NICRA
National Innovations in Climate Resilient Agriculture

TURNING OVER A NEW LEAF IN AGRICULTURE WITH NICRA EXPERIENCES (2019-20)

A. K. Singha, A.K. Tripathi, Bidyut C. Deka, Divya Parisa
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PREFACE

Greetings from Team ICAR- ATARI (Zone- VII)!

The ICAR- Agricultural Technology Application Research Institute (ATARI), Zone–VII with its headquarters at Umiam, Meghalaya is primarily responsible for systematic coordination, monitoring and reviewing of mandated activities of KVKs such as technology assessment, demonstrations, training programmes and other extension activities in five North Eastern states of Manipur, Meghalaya, Mizoram, Nagaland and Tripura. In addition, the institute is also engaged in formulation and implementation of need based research projects as part of strengthening agricultural extension research and knowledge management. The institute is presently implementing; ***"National Innovation on Climate Resilient Agriculture (NICRA)"*** for technology demonstration component on farmers' fields through 14 selected KVKs.

The institute has initiated an effort to publish a book, titled "Turning Over a New Leaf in Agriculture with NICRA Experiences (2019-20)" under NICRA Project for the year 2019-20 through concerted efforts of its scientists and staff. This includes achievements and progress of different activities of NICRA KVKs under selected modules, such as, **Natural Resource Management, Crop Production, Livestock and Fisheries Interventions, Institutional Interventions, Capacity Building and Extension Activities** and other highlights during the period. This will help to serve as a reference document for the concerned stakeholders in the region for formulating programmes and strategies in mitigating climate vulnerabilities.

I thankfully acknowledge the commendable efforts and contributions made by Dr. A.K. Singha (Pr. Scientist), Mrs. Divya P. (Scientist), Dr. Amrutha T. (Scientist), Mr. Azriel Mervin Tariang (SRF, NICRA) and all the staffs of the implementing KVKs, including all other administrative and supporting staff, SRFs/YPs/DEOs of the institute in bringing out this document within a stipulated time period.

Place: Umiam, Meghalaya
Date: March, 2021

(A.K. Tripathi)
Director (Acting)

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The Authors would also like to express their deepest appreciation to the Accounts Section of ICAR-CRIDA, Hyderabad, ICAR-ATARI, Zone-VII, Umiam and all concerned Host Institutes of the KVKs for their timely release of funds without which, the progress, goals and achievements of the project would be extremely difficult to achieve.

Authors

CONTRIBUTORS

The following are the KVKs engaged in implementation of Technology Demonstration Component of NICRA under ICAR-ATARI, Zone-VII, Umiam, Meghalaya during 2019-20 and it is only with their sincere effort, dedication and hard works that made this publication possible and the whole project a success since its initiation in 2011-12.

1. Krishi Vigyan Kendra Imphal East, Manipur.
2. Krishi Vigyan Kendra Senapati, Manipur.
3. Krishi Vigyan Kendra, Ukhrul, Manipur.
4. Krishi Vigyan Kendra, West Jaintia Hills, Meghalaya.
5. Krishi Vigyan Kendra, Ri Bhoi, Meghalaya.
6. Krishi Vigyan Kendra, West Garo Hills, Meghalaya.
7. Krishi Vigyan Kendra, Lunglei, Mizoram.
8. Krishi Vigyan Kendra, Serchhip, Mizoram.
9. Krishi Vigyan Kendra, Dimapur, Nagaland.
10. Krishi Vigyan Kendra, Mokokchung, Nagaland.
11. Krishi Vigyan Kendra, Mon, Nagaland.
12. Krishi Vigyan Kendra, Phek, Nagaland.
13. Krishi Vigyan Kendra, Dhalai, Tripura.
14. Krishi Vigyan Kendra, Khowai, Tripura.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

National Innovations on Climate Resilient Agriculture (NICRA) is a network project of the Indian Council of Agricultural Research (ICAR) launched in February, 2011. The project aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration. During the year 2011 to 2015, there were 17 numbers of KVKs representing different agro-climatic conditions with designated problem areas were distributed in the 8 North East States. However, during 2015-16 ATARI in North Eastern Region was split into two zones *viz.*, ICAR-ATARI Zone-VI in Assam and ICAR-ATARI Zone-VII in Umiam, Meghalaya. The total number of KVKs in Zone VII is 14 comprising from 5 states which are KVKs Imphal East, Senapati and Ukhrul from Manipur, KVKs Jaintia Hills, Ri Bhoi and West Garo Hills from Meghalaya, KVKs Lunglei and Serchhip of Mizoram, KVKs Dimapur, Mokokchung, Mon and Phek from Nagaland and KVKs Dhalai and Khowai from Tripura.

Module-wise interventions under Technology Demonstration Component

Module I: Natural Resource Management

Interventions such as in-situ moisture conservation, water harvesting and recycling for supplemental irrigation, improved drainage in flood prone areas, conservation tillage, artificial ground water recharge measures, water saving irrigation method, crop residue incorporation instead of burning, installation of vermicompost units for income generation, soil health management, polyhouse construction for growing of vegetable crops under protected cultivation *etc.,* with a total number of 503 demonstrations covering a total area of 551.70 ha benefitted 1,304 number of farmers.

Module II: Crop Production

Short duration varieties/ drought tolerant varieties/ flood tolerant varieties/ temperature tolerant varieties/ High Yielding Varieties, advancement of planting dates of rabi crops in areas with terminal heat stress, water saving paddy cultivation methods, frost management in horticultural crops through fumigation, community nurseries for delayed monsoon, custom hiring centers for timely planting, location specific intercropping systems with high sustainable yield index, crop diversification, protected cultivation, zero tillage practices, crop diversification, soil health management, integrated crop management, pest and disease management, apiary, mushroom cultivation, integrated farming system & others were demonstrated which covered an area of 183.69 ha area and benefitted 670 numbers of farmers with 376 demonstrations.

Module III: Livestock & Fisheries

Interventions such as use of community lands for fodder production during drought / flood, introduction of new fodder, improved fodder/feed storage methods, preventive vaccination, deworming, animal health check-up, improved shelters for reducing heat stress in livestock, management of fish ponds /tanks during water scarcity and excess water, improved feeding like location specific mineral mixtures or mineral bricks, piggery, backyard poultry farming, goatery & duckery were demonstrated which benefitted 834 numbers of farmers and covered 18.96 ha of area. A total of 1292 numbers of livestock and birds and 40,000 numbers of fingerlings were distributed to the farmers. A total of 155 demonstrations were covered and several units were developed relating to livestock and fisheries interventions.

Module IV: Institutional Interventions

Demonstrations on Seed Bank, Fodder Bank, Commodity groups, Community nursery establishment, Custom hiring centre, Collective marketing, Climate literacy through a village level weather station and other interventions like Survey and Participatory Rural Appraisal, Site selection, Diagnostic visit, Rabi vegetables seed distribution programme covering an area of 589.4 ha which benefited 1870 numbers of farmers.

Module V: Capacity Building

Various training programmes in different fields, amounting to a total of 99 training courses were conducted by the KVKs under Zone-VII which benefited a total of 2811 number

of male and female farmers.

Module VI: Extension Activities

Extension activities like Exposure visit of farmers, Strengthening SHGs, Integrated farming system, a number of Field days, Method demonstrations, and Awareness programmes were conducted by KVKs which offers a wide range of benefits providing vital information for the upliftment of farming communities of the NICRA villages and likely the adjoining villages as well. A total number of 4582 farmers were benefitted from a total of 356 number of courses/programmes conducted. Of the total beneficiaries, 2571 farmers were males and 2011 farmers were females.

1. INTRODUCTION

National Innovations on Climate Resilient Agriculture (NICRA) - a network project of the Indian Council of Agricultural Research (ICAR) was launched in February, 2011. The project aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration. The research on adaptation and mitigation covers crops, livestock, fisheries and natural resource management. The project consists of four components-Strategic Research, Technology Demonstration, Capacity Building and Sponsored/Competitive Grants. This report highlights the achievements during the year 2019-20.

Climate change has created several challenges and problems in the agricultural sector all over the world and no doubt it will create more challenges and problems in the years to come. The incidences of climatic aberrations like rise in temperature change in rainfall pattern and frequency and other such phenomenon is piling up pressure on agricultural and allied systems. It creates negative impact on crop, livestock, fishery and other allied productive systems in many regions. It is also adding negative pressure on natural resources necessary for agriculture and its allied activities leading to environmental pollution, water sacristy and extensive soil degradation.

Climate change has indeed been a concern for meeting the nation's requirement for food and nutritional security. Climate change is predicted to reduce agricultural yields by 4.5 to 9 percent, depending upon its magnitude and distribution thereby impacting the nation's GDP by up to 9 percent in the next 20 years (affecting approximately 1.5 percent of GDP per annum). Currently, agriculture makes up about 16 percent of India's GDP per annum. The Government of India has accorded high priority on research and development to cope up with climate change in agriculture sector in order to combat it or to reduce its effects in ensuring food and nutritional security for a growing population.

The main objectives of the project are:

- To enhance the resilience of Indian agriculture covering crops, livestock and fisheries to climatic variability and climate change through development and application of improved production and risk management technologies
- To demonstrate site specific technology packages on farmers' fields for adapting to current climate risks
- To enhance the capacity building of scientists and other stakeholders in climate resilient agricultural research and its application.

Both short term and long terms outputs are expected from the project in terms of new and improved varieties of crops, livestock breeds, management practices that help in adaptation and mitigation and inputs for policy making to mainstream climate resilient agriculture in the developmental planning. The overall expected outcome is enhanced resilience of agricultural production to climate variability in vulnerable regions. The project is comprised of four salient components.

- Strategic research on adaptation and mitigation
- Technology demonstration on farmers' fields to cope up with current climate variability
- Sponsored and competitive research grants to fill critical research gaps

- Capacity building of different stake holders

"Welcome to NICRA Village" - Dhalai, Tripura

The technology demonstration component deals with demonstrating proven technologies for adaptation of crop and livestock production systems to climate variability. This component is implemented in selected vulnerable districts of the country through location specific interventions by Krishi Vigyan Kendras in a participatory mode. The project is implemented in 100 districts involving over one lakh farm families across the country.

NICRA is implemented in selected vulnerable districts through 14 KVKs representing different agro-climatic conditions in 5 North Eastern States *viz.* Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Various interventions and adaptation measures were put forth to address the change in climate and its implications on agriculture, food security and livelihood of the agricultural communities.

The vulnerabilities of the respective KVK districts are mentioned here under:

Table 1.1: State wise details of operational NICRA KVKs along with their climatic vulnerability

State	District	Agro-climate	Vulnerability
Manipur	Senapati	Sub Tropical Plain Zone	Drought/water stress
	Imphal East	Mild Tropical Hill Zone	
	Ukhrul	Sub Tropical Hill Zone	Frost /Soil Erosion
Meghalaya	Ri-Bhoi	Mid Tropical Hill Zone	Drought / water stress Frost / Hailstorm
	West Garo Hills	Sub Tropical Hill Zone	Drought/water stress
	Jaintia Hills	Sub Tropical Hill Zone	Drought/ Flood
Mizoram	Lunglei	Sub Tropical Hill Zone	Water stress
	Serchhip	Mid Tropical Plain Zone	Drought
Nagaland	Phek	High hill Zone	Drought/water stress
	Dimapur	Mid Tropical Plain Zone	
	Mokokchung	Mild Hill Zone	
	Mon	Upper Brahmaputra Valley Zone	Drought/ Soil erosion
Tripura	Dhalai	Mid Tropical Plain Zone	Flood/ Soil erosion
	Khowai	Mid Tropical Plain Zone	Drought like situation

These districts are selected based on the following criteria besides the strength of the KVKs:

- Drought proneness based on 30 years rainfall data (Source : IMD)
- Cyclone proneness based on frequency as recorded by IMD/State Disaster Management agencies.
- Flood proneness based on IMD data and NDMA maps.
- Vulnerability to heat wave and cold wave based on IMD grid data on temperatures.
- Actual incidence of floods and drought as recorded by AICRPAM centres

The interventions in the village panchayats are finalized following a participatory approach through the Village Climate Risk Management Committee (VCRMC), after the PRA to assess the climate related problems in the village and baseline survey. The program was launched formally in all the villages by involving the state line department

functionaries and leaders of the panchayats to ensure local ownership of the project from the beginning and convergence of related schemes currently in operation in the panchayat.

Table 1.2: Villages adopted by NICRA-KVKs under ATARI Zone-VII where the various technologies have been demonstrated

Name of KVK	Name of village
Imphal East	Andro, Top Chingtha, Yairipok Yambem & Nungbrung villages
Senapati	Hengbung & Mayangkhang Villages
Ukhrul	Ramva Village
Jaintia Hills	Umjalasiaw
Ri-Bhoi	Kyrdem & Sohriewblei
West Garo Hills	Marapara, Sananggre, Rongbokgre, Bagugre and Rimrangpara villages
Lunglei	Hnahthial
Serchhip	N. Vanlaiphai
Dimapur	Dhansiripar
Mokokchung	Aliba
Mon	Ngangching
Phek	Thipuzu, Phusachodu, Kikruma, K. basa
Dhalai	Methirmia
Khowai	North Pulinpur ADC Village & Duski ADC village

2. INTERVENTIONS DURING 2019-20

Module wise activities and interventions achieved by the NICRA farmers and KVKs in the adopted villages under ATARI Zone-VII during 2019-20 are as follows:

2.1 Module I: Natural Resource Management

a.) In-situ moisture conservation measures

Under this module, interventions such as moisture conservation through broad bed and furrow system for planting French bean var. Arka Arjun, cultivation of Paddy var. Himalini. Maize var. RCM-76 and Potato var. Kufri Jyoti were raised through ridge and furrow method in which a yield increase of 60 per cent was recorded in the case of Maize var. RCM-76. The practise of contour cultivation was done in Umjalasiaw village of West Jaintia Hills District in which Paddy var. CAU R1 was grown followed by pea in the rice fallow. This intervention recorded an improved in crop yield over the conventional method of cropping by 53 per cent. Furrow irrigation method was popularized in Khowai District of Tripura and Maize var. VMH-45 was cultivated in a total area of 53 ha. The total yield increase was recorded to be 79.31 per cent over the conventional method. Another intervention under this module is the practise of mulching using either crop residues or plastic mulch. Crops that were mulched during 2019-20 include pea var. Aman (PF5-19), tomato var. Samrudhi, Broccoli var. Green Magic, Cabbage var. BC 76 and Rareball and Bitter gourd var. Kaberi-88 and Boulder. The yield increase percent for vegetable crops under mulching intervention was recorded to be 100.83 percent over the local/ conventional farming method. Conservation of tillage was also practise under this module in which pulses and oilseeds were cultivated using zero or minimum/ improved tillage methods and the result of the interventions recorded an increase in yield by 122 percent in the case of pulses and 20.98 percent in oilseeds, during 2019-20. The summarization of the interventions under this module is as under:

BBF in French bean

Ridge and furrow cultivation of Maize

Table 2.1.1: NRM – in-situ moisture conservation measures.

Interventions	No. of demonstrations	No. of farm-ers	Area under practice in the village (ha)	
			Now	Before NICRA project
BBF	10	10	8	0
Ridge and Furrows	10	15	7	0
Contour cultivation	1	4	2	0
FIRB method	91	91	53	0
Mulching (organic/ plastic)	213	221	95.5	0.5
Conservation tillage	63	72	56	6
Total	388	413	221.5	6.5

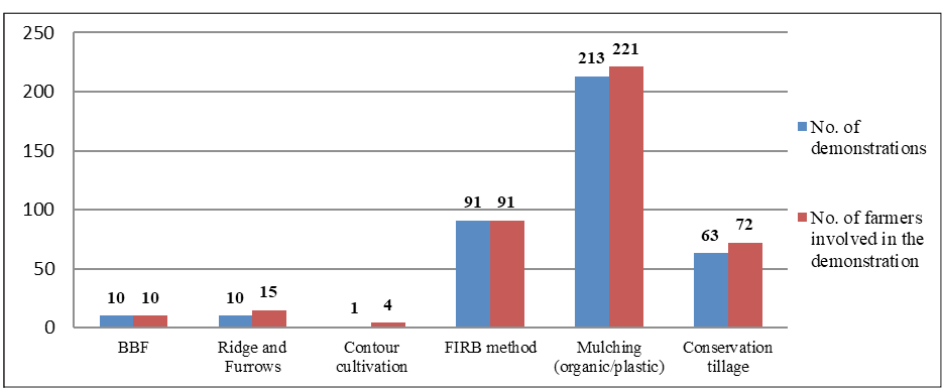

Fig 2.1.1: Demo and number of farmers involved: in - situ moisture conservation measures

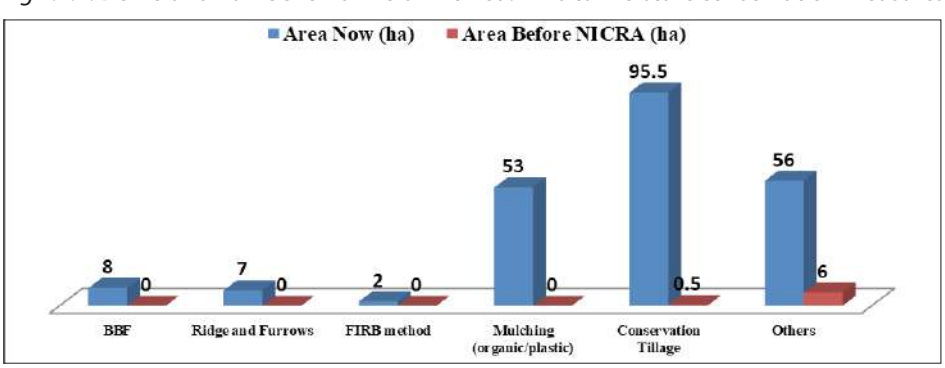

Fig 2.1.2: Area (ha) present and before NICRA interventions

b.) Ex-situ moisture conservation measures

Under this sub heading of NRM, interventions and activities conducted during 2019-20 include the creation and popularization of farm ponds, Jalkunds in which 43 such demonstrations were made during 2019-20 in the different NICRA adopted villages. The intervention covers an area of 68.75 ha in total and 59 farmers benefitted from the intervention during the year. Life saving irrigation was possible from this intervention and horticultural crops such as cabbage vars. Rareball, Green hero, Broccoli var. Green Magic, Cauliflower var. Swati, tomato var. Rocky, Arka Rakshak and others were grown. It was recorded that the overall crop yield percent of this intervention over the conventional cropping method was over 133 percent. Micro irrigation through sprinkler irrigation was established in Imphal East district for the cultivation of onion var. Arka Lalima in an area of 0.5 ha. The yield of onion under the intervention was 204.2 q/ha as compared to 154.6 q/ha from conventional cropping method and the water saving percentage was up to 50 percent. Other interventions under this module include the repairing of irrigation channels and other water conservation structures. The summarization of the interventions under this module is as under:

Irrigation through PVC Pipe supplied under NICRA Project

Drip irrigation in cauliflower

Water harvesting through Jalkund

Table 2.1.2: NRM – Ex-situ moisture conservation measures.

Interventions	No. of demos	No. of farmers	Area under practice in the village (ha)	
			Now	Before NICRA project
Farm ponds	15	15	7.5	2
Jalkunds	33	44	61.25	14.4
Improved drainage	1	700	180	100.32
Sprinkler irrigation	1	1	0.5	0
Other	15	15	12	3
Total	65	775	261.25	119.72

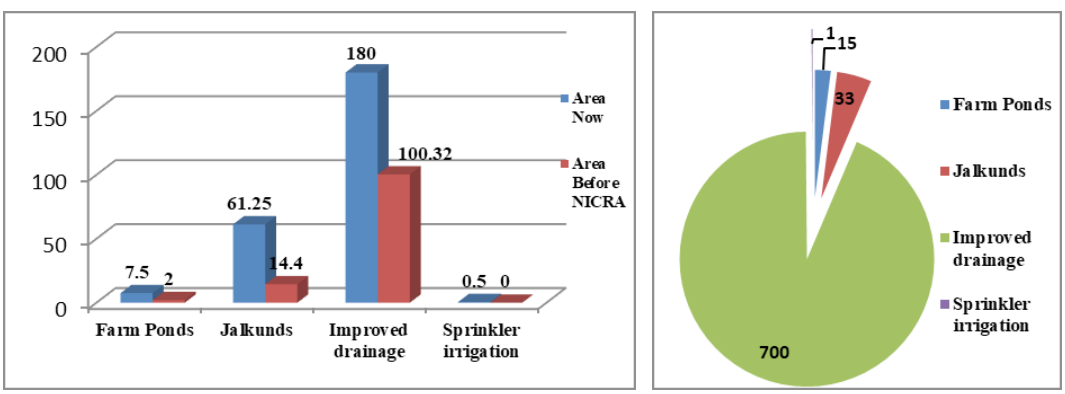

Fig 2.1.3: Area (ha) before and after NICRA interventions and farmers distribution per intervention

c.) Soil health improvement interventions

Under soil health improvement module, interventions such as distribution of soil health cards, nutrient management, green manuring, crop residue incorporation and composting were popularized. During the year, soil health cards was distributed to 20 farmers and through this, farmers were able to correct and improve soil nutrient availability which also leads to increase in the production of different crops like pea var. Arkel, soybean var. JS 335, paddy var. Swarna Sub-1 and bitter gourd. The overall yield increase from soil health card intervention was recorded to be 39

Portable vermicompost structure

percent. Composting of crop residues through vermicompost was popularized over several areas, involving 29 farmers. Vermicompost harvested is again utilized in the farmer's field and it reduces the need for procuring compost from external sources thereby reducing the overall cost of cultivation of crops. The summarization of the interventions under this module is as under:

Soil conservation using cover crop (rice bean)

Table 2.1.3: NRM – Soil health improvement interventions.

Interventions	No. of demos	No. of Farmers	Area under practice in the village (ha)	
			Now	Before NICRA project
Soil Health Cards	3	9	20	14
Site Specific Nutrient Management	1	2	5	9
Green manuring	1	2	2	1
Crop Residue incorporation	1	2	50	2
Vermicompost	5	25	29	38.95
Other	1	10	10	4
Total	12	50	116	68.95

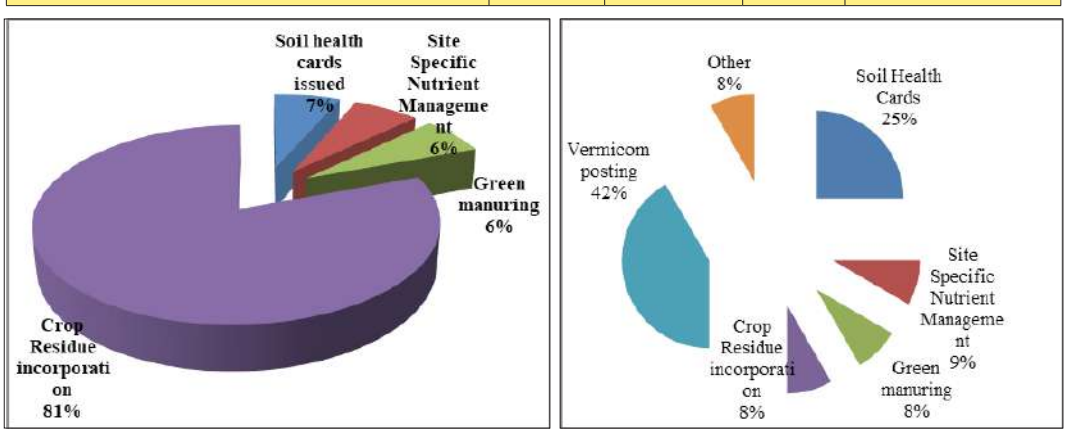

Fig 2.1.4: Distribution of demonstrations and farmers per intervention respectively

2.2 Module II: Crop Production

Crop production based interventions undertaken during the year 2019-20 includes the cultivation of short to medium duration crops such as paddy vars. RCM 12, 13, 76, Bhalum 3 and Disang; maize vars. RCM 76 and HQPM 1; soybean var. JS 335 and foxtail millet var. Sheyam and tomato var. Arka Rakshak; drought tolerant crops like paddy var. Gitesh, Pusa Sugandh-5, IR 36; field pea var. Aman, pea var. Prakash, toria var. TS 67 and Dragon fruit var. Hylocereus undatas; flood tolerant varieties of crops such as paddy var. Gitesh and potato var. Kufri Girdhari; advancement of planting of crops viz., pea var. Arkel and broccoli var. Green Magic so as to escape terminal stresses; water saving paddy cultivation methods such as SRI for varieties *viz.,* IR-36, SARS 2 and Gomati and aerobic paddy for the cultivation of paddy var. RCM 30; practise of location specific intercropping of different types of crops such as maize and groundnut, maize and French bean, maize and soybean etc., diversification of crops viz., groundnut var. ICGS 76 toria var. TS 38, 67, black gram var. PU-31, persimmon var. Fuyu & Hachiya, potato (TPS) var. HPS II/67 as well as the cultivation of round the year mushroom and apiculture were possible and farmers were not dependent on a single crop for their source of income. Cultivation of horticultural crops round the year in protected structures was also done in KVK, Ri Bhoi District, Meghalaya and crops such as Knol Khol: Early white Cabbage: H-139, Cucumber: Malini, Capsicum: California Wonder Tomato: Arka Rakshak, Flower: Gerbera were grown. The practise of low cost tunnel for the cultivation of king chilli was done in KVK, Phek, Nagaland to minimize the impact of frost on the crop and it recorded a yield of 100.5 q/ha which is 57.77% more as compared to the farmer's practise. The summarization of crop production module is as follows:

Low-cost walk in tunnel for protected cultivation of vegetables

Short duration paddy var. Disang

8 Row Drum Seeder for paddy cultivation

Table 2.2.1: Crop Production interventions during 2019-20

Interventions	No. of KVK	No. of Demos	No. of farmers involved in the demo	Area taken up with demo (ha)	Area under practice in the village (ha)	
					After NICRA	Before NICRA
Short duration varieties	7	25	51	16.2	64.5	0.5
Drought tolerant varieties	6	46	62	15.5	46	8.4
Flood tolerant varieties	3	51	51	7	37.5	5
Advancement of planting dates to escape moisture stress	2	5	25	11.4	43.6	2
Water saving Paddy (SRI)	2	95	100	42	223	200
Water saving paddy (aerobic)	1	15	15	5	12	3
Contingency Crop	1	25	25	3.5	5	2
Location specific inter cropping system	4	21	92	19.2	29.8	6
Crop Diversification	5	52	98	54	78.66	5.5
Nutrient Sprays	1	10	23	1.5	58	4.5
Low cost Poly houses	1	2	20	0.01	0.01	0
Low cost tunnels	1	5	5	0.02	0.1	0
IFS	3	6	8	1.99	3.75	0.5
Others	7	18	95	6.37	30.2	2
Total	44	376	670	183.69	632.12	239.4

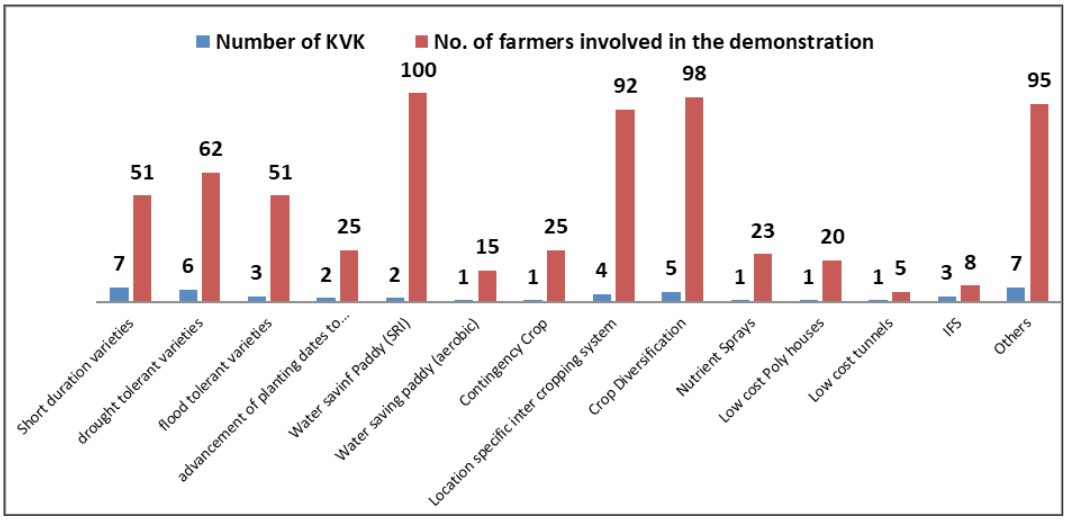

Fig 2.2.1: Relation between numbers of farmers with the KVKs involved per intervention

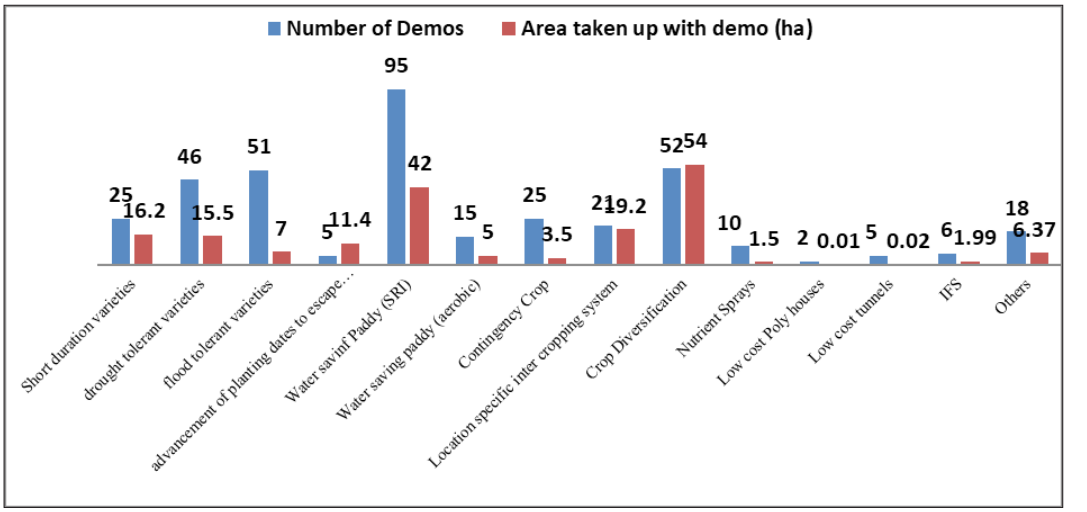

Fig 2.2.2: Number of demos and area covered (ha) per intervention

2.3 Module III: Livestock & Fisheries

Interventions on livestock and fisheries module achieved during the year are as follows:

Preventive vaccination – It is done to improve the health of livestock and reduce the mortality rate of livestock in the villages especially during the monsoon period where most diseases occur. A total of 578 animals were vaccinated during the year and the mortality rate of animals was reduced drastically.

