

KVK -JAGATSINGHPUR

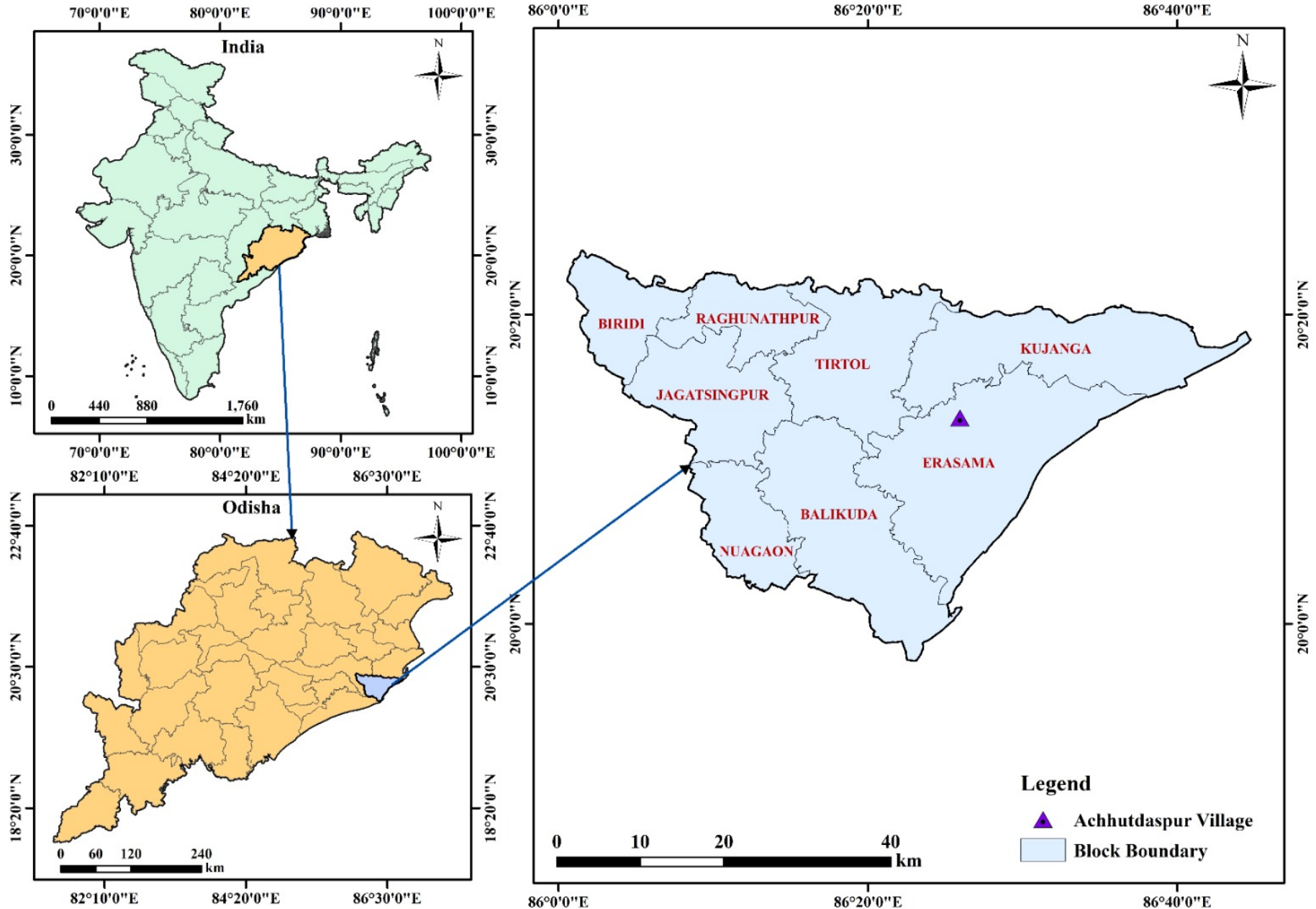
**Technology Demonstrations in Jagatsinghpur
District of Odisha**

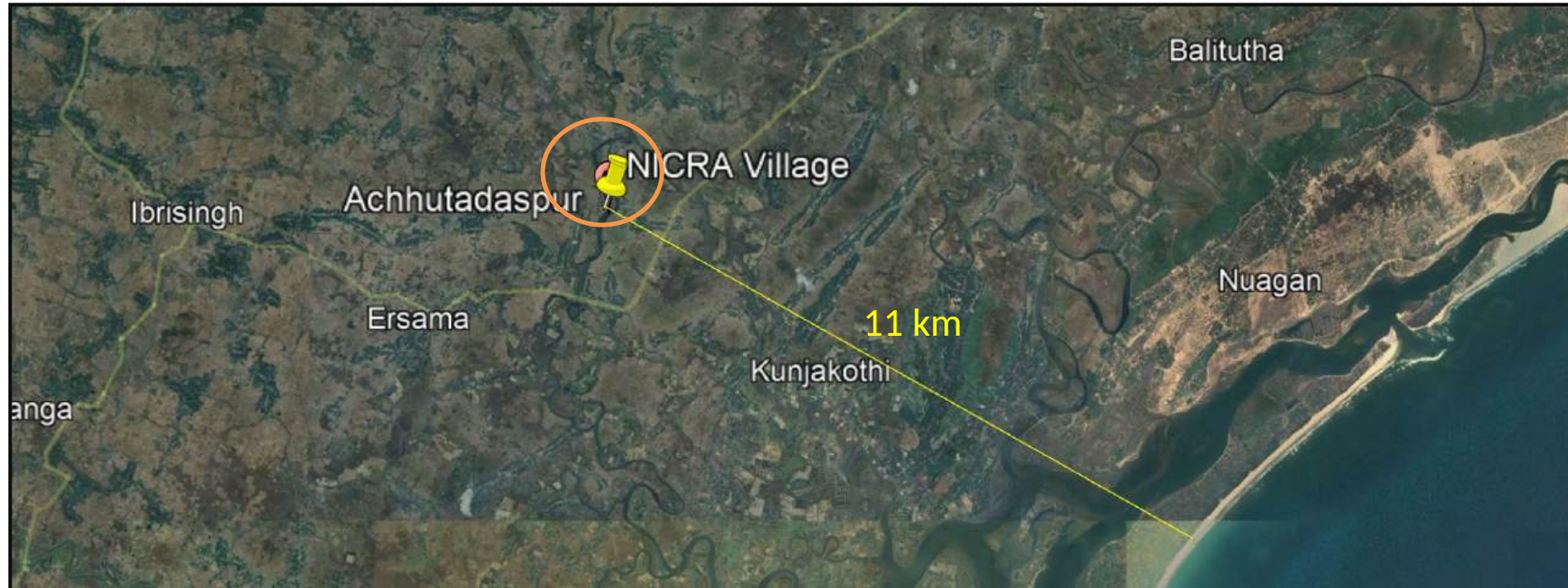
**Impact and performance of NICRA interventions taken up
during *kharif & rabi* (2021 to 2025)**



