natural Resource Management Interventions

***In-situ* moisture conservation measures (Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)**

Interventions	Details of Technology		Critical inputs provided from the project (Machinery, cost for renovation, irrigation systems, seed etc.)	No. of demos	No. of farmers involved in the demonstration	Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha) (Average)				Economics of local practice (Rs./ha) (Average)			
	Crop Name	Name of variety				Now (2020)	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Trench cum bunding																	
BBF																	
Ridges and furrows	Cowpea	Namdhari	Seeds	10	10	1.5	0.5	100	92	58700	110000	51300	1.87	56700	98000	43301	1.72
	Beans	Namdhai	Seeds	10	10	1	0	100	-	-	-	-	-	68500	100000	31501	1.46
	Radish	Pusa Chetaki	Seeds	10	10	1.25	0.25	230	217	70200	150000	79800	2.14	62600	125000	62400	2.00
Contour trenching																	
Contour cultivation																	
FIRB method																	
Mulching (organic/ plastic)	Brinjal	Swarna shyamali	QPM & polythine mulching sheet	10	10	1.0	-	365	315	99900	220500	120600	2.44	108700	255500	146800	2.70
Conservation furrow																	
Field bunding	Rice	Swarna sub 1	Machinery cost	10	10	17	-	-	-	-	-	-	-	-	-	-	-
Bed and furrows																	
Compartmental bunding																	
Summer deep ploughing	Rice	Swarna sub 1	Machinery cost	10	10	22	2	-	-	-	-	-	-	-	-	-	-
Conservation tillage where appropriate like zero tillage/ minimum tillage etc...																	
Land leveling/ Laser land leveling																	
Any other specify																	

2: Ex-situ moisture conservation measures (Water harvesting and efficient use/critical/supplemental irrigation)

(Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

Interventions	Details of Technology		Critical inputs provided from the project (Machinery, cost for renovation, irrigation systems, seed etc.)	No. of demos	No. of farmers involved in the demonstration	Area under practice in the village (ha)		Measurable indicators Crop yields* (q/ha) (Average)		Economics of demonstration (Rs./ha) (Average)				Economics of local practice (Rs./ha) (Average)			
	Crop Name	Name of variety				Now (2020)	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Community ponds																	
Farm ponds	Vegetables		Machinery cost	01	25	0.4	-	-	-	-	-	-	-	-	-	-	-
Jalkunds																	
Arhars/ Pynes																	
Check dams																	
Polybag/ Sand bag check dams																	
Open well																	
Bore well																	
Percolation tank																	
Improved drainage in flood prone areas (Desilting of drainage channel)																	
Artificial ground water recharge measures																	
Drip irrigation																	
Sprinkler irrigation																	
Rain gun irrigation																	
Any other (Pl. specify)																	

*Mention crop being taken up in each demonstrations

3: Soil health improvement interventions

(Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

Interventions	Details of Technology		No. of Demos	No. of farmers involved in the demonstration	Area under practice in the village (ha)		Measurable indicators Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha) (Average)				Economics of local practice (Rs./ha) (Average)			
	Crop Name	Name of variety			Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Soil health cards issued and how they are used																
Tank silt application																
Site specific nutrient management																
Green manuring	Rice	Swarna sub1	20	20	20	-	12t greenmatter /ha	-	-	-	-	-	-	-	-	-
Correction of nutrient deficiency																
Gypsum application																
Crop residue incorporation instead of burning																
Vermicomposting																
Any other specify																

