

## **Building Resilience Through Vegetable Based Integrated Farming System: A Case of North Eastern Ghat Region in Ganjam**



### **Introduction:**

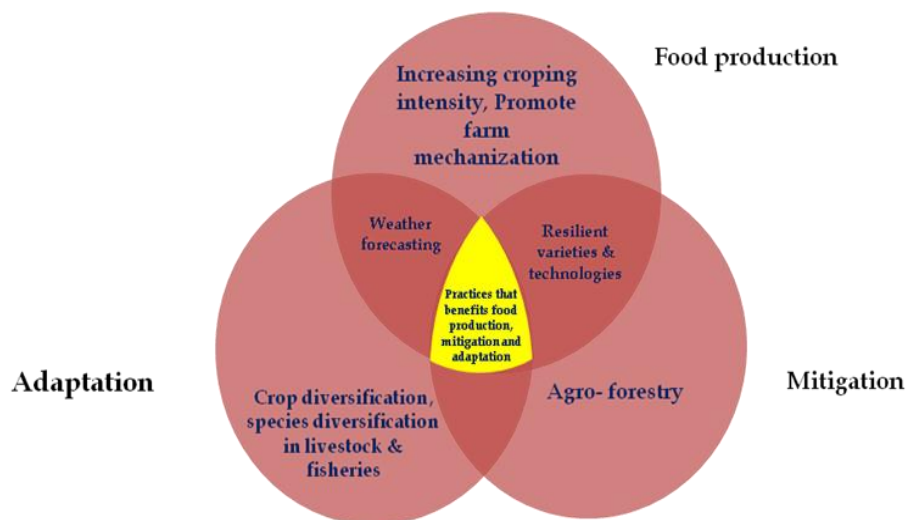
The agriculture sector plays a key role in Ganjam's economy and smallholder farmers constitute a significant portion of the district's population. They already face numerous risks in agricultural production, including pest and disease outbreaks, extreme weather events and market shocks, among others, which often undermine their household food and income security. Because smallholder farmers typically depend directly on agriculture for their livelihoods and have limited resources and capacity to cope with shocks, any reductions to agricultural productivity can have significant impacts on their food security, nutrition, income and well-being.

Ganjam is a district in which understanding the vulnerability of farmers to agricultural risks and climate change is particularly important, as farmers comprise approximately 70% of the population and climate change impacts are expected to be significant. Farmers in this district experience various climatic aberration like Drought, Cyclone, Terminal moisture stress, Short term submergence in frequent intervals. There is limited information on the overall

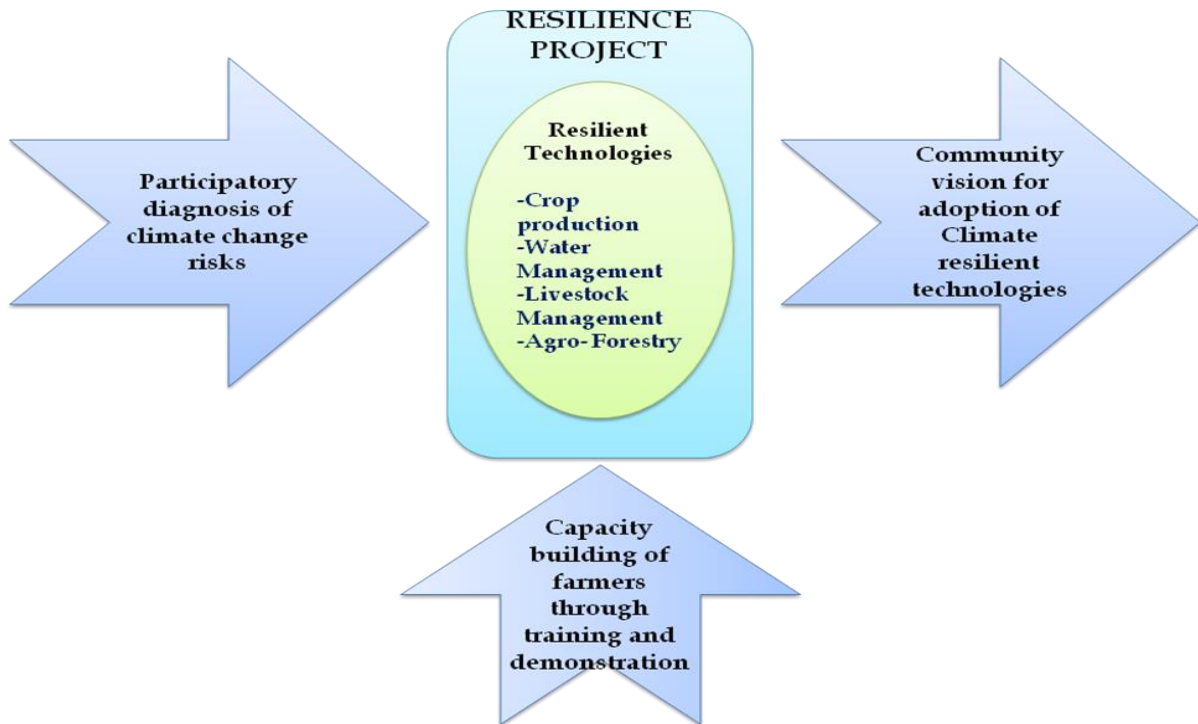
vulnerability of farmers to different agricultural risks and the strategies that farmers use to cope with these risks. In addition, there is little information on what adaptation measures are needed to reduce farmer vulnerability in the context of climate change. Further an economic survey in 2017-18 cautioned that “climate change might be reducing annual agriculture income in the range of 15 per cent to 18 per cent and up to 20 per cent to 25 per cent for unirrigated areas”. This creates food shortages, nutrient deficiencies in humans due to inadequate intake of healthy food makes humans vulnerable to health issues.