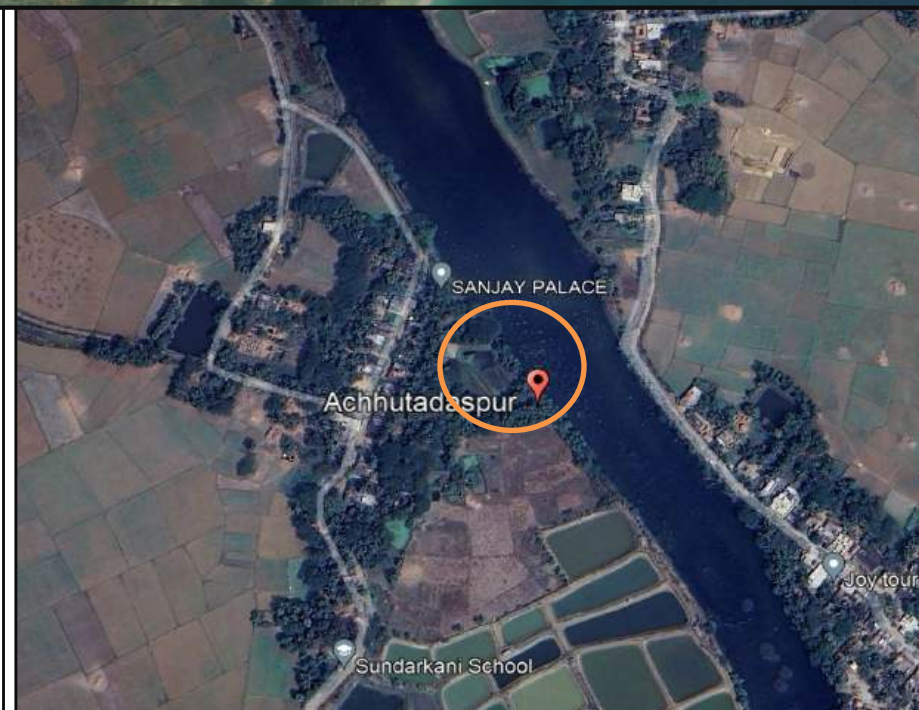
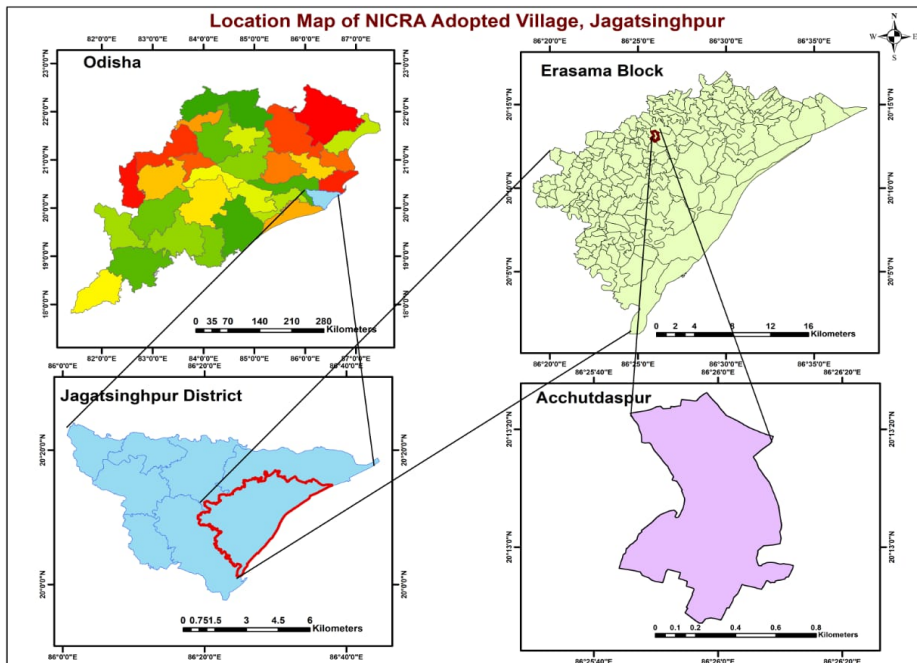
Krishi Vigyan Kendra, Jagatsinghpur
Odisha University of Agriculture & Technology, Bhubaneswar
Technology Demonstration component of NICRA

Location Map of NICRA Village





Location Map of NICRA Adopted Village, Jagatsinghpur



Resource Map of Village Achhutadaspur

20°13'20"N

20°13'0"N

20°13'20"N

20°13'0"N

86°25'40"E

86°26'0"E

86°26'20"E

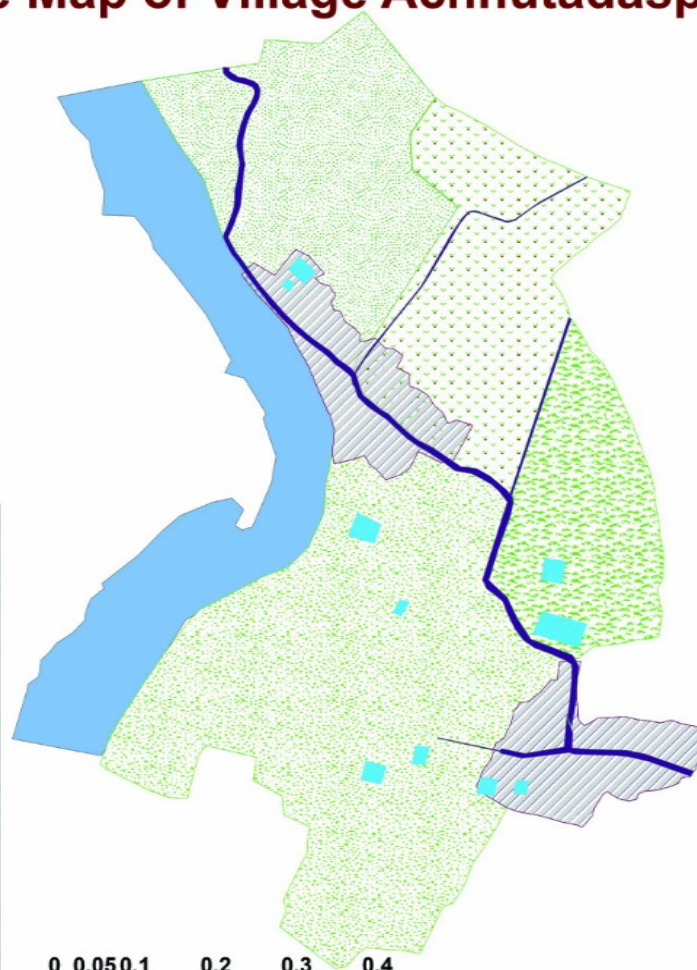
86°25'40"E

86°26'0"E

86°26'20"E



Sl. No	Village information	
1	Agro-climatic Zone:	East and South Eastern Coastal Plain
2	Mean Annual Rainfall :	1706.64 mm
3	Soil Type :	Coastal Saline and Alluvial
4	Number of Household (Nos) :	118
5	Farmer Category (Nos):	a) Landless: 3 b) Marginal(<1 ha): 81 c) Small (1-2 ha): 25 d) Medium (2-10 ha): 9 e) Large(>10 ha): Nil
6	Literacy rate (%):	a) Male: 66.1% b) Female: 53.2%
7	Cultivable Land (ha):	240 ha
8	Cropping Intensity (%):	158%
9	Major cropping systems:	a) Rice-Greengram, b) Rice-Blackgram, c) Rice-Vegetable d) Rice-fallow
10	Cattle Population (Nos):	167
11	Population of Small ruminants (Nos):	5568



Legend

- Village Built-up Area
- Village_Road
- River
- Pond
- Agril_Land Patch-I
- Agril_Land Patch-II
- Agril_Land Patch-III
- Agril_Land Patch-IV