Add rows if necessary

4: Crop Production Interventions

(Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

Interventions	Details of Technology		No. of Demos	No. of farmers		Area under practice (ha)		Crop yield* (q/ha) (Average)		% increase in yield over local	Economics of demonstration (Rs./ha) (Average)				Economics of local (Rs./ha) (Average)			
	Crop Name	Name of variety		Involved	Area taken up with demo (ha)	After NICRA	Before NICRA	Demo	Local		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Short duration varieties																		
Drought tolerant/ improved varieties	Rice	Sahabhagi Dhan	15	15	10	10	-	39	32	22.5	43500	70590	27090	1.62	42000	57920	15920	1.37
Flood tolerant varieties	Rice	Swarna sub 1	15	15	10	22	-	41	34	20.58	44500	74210	29710	1.66	43000	61540	18540	1.43
Advancement of planting dates of <i>rabi</i> crops in areas with terminal heat stress	Rice-blackgram	Sahabhagi Dhan and PU 31	25	25	10	15	-	62(REY)	38	63	65000	1,12,220	47220	1.72	43000	68,780	25780	1.59
Water saving paddy cultivation methods (SRI)																		
Water saving paddy cultivation methods (aerobic paddy)																		
Water saving paddy cultivation methods (direct seeding)																		
Frost/ cold wave management in horticultural crops through fumigation																		
Contingency crops	Blackgram (Post flood)	PU 31	10	10	10	15	5	5.4	4.8	12.5	21500	35,100	13600	1.63	20,000	31200	11200	1.56
Location specific intercropping systems demonstrated																		
Conservation tillage where appropriate like zero tillage/ minimum tillage etc...																		

Interventions	Details of Technology		No. of Demos	No. of farmers		Area under practice (ha)		Crop yield* (q/ha) (Average)		% increase in yield over local	Economics of demonstration (Rs./ha) (Average)				Economics of local (Rs./ha) (Average)			
	Crop Name	Name of variety		Involved	Area taken up with demo (ha)	After NICRA	Before NICRA	Demo	Local		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Crop diversification	Ginger	Suprava	10	10	1	1	0	175	-		220160	525000	304840	2.38	-	-	-	-
	Turmeric	Suruchi	10	10	1	1	0	60	-		188200	300000	111800	1.59	-	-	-	-
	Potato	Kufri jyoti	10	10	1	15	7	300	250	20.0	93800	180000	86200	1.92	91800	150000	58200	1.63
	Yam	Orissa elite	10	10	1	1	0.5	237	200	18.5	181400	355500	174100	1.96	179400	300000	120600	1.67
	Elephant foot yam	Gajendra	10	10	1	1	0.4	245	200	22.5	162300	367500	205200	2.26	159300	300000	140700	1.88
	Colocassia	Muktakeshi	10	10	1	2	1	235	200	17.5	71700	188000	116300	2.62	79700	160000	80300	2.00
Nutrient spray during drought																		
Low cost poly houses																		
Low cost tunnels for minimising impact of frost/ cold wave																		
Integrated Farming Systems (mention components and area)																		
Others (if any)																		

*Make a separate row for each crop and variety demonstrated

5: Livestock & Fisheries

(Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

Interventions	Technology demonstrated	Critical input from the project (Variety, Breed, etc.)	No. of demos	No. of farmers involved	Area (ha)/ no.	Measurable indicators of output* (Average)		% increase over local	Economics of demonstration (Rs./ha) (Average)				Economics of demonstration (Rs./ha) (Average)			
						Demo	Local		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Introduction of new fodder crops or new varieties	Cultivation of Hybrid Napier Co4 & Co 5	Co 4 and Co 5 cuttings	10	10	2	200q/ha	-	-	70000	1,00000	30000	1.42	-	-	-	-
-Improved fodder/feed storage methods (Silage/ hay/ etc.)																
Preventive vaccination																
Improved shelters for reducing heat stress/ cold stress/ water logging/ flood and diseases in livestock	Improved poultry housing system															
	Improved goat housing system															
	Scientific management of cowshed															
Introduction of improved breeds (Poultry/ goat/fish)	Kadakhnath Poultry															
Management of fish ponds / tanks during water scarcity and excess water																
Improved feeding like location specific mineral mixtures or mineral bricks																
Any others like Pig, Duck farming																

* Output is in terms of litres (milk), number (eggs), kgs (meat), kg/ha (dry fodder yield)

6: Institutional Interventions

(Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

Interventions	Details of activity			Critical input from the project (Equipment/ Breed / Variety / planting material, doses)	No. of farmers involved/ benefited	Unit / No. / Area (ha) benefited
	Name of crops /varieties Commodity groups / Implements used by number of farmers	Quantity produced (Q)/ Number / Total rental Charges collected (Rs.)/Area covered (ha)	Technology used in seed / fodder production systems & function of groups			
Seed production systems	Rice-Swarna sub1	10 q	Production of TLS from certified seed with recommended package of practices	Certified seed of Swarna sub1	5	0.5 ha
Fodder production systems	Hybrid Napier	5t	Production of hybrid napier variety Co 4 and Co 5	Cuttings of Co4 and Co 5	10	0.4 ha
Commodity groups						
Custom hiring centre	Power tiller, water pump, sprayer, Tractor	Rs 4000		Form CHC at NICRA village	35	12 ha
Collective marketing						
Climate literacy through a village level weather station						
Any other (Pl. specify)						

