ACTION PLAN

NATIONAL INNOVATIONS IN CLIMATE RESELIENT AGRICULTURE (NICRA)

2024-25

KrishiVigyan Kendra, Kendrapara

Zone-V, ICAR-ATARI, Kolkata

Odisha University of Agriculture & Technology, Bhubaneswar

Annual Action Plan (2024-25)

NATIONAL INNOVATIONS IN CLIMATE RESELIENT AGRICULTURE - TECHNOLOGY DEMONSTRATION COMPONENET

A. Basic information

S.No.	*Item*	*Detail*
1.1	Zone	Zone V
1.2	Name of KVK (district)	Kendrapara
1.3	Name of Tehsil	Kendrapara
1.4	Name of Village	Gajipitha, Birindolo
1.5	Climatic vulnerability	Flood, Moisture stress, Cyclone, Pest incidence

B. What are the promising resilient practices identified based on the last 6 years of work

S No	Module	Resilient practice	*Suitability of the practice in the village
Natural Resource Management			
1	Green manuring	Green manuring (dhanicha) in rice	Suitable to medium land paddy cultivation
2	Mulching	Poly mulching/ organic mulching (paddy straw) in Brinjal	Suitable to upland vegetable cultivation
3	Pond renovation	Renovation of pond for fish production and irrigation	Suitable to pond-based farming system
4	Moisture conservation	Raising of Field bund in rice	Suitable to rainfed medium and upland paddy cultivation
Resilient varieties and systems			
1	Flood tolerant varieties	Cultivation of flood tolerant rice variety Swarna sub 1 and CR 1009 sub 1	Suitable to temporary flood situation and lowland
2	Seedling raising	Low-cost poly tunnel for seedling raising	Suitable for vegetable QPM production during kharif season
3	Paira cropping	Rice + Black gram Paira cropping	Suitable to rainfed lowland
4	Short duration variety	Cultivation of greengram var. IPM-2-14 in post flood situation	Suitable to catch the season

S No	Module	Resilient practice	*Suitability of the practice in the village
5	Heat and disease tolerant variety	Cultivation of Heat tolerant and ToLCV & BW resistant tomato Variety Arkaananya	Suitable to upland/ medium land and heat stress.
6	Grow bag cultivation	Cultivation of cucurbits vegetables in grow bag and trellis system	Ensuring vegetable availability under flood situation.
Livestock related interventions			
1	Backyard poultry rearing	Stress tolerant duck breed Khaki Campbell and poultry breed Kadaknath	Hardy breeds of poultry rearing in backyard for increasing livelihood status.
2	Housing system	Improved hygienic goat housing system	Suitable for hygienic shelter under flood condition
3	Housing system	Low-cost portable poultry housing system	Suitable for shifting of the poultry cage during flood condition.

- Suitability with reference to farming systems such as rainfed/ irrigated/ horticulture, etc.
- It can be lowland/ medium land/ upland situations in the village
- It can be temporary or shallow flooding/ prolonged and deep-water situations, etc.

C. Predominant farming systems of the village and suitable low-cost resilient practices for each of the farming situations

S No	Farming situation	Predominant crops grown	Extent of cultivated area in the village	% of the total cultivated area in the village	*Low-cost resilient practices that can be scaled up	Proposed area to be covered during 2024-25
1	**Rainfed upland**					
	Rice-fallow	Rice	180 ha	36	DSR, ICM in millet,	40 ha
2	**Rainfed midland**					
	Rice-pulse	Kharif- Rice Rabi- Blackgram and green gram	130 ha	26	Green manuring, Flood tolerant rice, Vermi composting, paira cropping	40 ha

S No	Farming situation	Predominant crops grown	Extent of cultivated area in the village	% of the total cultivated area in the village	*Low-cost resilient practices that can be scaled up	Proposed area to be covered during 2024-25
3	**Rainfed lowland**					
	Rice-pulse	Kharif- Rice Rabi- Blackgram	70 ha	14	Flood tolerant rice, Post flood stocking of IMC yearling	20 ha
4	**Irrigated upland**					
	Vegetable-Vegetable	Kharif- Cucurbits Rabi-	120 ha	24	Organic mulching in vegetable,	20 ha