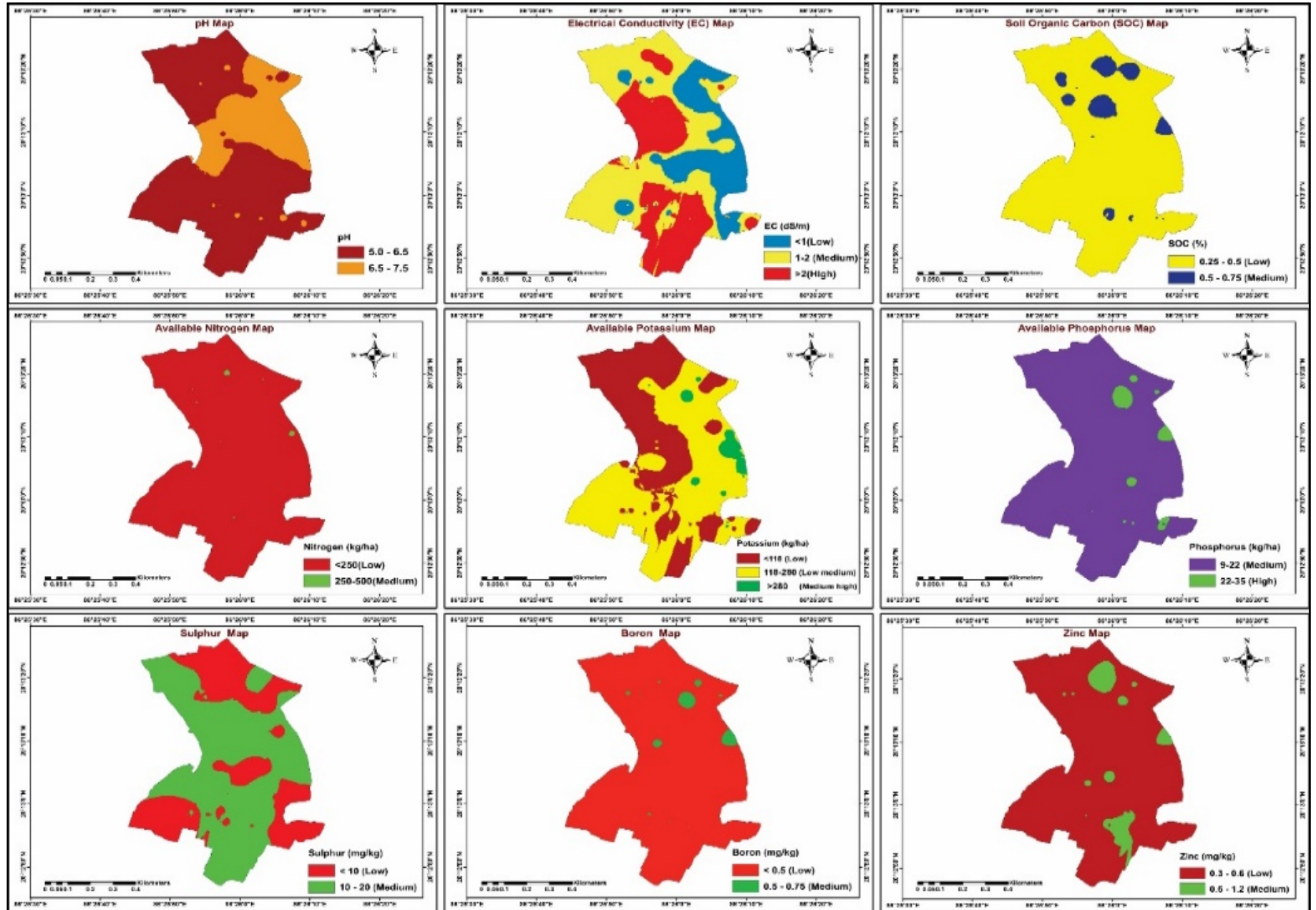
0 0.05 0.1 0.2 0.3 0.4 Kilometers



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Soil nutrient Map of NICRA Village



Details about the villages involved in the programme

S.No	Details	Village 1
1	Name of the village adopted	Achhutadaspur
2	Involved in TDC-NICRA since (year)	2021
3	Retreating of TDC-NICRA programme (year)	5 th
4	Cultivated area (ha)	250
5	Area covered under TDC-NICRA	200
6	Flood/Submergence prone Area (ha)	152
7	Drought affected area (ha)	240
8	No. of households in the village	118
9	No. of households covered under TDC-NICRA	105
10	No. of farmers in the village (Men + Women)	291 (164+127)
11	No. of farmers covered under TDC-NICRA (Men + Women)	239 (134+105)

Rainfall characteristics and stress experienced

Parameters	Normal year		Stress year (mention the year/ years)			
			Drought		Flood	
	Year	Parameters	Year	Parameters	Year	Parameters
Annual rainfall (mm)	2022	1529.60	2023	1106.51	2021	2433.31
Total <i>kharif</i> rainfall	2022	1247.92	2023	790.23	2021	1350.85
Total <i>rabi</i> rainfall	2022	169.07	2023	198.87	2021	662.41
No. of rainy days (>2.5 mm)	2022	81	2023	74	2021	98
No. of dry spells during <i>kharif</i> season (mention dates)	2022	01 (04-06-22 to 14-06-22)	2023	02, 06.10.2023 to 22.10.2023 & 25.10.2023 to 04.11.2023	2021	NA
Duration of dry spells	2022	11 Days	2023	17 Days, 11 Days	2021	NA
No. of intensive rains > 60 mm (mention dates)	2022	03 Nos 17-07-22, 14-08-22, 24-08-22	2023	02 Nos 15-07-23, 14-09-23,	2021	04 Nos 25-05-21, 26-05-21, 23-06-21, 23-07-21
Quantity of rainfall received (mm)	2022	80.64, 82.83, 86.84, 61.87	2023	91.11, 64.14	2021	131.77, 194.19, 69.55, 105.39

Rainfall characteristics and stress experienced

Parameters	Normal year		Stress year (mention the year/ years)			
			Drought		Flood	
	Year	Parameters	Year	Parameters	Year	Parameters
Number of heat waves experienced	2022	3	2023	5	2021	4
Heat waves (Date and duration)Tmax >35° C for two consecutive days	2022	23-04-22 to 29-04-22 (7 days), 20-05-22 to 21-05-22 (2 days), 28-05-22 to 29-05-22 (2 days),	2023	10-04-23 to 20-04-23 (11 days), 07-05-23 to 11-05-23 (5 days), 14-05-23 to 25-05-23 (12 days) 29-05-23 to 09-06-23 (12 days) 11-06-23 to 18-06-23 (8 days)	2021	24-03-21 to 25-03-21 (2 days), 29-03-21 to 01-04-21 (4 days), 24-04-21 to 27-04-21 (4 days) 17-05-21 to 19-05-21 (3 days)
Number of cold waves experienced,Tmin <15° C for two consecutive days	2022	6	2023	4	2021	4
Cold waves (Date and duration)	2022	02-01-22 to 06-01-22 (5 days), 08-01-22 to 09-01-22 (2 days), 17-01-22 to 20-01-22 (4 days), 28-01-22 to 31-01-22 (4 days), 18-12-22 to 20-12-22 (3 days), 23-12-22 to 24-12-22 (2 days)	2023	06-01-23 to 12-01-23 (7 days), 03-02-23 to 05-02-23 (3 days), 12-12-23 to 13-12-23 (2 days), 16-12-23 to 22-12-23 (7 days)	2021	16-01-21 to 18-01-21 (3 days), 31-01-21 to 06-02-21 (7 days), 08-02-21 to 10-02-21 (3 days), 15-12-21 to 25-12-21 (11 days)

Vulnerabilities in different seasons and stage of crop affected

Major Vulnerability	Year	Season (<i>Kharif/rabi</i> and Both)	Stage of crop affected	No of days	Contingency measures adopted	Impact (Farmers and other stakeholder perception)
Drought	2023	Kharif	Panicle initiation	28	Supplemental irrigation, potash spray	Farm pond users saved crop; 20-30% higher yield
Flood	2021	Kharif	Tillering & vegetative	8	Submergence-tolerant rice, drainage/bio-drainage	Crop loss reduced; quick recovery after replanting.
Heat stress	2023	Rabi	Flowering & pod filling	6	Sprinkler irrigation, KNO ₃ spray	Reduced flower drop and better pod setting.