7: Capacity Building taken up (HRD)

Sl. No.	Thematic area	Title of training	No. of programmes	No. of beneficiaries		Date		Feedback from farmers
				Male	Female	from	to	
1	ICM	Cultivation practices of swarna sub 1 and Sahabhazi Dhan	01	11	14			
2	Soil Health Management	Organic amendments as green manure to improve soil fertility	01	16	09			
3	Crop diversification	Crop Diversification to combat climate change effect	01	12	13			
4	INM	INM in Rice- blackgram Paira cropping system	01	14	11			
5	Moisture Conservation	Insitu Moisture conservation through organic mulching	01	15	10			
6	QPM	Scientific raising of vegetable seedlings under low cost poly house	01	9	16	9.7.2020	9.7.2020	Weekly skill development training required
7	Varietal supplementation	Scientific cultivation of tuber crops	01	17	8	15.6.2020	15.6.2020	

8: Extension Activities

Name of the activity	Details about the activity	Number of programs	Time of the program conducted (From--- to ---)	No. of beneficiaries		Remarks
				Male	Female	
Exposure visit of farmers						
Exposure visit of students						
Strengthening SHGs						
Strengthening kisan clubs						
Field days						
Method demonstrations						
Awareness						
Others (if any)						

Note: 1) Please don't change format heads. 2) All the required specific information should be given.

9: Rainfall characteristics for the year 2020-21

Month		June	July	August	September	October	November	December	January	Annual
Rainfall received in (mm)		150.8	134.0	755.4	81.3	343.0	5	0	0	
No. of dry spells during kharif season 2020	>10days	01	01	-	01	-	-	-	-	
	>15days	-	01	-	01	-	-	-	-	
	>20days	-	-	-	-	-	-	-	-	
No. of intensive rain spells (2020)	>60 mm per day	01	02	05	-	-	-	-	-	
	Waterlogging/Flooding observed (number of days)	-	07	12	-	11				
Any other extreme events (Heat wave, Cold wave, frost) observed during the season	No									
Contingency measures adopted during the season	1) Life-saving irrigation to the rice nursery during dry spell by adopting community nursery approach 2) Growing of flood tolerant rice variety Swarna Sub-1 to combat flood									

10: Day-wise rainfall distribution in the village during *kharif* 2020; Rainfall recorded at Ratanpur, Marshaghai mention the place (NICRA village/ KVK??)

		Day														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rainfall (mm)	June	0	0	0	0	0	0	0	0	0	0	0	4	3	12	7
	July	0	0	0	0	92	12	0	0	0	0	0	0	22	32	0
	August	0	0	0	32	138	22	0	7	4	0	0	0	0	22	118
	September	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	October	31	11	22	4	46	19	30	8	14	0	3	0	0	16	32
	November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

		Day															
		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Rainfall (mm)	June	42	0	0	0	0	8	0	0	0	0	0	5	0	32	0	-
	July	8	6	0	0	0	0	0	0	0	5	0	0	18	0	0	3
	August	7	0	0	114	75	5	3	0	13	8	234	12	0	0	0	0
	September	0	0	0	0	0	16	14	6	0	0	14	3	0	0	15	-
	October	15	0	0	4	3	5	52	12	2	0	0	0	0	0	0	0
	November	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	December	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

11: Impact of contingency measures taken up in the village (Relate the dry spells/floods/heat wave/cold wave/etc., with crops and their growth stages) (Please provide your inputs about the performance of the interventions with reference to the rainfall, climatic vulnerability (drought, flood/ cold wave/heat wave, etc.) crop growth, soils, etc. at the end of table)

S. No	Dry spell/ heat wave/cold wave/frost (no. of days)	Duration (from --- to-----)	Crop name	Crop stage Affected	Intervention taken up*	Number of farmers involved	Impact on crop yields (q/ha)		
							Farmers' practice	Demo	Increase over farmers' practice
1	Dry spell	July 1 st and 2 nd week	Rice	Seedling stage	Community nursery	15	-	-	-
2	Flood	August 2 nd week and October 1 st week	Rice	Tillering stage and PI stage	Cultivation of flood tolerant rice variety Swarna Sub-1	15	41	34	20.58
3									

