

TECHNOLOGY DEMONSTRATION COMPONENT UNDER NICRA

Baseline details about the adopted village

Demographic information

Name of village: Nongthymmai

District: Ri Bhoi

Population: 1200

Male: 562

Female: 638

No. of households: 150

Family size- 8-15 numbers

Main occupation: Agriculture and allied activities

Total area of the village: 4 sq km

Per capita Land holding: 0.8 ha

Jhuming area: 1/4th of the village area 3 yrs cycle

Major Crops grown:

Field crops: Rice (SRI), Maize.

Vegetables: Tomato, brinjal, capsicum, potato, cabbage, cauliflower, cucumber, broccoli lettuce etc.

Spices: Ginger, turmeric.

Livestock reared: Local indigenous pigs and poultry

List of technology interventions for demonstration in the farmers' field at NICRA village during 2013-14 (Nongthymmai village)

Sl. No.	Category	Name of the technology
1	Crop Production	a) Rice production through System of Rice Intensification (SRI) and Integrated Crop Management (ICM)
		b)Crop intensification in rice fallow through Zero tillage of pea and rapeseed
		c) Introduction of raddish, carrot, french bean, lettuce, ginger, turmeric, pumpkin cultivation in the rice field after harvesting of paddy
		c) Scientific potato, tomato, cucumber, capsicumwith emphasis on offseason production
2	Livestock Production	a) Introduction of upgraded pig variety (T&D) with scientific method of rearing
		b)Introduction of Improved breeds of goat for meat supplementation in increased temperature
		c) Backyard poultry production with improved Kuroiler chicken and vanarajagermplasm
4	Others	a)Low cost vermicomposting for organic manure supplementation
		b) Introduction of rain water harvesting structure and storing the water in Jalkund for use in the water stress situation

CROP PRODUCTION

Zero tillage of Pea planting in rice fallows

Objective: Crop intensification for augmenting the production and enhancing soil fertility and health based on spatial and temporal utilization. To introduce zero tillage and assess the performance of Pea crop *var. Vikash* in rice fallows under the local climatic situation.

Sl. No.	Activities taken
1.	Pulse crop Pea seed (<i>var. Vikash</i>) were distributed for demonstration in the farmers' field
2.	The crop is planted in the rice fallow in an area of 0.6ha with the available rice crop biomass and sufficient moisture

Outcome:

Field pea has been harvested with well developed fruit pods with average yield of 58.3q/ha.

Zero tillage of rapeseed planting in rice fallows

Objective: Crop intensification for augmenting the production. To introduce zero tillage and assess the performance of Rapeseed (*var. M-27*) in rice fallows under the local climatic situation

Sl. No.	Activities taken
1.	Rapeseed (<i>var. M-27</i>) were distributed for demonstration in the farmers' field
2.	The crop is planted in the rice fallow in an area of 2.5 ha with the available rice crop biomass and sufficient moisture
3.	A follow up and individual farm visit were taken up for expert guidance in terms of improved intercultural operations

Outcome:

The crop has been harvested with average yield of 6.8q/ha.

VEGETABLE CULTIVATION

Scientific cultivation of potato

Objective: To assess the irrigation efficiency and nutrient use efficiency in vegetable production and to compare the performance with traditional varieties without nursery management under polyhouse.

Sl. No.	Activities taken
1.	Two polyhouses have been constructed for off-season vegetable production and for raising vegetables at a seedling stage in nursery
2.	Potato seed tubers (<i>var. Kufri Jyoti, Kufri Giriraj and mixed variety</i>) were distributed
3.	These crops were cultivated in the raised bund after rice cultivation in an area of 1 ha each.

Outcome: yield was 200-230q/ha in comparison to normal method and varieties (140-160q)



Scientific cultivation of cucumber

Objective: To assess the irrigation efficiency and nutrient use efficiency in vegetable production and to compare the performance with traditional varieties without nursery management under polyhouse

Sl. No.	Activities taken
1.	Two polyhouses have been constructed for off-season vegetable production and for raising vegetables at a seedling stage in nursery
2.	Cucumber hybrid seed (<i>var. Malini</i>) were distributed
3.	These crops were cultivated in the raised bund after rice cultivation in an area of 1 ha.

Outcome: Yield was 13.5t/ha compared to 7-8t/ha in local varieties with traditional practices.

Scientific vegetable cultivation of tomato

Objective: To introduce and assess the performance of **tomato** crop in rice fallow s under the local climatic situation

Sl. No.	Activities taken
1.	Two polyhouses have been constructed for off-season vegetable production and for raising vegetables at a seedling stage in nursery
2.	Tomato hybrid seed (<i>var. Rocky and Megha-3</i>) were distributed.
3.	These crops were cultivated in the raised bund after rice cultivation in an area of 1 ha each to ensure irrigation efficiency and nutrient efficiency

Outcome: yield-32t/ha compared to 15t/ha from local varieties.