- Improved shelters – Improved shelters were constructed for piggery as well as poultry units. Piggery shelter constructed includes improved pig sty with wallowing tank for reducing heat stress, low cost climate resilient environment affinitive pig pen model and low cost Heat stress management in Pig sty using locally available raw materials. Poultry shelter constructed was Climate Resilient Raised Floor Poultry Housing with 180 numbers of birds. A total of 15 housing units were constructed during the year.
- Introduction of improved animal breeds – Improved poultry breeds popularized in the NICRA villages include Vanaraja, Srinidhi and Kuroiler which are dual purpose birds which can fetch more income for the farmers. Improved species of fish fingerlings such as IMC and other exotic carps were also introduced. A total of 1127 animals and 40,000 fish fingerlings were distributed to the farmers during the year.
- Renovation of fishery ponds – This intervention was taken up by KVK, Mokokchung, Nagaland, in which four numbers of fish ponds were renovated for proper fishery and water management. Water from the renovated ponds was used for life saving irrigation during the dry season.
- Improved feeding methods – In this intervention, improved feed such as mineral mixture incorporation and silage feeding was done to livestock. This intervention leads to reduced in parasitic load in faecal sample of piggery by over 70% and body weight gain by 79%. Altogether, 108 farmers were involved in the intervention.

Integrated Farming Systems and others –

Improved Shelter (Pig Sty) with locally available raw materials

Composite fish culture

IFS at KVK, West Jaintia Hills, Meghalaya

Several IFS units were replicated in the NICRA villages based on the promising ones that were setup in the early years. During the year 2019-20 a total of twenty three IFS models, apiary, composite fish culture and artificial insemination of pigs were demonstrated to twenty seven numbers of farmers and six units were established.

The details in terms of number of demonstrations, farmers involved, area covered etc. is given in the table below:

Table 2.3.1: Livestock and Fishery module during 2019-20

Interventions	No. of KVKs	No. of demos	No. of farmers involved in the demo	Area (ha)	Units (no.)	Animals distributed (no.)	Fish fingerlings distributed (no.)	Vaccinated/ Treated (no.)
Introduction of new fodder	1	1	5	5				
Preventive Vaccination	4	4	490					378
Improved Shelters	4	13	15		15			
Improved breeds	7	104	180	8		1127	40000	
Management of fish ponds	1	4	4		4			
Improved Feeding	3	6	113	4.2		137		
Others	6	23	27	1.76	6	28		
Total	26	155	834	18.96	25	1292	40000	378

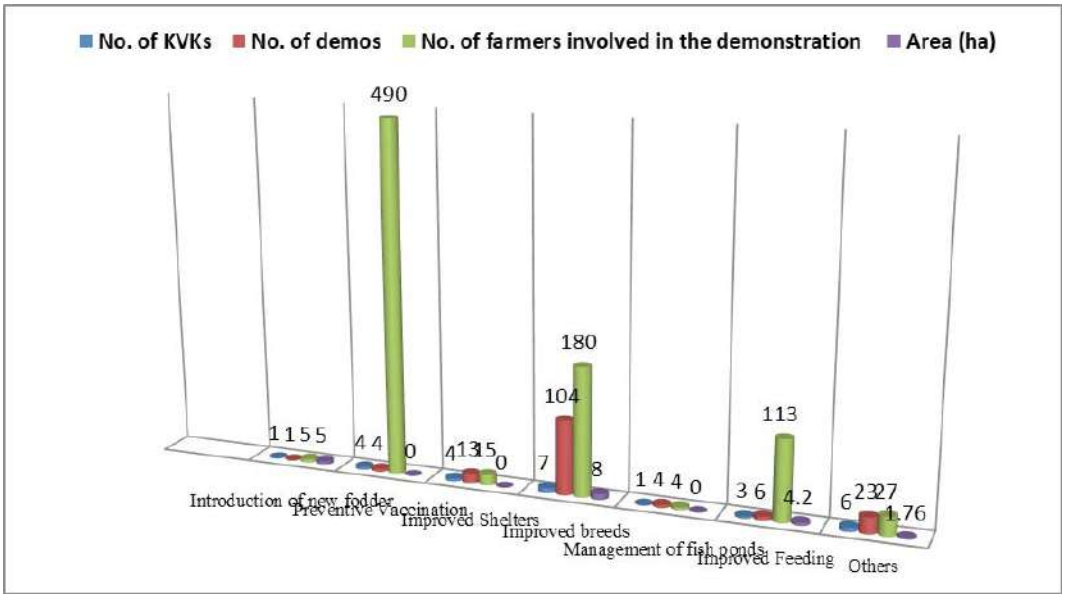

Fig 2.3.1: Representation of interventions under Livestock and Fisheries module

2.4 Module IV: Institutional Interventions

Paddy CAU R1 grown in community nursery

Institutional interventions conducted by the NICRA KVKs during 2019-20 are as follows:

Seed production systems – Under this intervention, quality seeds of known crop varieties were produced as a community based approach and the seeds were then stored and distributed to the local farmers whenever required. Seeds stored during the year amounts to 36.8 q of cereals (10 q of paddy and 26.8 q of maize), 13 q of pulse crop seeds and 16.5 q of oilseed crop seeds.

- Fodder production system – Tapioca and potato var. Kufri Giridhar meant for fodder was produced by KVKs Mokokchung and Phek respectively and it amounts to 260.5 q during 2019-20.
- Custom Hiring Centre – Custom Hiring Centres were established in each NICRA village and they are being managed by the local VCRMC. Tools and farm implements including power tiller are being made available to the local farmers on hired basis and the income generated is being put back into the CHC for regular maintenance. Area

covered from CHC intervention was 506.9 ha in total and benefitting 1044 numbers of farmers.

- Climate literacy through weather stations: This intervention was conducted by two KVKs, involving 325 farmers. The importance of this intervention is mainly to enable farmers to take weather-based farming decisions so as to minimise the risk of crop failure due to climatic aberrations.

Summary of interventions under institutional interventions undertaken by the NICRA KVKs during the year 2019-20 is as follows:

Table 2.4.1: Summary of Institutional interventions 2019-20

Interventions	No. of KVKs	No. of farmers involved/ benefited	Quantity produced (q)	No. / Area (ha) benefited	Unit (no.)
Seed Production System	10	181	653.4	74.3	4
Fodder Production System	3	140	420.5	4.2	
Custom Hiring Centre	12	1044		506.9	
Climate literacy through weather stations	2	325	0	0	0
Others	1	180	0	4	0
Total	28	1870		589.4	4

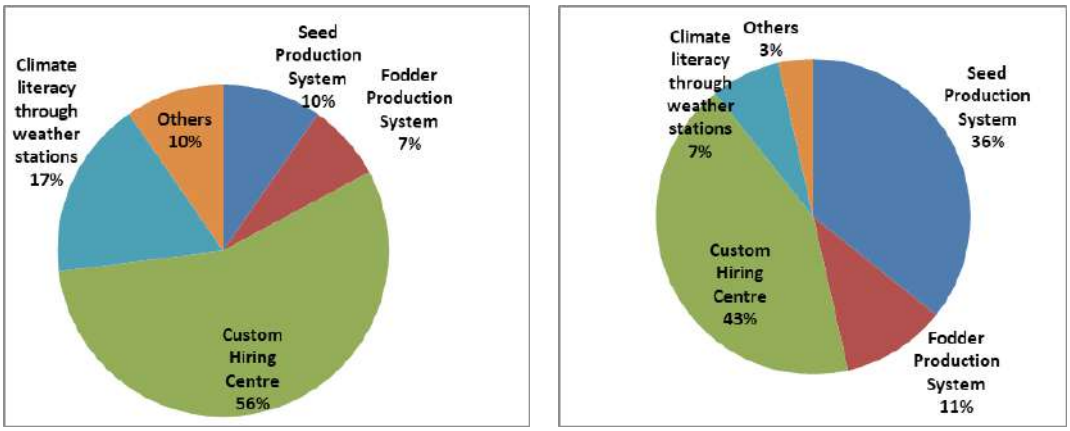

Fig 2.4.1: Distribution of farmers and KVKs involved per intervention respectively

2.5 Module V: Capacity Building

Capacity building activities conducted by NICRA KVKs focuses the farmers' ability to venture into new farming methods and to improve what they are currently engaged in doing. It enables the farmers to adapt to relevant and improved farming practices more rapidly and accurately. Capacity building programmes in crop production, natural resource management, horticulture, food processing and value addition, livestock and fisheries management, mushroom cultivation, group dynamics and others have been conducted during 2019-20, benefitting 2811 farmers in total. The table below shows the details of capacity building conducted during the year:

Table 2.5.1: Summary of Capacity Building Programmes during 2019-20

Thematic area	No. of KVKs	No. of programmes	No. of beneficiaries		Total
			Male	Female	
Horticulture	3	3	37	28	65
Plant protection	4	6	102	114	216
Water harvesting	1	2	43	32	75
Mushroom cultivation	3	6	38	49	87
Food processing and value addition	4	6	16	119	135
Protected cultivation	2	2	42	13	55

IFS	7	9	165	124	289
NRM	11	18	359	346	705
Crop production	9	24	304	274	578
Group dynamics	1	2	19	27	46
Breed improvement	5	6	89	85	174
Livestock management	4	15	202	184	386
TOTAL	54	99	1416	1395	2811

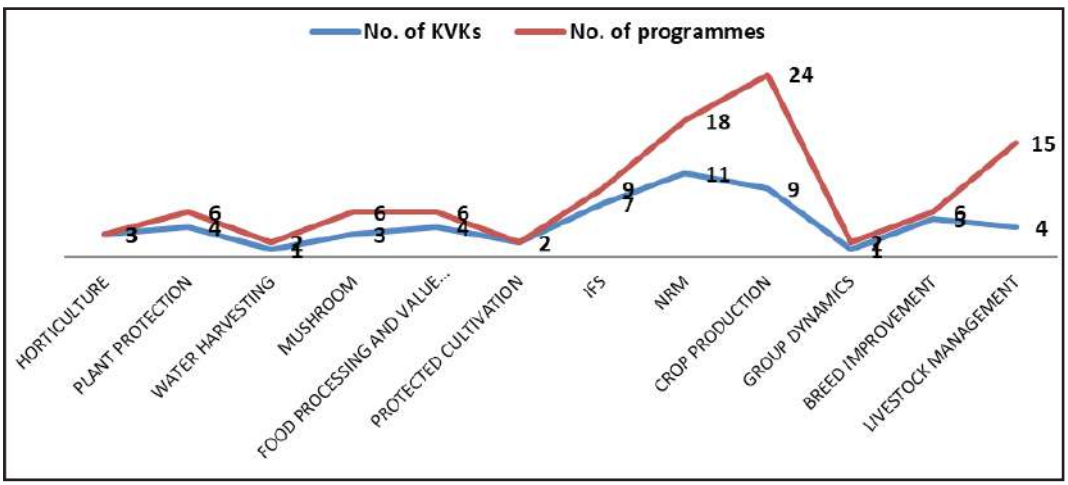

Fig 2.5.1: Number of KVKs to the number of programmes conducted under the intervention

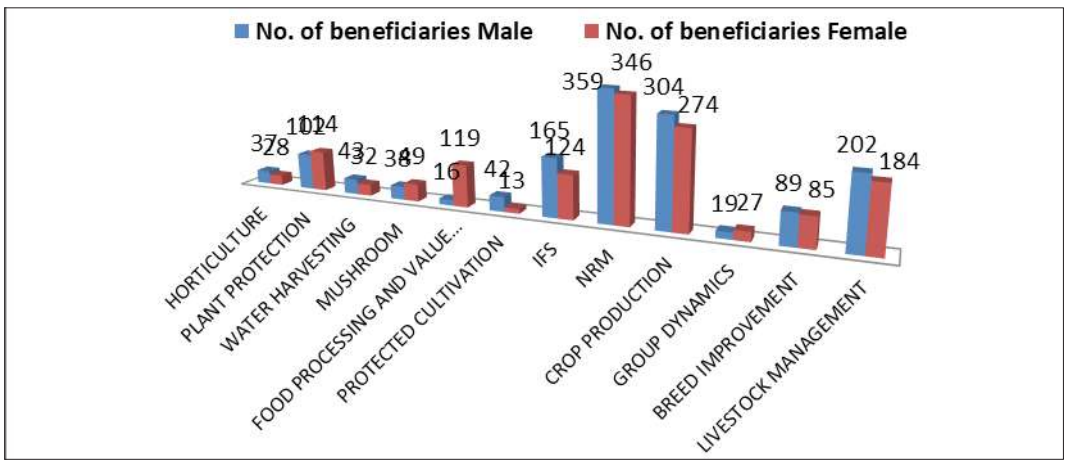

Fig 2.5.2: Ratio between male to female beneficiaries under the different interventions

2.6 Module VI: Extension Activities

Exposure visit of school students to NICRA Village

Extension activities provides information to farmers **and passes** new ideas developed by agricultural research institutions and other such enterprises. These programmes cover a broad range of interventions such as exposure visits of farmers and even students, strengthening of SHGs' and Kisan clubs, field days to successful farm models and research farms that provide first hand experience to the farmers including method demonstrations and awareness programmes, are all indispensible elements that the farmers need to improve their agricultural production and productivity. During 2019-20, a total of 356 programmes were conducted by NICRA KVKs of ATARI Zone-VII and benefitting 4582 farmers, farm women and students.

Table 2.6.1: Extension Activities conducted

Name of the activity	Number of KVKs	Number of programs	No. of beneficiaries		Total
			Male	Female	
Exposure Visit of farmers	5	7	81	42	123
Exposure Visit of students	4	4	100	96	196
Strengthening of SHGs	3	5	36	91	127
Strengthening Kisan clubs	1	3	55	0	55
Field days	11	21	229	217	446
Method demonstrations	10	50	289	301	590
Awareness programmes	8	17	610	430	1040
Others	11	249	1171	834	2005
Total		356	2571	2011	4582

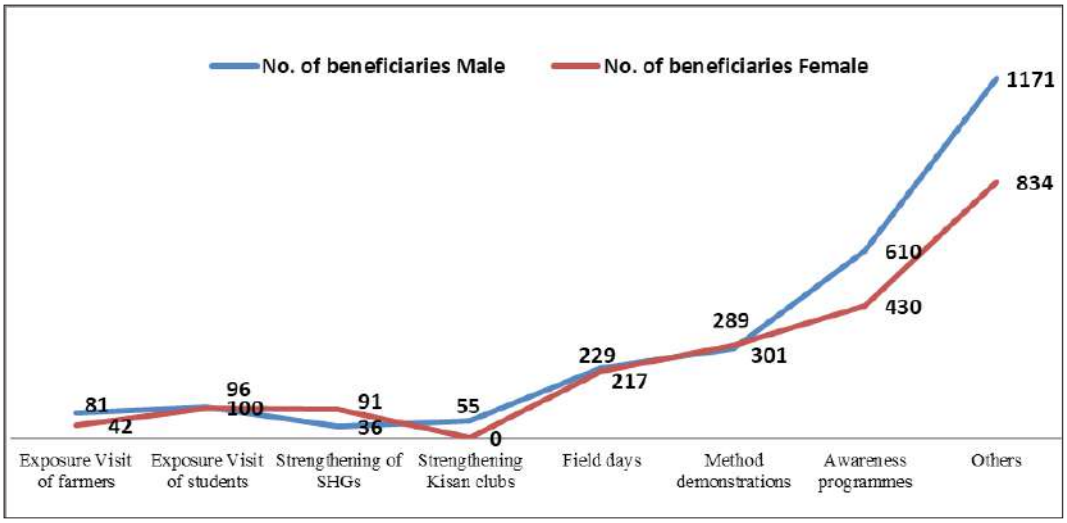

Fig 2.6.1: Male to Female beneficaries in the different extension activities

3. SUMMARY OF NICRA INTERVENTIONS

The overall summary of interventions taken under NICRA Project during 2019-20 is given below:

Table 3.1: Summary of NICRA Interventions during 2019-20

Intervention	No. of demos	No. of farmers benefitted	Area covered (ha)	Area before NICRA (ha)	Units created (no.)	Animals distributed (no.)	Fish Fingerlings distributed (no.)	Animals Treated / Vaccinated (no.)
NRM - A (In- tu moisture conservation)	388	413	221.5	6.5				
NRM - B (Ex-situ moisture conservation)	65	775	261.25	119.72				
NRM - C (Soil conservation)	50	116	68.95	13.5				
Crop production	376	670	183.69	239.4				
Livestock & Fisheries	155	834	18.96		25	1292	40000	378
Institutional Interventions		1870	589.4		4			
TOTAL	1034	4678	1343.75	379.12	29	1292	40000	378

Intervention	No. of Courses	No. of beneficiaries		
		Male	Female	Total
Capacity Building	99	1416	1395	2811
Extension Activities	356	2571	2011	4582
TOTAL	455	3987	3406	7393

4. RAINFALL CHARACTERISTICS

The rainfall characteristics as well as day wise rainfall distribution of villages under NICRA Project during 2019-20 is given in the following tables:

Table 4.1: Rainfall characteristics during Kharif 2019-20 (mm)

STATE	KVK	June	July	August	September
Manipur	Imphal East	181.4	202.6	62.9	253.7
	Senapati	82.9	193.5	116.5	332.4
	Ukhrul	130	352.8	139.3	210.1
Meghalaya	Jaintia Hills	669.2	447	149.4	370
	Ri Bhoi	380.4	396.2	425.6	220.9
	West Garo Hills	294.8	339	41	66.4
Mizoram	Lunglei	273	463	272	308
	Serchhip	198.6	321.6	178.8	250.5
Nagaland	Dimapur	195	271.3	274.5	173.4
	Mokokchung	289.52	781.99	644.74	160.05
	Mon	293	388	349	370
	Phek	651	862	532	666
Tripura	Dhalai	278.1	483.9	252.8	265.4
	Khowai	308	304.3	252.9	147.6

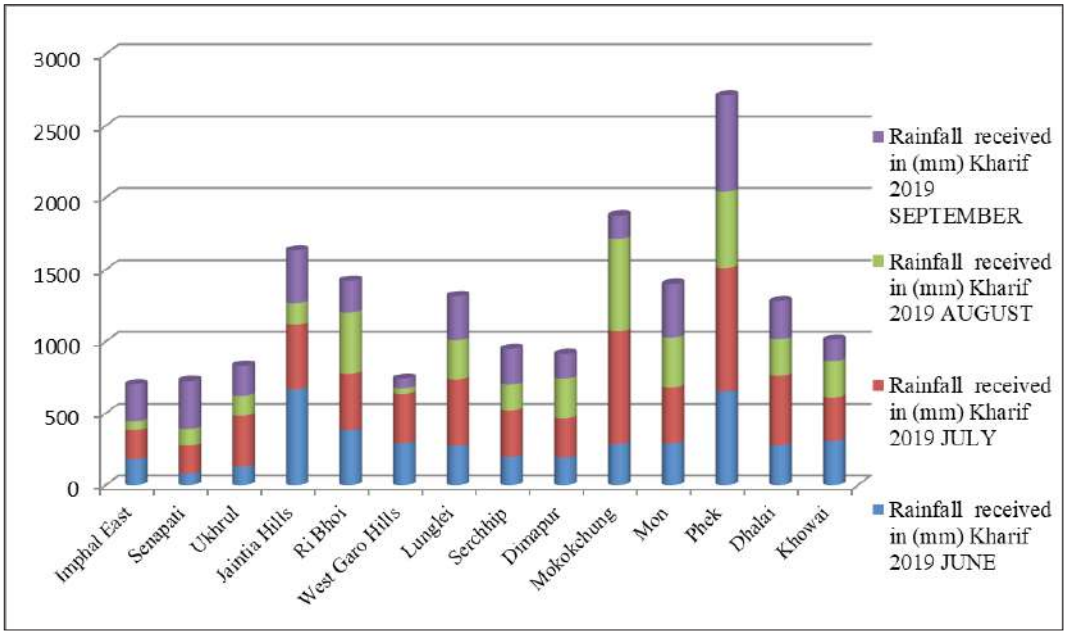

Fig 4.1: Monthly rainfall (mm) distribution in the village during Kharif 2019

5. IMPACT OF CONTINGENCY MEASURES

The impact of dry spells has greatly impacted the cultivation of crops in some of the NICRA villages. The details of activities taken by the KVKs are described below:

i. **KVK, Imphal East: -** Drought like conditions was observed during 22nd of April till September, 2019 which was during cultivation of paddy. As a contingency measure, the KVK provided the farmers with 1488m Irrigation pipe (124 pipe of 12 m length, 60mm and 110 mm) for irrigating 200 ha from Thoubal River (RLI) in NICRA village Yambem and Top Chingtha and the 260 numbers of farmers could provide life saving irrigation for cultivating paddy successfully. Other farmers were provided with seeds of Black gram var. PU-31 @ 200 kg, French bean var. Ayoka @ 10 kg and Cabbage var. Rareball @ 400 gm in community nursery mode as contingency crops and benefitting 26 farmers.

ii. **KVK, Ukhrul:** - Dry spells was observed during the month of May to June, 2019 which coincided with the seedling stage of paddy. As a contingency measure, irrigation was provided using pump from the custom hiring centre and impacted with a crop yield of 49%. Moisture stress was also reported during the month of October and it was at the time of fruiting stage of pea. One farmer took up early planting of pea and was not affected by the climate aberration and yield increase of his crop as compared to other farmers was 33.30%.

iii. **KVK, West Jaintia Hills: -** Dry spells were observed from 15th of November to 10th December and then from 12th December to 12th January which coincided with the cultivation cabbage (cupping stage) and tomato (seedling stage) respectively. Since the dry spell occurs regularly, low cost water harvesting structures were constructed for supplying supplemental and life saving irrigation during such period. The impact of the intervention reported that a yield increase of 198.4% for cabbage and 125% in the case of tomato was observed. For cabbage, 4 farmers were involved and 5 farmers were involved for the cultivation of tomato.

iv. **KVK, West Garo Hills: -** The adopted villages of West Garo Hills experienced dry spells from November 2019 till January 2020. During the period, the cultivation of toria was during flowering stage and as a contingency measure; late sowing of the crop was done which reported in a yield increase of 11.26%.

v. **KVK, Mokokchung: -** Dry spells was recorded for six days in the month of June, form 16th till 21st. the dry spells was during tillering stage of paddy and life saving irrigation from ring well was given which resulted in a yield increase of 11.26%.

vi. **KVK, Mon: -** The adopted village experienced dry spells during June to August during the cultivation of paddy (flowering and milking stage) where there were also incidences of pest. Compartmental planting of soybean on bund in paddy field was done as a method of contingency measure which reported a yield increase of 16.47%. Another dry spell was reported lasting for 54 days from 13th November, 2012 to 5th of January, 2020. As a contingency measure, zero tillage with paddy straw mulching was

done for the cultivation of rapeseed, minimal tillage and mulching was done for the cultivation of pea and irrigation through constructed water storage tank was given to cabbage (vegetative & head formation stage). Significant yield improvement was recorded from the interventions and there was over 25% yield improvement in the case of cabbage. Altogether, 50 farmers benefitted from contingency measures taken by the KVK.

vii. **KVK, Phek: -** High intensity of rain coupled with hail was observed for over 3 weeks in the month of April, 2019 and this have affected the cultivation of Kiwi fruit as it was during flowering stage. As a contingency measure, shade nets were provided to 2 farmers for protection against the climatic aberrations and the yield of fruit was highly significant with yield increase of 78.44%.

viii. **KVK, Dhalai: -** High intensity rain was recorded from 8th to 12th July, 2019 and again from 14th to 26th July, 2019 which affected the cultivation of paddy as it was during vegetative stage. As contingency measure, summer cabbage was grown by 25 farmers so as to gain income in the case of crop failure.

ix. **KVK, Khowai: -** The adopted village of the KVK experienced multiple dry periods during November to February. The crops/crop stages affected by the dry spells were during the flowering and fruiting stages in bitter gourd, in which mulching with paddy straw and irrigation using solar nano pump was done as means of contingency measures, vegetative, silking and cob formation stages in maize in which furrow irrigation by use of nano pumps for irrigation was done as contingency measures taken and the vegetative stage and tuber formation stage in the case of potato, whereby IPM was conducted as means of contingency measures taken to improve the overall crop health and production.

