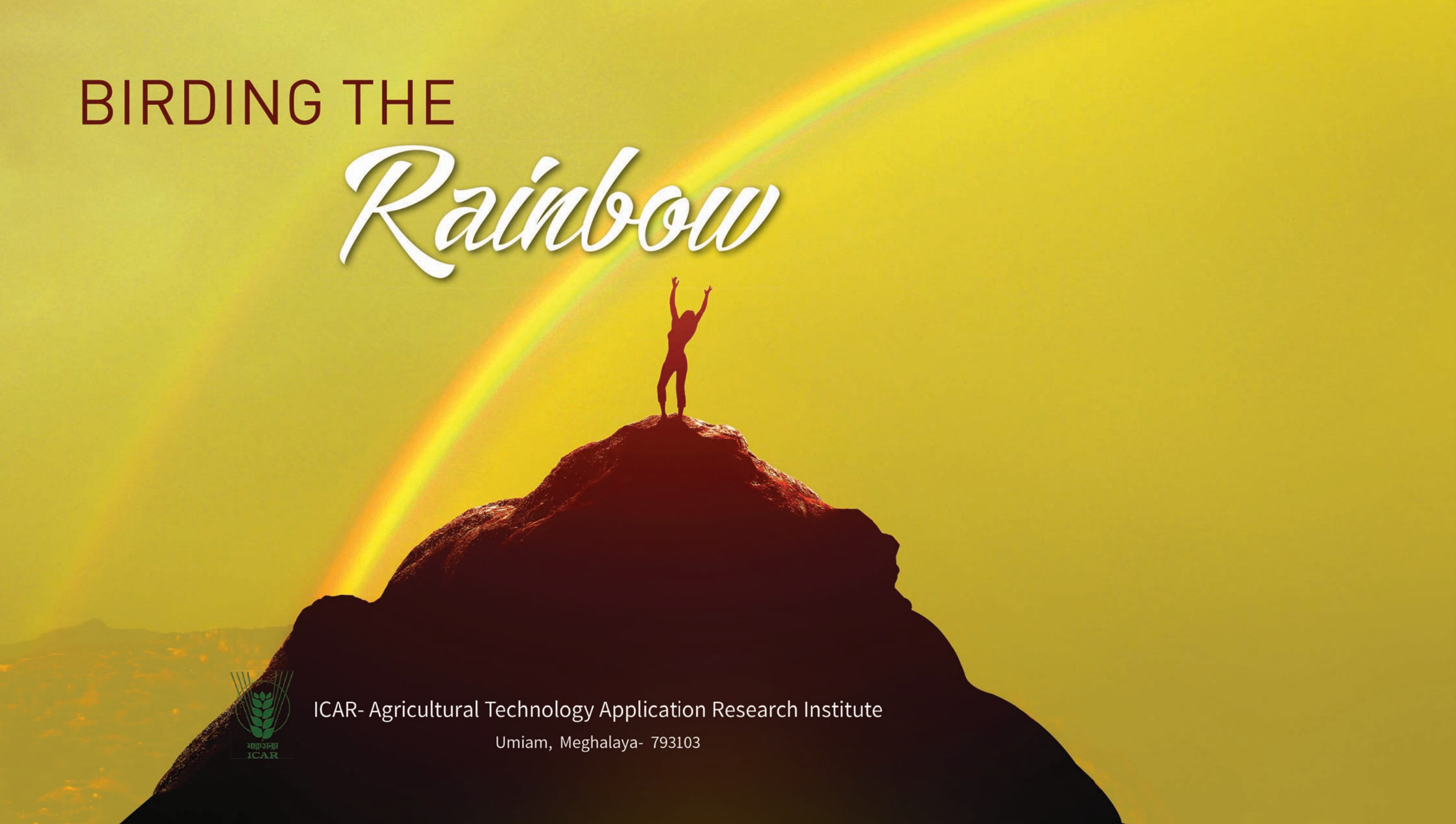
BIRDING THE *Rainbow*



ICAR- Agricultural Technology Application Research Institute

Umiam, Meghalaya- 793103

BIRDING THE *Rainbow*

a glimpses of success stories...