*Indicate NRM, crop based and livestock-based interventions for each of the farming situation

D. Module-wise existing practice and climate resilient practice/technology to be demonstrated for the year 2023-24

S. No.	Module	Climatic constraint addressed	Key intervention	Measurable indicator (s)
1	**Natural resource management**			
a.		Drought	Construction/ renovation of Farm Pond / Irrigation channel	Yield increases due to life saving irrigation
b.	River bank plantation	To check run off	Planting Neem, Karanja, Casuarina plants	
c.	Soil health management	Moisture stress	Green manuring in Rice by dhanicha	Soil carbon improvement
d.	Agricultural waste utilisation		Vermi composting	Productivity
e.	Moisture conservation	Moisture stress	Ridge & furrow method	
2	**Crop production**			
a.	Improved varieties	Flood	Flood tolerant rice variety Swarna Sub 1 & CR 1009 sub 1	Tolerant to Submergence, Yield
b.	Direct seeded rice	Flood	Mechanized DSR	

S. No.	Module	Climatic constraint addressed	Key intervention	Measurable indicator (s)
c.	Rice – Blackgram Paira cropping system	Moisture Stress	Paira cropping system	System Yield
d.	Short duration green gram cultivation in post flood situation	Flood	Post flood cultivation of pulse	Yield increase in catch crop
e.	Improved jute retting technology with application of NINFET SATHI	Flood	Improved quality of fibre through NINFET SAATHI	Yield and quality of fibre
f.	Purple rice Var. Labanya as crop diversification	Moisture stress	Crop Diversification	Yield
g.	Crop diversification	Water logging	Commercial lotus cultivation	Yield
h.	Crop diversification		Exotic vegetable cultivation	Yield
i.	Crop diversification		Off season Cauliflower	Yield
j.	Bitter gourd in trellis and grow bag	Flood	Growing in grow bags with trellis system	Yield
k.	Disease and pest management	Pest infestation	BPH management in Rice	% reduction in pest &Yield
l.	Disease and pest management	Pest infestation	YMV management in greengram	% reduction in YMV &Yield
m	Disease and pest management	Pest infestation	Bio intensive pest management in okra	
	Mushroom cultivation	Production controlling humidity & temperature	Off season paddy straw mushroom under shade net	Yield
3	**Livestock & Fisheries**			
b.	Pisciculture	Flood	Post flood stocking of yearlings to minimize culture duration	Avg. body wt. of carps, Yield increase
c.	Duckery	Flood	Rearing of stress tolerant duck breed Khaki Campbell	Body wt (kg) Egg laying capacity
d.	Poultry	Flood	Rearing of stress tolerant chick breed Rainbow roster	Body wt (kg)

S. No.	Module	Climatic constraint addressed	Key intervention	Measurable indicator (s)
e.	Improved shelter	Flood	Low-cost portable poultry house	Survival %
4	**Institutional interventions**			
a.	Seed Bank	Flood	Supply of storage structure	Area coverage with stored seed
b.	Fodder bank	Flood	Supply of planting material	Productivity

2.0 Non-recurring contingencies – Equipment

Procurement of farm machinery/ implements for Custom Hiring Centre (CHC)

S.No.	Item	Unit cost* (Rs)	No. of units	Amount (Rs)
1.	Multi crop planter	2,00,000	1	2,00,000
2.	Self- propelled paddy transplanter	2,50,000	1	2,50,000
Total			2	4,50,000

** Wherever possible, subsidy extended by State Government for the machinery to be utilized and accordingly rate adjusted. Wherever required, include equipment for village level small weather station, rain gauge and any other critical equipment for community interventions.*

3.1 Module 1 – NRM interventions

A) Repair / Renovation of existing water harvesting structures & drainage channels etc.

