

Action Plan (2011-12)
Under
Technology Demonstration Component
Of
National Initiative on Climate Resilient Agriculture

Submitted By:
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Project Proposal
Under
Technology Demonstration Component
of
National Initiative on Climate Resilient Agriculture

Name of the scheme	National Initiative on Climate Resilient Agriculture (NICRA)
Source of funding	Indian Council of Agricultural Research, New Delhi
Name of the coordinating institution	Central Research Institute for Dryland Agriculture, Santoshnagar, Hyderabad 500059
Name of the component of the scheme	Technology Demonstration component
Title of the project	Climate Resilient Agricultural Technology Package at village level
Name and address of the implementing Krishi Vigyan Kendra (KVK)	Krishi Vigyan Kendra, Ganjam Bhanjanagar At-Benakunda, PO-Dihapadhala, via-Tanarada Dist-Ganjam, Odisha Pin-761126
Area of operation (Name & address of selected the village)	Village-Chopara, GP-Jagannath Prasad PO-Jagannath Prasad, Block-Jagannath Prasad, Dist- Ganjam(Odisha)
Zonal project directorate (concerned)	Zonal Project Directorate, Zone-VII JNKVV Campus, Jabalpur, PO-Adhartal Madhya Pradesh-482004
Project team of the KVK	Mr. Sutanu Kumar Satapathy, PC & PI Debendra Kumar Debata, SMS (P.P), CO PI.

Duration of the project	2010- 2011 (January 2011 to March 2012)
Budget	Year 2010-11: Rs. 10,00,000
Year 2011-12:	Rs. 20,35,000
Total budget:	Rs. 30,35,000

1.0 Agriculture profile of the selected village

1.1 Distribution of households in the village

Particular	Landless	Marginal	Small	Medium	Large	Total
Number	12	213	38	52	-	315
Average landholding size (ha)	-	0.25	1.0	1.4	-	

Demographic details

	Male	Female	Total/ overall
Total population	890	335	1225
Literacy	569	169	738

1.2 Rainfall	Average (mm)	Normal Onset (specify week and month)	Normal Cessation (specify week and month)	
SW monsoon (June-Sep):	712.20	2 nd week of June	2 nd week of Sept	
NE Monsoon(Oct-Dec):	255.90	2 nd week October	1 st week of Nov	
Winter (Jan- March)	40.00	-	-	
Summer (Apr-May)	12.00	-	-	
Annual	1020.10	-	-	
Historical trends in rainfall		Decadal average		
		1980-90	1990-2000	2000- 2010
No. of rainy days		69.2	65.4	62.2
No. dry spells during kharif season	> 10 days	6	6	8
	> 15 days	2	3	3
	> 20 days	3	4	4

No. Intensive rain-spells	> 60 mm per day	3	2	3
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1. 3	Major Soils	Area (ha)	Percent (%) of total
	1. Sandy –sandy clay	98	49.1
	2. clay loam	90	45.1
	3. Later rite	11.5	.05

1.4	Agricultural land use	Area (ha)	Percent (%)	
	Total cultivated area	150	27.2%	
	Culturable wasteland	22	3.6%	
	Pasture land	5	4.7%	
	Others	22.5	64.5%	
	Rainfed area	189.5		
	Net irrigated area	-		
	Gross irrigated area	-		
	Gross cultivated area	168		
	Cropping intensity %	112		
1.5	Sources of Irrigation	Number	Area (ha)	% area
	Tanks	5 (Seasonal)	1.2	
	Open wells	16		
	Tube wells	2		
	Lift irrigation	-		
	Other sources	-		
	Total	23		
	Pumpsets	2		
	Sprinkler/ drip systems	-		

	Defunct rain-water harvesting structures in the village	One
	Groundwater availability and use	
	Depth of water table in bore wells (feet)	75
	Decrease of water table, if any over the past 10 years (feet)	-
	Quality of water:	Alkaline
	Area irrigated by one bore-well (ha)	-
	Area irrigated by one open-well (ha)	2.5

Area of major field crops & horticulture etc.