BIRDING THE
Rainbow

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PREFACE

ICAR-Agricultural Technology Application Research Institute (ATARI), Umiam, Meghalaya with its 83 Krishi Vigyan Kendras (KVK) across entire Northeast India has been working as a frontline extension education organization to cater the needs of various stakeholders including farmers of the region. The Institute through various flagship programmes of ICAR, *viz*., Mera Gaon Mera Gaurav (MGMG), Pulses and Oilseeds Cluster Demonstrations, Skill Development on Agriculture through ASCI, Attracting and Retaining Youth in Agriculture (ARYA) and Farmers FIRST etc has been trying very hard to improve the economic conditions of the farmers in association with the KVKs, Assam Agricultural University, Central Agricultural University, ICAR Institutes and other line departments in the region. KVKs of the region are addressing the location specific problems of the respective districts and providing the need based solution to such problems with utmost sincerity and dedication. These flagship programmes and such other routine activities of KVKs have created the environment for entrepreneurship development in the field of agriculture and allied disciplines in the region.

While working with the farmers, the KVKs have been able to generate adequate motivation and enthusiasm in the minds of the farmers besides introducing several new innovations in the farmers' field with active involvement of the farmers through the OFTs/ FLDs and skill development programmes. Some of these activities have been finally reflected as success stories and few of them have been incorporated in this publication so as to encourage the KVKs and farmers for their significant work. We sincerely hope this publication will encourage many other KVKs to replicate such successes in other villages in order to double the income of the farmers by 2022. We acknowledge the services rendered by the staff of the KVKs of the region and ICAR-ATARI, Umiam including the RAs/ SRFs/ DEOs for their input in bringing out this publication in time.

(Bidyut C. Deka)
Director

CONTENT

GROUP FARMING IN PUMPKIN BRINGS PROSPERITY TO FARMERS OF NALBARI, ASSAM

INTRODUCTION

Mr Pankaj Kalita, Balitara village under Nalbari district started his career as a teacher in a college, but due to his keen interest in farming he had chosen agriculture as source of livelihood way back in 1996. Initially, his income from his farm activity was meagre and the devastating flood in 2004 had further weakened his economic condition due to silt deposition in his entire paddy field of 2 hectare. To overcome his grim situation Mr. Kalita visited the newly established Krishi Vigyan Kendra (KVK) at Nalbari in the month of September, 2004. The KVK scientists advised him to sow coriander in his silt deposited fields to earn some income. The performance of coriander was excellent and he earned a good amount from coriander that year. This had given him lot of confidence to plan his entire agricultural activity in a different way. Later on, under the technical guidance of KVK, Mr Kalita started cultivation of pumpkin in an area of 1 hectare in 2009 along with other crops and could earn Rs. 89,750.00.

KVK INTERVENTION

Having seen the profitability of pumpkin he approached KVK, Nalbari and discussed about forming a SHG for cultivation of seasonal vegetables in the bank of Pagladia River in Balitara, Nalbari. As per the advice of the KVK, Nalbari a group of youth under the leadership of Mr. Kalita formed **Seven Star Vegetable Grower Society** in 2012 and expanded the cultivation of pumpkin. In 2013, with the advice of the KVK he advanced the sowing time of pumpkin from October-November to July-August to reduce the irrigation cost in silt deposited river bank. In the same year, Mr. Kalita initiated zero tillage technology for raising pumpkin in his field with the advice of KVK, Nalbari.

OUTPUT

Mr. Kalita and his group with technical guidance from KVK, Nalbari cultivated pumpkin in 20 hectares of land on the bank of river Pagladia in Nalbari in 2014 and earned Rs. 10.00 lakh as net profit. In 2015 they got huge success by earning Rs. 15.0 lakh from the same area.

OUTCOME & IMPACT

Looking into the success other villagers also started pumpkin cultivation and in 2016. A group of six youth under the leadership of Mr. Kalita formed another Farmer club "Jyoti Farmers Club" and cultivated pumpkin in an area of 40 hectares and earned net profit of Rs. 21.00 lakh. Now, the Balitata village is known as Pumpkin village of the district Nalbari in Assam. The wholesalers from state like Tripura and Nagaland besides Assam are lifting the pumpkin by truck from the field itself.

Now, there has been horizontal spread of pumpkin cultivation in Nalbari district.The neighboring districts of Kamrup and Baksa of Assam have also stated the cultivation of pumpkin in large scale. In 2017, NABARD has awarded "Jyoti Farmers Club" as the best FPO of the state for their achievement in mobilizing the youth of the district. Mr. Pankaj Kalita has also received Jagjivan Ram Abhinav Kisan Puraskar 2016 from ICAR for his work.