6. ADOPTION OF SUCCESSFUL INTERVENTIONS

List of successful interventions adopted in the NICRA villages are as follows: -

6.1. Natural Resource Management

Interventions such as is-situ moisture conservation through mulching using paddy straw and other farm waste, furrow irrigation of crops, zero and minimum tillage, water harvesting through farm ponds and jalkunds, recycling of farm waste for composting, protected cultivation of crops through protected structures and so on. These interventions have been replicated extensively and also to neighbouring villages.

Table 6.1.1: Successful interventions under NRM

State	KVK	Successful interventions	Crop	Variety	Extent of adoption in the village (ha)
Manipur	Imphal East	Jalkund	Tomato	Arka Rakshak	2.5
	Senapati	Minimum tillage	Pea	Aman	2
	Ukhrul	Cover crops in abundant jhum land for soil and moisture conservation	Rice bean	local	20
Meghalaya	Jaintia Hills	Jalkund	Tomato, Broccoli	Rocky, Ashwarya	0.5
	Jaintia Hills	Vermicompost incorporation	Potato	Kufri Jyoti	3
	Ri Bhoi	NRM	Gerbera		0.02
	Ri Bhoi	Jalkund			20
	Ri Bhoi	Vermicompost			20
	West Garo Hills	Low cost vermicompost	-	-	5 units
	West Garo Hills	Cultivation of winter vegetables using Jalkund	-	-	10 units

Mizoram	Lunglei	Low cost water harvesting structure 'Jalkund'	Cabbage, Tomato	Improved Bahar, Samrudhi	3
	Serchhip	Broad bed & Furrow	French bean	Arka Arjun	8
	Serchhip	Zero tillage cultivation	Toria	TS-67	8
Nagaland	Mokokchung	Jhalkund	Off season cucumber, Broccoli	Local, Green Magic	3.7
	Mon	Zero tillage practices	Rapeseed	TS- 38	15
	Mon	Zero/ Minimal tillage with mulching of paddy straw mulching	Pea	Prakash	6
Tripura	Dhalai	Straw mulching in Bitter gourd cultivation	Bitter gourd	Kaberi - 88	15
	Khowai	Nano Pump Technology through Water Harvesting structure	-	-	105.28
	Khowai	Mulching in Bitter Gourd with Paddy Straw	Bitter gourd	Bolder	62
	Khowai	Furrow irrigation with High yielding variety of Maize	Maize	DA61A , VMH-45	53

6.2. Crop Production

Successful interventions popularized in the NICRA villages include the use of improved crop varieties of paddy (Pusa Sugandh-5, Swarna Sub-1, RCM-13, Gitesh, Bhalum III, CAU-R1, etc.), maize (HQPM-1, RCM-76), groundnut (ICGS-76), pea (Arkel, Arka Priya, Prakash) and others. The details of successful interventions under crop module are as the table below:

Table 6.2.1: Successful interventions under Crop Production

State	KVK	Successful interventions	Crop	Variety	Extent of adoption in the village (ha)
Manipur	Imphal East	Zero Tillage	Rapeseed	TS-38	5
	Imphal East	Straw Mulching	Pea	Aman	2
	Imphal East	Direct sowing (Eight row drum seeder)	Paddy	CAU-R3	3
	Senapati	DSR	Paddy	CAU-30	3
	Ukhrul	Early production of garden pea for escaping moisture stress	Pea	Arkel	40
	Ukhrul	Introduction of mid duration paddy variety	Paddy	RCM-13	20
	Ukhrul	Maize intercrop with Groundnut for moisture conservation and nutrient recycle	Maize & Ground-nut	RCM-76 & ICGS-76	1
	Ukhrul	Mushroom cultivation	Mushroom	Oyster	12 units
	Ukhrul	Value addition of locally available fruits and vegetable	-	-	15 units
Meghalaya	Jaintia Hills	Paddy cum fish	Fish	Amur carp	0.1
	Jaintia Hills	Integrated farming system	Fish	Grass carp, common carp, amur carp	1.7
	Ri Bhoi	Maize – French bean cropping system	Maize	RCM 76	1
			French bean	Naga local	
	Ri Bhoi	Ginger-pea cropping system using jalkund water	Ginger	Nadia	1
			Vegetable Pea	Arka priya	

Meghalaya	Ri Bhoi	Maize – French bean cropping system	Maize	RCM 76	1
			French bean	Naga local	
	Ri Bhoi	Ginger-pea cropping system using jalkund water	Ginger	Nadia	1
			Vegetable Pea	Arka priya	
	Ri Bhoi	Round The Year Vegetable Production Under Protected Condition	Knol Khol	Early white	0.03
			Cabbage	H-139	
			Cucumber	Malini	
			Capsicum	California Wonder	
			Tomato	Arka Rakshak	
			Flower	Gerbera	
	Ri Bhoi	Zero energy cool chamber for enhancing the shelf life of perishable fruits & vegetable	Vegetables, Mushroom and Betel leaves		
	West Garo Hills	Staggered transplanting of paddy	Paddy	Gitesh	12
	West Garo Hills	Cultivation of late sown toria in rice fallows	Toria	TS-67	5
Mizoram	Lunglei	Inter cropping	Cabbage + Tomato	Improved Bahar + Samrudhi	2
	Lunglei	Inter cropping	Maize + Soybean	RCM 75 + JS335	2
	Lunglei	Stress tolerant crop	Dragon fruit	Hylocerous undatas	2
	Serchhip	Maize based cropping system	Maize	RCM-76	4

Nagaland	Dimapur	Cropping system	Rice – Toria	Toria TS-67	20
	Mokokchung	Short duration crop	Paddy	Disang	3.2
	Mokokchung	Vermicompost for soil health improvement	Off season cucumber	Local	2.1
	Mokokchung	Vermicompost for soil health improvement	Cabbage	BC 76 & Rareball	1
	Mon	Foxtail millet- soybean (sequential cropping system)	Foxtail millet & Soybean	Local & JS- 335	25
	Mon	DSR method in paddy	Paddy	SARS- 2/ IR-36	5
	Phek	Crop geometry in maize variety HQPM 1	Maize	HQPM 1	1
	Phek	Low cost poly-house for king chilli production	Chilli	King Chilli	0.3
Tripura	Dhalai	Submergence tolerant variety in paddy	Paddy	Swarna sub -1	40
	Khowai	SRI in Paddy	Paddy	Gomoti, Ranjit, Tripura Nirog, Tripura Chikon	215
	Khowai	IPM in TPS	Potato	HPS II/67	16.88

6.3. Livestock and Fisheries

Interventions such as introduction of improved animal breeds, composite fish culture, IFS, feeding management in animals, improved shelters to reduce climatic stress, preventive vaccinations and others have proven to be highly successful in the case of reducing disease incidences in animals, improved growth and overall productivity.

Table 6.3.1: Successful interventions under Crop Production

State	KVK	Successful interventions	Livestock	Breed	Extent of adoption in the village in ha (2019)
Manipur	Senapati	Introduction of stress tolerant Poultry breed	Poultry	Grama priya	5 units
	Ukhrul	Composite fish farming	Fish	Common carp and grass carp	0.4
Meghalaya	Jaintia Hills	Backyard poultry farming		Vanaraja	4 farmers
	Ri Bhoi	Climate Resilient Raised Floor Poultry Housing	Poultry	Kuroiler	
	Ri Bhoi	Paddy cum fish Integrated farming system	HYP paddy + fish	IMC, Amur carp	
	West Garo Hills	Preventive Vaccination		Vaccination against FMD, Swine Fever and Ranikhet disease	63% adoption
	West Garo Hills	De-worming and mineral supplementation in pigs		-	75%
	West Garo Hills	Backyard Kuroiler Farming		Kuroiler	80%
Mizoram	Lunglei	Breed introduction of dual purpose birds	Poultry	Vanaraja	15 farmers
Nagaland	Mokokchung	Backyard poultry farming	Poultry	Vanaraja	31 units
Nagaland	Mon	Rearing of backyard poultry	Poultry bird	Kuroiler	1080 birds
Tripura	Dhalai	Integrated farming system (IFS) module	IFS	Component (fishery + duckery)	2
	Khowai	Integrated Farming System (IFS)	Fish, Duck and Horticultural crops	Khaki Campbell, Rohu , Mrigal, Catla, Common Carp, Brinjal, Papaya, Tomato, Chilli	13.25

7. POPULARIZATION OF CLIMATE RESILIENT VARIETIES

Climate resilient crops/varieties are those which can withstand the stress which comes along with climate change. These crops have no or little impact to the fluctuations in climate of a region and thus the production and productivity of such crops is not hampered. Crops like rice (CAU R3, Shahsarang, Swarna Sub-1 *etc.*,), pea (Aman, Prakash, Vikash *etc.*,), tomato (Amitabh-004, Rocky, Megha tomato 3 *etc.*,), cabbage (Wonderball, H-139 *etc.*,) and varieties of other crops have been introduced and popularize in the NICRA villages and have proved to be promising. The details regarding the popularization of these climate resilient varieties are given below:

Table 7.1: Popularization of Climate Resilient Varieties (Kharif)

State	KVK	Crop	Climate Resilient Varieties incorporated in the Kharif 2019 plan of the State Department	Approx. area brought under the variety by the state department during the Kharif 2019 (ha)
Meghalaya	Ri Bhoi	Chilli	Gunter hope	2
	Ri Bhoi	Ginger	Nadia	0.4
	Ri Bhoi	Maize	RCM 76	0.75
	Ri Bhoi	French bean	Naga local	0.2
	West Garo Hills	Paddy	Gitesh	5
	West Garo Hills	Paddy	Swarna Mashuri	1
	West Garo Hills	Toria	TS-67	0.5
Mizoram	Lunglei	Maize	RCM-75	NA
	Lunglei	Soybean	JS 335	NA
	Lunglei	Dragon fruit	Hyloserous undatas	NA
	Lunglei	Paddy	Bhalum-3	NA
Nagaland	Mokokchung	Paddy	CAU R1	5.1
	Mokokchung	Paddy	Disang	3.6

Nagaland	Mokokchung	Maize	HQPM 1	9.6
	Mon	Soybean	JS- 335	10
	Mon	Paddy	IR-36	2
	Mon	Paddy	SARS 2	2
	Mon	Maize	RCM 76	2
	Phek	Maize	HQPM 1	1
Tripura	Dhalai	Paddy	Swarna Sub-1	40
	Khowai	Paddy	Gomoti	5000

Table 7.2: Popularization of Climate Resilient Varieties (Rabi)

State	KVK	Crop	Climate Resilient Varieties incorporated in the Rabi 2019 plan of the State Department	Approx. area brought under the variety by the state department during the Kharif 2019 (ha)
Meghalaya	Ri Bhoi	Cabbage	H-139	2.3
	Ri Bhoi	Capsicum	Royal wonder	1.5
	Ri Bhoi	Capsicum	Wonder pushpa	1.5
	Ri Bhoi	Broccoli	Green star	0.5
	Ri Bhoi	Broccoli	Green magic	5
	Ri Bhoi	Pea	Arka Priya	1.5
Nagaland	Mokokchung	Broccoli	Green Magic	4.2
	Mon	Pea	Prakash/ Aman	10
	Mon	Rapeseed	TS- 38 & TS- 36	10
	Phek	Field pea	Aman	1
Tripura	Dhalai	Lentil	HUL -57 (Minimum tillage in Lentil Cultivation)	25
	Khowai	Potato	HPS II/67	120

8. AWARDS RECEIVED

Several awards were usually given to the KVKs or farmers by different authorities for their exceptional work done and several such awards were received during the year for NICRA interventions by farmers and KVKs alike. The details of awards received during the year are listed in the table below:

Table 8.1: Awards Received during the year for the work related to NICRA

State	KVK	Name of the award	Given by whom	Award given
Mizoram	Lunglei	Best NICRA Award 2019	ICAR–Central Research Institute for Dryland Agriculture, Hyderabad	4th June 2019
Nagaland	Dimapur	Best NICRA KVK Award 2019, ATARI Zone VII	ICAR–Central Research Institute for Dryland Agriculture, Hyderabad	4th June 2019
Tripura	Khowai	Pandit Deen Dayal Upadhay Antodaya Puruskar to Mr. Charan Debbarma	ICAR	2019
	Khowai	Innovative Farmer Award for Climate Resilient Agriculture to Mr. Mangal Debbarma	ICAR Research Complex for NEH Region, Tripura Centre, Lembucherra, Agartala , Tripura (West)	2019
	Khowai	Innovative Maize Farmer to Mr. Charan Debbarma	ICAR Tripura Centre during Promotion of Maize in North –East India: Opportunities and Strategies	2019
	Khowai	Innovative Maize Farmer to Mr. Chittaranjan Debbarma	ICAR Tripura Centre during Promotion of Maize in North –East India: Opportunities and Strategies	2019
	Khowai	Innovative Maize Farmer to Mr. Alen Debbarma	ICAR Tripura Centre during Workshop cum Capacity Building Programme on "Maize as Food-Feed Crop for Farmers' Prosperity"	2020
	Khowai	Innovative Maize Farmer to Mr. Anil Debbarma	ICAR Tripura Centre during Workshop cum Capacity Building Programme on "Maize as Food-Feed Crop for Farmers' Prosperity"	2020
	Khowai	Innovative Maize Farmer to Mr. Mantu Debbarma	ICAR Tripura Centre during Workshop cum Capacity Building Programme on "Maize as Food-Feed Crop for Farmers' Prosperity"	2020

Tripura	Khowai	Innovative Maize Farmer to Mr. Chabi Kumar Debbarma	ICAR Tripura Centre during Workshop cum Capacity Building Programme on "Maize as Food-Feed Crop for Farmers' Prosperity"	2020
	Khowai	Innovative Maize Farmer to Mr. Mitra Debbarma	ICAR Tripura Centre during Workshop cum Capacity Building Programme on "Maize as Food-Feed Crop for Farmers' Prosperity"	2020
	Khowai	Young Researcher Award to Mr. Lord Litan Debbarma, SRF: NICRA	Society for Biotic and Environmental Research, Salem, Tamil Nadu	2019
	Khowai	Best Oral Presentation to Mr. Dipankar Dey, Senior Scientist & Head(i/c),KVK Khowai	ICAR Tripura Centre during National Workshop on Promotion of Maize in North –East India: Opportunities and Strategies	2019
	Khowai	Best Oral Presentation to Mr. Dipankar Dey, Senior Scientist & Head(i/c),KVK Khowai	Institute of Engineers, Tripura Chapter during the National Conference on Commercial Crops Processing and Value Addition, Agartala , Tripura	2019

9. VISITS OF DIGNATARIES

Various profound and distinguished personnel used to visit the NICRA villages from time to time either for attending different programmes or for other purposes. The details of different dignitaries visiting NICRA villages along with their valuable suggestions and recommendations are listed below:

Table 9.1: Dignitaries visited NICRA Villages during 2019-20

State	KVK	Name of the person	When the visit occurred	Significant comments/ suggestions
Manipur	Imphal East	Dr. K.D Kokate, Dr. B.S Hansra, Dr. A.K. Vasisht, Dr. S.V. Ngachan, Dr. H.C Bhattacharya, Prof M. Premjit Singh, Dr. Bidyut C. Deka	21.11.2019	Documentation of success story
	Ukhrul	DR. Kh. Rishikanta Singh, Sr. Scientist, ICAR, Manipur Centre	11.07.2019	Study the economic status of farmers in the village
	Ukhrul	Shri. K. Apem, Journalist, Asia News International (ANI)	29.12.2019	-
	Ukhrul	Shri. Lungsem Luiram, BTM/ ATMA, Ukhrul	25.01.2019	IFS Model & secondary agriculture encouraged
Meghalaya	Jaintia Hills	Dr Sudeimaia Toi, AH & VO Veterinary Dispensary, Jaintia Hills	22.07.2019	Regular vaccination of livestock should be taken
	Jaintia Hills	Dr Mehun Sutong, AH & VO Sheep and goat farms , Saitsama, Jaintia Hills	22.07.2019	Farmers should take proper data in order to know the benefits they got from rearing improved varieties as compared to local varieties

Meghalaya	Ri Bhoi	Dr. A.K. Jha, Principal Scientist & Nodal Officer ICAR KVKs, Umiam	19.06.2019	The performance of backyard poultry farming, Micro water harvesting structure for life saving irrigation, vermicompost and protected cultivation have performed well and deep litter housing of pig need to refined for acceptance point of view in consultation with technology developer
Mizoram	Lunglei	Dr. Bidyut C. Deka, Director, ATARI, Umiam	25.11.2019	The KVK Lunglei facilities with limited resources are being well maintained. The staffs are relatively young and energetic and have the desired attitude to do better with guidance. Suggestion to maintain the data base of the district and update the portal in a regular manner. I wish them all success for future endeavour
	Lunglei	Dr. Saurav Saha, ICAR-NEH, Mizoram Centre	12.05.2019	Very well maintained KVK Campus, the activities of the NICRA are really impressive. Wish a very good luck for the KVK Lunglei for the betterment of the farming community

Mizoram	Lunglei	C Lalrinsanga, Minister of Agriculture, etc, Mizoram	04.06.2019	I am proud to have witnessed this important place which is more than I had expected. Highly appreciate their works done. Wish them for the upliftmnet of farming community.
	Lunglei	Lawmawma Tochhawng, Vice Chaiman, High Power Committee, Lunglei	26.07.2019	I really appreciate and witnessed the work done by KVK Lunglei, I wish them further improvement and success
	Lunglei	Zoramthanga, Chief Minister, Mizoram	15.11.2019	
Nagaland	Mon	Shri. K. Yamao Konyak, BDO (RD), Aboi	15.01.2020	Schemes implemented under MGNREGA in NICRA village for benefit of the farming community.
	Mon	Shri. Marzulu Lemtur, SO, RD block, Aboi	16.08.2019	Visited NICRA Ngangching village and found to be satisfactory.
	Mon	Shri Jolayi Nienu, CDPO, Aboi	17.09.2019	The undersigned along with Poshan Abhiyan team from Aboi town visited Ngangching village and imparted Awareness programme on women and child nutrition for the NICRA beneficiaries
	Mon	Er. Moatemsu, JE, PHED, Aboi	13.11.2019	Reports of various departments in the village were discussed in detail and public grievances noted down along with NICRA farmers.

	Phek	Dr. Vineet Bhasin	19.05.2020	Appreciated the work of KVK Phek under NICRA
Tripura	Dhalai	B. B. Das (Deputy Director ARDD, Salema)	20.09.2019	1. Demonstration of Integrated Farming System (IFS) to be taken up scaled more. 2. Vaccination programme to be taken up in collaboration with Animal health department.3. Fodder demonstration to be taken up to feed the animals during lean season.
	Dhalai	Sandeep Some (DDA, Agriculture, Ambassa)	12.10.2019	Demonstration of Integrated Farming System (IFS) to be taken up scaled more. Drought tolerant of paddy variety (Var. Sahabhagidhan) to be taken up to overcome the drought situation
	Dhalai	Partha Pratim Roy (Superitandant of Agriculture, Durgachoumuhani)	19.11.2019	More demonstration of climate resilient variety crops. Exposure visits should be made in NICRA villages. Contingency crop to be taken up in uncertain situations
Tripura	Khowai	Dr. K.K. Barman, Principal Scientist (Agronomy),ICAR Research Complex for NEH region Tripura Centre, Lembucherra, Tripura	Krishi Mela Under Jal Shakti Abhiyan on 29.07.2019	Appreciated the efforts of KVK, Khowai in disseminating the climate resilient technologies

10. AMOUNT (Rs.) MOBILIZED THROUGH CONVERGENCE FROM VARIOUS DEPARTMENTS

The details of KVKs converging with other departments and the share of financial matters with the respective departments are given below:

Table 10.1: Amount (Rs.) mobilized through convergence from various departments

State	KVK	Activity/ Intervention	Number of Farmers benefitted	Coverage Area (ha)	Convergence established with (Name of the programme or department)	Approx. amount (Rs.) mobilized
Manipur	Imphal East	Jalkund	10	2.5	NABARD, Manipur Centre	1,20,600
Meghalaya	Jaintia Hills	Vaccination camp for cattle against Foot and Mouth Disease	55 farmers (73 cattle)		Office of the District Veterinary Officer	
Mizoram	Lunglei	Improved Housing in Pig sty	4	4 units	NEIDA	10000
Tripura	Dhalai	Minimum tillage in Lentil cultivation	30	2	NFSM & ATMA	60000
	Dhalai	Flood tolerant varieties Paddy (Swarna Sub-1)	40	5	NFSM & ATMA	1,20,000
	Dhalai	Straw mulching in bitter gourd cultivation	30	5	Horticulture department	60000
Tripura	Khowai	Cluster Demonstration of SRI in HYV of Paddy Var. Gomoti	Number of Farmers: 95	40	Name of the Programme: National Food Security Mission, Department: Department of Agriculture, Govt. of Tripura	75000
	Khowai	Cluster demonstration on furrow irrigation in Maize	Number of Farmers: 91	13.5	ICAR Research Complex for NEH Region, Tripura Centre	20000

11. PUBLICATIONS

NICRA KVKs under ICAR-ATARI, Zone-VII have made different publications like Folders, Booklets, Video clippings, Research papers, leaflets *etc.*, for the betterment of farmers and also to publish their findings. The details of publications by KVKs are given below:

Table 11.1: Publications and other products developed during the year 2019-20

State	Name of KVK	Type of publication	Title	Authors	Pages
Manipur	Imphal East	Research Paper	Low cost perennial water harvesting technology (Jalkund): A boon for farmers doubling income in the mild hill slopes. Gunajit Oinam. Journal of Soil and Water conservation; 2019: Vol. 18 (3).	Gunajit Oinam	
	Imphal East	Video Film	Housing of Pigs- Improved Pig Sty and Wallowing Tank	KVK, Imphal East	
Meghalaya	Ri Bhoi	A documentary video film	climate smart polyhouse technology for vegetable production	KVK, Ri Bhoi	
	Ri Bhoi	Success story	Doubling farmers income through popularization of poultry breeds in Ribhoi district of Meghalaya - A success story" in CAU Farm Magazine (April-June 2019)	KVK, Ri Bhoi	
Mizoram	Lunglei	Bulletin	Natural resource Management		
	Lunglei	Folder	Dragon fruit chin dan leh enkawl dan		
	Lunglei	Folder	Oyester mushroom cultivation		
	Lunglei	Folder	Intercropping of Maize + Soybean		
Nagaland	Dimapur	Folder	Neem: Its uses in Plant protection	E. Lireni Kikon, Dr. Moanaro, Dr. Ebibeni Ngullie, and Dr. D. J Rajkhowa. RCN/Pub./ Ext. Lit/2020/19.	

Nagaland	Mon	Research paper	Effect of tillage and mulching on yield of rapeseed crop in Mon District Nagaland. International J. of Agriculture Sciences. 18(11): 9088-9090.	Sachan, M. S.; Michui, P. and Mezhatsu, R. (2019)	
	Mon	Popular article	Rapeseed/ Toria- A Potential Climate Resilient Oilseeds Crop under Zero Tillage Practices in Mon District Nagaland. Morung Express, pp. 7: dated- 04.10.2019.	Sachan, M. S.; Michui, P. and Mezhatsu, R. (2019).	
	Mon	Popular article	Resource conservation agricultural practices under National Innovations climate resilient in Agriculture- Technology Demonstration Component. Morung Express, pp. 7: dated- 07.02.2020	Sachan, M. S. and Mezhatsu, R. (2020)	
Tripura	Khowai	Research papers	Integrated Crop management in paddy changing the income level of paddy farmers of North Pulinpur ADC village of Tripura under NICRA. International Journal of Agriculture Sciences	Dey et al., 2019	
	Khowai	Research papers	Doubling Income of Paddy Farmers of Tripura Through Raised and Sunken Bed Technology. International Journal of Agri-culture Sciences	Dey et al., 2019	
	Khowai	Research papers	Raised and Sunken Bed Technology for Doubling Paddy farmer's income of Tripura. National Conference on Commercial Crops Processing and Value Addition, Agartala , Tripura	Dey et al., 2019	
	Khowai	Abstract	Weed Survey in fields of transplanted rice (Oryza sativa L.) in North Pulinpur area under Khowai district. "National Conference on Challenges and Innovative Approaches in Agriculture & Allied Sciences Research"	Debbarma et al., 2019	
	Khowai	Abstract	Raised and Sunken Bed Technology for Doubling paddy farmers Income of Tripura. "National Conference on Challenges and Innovative Approaches in Agriculture & Allied Sciences Research"	Dey et al., 2019	
	Khowai	Abstract	Paddy-Maize cropping sequence doubled the farmer's income of North Pulinpur ADC village of Tripura-A case study.	Dey et al., 2019	

Tripura	Khowai	Abstract	Weed Survey in fields of transplanted rice (Oryza sativa L.) in North Pulinpur area under Khowai district.	Debbarma et al., 2019	
	Khowai	Leaflets/ folders	Scientific method of mixed fish farming	Subrata Choudhury, Dipankar Dey, Lord Litan Debbarma	
	Khowai	Success stories	Drishyayan	Dey etal., 2019	
	Khowai	Success stories	A dream journey from Cannavis sativa grower to prestigious ICAR Pandit Deen Dayal Upadhyay Antyodaya Award Winner, 2018	Dey etal., 2019	
	Khowai	Newspaper coverage	Botta Chaser upar karmashala	Dainik Sambad	-
	Khowai	Newspaper coverage	Kartabe ek Nisthai puraskrita Divyodayeer Krishi Vigyani	Sandyan Patrika	-

12. SIGNIFICANT OBSERVATIONS

Significant findings observed by the KVKs in their respective NICRA villages are given in the following table:

Table 12.1: Significant observations along with performance of interventions, adoption and livelihood improvement during 2019-20

	KVK	Significant observations	Performance of interventions	Adoption of interventions	Livelihood improvement
Manipur	Imphal East	Jalkund	Successfully developed Integrated Farming system by providing water throughout the year	10 units of Jalkund has been constructed	Socio economic benefit from water harvesting is increased crop yield and farm income. It also leads to an improved food security and knowledge of soil erosion and conservation and to strengthening of social network. The reduction in demand for water reduces both operational and capital costs for water utilities through water harvesting techniques. Evidently there are many socio-economic benefits to be had through properly owners harvesting water and it is a good example of sustainable management of water resources that contribute to water and food security.
Manipur	Ukhrul	Improvement in production and productivity at any stress is seen in the Intervention on Escaping moisture stress through early planting in garden pea	B: C ratio in case of early sowing is 3. 2 as compared to 1.8 in case of farmer practice (late sowing)	Farmers without any hesitation willing to adopt this technology and is expected to expand multiple times within years to come	Net income was up by Rs. 84,000/ha with percent increased of 175% in profit. B: C ratio in case of early sowing is 3. 2 as compared to 1.8 in case of farmer practice (late sowing)
Manipur	Ukhrul	Secondary Agriculture for solve the dwell effect of low income and management of agricultural bi product through cultivation of mushroom utilizing crop residue as raw material.	Oyster mushroom can be grown in wide range of climatic condition, less prone to diseases and it's B: C ratio is 2.5.	Mushroom farming technology is one of the fastest and widely accepted by farmers since the cost of production is low and its short duration	Horizontal expansion can be seen clearly regarding mushroom cultivation. On an average, 1.5 kg of mushroom per cube/bag can be harvested with an average net profit of Rs 150.