1.6		Major Field Crops cultivated	Area (ha)					
			Kharif		Rabi		Summer	Total
			Irrigated	Rainfed	Irrigated	Rainfed		
	1	Paddy		130.5				130.5
	2	Groundnut		10.5		8		18.5
	3	Black gram		2		10		12.0
	4	Ragi		5				5
		Horticulture crops - Fruits	Total area		Irrigated		Rainfed	
	1	Cashew	15					
	2	Coconut	0.2					
	3	Mango	6..8					
		Vegetables	Total area		Irrigated		Rainfed	
	1	Chilli	0.6		0.6		-	
	2	Banana	0.2		0.2		-	
	3	Brinjal	1.0		-		1.0	
	4	Cabbage	0.2		0.2		-	
		Other crops (Medicinal, plantation, fodder crops	Total area		Irrigated		Rainfed	
		Grazing land	5.0					

		Sericulture etc			
		Others			
		Teak	11.0		
		Gambhari	5.0		
		Acasia	5.0		
		Bamboo	1.0		

1.7	Livestock	Number	Yield/ productivity	Price (Rs./ liter in case of milk; Rs./ kg live body weight in case of sheep & goat)
	Cattle: Crossbred	-		
	Cattle: Indigenous	200	1lit/day	Rs10/litre
	Buffaloes	25	1.5litre/day	
	Goat	100		Rs20/litre
	Sheep	50		
1.8	Poultry			
1.9	Inland Fisheries	Area (ha)	Yield (t/ha)	
	Fresh water	2.0	0.6	
	Brackish water	-		
	Others	-		

1.10 Production and Productivity of major crops (Average of last 3 years: 2007-08, 2008-09, 2009-10)

Crop	Average productivity (kg/ha)		
	Kharif	Rabi	Summer
1 Paddy	2500.0	-	-
2 Groundnut	400.0	500	
3 Blackgram	-	200	
Major Horticultural crops	Average productivity (kg/ha)		
Crop 1 Brinjal		10500	
Crop 2 Chilli		4500	

1.11	Sowing window for 5 major crops (start and end of sowing period)	Crop 1: paddy	2: Groundnut	3: Blackgram	4: Brinjal	
	Kharif- Rainfed	June-Aug	June	August	July-August	
	Kharif-Irrigated	-				
	Rabi- Rainfed	-		January		
	Rabi-Irrigated	-	-			

1.12	What is the major contingency the village is prone to? (Tick mark)	Regular			Sporadic (specify month of occurrence in brackets)			Which crops are affected most
		Severe	Moderate	Mild	Severe	Moderate	Mild	
	Drought		✓	-				Paddy
	Flood							
	Heat wave			✓				Vegetable
	Cold wave							
	Pests and diseases (specify)blast,BPH,Stemborer in paddy,wilt in groundnut, mosaic in blackgram, stem borere in brinjal			✓				Paddy, Groundnut, Blackgram, Brinjal
	Sea inundation							

1.13 Other constraints/ scarcities

Water logging	-
Change in rainfall timing affecting certain livelihood (in certain areas)	No
Non-availability of quality seed in time (name the crop):	Paddy, Groundnut, vegetables
Non-availability of farm machinery/ implements (name the machine/ implement):	Power tiller, thresher, weeder, sprinkler and drip systems
Non-availability of fodder (specify the months of scarcity):	-
Non-availability of critical inputs for livestock & poultry, like vaccines, etc.	Yes
Major diseases in livestock & poultry (which animal is more affected):	-
Which crops are more affected due to water scarcity/ low rainfall:	Paddy, Fish, Groundnut
Lower price of farm produce (name of the crops):	Paddy
Marketing arrangement/ channels for livestock & their products:	No