S. No.	*Intervention*	*Dimensions*	*No. of beneficiaries*	*Convergence value, if any (Rs)*	*Value of farmers share, if any(Rs)*	*Cost to project (Rs)*
1	Renovation of farm pond / irrigation in channel	(25 X 15 X 3) m. (2 nos)	40			30,000
2	River bed plantation	(220 X 50) m	50			15,000
3	Raising of field bund	2 ha	10			10,000
	Sub-total 3.1		**110**			**55,000**

B) *In situ* conservation – Resource Conservation Technologies (RCTs)

Item (specify)	*Unit cost Rs/acre*	*No. of demos*	*Coverage*		*Amount (Rs)*	*Remarks*
			Area (acres)	*No. of farmers*		
	A	**B**	**C**	**D**	**A x C**	
Green manuring (dhaincha) in Rice	1,600	25	25	25	40,000	Soil health management
Ridge and Furrow in vegetables	8,000	10	2.5	10	20,000	Moisture conservation
Organic mulching in vegetables	5,000	10	5	10	25,000	Moisture conservation
Vermicompost from bio degradable waste	4,000/ tank	5	-	5	20,000	Agro waste management
Application of bio fertilizer in pulse/ vegetable	1,000	20	10	20	10,000	Improvement of soil fertility
Sub-total 3.1					**1,15,000**	

3.2 Module II – Crop production interventions

A) Stress tolerant / improved varieties

Intervention	*Description*		*Cost (Rs)/ acre*	*No. of demos*	*Coverage*		*Amount (Rs)*	*Remarks (purpose of interventio n)*
	Crop	*Variety (s)*			*Area (ac)*	*No. of farmer*		
			A	*B*	*C*	*D*	*A x C*	
Flood tolerant rice variety	Rice	Swarna sub 1	800	25	25	25	20,000	
	Rice	CR 1009 sub 1	800	25	25	25	20,000	
Nutrient management in Rice	Rice	Swarna sub 1 &CR 1009 sub 1	2,000	25	10	25	20,000	
Legume as flood contingent crops	Green gram	Virat	1040	25	25	25	26,000	
ICM in millets	Ragi	Arjun	1,000	5	2.5	5	5,000	
Rice Fallow management with paira cropping	Rice + Black gram	Suitable var.	5,000	25	10	25	50,000	
Improved jute retting using NINFET SAATHI	Jute	Suitable var.	3,200	20	5	20	16,000	

Intervention	*Description*		*Cost (Rs)/ acre*	*No. of demos*	*Coverage*		*Amount (Rs)*	*Remarks (purpose of interventio n)*
	Crop	*Variety (s)*			*Area (ac)*	*No. of farmer*		
			A	*B*	*C*	*D*	*A x C*	
High value vegetable crop	Red cabbage		10,000	10	1	10	10,000	
Bitter gourd cultivation in grow bag & trellis	Bitter gourd		15,000	5	1	5	15,000	
Off season cauliflower	Cauliflow er	CFL-1522	24,000	10	1	10	24,000	
Commercial lotus cultivation	Lotus	Accessi on-1	12,000	10	1	10	12,000	
IPM in Rice	Rice	Swarna sub 1	3,000	30	7.5	30	22,500	
Bio intensive pest management	Okra	F1 hybrid	4,000	15	5	15	20,000	
Thrips and mite management	Chilli		4,000	10	2.5	10	10,000	
Mushroom production	Paddy straw & Oyester		70/ bed	20	400 bed	20	28,000	
Total							**2,98,500**	

B) Improved agronomic practices and other crop interventions

Intervention		*Cost (Rs)/ acre*	*No. of demos*	*Coverage*		*Amount (Rs)*	*Remarks (Purpose of intervention)*
				Area (ac)	*No. of farmers*		
		A	*B*	*C*	*D*	*A x C*	
Water saving paddy cultivation methods	DSR	3,000	25	30	25	39,000	
Community nursery - Rice		2,00,000	1	0.1	25	20,000	Availability of seedling for early season flood
Critical inputs for Integrated Farming systems (Vegetable Seedlings, Fingerlings, Chicks, Mushroom spawn)			1	1	5	30,000	