Vulnerabilities in different seasons and stage of crop affected



Submergence condition



Rice crop damaged by Flash flood condition during tillering stage



Submergence condition

Most Promising climate resilient Technologies Identified

Module	S.N	Climate constraints	Farmers practice	Climate resilient technologies identified			
				Rainfed without animal (FST-1)	Rainfed with animal (FST-2)	Irrigated without animal (FST-3)	Irrigated with animal (FST-4)
NRM	1	Drought/ Dry Spells	Rainfed farming/ Flood Irrigation for irrigated farmers	Water harvesting in farm pond & supplemental irrigation	Water harvesting in farm pond & Supplemental irrigation	Micro irrigation and mulching	Micro-irrigation and mulching
	2	Salinity	Local rice var. Raspanjar	-	Green manuring in Dhanicha & Deep ploughing/ INM	-	-
	3	Submergence	Field to field drainage	Drainage facility with field drains & Hume pipe	-	Raised bed and Ridge and furrow systems	-

Most Promising climate resilient Technologies Identified

Module	S.N	Climate constraints	Farmers practice	Climate resilient technologies identified			
				Rainfed without animal (FST-1)	Rainfed with animal (FST-2)	Irrigated without animal (FST-3)	Irrigated with animal (FST-4)
Crop	1	Submergence	Sarala & Pooja	Submergence tolerant rice varieties Swarna sub-1 & CR 1009 sub-1	-	-	-
	2	Salinity	Local salt tolerant rice var. Raspanjar	Coconut planation	Salt tolerant rice varieties and Coconut	Coconut & Arecanut	Coconut & Arecanut
	3	Water stress	Local Varieties	Short-duration pulses	-	Vegetables like Okra with drip	Micro-irrigation Coconut & Arecanut

Most Promising climate resilient Technologies Identified

Module	S.N	Climate constraints	Farmers practice	Climate resilient technologies identified				
				Rainfed without animal (FST-1)	Rainfed with animal (FST-2)	Irrigated without animal (FST-3)	Irrigated with animal (FST-4)	Other predominant system (Landless labour)
Lives tock	1	Drought	Improper feed availability; local breed	-	Backyard Poultry-Aseel / Cattle shed Renovation + Hybrid Napier	-	Cattle shed+ Hybrid Napier	-
	2	Submergence	-	-	Fishery (IMC) & Duckery	-	Duckery	-
	3	Heat Stress	-	-	Improved housing with ventilation cows	-	Improved housing with ventilation	-

FST Scenarios

FST No.	Scenario	Problem	Interventions
FST 1	Rainfed without Animal	Submergence in Kharif and moisture stress in Rabi Season	Submergence tolerant Rice varieties in Kharif+ Drainage Facility + short duration greengram variety+ Supplemental irrigation from Farm
FST 2	Rainfed with Animal	Soil Salinity, Moisture stress in Rabi and Heat stress in summer	Deep Ploughing +Green Manuring+ Saline Tolerant Rice Varieties+ INM+ Supplemental irrigation from farm pond+ Resilient Poultry Breed+ Renovation of Cattle Shed+ Fodder bank for animals+ Coconut Plantation
FST 3	Irrigated without animal	Limited irrigation in Rabi	Sprinkler Irrigation+IPM
FST 4	Irrigated with animal	Limited irrigation in Rabi	Drip irrigation and mulching in vegetables +INM+Duckery

Impact of promising CRTs in FST-1 (Rainfed without animal)

Climate stress	Climate resilient technology	Crop/ cropping system	NICRA farmers			Farmers Practice			CRT impact (% Resilience)
			Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	
Normal year (Average of normal years)									
Submergence	Submergence Tolerant var. Swarna Sub-1	Rice	4800 (23%)	60000	110400	3900	58000	89700	
Submergence	Var. CR 1009 Sub-1	Rice	4680 (21.5%)	60000	107640	3850	58000	88550	
Moisture stress in rabi	Swarna Sub-1 in <i>kharif</i> and Short duration variety : Virat in <i>rabi</i>	Rice-Greengram	6876 (Eq. Yield) 21.9%	90000	158151	5640	82000	129637.2	
Stress year (Average of stress years)									
Submergence	Submergence Tolerant var.Swarna Sub-1	Rice	4500 (25%)	60000	103500	3600	58000	82800	93.7
Submergence	CR 1009 Sub-1	Rice	4400 (29.4%)	60000	101200	3400	58000	78200	95.6
Moisture stress in rabi	Swarna Sub-1 in <i>kharif</i> and Short duration variety : Virat in <i>rabi</i>	Rice-Greengram	6010 (Eq. Yield)	90000	138228	5070	82000	116659.8	87.3



Swarna Sub-1



CR 1009 Sub-1

(Rainfed without Animal)



Short duration greengram variety (Virat)



Crop Cutting in CR 1009 Sub-1

Before

Farm pond Renovation

After



(Rainfed without Animal)



New Pond Construction

Drainage Facility



Impact of promising CRTs in FST-2 (Rainfed with animal)

Climate stress	Climate resilient technology	Crop/ cropping system	NICRA farmers			Farmers Practice			CRT impact (% Resilience)
			Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	
Normal year (Average of normal years)									
Salinity	Green manuring with Dhanicha	1. Rice	4450	61000	102,350	3350	51000	77,050	
	Salt tolerant var. Luna Suverna	2. Rice	3750	58500	86,250	3160	49000	72,680	
	INM	3. Greengram	570	30000	49,487	470	24500	40,805	
Stress year (Average of stress years)									
Salinity	Green manuring with Dhanicha	1. Rice	4100	60000	94,300	3110	51000	71,530	92.13
	Salt tolerant var. Luna suverna	2. Rice	3400	58500	78,200	2950	49000	67,850	90.66
	INM	3. Greengram	450	26000	39,069	350	24500	30,387	78.94



Green manuring with Dhanicha



Distribution of Soil Health Card



Green manuring with Dhanicha





Visit of ICAR-CRRI scientists to Luna Ambiki



Field day on Salt tolerant variety of rice



Luna Barihal



Luna Ambiki



Luna Suvarna

Impact of promising CRTs in FST-2 (Rainfed with animal)

Climate stress	Climate resilient technology	Crop/cropping system	NICRA farmers			Farmers Practice			CRT impact (% Resilience)
			Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	
Normal year (Average of normal years)									
Nutrient stress	Sparing of Nano DAP in Drone	Greengram	725	31500	62944	450	27500	39069	
Stress year (Average of stress years)									
Nutrient stress	Sparing of Nano DAP in Drone	Greengram	640	31500	55564	410	27500	35596	88.27



Impact of promising CRTs in FST-2 (Rainfed with animal)

Climate stress	Climate resilient technology (Breed change/ Shelter management/ Nutrition/ Fodder)	Animal species	NICRA			Farmers Practice			CRT impact (% Resilience)
			Production /Year	COP* (₹ Animal ⁻¹)	Gross returns (₹ Animal ⁻¹)	Producti on /Year	COP (₹ Animal ⁻¹)	Gross returns (₹ Animal ⁻¹)	
Normal year									
Heat Stress	Backyard Poultry : Assel	Poultry Birds	68.4 kg / 60 number year , 5% mortality / year (1.3 kg/ bird)	Rs 150/ bird	Rs 260/ bird (Rs 200/kg) Rs 14,820/ year	47 kg 1.0 kg/bird With 22% mortality	120/ bird	Rs 200/bird Rs 9,400/year	
Stress year									
Heat Stress	Backyard Poultry : Assel	Poultry Birds	51 kg (0.9 kg/ bird)	Rs 150/ bird	Rs 180/ bird	37.6 kg 0.8 kg/bird	120/ bird	Rs 160/ bird	74.5%



Apiary unit



Apiary unit

(Rainfed with Animal)



Poultry Brooding Unit



Backyard Poultry

Impact of promising CRTs in FST-2 (Rainfed with animal)