Scientific vegetable cultivation of capsicum

Objective: To assess the irrigation efficiency and nutrient use efficiency in vegetable production and to compare the performance with traditional varieties without nursery management under polyhouse.

Sl. No.	Activities taken
1.	Two polyhouses have been constructed for off-season vegetable production and for raising vegetables at a seedling stage in nursery
2.	Capsicum seed (<i>var. California wonder</i>) were distributed.
3.	These crops were cultivated in the raised bund after rice cultivation in an area of 1 ha.

Outcome: Yield was 28t/ha.



 **NATIONAL INITIATIVE** 
ON
CLIMATE RESILIENT AGRICULTURE (NICRA)
ICAR (RC) FOR NEH REGION
Umroi Road, Umiam, Meghalaya-793103
Name of Technology: Climate Resilient Capsicum
Variety: California Wonder
Adopted Village: Nongthymmai

LIVESTOCK PRODUCTION

Production of upgraded pig variety

Objective: To assess the performance of T & D breed under the local climatic situation and comparative performance with local breeds

Sl. No.	Activities taken
1.	Selection of <i>T & D (Tamworth & Desi local)</i> piglets breed of 2-3 months old and having an average weight of 10 kg
2.	For an individual, 3 piglets (1 male & 2 female) were given and a total of 27 piglets for 9 piggery farmers
3.	A follow up and individual farm visit were taken up for expert guidance in terms of feeding, improved healthcare management

Outcome:

The body weight of the piglets has increased to average weight of 90 kg in 9 months in comparison to the local breeds and traditional method of rearing(50kg).20 piglets have been delivered.

Goatery

Objective: To assess the performance of *Assam Hill Goat* breed under drought condition.

Sl. No.	Activities taken
1.	The improved breed (<i>Assam Hill Goat</i>) were of 4-6 months old of free grazing type and having an average weight of 13 kg were selected .
2.	For an individual, 3 goatkids (1 male & 2 female) were given and a total of 12 goatkids for 4 goatery farmers
3.	A follow up and individual farm visit were taken up for expert guidance in terms of feeding, improved healthcare management

Outcome:

Goat kids performed well with a body weight of 18-20 kg average increased in 12 months and female goats have given birth to one goat kid each.

Backyard poultry production with improved Kuroiler chicken germplasm

Objective: comparative performance of Vanaraja, broiler and kuroiler birds in the given climatic conditions.

Sl. No.	Activities taken
1.	The Kuroiler birds were of free range type and of 6 months old having an average weight of 350 gm were selected.
2.	These were distributed to the total five selected family farmers with 20 birds each for 1 individual farmer
3.	A follow up and individual farm visit were taken up for expert guidance in terms of feeding, improved healthcare management

Outcome:

Both male and female birds respectively developed a body weight of 2.90 kg & 2.50 kg approximately in 9 months.



Vermicomposting Unit

Objective: supplementation of organic manure and efficient use of available bio mass and crop residues etc, subsequently, enhancing carbon cycling.

Sl. No.	Activities taken
1.	Vermicomposting unit of 10 numbers (10x3x2 ft) were constructed with low cost fabricated tanks along with thatch roof
2.	15 kg of earthworm culture is released @ 1.5 kg per tank. 1.5q is extracted per unit.
3.	A follow up and individual farm visit were taken up for expert guidance

Introduction of vermi-culture in the vermicomposting unit in the farmers' field



Programme undertaken during Kharif season, 2012-13

Crop	Variety	Climate Resilient Technology	No. of Demonstration	Area	Result
Rice (low land)	Sasharang	System of Rice Intensification (SRI) for optimum utilization of resources	10	2 ha	Presented in table later
Maize	HQPM-9	Increasing productivity of maize under upland condition	20	2 ha	Do
Rice (upland)	Bhalum 1, 2 & 3	Increasing rice upland productivity under delayed moonson	10	1 ha	Do

Comparative study between local and improved variety of upland rice

Particulars	Bhalum -1	Local
Yield (kg/ha)	3050	1855
Cost of cultivation (Rs./ha)	19200	18500
Gross income (Rs./ha)	45750	28125
Net income (Rs./ha)	26550	9625
Benefit-cost ratio	2.38	1.5



Comparative study between local and improved variety of maize

Particulars	HQPM-9	Local
Yield (kg/ha)	3480	2290
Cost of cultivation (Rs./ha)	18620	15800
Gross income (Rs./ha)	34800	22900
Net income (Rs./ha)	15140	7100
Benefit-cost ratio	1.86	1.50