Intervention	*Cost (Rs)/ acre*	*No. of demos*	*Coverage*		*Amount (Rs)*	*Remarks (Purpose of intervention)*
			Area (ac)	*No. of farmers*		
	A	*B*	*C*	*D*	*A x C*	
Nursery inputs for QPM (portray, cocopeat, fipronil, COC, formalin, vermicompost, root trainer)		5	0.1	5	15,000	
Low-cost poly tunnel structure	-	1	0.1	20	15,000	
Low-cost shade net for mushroom production	-	2	-	10	30,000	
Facilitating insurance for crops (Rice)			60	30		
Income generation activities (Mushroom etc.)	70/ bed	20	400 bed	20	28,000	
Total					**1,77,000**	

4.0 Module 3 – Livestock & Fisheries interventions

4.1 Year-round fodder production strategies (annual/perennial fodder) in the village

Season	**Name of fodder**	**Variety**	**Area (ha)**	**Unit cost of demo (Rs)***	**No. of demos**	**Amount (Rs)***	***Remarks (purpose of intervention & farmers covered)***
Rabi		Hybrid Napier CO4	0.4	500	5	2500	
Summer		Hybrid Napier CO4	0.4	500	5	2500	
	Total					**5,000**	

4.2 Feed demonstrations for crop residue management / stress management: silage / feed blocks/ mineral mixture (MM) blocks / feed enrichment

Details of feed demo*	**Unit cost of demo (Rs)**	**No. of demos**	**Amount (Rs)**	***Remarks (purpose of intervention& farmers covered)***
a) Mineral mixture demos	500	10	5,000	Mineral mixture to be supplemented with animal feed

Details of feed demo*	Unit cost of demo (Rs)	No. of demos	Amount (Rs)	*Remarks (purpose of intervention& farmers covered)*
b) Feeding management & disease control programme in livestock (Total Mixed Ration, Mineral block, medicines & disinfectant solution)	5,000	3	15,000	Animal health camp/ low-cost feed from local input
c) Fish feed, medicines, potassium permanganet	4,000	5	20,000	For enhancing growth rate of fish and taking preventive measures for disease incidence
Total			**40,000**	

**Specify fodder & animal type for demos; here indicate cost of demo, if any; cost of establishment of new units to be given in item 2.0 (equipment), if any.*

4.3 Improved housing /shelter for protection of livestock against extreme weather

Type of shelter improvement*	Unit cost of demo (Rs)	No. of demos	Amount (Rs)	*Remarks (purpose of intervention& farmers covered)*
Low-cost portable poultry house	5,000	04	20,000	
Total		**04**	**20,000**	

**Specify animal type and material used; Plan innovative demonstrations using locally available material*

4.4 Livestock / Fisheries units

A	B	C	D	E	F	G
Enterprise/unit*	**Unit cost (Rs)**	**Convergence share in unit cost, if any** (Rs)**	**Project share in unit cost (Rs)**	**No. of units**	**Cost to Project (D x E) (Rs)**	***Remarks (purpose of intervention& farmers covered)***
Post flood stocking of Yearlings in composite carp culture	2,000			10	20,000	
Duckery	1,500			10	15,000	
Poultry bird Rainbow roster, Kruilor	1,500			20	30,000	
Total					**65,000**	

** Stress tolerant breeds/piggery/goatery/duckery/backyard poultry/ fisheries/bee keeping etc.*

5.0 Module 4 – Community interventions

5.1 Establishment of fodder banks (hay)

Name of the SHG	Fodder type	Quantity of storage (t)	Unit cost (Rs.)	No. of units	Amount (Rs.)	*Remarks (purpose of intervention& farmers covered)*
Maa Sarala SHG (Gajapitha) Radhakrishna SHG (Bilabalarampur)	Hybrid Napier CO4		7,500	2	15,000	
Total					**15,000**	