BLACK POLYETHYLENE MULCH: A BOON FOR PINEAPPLE CULTIVATION IN NAGALAND

INTRODUCTION

Pineapple (*Ananas comosus*) is one of the important fruit crops of Dimapur district of Nagaland occupying the total area of 3700 ha with a production of 57,500 t with the average productivity of 15.54 t/ha. In Dimapur district of the state pineapples are grown in hillocks with the slope of 30-40% as beyond that soil erosion is very high during rainy season and experienced moisture scarcity during winter. Prior to KVK intervention, pineapple was cultivated at single row spacing of 1 meter square along the slope for the ease of weeding in an area of 5-6 hectare in Molvam village, Dimapur. In this system of planting the productivity of the crop is very low with higher level of soil erosion.

KVK INTERVENTION

The KVK, Dimapur organised hands on training on pineapple cultivation during 2002 with the latest technology of double row spacing @ 90 x 60 x 30 cm^3 across the slope to accommodate plant population of 44,500/ha. The KVK in collaboration with the Department of Horticulture, Govt. of Nagaland and CIH, Medziphem worked hand in hand to popularize double row spacing in pineapple during 2006-12. The farmers' income of the village increased significantly during the period. However, farmers were looking for some technology to reduce the cost of weeding. Therefore, in 2013-14, KVK Dimapur under TSP programme introduced black polythene mulching in pineapple and the mulch materials having the thickness of 50 µ were provided to the farmers of Molvam.

OUTPUT & OUTPUT

With the introduction of double row spacing, the area under pineapple had been increased to 520 ha in Malvom village during 2014-15 with or without mulching. The use of black polythene mulching not only suppressed the weed growth but conserved the soil moisture, which leads to early flowering in mulch plot by 6-7 months i.e. flowering started after 9-10 months of planting in Jan-Feb where as in control the flowering was observed only after 15 months of planting in September. First year nearly 7.5-10% plants only flowered. Next season nearly 50% plants flowered. Soil moisture was conserved by polythene mulch which could produce the double size fruits. The average fruit weight was recorded 2.1 Kg/fruit under polyethylene mulch with an average productivity of 750 q/ ha compared to 1.2 kg/ fruit in control plot with average productivity of 400 q/ ha.

IMPACT

Pineapple cultivation with polythene mulch has been gladly accepted by the farmers as this technology has reduced the cost of weeding in subsequent years although the initial cost of cultivation i.e. laying of black polythene sheet and labour cost @Rs 1,85,000/ha was high. Now, the pineapple cultivation with black polythene mulch with double row spacing i.e. 90 x 60 x 30cm having plant population of 44500/ha is gaining popularity in many of the villages of Nagaland.

BITTER GOURD WITH PADDY STRAW MULCHING IS GAINING POPULARITY IN TRIPURA

INTRODUCTION

Mr. Kali Charan Debbarma, a farmer of village North Pulinpur under block Teliamura was a poor farmer with limited resources and was unable to meet the demand of his family. The scientists of KVK, Khowai visited his land (0.8ha) in 2011 which usually remained fallow after rainfed kharif paddy. He had no scope to take second crop due to scarcity of water in other seasons of the year.

KVK INTERVENTION

A Front Line Demonstration (FLD) on cultivation of bitter gourd was conducted by KVK in the paddy fallow land with paddy straw mulching during 2012 having the thickness of 3-4 inch with high yielding variety "Jyoti Bolder" in 1000 m^2 land of Mr. Kali Charan Debbarma. During the demonstration, the other farmers were also given hands on training about the spacing, fertilizer doze and other intercultural operations.

OUTPUT & OUTCOME

After getting confidence of growing bitter gourd with straw mulching with assured profit, Mr. Debbarma had increased his area for cultivation upto 1.0 acre in 2013. He provided life saving irrigation by using harvested rain water from nearby pond. The total net return from his fallow land of 1 acre was Rs. 85800 from his bitter gourd crop.

Looking into the success of Mr. Debbarma the other farmers of the village also came forward and adopted Mulching technology in bitter gourd in the village and the detail is shown in the following table.

Interventions	Extent of adoption in the village in ha				
	2012	2013	2014	2015	2016
Mulching in bitter gourd	Nil	Nil	1.12	8.00	12.0

IMPACT

Now most of the farmers of the village have accepted this technology under water stress situation. Both the area and production of bitter gourd started improving with an average productivity of 97.5 q/ha. These efforts of KVK have motivated the farmers to adopt this climate resilient technology for higher return.

OYSTER MUSHROOM CULTIVATION ENHANCES FARM INCOME IN MEGHALAYA

INTRODUCTION

Mushrooms play an important role in the rural livelihood as different species of wild mushrooms are available in deep jungles of West Khasi Hills. Farm women collect seasonal mushrooms grown wild in the jungle during lean period for family nutrition and also earn extra family income. The availability of these wild mushrooms is limited only for few months in a year which is not sustainable. With recent incidents of wild mushroom poisoning in different parts of Meghalaya, collection and consumption of wild grown mushroom is at stake for farming community. In order to promote the cultivable species of mushroom which is safe and rich in nutrition, Krishi Vigyan Kendra, West Khasi Hills has identified oyster mushroom cultivation as a thrust area.