Meghalaya	West Garo Hills	Potential use of paddy straw through Oyster Mushroom cultivation	Encouraging	20%	Additional income received
Mizoram	Lunglei	Use of low cost water harvesting Jalkund for supplemental irrigation	Increase the water use efficiency and cropping intensity by taking additional crop during winter season	5 nos. of Jalkund (5x4x1.5) m having a capacity of 30,000lts has been constructed for accumulation of flowing water and utilising for irrigation purpose during winter.	Sustainable and additional income during lean period
Mizoram	Lunglei	Intercropping of Maize + Soybean for additional income	Minimize the risk due to crop failure under adverse environmental condition but also gives a higher total return per unit area of land	5 nos. of demonstration were conducted covering a total area of 7.5ha	Fetches additional income
Nagaland	Dimapur	Implementation of NICRA project in the NICRA village has helped in uplifting the socio-economic conditions of the resource poor farmers. The interventions of different technologies under different modules have helped the farmers in addressing the challenges due to climate variability and climate change	The productivity of summer rice and cropping intensity has increased from 24.50 q/ha to 30.50 q/ha and from 116% to 150 % respectively. Cultivation of oilseeds like linseed and toria as second crop after the harvest of paddy was successfully demonstrated to utilize the residual moisture and to increase the cropping intensity as the farmers practiced only mono cropping.	43%	The farmers could earn a net return of approx. Rs.35224.95/ with B:C ratio of 1.79:1 under rice- toria cropping system

Nagaland	Dimapur	Implementation of NICRA project in the NICRA village has helped in uplifting the socio-economic conditions of the resource poor farmers. The interventions of different technologies under different modules have helped the farmers in addressing the challenges due to climate variability and climate change	Round the year mushroom cultivation: For additional income round the year oyster mushroom (Pleurotus spp.) cultivation was demonstrated. Farmers could earn 5000 to 7950 per unit with cost benefit ratio of 3.2:1.	23.60%	Farm women were trained on the round year mushroom cultivation and the farmers could earn an additional income of 5000 to 7950 per unit with cost benefit ratio of 3.2:1.
			Poultry & Piggery: Improved breeds of pig and poultry like Vanaraja/Srinidhi and Hampshire cross pigs were well accepted by the farmers. In poultry, farmers could obtain 210 % increase in body weight and 216 % in egg production. In pigs, 47.3 % increase in body weight and 33.4 % in piglet production	35%	Poultry & Piggery: The farmers could earn an additional income of approx. Rs. 200 to 1000/ bird with B: C ratio of 1.5 to 2.5:1 depending on the purpose of rearing i.e., either for meat or egg production. In case of piggery, the farmers could earn an additional income of approx. Rs.18, 000 (meat purpose) to 23,000/pig (for breeding purpose).
			Fishery: In order to compensate the yield loss of paddy due to moisture stress, composite fish farming was demonstrated where farmers can obtain 76.5% increase in fish yield over local	45%	Fishery: The farmers could earn an additional income of approx. Rs. 1,00,000 to 1,40,000/ha.

Nagaland	Mon	Cultivation of soybean after foxtail millet fallow	KVK demonstrated improved and moisture tolerant variety JS 335 as secondary crop after harvesting of foxtail millet crop at farmers field. The demo farmers realized additional average yield 10.45 q/ ha with net returns of Rs. 22,000/- per ha from soybean which limiting under Jhum practices. Soybean was sown during second F.N. of June without any deviation in optimum window. From the data analysis 68.53% increase in profit over farmers practice was estimated in foxtail millet- soybean cropping sequence demonstration compared with farmer's practice of sole foxtail millet crop.	The adoption of foxtail millet- soybean sequence increased the net returns (Rs. 32,100/ ha) than farmers practice of sole foxtail millet (Rs. 10,100/ ha), and cropping intensity also doubled apart from food and nutritional security under sandy loam soils upland in Jhum farming system of Mon district Nagaland, India.	The economic viability of improved technology over farmers practice was calculated depending on prevailing prices of input and output costs. The improved technologies resulted in increased income with cost benefit ratio of 2.12. It is also reported by farmers that they are utilizing more millet fallow land with soybean cultivation in Jhum field.

Nagaland	Mon	Zero tillage in rapeseed	Cropping intensification with regular tillage is difficult in Mon district due to water scarcity during post monsoon season, lack of irrigation facilities and short time lag after harvest of rice crop for seed sowing. Therefore, five demonstration of zero till rapeseed (TS- 38) was taken up which resulted in improved seed yield 6.75 q/ ha, improved their income, by getting average net profit of Rs. 8500/ ha within 4 months with low investment of Rs. 5000/ ha with B:C ratio 2.70.	The adoption of improved practices and variety TS- 38 had resulted in increased yield by 18 to 25 percent with less water usage compared to conventional tillage practices.	Improved socio- economic status of farmer's by utilization of resource conservation technologies.
Nagaland	Mon	No/ minimum tillage and paddy straw mulching in pea	Moisture stress and little rainfall during rabi season are the main constraint for successful growing of winter crops at NICRA adopted villages of Mon district. Five demonstration of zero- tillage planting of pea along with paddy straw mulching in rice- fallows was conducted during winter season. The productivity of pea is 9.50 q / ha with B: C ratio 1.72.	Zero tillage along with paddy straw mulching of pea after rice is one of the successful resource-conserving technology in rice- pea system of the district. KVK has demonstrated the variety of Prakash and resulted in 7 to 15% higher productivity as compared to conventional practice.	Through crop diversification doubling the farmers income, increasing cropping intensity and food and nutritional security by utilizing resource conservation technologies.

Nagaland	Mon	The benefit realized from poultry farming has empowered the farmers to increase their flock size since it gives suitable economic returns and provide a profitable livelihood enterprise.	The performance of the backyard poultry farming instilled a sense of eagerness amongst the farmers of the village and nearby villages to undertake backyard poultry .As a result the demand for Kuroiler chicks increased manifold.	Encouraged with the results of Kuroiler over local in terms of body weight gain and egg production, more than 50 per cent of the household were adopted the technology besides, the technology is spreading to the adjoining villages.	Almost all the selected farmers under the programme are maintaning their poultry scientifically and earning an additional income from sale of eggs and poultry as meat.
Tripura	Dhalai	Good	Good	Integrated farming (IFS) system module	a. To improve the income of farmers. b. Improvement in productivity. c. Cost reduction.
Tripura	Dhalai	Good	By adopting this interventions moisture stress was reduced, good crop yield, easy in crop harvesting.	Straw mulching in bitter gourd cultivation	Due to good fruit size the market value of the crop is little bit high in demand.
Tripura	Dhalai	Good	This technology is found to benefit farmers more in terms of more income with less input, given higher yield and beneficial to poorer households.	System of Rice Intensification (SRI) technology	Increasing yield of rice, water saving and to increase the net income.

Tripura	Khowai	To show the impact of different activities, Cluster demonstration area should be selected. Integrated mode of activities gave more results than critical gap analysis of crop production concept- IFS and diversification of enterprises. In climate change, there is need to create some more resources for sustainable income generation	Through all the successful interventions on crop diversification, the cropping intensity of the village has been increased from 116 to 172 % within 8 years only.	All the successful climate resilient technologies are horizontally spreading to the nearby Village like Duski, Moharpara, Nayanpur having similar Agro-climatic Condition.	Integrated mode of activities plays most crucial role in livelihood improvement

13 . FARMERS' PROFILE OF DIFFERENT NICRA INTERVENTIONS

The farmers' profile of the different NICRA interventions at each KVK is given the following tables below:

I. Table 13.1: KVK, Imphal East, Manipur

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Improved zero tillage cultivation ntion														
Ph. Bijensana	Rapeseed	TS-38	1	0	7.4	6.4	20850	33300	12450	1.59	19400	28800	9400	1.48
L. Ibochouba	Rapeseed	TS-39	1	0	7.6	6.2	20850	34200	13350	1.64	19400	27900	8500	1.43
Straw mulching														
Th. Punshiba	Pea (Straw mulching)	Aman	1	0	7.74	6.9	31200	56393	25193	1.8	28500	41400	12900	1.45
L.Manithoiba	Pea (Straw mulching)	Aman	1	0	7.88	7.4	31200	57413	26213	1.84	28500	47280	18780	1.65
Jalkund														
Ibohal	Tomato	Arka Rakshak	0.25	0	198	0	125000	658350	533350	5.23				
L.Ibochouba	Tomato	Arka Rakshak	0.25	0	201	0	125000	668325	543325	5.34				
Soil health cards issued and how they are used														
Th Jatra	Pea	Arkel	1	0	41	37.6	44020	123000	78980	2.79	52200	112800	60600	2.16

Th Tiken	Pea	Arkel	1	0	40.8	39	44020	122400	78380	2.78	52200	117000	64800	2.24
Short duration variety														
L.Ibochouba	Paddy	CAU-R3	1	0	58.4	43	59959	146000	86041	2.43	53947	107500	53553	1.99
S.Gopen	Paddy	CAU-R3	1	0	61	45.6	59959	152500	92541	2.54	53947	114000	60053	2.11
Sprinkler Irrigation														
H.Premjit	Onion	Arka lalima	0.5	0	204.2	154.6	147140	904000	756860	6.14	147140	573019	425879	3.89

II. Table 13.2: KVK, Senapati, Manipur

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Minimum tillage														
Joseph	Pea	Aman	1	0	13.77	0	47600	79800	32200	1.68				
Lily	Pea	Aman	1	0	12.8	0	48000	81300	33300	1.69				
Nomlengmang Zou	Pea	Aman	1	0	12.98	0	47900	78600	30700	1.64				
Lalkhohao Kipgen	Pea	Aman	1	0	13.2	0	47600	78900	31300	1.66				
Man Bahadhur	Pea	Aman	1	0	13.5	0	46700	79200	32800	1.70				

Jalkund														
Kaping	Tomato	Arka Rakshak	1	0	215.5	145	84800	206000	121200	2.43	82400	159000	76600	1.93
Nomlengmang	Tomato	Arka Rakshak	2	0	210.5	165	85430	212500	127070	2.49	82400	161500	79100	1.96
Ronel	Tomato	Arka Rakshak	2	0	211	157	84190	206500	122310	2.45	83600	163000	79400	1.95
Rubi	Tomato	Arka Rakshak	2	0	211	161.1	85980	224000	138020	2.61	83200	164000	80800	1.97
Sagoila	Tomato	Arka Rakshak	2	0	212	182	84600	211000	126400	2.49	83400	162500	79100	1.95
Vermicomposting														
Amazon	-	-	3	-	1440 kgs	-	8000	21700	13700	2.71	-	-	-	-
Kaping	-	-	3	-	1470 kgs	-	8000	21750	13750	2.72	-	-	-	-
Hopson	-	-	3	-	1487 kgs	-	8000	21600	13600	2.70	-	-	-	-
Kaminlal	-	-	3	-	1418 kgs	-	8000	21800	13800	2.73	-	-	-	-
Seiboi	-	-	3	-	1435 kgs	-	8000	21900	13900	2.74	-	-	-	-
Direct Seeded Rice														
Phillip	Paddy	RCM-30	12	3	38.6	32	45100	77100	32000	1.71	44300	66900	22600	1.51
Matia	Paddy	RCM-30			38.2	31	44700	76300	31600	1.71	43600	66000	22400	1.51
Man kumar	Paddy	RCM-30			38.5	34	44500	75900	31400	1.71	43300	64800	21500	1.50
Lokhii	Paddy	RCM-30			37.9	35	45900	77600	31700	1.69	44500	66400	21900	1.49
Rapuiba	Paddy	RCM-30			38.2	33	44800	75600	30800	1.69	44300	65900	21600	1.49

Short duration verities														
Kaping	Tomato	Arka Rakshak	2	0.5	215.5	145	84800	206000	121200	2.43	82400	159000	76600	1.93
Nomlengmang	Tomato	Arka Rakshak			210.5	165	85430	212500	127070	2.49	82400	161500	79100	1.96
Ronel	Tomato	Arka Rakshak			211	157	84190	206500	122310	2.45	83600	163000	79400	1.95
Rubi	Tomato	Arka Rakshak			211	161.1	85980	224000	138020	2.61	83200	164000	80800	1.97
Sagoila	Tomato	Arka Rakshak			212	182	84600	211000	126400	2.49	83400	162500	79100	1.95
Integrated Farming System														
Phillip	Duck	White pekin	5	8	2.5	2.3	26000	48500	22500	1.87	24500	42150	17650	1.72
	Fish	Catla, Grass carp, Rohu			0.4	0.34	32500	81000	48500	2.49	27500	73300	45800	2.67
Lily	Duck	White pekin			2.8	2.4	25600	48100	22500	1.88	24700	42650	17950	1.73
	Fish	Catla, Grass carp, Rohu			0.5	0.35	31300	80000	48700	2.56	27600	73500	45900	2.66
Elezabeth	Duck	White pekin			2.9	1.8	26200	49100	22900	1.87	24800	42600	17800	1.72
	Fish	Catla, Grass carp, Rohu			0.6	0.36	33100	87100	47600	2.63	26400	72600	46200	2.75
Silla	Duck	White pekin			2.9	1.9	25800	48000	22200	1.86	24350	41850	17500	1.72
	Fish	Catla, Grass carp, Rohu			0.3	0.32	31500	79300	47800	2.52	26700	73000	46300	2.73

Chunguila	Duck	White pekin	5	8	2.4	2.2	26400	49300	22900	1.87	24750	41750	17300	1.69
	Fish	Catla, Grass carp, Rohu			0.2	0.34	31600	79600	47400	2.52	36800	72100	45300	1.96
Backyard poultry farming														
Tongjang Kipgen	Poultry	Grama priya	16	5	2.64	1.64	11800	20380	8580	1.73	11300	14500	3200	1.28
Lalboi	Poultry	Grama priya			2.65	1.65	12200	20770	8570	1.70	11600	14900	3300	1.28
Rebecca	Poultry	Grama priya			2.63	1.66	12300	20890	8590	1.70	11800	15000	3200	1.27
Hannah	Poultry	Grama priya			2.62	1.63	12000	20600	8600	1.72	11500	14800	3300	1.29
Kimjanei	Poultry	Grama priya			2.66	1.62	11700	20320	8620	1.74	11300	14600	3300	1.29

III. Table 13.3: KVK, Ukhrul, Manipur

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Jalkund for life saving irrigation														
Somi	Pea& Cabbage	Arkel & Green hero	3.2	0	30,000 L/ structure	0	15400	32000	16600	2.08	60,000	108000	48,000	1.8
Pamthing	Pea& Cabbage	Arkel & Green hero	3.2	0	30,000 L/ structure	0	15400	30400	15000	1.97	60,000	108000	48,000	1.8

Cover crops in abandon jhum														
Naoya	Rice bean	Local	0.5	0	12		32000	66000	34000	2.06				
Hangthingla kasar	Rice bean	Local	0.4	0	11.2		32000	61600	29600	1.93				
Ringrton lungle	Rice bean	Local	0.5	0	10.4		32000	57200	25200	1.79				
Srawon zimik	Rice bean	Local	0.6	0	12.2		32000	67100	35100	2.10				
L.Grace	Rice bean	Local	0.5	0	10.2		32000	56100	24100	1.75				
Escaping moisture stress (Early Planting of- Pea)														
Naoyo	Pea	Arkel	0.5	0	24	18	60000	192000	1,32,000	3.20	60,000	108000	48,000	1.8
Thotreingam	Pea	Arkel	0.5	0	23.8	19.2	60000	190400	130400	3.17	60,000	115200	55200	1.92
Pamchui	Pea	Arkel	0.4	0	24.4	18.6	60000	195200	135200	3.25	60,000	111600	51600	1.86
Aso	Pea	Arkel	0.6	0	22.8	17.2	60000	182400	122400	3.04	60,000	103200	43300	1.72
Honreishim	Pea	Arkel	0.4	0	22.2	17.4	60000	177600	117600	2.96	60,000	104400	44400	1.74
Mid duration paddy variety														
Aphi	Paddy	RCM-13	0.5	0	32.3	22.6	32,000	58,140	26140	1.82	32,000	40680	8680	1.27
Somi	Paddy	RCM-13	0.5	0	34	22.8	32,000	61,200	29600	1.91	32,000	41040	9040	1.28
Chinaoyo	Paddy	RCM-13	0.5	0	32.5	21.4	32,000	58,500	26500	1.83	32,000	38520	6520	1.20
Pamthing	Paddy	RCM-13	0.5	0	33.6	22.4	32,000	60,480	28480	1.89	32,000	40320	8320	1.26

Maize intercrop with Groundnut														
As.Philip	Maize + Groundnut	RCM-76+ICGS70	0.2	0	25.46	22.2	30,000	76,380	46380	2.55	35,000	66600	31600	1.90
Aphi	Maize + Groundnut	RCM-76+ICGS70	0.2	0	24.73	20.4	30,000	74,190	44190	2.47	35,000	61000	26000	1.74
Apiculture														
Mayopam			25 units	0	7.2 kg/hive	3.8 kg/ hive	1000	3600	2600	3.6	1000	1900	900	1.9
Somi					7.0 kg/hive	4 kg/ hive	1000	3000	2000	3	1000	2000	1000	2
Mushroom farming														
Ramung Kasar	Mushroom	Oyster	68 units	0	1.5 kg/bag	-	80	220	140	2.75				
A S. Teimiwon	Mushroom	Oyster			1.6 kg/bag		80	240	160	3				

IV. Table 13.4: KVK, Jaintia Hills, Meghalaya

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
JALKUND														
Taiarlang Nongrum	Broccoli	Rocky	0.1		Broccoli-125	Tomato-212	214200	613100	398900	2.86	148400	105000	43400	1.41
	Tomato	ashwarya			Tomato-238.1									

Aicy Dhar	Broccoli	Rocky	0.1		Broccoli-124.2	Tomato-204.5	213800	594650	380850	2.78	143150	100500	42650	1.42
	Tomato	ashwarya			Tomato-228.5									
Partial Suting	Broccoli	Rocky	0.1		Broccoli-121.2	Tomato-228.1	214500	591640	377140	2.76	159670	112000	47670	1.43
	Tomato	ashwarya			Tomato-239.2									
Sarmon Suting	Broccoli	Rocky	0.1		Broccoli-128.4	Tomato-239.8	214050	619150	405100	2.89	167860	102500	65360	1.64
	Tomato	ashwarya			Tomato-242.5									
	Broccoli	Rocky	0.1		Broccoli-127.2	Tomato-234.25	214500	610120	395620	2.84	163975	106500	57475	1.54
	Tomato	ashwarya			Tomato-235.6									
INTEGRATED FARMING SYSTEM														
Naphang Rympeit	Chilli, Cabbage		0.6		Chilli-59.5 Cabbage-248	Fish yield=2.50q	Veg= 135500	Veg= 471100	Veg= 335600	2.7:1	33520	50000	16480	1.49:1
	Fish				Fish-17.5q		Fish= 159160	Fish= 350300	Fish= 191040					
Karmila Hadia	Chilli, Cabbage		0.5		Chilli-55.4 Cabbage-237.5	Fish yield=5.54q	Veg= 141500	Veg= 443250	Veg= 301750	2.5:1	55121	110800	55679	2.01:1
	Fish				Fish yield-15.1q		Fish= 145652	Fish= 302400	Fish= 156775					
Likshon Rymbai	Chilli		0.6		chilli-57.5	Fish Yield=3.21q	Veg-132700	Veg-478000	Veg-345300	2.8:1	42560	64200	21640	1.5:1
	Cabbage				Cabbage-248		Fish-147160	Fish-	Fish-160840					

Likshon Rymbai	Fish				Fish Yield-15.4q			308000						
Paddy followed by potato in ridges and furrows														
Harding Nongspung					91.4	81.1	72640	164556	91916	2.2:1	64700	121710	57010	1.8:1
Ailinda Tariang					94.6	85.2	75500	170280	94780	2.26	65200	127800	62600	1.96
Runi Mukhim					88.4	80.25	72100	159120	87020	2.21	64500	120375	55875	1.87
Naphang Rympeit					87.2	79.1	73500	156960	83460	2.14	66100	118650	52550	1.8
Paul Phawa					92.4	80.2	72600	166320	93720	2.29	64200	120300	56100	1.87
Crop diversification- Groundnut cultivation														
Ailinda Tariang					10.113		27200	50565	23365	1.85				
Aicy Dhar					11.5		27550	57500	29950	2.09				
Harding Nongspung					10.21		26400	51050	24650	1.93				
Partial suting					92.5		25100	462500	437400	18.43				
Sarmon suting					10.1		25800	50500	24700	1.96				

Vaccination														
Farmer1	Dairy	Indigenous	73 cattles vacci-nated	Nil	5% mortality	15% mortality	78000	210000	132000	1.692308	80000	150000	70000	0.88
Farmer2	Dairy	Indigenous	73 cattles vacci-nated	Nil	5% mortality	15% mortality	81000	200000	119000	1.469136	70000	160000	80000	1.14
Farmer3	Dairy	Indigenous	73 cattles vacci-nated	Nil	5% mortality	15% mortality	80000	220000	140000	1.75	80000	140000	70000	0.88
Farmer4	Dairy	Indigenous	73 cattles vacci-nated	Nil	5% mortality	15% mortality	82000	200000	118000	1.439024	90000	150000	60000	0.67
Farmer5	Dairy	Indigenous	73 cattles vacci-nated	Nil	5% mortality	15% mortality	79000	220000	141000	1.78481	80000	150000	70000	0.88
Backyard poultry farming														
Philimon Siangshai	Poultry	Vanaraja	30 birds distrib-uted	Nil	5% mortality	15% mortality	4800	20880	16080	3.35	4120	13875	9750	2.37
Taiar Nongrum	Poultry	Vanaraja	30 birds distrib-uted	Nil	5% mortality	15% mortality	4900	20900	16100	3.285714	4130	13874	9755	2.36

Younis Shylla	Poultry	Vanaraja	30 birds distrib-uted	Nil	5% mortality	15% mortality	5000	20890	16090	3.218	4125	13876	9745	2.36
Naphang Rympeit	Poultry	Vanaraja	30 birds distrib-uted	Nil	5% mortality	15% mortality	5000	20880	16070	3.214	4125	13870	9740	2.36
Andreas sumer	Poultry	Vanaraja	30 birds distrib-uted	Nil	5% mortality	15% mortality	4800	20900	16110	3.35625	4125	13880	9760	2.37

V. Table 13.5: KVK, Ri Bhoi, Meghalaya

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Soil fertility management by organic sources of nutrients (vermicompost)														
Mr. Colbert Shadap Mrs. Valarie Maring			2 units	0	31.5			61580	44790	2.41				
Mrs.A Ryngkhang, Mrs Biona Lymphuid Mrs Balahun Rymbai, Mr. Baitbok Shadap, Mrs. Kynjaimon Shadap	Maize	RCM 76	1	0.3	35.6	12.3	11420	63890	52470	2.37	5890	30570	24680	1.28
	French bean	Naga local			102									

Ginger-pea cropping system using jalkund water														
Mr. Bahduh Makri, Mrs. Valarie Maring Mrs. Biona Lymphuid	Ginger Garden Pea	Nadia Arka Priya	1	0.25	248 107.6	167.6	92447	705701	613254	4.34	71291	345681	274390	3.23
Round the year vegetable production under protected condition														
Mrs. Biona Lymphuid Mr. Johnny Shadap, Mrs. Kynjaimon Shadap	Cabbage Cucumber Capsicum Tomato	H-139 Malini California wonder Arka Rakshak	0.01	0	436.6	0	21610	62360	40570	2.52				
Zero energy cool chamber for enhancing the shelf life of perishable fruits & vegetable														
Mrs. Biona Lymphuid	Leafy vegetables		4 units	0	0.6									
Mrs. Valarie Maring	Other vegetables				0.59									
Mr. Johnny Shadap,	Tomato				0.47									
Mrs Arabia Pale	Mushroom				0.13									
	Betel leaves				0.71									

VI. Table 13.6: KVK, West Garo Hills, Meghalaya

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Popularization of Paddy var. Gitesh														
Pronilla M. Sangma	Paddy	Gitesh	3	0	34.8	18.1	23700	34800	11100	1.47	14000	18100	4100	1.29
Jetmoni Sangma	Paddy	Gitesh	1	0	37.5	19	20450	37500	17050	1.83	13100	19000	5900	1.45

Anthon Sangma	Paddy	Gitesh	1.5	0	42.6	23.1	19740	42600	22860	2.16	15200	23100	7900	1.52
Rajen D, Marak	Paddy	Gitesh	3.5	0	40.3	17.2	24000	40300	16300	1.68	13700	17200	3500	1.26
Liverd Ch. Momin	Paddy	Gitesh	3	0	32.7	18	24610	32700	8090	1.33	14000	18000	4000	1.29
Popularization of Toria var. TS-67														
Baylestine Sangma	Toria	TS-67	0.5	0	8.72	4.56	22120	61040	38920	2.76	19420	31920	12500	1.64
Kebilla Sangma	Toria	TS-67	1	0	6.91	6	20910	48370	27460	2.31	16800	42000	25200	2.50
Simpolin Sangma	Toria	TS-67	1	0	7.48	5.12	19560	52360	32800	2.68	15600	35840	20240	2.30
Bithson Marak	Toria	TS-67	1	0	8.22	4	24710	57540	32830	2.33	19480	28000	8520	1.44
Pronilla M. Sangma	Toria	TS-67	1.5	0	7.7	5.32	19400	53900	34500	2.78	18700	37240	18540	1.99
Popularization of Vermicompost														
Anjana Sangma	Vermicompost		1	-	12.24	-	7470	18360	10890	2.50				
Herilla Sangma	Vermicompost		1	-	9.65	-	7410	15440	8030	2.10				
Susana Ch. Momin	Vermicompost		1	-	14.1	-	6920	21150	14230	3.10				
Pronilla M. Sangma	Vermicompost		1	-	7.8	-	5810	11700	5890	2.00				
Jetmoni Sangma	Vermicompost		1	-	11.75	-	6490	17625	11135	2.70				
Popularization of Mushroom Cultivation														
Pronilla M Sangma	Oyster mushroom	Pleurotus Ostreatus	One unit	0	75kg	0	4200	15000	10800	3.60				
Jethmoni Sangma	Oyster Mushroom	Pleurotus Ostreatus	One unit	0	55kg	0	3400	11000	7600	3.20				
Hellia M Sangma	Oyster Mushroom	Pleurotus Ostreatus	One unit	0	68kg	0	3800	13600	9800	3.60				

Integrated Farming Systems														
Pronilla M Sangma	IFS(Fish-Duck-Banana)	Fish - Rohu, Catla, Bata, Carps	1 bigha	1 bigha Duck 20 numbers eggs (1600 nos.) - Rs 16000 Banana - Rs 10000	255kg - Rs 51000	98kg	16950	77000	60050	4.50	9500	19500	10000	2.10
		Duck-Local												
		Banana- G9												
Jethmoni Sangma	IFS(Fish-Duck-Banana)	Fish - Rohu, Catla, Bata, Carps	0.5 bigha	0.5 bigha 20 nos. (1600 eggs) 16000 2000	125 kg, Rs 25000	Fish-55kg	12500	43000	30500	3.44	6200	13500	7300	2.20
		Duck - Local												
		Banana- G9												
Backyard Poultry														
Rajen Marak	Backyard Kuroiler farming	Kuroiler	15 birds	Reared only Local chicken Meat- 3.0 kg body wt per bird at 10 months	Eggs-105 nos. per bird per year Meat- 1.0 kg body wt per bird at 10 months	Eggs-42 nos. per bird per year	5150	14750	9600	2.90	4060	5200	1140	1.30
Herilla Marak	Backyard Kuroiler farming	Kuroiler	15 birds	Reared only Local chicken Meat- 2.8 kg body wt per bird at 10 months	Eggs-112 nos. per bird per year Meat- 1.0 kg body wt per bird at 10 months	Eggs-42 nos. per bird per year	5300	14950	9650	2.90	4060	5200	1140	1.30