* List the interventions taken up for each crop

12: Adoption of successful interventions in the NICRA village & the adjoining villages

Successful interventions	Crop	Variety	Extent of adoption in the village in ha (2020)
NRM			
1. Summer ploughing	Rice	-	22 Ha
2. Green manuring	Rice	-	18 Ha
CROP			
1. Cultivation of flood tolerant rice variety Swarna Sub-1	Rice	Swarna Sub-1	15 Ha
2. Rice-Blackgram paira cropping	Rice, Blackgram	Sahabhagi Dhan and PU-31	12 Ha
Livestock			
1. Rearing of poultry breed 'Kadaknath'			
2. Breed upgradation in goat by Beetal buck			

13: Details about agro advisories issued (Organization giving the forecast: IMD (AICRP on Agro-meteorology), forecast is based on the district or the block: District, -Organization giving the agromet advisory OUAT; How the advisories are disseminated in the NICRA village: Text messages and WhatsApp messages

Agromet advisory Bulletins issued

(Please provide your inputs about the performance of the advisory with reference to the rainfall forecasted at the end of table)

Month	June	July	August	September	October	November	December	January
Number of agromet bulletins issued	1	1	1	1	1	1	1	1
Other advisories issued								

14: Popularization of Climate Resilient Varieties

Crop*	Climate Resilient Varieties incorporated in the <i>Kharif</i> 2020 plan of the State Department	Approx. area brought under the variety by the state department during the <i>Kharif</i> 2020 (ha)	Climate Resilient Varieties incorporated in the <i>Rabi</i> 2020 plan of the State Department	Approx. area brought under the variety by the state department during the <i>Rabi</i> 2020 (ha)
Crop1: RICE	Swarna Sub-1	150 Ha	-	
			-	
Crop2:	Variety 1		Variety 1	
	Variety 2		Variety 2	
Crop3	Variety 1		Variety 1	
	Variety 2		Variety 2	
Crop4	Variety 1		Variety 1	
	Variety 2		Variety 2	
Crop4	Variety 1		Variety 1	
	Variety 2		Variety 2	

15: Awards Received during the year for the work related to NICRA

Name of the award	Given by whom	When the award was given
Young Researcher Award	Institute of Scholars, Bengaluru, Karnataka	November, 2020

16: Distinguished visitors to the NICRA village during the year

Name of the person	When the visit occurred	Significant comments/ suggestions

17: Amount (Rs.) mobilized through convergence from various departments

S. No.	Activity/ Intervention	No. of farmers benefited	Coverage [Area (ha)]	Convergence established with (Name of the programme or department)	Approx. amount (Rs.) mobilized

18: Publications and other products/Video films etc., developed during the year**19: Lessons learnt from the project**

Significant observations	Performance of interventions	Adoption of interventions	Livelihood improvement
1. The flash flood damages entire crop of rice in the village. Hence, flood tolerant rice variety Swarna Sub-1 was introduced.	Cultivation of flood tolerant rice variety Swarna Sub-1 withstands water submergence up to 10-12 days and yields 21 % more than the locals.	The variety has been well adopted by the village as well as the adjacent villages. The area under this variety has been expanded to >25 Ha in the village.	The farmers experienced higher income from cultivation of this variety thereby resulting in improved livelihood condition.

20: Equipment procured under custom hiring center since the inception of the programme

S.No.	Equipment purchased	Number of units purchased	Year of purchase	Whether the equipment is in working condition or not
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				