1.14 Existing community participation

1.15 Coping strategies adopted by innovative farmers of the selected village/ nearby villages:

Adverse situation	Coping strategy
Early season drought (delayed onset)	Nil
Normal onset followed by 15-20 days dry spell	Cultivation of short duration ragi var-Chilika, (KVK intervention)
Mid season drought (long dry spell, consecutive 2 weeks rainless)	Nil
Terminal drought	Nil
Insufficient groundwater recharge due to low rainfall/ over-exploitation	Nil
Scarcity of feed and fodder and water for animals during drought	Nil
Feeding/ reproductive management of livestock during heat/ cold wave	Nil
Feed and fodder and water for animals during heat/ cold wave	Nil
Fisheries: Shallow water in ponds due to insufficient rains/inflows	Stocking of fish yearlings with supplementary feeding with mixture of GNOC & RB in the ratio 1:1 fortified with vit-min mixture(1%) @2-5% of body wt.
Crop management during short duration flood situation	Nil
Disease epidemics mitigation in livestock during cyclone/ flood	Nil

1.16 Schemes/ programmes in operation in the selected village, like.

- MNREGS:
- Integrated watershed development programme: Water shed programme
- Others

2.0 Climate resilient technology package

2.1 Proposed interventions

Interventions		No. of units/ farmers proposed	Area, ha	Cost per unit or per ha, Rs.	Total Expenditure, Rs.
No. of active SHGs in the village: 2 No. of the other active community based organizations in the village and their activities: Nil No. of farmers going for insurance of their crops: Nil No. of farmers going for insurance of their animals (mention separately for small and large ruminants): Nil		100	40.0	12,000	4,80,000
Drought resistant / flood tolerant varieties:					
Crop- 1 Paddy (Sahabhagi/Naveen/MTU-1001)					
Crop- 2 Ragi (Chilika/Dibyasingha/Subhra)		25	5.0	6000	30,000
Crop-3 Maize		20	3.0	8,000	24,000
Crop-4 Groundnut (Smruti/TMV-2/Devi/AK-12-24)		15	5.0	18,000	90,000
Introduction of new crops (drought/ flood tolerant)					
Crop- 1 Elephant Foot Yam (Gajendra)		10	1.0	60,000	60,000
Crop- 2 Yam bean (Rajendra mishri khanda & others)		05	1.0	25,000	25,000
Appropriate inter-cropping systems					
Crop-1 Paddy+ Arhar		05	1.0	14,000	14,000
Crop-4 Ragi+Arhar		05	1.0	8,000	8,000
In-situ moisture conservation:					
1- Turmeric (Roma) (Straw & leaf mulching)		10	1.0	1,00,000	1,00,000
Rainwater harvesting structure (Farm pond)-			0.4	3,50,000	1,40,000
Percolation pond/ injection wells for recharging the wells			0.2	3,00,000	60,000
Renovation of defunct water harvesting structures in the village:					
			0.4	3,00,000	1,20,000
Micro-irrigation system: Drip/ Sprinkler					

Drip- Mango & Cashew	10 10	3.0 2.0	6,500 40,000	20,000 80,000
Seed production (bank) for own use (crop for which seed is not available) 20-25 farmers selected. Sprinkler- Vegetable, Groundnut Paddy- Sahabhazi/Naveen/MTU-1001	20	10.0	13,000	1,30,000
Fodder bank (No. of members) Revolving fund may be given initially	-	-	-	
Development of private/ common fodder resources	-	-	-	
Prophylaxis of livestock & poultry	-	-	-	25,000
Mitigation of vitamins and mineral deficiency in livestock	-	-	-	25,000
Introducing better adapted high yielding breeds of livestock	-	-	-	
Custom hiring centre (farm machinery/ implements/ equipments)	-	-	-	6,25,000
Activities for diversification of agriculture/ livelihoods	-	-	-	50,000
Capacity building (trainings/ visits): 1- Training, exposure visit, documentation	-	-	-	1,00,000
Insurance of livestock/ crops (facilitation)	-	-	-	50,000
Agro-advisory services to the farmers	-	-	-	14,000
Group marketing for high value crops	-	-	-	
Total	-	-	-	22,70,000
Salary Head of SRF (2 nos)	-	-	-	4,00,000
Institutional charge	-	-	-	1,00,000
TA, DA	-	-	-	85,000
POL	-	-	-	70,000
Monitoring review, Consultancy	-	-	-	50,000
Contingency	-	-	-	60,000
Grand Total	-	-	-	30,35,000