Pronilla Sangma	Backyard Kuroiler farming	Kuroiler	15 birds	Reared only Local chicken Meat- 2.5 kg body wt per bird at 10 months	Eggs-110 nos. per bird per year Meat- 1.0 kg body wt per bird at 10 months	Eggs-42 nos. per bird per year	5260	15210	9950	2.90	4060	5200	1140	1.30
Ruth Momin	Backyard Kuroiler farming	Kuroiler	15 birds	Reared only Local chicken Meat- 2.5 kg body wt per bird at 10 months	Eggs-110 nos. per bird per year Meat- 1.0 kg body wt per bird at 10 months	Eggs-42 nos. per bird per year	5200	13200	8000	2.50	4060	5200	1140	1.30
Mineral mixture supplementation and de-worming in pigs														
Jethmoni Sangma	Mineral mixture supplemen-tation and de-worming in pigs	Mineral mixture and de-wormer	Following the practice	-	Avg. monthly body wt gain -5.74 kg	Avg. monthly body wt gain -3.2 kg	2350 (For individu-al pig)	6819	4469, (Farmer earned additional income due to increased body weight gain					
Anjana Sangma	Mineral mixture supplemen-tation and de-worming in pigs	Mineral mixture and de-wormer	Following the practice	-	Avg. monthly body wt gain -5.50 kg	Avg. monthly body wt gain -3.2 kg	2350 (For individu-al pig)	6534	4184, (Farmer earned additional income due to increased body weight gain					

Susana Ch. Momin	Mineral mixture supplemen-tation and de-worming in pigs	Mineral mixture and de-wormer	Following the practice	-	Avg. monthly body wt gain -5.70 kg	Avg. monthly body wt gain -3.2 kg	2350 (For individu-al pig)	6771	4421, (Farmer earned additional income due to increased body weight gain					

VII. **Table 13.7: KVK, Lunglei, Mizoram**

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Jalkund														
Lalbiakdika	Cabbage	Improved bahar	1.25	0.5	29.73	23.23	36500	123000	86500	3.37	26500	64300	37800	2.40
Lalsiamliana	Tomato	Samrudhi	1	0.25	18.25	13.05	35700	112500	76800	3.55	24500	63500	39000	2.50
F Biakthangpui	Cabbage	Improved bahar	2	0.75	28.73	22.13	36500	114500	78000	3.20	26500	63100	36600	2.38
Chhuanawma	French bean	Local	1.5	0.75	34	22.5	32457	112760	80303	3.47	24350	67340	42990	2.77
Renovation of farm pond/drainage														
Lallungmuana	Tomato	Samrudhi	1.5	0.5	18.25	13.05	35700	112500	76800	3.5	24500	63500	39000	2.5
Lalhmingzuala	Cabbage	Improved bahar	1	2.25	29.73	23.23	36500	114500	78000	3.2	26500	64300	37800	2.4
Rohmingsanga	Tomato	Samrudhi	1.25	0.75	18.75	13.15	35600	112500	76900	3.1	24500	63900	39400	2.61
Laltanpuia	Cabbage	Improved bahar	1	0.5	28.50	22.50	36500	109800	73300	3.01	26500	57600	31100	2.17
Inter cropping														
Chhuanawma	Maize	RCM 76	1.25	0.75	30.2	22	23560	49110	25550	2.08	18575	33520	14945	1.8
	Soybean	JS 335			10.05									

Lalthanzama	Maize	RCM 77	1	0.5	30.1	21.9	23460	48210	24750	2.05	18675	33220	14545	1.7
	Soybean	JS 336			10									
Lalzuimawia	Cabbage	Improved Bahar	1.5	1	28	26	30240	102500	72260	3.38	29654	94550	64896	3.1
	Tomato	Samrudhi			22									
Vanlalchhuani	Cabbage	Improved Bahar	1	0.75	28	26	30220	102400	72180	3.39	29654	64,500	34846	2.18
	Tomato	Samrudhi			22									
Lalropuia	Cabbage	Improved Bahar	1.5	1	28	26	30240	102500	72260	3.38	29654	94550	64896	3.1
	Tomato	Samrudhi			22									
Stress tolerant crop														
H Lalnunmawia	Dragon fruit	Hylocereus undatus	1.75	0.25	12.5	7	78000	242220	164220	3.10	62500	125400	62900	2.00
Thanthuama	Dragon fruit	Hylocereus undatus	0.75	0.25	10.2	3	76500	231000	154500	3.00	63400	128000	64600	2.00
PC Lianhlira	Dragon fruit	Hylocereus undatus	1.5	0.5	11.3	5	75000	230200	155200	3.06	62500	125400	62900	2.00
Lalhmingsangi	Dragon fruit	Hylocereus undatus	1.5	0.5	11.3	5	75000	230200	155200	3.06	62500	125400	62900	2.00
Thangchhunga	Dragon fruit	Hylocereus undatus	1	0.5	10.3	5.4	76000	235200	159200	3.09	63400	128000	64600	2.00
Mushroom cultivation														
H Malsawmtluanga	Mushroom	Pleurotus ostreatus	1 unit	0	1.15	0	13500	46000	32500	3.41				
Damhnuna	Mushroom	Pleurotus ostreatus	1 unit	0	1.17	0	13500	46800	33300	3.47				
Lalrinpuii	Mushroom	Pleurotus ostreatus	1 unit	0	1.15	0	13500	43500	30000	3.22				
P lianzuali	Mushroom	Pleurotus ostreatus	1 unit	0	1.15	0	13500	46000	32500	3.41				
C Lalduhzuali	Mushroom	Pleurotus ostreatus	1 unit	0	1.17	0	13500	46800	33300	3.47				
T Lalsangzuali	Mushroom	Pleurotus ostreatus	1 unit	0	1.14	0	13500	46000	32500	3.47				
Lalramawi	Mushroom	Pleurotus ostreatus	1 unit	0	1.14	0	13500	455000	32000	3.41				
Zochansangi	Mushroom	Pleurotus ostreatus	1 unit	0	1.17	0	13500	46800	32000	3.37				
Vanlalpeki	Mushroom	Pleurotus ostreatus	1 unit	0	1.17	0	13500	46800	33300	3.47				
Ramdinpuia	Mushroom	Pleurotus ostreatus	1 unit	0	1.15	0	13500	46000	32500	3.47				

Demonstration of Dual purpose birds														
Vanlalruati	Poultry	Vanaraja	20 nos.	0	140 egg/ hen/year	90 egg/ hen/year	8575	16320	7745	1.95	6750	10450	3700	1.55
Lalruatsaki	Poultry	Vanaraja	20 nos.	0	135 egg/ hen/year	84 egg/ hen/year	8320	16200	7880	1.95	6450	10230	3780	1.59
Laldinpuii	Poultry	Vanaraja	20 nos.	0	140 egg/ hen/year	87 egg/ hen/year	8630	16520	7890	1.91	5980	9450	3470	1.58
Zothanpuii	Poultry	Vanaraja	20 nos.	0	137 egg/ hen/year	91 egg/ hen/year	8230	15930	7700	1.94	6235	10240	4005	1.64
Dohrangi	Poultry	Vanaraja	20 nos.	0	145 egg/ hen/year	92 egg/ hen/year	8565	16220	7655	1.98	5435	9120	3685	1.68
Lianchawii	Poultry	Vanaraja	20 nos.	0	140 egg/ hen/year	90 egg/ hen/year	8575	16320	7745	1.90	5980	9450	3470	1.58
Chaltluangi	Poultry	Vanaraja	20 nos.	0	138 egg/ hen/year	91 egg/ hen/year	8320	16200	7880	1.95	6450	10230	3780	1.58
Lalnunpuia	Poultry	Vanaraja	20 nos.	0	142 egg/ hen/ year	91 egg/ hen/ year	8630	16520	7890	1.91	6450	10230	3780	1.59
Lalsangliana	Poultry	Vanaraja	20 nos.	0	142 egg/ hen/ year	89 egg/ hen/ year	8230	15930	7700	1.94	5980	9450	3470	1.59
Lalruatsaki	Poultry	Vanaraja	20 nos.	0	140 egg/ hen/ year	90 egg/ hen/ year	8565	16220	7655	1.89	5435	9120	3685	1.68
Laldinpuii	Poultry	Vanaraja	20 nos.	0	143 egg/ hen/ year	90 egg/ hen/ year	8575	16320	7745	1.90	6750	10450	3700	1.55
Improve housing in Pig sty														
V Lalthakimi	Pig	Crossbreed			22 litter/ year	16 litter/ year	34755	110000	75245	3.10	28570	80000	51430	2.80

JC Remsangpuia	Pig	Crossbreed			24 litter/ year	16 litter/ year	34995	120000	85005	3.40	28750	80000	51250	2.70
F malsawmthangi	Pig	Crossbreed			21 litter/ year	15 litter/ year	34500	105000	70500	3.00	27850	75000	47150	2.60
Lalnun puia	Pig	Crossbreed			23 litter/ year	17 litter/ year	34650	115000	80350	3.30	28870	85000	56130	2.90
LH Dawngliana	Pig	Crossbreed			23 litter/ year	16 litter/ year	34650	115000	80350	3.30	28770	80000	51230	2.70

VIII. **Table 13.8: KVK, Serchhip, Mizoram**

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ ha) (Average)		Economics of demonstration (Rs./ ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
BBF														
K. Liandawla	French bean	Arka Arjun	1	0	51.6	1	36510	112640	77640	3.1	2000	4000	21,800	2
Jehova Zarzoliana	French bean	Arka Arjun	1	0	51.6	0.3	36510	112640	77640	3.1	2350	7000	10,000	2.9
Lalrintluanga	French bean	Arka Arjun	2	0	51.6	1.1	36510	112640	77640	3.1	3200	8000	21,800	2.5
Lalramchhana	French bean	Arka Arjun	1	0	51.6	0.2	36510	112640	77640	3.1	3200	8500	10,000	2.6
PC. Malsawma	French bean	Arka Arjun	1	0	51.6	0.1	36510	112640	77640	3.1	3000	8600	11,000	2.8
Ridge & Furrow														
F. Saithangpuia	Maize	RCM-76	0.5	0	32	3	23400	54400	31000	2.3				
Rinliani	Maize	RCM-76	0.2	0	32	2	23400	54400	31000	2.3				

Sangvuana	Maize	RCM-76	0.3	0	32	1.9	23400	54400	31000	2.3				
Ramngaihzuala	Maize	RCM-76	0.2	0	32	1.4	23400	54400	31000	2.3				
Lalbiakhluni	Maize	RCM-76	0.2	0	32	1.3	23400	54400	31000	2.3				
Zero tillage cultivation														
Lianzuala	Toria	TS-67	1	0	6.8	0.32	12500	25840	13340	2				
Lalnunhlima	Toria	TS-67	1	0	6.8	0.28	12500	25840	13340	2				
Dintharpuia	Toria	TS-67	0.5	0	6.8	0.24	12500	25840	13340	2				
Lalrinmawia	Toria	TS-67	0.3	0	6.8	0.33	12500	25840	13340	2				
C.Lalhranga	Toria	TS-67	0.4	0	6.8	0.4	12500	25840	13340	2				

IX. **Table 13.9: KVK, Dimapur, Nagaland**

	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ ha)				Economics of local practice (Rs./ha)			
Farmer name	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
NRM														
Lokeshwar	Broccoli	Green Magic	0.025	-	2.98	-	4700	8210	3510	1.75	NA	NA	NA	NA
	Cabbage	Green Express									NA	NA	NA	NA
	Capsicum	Indra									NA	NA	NA	NA
	Coriander	Sadhana									NA	NA	NA	NA

Lokeshwar	Tomato	Arka Rakshak	0.025	-	2.98	-	4700	8210	3510	1.75	NA	NA	NA	NA
	Mustard leaf	local									NA	NA	NA	NA
Bronop Jigdung	Broccoli	Green Magic	0.025	-	2.98	-	4700	8210	3510	1.75	NA	NA	NA	NA
	Cabbage	Green Express									NA	NA	NA	NA
	Capsicum	Indra									NA	NA	NA	NA
	Coriander	Sadhana									NA	NA	NA	NA
	Tomato	Arka Rakshak									NA	NA	NA	NA
	Mustard leaf	local									NA	NA	NA	NA
Crop diversification														
Prakash	Rice	RCM-12	0.45	0	26.1	21	26000	39150	13150	1.50	23500	31500	8000	1.34
Kolinath	Rice	RCM-12	0.38	0	26.18	21	26000	39720	13270	1.52	23500	31500	8000	1.34
Rakesh	Rice	RCM-12	0.35	0	25.95	21	26000	38925	12925	1.48	23500	31500	8000	1.34
Bon	Rice	RCM-12	0.27	0	26.06	21	26000	39090	13090	1.50	23500	31500	8000	1.34
Erash	Rice	RCM-12	0.29	0	26.24	21	26000	39360	13360	1.50	23500	31500	8000	1.34
Vicky	Rice	RCM-12	0.26	0	25.92	21	26000	38880	12880	1.49	23500	31500	8000	1.34

Philip	Rice	Gitesh	0.5	0	33.64	26.82	26000	50560	24460	1.94	23500	40230	16730	1.71
Nituli	Rice	Gitesh	0.4	0	33.15	26.82	26000	49725	23725	1.91	23500	40230	16730	1.71
Sonjuta	Rice	Gitesh	0.6	0	32.98	26.82	26000	49470	23470	1.90	23500	40230	16730	1.71
Lairing	Rice	Gitesh	0.5	0	33.49	26.82	26000	50235	24235	1.93	23500	40230	16730	1.71
Gulson	Rice	Pusa Sugandh-5	0.39	0	33.55	27.4	25500	50325	24825	1.97	23500	41100	17600	1.74
Khakkhu	Rice	Pusa Sugandh-5	0.32	0	32.16	27.4	25500	48240	22740	1.89	23500	41100	17600	1.74
Mridula	Rice	Pusa Sugandh-5	0.26	0	33.79	27.4	25500	50685	25185	2.01	23500	41100	17600	1.74
Prakash Longmailai	Rice	Pusa Sugandh-5	0.33	0	33.55	27.4	25500	50325	24825	1.97	23500	41100	17600	1.74
Shatu	Rice	Pusa Sugandh-5	0.24	0	33.68	27.4	25500	50520	25020	1.98	23500	41100	17600	1.74
Monika	Rice	Pusa Sugandh-5	0.21	0	33.12	27.4	25500	49680	24180	1.94	23500	41100	17600	1.74
Nile	Rice	Pusa Sugandh-5	0.2	0	32.81	27.4	25500	49215	23715	1.93	23500	41100	17600	1.74

Sonam	Rice	Pusa Sugandh-5	0.23	0	32.95	27.4	25500	49425	23925	1.94	23500	41100	17600	1.74
Sunil	Black gram	PU-31	0.78	0	7.7	6.4	18500	44390	25890	2.37	17500	36480	18980	2.08
Maleh	Black gram	PU-31	0.53	0	7.25	6.4	18500	41789	23289	2.25	17500	36480	18980	2.08
Jaikishan	Black gram	PU-31	0.46	0	7.14	6.4	18500	40698	22198	2.19	17500	36480	18980	2.08
Birdin	Black gram	PU-31	0.51	0	7.22	6.4	18500	41154	22654	2.22	17500	36480	18980	2.08
Talina	Black gram	PU-31	0.45	0	7.31	6.4	18500	41667	23167	2.25	17500	36480	18980	2.08
Urmila	Black gram	PU-31	0.52	0	7.06	6.4	18500	40242	21742	2.17	17500	36480	18980	2.08
Rengchar	Black gram	PU-31	0.49	0	6.55	6.4	18500	37335	18835	2.01	17500	36480	18980	2.08
Nituli jigdung	Black gram	PU-31	0.47	0	7.13	6.4	18500	40641	22141	2.19	17500	36480	18980	2.08
Noorja giri	Black gram	PU-31	0.41	0	6.88	6.4	18500	39216	20716	2.11	17500	36480	18980	2.08
Sonjuta jigdung	Black gram	PU-31	0.38	0	7.29	6.4	18500	41553	23053	2.24	17500	36480	18980	2.08

Phobelal	Toria	TS-67	1.29	0	7.1	6.2	18000	28400	10400	1.57	17500	24800	7300	1.24
Ajin Hasnu	Toria	TS-67	0.87	0	7.32	6.2	18000	29280	11280	1.42	17500	24800	7300	1.24
Udui Langthosa	Toria	TS-67	0.69	0	7.45	6.2	18000	29800	11800	1.44	17500	24800	7300	1.24
Dewari	Toria	TS-67	0.72	0	6.98	6.2	18000	27920	9920	1.35	17500	24800	7300	1.24
Grikthong	Toria	TS-67	1.48	0	7.26	6.2	18000	29040	11040	1.61	17500	24800	7300	1.24
Ravi mura	Toria	TS-67	0.85	0	6.57	6.2	18000	26280	8280	1.46	17500	24800	7300	1.24
Lala	Toria	TS-67	0.74	0	7.05	6.2	18000	28200	10200	1.56	17500	24800	7300	1.24
Rosma	Toria	TS-67	0.93	0	6.81	6.2	18000	27200	9200	1.51	17500	24800	7300	1.24
Bhunath	Toria	TS-67	0.56	0	7.24	6.2	18000	28960	10960	1.6	17500	24800	7300	1.24
Asman	Toria	TS-67	1.87	0	7.13	6.2	18000	28520	10520	1.58	17500	24800	7300	1.24
Prakash Longmailai	Toria	TS-67	1.23	0	7.1	6.2	18000	28400	10400	1.57	17500	24800	7300	1.24
Mushroom cultivation as secondary agriculture														
Mainadi Thaosen	Mushroom	Pleurotus spp.	3 units and 20 farmers	0	53 kg/unit	-	2500	7950	5450	3.2	NA	NA	NA	NA
Kedizeno	Mushroom	Pleurotus spp.	3 units and 20 farmers	0	53 kg/unit	-	2500	7950	5450	3.2	NA	NA	NA	NA

Sita	Mushroom	Pleurotus spp.	3 units and 20 farmers	0	53 kg/unit	-	2500	7950	5450	3.2	NA	NA	NA	NA
Abele	Mushroom	Pleurotus spp.	3 units and 20 farmers	0	53 kg/unit	-	2500	7950	5450	3.2	NA	NA	NA	NA
Nivora Thaosen	Mushroom	Pleurotus spp.	3 units and 20 farmers	0	53 kg/unit	-	2500	7950	5450	3.2	NA	NA	NA	NA
Backyard poultry with Vanaraja/ Srinidhi														
Shri. Ham-jen Thaosen	Poultry	Vanaraja/ Srinidhi			2.48 kg within 16th weeks of age, 158 eggs/ bird/ year. Surviv-ability % of 95	0.80 kg within 16th weeks of age, 50 eggs/ bird/year	680	1676	996	2.5	270	534	264	2
Mhabeni	Poultry	Vanaraja/ Srinidhi			3.1 kg at 16th of age	0.80 kg within 16th weeks of age	445	690	245	1.6	138	184	46	1.3
Burnima Girisa	Poultry	Vanaraja			2.8 kg within 16th weeks of age	0.80 kg within 16th weeks of age	438	644	206	1.5	138	184	46	1.3
Backyard piggery with Hampshire cross pig														
Kisman Girisa	Piggery	Hampshire cross pigs			118 kg of body weight at 12 months of age	52 kg of body weight at 12 months of age	16060	27140	11080	1.7	8125	11960	3835	1.5

Sujit Jigdung	Piggery	Hampshire cross pigs			55 kg within 7 months, litter size is 7	37 kg within 7 months, litter size is 6/sow/ farrowing	18650	37150	19100	2	18500	29510	11010	1.5
Bali Girisa	Piggery	Hampshire cross pigs			On going	-	-	-	-		-	-	-	
Projen Hasnu	Piggery	Hampshire cross pigs			On going	-	-	-	-		-	-	-	
Nituli Jigdung	Piggery	Hampshire cross pigs			On going	-	-	-	-		-	-	-	
Riteki Girisa	Piggery	Hampshire cross pigs			On going	-	-	-	-		-	-	-	
Bonali Girisa	Piggery	Hampshire cross pigs			62 kg with-in 7 months of age, litter size is 8	37 kg within 7 months, litter size is 6/sow/ farrowing	18920	42260	23340	2.2	18500	29510	11010	1.5
Composite Fish Farming														
Jibeswar Girisa	Composite Fish Culture	IMC and Exotic Carps			1563 kg/ ha within 6 months	862 kg/ ha within 6 months	1,11,000	2,50,080	1,39,080	2.3	87,550	1,37,920	50370	1.6
Sumitra Hasnu	Composite Fish Culture	IMC and Exotic Carps			1563 kg/ ha within 6 months	862 kg/ ha within 6 months	1,11,000	2,50,080	1,39,080	2.3	87,550	1,37,920	50370	1.6
Protindra Jigdung	Composite Fish Culture	IMC and Exotic Carps			1563 kg/ ha within 6 months	862 kg/ ha within 6 months	1,11,000	2,50,080	1,39,080	2.3	87,550	1,37,920	50370	1.6
Joham Jigdung	Composite Fish Culture	IMC and Exotic Carps			1563 kg/ ha within 6 months	862 kg/ ha within 6 months	1,11,000	2,50,080	1,39,080	2.3	87,550	1,37,920	50370	1.6

Riteki Girisa	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6	862 kg/ ha within 6 months	1,11,000	2,50,080	1,39,080	2.3	87,550	1,37,920	50370	1.6
Ringjen Naben	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Amon Difoesa	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Kolinath Difoesa	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Pobitra Jigdung	Composite Fish Culture	IMC and Exotic Carps			1541 kg/ ha within 6 months	862 kg/ ha within 6 months	1,09,287	2,46,560	1,37,273	2.3	87,550	1,37,920	50370	1.6
Tendul Haflongbar	Composite Fish Culture	IMC and Exotic Carps			1541 kg/ ha within 6 months	862 kg/ ha within 6 months	1,09,287	2,46,560	1,37,273	2.3	87,550	1,37,920	50370	1.6
Manoj Jigdung	Composite Fish Culture	IMC and Exotic Carps			1541 kg/ ha within 6 months	862 kg/ ha within 6 months	1,09,287	2,46,560	1,37,273	2.3	87,550	1,37,920	50370	1.6
Bonali Girisa	Composite Fish Culture	IMC and Exotic Carps			1541 kg/ ha within 6 months	862 kg/ ha within 6 months	1,09,287	2,46,560	1,37,273	2.3	87,550	1,37,920	50370	1.6
Brojen Hasnu	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Devojit Naben	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6

Josonath Hasnu	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Hamjen Hasnu	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Pikash Maibangsa	Composite Fish Culture	IMC and Exotic Carps			1326 kg within 6 months	862 kg/ ha within 6 months	1,10,160	2,12,160	1,02,000	2	87,550	1,37,920	50370	1.6
Bishno Hasnu	Composite Fish Culture	IMC and Exotic Carps			1448 kg/ ha within 6 months	862 kg/ ha within 6 months	1,18,680	2,31,680	1,13,000	2	87,550	1,37,920	50370	1.6
Josh Haf-longber	Composite Fish Culture	IMC and Exotic Carps			1448 kg/ ha within 6 months	862 kg/ ha within 6 months	1,18,680	2,31,680	1,13,000	2	87,550	1,37,920	50370	1.6
Bhaihan Jigdung	Composite Fish Culture	IMC and Exotic Carps			1448 kg/ ha within 6 months	862 kg/ ha within 6 months	1,18,680	2,31,680	1,13,000	2	87,550	1,37,920	50370	1.6
Vidyaraz Hasnu	Composite Fish Culture	IMC and Exotic Carps			1448 kg/ ha within 6 months	862 kg/ ha within 6 months	1,18,680	2,31,680	1,13,000	2	87,550	1,37,920	50370	1.6
Philip Thaosen	Composite Fish Culture	IMC and Exotic Carps			1448 kg/ ha within 6 months	862 kg/ ha within 6 months	1,18,680	2,31,680	1,13,000	2	87,550	1,32,920	50370	1.6

X. Table 13.10: KVK, Mokokchung, Nagaland

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Jhalkund														
Imnalemba	Off season cucumber	Local	17.1	4.2	130.5	101.4	47970	113670	65700	2.4	46960	90850	43890	1.9
Longsu	Broccoli	Green Magic	10.4	2.7	13.5	9.8	22700	108000	85300	4.7	21500	57850	36350	2.7
Polymulching														
Moamongla	Broccoli	Green Magic	9.2	0	11.4	9.7	33450	91000	57550	2.7	31950	59600	27650	1.9
Ningsangwala	Broccoli	Green Magic	9.2	0	12.2	9.9	36150	97600	61450	2.7	32400	62950	30550	1.9
Sakutemsula	Cabbage	Rareball	5.3	0	10.3	8.4	35900	92100	56200	2.6	28270	54200	25930	1.9
Talinungla	Cabbage	BC 76	5.3	0	10.8	8.7	33400	83250	49850	2.5	29600	55350	25750	1.8
Short duration paddy variety														
Supong	Paddy	Disang	17.5	0	25.2	19.8	32350	80600	48250	2.5	37250	62500	25250	1.7
Sakula	Paddy	Disang	17.5	0	23.4	18.7	32850	75700	42850	2.3	33550	56450	22900	1.9
Talinungla	Paddy	Disang	17.5	0	24.1	18.9	32050	77350	45300	2.4	34350	58200	23850	1.6
Advancement of planting dates of rabi crops														
Merangla	Broccoli	Green Magic	13.6	0	11.9	8.7	29850	89270	59420	2.9	28840	55790	26950	1.9
Ajungla	Broccoli	Green Magic	13.6	0	12.1	8.9	30750	91100	60350	3	28700	56200	27500	1.9
Asangla	Broccoli	Green Magic	13.6	0	8.4	7.2	28350	81150	52800	2.9	25500	50250	24750	2
Wapangla	Broccoli	Green Magic	13.6	0	9.4	7.8	27750	82100	54350	3	26350	51750	25400	2

Kilemla	Broccoli	Green Magic	13.6	0	8.1	7.3	29000	80200	51200	2.8	25700	50600	24900	2
Location specific Intercropping														
Tsupong	Maize	RCM 76	10.8	0	29.4	Sole crop (maize): 28.2	43800	121800	78000	2.8	36550	70500	33950	1.9
	Soybean	JS 335			13.8									
Alang	Maize	RCM 77	10.8	0	28.6	Sole crop (maize): 26.7	43050	112550	69500	2.6	35700	66700	31000	1.8
	Soybean	JS 336			12.7									
Imtiyanger	Maize	RCM 78	10.8	0	28.5	Sole crop (maize): 27.3	41850	113100	71250	2.7	36200	67250	31050	1.8
	Soybean	JS 337			13.1									
Vermicomposting														
Sentijang	Off season cucumber	Local	14.2	6.4	78.5	51.2	27650	59230	31580	2.1	23250	45600	22350	1.9
Imkonglemba	Off season cucumber	Local	14.2	6.4	79.7	52.7	27500	63000	35500	2.3	23650	47050	23400	2
Lanumongla	Off season cucumber	local	14.2	6.4	79.1	51.9	28250	62850	34600	2.2	22350	44850	22500	2
Imnametong	Cabbage	BC 76	9.75	3.1	81.7	74.6	29300	69050	39750	2.4	21850	43350	21500	1.9
Jungshinungsang	Cabbage	BC 76	9.75	3.1	82.2	74.4	30250	65370	35120	2.2	22150	44500	22350	2
Apiary														
Deaconba	Improved Bee farming for income generation		4 units	1 unit	55	0	12000	38500	26500	2.9				