KVK INTERVENTION

Oyster mushroom cultivation was first introduced in Tengri village, West Khasi Hills, Meghalaya by KVK West Khasi Hills during 2013-14 with a view to promote cultivated species of mushroom and uplift the nutritional status of farm families in remote areas. Awareness Programme was conducted on the importance and nutritional benefits of mushrooms. Method demonstrations were also conducted on cultivation technology of oyster mushroom. Smt. Billinda Syiemlieh, a progressive farmer from Tengri village adopted the technology and started cultivation on a larger scale. Mushroom spawns were regularly supplied by KVK West Khasi Hills from Division of Plant Pathology, ICAR for NEH Region, Umiam.

OUTPUT & OUTCOME

At the onset of the adoption of the technology, Smt. Billinda Syiemlieh invested Rs. 9400/- for one unit of mushroom cultivation which included

Training and Demonstrations

Demonstration unit in smt. Billinda Syiemlieh's farm

50 mushroom beds. The total cropping period was 45 days approximately, where 90 kg of fresh mushrooms were harvested. The gross return was Rs 13500/- and the net return was Rs 4100/-. The benefit cost ratio was calculated to be 1.43. From second year onwards, she expanded her cultivation area by building two more low cost cropping houses. KVK West Khasi Hills has taught her low cost spawn multiplication technique. She

has started multiplying mushroom spawn in her own multiplication unit. Now, she is the most successful mushroom grower in West Khasi Hills district, Meghalaya.

Smt. Billinda Syiemlieh is now a role model for other farmers as she has come out successfully in adopting the technology. Many farmers got exposure for adoption of the technology as she conveyed the message on importance of growing mushrooms from her own experience in trainings and programmes conducted by KVK, West Khasi Hills. Now the technology has spread to as many as 8 villages in West Khasi Hills covering 30 numbers of mushroom growers in the district.

IMPACT

Farm women admitted their productive utilization of leisure time which otherwise they spend by chitchatting with other folks in the evening. They also quoted that by working just two hours in the evening for two three days, they can harvest 8 to 10 times in a period of 45 to 50 days. In fact, they said it is more convenient and remunerative to grow at home throughout the year rather than collecting wild seasonal mushroom from the jungle.

INTERCROPPING OF GINGER WITH SOYBEAN INCREASES FARMERS' INCOME IN MIZORAM

INTRODUCTION

More than 70% of the total population is living in rural areas in Mizoram and most of them have been cultivating crops in jhum field resulting in heavy soil erosion. Ginger is one of the main cash crops where almost every farmer cultivates in their field. Ginger cultivation in jhum land leads to very heavy losses of top fertile soils not only in the current year but also in the next harvesting year.

KVK INTERVENTION

Krishi Vygian Kendra, Serchhip district introduced intercropping of ginger with soybean in terrace land in the year 2013- 2015 as On Farm Trials in farmers'field. Training and group discussions with farmers were organized. The rhizome seeds (50 kgs), soybean seeds (1 kg) manure (Neem cake 50 kg) and fertilizers (NPK as recommended dose) were given to the selected farmers. The technology makes the cultivation more profitable by intercropping soybean with ginger in same plot of land. More over the cultivation is carried out in the terrace land where there is very less erosion of top fertile soils. Mulching is done on the terrace with saw dust/ cut grass; this reduces the weed growth before the soybean grows. When the soybean grows up it acts as a shade as well as the mulch materials for ginger. Soybean being a Nitrogen fixing crop provides Nitrogen, thereby making mutual benefit to each other.

In the year 2015-16, the technology was selected for Front Line Demonstration where 10 farmers from 4 villages were selected for the demonstration.

Technology	Yield q/ ha	Net Return(Rs./ha)	B:C ratio
Intercropping of ginger with soybean under rainfed terrace cultivation	Ginger – 208 Soybean –15	Ginger 2,45,000/- + Soybean 90,000 **Total = 3,35,000.00**	2.64

OUTPUT & OUTCOME

Great enthusiasm was aroused amongst the farmers of different villages after witnessing the results of FLD. Mr Vanrinmawia from N. Vanlaiphai, Mrs. C. Ropiangi from Khawlailung, and Mr. Lalnudika from Chekawn were the few farmers among the many farmers who adopted the technology. The income of the farmers increased 3 fold after adopting the technology due to decrease in disease and pest intensity, decrease in depletion of soil and nutrient, reduction in weed infestation and increase water holding capacity of soil. This has finally resulted into the higher benefit cost ratio owing to less requirment of total mandays.