5.2 Establishment of Seed banks

Name of the SHG	Crop and variety	Quantity of storage (t)	Unit cost (Rs.)	No. of units	Amount (Rs.)	Remarks (No. of beneficiaries & Period of use)
Maa Sarala SHG (Gajapitha)	Rice (Swarna Sub1)	20	20000	1	20,000	
Total					**20,000**	

6.0. Capacity Building & Training Programmes

6.1 Training Courses

Theme	Title of training course	Proposed month	No. of participants	Amount (Rs.)
Crop production	Climate resilient technologies for rice based cropping system	June	30	2250
	ICM in Direct seeded rice	July	30	2250
	ICM in Millet	November	30	2250
	Management of rice during post flood situation	August	30	2250
Production technology	Round the year marigold cultivation	August	30	2250
	Climate resilient vegetable crops and cultivation practices	August	30	2250
	Layout, planning and establishment of river bed plantation	September	30	2250
Crop Protection	Integrated disease and pest management in Rice	August	30	2250

Theme	Title of training course	Proposed month	No. of participants	Amount (Rs.)
	Integrated disease and pest management in tomato	February	30	2250
Resource conservation	Vermi composting	December	30	2250
Pond management	Fish pond management in post flood situation	September	30	2250
Feeding management	Feeding management in pisciculture tanks	October	30	2250
Mushroom	Off season mushroom production	December	30	2250
Total			**390**	**29,250**

6.2 Field Days

Theme	Title of Field Day	Proposed month	No. of participants	Amount
Crop production	Flood tolerant rice variety	November	50	2,000
Crop diversification	Exotic vegetable cultivation	February	50	2,000
Disease & pest management	IPM in Chilli	December	50	2,000
	Total		**150**	**6,000**

6.3 Exposure Visits

Place of visit	Purpose of visit	Proposed month	No. of participants	Cost to project (Rs.)
CHES, CTCRI, IIWM, NRRI	Awareness on improved climate resilient technology	January	40	30000
Total			**40**	**30000**

7.0 Up-scaling of Successful Interventions (Practices which can be scalable with minimal cost are to be selected for scaling up)

Sl.No.	Name of technology	Unit cost/ha (Rs.)	No. of farmers covered	Cost to project (Rs.)	Remarks (justification)
1.	Flood tolerant rice varieties	2,000	20	0	
Total					

8.0 Contractual Manpower (SRFs)

Category	Rate/month (Rs.)	No. of positions	No. of months	Amount (Rs.)
SRF	32,550	1	12	3,90,600
Total		**1**	**12**	**3,90,600**

9.0 Media Products to be developed (brochure/bulletin)

Item description	No. of copies	Amount (Rs.)
NICRA newsletter on Impact of NICRA activities	500 (8 pages)	10,000
Total	**500**	**10,000**

Summary of budget Estimates for 2023-24 (Tentative)

S.N.	*Item*	*Amount (Rs)*
1.	Procurement of farm machinery/implements for CHC	4,50,000
2.	Repair/ Renovation of existing water harvesting structures & drainage channels etc.	55,000
3.	*In situ* conservation – Resource Conservation Technologies (RCTs)	1,15,000
4.	Crop production- Stress tolerant/ Improved varieties	2,98,500
5.	Improved agronomic practices and other crop interventions	1,77,000
6.	Year-round fodder production strategies (annual/perennial fodder) in the village	5,000
7.	Feed demonstrations for crop residue management / stress management: silage / feed blocks/ mineral mixture blocks / feed enrichment	40,000
8.	Improved housing /shelter for protection against extreme weather	20,000
9.	Livestock/fisheries units	65,000
10.	Establishment of fodder banks (hay)	15,000
11.	Establishment of seed banks	20,000
12.	Training courses	29,250
13.	Field days	6,000
14.	Exposure visits	30,000
15.	Up-scaling of successful interventions	
16.	Contractual manpower (SRFs)	3,90,600
17.	Media products to be developed	10,000
18.	Any other contingencies (TA, PoL etc.)	50,000
	Grand total	**17,76,350**

Date: **Signature of PI / PC, NICRA- KVK**