Poultry farming													
Shilukaba	Backyard poultry rearing (Vanaraja)		46 units	0	130-140	25-30			3000			900	
Imchawati	Backyard poultry rearing (Vanaraja)				120-130	20-25			2850			900	
Supongtsungba	Backyard poultry rearing (Vanaraja)				110-120	20-30			2700			850	
Imtinungsang	Backyard poultry rearing (Vanaraja)				130-140	25-30			3050			950	
Moalemla	Backyard poultry rearing (Vanaraja)				130-140	25-30			2900			900	
Medemkaba	Backyard poultry rearing (Vanaraja)				130-140	20-30			2930			850	
Watinungsang	Backyard poultry rearing (Vanaraja)				130-140	25-30			3000			850	
Purlemba	Backyard poultry rearing (Vanaraja)				130-140	20-30			2950			900	

Fish farming														
Sangpanger	Renovation of fishery ponds		23 units	Existing ponds were not maintained properly	21.23	17.8	46500	136250	89750	2.9	44850	101400	56550	2.2
Pangjunglemba	Renovation of fishery ponds				21.82	18.2	45650	137150	91500	3	44900	100750	55850	2.2
Temjenyanger	Renovation of fishery ponds				19.75	17.6	43500	130850	87350	3	43650	96700	53050	2.2
Bendangnichet	Renovation of fishery ponds				21.2	17.9	46550	134650	88100	2.9	44350	97500	53150	2.1

X. Table 13.10: KVK, Mokokchung, Nagaland

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Jhalkund														
Imnalemba	Off season cucumber	Local	17.1	4.2	130.5	101.4	47970	113670	65700	2.4	46960	90850	43890	1.9
Longsu	Broccoli	Green Magic	10.4	2.7	13.5	9.8	22700	108000	85300	4.7	21500	57850	36350	2.7
Polymulching														
Moamongla	Broccoli	Green Magic	9.2	0	11.4	9.7	33450	91000	57550	2.7	31950	59600	27650	1.9
Ningsangwala	Broccoli	Green Magic	9.2	0	12.2	9.9	36150	97600	61450	2.7	32400	62950	30550	1.9
Sakutemsula	Cabbage	Rareball	5.3	0	10.3	8.4	35900	92100	56200	2.6	28270	54200	25930	1.9
Talinungla	Cabbage	BC 76	5.3	0	10.8	8.7	33400	83250	49850	2.5	29600	55350	25750	1.8

Short duration paddy variety														
Supong	Paddy	Disang	17.5	0	25.2	19.8	32350	80600	48250	2.5	37250	62500	25250	1.7
Sakula	Paddy	Disang	17.5	0	23.4	18.7	32850	75700	42850	2.3	33550	56450	22900	1.9
Talinungla	Paddy	Disang	17.5	0	24.1	18.9	32050	77350	45300	2.4	34350	58200	23850	1.6
Advancement of planting dates of rabi crops														
Merangla	Broccoli	Green Magic	13.6	0	11.9	8.7	29850	89270	59420	2.9	28840	55790	26950	1.9
Ajungla	Broccoli	Green Magic	13.6	0	12.1	8.9	30750	91100	60350	3	28700	56200	27500	1.9
Asangla	Broccoli	Green Magic	13.6	0	8.4	7.2	28350	81150	52800	2.9	25500	50250	24750	2
Wapangla	Broccoli	Green Magic	13.6	0	9.4	7.8	27750	82100	54350	3	26350	51750	25400	2
Kilemla	Broccoli	Green Magic	13.6	0	8.1	7.3	29000	80200	51200	2.8	25700	50600	24900	2
Location specific Intercropping														
Tsupong	Maize	RCM 76	10.8	0	29.4	Sole crop (maize): 28.2	43800	121800	78000	2.8	36550	70500	33950	1.9
	Soybean	JS 335			13.8									
Alang	Maize	RCM 77	10.8	0	28.6	Sole crop (maize): 26.7	43050	112550	69500	2.6	35700	66700	31000	1.8
	Soybean	JS 336			12.7									
Imtiyanger	Maize	RCM 78	10.8	0	28.5	Sole crop (maize): 27.3	41850	113100	71250	2.7	36200	67250	31050	1.8
	Soybean	JS 337			13.1									
Vermicomposting														
Sentijang	Off season cucumber	Local	14.2	6.4	78.5	51.2	27650	59230	31580	2.1	23250	45600	22350	1.9
Imkonglemba	Off season cucumber	Local	14.2	6.4	79.7	52.7	27500	63000	35500	2.3	23650	47050	23400	2

Lanumongla	Off season cucumber	local	14.2	6.4	79.1	51.9	28250	62850	34600	2.2	22350	44850	22500	2
Imnametong	Cabbage	BC 76	9.75	3.1	81.7	74.6	29300	69050	39750	2.4	21850	43350	21500	1.9
Jungshinung-sang	Cabbage	BC 76	9.75	3.1	82.2	74.4	30250	65370	35120	2.2	22150	44500	22350	2
Apiary														
Deaconba	Improved Bee farming for income generation		4 units	1 unit	55	0	12000	38500	26500	2.9				
Poultry farming														
Shilukaba	Backyard poultry rearing (Vanaraja)		46 units	0	130-140	25-30			3000				900	
Imchawati	Backyard poultry rearing (Vanaraja)				120-130	20-25			2850				900	
Supongtsungba	Backyard poultry rearing (Vanaraja)				110-120	20-30			2700				850	
Imtinungsang	Backyard poultry rearing (Vanaraja)				130-140	25-30			3050				950	
Moalemla	Backyard poultry rearing (Vanaraja)				130-140	25-30			2900				900	
Medemkaba	Backyard poultry rearing (Vanaraja)				130-140	20-30			2930				850	
Watinungsang	Backyard poultry rearing (Vanaraja)				130-140	25-30			3000				850	
Purlemba	Backyard poultry rearing (Vanaraja)				130-140	20-30			2950				900	

Fish farming													
Sangpanger	Renovation of fishery ponds		23 units	Existing ponds were not maintained properly	21.23	17.8	46500	136250	89750	2.9	44850	101400	56550	2.2
Pangjunglemba	Renovation of fishery ponds				21.82	18.2	45650	137150	91500	3	44900	100750	55850	2.2
Temjenyanger	Renovation of fishery ponds				19.75	17.6	43500	130850	87350	3	43650	96700	53050	2.2
Bendangnichet	Renovation of fishery ponds				21.2	17.9	46550	134650	88100	2.9	44350	97500	53150	2.1

XI. Table 13.11: KVK, Mon, Nagaland

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Zero tillage & paddy straw mulching in pea														
Mr. Angpa Konyak	Pea	Prakash	1	0	9.1	8.5	21,200	36,400	15,200	1.72	24,300	34,400	10,100	1.42
Mr. Sangtan Konyak	Pea	Prakash	1	0	8.7	8.5	21,200	34,800	13,600	1.64	24,300	34,400	10,100	1.42
Mr. Langpei Konyak	Pea	Prakash	1	0	9.5	8.5	21,200	38,000	16,800	1.79	24,300	34,400	10,100	1.42
Mr Phuhju Konyak	Pea	Prakash	1	0	10.1	8.5	21,200	40,400	19,200	1.9	24,300	34,400	10,100	1.42
Mr. Kailang Konyak	Pea	Prakash	1	0	10.8	8.5	21,200	43,200	22,000	2.04	24,300	34,400	10,100	1.42
Zero tillage in Rapeseed														
Mr. Kayan Konyak	Rapeseed	TS 38	1	0	6	5.5	5000	12,000	7000	2.4	7500	11,000	3500	1.47

Mr. Angpa Konyak	Rapeseed	TS 38	1	0	6.9	5.5	5000	13,800	8800	2.76	7500	11,000	3500	1.47
Mr. Along Konyak	Rapeseed	TS 38	1	0	7.3	5.5	5000	14,600	9600	2.92	7500	11,000	3500	1.47
Mr. Langpei Konyak	Rapeseed	TS 38	1	0	6.75	5.5	5000	13,500	8500	2.7	7500	11,000	3500	1.47
Mr Phuhju Konyak	Rapeseed	TS 38	1	0	5.9	5.5	5000	11,800	6800	2.36	7500	11,000	3500	1.47
Water supply through constructed irrigation channel from river to paddy field														
Mr. Phuhju Konyak	Paddy	SARS 6	1	0.5	35.5	25.5	23,500	35,500	15,300	1.65	20,000	25,500	5500	1.27
Mr. Angpa Konyak	Paddy	SARS 6	1.5	0.5	40	25.5	23,500	40,000	16,500	1.7	20,000	25,500	5500	1.27
Mr. Sangtan Konyak	Paddy	IR 36	2	1	40.8	25.5	23,500	40,800	17,300	1.74	20,000	25,500	5500	1.27
Miss Limei Konyak	Paddy	IR 36	1	0.5	37.2	25.5	23,500	37,200	13,700	1.58	20,000	25,500	5500	1.27
Mr. Bupe Konyak	Paddy	IR 36	1.5	0.5	36	25.5	23,500	36,000	12,500	1.53	20,000	25,500	5500	1.27
Soil health cards issued and how they are used														
Mr. Shahmi Konyak	Soybean	JS 335	0.5	0	8.5	6.4	18,000	34,000	16,000	1.89	17,000	25,600	8600	1.51
Mr. Kailang Konyak	Soybean	JS 335	0.5	0	8	6.4	18,000	32,000	14,000	1.78	17,000	25,600	8600	1.51
Soil health improvements (Green manuring)														
Mr. Mopa Konyak	Green gram	Pusa Vishal	0.5	0	7.5	0	17,500	26,000	8500	1.48				
Mr. Kailang Konyak	Green gram	Pusa Vishal	0.5	0	7.5	0	17,500	26,000	8500	1.48				
Sequential cropping of Foxtail millet-Soybean														
Mr. Ati Konyak	Foxtail millet- Soybean	Local- JS 335	1	0	19.75	14.85	24,100	51,100	27,000	2.12	19,800	36,150	16,350	1.82
Mr. Kailong Konyak	Foxtail millet- Soybean	Local- JS 335	1	0	21.5	14.85	24,100	55,628	31,528	2.31	19,800	36,150	16,350	1.82
Mr. Y. Mopa Konyak	Foxtail millet- Soybean	Local- JS 335	1	0	18	14.85	24,100	46,573	22,453	1.93	19,800	36,150	16,350	1.82
Mr. Hongmei Konyak	Foxtail millet- Soybean	Local- JS 335	1	0	17.25	14.85	24,100	44,632	20,532	1.85	19,800	36,150	16,350	1.82

Mr. Chinglem Konyak	Foxtail millet- Soybean	Local- JS 335	1	0	22.25	14.85	24,100	57,568	33,468	2.39	19,800	36,150	16,350	1.82
Short duration variety of Maize														
Mr. Along Konyak	Maize	RCM 76	0.5	0	32.85	22.5	17,000	32,850	15,850	1.93	14,500	22,500	8000	1.55
Mr. Y. Mopa Konyak	Maize	RCM 76	0.5	0	30	22.5	17,000	30,000	13,000	1.76	14,500	22,500	8000	1.55
Mr. Ati Konyak	Maize	RCM 76	0.25	0	26.3	22.5	17,000	26,300	9300	1.55	14,500	22,500	8000	1.55
Mr. Kailong Konyak	Maize	RCM 76	0.5	0	37.5	22.5	17,000	37,500	20,500	2.2	14,500	22,500	8000	1.55
Mr. Kamyung Konyak	Maize	RCM 76	0.25	0	28.7	22.5	17,000	28,700	11,700	1.69	14,500	22,500	8000	1.55
Sequential cropping (Colocasia + Paddy- Pea)														
Mr. Shahmi Konyak	Colocasia + Paddy- Pea	Local + IR 36- Prakash	0.5	0	154.3	108.4	63,250	1,21,650	58,400	1.92	34,800	62,900	28,100	1.71
Mrs. Phengam Konyak	Colocasia + Paddy- Pea	Local + IR 36- Prakash	0.5	0	140.7	108.4	63,250	1,10,928	47,678	1.75	34,800	62,900	28,100	1.71
Water saving paddy cultivation methods (DSR)														
Mr. Angpa Konyak	Paddy	IR 36	0.25	0	25.5	17.5	15,400	25,500	10,300	1.67	13,000	17,500	4500	1.35
Mr. Phuhju Konyak	Paddy	IR 36	0.25	0	28	17.5	15,400	28,000	12,600	1.81	13,000	17,500	4500	1.35
Mr. Sangtan Konyak	Paddy	IR 36	0.5	0	22.5	17.5	15,400	22,500	7,100	1.46	13,000	17,500	4500	1.35
Mr. Langpai Konyak	Paddy	IR 36	0.5	0	30	17.5	15,400	30,000	14,600	1.94	13,000	17,500	4500	1.35
Mr. Kailang Konyak	Paddy	IR 36	0.5	0	24.5	17.5	15,400	24,500	9,100	1.59	13,000	17,500	4500	1.35

Poultry (Kuroiler)													
Shri. Ashong	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.36kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	29,700	17,820	2.5	4,656	5,985	1329	1.3
Shri. Yenmoi	Poultry	Kuroiler	6	0										
Shri. Punyei	Poultry	Kuroiler	6	0										
Shri. Ngami	Poultry	Kuroiler	6	0										
Shri.Monnyei	Poultry	Kuroiler	6	0										
Shri. Toklang	Poultry	Kuroiler	6	0										
Shri. Hemjei	Poultry	Kuroiler	6	0										
Shri.Hankang	Poultry	Kuroiler	6	0										
Shri. Phulshai	Poultry	Kuroiler	6	0										
Shri.Yangkei	Poultry	Kuroiler	6	0										
Shri. Angpa	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.55kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	32,130	20,250	2.7	4,656	5,985	1329	1.3
Shri.Shangmei	Poultry	Kuroiler	6	0										
Shri. Langngo	Poultry	Kuroiler	6	0										
Shri. Shipa	Poultry	Kuroiler	6	0										
Shri. Langkhu	Poultry	Kuroiler	6	0										
Smt. Ashom	Poultry	Kuroiler	6	0										
Shri. Monjei	Poultry	Kuroiler	6	0										
Shri. Meyen	Poultry	Kuroiler	6	0										
Shri. Yongnyu	Poultry	Kuroiler	6	0										
Shri. Ngato	Poultry	Kuroiler	6	0										

Shri. Anjei	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.3kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	28,980	17,100	2.4	4,656	5,985	1329	1.3
Shri. Shampa	Poultry	Kuroiler	6	0										
Shri. Hemlem	Poultry	Kuroiler	6	0										
Shri.Hongyang	Poultry	Kuroiler	6	0										
Shri. Ahu	Poultry	Kuroiler	6	0										
Shri. Bupe	Poultry	Kuroiler	6	0										
Shri. Akai	Poultry	Kuroiler	6	0										
Shri. Shewang	Poultry	Kuroiler	6	0										
Shri. Enyei	Poultry	Kuroiler	6	0										
Shri. Phonglao	Poultry	Kuroiler	6	0										
Shri. Nyeingo	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.6kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	32,760	20,880	2.7	4,656	5,985	1329	1.3
Shri.Changyong	Poultry	Kuroiler	6	0										
Shr. Chingshem	Poultry	Kuroiler	6	0										
Shri.Pửngjei. K	Poultry	Kuroiler	6	0										
Shri. Yupe	Poultry	Kuroiler	6	0										
Shri. Yongan	Poultry	Kuroiler	6	0										
Shri. Ngalan	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.6kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	32,760	20,880	2.7	4,656	5,985	1329	1.3
Shri Wongkhao	Poultry	Kuroiler	6	0										
Shri. Longnyei	Poultry	Kuroiler	6	0										
Shri. Anghpa	Poultry	Kuroiler	6	0										

Shri. Shahpang	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.4kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	30,240	18,360	2.5	4,656	5,985	1329	1.3
Shri. Nokkhe	Poultry	Kuroiler	6	0										
Shri. Kaipu	Poultry	Kuroiler	6	0										
Shri. Tonai. K	Poultry	Kuroiler	6	0										
Shri. Phungphe	Poultry	Kuroiler	6	0										
Shri. S. Bupe	Poultry	Kuroiler	6	0										
Shri. Hongkai	Poultry	Kuroiler	6	0										
Shri. Bito	Poultry	Kuroiler	6	0										
Shri. Alang	Poultry	Kuroiler	6	0										
Shri. Angkhah	Poultry	Kuroiler	6	0										
Shri. Hejei	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.37kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	29,700	17,820	2.5	4,656	5,985	1329	1.3
Shri. Kaiyung	Poultry	Kuroiler	6	0										
Shri. Phulao . K	Poultry	Kuroiler	6	0										
Shri. Shangkho	Poultry	Kuroiler	6	0										
Shri. Noksen	Poultry	Kuroiler	6	0										
Shri. Kaiho. K	Poultry	Kuroiler	6	0										
Shri. Pangloi	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.37kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	29,700	17,820	2.5	4,656	5,985	1329	1.3
Shri. Chawang	Poultry	Kuroiler	6	0										
Shri. Towang	Poultry	Kuroiler	6	0										
Smt. Wanngoi	Poultry	Kuroiler	6	0										

Shri. Manchah	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.35kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11,880	29,610	17,730	2.49	4,656	5,985	1329	1.3
Shri. Honglem	Poultry	Kuroiler	6	0										
Smt. Hejai	Poultry	Kuroiler	6	0										
Shri. Nokpai	Poultry	Kuroiler	6	0										
Shri. Hongjei	Poultry	Kuroiler	6	0										
Shri. Sempa	Poultry	Kuroiler	6	0										
Shri.Kailang	Poultry	Kuroiler	6	0										
Shri. Ati	Poultry	Kuroiler	6	0										
Shri. Pongpe	Poultry	Kuroiler	6	0										
Shri.Echem	Poultry	Kuroiler	6	0										
Shri.Y.Mopa	Poultry	Kuroiler	6	0	Average body weight at 12 weeks of age is 2.4kg (Cluster based)	Average body weight at 12 weeks of age is 0.475kg (Cluster base	11880	30240	18360	2.5	4656	5985	1329	1.3
Shri.Teiwang	Poultry	Kuroiler	6	0										
Shri.Wanglei	Poultry	Kuroiler	6	0										
Shri.Shangnyei	Poultry	Kuroiler	6	0										
Shri.Yangyan	Poultry	Kuroiler	6	0										
Shri.Ali	Poultry	Kuroiler	6	0										
Shri. Potok	Poultry	Kuroiler	6	0										
Shri.Yohan	Poultry	Kuroiler	6	0										
Shri. Ngo-an	Poultry	Kuroiler	6	0										
Shri. Eling	Poultry	Kuroiler	6	0										

XII. Table 13.12: KVK, Phek, Nagaland

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Popularization of French bean														
Shekoralu	French bean	Anupama	0.5	0	63.3	42.9	49210	124860	75650	2.54	46020	87490	41470	1.9
Vezhotsolu	French bean	Anupama	1	0	62.5	43.8	49140	124740	75600	2.54	46400	87480	41080	1.89
Vetsulu	French bean	Anupama	1	0	61.65	44.15	49185	124850	75665	2.54	45700	87570	41870	1.92
Muzathi	French bean	Anupama	0.5	0	62.3	43.5	49050	124790	75740	2.54	45870	87490	41620	1.91
Chosuyi Khamo	French bean	Anupama	0.4	0	62.25	44.4	49165	124760	75595	2.54	46010	87470	41460	1.9
Low-cost vermicomposting														
Nuthivolu	Vermicompost	Eisenia fetida	2	0	12.25	0	8515	30495	21980	3.58	-	-	-	-
Hushetso	Vermicompost	Eisenia fetida	2	0	11.9	0	8520	30395	21875	3.57	-	-	-	-
Cusato	Vermicompost	Eisenia fetida	3	0	11.95	0	8510	30480	21970	3.58	-	-	-	-
Joseph Puro-	Vermicompost	Eisenia fetida	1	0	12.5	0	8505	30520	22015	3.59	-	-	-	-
Vezhotalu	Vermicompost	Eisenia fetida	2	0	12.35	0	8515	30485	21970	3.58	-	-	-	-
Popularization of Dual breed Poultry														
Rato Veyie	Poultry	Srinidhi	89	0	0	0	3550	9660	6110	2.72	3460	7300	3840	2.11
Vesu Rakho	Poultry	Srinidhi	92	0	0	0	5300	11450	6150	2.16	4550	8570	4020	1.88
Shuduve Chuzo	Poultry	Srinidhi	108	0	0	0	4215	12400	8185	2.94	5340	9340	4000	1.75
Senetalu Chuzo	Poultry	Srinidhi	76	0	0	0	3650	11000	7350	3.01	4650	6850	2200	1.47
Huvekhoyi	Poultry	Srinidhi	94	0	0	0	4650	10540	5890	2.27	4650	7100	2450	1.53

Low cost poly-house														
Vechuso	King chilli	Local	80 m^2	0	107	65.5	945500	2675500	1730000	2.83	568000	1309500	741500	2.31
Vecuhu	King chilli	Local	60 m^2	0	105	58.2	882521	2625478	1742957	2.97	620000	1163000	543000	1.88
Vethira	King chilli	Local	40 m^2	0	93.5	50.15	1005870	2337550	1331680	2.32	610000	1004500	394500	1.65
Vezhokhoyi	King chilli	Local	50 m^2	0	102	71.5	952388	2550220	1597832	2.68	590000	1430000	840000	2.42
Cukhoto	King chilli	Local	70 m^2	0	95.2	73.15	1001500	2380000	1378500	2.38	612000	1463000	851000	2.39
Partial protection of Kiwi fruit using 50% shade net during flowering against high rainfall														
Sevohu Chuzo	Kiwi	Allison	1	0.25	151	79.7	415000	1510000	1095000	3.64	185000	637600	452600	3.45
Medopoyi Tetseo	Kiwi	Allison	0.5	0	142	84.5	425000	1420000	995000	3.34	215000	676000	461000	3.14
Popularization of Maize var. HQPM 1														
Huluvo Phusachodu	Maize	HQPM1	1	0.4	42.36	22.32	27000	84720	57720	3.13	25000	44640	19640	1.78
Muzathi	Maize	HQPM1	0.5	0.1	20.5	9.93	13500	41000	27500	3.03	12500	19880	7380	1.59
Venulii	Maize	HQPM1	0.6	0.1	25.85	13.64	17450	51700	34250	2.96	15900	27280	11380	1.71
Muleyi	Maize	HQPM1	0.3	0	12.85	6.057	9125	25700	16575	2.81	8350	12114	3764	1.45
Chosiihyi	Maize	HQPM1	0.1	0	4.29	2.16	2700	8590	5890	3.18	2410	4336	1926	1.79
Vesasulii	Maize	HQPM1	0.5	0.2	21.51	10.92	13500	43020	29520	3.18	12500	21850	9350	1.74
Popularization of field pea var. Aman														
Vesanulu (Kikruma)	Field pea	Aman	0.2	0	2.99	2.2	7600	14956	7356	1.96	7200	11036	3836	1.53
Nepolu	Field pea	Aman	0.8	0.3	11.83	8.77	28000	59175	31175	2.11	26400	43862	17462	1.66
Vezotolii	Field pea	Aman	0.5	0.1	7.45	5.43	18200	37299	19099	2.04	17200	27155	9955	1.57
Tsivelii	Field pea	Aman	0.4	0.2	5.94	4.4	13200	29731	16531	2.25	12400	22026	9626	1.77
Nungosalii	Field pea	Aman	1	0.4	14.9	10.83	36000	74507	38507	2.06	32000	54163	22163	1.69
Cikroneyo	Field pea	Aman	0.5	0.2	7.44	5.48	18200	37213	19013	2.04	17200	27404	10204	1.59

Popularization of potato var. Kufri Girdhari														
Chosuhyi (Phusacha-do)	Potato	Kufri girdhari	0.5	0.2	141.27	108.21	66000	282540	216540	4.28	56000	216420	160420	3.86
Huluvo	Potato	Kufri girdhari	1	0.5	276.18	206.25	132000	552360	420360	4.18	112000	412500	300500	3.68
Ciekrovolu	Potato	Kufri girdhari	0.4	0.1	111.05	84.21	52400	222100	169700	4.23	44400	168420	124020	3.79
Shenulu	Potato	Kufri girdhari	0.8	0.3	225.05	166.9	106000	450100	344100	4.24	90000	333800	243800	3.7
Shekhozolu	Potato	Kufri girdhari	1	0.3	276.43	202.41	132000	552860	420860	4.18	112000	404820	292820	3.61
Velasalu	Potato	Kufri girdhari	0.5	0.2	140.44	107.31	66000	280880	214880	4.25	56000	214620	158620	3.83

XIII. Table 13.13: KVK, Dhalai, Tripura

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Straw mulching in bitter gourd cultivation														
Gautam Das	Bitter gourd	HYV	0.32	0	262	162	90,000	3,93,000	3,03,000	4.36	79,000	2,43,00	1,64,000	3.07
Adhir Ch. Das	Bitter gourd	HYV	0.16	0	248	162	90,000	3,72,000	2,82,000	4.13	79,000	-	-	-
Taj uddin Ahmed Khan	Bitter gourd	HYV	0.36	0	268	162	90,000	4,02,000	3,12,000	4.46	79,000	-	-	-
Talim uddin Khan	Bitter gourd	HYV	0.12	0	232	162	90,000	3,48,000	2,58,000	3.86	79,000	-	-	-
Nidhir Ch. Das	Bitter gourd	HYV	0.8	0	275	162	90,000	4,12,500	3,22,500	4.58	79,000	-	-	-

Minimum tillage in lentil cultivation														
Ratan Das	Lentil	Hul - 57	0.14	0.02	5.5	4.1	30,000	44,000	14,000	1.46	24,000	32800	8,800	1.36
Siraj Ahmed khan	Lentil	Hul - 57	0.16	0.04	5.8	4.1	30,000	46,400	16,400	1.54	24,000	-	-	-
Talim Uddin Khan	Lentil	Hul - 57	0.32	0.08	6.5	4.1	30,000	52,000	22,600	1.73	24,000	-	-	-
Sirajur Rahaman	Lentil	Hul - 57	0.12	0.02	4.8	4.1	30,000	38,400	8,400	1.28	24,000	-	-	-
Anil Ch. Das	Lentil	Hul - 57	0.18	0.03	5.9	4.1	30,000	47,200	17,200	1.57	24,000	-	-	-
Submergence tolerant variety of paddy (Var. Swarna Sub-1														
Ratan Das	Paddy	Swarna sub - 1	0.48	0.32	46	33	31,250	63,250	32,000	2	28,000	45,375	17,375	1.6
Taj uddin Ahmed khan	Paddy	Swarna sub - 1	0.64	0.48	43	33	31,250	59,125	27,875	1.89	28,000	-	-	-
Talim uddin	Paddy	Swarna sub - 1	0.8	0.48	47.5	33	31,250	65,312	34,062	2.08	28,000	-	-	-
Jumer ali khan	Paddy	Swarna sub - 1	0.96	0.8	47.8	33	31,250	65,725	34,475	2.1	28,000	-	-	-
Siraj Ahmed khan	Paddy	Swarna sub - 1	0.32	0.16	38	33	31,250	52,250	21,000	1.67	28,000	-	-	-
Contingency crop														
Gautam Das	Cabbage	Rare ball	0.32	0.08	550	375	93,000	3,02,500	2,09,500	3.25	80,000	2,06,250	1,26,250	2.57