IMPACT

More farmers are adopting the technology and the famers who adopted the technology increased their cultivation area. Farmer having terrace land shifted their cropping pattern and changed their crops to ginger cultivation intercropped with soybean.

DOUBLING FARMERS INCOME BY PROTECTED CULTIVATION OF VEGETABLES

INTRODUCTION

The productivity of vegetables in Ri-Bhoi district of Meghalaya is very low due to diverse climatic condition viz., high rainfall during rainy season, moisture stress, frost during winter season, poor soil nutrient due to losses resulted by the process of leaching, toxicity of iron and aluminium etc. The protective cultivation is the best alternative for regulating the above factors as per requirement of the crops in order to realize the maximum potential of the crops. It also helps in raising good quality nursery of crops and also protect the crops from extreme and unseasonal weather conditions.

KVK INTERVENTION

Keeping the above situation in view, KVK Ri Bhoi introduced low cost polyhouse technology using locally available raw materials like bamboo for off seeason production of vegetables in Kyrdem village under TSP programme through FLD programme. Hands on training and demonstration were conducted for cultivation of vegetables like tomato, capsicum, brinjal, cabbage, bitter gourd etc. By spending Rs. 15000, low cost polyhouse of 100 m² size was constructed. Training, exposure visits, farmer-scientist interactions, field days were organized to showcase the technologies to the neghnouring farmers and villagers for large scale adoption.

OUTPUT & OUTCOME

The result showed that the vegetable production in protected condition round the year was increased by 138 per cent as compared to normal cultivation. Similarly the net return was almost double/ tripple in most of the vegetables compared to outside cultivation.

Table . Vegetable production round the year

Crops	**Variety**	Net return inside polyhouse (Rs/ unit/yr)	Net return outside (Rs/unit/yr)	B:C ratio (Polyhouse)	B:C ratio (Outside)
Tomato	Rocky	21000	10600	1.88	1.44
Brinjal	Chhaya	18000	15000	1.67	1.56
Bitter gourd	Abhishek	16500	4500	1.55	1.15
Capsicum	Royal Wonder	21700	3700	1.85	1.44
Lettuce	Grand Rapids	1000	475	3.00	1.95
Broccoli	Pushpa	16500	9450	1.89	1.51
Cucumber	Malini	5000	2450	1.31	1.15

IMPACT

The farmers are very happy with the technology as their crops are protected especially during the nursery stage. The off season vegetables provide good prices to the farmer. The technology has now spread in 3 neighboring villages covering 19.5 ha benefiting 84 farmers of the villages.

JALKUND BASED VEGETABLE CULTIVATION STIMULATES AGRI-PRENEURSHIP IN SIKKIM

INTRODUCTION

Nandok village in East district of Sikkim is suitable for the cultivation of horticultural crops due to its unique geographical location. This village receives normal annual rainfall of 3057.3 mm in kharif and 269.1 mm during rabi season. Its vicinity to the state capital Gangtok provides opportunities to quickly market the produce with good returns. During the last decade, the village has become vulnerable to the adverse effects of climate change such as drought, erratic rainfall pattern, wind and hail storms. Cultivable land is facing soil erosion during kharif and acute shortage of water for cultivation of rabi vegetable crops. Winter precipitation during the last decade has significantly diminished leaving the farmers with reduced opportunities of rabi vegetable cultivation. However, the farmers revealed immense willingness to grow rabi vegetables if assured water supply is made.

KVK INTERVENTION

After assessment of water related problems in the village, Krishi Vigyan Kendra, ICAR Research Complex for NEH Region, Sikkim Centre, East Sikkim, Ranipool intervened with the different activities under NICRA to increase the water use efficiency. During the bench mark survey, PRA and focused group discussions, rainwater harvesting and storage in farm ponds for efficient utilization of rainwater was identified as a suitable intervention. Climate resilient technologies to enhance productivity and income and sustain livelihoods of the farmers in the village were also prioritized.

Mr. Gokul Rai volunteered to adopt the pond technology with capacity of 40 cu m (size: 5 m x 4 m x 2 m) on his farm. He constructed a *jalkund* for rainwater harvesting in which the runoff from the village streams was harvested and judiciously used as supplemental irrigation to grow organic cabbage, cauliflower, broccoli, and vegetable seedlings under low cost structures and manage mid-season drought.