* 1. The interventions may be decided based on real needs of the village and feasibility of implementation

2. The NRM interventions like check dams, de-silting of water harvesting structures, (even some farm ponds) etc. may got done through MNREGS. The wage component may come from NREGS and material component may come from NICRA.

2.2 List of implements for the Farm machinery custom hiring center (to be identified based on community needs)*

S. No	Items	Total Cost
1	MB Plough	30717.00
2	Power sprayer	17250.00
3	2 Water pumps	41000.00
4	Power tiller with rotavator	145350.00
5	Micro irrigation (Sprinkler & Drip)	80120.00
6	Seed cum fertiliser drill	34100.00
7	Power weeder	60300.00
8	Thresher (power operated)	29700.00
9	Breeding hapa -3 Nos	2970.00
10	Hatching Hapa (Outer) -4nos Hatching Hapa (inner) -4nos	3000.00
11	Hand net – 3 nos, Plankton net-3 Nos, pH paper-1set	990.00
12	Printer	5400.00
13	Computer	42176.00
14	GPS	15080.00
15	Pocket pH meter	4725.00
16	Pocket EC meter	4837.00
17	Weather station	50000
18	Rotary trillor	56000.00
19	Plankton Net	600.00
20	pH paper set	300.00
	Total	6,24,615.00

2.3 Functioning of the fodder bank (conservation and storage of fodder to be used during scarcity period)

2.4 Institutional arrangements to be encouraged/ made

The farmers of the selected village have to own the programme. There is need to organize/form committees of the villagers to take up the project activities by calling a gram sabha meeting. The following committees may be organized:

- *Village Climate Risk Management Committee (CRMC)*: to take up the overall activities of the project
- *Committee for managing the custom hiring center* (Farm service center) in the village
- *Fodder management committee*

The relevant members of the CRMC may also be the part of other committees.

Sustainability fund and institutional framework for promoting user fee and collection of depreciation cost etc should also be planned.

Note: Some details should be provided about the functioning of the proposed institutional structures

problems	Intervention	Resilience to climate change
Water scarcity	Introduction of drought tolerant paddy varieties	
	Sahabgagi dhan-Sustain drought for about 3weeks without getting affected	
	Naveen- Tolerance to drought as well as major pest diseases .	
	MTU_1001-Variety of paddy that withstand some pressure of windand waterlogging.	
	Rain waterharvesting by farm pond	To escape drought
	Summer ploughing	
	Insitu water conservation through mulching and others	
	Introduction of improved ragi ,maizeand oil seed varieties	
	ragi(chilika,subhra,Dibyasingh)	To escape mid season drought.
	Maize-hybrid varieties)	
	Oilseed (Groundnut)-Smruti, Devi, TMV-2	
	Introduction seed production programme for own use (crop for which seed is not available)	
	IPM for paddy, ragi,maizeand vegetables	Land use practice
	Cultivation of yambean-Rajendra mishri khanda	
	Turmeric-Roma	
	Elyphant foot yam-Gajendra	
	Rain water harvesting	Life saving irrigation during dry spell
	Renovation of existing water bodies (WHS, farm ponds)	
	Intercropping(ragi+Arhar,Paddy+Arhar)	Improve soil health.
	Micro Irrigation system for field crop & Horti.crops	Life saving irrigation at critical growth stage and increasing WUE
	Sprinkler irrigation	
	Drip irrigation	
	In-situ moisture conservation in vegetables	Minimize evaporation loses, suppression of weeds and
	Live and poly mulching for efficient water management	