Talim uddin khan	Cabbage	Rare ball	0.16	0.04	490	375	93,000	2,69,500	1,76,500	2.89	80,000	-	-	-
Taj uddin Ahmed khan	Cabbage	Rare ball	0.24	0.02	530	375	93,000	2,91,500	1,98,500	3.13	80,000	-	-	-
Ratan Das	Cabbage	Rare ball	0.08	0.04	435	375	93,000	2,39,250	1,46,250	2.57	80,000	-	-	-
Farima bibi	Cabbage	Rare ball	0.04	0.02	350	375	93,000	1,92,500	99,500	2.06	80,000	-	-	-
Gautam Das	Field pea	HUDP -15	0.16	0.08	37.5	28	55,000	1,38,750	83,750	2.52	53,000	1,03,600	50,600	1.95
Suman Das	Field pea	HUDP -16	0.16	0.04	37	28	55,000	1,36,900	81,900	2.48	53,000	-	-	-
Taj uddin Ahmed khan	Field pea	HUDP -17	0.32	0.02	38.6	28	55,000	1,42,820	87,820	2.59	53,000	-	-	-
Ratan Das	Field pea	HUDP -18	0.16	0.08	37.6	28	55,000	1,39,120	84,120	2.52	53,000	-	-	-
Siraj khan	Field pea	HUDP -19	0.32	0.08	38.2	28	55,000	1,41,340	86,340	2.56	53,000	-	-	-
Fodder cultivation														
Gautam Das	Fodder	Congo signal	0.16	0	170	0	35,000	85,000	50,000	2.42				
Talim uddin khan	Fodder	Congo signal	0.08	0	160	0	35,000	80,000	45,000	2.28				
Bidhan Das	Fodder	Hybrid napier	1.12	0	260	0	37,000	1,17,000	80,000	3.1				
Talim uddin khan	Fodder	Hybrid napier	0.8	0	245	0	37,000	1,10,250	73,250	2.9				

XIV. Table 13.14: KVK, Khowai, Tripura

Farmer name	Technology demonstrated		Area under practice in the village (ha)		Crop yields (q/ha) (Average)		Economics of demonstration (Rs./ha)				Economics of local practice (Rs./ha)			
	Crop Name	Name of variety	Now	Before initiation of NICRA project	Demo	Local	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Mulching in Bitter gourd with paddy straw														
Dilip Debbarma	Bitter gourd	Bolder	0.16	0	97	0	1,42,000	3,95,600	2,53,600	2.78				
Lila Chandra Debbarma	Bitter gourd	Bolder	0.16	0	96	0	142000	391900	2,49,900	2.75				
Ajit Debbarma	Bitter gourd	Bolder	0.12	0	95	0	143500	395500	252000	2.75				
Mitra Debbarma	Bitter gourd	Bolder	0.16	0	97	0	142500	382900	2,40,400	2.68				
Sanjit Debbarma	Bitter gourd	Bolder	0.08	0	96	0	142000	383000	241000	2.69				
Furrow irrigation method with Maize														
Furrow irrigation method with Maize	Maize	VMH-45	53	0	52	29	32989	98800	65811	2.99	36010	75000	38990	2.08
Charan Debbarma	Maize	VMH-45	0.12	0	54	29	35600	1,00,000	64400	2.8	35600	70500	34900	1.98
Chitta Ranjan Debbarma	Maize	VMH-45	0.08	0	53	29	34500	102000	67500	2.95	34500	69000	34500	2
Mantu Debbarma	Maize	VMH-45	0.08	0	53	28	33200	98000	64800	2.95	33200	62000	28800	1.86
Chabi Kumar Debbarma	Maize	VMH-45	0.12	0	53	28	34000	97600	63600	2.87	34000	68500	34500	2.01
Alen Debbarma	Maize	VMH-45	0.16	0	52	29	36000	105000	69000	2.91	36000	71300	35300	1.98
Water saving paddy cultivation methods (SRI)														
Water saving paddy cultivation methods (SRI)	Paddy	Gomoti	215	200	72	52	51000	86400	35400	1.69	48,000	63,500	15,500	1.32

Sarubala Debbarma	Paddy	Gomoti	1.12	8	72	52	50000	86700	36700	1.73	50000	62500	12500	1.25
Kunju mohan Jamatia	Paddy	Gomoti	0.64	0.64	73	52	52000	87500	35500	1.68	52000	63200	11200	1.21
Birmohan mohan Jamatia	Paddy	Gomoti	0.64	0.64	71	48	52500	85500	33000	1.62	52500	66200	13700	1.26
Adhinkanya Debbarma	Paddy	Gomoti	0.48	0.48	71	50	50000	84600	34600	1.69	50000	66500	16500	1.33
Tarit Kumar Debbarma	Paddy	Gomoti	0.64	0.64	72	50	50300	85100	34800	1.69	50300	64200	13900	1.27
Integrated Pest Management (IPM)														
Integrated Pest Management (IPM)	Potato (TPS)	HPS II/67	16.88	0	35	0	74000	250000	176000	3.37	-	-	-	-
Anil Debbarma	Potato (TPS)	HPS II/67	0.08	0	95	0	74000	250000	176000	3.37	-	-	-	-
Sambhuram Debbarma	Potato (TPS)	HPS II/67	0.08	0	94	0	76000	252000	176000	3.31	-	-	-	-
Subodh Debbarma	Potato (TPS)	HPS II/67	0.04	0	96	0	75500	250100	174600	3.31	-	-	-	-
Dani Ram Debbarma	Potato (TPS)	HPS II/67	0.08	0	95	0	76500	251500	175000	3.28	-	-	-	-
Rabindra Debbarma	Potato (TPS)	HPS II/67	0.08	0	94	0	76000	248000	172000	3.26	-	-	-	-

14. CASE STUDIES (SUCCESS STORIES) REPORTED BY THE NICRA KVKs

i) KVK, Imphal East, Manipur

Name of farmer	**Maibam Ibohal**
Age	**68**
Mobile	**8974112641**
Address	**Nungbrang**
Land holdings (Rainfed & Irrigated)	**0.25 (Rainfed)**
Livestock	**IFS**

Success story-1	
Technology demonstrated:	Low cost water harvesting structure Jalkund (Geo Membrane HDPE 300 micron)
Problem identified:	The riverine areas at Nungbrang Imphal East having sandy soil with high water seepage and infiltration rate where construction of farm pond is not feasible for taking up Fish, vegetable and animal based IFS model.
Description of technology:	Jalkund was made up of 300µ Black HDPE poly-film with a size of 5m x 4m x 1.5m having 30000 litre water capacities was used for the farming purposed. Before constructing Jalkund, excavation was done by manual labour. After excavation of Jalkund structure the side and ground wall was plastered using clay. After drying of plastering, sufficient amount of banana leaf were laid on all around the wall and ground for giving a cushion before laying HDPE poly-film sheet. After laying the sheet all the sides were earthen up with soil. The source of the water is taken from nearby source like river and channel through HDPE 25mm pipe for taking up Fish, vegetable and animal based Integrated Farming system
Impact of intervention:	It was observed that with stored water in the *Jalkund*, farmers opted for crop production and rearing of pig and poultry. However, selection and adoption of a particular farm activity depended on resources available with them to bear initial expenditure and preferential food habit, and the income so generated also improved their standard of living. Water harvesting structure, Jalkund of size 5m x 4m x 1.5 m is found to be most effective for giving protective irrigation up to an area of 0.25 ha during long dry spells with proper irrigation practices and also met household water requirement by the Jalkund for at least 5 household during water scarcity period. Micro irrigation practices are preferred to ensure an effective

Impact of intervention:	utilization of the harvested water. Poly lining of the Jalkund, Geo membrane HDPE 250 µ poly film is recommended for areas having high seepage rate.
How the interventions minimized the impact of climate variability	Low cost water harvesting, Jalkund meet the water scarcity during pre-monsoon and post monsoon which cause drought due to high deviation of rainfall, -507mm(-42%) from Jan,2019 to Aug,2019) in the NICRA village. Also hampering the overall cultivation of Paddy and other farming activities. Such interventions make successfully developed Integrated Farming system using harvested water to minimize the impact of climate variability.
Yield and Economics:	Economic analysis of each activity was made with the aim to select or recommend a profitable activity for farmers, which they should adopt for properly utilizing stored water in the *Jalkund* as well as for maintaining their livelihood. Expenditure on seed/seedling, feed, fertilizers etc. has been included in the analysis. The construction cost of poultry and pig house has not been included as every household has such structure. The economic calculation was done on yearly basis depend on the type of activities. Local market price of each input was also taken into consideration. The total cost of production is calculated to Rs. 24,400/- with a Gross returned of Rs. 85,430 and a B: C ratio of 3.5 in a small holding area of 0.25ha.

ii) KVK, Senapati, Manipur

Name of farmer	**Tongjang Kipgen**
Age	**38**
Mobile	**8731959735**
Address	**Hengbung**
Land holdings (Rainfed & Irrigated)	
Livestock	**Poultry production**

Success story-1	
Technology demonstrated:	Backyard poultry rearing
Problem identified:	Before intervention, Mr. Tongjang Kipgen was rearing local birds and faced problems of mortality (65%)
Description of technology:	30 Gramapriya breed of poultry were provided as an intervention
Impact of intervention:	Higher income as compared to local birds

How the interventions minimized the impact of climate variability	Less mortality rate (6%) and can tolerate temperature stress
Yield and Economics:	Yield: Male: 3 kg/bird; Female:2.28 kg/bird; egg=102 eggs/bird Gross cost : Rs. 11800 Gross return : Rs. 20380 Net income : Rs. 8580 B:C ratio: 1.7:1

iii) KVK, Ukhrul, Manipur

Name of farmer	**Aphi**
Age	**46**
Mobile	**7628048310**
Address	**Ramva**
Land holdings (Rainfed & Irrigated)	**0.2 irrigated** **0.6 rain fed**
Livestock	**200 birds**

Success story-1	
Technology demonstrated:	Low Cost Rain Water Harvesting Structure for Live Saving Irrigation-Jalkund
Problem identified:	Non-availability of water(moisture) during rabi /dry spells And water loses while storing due to infiltration and seepage loses
Description of technology:	Ramva Village under Ukhrul block of Ukhrul District was selected as a representative village for implementing NICRA (TDC) Project by KVK Ukhrul, ICAR Complex for NEH Region, Manipur Centre as the village is frequently affected by moisture stress, land slide and irregularities of monsoon. As per bench mark survey 80% are marginal and economically poor farmers. Agriculture is the main occupation of the farming community with up land terrace Paddy and jhuming are the major activities with a productivity of 18.2 q/ ha followed by Maize, Mustard etc. vegetable and fruits cultivations were confined to Kitchen garden as a subsidiary income generation. Villagers also rear non-descript types of Cattle, Pig, and poultry.

Impact of intervention:	Technical guidance for laying out the Jalkund were imparted to the farmers and inputs like Silpauline lining (5mx4.5mx1.5m) size, digging cost @ Rs 2500/Jalkund, vegetable seeds (cabbage, French bean etc.) were also distributed to the selected farmers. Rain water of about 30,000 litters /Jalkund were harvested for judicious irrigation to vegetable crops and watering to livestock's and Poultry during lean period apart from domestic uses. Data on different aspects like total cost of constructing Jalkund, cost per litre water, total area irrigated, yield of vegetables were recorded from each beneficiary to work out the Economics and Cost –Benefit Ratio.
How the interventions minimized the impact of climate variability	The harvested rain water during the rainy season is used for supplemental irrigation to highly moisture stress rabi crops, vegetables and watering to livestock's. More over loses of water due to seepage and infiltration were drastically reduced thus making jalkund an efficient storage structure for this type of soil texture and topography.
Yield and Economics	Production and productivity of high value vegetable crops were increased up to 40% from the initial year for own consumption and for sell in local market. Beneficiaries could earn an average additional net income of Rs 12,000-15,000 /Jalkund/year with a BCR of about 2.1:1 from selling the high value vegetables at the cost of Rs 0.40/liter of rain water harvested in Jalkund from first year.

Name of farmer	**Somi AS**
Age	**55**
Mobile	**9862625202**
Address	**Longsang**
Land holdings (Rainfed & Irrigated)	**2 ha rainfed** **1ha irrigated by stream**
Livestock	**4 cow**

Success story-2	
Technology demonstrated:	Enhanced crop production by escaping moisture stress through early planting
Problem identified:	Moisture stress in maturity stage of Garden pea and lack of irrigation in rabi season

Description of technology:	Since moisture availability is one of the prime factors that determine crop production. However, it is not economical viable to go for irrigation throughout the season. Consequently, such studies which help in understanding to avoid stress during critical stages of water requirement for a particular crop are essential. Thus, in order to address the problem of frequent moisture stress KVK Ukhrul through awareness program among the farmers during training and field visit recommended to adopt early sowing of Garden Pea (mid early) during August and harvesting at October/November to escaping moisture stress during its maturity period, by altering time of sowing in the year 2016-18.
Impact of intervention:	Better growth was observed in the demonstrated plot due to moisture availability. 80% fruiting are expected during the beginning of rabi season. Farmers were able to harvest the pea before the festive season and fetch a good market for the green pea. With the success of the technology more farmers are interested to take up the technology wherever there is cultivable waste land. Socio-economic conditions of the farmer's are expected to improve due to better result.
How the interventions minimized the impact of climate variability	Early sowing in wet months has commonly been an advantage for this crops as it skips the critical stage of moisture stress thus suffered little or no damage and allowed to establish a healthy crops, even at the later stages frost might be an extra risk added if sowing late. It was found that early sowing (August) always have a assurance of adequate moisture in the soil, which will help in better growth and yielded in compared to late sowing (October). Thus this case study concluded that managing time of sowing and natural resources had provided enough moisture for sustaining a good harvest of the crops in the village. The same area can be sown by other vegetables/crops after the harvest of pea.
Yield and Economics	Production of pea was increased up to 33.3% in demonstrated field as compared to normal sowing time (farmers practise). Beneficiaries could earn an average additional net income of Rs 1,32,000 per ha with a BC ratio of about 3.2:1 as compared with local with a BC ratio of 1.8

iv) KVK, Jaintia Hills, Meghalaya

Name of farmer	Irene Dhar
Age	63
Mobile	8794374137
Address	Namdong, West Jaintia Hills
Land holdings (Rainfed & Irrigated)	0.2
Livestock	Poultry

Success Story - 1	
Technology demonstrated:	Backyard Poultry farming
Problem identified:	• Poor productive and reproductive performance of local poultry birds resulting in less income • High mortality rate
Description of technology:	Back yard poultry farming with improved chicken variety Vanaraja
Impact of intervention:	• Improve the socio economic condition of farmers by rearing improved chicken variety • It also generates employment opportunities for rural youth and farmers.
How the interventions minimized the impact of climate variability	• Climate variability often cause a huge loss to the farmers from crop production, therefore introduction of poultry sector can help farmers for sustainable income. • Introduction of Vanaraja in NICRA village results in low mortality rate as compared to other chicken varieties
Yield and Economics of demonstration	Gross Cost: Rs. 5,000.00 Gross return: Rs. 20,890.00 Net Return: Rs. 16,090.00 BCR: 3.13
Yield and Economics of local practice	Gross Cost: Rs. 4,125.00 Gross return: Rs. 13,876.00 Net Return: Rs. 7,745.00 BCR: 2.36

Name of farmer	Aicy Dhar
Age	52
Mobile	9774243833
Address	Namdong, West Jaintia Hills
Land holdings (Rainfed & Irrigated)	0.5
Livestock	Piggery

Success Story - 2	
Technology demonstrated:	Low cost water harvesting structure -Jalkund
Problem identified:	Lack of irrigation water during dry spell and rabi season
Description of technology:	Low cost rain water harvesting using jalkund for vegetables cultivation
Impact of intervention:	Rainwater can be stored directly in jalkund can be use for all year round production of vegetables and also the stored water can be use for piggery and poultry and even for rearing of fish.
How the interventions minimized the impact of climate variability	Climate variability can be minimized by rain water harvesting and its judicious use for crop production. Direct rainfall collection through jalkund can be highly beneficial for farmers for providing irrigation to crops during moisture scarcity conditions or dry spell during rabi seasons
Yield and Economics of demonstration	Broccoli: 125q/ha Tomato: 238.1 q/ha Gross Cost: Rs. 2,13,800.00 Gross return: Rs. 5,94,650.00 Net Return: Rs. 3,80,850.00 BCR: 2.78
Yield and Economics of local practice	Tomato: 204.5 q/ha Gross Cost: Rs. 1,43,150.00 Gross return: Rs. 1,00,500.00 Net Return: Rs. 42,650.00 BCR: 1.42

v) KVK, Ri Bhoi, Meghalaya

Name of farmer	Valarie Masharing
Age	46
Mobile	7640929118
Address	Kyrdem Village, Bhoirymbong Block
Land holdings (Rainfed & Irrigated)	5.1
Livestock	Poultry

Success Story - 1	
Technology demonstrated:	Innovative Micro-Integrated Farming System Model
Problem identified:	High risk with single enterprise for hill farmers
Description of technology:	A jalkund unit of size 5x4x2 ft^3 with a capacity of 40,000 liters of water was demonstrated by lining the jalkund with HDPE 1000 ų for effective storage of rainwater during kharif season. Fingerlings comprising of 100 numbers of Indian Major Carp was released into the jalkund unit .A poultry shed constructed nearby with 40 numbers of dual purpose Vanaraja breed of poultry which act as a source of nutrients and biomass for fish helps in growth of phytoplankton and zooplankton apart from giving additional income from meat and eggs
Impact of intervention:	With the inculcation of scientific approach like micro IFS unit of different components has not only enhanced her resource use efficiency in existing production system but also helped her to climb up a step towards sustainability of small holder family farming production system in future by mitigating its negative environmental effect through proper recycling of nutrients and resources.

Yield and Economics of demonstration:

Sl. No	Interventions	Output	Gross Income (Rs.)	Net Income (Rs.)	B:C ratio
1.	Poultry meat	Avg. Weight-4.5 kg	32,400	20,400	2.7:1
2.	Poultry eggs	108 no./yr/ bird	27,000	22,300	6.2:1
3.	Fish	30 kg/ jalkund	6000	4870	5.3:1
4.	Gerbera	40 flower/ plant/ year	52,300	41,840	5.0:1
		Total	**1,17,700**	**89,410**	

Name of farmer	Biona Lymphuid
Age	46
Mobile	
Address	
Land holdings (Rainfed & Irrigated)	3.1
Livestock	

Success story-2					
Technology demonstrated:	Climate Resilient Backyard Poultry Breeds through raised poultry house				
Problem identified:	Low productivity of local poultry breed				
Description of technology:	Breed: Kuroiler, Floor space- 1sqft/bird/day				
Impact of intervention:	Mortality reduced by 16% Growth rate enhanced by 734.8%.				
How the interventions minimized the impact of climate variability	For contented management and increased body growth rate				
Yield and Economics:	S. No.	Particulars	Indigenous	Vanaraja	Kuroiler
	1	Average weight (kg/bird)	2.1	4.5	3.4
	2	Cost of rearing (Rs/bird)	210	300	300
	3	Sale Price for meat(Rs/bird)	360	810	612
	4	Sale price for eggs (Rs.)	336 (42 nos./ year)	864 (108 nos./year)	720 (90 nos./year)

vi) KVK, West Garo Hills, Meghalaya

Name of farmer	Shri Niksheng Sangma
Age	42
Mobile	9366773589
Address	Norangre, West Garo Hills
Land holdings (Rainfed & Irrigated)	Rainfed – 0.165 ha
Livestock	NIL

Success story-1	
Technology demonstrated:	Winter vegetable cultivation using Jalkund
Problem identified:	Scarcity of irrigation water during rabi season and Low yield
Description of technology:	Pit dug in upland area of size : 5 m x 4m x 1.5 m; Placed with 300µ Silpaulin Harvest : 30,000 litres of water Crops: Cole crops, Tomato, Chilli
Impact of intervention:	Before intervention, Shri Sangma cultivates only few plants of cabbage around 2000 nos. in 450 sq. m due to scarcity of irrigation water.
	After training programme imparted by KVK, he construct a Jalkund of size 5 m x 4 m x 1.5 m with a storage capacity of 30,000 litres of water under the supervision of KVK scientific KVK staffs
	Due to storage of water during rainy season, he could cultivate Cole crops, tomato and chilli in an area of 0.165 ha of his farm and sold in local market with a good monetary net return of Rs.60, 500 /- from his small land.
	Shri Sangma expressed his willingness to expand more areas under vegetable in future and moreover the nearby farmers are very much convinced with the technology which showed their eagerness to practice the same in the next coming season.
How the interventions minimized the impact of climate variability	Minimize the moisture stress conditions of winter vegetables
	Increases the cropping intensity
	Breaks the traditional culture of sole cropping
	Increases the economic and livelihood condition of the farmer

Yield and Economics:	Activity	Pre- intervention	Post- intervention				
	Winter vegetables (During 2019)	Only few plants of cabbage (2000 nos.) were grown during rabi season	Cabbage var. Rareball, Area = 500 m^2, Spacing = 45 x 45 cm , No. of plants= 2500, Avg. wt./ pl. = 1.0 kg, Yield (kg) = 2500, Selling price per kg = Rs. 10	Cauliflower var. Swati, Area = 300 m^2, Spacing = 45 x 45 cm , No. of plants= 1500, Avg. wt./ pl. = 1.0 kg Yield (kg) = 1500, Selling price per kg= Rs. 10	Broccoli var. Indame pirate, Area = 250 m^2, Spacing = 45 x 45 cm, No. of plants= 1250, Avg. wt./ pl. = 0.80 kg Yield (kg) = 1000, Selling price per kg= Rs. 20	Tomato var. US- 1080, Area = 350 m^2, Spacing = 50 x 50 cm ,No. of plants= 1400, Avg. no. of fruits/ pl= 15, Avg. wt./ pl. = 1.2 kg, Yield (kg) = 1800, Selling price per kg= Rs. 15	Chilli var.NS-1101 Area = 250 m^2, Spacing = 50 x 50 cm ,No. of plants= 1000, Avg. wt./ pl. = 0.15 kg ,Yield (kg) = 150, Selling price per kg= Rs. 40
	Income generated (Rs.)	Rs. 24000/-	Rs. 25000/-	Rs. 15000/-	Rs. 20000/-	Rs. 27000/-	Rs. 6000/-
	Total :	Rs. 24,000/-	Rs. 93,000/-				
	NR (Rs.)	Rs. 10,500/-	Rs. 60,500/-				
	B:C ratio	1.78	2.86				

vii) KVK, Lunglei, Mizoram

Name of farmer	H Lalnunmawia
Age	54
Mobile	9862751397
Address	Chanmari, Hnahthial
Land holdings (Rainfed & Irrigated)	2.5 ha
Livestock	NIL

Success story-1	
Technology demonstrated:	Demonstration on stress tolerant crops 'Dragon fruit'
Problem identified:	Water stress
Description of technology:	Crop name : Dragon fruit Variety : Hylocerous undatus

Impact of intervention:	Demonstration of water stress tolerant crops dragon fruit has positively impact on the agricultural system of MR H Lalnunmawia. Before the adoption of this technology he engaged in Jhum cultivation, pig rearing and cultivation of vegetable crops. The village has experiences diverse climatic condition i.e. erratic rainfall, moisture stress etc. After the intervention of KVK Lunglei under NICRA project in convergence with State Horticulture department his income doubled to 3.5 lakh from this crop. Now he is living in a comfortable life and now could manage all his family expenses from his farming enterprise. Due to his successful cultivation of dragon fruit he motivate other farmers and now more than 10 farmers are starting cultivation of this crops.
How the interventions minimized the impact of climate variability	The intervention made double his income. At the beginning his area is only 0.25ha and now extended in 1.5ha under dragon fruit cultivation. Due to his successful cultivation of dragon fruit he motivate other farmers and now more than 10 farmers are starting cultivation of this crops. In 2018 he started cultivation of 250 tree in an area of 0.25 has income of Rs 50,000. In 2019 he extend his farm area with 480 tree and this led increase his income to Rs 3,50,000 per year
Yield and Economics:	Mr Lalnunmawia could double his income from the second year of cultivation of these stress tolerant crops. In 2018 he started cultivation of 250 tree in an area of 0.25 has income of Rs 50,000. But in 2019, his income increase to Rs 3,50,000 per year.