OUTPUT & OUTCOME

Pre-intervention, Mr. Gokul Rai was confined to only single crop of maize during kharif; leaving the field fallow during rabi season. The returns from farming were very nominal. Increased availability of water encouraged Mr. Rai to diversify the cropping system with organic cabbage, cauliflower, broccoli cultivation and vegetable seedlings production under low cost structures during the rabi season. Efficient use of farm pond water to irrigate rabi crops during dry spells with micro-irrigation systems (sprinkler and drip) made vegetable production a profitable venture for him. It increased the cropping intensity from 100 to 216 per cent and the net returns multiplied manifold from Rs. 16,500/- to Rs. 85,250/- from his 0.45 ha of net arable land. Mr. Rai is now a successful farmer showing the path to other farmers to manage mid-season drought through farm pond technology

IMPACT

Mr. Rai has emerged as a commercial vegetable seedlings producer and a role model for other traditional farmers and educated youth. He has become an effective techno-agent and supplies quality seedling. He disseminates technical know-how which he constantly updates with the help of scientists and officers of KVK, East Sikkim.

In recognition of his achievements in Nandok village, East Sikkim, Mr. Gokul Rai was felicitated by Sh. D. N. Takarpa, Hon'ble Minister, Food Security and Agriculture Development Department, Government of Sikkim as Best Rural Youth Farmer on the 38th Foundation Day of ICAR Research Complex for NEH Region, Sikkim Centre, Tadong in 2013. Besides, he also manages Farm Field School on Vegetable Seedlings Production under Low Cost Structure sponsored by ATMA, East Sikkim.

INCREASING RICE PRODUCTION THROUGH SRI TECHNOLOGY IN TUENSANG, NAGALAND

INTRODUCTION

More than 70% of the total area is under rice production in Tuensang, Nagaland. The district is hilly terrain where mechanization is almost impossible resulting higher cost of production with low output. Intensifying rice cultivation under TRC/WRC with appropriate technologies can enhance the production and productivity while conserving Jhum area to some extent. Under such situation, *System of Rice Intensification (SRI)* may be the most promising sustainable option for the farmers.

KVK INTERVENTION

Krishi Vigyan Kendra, Tuenchang introduced System of Rice Intensification technology during 2009 through 'On Farm Trial' in farmers' field with the backup of required training. The result generated lot of enthusiasm in the minds of the beneficiary farmers. Therefore, Frontline Demonstration was conducted in partnership with Eleutheros Christian Society, Tuensang and NABARD in Longra and Sangsangnyu village in 2011 involving 23 farmers covering an area of 5 ha.

OUTPUT AND OUTCOME

Performance of the technology under demonstration was much better than the conventional practice with an average increase of 54% and 44% in both the villages. Average yield under SRI was 47.30q/ha and 36q/ha in Longra and Sangsangyu, respectively.