21: Success stories of the farmers

Success story-1		
Name of farmer	Akshaya Swain	Photo of farmer
Age	46	
Mobile	9556606950	
Address	Ratanpur Marshaghai Kendrapara	
Land holdings (Rainfed & Irrigated)	Rainfed- 4 Acre Irrigated-1 Acre	
Livestock	2 dairy animals 25 poultry birds	
Technology demonstrated:	Rice fallow to Rice- Blackgram Paira cropping system	
Problem identified:	In rainfed situation, only long duration low yielding rice is grown. In the next season the land is remaining vacant due to lack of enough moisture	
Description of technology:	In the medium land situation, the long to medium duration rice e.g. Swarna, Pooja is being replaced by the short duration rice DRR -44, Swarnashreya. As a result the rice crop is harvested 20-25 days earlier than the stipulated time period of harvest. In the field rice –blackgram paira cropping is practiced. Before 10 days harvest of the rice crop, blackgram seeds of the variety PU-31 is being broadcasted.	
Impact of intervention:	<p>Before the implementation of this cropping system under post flood situation farmers were growing only rice as <i>kharif</i> crop followed by fallow land due to lack of the soil moisture for rabi crop. By adopting this technology the following impacts were recorded:</p> <ol style="list-style-type: none"> Additional revenue generation by taking blackgram as second crop under post flood situation. The residual moisture in the rice fallow is utilized by the blackgram resulting in higher resource use efficiency. The existing cropping intensity is doubled due to introduction of double crop instead of sole cropping of rice and fallow. As a legume crop is introduced into the system it restores soil fertility through biological nitrogen fixation. An extra net income of Rs.10,200/- out of 3.5 q/ha yield of black gram PU-31 	
How the interventions minimized the impact of climate variability	As a result of this intervention, we are getting almost 30 days extra with enough soil moisture status due to change in variety and sowing window of blackgram. Rice-Blackgram cropping is a profitable system from economic as well as soil health management point of view. In addition to this it improves soil fertility by following crop rotation principle.	
Yield and Economics:	The REY of the rice-blackgram paira cropping system is found to be 62 q/ha with a maximum net return of Rs 47220 and BCR of 1.72.	

21: Prepare farmer wise table for each of the demonstration

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Cultivation of Sahabhagi Dhan														
Farmer1	Rice	Sahabhagi Dhan	10	-	40	32	43500	72400	28900	1.66	42000	57920	15920	1.37
Farmer2	Rice	Sahabhagi Dhan	10	-	38	32	43500	68780	25280	1.58	42000	57920	15920	1.37
Farmer3	Rice	Sahabhagi Dhan	10	-	39	32	43500	70590	27090	1.62	42000	57920	15920	1.37
Farmer4	Rice	Sahabhagi Dhan	10	-	41	32	43500	74210	30710	1.70	42000	57920	15920	1.37
Farmer5	Rice	Sahabhagi Dhan	10	-	40	32	43500	72400	28900	1.66	42000	57920	15920	1.37

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Cultivation of Swarna Sub 1														
Farmer1	Rice	Swarna Sub 1	22	-	41	34	44500	74210	29710	1.66	43000	61540	18540	1.43
Farmer2	Rice	Swarna Sub 1	22	-	42	34	44500	76020	31520	1.70	43000	61540	18540	1.43
Farmer3	Rice	Swarna Sub 1	22	-	40	34	44500	72400	27900	1.62	43000	61540	18540	1.43
Farmer4	Rice	Swarna Sub 1	22	-	40	34	44500	72400	27900	1.62	43000	61540	18540	1.43
Farmer5	Rice	Swarna Sub 1	22	-	41	34	44500	74210	29710	1.66	43000	61540	18540	1.43

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Rice-blackgram Paira cropping														
Farmer1	Rice-blackgram	Sahabhagi dhan, PU-31	15	-	61(REY)	38	65000	110410	45410	1.69	43000	68,780	25780	1.59
Farmer2	Rice-blackgram	Sahabhagi dhan, PU-31	15	-	60(REY)	38	65000	108600	43600	1.67	43000	68,780	25780	1.59
Farmer3	Rice-blackgram	Sahabhagi dhan, PU-31	15	-	62(REY)	38	65000	1,12,220	47220	1.72	43000	68,780	25780	1.59
Farmer4	Rice-blackgram	Sahabhagi dhan, PU-31	15	-	60(REY)	38	65000	108600	43600	1.67	43000	68,780	25780	1.59
Farmer5	Rice-blackgram	Sahabhagi dhan, PU-31	15	-	62(REY)	38	65000	1,12,220	47220	1.72	43000	68,780	25780	1.59

Please provide information in the same format for all the demonstrations taken up during the year 2020. This includes technologies demonstrated in NRM, crops, livestock fisheries.