Climate stress	Climate resilient technology (Breed change/ Shelter management/ Nutrition/ Fodder)	Animal species	NICRA			Farmers Practice			CRT impact (% Resilience)
			Production /Year	COP* (₹ Animal ⁻¹)	Gross returns (₹ Animal ⁻¹)	Production /Year	COP (₹ Animal ⁻¹)	Gross returns (₹ Animal ⁻¹)	
Normal year									
Submergence/Drought	Use of Community Pond	IMC culture	2100	1,20,000	2,10,000	1600	1,10,000	1,60,000	
Stress year									
Submergence/Drought	Use of Community Pond	IMC culture	1700	1,10,000	1,70,000	1000	1,00,000	1,00,000	80.9



Fishery



Fishery

(Rainfed with Animal)



Visit of Zonal High-Level Committee to fishery unit in NICRA Adopted Village

Impact of promising CRTs in FST-2 (Rainfed with animal)

Benefits obtained by introduction of livestock with crops

	System benefit	Cost of production	Gross returns	Net returns	B:C
1	Crop alone	61000	102,350	41350	1.67
2	Crop + livestock	69500	128,570	59,070	1.84



Backyard Poultry



Backyard Poultry

Impact of promising CRTs on crops in FST-3 (Irrigated without animal)

Climate stress	Climate resilient technology	Crop/ cropping system	NICRA farmers			Farmers Practice			CRT impact (% Resilience)
			Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	
Normal year (Average of normal years)									
Moisture stress	Sprinkler irrigation	Greengram	600	30000	52,092.0	490	26000	42,542	
	IPM (Neem oil spraying, Yellow and Blue stick trap @10/acre, Trichogramma Chilonis@2/acre)	Greengram	580	27000	50,355.6	500	24000	51,224	
Stress year (Average of stress years)									
Moisture stress	Sprinkler irrigation	Greengram	470	30000	40,805	400	26000	34,728	78.3
	IPM	Greengram	450	27000	39,069	390	24000	33,860	77.6



Sprinkler irrigation in Greengram



Micro-irrigation in vegetables



Visit of Zonal High-Level Committee to Micro-irrigation unit in vegetables





IPM in Greengram



IPM in Greengram

Impact of promising CRTs in FST-4 (Irrigated with animal)

Climate stress	Climate resilient technology	Crop/ cropping system	NICRA farmers			Farmers Practice			CRT impact (% Resilience)
			Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	Productivity (kg ha ⁻¹)	COC (₹ ha ⁻¹)	Gross returns (₹ ha ⁻¹)	
Normal year (Average of normal years)									
Water Stress in Rabi	Drip Irrigation	Okra	12000	70000	120000	9700	73000	97000	
Low fertility	INM	Greengram	590	27000	51,224	520	26000	45,146	
Stress year (Average of stress years)									
Water Stress in Rabi	Drip Irrigation	Okra	10900	70000	102000	9200	73000	89000	90.83
Low fertility	INM	Greengram	550	27000	47,751	500	26000	43,410	93.22

Impact of promising CRTs in FST-4 (Irrigated with animal)

Climate stress	Climate resilient technology (Breed change/ Shelter management/ Nutrition/ Fodder)	Animal species	NICRA			Farmers Practice			CRT impact (% Resilience)
			Production /Year	COP * (₹ Animal ⁻¹)	GMR (₹/Animal) Gross returns (₹ Animal ⁻¹)	Production /Year	COP (₹ Animal ⁻¹)	Gross returns (₹ Animal ⁻¹)	
Normal year									
Water Stress	Khaki Campbell	Duck (30 Nos/Year)	30 kg duck meat & 3000 eggs/year	250/ duck	Rs 400/duck (Rs 200/kg) 6000 meat+18000 = 24000				
Stress year									
Water Stress	Khaki Campbell	Duck	20 kg meat +2000 egg	200/ duck	Rs 300 /duck (4000+12000 = 16000)				66.6



INM in Greengram



Irrigated with animal



INM in Greengram



Micro-irrigation in vegetables



Drip irrigation in coconut & Arecanut

Irrigated with animal



Cattleshed renovation



Duck rearing



Cattleshed renovation



Impact of promising CRTs in FST-4 (Irrigated with animal)

Benefits obtained by introduction of livestock with crops

	System benefit	Cost of production	Gross returns	Net returns	B:C
1	Crop alone	70000	120000	50000	1.7
2	Crop + livestock	77500	144000	66500	1.85



Hybrid Napier along the river Bank



Hybrid Napier along the river Bank

Input supplied to the field

S.No	CRT	NICRA Farmers			Farmers Practice		Cost of input saved with NICRA (₹)
		Input	Input Qty	Input cost (₹)	Input Qty	Input cost (₹)	
1	Demonstration on Flood Tolerant Rice Variety	Fertilizer (kg)	500 kg	5000	600 kg	6000	1000
		Water (Litre)					
		Labour (man days)	110	44000	120	48000	4000
		Pesticide (kg or L)		1000		2000	1000
		Seed (kg)	40 kg	1600	60 kg	2400	8000
		Feed (q)					
		Compost (t)	5 ton/ha	4500	2 ton/ha	2000	
2	Demonstration on Short duration variety : Virat	Fertilizer (kg)	3 kg 19:19:19	600			
		Water (Litre)	1 sprinkler irrigation	1000			
		Labour (man days)	45	18000	50	20000	2000
		Pesticide (kg or L)		1000		1500	500
		Seed (kg)	25 kg	2500	30 kg	3000	5 kg
		Feed (q)					
		Compost (t)					
3	Demonstration on green manuring with Dhanicha	Fertilizer (kg)	400 kg	4000	600 kg	6000	2000
		Water (Litre)					
		Labour (man days)	110	44000	115	46000	2000
		Pesticide (kg or L)		2000		2000	0
		Seed (kg)	40 kg	1600	60	2400	800
		Feed (q)					

Input supplied to the field

S.No	CRT	NICRA Farmers			Farmers Practice		Cost of input saved with NICRA (₹)
		Input	Input Qty	Input cost (₹)	Input Qty	Input cost (₹)	
4	Demonstration on Salt Tolerant Rice Variety	Fertilizer (kg)	500 kg	5000	600 kg	6000	1000
		Water (Litre)					
		Labour (man days)	110	44000	115	46000	2000
		Pesticide (kg or L)		1000		2000	1000
		Seed (kg)	40 kg	1600	60 kg	2400	800
		Feed (q)					
		Compost (t)	5 ton/ha	4500	2 ton/ha	2000	
5	IPM in Greengram,	Fertilizer (kg)	3 kg 19:19:19	600			
		Water (Litre)	1 sprinkler irrigation	1000			
		Labour (man days)	45	18000	50	20000	2000
		Pesticide (kg or L)		1500		2000	500
		Seed (kg)	25 kg	2500	30 kg	3000	500
		Feed (q)					
		Compost (t)					
6	Demonstration on Sprinkler irrigation in	Fertilizer (kg)	3 kg 19:19:19	600			
		Water (Litre)	1 sprinkler irrigation	1000			
		Labour (man days)	45	18000	50	20000	2000
		Pesticide (kg or L)		1000		1500	500

Input supplied to the field

S.No	CRT	NICRA Farmers			Farmers Practice		Cost of input saved with NICRA (₹)
		Input	Input Qty	Input cost (₹)	Input Qty	Input cost (₹)	
7	Demonstration on Drip irrigation in Okra	Fertilizer (kg)	210 kg	3150	300	4500	1350
		Water (Litre)	416 mm	5000	656	8000	3000
		Labour (man days)	90	36000	110	44000	8000
		Pesticide (kg or L)		3000		4000	1000
		Seed (kg)	8 kg	8000	10 kg	10000	2000
		Feed (q)					
		Compost (t)	7 ton/ha	5500	2.5 ton/ha	2500	
8	INM in Greengram,	Fertilizer (kg)		1000		500	
		Water (Litre)	1 sprinkler irrigation	1000			
		Labour (man days)	45	18000	50	20000	2000
		Pesticide (kg or L)		500		1000	500
		Seed (kg)	25 kg	2500	30 kg	3000	500
		Feed (q)					
		Compost (t)					