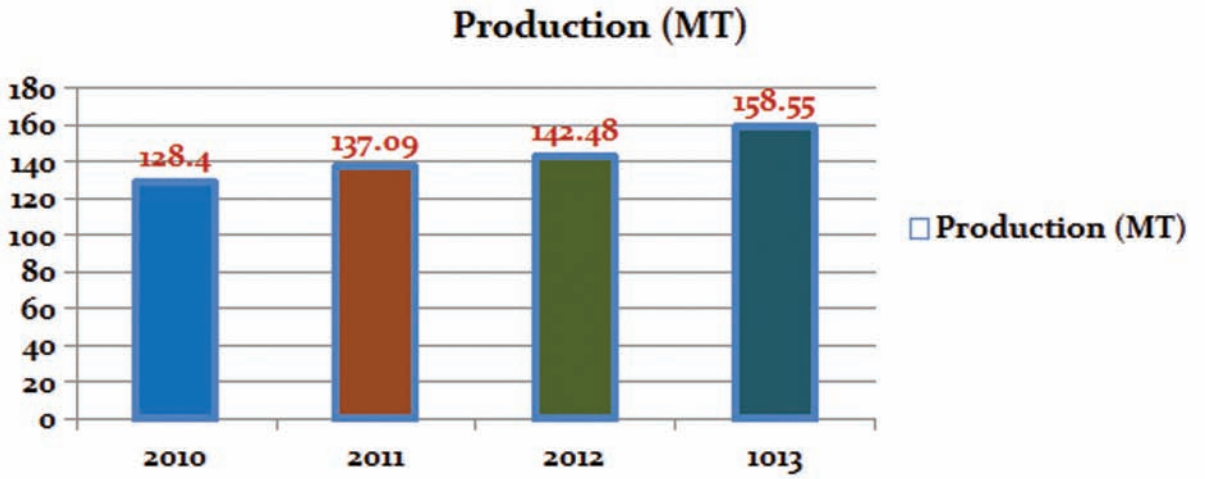


Fig-Rice Production status under TRC in Longra village

The success of SRI technology aroused different level of interest among the farmers. The farmers of Longra village released a mass declaration to adopt SRI technology on 3rd December 2011. The farmers of the villages even went on to state that in their 50 years of practicing terrace rice cultivation, they had never witnessed such bumper yield, that too with a single seedling. The success of this intervention led to 98 new farmers declaring full adoption of the new technology paving way for the sponsoring agency NABARD Dimapur to extend the assistance for another year.

IMPACT

With the introduction of System of Rice Intensification technology, the overall production of rice in the village has increased linearly during last four years (Fig). Due to popularization of SRI among the villagers, the households practicing *Jhum* in 2013 has been reduced to 47 from 167 in 2016. Longra village has now become a model SRI village in the locality. Since 2016, under the funding of Ratan TATA Trust through NEIDA initiatives SRI technology is being disseminated in 23 more villages in Tuenchang district by Eleutheros Christian Society in collaboration with KVK, Tuenchang.

FARMERS PROSPER THROUGH SUGARCANE CULTIVATION IN TINSUKIA, ASSAM

INTRODUCTION

In Margherita block of Tinsukia district in Assam, sugarcane is the important commercial crop grown next to tea and *Khasi* mandarin. People of this area are mostly scheduled tribe and mainly depend on agriculture for their livelihood. Mr. Mukheswar Kachari (42 years), a farmer of Ulup village has two ha of land. Few years back, he was growing local variety of sugarcane by using traditional system of cultivation without any scientific inputs along with *Khasi* mandarin and tea. But, he was not economically benefitted with sugarcane cultivation and hence, concentrated on growing tea in his land.

KVK INTERVENTION

The KVK scientists surveyed the sugarcane growing area of Margherita block and the problems were screened. The low yield of sugarcane was attributed to the various attacks of pests and diseases mainly sugarcane plassey borer, inadequate irrigation facilities, lack of HYV etc. KVK scientists demonstrated high yielding, pest and disease tolerant sugarcane variety 'Barak' developed by Sugarcane Research Station, Buralikson, Assam Agricultural University in 1 bigha (1333 m^2) area and conducted training regarding scientific methods of cultivation of high yielding sugarcane variety in the year 2012-13.

OUTPUT AND OUTCOME

Before KVK intervention, Mr. Kachari earned only Rs. 0.65 lakh/ha with Benefit: Cost ratio 1.25 by cultivating local low yielding sugarcane variety under very subsistence management. After KVK interventions, Mr. Kachari was able to get a net return of Rs 1, 44,800.00 / ha with a B: C ratio of 1: 3.88 from sugarcane cultivation in the year 2013-14. Better return from the new variety with scientific management has motivated him to purchase a sugarcane crushing machine. At present, he is earning more income by selling jaggery. Following the success, Mr. Kachari extended his cultivation in 1 ha land in the next year.

IMPACT

Looking into the success of sugarcane cultivation of Mr. Kachari, the other farmers of the village started cultivating high yielding variety of sugarcane and presently the cultivation is spreading horizontally in nearby villages covering an area of 15 ha. Several youth came forward for its cultivation and got bumper harvest during the year 2015-16 with a production of 40 tonnes per ha with an economic return of Rs. 2, 16,000.00.

These efforts of KVK, Tinsukia have motivated the farmers to adopt the scientific methods of sugarcane cultivation and to take up cultivation of this crop for higher economic return. As a result, both production and area under sugarcane in Tinsukia district has started improving.

ABHISHEK: A HIGH YIELDING VARIETY OF RICE SUITABLE FOR NORTH SIKKIM

INTRODUCTION

Rice is the staple food grain in Sikkim next to maize and grown exclusively during kharif season. The rice productivity of Sikkim is at a very dismal figure of average 18 quintal ha^{-1}. Most of the farmers are hesitant to take up rice cultivation as its total factor of productivity is declining and its profitability is in question with the rise in input costs. Hence new innovations and initiatives are required to make rice production system more sustainable and economically profitable. Under these circumstances, introduction of highly improved and high yielding varieties which performs well under Sikkim condition is one of the good options.

KVK INTERVENTION

In order to meet the future food demands for the teeming population of the district, Krishi Vigyan Kendra, North Sikkim, Mangan took up Front Line Demonstration (FLDs) to identify suitable paddy variety adaptable for the local farming community and the programme was successfully demonstrated by introducing a high yielding variety of paddy "Abhishek" from CRRI, Cuttack.