	Improvement of soil fertility and productivity and water holding capacity with green manuring (Dhanicha)	resilient to dry spell
Lack of farm implements	Setting of farm machinery custom hiring centre (MB plough power tiller, power sprayer ,weederetc)	Timely availability of farm implements
Lack of agroadvisory.	Agro-advisory services to the farmer	Management of pest and disease fluctuations occurring due to climatic variability
	Weather based pest and disease forecasting message	
	Kisan Mobile Advisory Services (KMA)	
lack of breeding improvement and maintenance of livestock	Mitigation of mineral and vitamin deficiency in livestock's	
	Providing improved buck.-Sirohi	
	Prophylaxis of Livestock and poultry	Enhance immunity of livestock during stress
	Vaccination camp against common endemic diseases like BQ, Anthrax, FMD, Ranikhet etc.	
Lack of extra income	Activities for diversification of Agriculture /Livelihoods	Alternative livelihood support
	Introduction of paddy straw and oyster mushroom cultivation	
	Introduction of Apiculture	
	Group marketing for high value crops	Alternative livelihood support
	Collective marketing and value addition of surplus crops	
	pisciculture	
Lack of awareness of insurance.	Insurance of crops and Livestock	Risk mitigation measures
Lack of extension worker	Capacity building	
	Training and Exposure visit	Seeing is believing

4.5 Activity schedule (January 2011 to March 2012)

Month wise Activities/ Interventions															
<i>Natural resource Management</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Jan-11	Feb-11	Mar-11	April-11	May-11	June-11	July-11	Aug-11	Sept-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
	-	-	-	Renovati on of defunct pond	Renovati on of defunct pond	Micro irrigatio n system			Micro irrigati on	Mic ro irri gati on					
				Renovati on of water harvesti ng structur e	Renovati on of water harvesti ng structur e										
<i>Crop production</i>			Cust om hirin g centr e, purc hase of farm imple ment & mach inery			Introduc tion of drought tolerant variety	Introduc tion of new droughtt olerant crop	Introdu ction of paddy straw mushro om cultivat ion	Introd uction of yamb ean						Intro ducti on of reari ng of hone y-bee
						Integrat	IPM in								

Month wise Activities/ Interventions

<i>Natural resource Management</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Jan-11	Feb-11	Mar-11	April-11	May-11	June-11	July-11	Aug-11	Sept-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
						ed nutrient management in paddy	paddy								
						Seed production (Bank) paddy					Introductio n of oyster mush room				
<i>Livestock & Fishery</i>						Release of fingerlings/yearlings									
						Introduc tion of , improve d buck	Release of fish fingerlin g/yearli ng	Use of supple mentar y feeding	Use of Cifax for mana gement of EUS	Lim e in stocki ng pond	Vacci natio n in poultr y,cattle and goatr y	Partial harve st of fish pond	Vacci nation of poultr y		
<i>Institution / capacity building</i>		Awar enes s Proje	Proje ct Lunc hing		Training on preparat ion of	INM of paddy	IPM of paddy	SRI method of rice cultivat	Rice fish farmin g		Oyste r mush room	Bee-keepin g for profit			

Month wise Activities/ Interventions

<i>Natural resource Management</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Jan-11	Feb-11	Mar-11	April-11	May-11	June-11	July-11	Aug-11	Sept-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
		ct objectives and goal	village meeting		pond			ion to mitigate global warming	technique in the deep waterlogged area		cultivation	& pleasure			
					Rainwater harvesting technique		Paddy straw mushroom cultivation	IPM in paddy			Exposure visit		Exposure visit		
					Resource conservation technology for rain fed farming	Income generation activity for empowerment of women									
					Weed management in kharif crops	Goat rearing	Soil test based fertilizer recommendation to crops								
					Soil sample collection	Integrated farming	Construction technology								

[illegible]