With this backdrop the RESILIENCE PROJECT came into picture. This project is in operation in three blocks i.e. Surada, Bhanjanagr , Buguda, which are quite vulnerable as far as climatic aberrations are concerned. The very objective of the project is to increase productivity and enhance the resilience through popularization of climate resilient technologies. In this context Inteegrated farming System is a major technology for sustainable livelihood & better utilization of available resources in the project area.

### **Graphical representation of different spheres of the RESILIENCE PROJECT**



## Functioning of the project:



## Background information:

Sri Ajit Pradhan, 36 years old native of Lathipada village, Surada block owned 06 acre of land & his traditional farms had crops like Rice, Greengram, Tomato, Brinjal etc. He was practicing local methods & practices for cultivation of different crops & faced different problems like terminal moisture stress in upland Rice, high weed infestation, wilting & low yield of vegetables, YMV in Greengram. With an investment of Rs. 127000/- he was getting a net profit of Rs. 123000/- in 2018. However it was not sufficient to maintain livelihood & other expenditure requirement.



### Technical guidance & support:

During field visit & PRA programme of RESILIENCE PROJECT, in 2018 we came in contact with Ajit & after a vivid discussion we have prepared a cropping plan as per the land situation & climatic condition. He agreed to incorporate the cropping plan & improved technology. As Lathipada village is rainfed & there is moisture stress so we have planned for drought tolerant var. Sahabghidhan in upland, raising of farm bund height, sowing across the slope for moisture conservation. The other resilient practices are- Wilt management in Vegetable crops by seed treatment, application of Trichoderma, Fungicide (Carbandazim + Mancozeb) & antibiotic- Streptocyclene, Poly mulching with 50 micron polythene for weed management, improved Trellis system with nylon net to lower pest & disease incidence & higher yield, YMV tolerant greengram var. IPM 02-14, adoption of Sweet corn cultivation, Mushroom cultivation, Climate resilient breed -Kadakhath & vermicomposting to augment income. The by-products were recycled in the farm for use as resources (Rice straw is used for Mushroom & then for vermicomposting, Vermicompost is utilized for vegetable crops). By adopting the resilience practices the yield of rice increased by 5q/ha, Wilting in vegetable decreased by 70%, Weed infestation decreased by 85%, YMV incidence decreased by 100% resulting in increase in net income to Rs.142900/-.

The details of income from different component before intervention & after intervention is as follows.

#### Before intervention( 2018)

Components	Names	Area (Ac.)/No.	Production (Q)	Gross cost (Rs.)	Gross Income (Rs.)	Net Income (Rs.)	BC ratio
Field Crops	Rice (Local var.)	4 ac	32q	32000	54400	22400	1.7
	Greengram (local var.)	2 ac	4q	10000	20000	10000	2.0
Hort.crop	Tomato	1 ac	80q	45000	80000	35000	1.8
	Brinjal	1 ac	85q	40000	85000	45000	21.3
<b>Total</b>				<b>127000</b>	<b>239400</b>	<b>112400</b>	<b>1.88</b>

**After intervention ( 2021)**

<b>Component s</b>	<b>Names</b>	<b>Area (Acre)/No</b>	<b>Production (Q/No.)</b>	<b>Gross cost (Rs.)</b>	<b>Gross Income (Rs.)</b>	<b>Net Income (Rs.)</b>	<b>BC ratio</b>
<b>FieldCrops</b>	Rice (Sahabhagidhan)	4ac	40 q	36000	68000	32000	1.89
	Greengram (IPM 02-14)	2ac	5 q	10000	25000	15000	2.50
<b>Hort.crops</b>	Sweet corn	0.5ac	6000 cobs	15000	30000	15000	2.00
	Bittergourd	0.5 ac	20 q	20000	40000	20000	2.00
	Tomato	1 ac	90q	40000	90000	50000	2.25
	Brinjal	1 ac	100q	40000	100000	60000	2.50
<b>Enterprises</b>	Mushroom	600 beds	6.40 q	36000	76800	40800	2.13
	Vermicompost	02 units	12q	8000	18000	10000	2.3
<b>Live stock</b>	Poultry	60 birds	0.9 q & 1800 eggs	10000	22500	12500	2.25
<b>Total</b>				<b>215000</b>	<b>470300</b>	<b>255300</b>	<b>2.19</b>

**Institution involved- RESILIENCE PROJECT, OUAT, BHUBANESWAR, KVK, GANJAM-I, HORT. DEPT., VETERINARY DEPT.**

**Conclusion:**

With the help of RESILIENCE PROJECT & KVK, Ganjam-I Sri Ajit Pradhan got technical guidance, knowledge & other support so that a vegetable IFS developed in that area & became a role model farmer for dissemination of resilient technologies. He has set himself as a role model for the cash-strapped farmers in the district, thanks to the synergistic integration of enterprises and optimum resource utilisation. Near by farmers visited his farm & realized that

by adopting IFS there will be higher income & better utilization of available resources .Ganjam where farmers are faced with prospects of poor yield and low income, could well take cues from the success story of a farmer who is earning a net annual income of Rs. 2.55 lakh from six acres of land by adopting integrated farm techniques and optimum resource utilization.