Programme undertaken during Rabi season, 2012-13

Crops	Variety	Climate Resilient Technology	No. of Demonstration	Area	Result
Pea	Arkel	Zero Tillage	30	2 ha	Awaited
Tomato	Rocky	Raising nursery under low cost poly house for early planting and saving seedling from low temperature	110	5 ha	Awaited
Potato	Kufri Joyti	Improved technology for water use efficiency	20	1 ha	Awaited
Winter vegetables	Improved varieties	Multiple use of water through the rain water and roof water harvesting	6	-	Awaited

Technologies demonstration on multiple uses of rain water through water harvesting

Technologies	Total number	Crops grown using the technologies
Roof water harvesting	6	Pea, Cauliflower, broccoli, tomato, lettuce, Rape seed, French beans, onion, cabbage, beet root, carrot.
Jal kund	6	Pea, Cauliflower, broccoli, tomato, lettuce, Rape seed, French beans, onion, cabbage, beet root, carrot.

Crops cultivated in Nongthymmai village

Before NICRA intervention	After NICAR intervention
Rice, maize, turmeric, cucumber, ginger, French bean, pea, tomato and carrot	Rice, maize, turmeric, cucumber, French bean, ginger, tomato, cauliflower, cabbage, beet, broccoli, lettuce, mustard, lentil, pea, pineapple, potato, carrot, raddish and better guard



Custom Hiring Centre



Success stories on pig cultivation

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	20	25
2	Variety	Khashi local	TXD and Cross breeds
3	Housing	Traditional	Deep liter system
4	Piglets per pig	4	9
5	Avg. weight gain per pig per year	40	60

Success stories on **vermi compost production**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	20	25
2	Variety	Khashi local	TXD and Cross breeds
3	Housing	Traditional	Deep liter system
4	Piglets per pig	4	9
5	Avg. weight gain per pig per year	40	60

Case studies on **rain water harvesting**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	0	6
2	Purpose	-	Irrigation in the kitchen garden

Case studies on **ginger**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	111	148
2	Variety	Local	Nadia
3	Area per farmers (ha)	0.15	0.3
4	Avg. yield	240kg/ 40kg input	320kg/40 kg input
5	Avg. Price per Kg (Rs.)	50	80

Case studies on **turmeric**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	20	40
2	Variety	Local, Shalabang	Lakadong
3	Area per farmers (ha)	0.15	0.3
4	Avg. yield	160kg/ 40kg input	320kg/40 kg input
5	Avg. Price per Kg (Rs.)	4 (Powder 60)	10 (Powder 120)

Case studies on **tomato**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	35	112
2	Variety	Local, Badsha, Non hem- 1	Rocky, 7610
3	Area per farmers (ha)	0.2	0.5
4	Avg. yield	9 q/packet input	12 q/packet input
5	Avg. Price per Kg (Rs.)	9	13

Case studies on **frenchbean**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	90	100
2	Variety	Local	Hybrid
3	Area per farmers (ha)	0.11	0.4
4	Avg. yield	220 kg/kg input	300 kg/kg input
5	Avg. Price per Kg (Rs.)	30	18

Case studies on **pea**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	0	60
2	Variety	-	Arkel
3	Area per farmers (ha)	-	0.2
4	Avg. yield	-	100 kg/kg input
5	Avg. Price per Kg (Rs.)	-	45
6	Avg. input used per farmers	-	3 kg

Case studies on **potato**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	5	60
2	Variety	Local	Kufri Joyti, Mixed
3	Area per farmers (ha)	0.10	0.16
4	Avg. yield	80 kg/ 50 kg input	150 kg/kg input
5	Avg. Price per Kg (Rs.)	6	10
6	Avg. input used per farmers	12 kg	40 kg

Case studies on **cucumber**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	10	60
2	Variety	Local	Malini
3	Area per farmers (ha)	0.10	0.2
4	Avg. yield	Home consumption	100 kg/packet input
5	Avg. Price per Kg (Rs.)	Do	15
6	Avg. input used per farmers	Do	2 packet

Case studies on **mustard**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	0	25
2	Variety	-	M-27
3	Area per farmers (ha)	-	0.1
4	Avg. yield per ha	-	20 kg
5	Avg. Price per Kg (Rs.)	-	60

Case studies on **Lentil**

Sl. No.	Parameters	Before NICRA	After NICRA
1	No. of farmers	0	15
2	Variety	-	-
3	Area per farmers (ha)	-	0.1
4	Avg. yield per ha	-	375
5	Avg. Price per Kg (Rs.)	-	40

Feedback from the farmers

- a. Awareness on climate resilient technologies has been improved
- b. Due to training and demonstration farmers are more capable to cope up adverse effects of climate factors through climate resilient technologies
- c. Technology along with proper support and sustenance.
- d. Refinement of climate resilient technologies should be through farmers' participation.
- e. ITK practiced by the farmers to mitigate the climate change may also be integrated.
- f. Larger area to be covered under training and demonstration for mass mobilization of people and widespread technology adoption.