Name of farmer	H Lalhmingzuala
Age	57
Mobile	9436775315
Address	Tuipui D, Hnahthial
Land holdings (Rain-fed & Irrigated)	1.5 Ha
Livestock	Nil

Success story-2	
Technology demonstrated:	**Low cost water harvesting structure 'Jalkund'**
Problem identified:	Less water supply during the lean period

Description of technology:	Low cost water harvesting structure 'Jalkund' capacity of 30,000 L. Size 5x4x1.5 m^3
Impact of intervention:	Mr. Lalhmingzuala motivate others farmers to manage mid season drought through low cost water harvesting structure. Jalkund helped in supplemental irrigation in winter crops and feeding of livestock during lean period. By adopting this technology he made agriculture as a profitable venture taking the advantage of rainwater harvesting besides increase in crop productivity, increase farm income. Farmers of the adjoining village also adopted the Jalkund on their farm after seeing the success of Mr Lalhmingzuala
How the interventions minimized the impact of climate variability	Mizoram experiences the highest acute shortage of water during winter season which minimize the chances for cultivation of rabi crops and cultivable land remains fallow, excess rainfall during rainy season causes extreme leaching and loss of nutrient from soil
Yield and Economics	The farmer is realizing an annual income of Rs 2,50,000 /ha/yr. by using improved Jalkund water to different crops with B:C ratio of 3.05.It improved the economic status of his family and he could respond area under other crops.

viii) KVK, Dimapur, Nagaland

Name of farmer	Prakash Longmailai
Age	42
Mobile	8794226136
Address	Dhansripar
Land holdings (Rain-fed & Irrigated)	3.9 Ha
Livestock	NIL

Success story-1	
Technology demonstrated:	Popularization of Toria var. TS-67 as second crop after paddy
Problem identified:	Mono cropping due to long duration rice variety and moisture stress
Description of technology:	Sequential cropping using medium duration rice variety and Toria (TS-67) to utilize the residual moisture

Impact of intervention:	An additional yield of 7.10 q/ha of toria could be achieved after main crop rice.
How the interventions minimized the impact of climate variability	Being medium duration in rice variety it gives sufficient time to go for second crop to utilize the residual moisture.
Yield and Economics:	Rice : 33.55 q/ha & Toria 7.10 q/ha
	Crop Equivalent yield (E.Y.)
	E.Y. of rice = 3355 x 15/15 = 3355 kg/ha
	E.Y of toria = 710 x 40 /15 = 1893.33 kg/ha
	Rice Equivalent yield of the system = 3355+ 1893.33= 5248.33 kg/ha
	Gross cost= Rs 43500 Gross return = Rs 78724.95 Net return = Rs 35224.95 B:C Ratio = 1.79:1

Name of farmer	Hamjen Thaosen
Age	28
Mobile	8257060154
Address	Doyapur
Land holdings (Rain-fed & Irrigated)	3.5 ha
Livestock	200

Success story-2	
Technology demonstrated:	Vanaraja “dual purpose bird”
Problem identified:	Low production potential of local/desi birds

Description of technology:	100 nos. of day old Vanaraja poultry chicks were given to Hamjen Thaosen. He maintained the chicks under intensive system for one month and supplemented with starter feed. This was done in order to reduce the chances of mortality due to stress and cold. The birds were vaccinated against Ranikhet, Gumboro and fowl pox diseases with the technical guidance of KVK Dimapur. Later on the birds were let loose in the backyard for scavenging and maintained with locally available maize grain, broken rice and minimum supplementation of vitamins and minerals that reduced the feed cost in subsequent period. Clean drinking water was provided to the birds *ad libitum* throughout the period. The daily operation in poultry unit was managed by family labour.
Impact of intervention:	He is a young budding entrepreneur and is an example to the educated unemployed youth. Besides earning an additional income of Rs. 996/bird, it has created an employment for him round the year. With the experience gained from his farm and benefit realized, has empowered him to increase the capacity from 100 birds to 200 birds now.
How the interventions minimized the impact of climate variability	When the climatic conditions do not favour the normal agriculture activities as agriculture is extremely vulnerable to climate change resulting in reduced yield of desirable crops while increasing the water needs. Improved dual purpose bird like Vanaraja may be the choice of bird to compensate these losses as these birds due to their physical adaptability to the diversified agro-climatic conditions are very sturdy. Have better production potential in terms of meat and egg with minimum investment.
Yield and Economics:	The average body weight was recorded randomly at weekly interval. The average body weight was 2.8 kg/bird with 16th weeks of age with average egg production of154 egg/bird/year. The eggs were mostly used for home consumption and some were sold @250 per tray. The extra adult male was culled on 145th day with average body weight of 3 kg/bird and sold @Rs. 300/kg. The survival percentage was 88.25. He could earn a net profit of Rs. 996/bird.

ix) KVK, Mokokchung, Nagaland

Name of farmer	Nangshikaba
Age	48
Mobile	9436201229
Address	Aliba village
Land holdings (Rainfed & Irrigated)	4.1 ha
Livestock	Pig and poultry birds

Success story-1	
Technology demonstrated:	Backyard poultry farming
Problem identified:	Small body size and low egg production in local birds
Description of technology:	Shri Ngangshikaba from Aliba village, Mokokchung District, Nagaland maintained about 20 local hens for egg production. It was estimated that the average egg production of his hens to be 60-70 eggs/hen/year. He faced a critical financial hardship for livelihood as his earning was very meagre. It was felt the need to introduce a dual purpose poultry birds to uplift his economic status. Therefore, Vanaraja birds which are dual purpose was introduced through NICRA project under backyard poultry farming
Impact of intervention:	With the intervention of KVK staff under NICRA project he was invited to a training programme on Management of small poultry units using improved variety i.e. Srinidhi. He was well-trained and exposed to the rearing of Srinidhi, a dual purpose and multi-coloured chicken suitable for rural poultry farming with a potential to produce 100% more eggs of 13-15 g heavier weight as compared to non-descript/ local breed under backyard poultry farming system. After being trained, 20 nos. of Srinidhi chicks were given to him and timely check up and vaccination was conducted. The birds were provided with locally available feed ingredients like rice bran, vegetables leaves, waste rice, wild lettuce, and egg shell etc. apart from small quantities of poultry feeds. Although there was some mortality the remaining chicks performed very well and he expanded his unit.

Impact of intervention:	Regarding health management Tetracycline, Sulphadrugs, piperazine liquid at 2-3 months intervals was advocated under the supervision of Animal Science discipline of KVK. At present he has 4 male, 15 female, 3 of which is in egg laying, 4 mothers in hatching and 61 young chicks. He also supplied hatching eggs to the interested poultry raisers @ Rs. 20/egg and also managed to incubate the hatching eggs and chicks so produced were sold to other mates @ Rs. 65/ 30-45 days old chicks. He sells birds' @ Rs. 200/kg live body weight at his doorstep.	
Yield and Economics:	**A. Cost of production**	
	Cost of bird @ Rs. 65/bird of 45 days old	4250
	Cost of bird feeds/year	17650
	Cost of medicine, vaccine etc. @ Re. 0.5/bird	3000
	Misc.	1000
	Total	**25900**
	B. Gross income	
	Sale of matured birds @ Rs.200/kg/year	17500
	Sale of 920 eggs @ Rs.15/egg	13800
	Sale of 187 30-45 days old chicks @Rs. 65/chick	12155
	a) Stock in hand of 58 kg @Rs. 200/kg for 4 male & 15 females	11600
	b) Stock in hand, 61 nos. of 6 weeks old birds	3965
	Total	**59020**
	C. Net income	
	Sale proceed	59020
	Cost of production	25900
	Total	**33120**

x) KVK, Mon, Nagaland

Name of farmer	Mr. Angpa Konyak
Age	52 Years
Mobile	8119809992
Address	Village- Ngangching, Post Office- Aboi, District- Mon, Nagaland- 797 603
Land holdings (Rainfed & Irrigated)	Rainfed- 5 ha; Irrigated- 2.5 ha
Livestock	Pig- 02 no.; Poultry- 05 nos.

Success story-1	
Technology demonstrated:	Cultivation of Rapeseed crop under Zero tillage practices after rice fallow
Problem identified:	Less farmers income and loss of residual soil moisture in winter season due to conventional tillage practices
Description of technology:	Mr Angpa Konyak sown preceding crop was local paddy (150 days). The KVK Scientist visited to his field and analyzed the soil. The soil was acidic (P^H 5.0- 5.4) in reaction and medium in available nitrogen (268-278 kg/ ha), phosphorus (20.10 to 27.20 kg/ ha) and potassium (132.8 to 146.50 kg/ ha). The average moisture status of the soil 18.11% up to 15 cm and 20.33% 15- 30 cm layer of soil was observed before planting of the crop. No farmyard manure and chemical fertilizers was applied to the crop. The crop was sown in the last week of October to broadcast method and thinned one week after germination to spacing of 15 cm plant to plant. Rapeseed variety TS 38 was used after rice fallow in lowland situation. Yield performance of rapeseed varieties were evaluated under zero tillage cultivation and compared with crops grown under conventional tillage was demonstrated. Since there was no rain throughout the crop period, the growth and yield parameters in the rapeseed variety TS- 38 was better in zero tillage practices than conventional tillage due to residual soil moisture after rice harvest.
Impact of intervention:	Mr. Angpa Konyak, of Ngangching village Aboi block Mon district is adopting the technology, improved their income, by getting average net profit of Rs. 8500 per ha within 4 months with low investment of Rs. 5000 per ha. By observing the standing crop in the field altogether, 10 farmers across in Aboi area Mon district adopted this technology and the area coverage under zero tillage cultivation of rapeseed- mustard increased to 20 ha. Under the water stress situation

Impact of intervention:	where there was no rainfall during the crop period of rabi season, rapeseed (TS 38) gave maximum average yield of 6.75 q/ ha under zero tillage cultivation.
How the interventions minimized the impact of climate variability	The present success story in the farmer's field indicated that rapeseed- mustard is a climate resilient crop which can be grown without water in the residual soil moisture. By adopting zero tillage, the farmers could increase the productivity, reduced cost of cultivation thereby increasing the cropping intensity and earning the additional income for them with less effort. Zero tillage also helps in timely sowing (October), conserving soil moisture and requires less water, saves tillage cost and time, and the soil is also protected from erosion due to the retention of surface residues thus reducing organic matter depletion. The improved version of this zero tillage cultivation and no chemical method of plant protection may be recommended to the resource poor farmers of the district in the context of climate change.

Yield and Economics:

Crop productivity and economics of rapeseed crop in rice fallow

Seed Yield (q/ ha) ± SD	Gross cost	Gross return	Net return	B: C ratio
6.75± 1.78	5000	13,500	8500	2.70
5.50± 2.51	7500	11,000	3500	1.47

Name of farmer	Smt. Eyam Konyak
Age	55
Mobile	8974993561
Address	Ngangching Village, P.O Aboi, Nagaland-798 603
Land holdings (Rainfed & Irrigated)	Rainfed- 3ha & Irrigated- 1.5 ha
Livestock	Poultry- 10 and Pig-02

Success story-2	**Popularization of Climate resilient poultry bird Kuroiler for backyard poultry rearing.**
Technology demonstrated:	Poultry (Kuroiler)

Problem identified:	Backyard poultry is a source of livelihood among the farming community. However, poor body weight gain and low egg production of desi bird is the major problem in the backyard poultry rearing.		
Description of technology:	Climate resilient poultry Kuroiler birds perform better grow faster and produce more eggs than the desi birds even under low input system of rearing having high immune competence for survivability. Four hundred eighty (480) Kuroiler chicks (vaccinated, 2 weeks old) were distributed among 80 farmers from two (2) villages under NICRA programme of Krishi Vigyan Kendra Mon, Nagaland in the year 2019. Kuroiler chicks were procured from Kegg Hatcheries Private Limited, Gurgaon through Private Agency. Farmers kept the birds in houses that were constructed with locally available materials such as bamboo, wood and palm leaves having raised floor (machang type housing). Broken rice was the main source of feed.		
Impact of intervention:	Farmers were economically motivated after seeing the worth of the technology and decided to form 3 new Self Help Groups comprising of 10 women farmer to take up backyard poultry as a venture for additional income. These farmers approached the KVK Mon for supply of vaccinated poultry Kuroiler chicks. Some farmers purchased Kuroiler chicks from the market for their own for backyard rearing. The initative taken by KVK Mon was able to attract farmers from the adjoining villages also because it is less capital intensive with sustainable economics returns and acts as livelihood oriented enterprise for small and marginal farmers of the district.		
How the interventions minimized the impact of climate variability	Kuroiler birds are dual purpose breed producing more egg and meat than the desi birds. They are relatively resistant to various poultry diseases; thrive well on locally available feed resources and good scavengers. They perform well in mid altitude areas of 1000 msl and suitable for geo-climatic condition of Mon district Nagaland. Farmers in this region mostly practice Jhum in upland hilly terrain thereby increases the chances of crop failure due to changing climate scenario. Hence, backyard Kuroiler farming has the potential to stabilize farm income and to bridge protein supply gap by improving the livelihood of the tribal farmers.		
Yield	**Sl. No.**	**Parameters (average)**	**Result**
	1.	Body Wt. 4th weeks (kg)	0.728
	2.	Body Wt. 8th weeks (kg)	1.450
	3.	Body wt. 12th weeks (kg)	2.4 00
	4.	Age at 1st egg (days)	160-180
	5.	Annual egg production (nos.)	105

	Particulars	Gross Cost (Rs.)	Gross Return (Rs.)	Net Return (Rs.)	B.C. ratio
Economics	Economics of demo (Rs/ farmer)	1188/-	3024/-	1836/-	2.54
	Economics of check (Rs/ farmer)	465.72/-	598.50/-	132.78/-	1.3

xi) KVK, Phek, Nagaland

Name of farmer	Mr. Huluvo
Age	61
Mobile	7085385503
Address	Phusachadu
Land holdings (Rainfed & Irrigated)	1 ha, Rainfed
Livestock	Poultry, piggery

Success story-1	
Technology demonstrated:	Crop geometry in maize variety HQPM 1
Problem identified:	Haphazard and mixed sowing
Description of technology:	Variety – HQPM 1, spacing – 60x20 cm, seed rate – 20 kg/ ha and recommended POP
Impact of intervention:	Mr. Huluvo of Phusachadu village earned 47.54% more from HQPM1 cultivation over the traditional cultivation practice of local maize. The average increase in net earnings was Rs. 57720.00 for HQPM 1. Thus, it is evident that the HQPM 1 cultivation has considerable potential to increase the net farming profitability for the farming community in Phek District of Nagaland. The cultivation of HQPM 1 resulted in marginal rise in individual farmer's income. A total of 3 ha area was covered under the participatory demonstration and 6 beneficiaries were benefited under the NICRA project.
How the interventions minimized the impact of climate variability	The recommended package of practice was followed by the farmer hence the incidences of insect pest was minimum which did not affect the crop yield. The crop geometry enhanced the crop growth and yield as it allowed fair distribution of sunlight, eased the intercultural operations and harvesting of the crop.

Yield and Economics:	The yield obtained from HQPM 1 was 42.36 q/ha while the yield from the local cultivar was 22.32 q/ha. The cost incurred for cultivation was Rs. 27000.00 in demonstration while in check it was Rs. 25000.00. The income generated was Rs. 57720.00 and Rs. 19640.00 respectively. The cost benefit was 3.13 and 1.78 respectively

xii) KVK, Dhalai, Tripura

Name of farmer	Gautam Das
Age	43 yrs.
Mobile	9366563343
Address	Anil Chandra Das, Methirmia, Kuchainala, Dhalai, Tripura – 799 287
Land holdings (Rainfed & Irrigated)	Rainfed= 4 ha Irrigated= 1.5 ha
Livestock	Fishery+ duckery + goatary + Cattle

Success story-1	
Technology demonstrated:	Straw mulching in bitter gourd cultivation
Problem identified:	Straw mulching is used to avoid moisture stress, weed competition, improve fruit quality, less used of irrigation, labour intensive, cost intensive , competition in diary sector as most of the fodder suppress due to used to full cover of paddy straw.
Description of technology:	For these technologies Paddy straw was used to conserve the soil moisture, and to suppress the weed competition. Further, by use of short duration and high yielding varieties of vegetables allowing rice to vacate fields in September-October, the traditional rice-fallow cropping can be converted into the rice-vegetable system. Bitter gourd is one of most suitable and remunerative crops, but productivity of the crop is low due to moisture stress. Therefore, the sustainable management of soil moisture in rice fallow land requires knowledge of the site-specific mulching. By this, it offers an excellent opportunity to grow bitter gourd was carried out at farmers' field to conserve and utilized residual soil moisture and enhanced the farmers'

Description of technology:	income. Due to limited irrigation facilities and stress on natural resources, getting high yields with minimal input and use of mulching can play a big role in water conservation.
Impact of intervention	His success influenced and motivated the neighbouring farmers. As loss of Soil water and weed growth is observed reduced in mulch crop. As a result, more uniform soil moisture is maintained and irrigation frequency is reduced. The growth of plants on mulch is observed twice that of plants in un-mulched soil. Because larger plants will require more water, mulching is not a substitute for irrigation. Fertilizer beneath the mulch is not lost by leaching so that fertilizers are optimally used and not wasted.
How the interventions minimized the impact of climate variability	As mulching acts protecting covering of the crops and also controls the variation in temperature, improves the physical, chemical and biological properties of soil. The twenty to thirty days old seedlings was transplanted in main field and after 20 days the crop was mulched by using paddy straw, which helps in conserving soil moisture. Moreover, bitter gourd vines have a trailing growth habit, and the vines can spread on ground. In either case weeds can pose major challenge in the initial growth period therefore the suppression of weeds is more important and saves their crops from wilting and dying. Moreover, it is found that mulches boosts up yield by 20-60% as compared to traditional cropping system. And first harvesting of fruit is done 20-25 days after fruit setting. Crop advancement by 15-20 days can fetch a good price for such vegetable produce.
Yield and Economics	Yield: The farmers can obtained an average yield of 245 q/ha to 268 q/ha by following this technology
	Economics: An average gross cost: 85,000-90,000/-
	Net return: 3,67,500 to 3,92,000/-
	BCR: 4.3

Name of farmer	**Taj Uddin Ahmed Khan**
Age	**43yrs.**
Mobile	70059 43694
Address	**S/O: Lt. Sayed Ahmed Khan Methirmia, Kuchainala Durgachowmuhani Block, Dhalai – 799 287**
Land holdings (Rainfed & Irrigated)	**Rainfed: 3.2 ha. Irrigated:0.8 ha.**
Livestock	**Duckery, fishery, goatary**

Success story-2	
Technology demonstrated:	Integrated farming System (IFS: Fishery + Duckery + Horticulture + Agri.) module
Problem identified:	Lack of knowledge on scientific fodder crop cultivation, non-availability of planning material, lack of knowledge on scientific fish rearing.
Description of technology	A productive pond was selected for construction of duck house. A bamboo made semi-permanent type of duckery house near the corner of the pond in (0.16 ha) area were constructed. And the embankments of this pond was utilized by planting Areca nut seedling along with some vegetables like pigeon pea, bottle gourd etc. This gives him additional income and home consumption. For fish - cum – duck integration Khaki Campbell species of duck was recommended to the farmers. • Khaki Campbell duck species: 30 nos. • Fingerlings of the size of 5-10 cm were selected. • A combination of 3 (three) species of fish viz. Catla (30%), Rohu (40%) and Common carp (30%) were selected.
Impact of intervention	His success influenced neighbouring farmers so much that many other farmers get interested and adopted the IFS models in their farm. So far 4 IFS models have been established in Methirmia village under Durgachawmuhoni block, Dhalai, District, Tripura. He became the role model for establishing a successful Integrated farming System in that village.

How the interventions minimized the impact of climate variability	Introduced climate resilient crop varieties, duckery introduced with fishery, recycling of nutrient.
Yield and Economics	The farmers can obtain an av. Production of fish = 1380 kg
	Eggs from Duck=6000 nos., Horticulture/ veg. sell = 70,000 Duck sell=90 nos./ Rs.330
	Economics : An avg. gross cost= 1,03,180, Gross Return= 4,10,860
	Net income= 3,07,680
	BCR= 3.98

xiii) KVK, Khowai, Tripura

Name of farmer	Sri. Mitra Debbarma
Age	50
Mobile	8974868466
Address	Village: North Pulinpur, P.O: Duski, District: Khowai, Pin Code: 799203, State: Tripura
Land holdings (Rainfed & Irrigated)	Area: 0.96 ha
Livestock	Cow- 2 nos., Pig -3 nos., Poultry-25 nos., Duck- 2 nos.

Success story-1	
Technology demonstrated:	**Bitter gourd cultivation with paddy straw as mulch material**
Problem identified:	North Pulinpur is one of the draught prone tribal inhabited ADC villages of the district Khowai under the state Tripura. The total geographical area of the village is 950 hectare with cultivable area of about 250 hectare only among 806 farm families. So, most of the families are holding either small or marginal farms. There was no perennial streams, rivers, ponds and other irrigation facilities in the village. Prevailing temperature ranges from 16°C to 37°C. Annual rainfall ranges from 2050 to 2550 mm, but almost whole amount goes out to neighbouring lower elevated village. Agriculture is the mainstay of the people, about 85 percent of them engage in agriculture

Problem identified:	ture and its allied activities. Farmers earned their livelihood from rain-fed rice based mono-cropped cultivation. Moisture stress during Kharif dry spell and winter season which lead to rice based mono-cropping system.
Description of technology	1. Use of Bitter gourd variety Jyoti bolder 2. Time of planting: First week of January 3. Use of straw mulching to cope up with the adverse climatic condition was special practice. It helped to reduce soil moisture loss as well as for easy trailing of the bitter gourd vines on the ground. 4. Use of Balanced fertilizer as recommended by soil testing report.
Impact of intervention	Mr. Mitra Debbarma is a progressive farmer of North Pulinpur ADC village; he and his entire family are involved in agriculture. Under the technical guidance of Krishi Vigyan Kendra Khowai, Tripura he has sown bitter gourd in an area of around 0.12 ha. He got an average yield of 97 q/ha & earned a net amount of 2, 40,400.00/ha by selling the produce in the local market.
How the interventions minimized the impact of climate variability	Mulches are loose covering or sheets of material placed on the surface of cultivated soil. Depending on the type of mulches used, there are many benefits of mulching including: helps soil retain moisture during summer, suppress weeds, regulate soil temperature, improve fertility and soil health. Mulching helped to reduce soil moisture loss as well as for easy trailing of the bitter gourd vines on the ground.
Yield and Economics:	**Yield:** 97 q/ha
	Gross Cost (Seeds, fertilizers and manures, Labourers) : 1,42,500.00/ ha
	Gross Return: 3,82,900.00/ha
	Net Return: 2,40,400.00 /ha
	B.:C Ratio: 2.68

Name of farmer	Mrs. Sarubala Debbarma
Age	42
Mobile	9612755365
Address	Village: North Pulinpur, P.O: Duski, District: Khowai, Pin Code: 799203, State: Tripura
Land holdings (Rainfed & Irrigated)	Area: 1.12 ha
Livestock	Goat-3 nos., Poultry-21 nos., Cow-2 nos., Pig-6 nos.

Success story-2	
Technology demonstrated:	**Water saving paddy cultivation in SRI**
Problem identified	Erratic Rainfall during Kharif Season
Description of technology	Use of variety: Gomoti, Time of transplanting: First week of July, Wider spacing i.e. 25x25 cm row to row and plant to plant, Transplanting of Single seedling per hill and younger seedlings (8-14 days old) from 3-4 leafs, Use of Balanced fertilizer as recommended by soil testing report, Use of Weeder for weeding.
Impact of intervention	Mrs. Sarubala Debbarma is a progressive farmer of North Pulinpur ADC village. After KVK intervention Mrs Saubala Debbarma got huge success in paddy production, on an average she got a yield of 72 q/ha. She has earned a gross return of around Rs. 86,000.00/ha
How the interventions minimized the impact of climate variability	In Tripura conventional method of rice cultivation is predominantly cultivated. Transplanting requires at least 25 ha-cm of water for puddling operation, which creates a dense clay layer in the sub-soil to prevent seepage losses. The crop requires 130 cm-ha of irrigation water in addition to adoption of suitable variety and application of recommended dose of fertilizers to realize a yield levels of 5-6 ton/ha. Generally a huge quantity of irrigation water goes to paddy cultivation of the state. It is estimated that flooded rice field produces a very huge quantity of methane gas which is responsible for global warming. The current practice of excessive exploitations of ground water has led to decline in the quality of soil and water. . SRI consumes relatively less water compared to conventional flooded rice. SRI benefits fewer incidences of pests and diseases, Reduced chemicals fertilizer and Less Lodging.

Yield and Economics	**Yield:** 72 q/ha
	Gross Cost (Seeds, fertilizers and manures, Labourers): 50,000.00/ha
	Gross Return: 86,700.00/ha
	Net Return: 36,700.00/ha
	B.:C Ratio: 1.73

15. STATUS OF FUNDS RECEIVED AND EXPENDITURE DETAILS DURING 2019-20

(Rupees in Lakh)

Sl. No	KVK/ ICAR-ATARI, Zone-VII	Unspent 2018-19	RE for the year 2019-20				Actual Funds Received 2019-20				Expenditure as per RE 2019-20			
			Grant-in-Aid General (REVENUE)		Grant-in-Aid General (CAPITAL)	TOTAL	Grant-in-Aid General (REVENUE)		Grant-in-Aid General (CAPITAL)	TOTAL	Grant-in-Aid General (REVENUE)		Grant-in-Aid General (CAPITAL)	TOTAL
			Operational	TA	Equipment		Operational	TA	Equipment		Operational	TA	Equipment	
1	2	3	4	5	6	7=4+5+6	8	9	10	11=8+9+10	12	13	14	15=12+13+14
I	ATARI, Zone-VII, Umiam	0.02260	6.00000	1.00000	0.41000	7.41000	5.97864	0.99886	0.40990	7.38740	5.51658	0.99053	0.40000	6.90711
II	KVKs													
1	Dhalai	0.00000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000
Govt. of Tripura		0.00000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000
2	Dimapur	0.22745	7.00000	0.55000	0.41000	7.96000	6.77255	0.55000	0.41000	7.73255	4.84109	0.29202	0.41000	5.54311
3	Umiam	0.28267	7.00000	0.55000	0.41000	7.96000	6.71733	0.55000	0.41000	7.67733	6.71952	0.35049	0.41000	7.48001
4	West Garo Hills	0.16858	7.50000	0.55000	0.41000	8.46000	7.33142	0.55000	0.41000	8.29142	6.21250	0.30056	0.41000	6.92306
5	Ukhrul	1.14920	7.00000	0.55000	0.12000	7.67000	5.85080	0.55000	0.12000	6.52080	7.27500	0.00000	0.12000	7.39500
ICAR, Umiam		1.82790	28.50000	2.20000	1.35000	32.05000	26.67210	2.20000	1.35000	30.22210	25.04811	0.94307	1.35000	27.34118
6	Imphal East	0.40792	7.00000	0.55000	0.41000	7.96000	6.55274	0.58944	0.40990	7.55208	7.14748	0.41734	0.39386	7.95868
CAU, Imphal		0.40792	7.00000	0.55000	0.41000	7.96000	6.55274	0.58944	0.40990	7.55208	7.14748	0.41734	0.39386	7.95868
7	Jaintia Hills	0.00029	8.00000	0.70000	0.41000	9.11000	7.99971	0.70000	0.41000	9.10971	8.00000	0.70000	0.41000	9.11000
Govt. of Meghalaya		0.00029	8.00000	0.70000	0.41000	9.11000	7.99971	0.70000	0.41000	9.10971	8.00000	0.70000	0.41000	9.11000

8	Lunglei	0.00000	7.00000	0.55000	0.40000	7.95000	7.00000	0.55000	0.40000	7.95000	7.00000	0.55000	0.40000	7.95000
9	Serchhip	0.00000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000
Govt. of Mizoram		0.00000	14.00000	1.10000	0.81000	15.91000	14.00000	1.10000	0.81000	15.91000	14.00000	1.10000	0.81000	15.91000
10	Mokokchung	0.00000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000
11	Mon	0.00000	7.00000	0.55000	0.58000	8.13000	7.00000	0.55000	0.58000	8.13000	7.00000	0.55000	0.58000	8.13000
Govt. of Nagaland		0.00000	14.00000	1.10000	0.99000	16.09000	14.00000	1.10000	0.99000	16.09000	14.00000	1.10000	0.99000	16.09000
12	Phek	0.54652	5.00000	0.55000	0.41000	5.96000	4.45348	0.55000	0.41000	5.41348	4.25824	0.33279	0.14168	4.73271
NRC Mithun		0.54652	5.00000	0.55000	0.41000	5.96000	4.45348	0.55000	0.41000	5.41348	4.25824	0.33279	0.14168	4.73271
13	Senapati	0.00000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000
FEEDS Manipur		0.00000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000	7.00000	0.55000	0.41000	7.96000
14	West Tripura	0.00000	7.00000	0.50000	0.41000	7.91000	7.00000	0.50000	0.41000	7.91000	7.00000	0.50000	0.41000	7.91000
RSK Kolkata		0.00000	7.00000	0.50000	0.41000	7.91000	7.00000	0.50000	0.41000	7.91000	7.00000	0.50000	0.41000	7.91000
Total KVKs		2.78263	97.50000	7.80000	5.51000	110.81000	94.67803	7.83944	5.50990	108.02737	93.45383	6.19320	5.22554	104.87257
GRAND TOTAL (I+II)		2.80523	103.50000	8.80000	5.92000	118.22000	100.65667	8.83830	5.91980	115.41477	98.97041	7.18373	5.62554	111.77968

15. STATUS OF FUNDS RECEIVED AND EXPENDITURE DETAILS DURING 2019-20

(Rupees in Lakh)

Sl. No	KVK/ ICAR-ATARI, Zone-VII	Unspent 2018-19	RE for the year 2019-20				Actual Funds Received 2019-20				Expenditure as per RE 2019-20			
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Govt. of Tripura		0.00000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000	7.00000	0.55000	0.31000	7.86000
2	Dimapur	0.22745	7.00000	0.55000	0.41000	7.96000	6.77255	0.55000	0.41000	7.73255	4.84109	0.29202	0.41000	5.54311
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