Input Distribution



Short duration Greengram var. Virat



Dhaincha



Greengram

Input Distribution



Fruit saplings



Millets



Poultry breed Vanaraja

Input Distribution



Salt & submergence tolerant varieties of rice



Hybrid Napier

Recycling of byproducts details

Climate Resilient Technology	Details of by product	By product produced (q)	Quantity recycled (q)					Revenue generated (if the by product is sold) (₹)
			As feed/fodder	As crop residues	As compost/vermi compost	Sold	Others (like mushroom production)	
Paddy straw mushroom production and Vermicomposting	Paddy straw	60	30	05	20	15	5	30000

Recycling of byproducts



Vermicomposting



Paddy straw mushroom cultivation



Straw mulching in turmeric

Details of formation of VCRMC & other institutions

S. No	Name	Details	Details of Institution performance				
			No. of villages covered	No. of members	No. of meetings	Total Revenue generated since inception	Funds available as on date
1	VCRMC	2021	1	20	66		
2	CCRMC (Cluster Climate Risk Management Committee)	-	-	-	-	-	-
3	CHC	2021	1	20	60	76250	25/10/2025
4	Fodder Bank	2023	1	1	0	2000	
5	Seed Bank	2022	1	20	15	8000	
6	Grand total Revenue generated					Rs.86,250	25/10/2025

Performance of Custom Hiring Center

S.No.	Name of Implement	Operational in area (ha)	No. of farmers utilized the equipment	Amount generated as revenue (₹)	Remarks
	Power weeder	10	34	11400	
	Rotavator	22	32	23200	
	Water pump	245	17	8750	
	Post Hole digger			1500	
	Mini rice mill	341	202	8900	
	Paddy Thresher cum winnower	225	17	5910	
	Power Sprayer	305	45	2450	
	Pulse thresher	243	135	9200	
	Paddy transplanter	21	47	4940	
Total amount generated since the beginning of the CHC (₹)				76250	Till 25/10/2025



Mini Rice Mill



Power Weeder



Paddy Thresher



Battery Sprayer

Delegates visit to CHC



Seed banks in NICRA villages

S. No.	Name of the village	Crop	Variety	Area (ha)	No. of farmers involved	Quantity produced (q)	Quantity of seed utilized (kg)	Quantity of seed sold (kg)	Revenue generated by selling (₹)
1	Achhuta daspur	Paddy	Swarna Sub-1	7		339.5	339.5	1.2	4800
2	Achhuta daspur	Paddy	Luna Suverna	3		112.5	112.5	1.0	4000

Fodder banks in NICRA villages

S. No.	Village name	Fodder	Variety	Area (ha)	No. of farmers involved	Quantity produced (q)	Quantity of fodder utilized as feed (q)	Quantity of fodder sold (q)	Revenue generated by selling fodder (₹)
1	Achhutad aspur	Hybrid Napier grass	CO3	0.8	15	21	1500	1500	

Strategies adopted for year round supply of fodder

Year round fodder supply	Strategies adopted
Hybrid Napier +Azolla	Hybrid Napier cultivation in waste land, Azolla in Poly Tanks

Capacity Building and other extension programmes taken up on climate resilient technologies

Thematic area	No. of programmes	No. of beneficiaries		Date		Feedback from farmers
		Male	Female	From	To	
Natural resource management	10	205	95	2021	2025	
Crop and cropping systems	18	379	161	2021	2025	
Horticulture	5	51	99	2021	2025	
Livestock	8	234	126	2021	2025	
IFS	3	60	30	2021	2025	
Institutionalization and miscellaneous	7	87	123	2021	2025	
Total	51	1016	634			

Training Programme



Extension Activities



Farmers day Dt-23.04.2023



Gramin Mausam Seva meeting



Women in Agriculture Day Dt-04.12.2022



Swacha Bharat Program

Extension Activities



VKSA-Pre-kharif campaign



VKSA- Ratha



PM-DDKY 2025



Animal Health Camp

Exposure visit



OUAT Agri Fair 18.02.2025



Awareness on PPVFRA at CIFA 25.03.2025



KVK Puri 01.06.2023

Technology spread through up scaling & details of convergence

Name of the climate resilient technology	Area (ha) (initial Adoption with the technology)	Initial farmers (No)	Area (ha) (Adoption with the technology after scaling up)	After scaling up farmers (No)	Convergence with agency/ scheme	Approx. amount (₹) mobilized
Submergence tolerant Rice Variety	02	10	25	120	Department of Agriculture, Odisha	
Salt tolerant Rice Variety	-	-	10	50	Department of Agriculture, Odisha	
Green manuring with Dhaincha	-	-	35	180	Department of Agriculture, Odisha	
Greengram after Rice under Rice-Fallow management	10	46	20	130	Department of Agriculture, Odisha	
Coconut Plantation	1	26	3	250	Department of Horticulture, Odisha	

Convergence Activities



AICRP on Plantation crop



IIWM, Bhubaneswar



Animal Health Camp with F&ARD, Odisha



All India Network Project on Soil Biodiversity-Biofertilizer

Suggest the measures to upscale the technologies

- **Cluster-based Demonstrations:** Proven technologies may be demonstrated in cluster approach for better Impact
- **Institutional Strengthening:** Empowering FPOs and SHGs, for technology dissemination, asset management, and local capacity building.
- **Strengthening of custom hiring Centre :** Providing an Implement shade and addition of high end machines beyond 2.5 lakh limit can enhance visibility, focus should be given on popularization of processing machines
- **Addition of Drone in Custom hiring centre:** Drone may be purchased for custom hiring centre and some farmers may be trained as drone pilot
- **Specialized Training:** Some Farmers from the NICRA Village may be Trained at Central Farm Machinery Training and testing Centre at Budni or Hisar for better skill
- **Proper Design of NRM structures:** DSS may be developed for positioning, scientific design and estimate of the structure.
- **Convergence Support:** Convergence with line departments Agriculture, Fisheries, Horticulture, Watershed, and Renewable Energy may be made at district, state and National level for NICRA village and there should be some policy.
- **Digital & Advisory Services:** Real Time local weather-based advisories, AWS may be established in NICRA village, ICT-enabled extension, and market linkages for timely decision-making is required.

Issuance of agro advisories

Whether agro advisories are being issued: Yes

Source of forecast: IMD, DAMU

No. of farmers covered: 400 ;

No. of farmers followed agro-advisory: _250

who is preparing agro-advisory: Scientists/SMS

No. of Agromet advisories issued	Date
450 number	Every Tuesday and Friday by Gramin Krishi Mausam Sewa, Odisha University of Agriculture and Technology

Publications

Sl. No.	Title	Type of publication(Research article/Review article/leaflets/folders/popular article/abstracts/extended summary etc)	Reference	Website link
1	Mapping of Soil Fertility Status in a Coastal Village of Odisha Using Geospatial Technology	Research Article (2023)	<i>International Journal of Plant & Soil Science</i> , 35(23), 368-379. Article no.IJPSS.110265, ISSN: 2320-7035	https://journalijpss.com/index.php/IJPSS/article/view/4252/8403
2	Integrated Climate-Resilient Practices for Enhancing Yield and Water Productivity of Rice in Rainfed Saline-Affected Coastal Ecosystem of Odisha, India	Research Article (2025)	<i>Journal of Experimental Agriculture International</i> , 47(11): 124-135. Article no.JEAI.147065, ISSN: 2457-0591	https://www.journaljeai.com/index.php/JEAI/article/view/3855/8850

Photographs of first page of publication



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Mapping of Soil Fertility Status in a Coastal Village of Odisha Using Geospatial Technology

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The most fundamental decision-making tool for sustainable soil nutrient management is the assessment of soil fertility in a region. During 2021, a soil fertility status inventory was prepared through National Innovations on Climate Resilient Agriculture (NICRA) project in Achyutadaspur village of Jagatsinghpur district, Odisha. A total of 125 surface soil samples were randomly collected from a depth of 0-15 cm with GPS locations and soil parameters like pH, electrical conductivity, organic carbon, available N, P, K, S, Zn, and B were evaluated using standard analytical procedures. GIS maps have been prepared using ArcGIS software based on the analysis report. The majority of the soil was found acidic around 62.4% area of the village, followed by



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Integrated Climate-Resilient Practices for Enhancing Yield and Water Productivity of Rice in Rainfed Saline-Affected Coastal Ecosystem of Odisha, India

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Authors' contributions

This work was carried out in collaboration among all authors. Authors DMD designed the study, supervised the field experiments and prepared the manuscript. Authors PM conducted the soil analysis and interpreted the soil health parameters. Author JS provided technical guidance and overall supervised the study. Author DP managed crop protection aspects and collected the data. Authors BM, SD, SP and TKP assisted in field experimentation and data compilation. Author PJM provided institutional support and guidance. Author AP contributed to technical planning and interpreted the data. Author SKM facilitated technical inputs and reviewed the manuscript. Author SLR did statistical analysis and refinement of the manuscript. All authors read and approved the final manuscript.

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HOLISTIC MANAGEMENT OF COASTAL SALINE SOIL: A CLIMATE RESILIENT APPROACH

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Coastal regions are increasingly vulnerable to the impacts of climate change which is exacerbating the challenges faced by agricultural ecosystems (Aggarwal et al. 2019, ICAR-CSSRI, 2018). The district of Jagatsinghpur, located along the Odisha coastline, is experiencing rising soil salinity due to frequent saline water flooding during high tides and the intrusion of seawater into inland aquifers. This has led to an increase in the capillary rise of saline groundwater which is increasing soil salinity and threatening agricultural productivity (Das et al. 2018). The traditional rice-based farming system in this region is facing significant stress with the declining yield and less economic return. The National Innovations in Climate Resilient Agriculture (NICRA) Project, operational under the Krishi Vigyan Kendra (KVK) in Jagatsinghpur has initiated targeted interventions to address these challenges and promote sustainable agriculture. This study was conducted in a saline-affected village namely Achyutadaspur in Erasama Block of Jagatsinghpur district under the NICRA-TDC project with an aim to evaluate the effectiveness of revised agricultural practices for enhancing rice yield and economic returns in comparison to the traditional practice.

The study implemented a series of interventions designed to counter the adverse effects of soil salinity and enhance the resilience of the coastal rice-based ecosystem. The revised practice included deep ploughing to break the hard pan layer formed due to the shallow tillage and heavy machinery operation which restricts the natural percolation of fresh rainwater. This was followed by the cultivation of *Dhanicho* (*Sesbania rostrata*) as a green manure crop before rice planting. *Dhanicho* cultivation not only improved the soil health by adding organic matter but also reduced the soil salinity through leaching salt by rupturing the hard pan layer through its deep root system. The revised practice also incorporated the use of salt-tolerant rice variety Luna Suvarna (*CR LC2096-71-2*) which has a high tolerance to saline soil conditions. Furthermore, rainwater harvesting was emphasized through construction of farm ponds for supplemental irrigation during the dry spells and also helped to dilute soil salinity.

In contrast, the traditional practice in the region involved the use of local rice varieties with low tolerance to salinity, minimal land preparation and reliance on natural rainfall to meet the crop water requirement. This approach often resulted in poor crop performance and low economic returns due to the high soil salinity and rainfall variability.

The comparative analysis between the traditional and revised practices revealed significant improvements in agricultural outcomes under the revised interventions. The adoption of deep ploughing, green manuring and the use of Luna Suvarna rice variety coupled with supplemental irrigation from farm pond has led to substantial increases in crop yield net profit and the benefit-cost benefit (B:C) ratio. The findings are summarized in the Table 1.

Table 1: Comparison of farmers' practice and revised practice

Treatment	Yield (q/ha)	Net Profit (Rs/ha)	B:C Ratio
Farmers' Practice (FP)	32.5	19500	1.37
Revised Practice (RP)	42.7	32400	1.54
CD at 5%	8.6		

The revised practices significantly outperformed the traditional methods, demonstrating a higher yield and better economic returns. The implementation of these practices under the NICRA-TDC project highlights the potential for improving the sustainability and resilience of coastal agricultural system in the face of climate change and increasing soil salinity.

The study underscores the critical importance of adopting climate-resilient agricultural practices to combat the growing threat of soil salinity in coastal regions. The interventions implemented under the NICRA-TDC project in Achyutadaspur village have shown promising results, offering a viable pathway to enhance the productivity and sustainability of coastal rice-based ecosystems. As climate change continues to intensify, it is imperative to scale up these practices and support the broader adoption of resilient agricultural strategies across similar vulnerable regions.

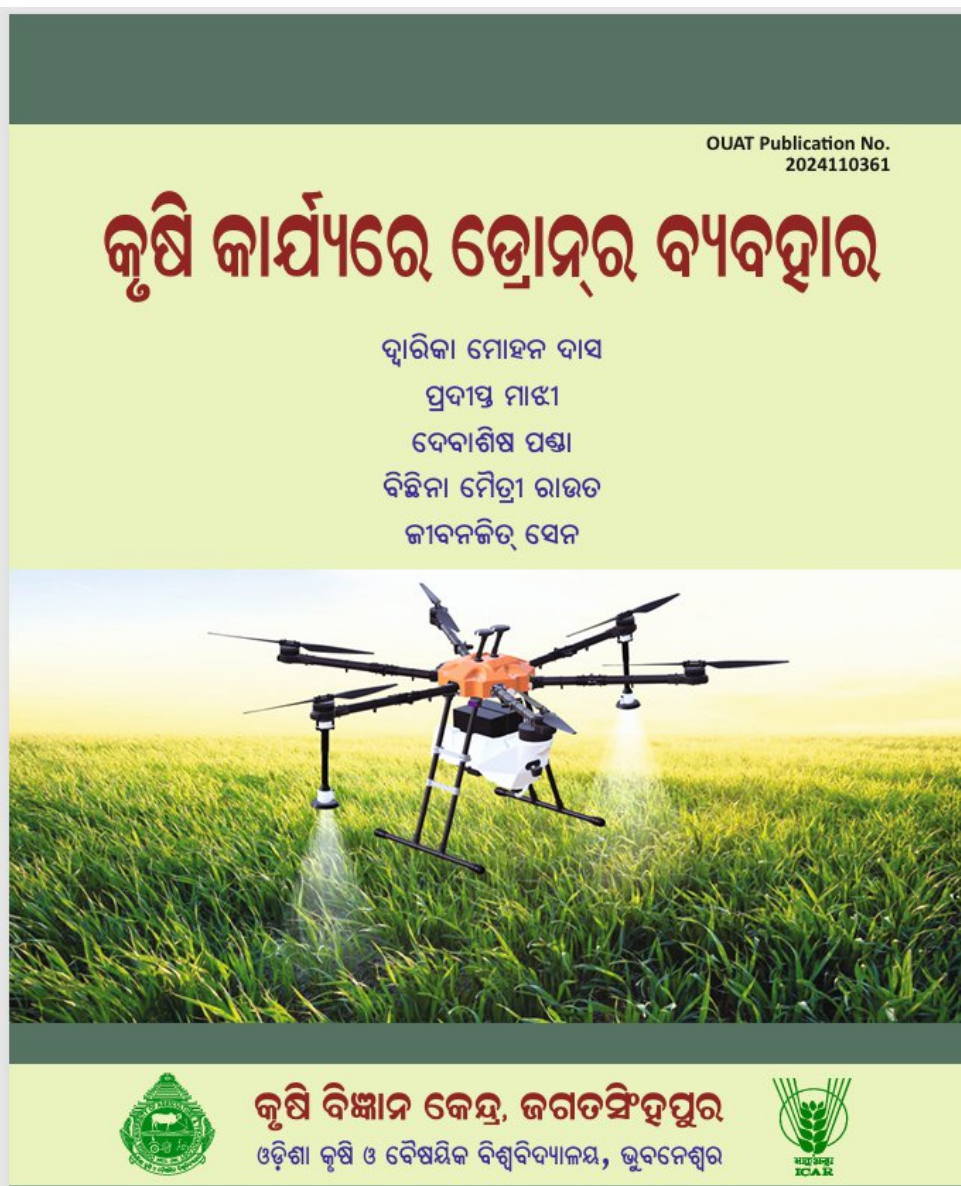
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International Conference on Rainfed Agriculture: Building Pathways for Resilience & Sustainable Livelihoods during 29-31, January 2025 at ICAR-CRIDA, Hyderabad



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NICRA Initiatives for Sustainable Agriculture in Rainfed Saline-Affected Coastal Rice Belt of Jagatsinghpur District of Odisha

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Coastal rice belts, particularly in rainfed saline-affected regions, face significant challenges due to climate change and increasing soil salinity. In these areas, rising salinity, frequent seawater intrusion and limited freshwater availability threaten traditional agricultural practices. This study evaluates sustainable agricultural practices tailored to enhance the productivity and resilience of rainfed saline-affected coastal rice belts. The interventions aim to improve soil health, crop yields, and economic returns for smallholder farmers. Coastal regions are increasingly vulnerable to the impacts of climate change which is exacerbating the challenges faced by agricultural ecosystems (Aggarwal et al., 2019, ICAR-CSSRI, 2018). The district of Jagatsinghpur, located along the Odisha coastline, is experiencing rising soil salinity due to frequent saline water flooding during high tides and the intrusion of seawater into inland aquifers. This has led to an increase in the capillary rise of saline groundwater which is increasing soil salinity and threatening agricultural productivity (Bhattacharyya et al., 2015, Das et al., 2018). The traditional rice-based farming system in this region is facing significant stress with the declining yield and less economic return. The National Innovations in Climate Resilient Agriculture (NICRA) Project, operational under the Krishi Vigyan Kendra (KVK) in Jagatsinghpur, has initiated targeted interventions to address these challenges and promote sustainable agriculture. This study was conducted in a saline-affected village namely Achyutdaspur in Erasama Block of Jagatsinghpur district under the NICRA-TDC project with an aim to evaluate the effectiveness of revised agricultural practices for enhancing rice yield and economic returns in comparison to the traditional practice.

Methodology

The study was conducted in saline-affected areas with rainfed conditions, where traditional practices struggle to cope with high salinity and erratic rainfall. Revised practices included deep ploughing to improve soil permeability, cultivation of salt-tolerant rice varieties, and implementation of integrated water management strategies such as rainwater harvesting. The

Awards

Sl. No.	Award Title	Awarded for	Award received from Organisation	Date
1	Progressive smart farmer award	Adopting climate smart agril. Practices	In OUAT Agri fair-2025	18.02.2025



Thank you

Example for FST-I module

Cropping systems technology: improved varieties of maize and red gram intercropping systems

[illegible]

Formula for calculation of crop equivalent yields

Crop equivalent
yield (CEY)

=

Yield (Main
crop)

+

Yield (intercrop/
succeeding crop)

×

Price (intercrop/
succeeding crop)

Price (main crop)

Calculation of crop equivalent yield:

Yield of maize is 20q and yield of red gram is 3.1q

Price of maize ₹ 2225 q⁻¹ and price of red gram ₹ 7550 q⁻¹

Maize equivalent yield (MEY) =

Yield (maize crop) +

Yield of red gram × price of red gram

Price of maize

MEY (q ha⁻¹) = 20 +

3.1 × 7550

2225

 = 30.5 q ha⁻¹

By products produced and recycled:

Interventions		Name of by-product produced	Quantity (t ha ⁻¹)	Selling price (₹ q ⁻¹)	Use of by-product*	Quantity recycled (t)	Amount mobilised (₹)
Crops	NICRA	Maize and red gram stalks	5.2	20	Used as mulch	5.2	-
	Non-NICRA	Maize	4.6	20	Used for fuel wood	Nil	-

* Crop by products use

a. Agriculture: Mulching/ compost etc.
b. Animals: Feed to cattle
c. Other enterprises: mushroom cultivation, selling etc.

* Animal by product use

a. Dung: crop, biogas etc.
b. Feed waste: FYM, crop etc.

Crops and livestock: Finger millet and red gram intercropping systems and 1 buffalo

Crops and livestock: Finger millet and red gram intercropping systems and 1 buffalo

Calculation of crop equivalent yield:

Yield of finger millet is 16.5 q and red gram is 0.7 q

Price of finger millet ₹ 3846 q⁻¹ and price of red gram ₹ 7550 q⁻¹

Finger millet equivalent yield (FEY) = Yield (finger millet crop) + $\frac{\text{Yield of red gram} \times \text{price of red gram}}{\text{Price of finger millet}}$

FEY (q ha⁻¹) = 16.5 + $\frac{(0.7 \times 7550)}{3846}$ = 17.9 q ha⁻¹

By products produced and recycled

Interventions		Name of by-product produced	Quantity (t ha ⁻¹)	Selling price (₹ q ⁻¹)	Use of by-product *	Quantity recycled (T)	Amount mobilised (₹)
Crops	NICRA	Finger millet and red gram stalks	5.4	20	Used as mulch	5.4	-
	Non-NICRA	Finger millet	3.6	20	Used for feed	Nil	-
Livestock	NICRA	Feed and solid wastes	5.5	700	Used as manure	5.5	-
	Non-NICRA	Feed and solid wastes	4.9	700	Used for sale	Nil	34300

* Crop by products use

a. Agriculture: Mulching/ compost etc.
b. Animals: Feed to cattle
c. Other enterprises: mushroom cultivation, selling etc.

*Animal by product use

a. Dung: crop, biogas etc.
b. Feed waste: FYM, crop etc.

MSP list of different commodities

Commodities	Price
Milk	Cow- ₹40 L ⁻¹ Buffalo- ₹ 50 L ⁻¹
Meat rate	Sheep- ₹ 850 kg ⁻¹ Goat- ₹ 100 kg ⁻¹ Poultry- Broiler (₹ 200 kg ⁻¹) and Splint birds (₹ 150 kg ⁻¹)
Egg	₹ 6 egg ⁻¹
Compost	₹ 20 kg ⁻¹
Dry fodder	₹ 3 kg ⁻¹
Green fodder	₹ 2 kg ⁻¹
Fish	₹ 100 kg ⁻¹
Mushrooms	₹ 250 kg ⁻¹

Commodity	Variety	MSP (₹ q ⁻¹)
Kharif crops		
Paddy	Common	2300
	Grade 'A'	2320
Jowar	Hybrid	3371
	Maldandi	3421
Bajra		2625
Ragi		4290
Maize		2225
Tur (arhar)		7550
Moong		8682
Urad		7400
Groundnut		6783
Sunflower seed		7280
Soyabean (yellow)		4892
Sesamum		9267
Nigerseed		8717
Cotton	Medium Staple	7121
	Long Staple	7521
Rabi crops		
Wheat		2425
Barley		1980
Gram		5650
Masur (lentil)		6700
Rapeseed & mustard		5950
Safflower		5940
Toria		5950
Commercial crops		
Copra (calendar year)	Milling	11160
	Ball	12000
De-husked coconut (calendar year)		3013
Jute		5335

Micro-sprinkler irrigation from farm pond