Abhishek was selected to demonstrate its productivity potential through System of Rice Intensification (SRI) and Organic Nutrient Management to test its adaptability. Demonstration was performed at KVK farm for On Station Trial (2014) followed by FLDs at different villages of Lower Dzongu area during two consecutive seasons (2015 &16) and the seeds were also sent to other districts of the state to test for its adaptability in the third season (2016).

OUTPUT & OUTCOME

Unlike other varieties, with a duration of 135-140 days, this variety was ready for harvest within 115-120 days after sowing. Even if there was delay in transplanting due to delay in harvest of previous crops or late release of water in the seasonal streams, the crop could be harvested with good yield. Due to its early maturing character, its water requirement was also less, therefore can be grown even under rainfed condition. The average productivity across various location of the district was 28 q/ ha. The taste of the variety was good and liked by many people. Yield was significantly higher than any other varieties used by the farmers.

IMPACT

Being impressed by the yield and quality, the farmers have taken up the variety in large scale and some of the farmers of North Sikkim have already started purchasing the seeds from fellow farmers and started growing in their field owing to its high productivity.

POPULARIZATION OF MEDIUM DURATION HYV OF PADDY IN MIZORAM

INTRODUCTION

Farmers of N.Vanlaiphai village, Serchipp , Mizoram have been cultivating more than one hundred year old local varieties of Paddy which are low yielding, tall stature, and sensitive to lodging and long duration (160 days maturity). These characteristics of old varieties do not permit timely land preparation and sowing of rabi crops due to which the fields remain fallow after paddy. Paddy are generally transplanted during 1st week of June and harvested during last week of November. The main reasons for introduction of CAU – R 1 is to increase paddy production as well as timely sowing of rabi crops after harvesting paddy.

KVK INTERVENTION

The KVK , Serchipp introduced CAU- R1 through OFT and FLD in the district with an aim to popularise double cropping by utilizing the residual moisture of paddy after harvesting. Good quality seeds were provided with hands on training for raising of nursery and line transplanting.

OUTPUT

With the adoption of medium duration HYV of Paddy (var. CAU – R 1), the average productivity recorded was 3 t/ha with a net return of Rs. 49,050/- per ha compared to local variety yielding 2.0 t/ha with a net return of Rs. 26,550/- .

OUTCOME/IMPACT

Intitially, 4 farmers have adopted the intervention of cultivation of medium duration HYV of Paddy (var. CAU – R 1) during the year 2015-16. Recently, 20 farmers from N.Vanlaiphai, Chhiahtlang, Serchhip and Chekawn villages adopted the technology in their 17 hectares of land. The average productivity of the variety was 3.2 t/ha with a net return of Rs 41200.

ENHANCING RESILIENCE TO FLOOD AFFECTED AGRICULTURE THROUGH PROPER DRAINAGE

INTRODUCTION

Floods, flash floods, and sand casting (deposition of large amounts of sand by flood water) are the most frequent water- induced hazards in Dhubri district of Assam. All of these hazards affect all aspects of the land, lives, and livelihoods of communities living in the district to a significant degree. Rice is the most important crop of Udmari village grown mainly as kharif as well as summer crop (early ahu). Flood is the major production constraint affecting *kharif* rice during growing period and summer rice at the time of harvesting. Submergence of crop for longer period of time during rainy season due to poor drainage resulted in crop loss in kharif rice which may go up to 20 to 100 per cent depending upon the duration of submergence.

KVK INTERVENTION

Considering the importance of drainage of excess water from crop field during kharif season in flood affected area, an intervention was made to remove excess water from crop field by renovating a drainage channel. This drainage channel was dug out long back; however due to poor maintenance, this channel was completely blocked by earth material leading to water stagnation or complete submergence of crop field. KVK Dhubri initiated a move to renovate the drainage channel in consultation with the local people and Village Climate Risk Management Committee (VCRMC), NICRA project.

OUTPUT & OUTCOME

Total 900 m length of the channel was renovated which is about 14 feet wide at the top and 10 feet wide at the base with depth starting from 4 feet to 7 feet. The dug out soil material was utilized for developing a rural road to the field by the

side of the channel. Immediate outcome of the renovation work was that there was no water submergence in rain during April-May, 2013 and the farmers were able to harvest their crop without any damage. This drainage channel was also utilized as water ways for carrying their produce from the field. Similarly, this drainage channel provided quick removal of excess water during *kharif* season and reduced the duration of submergence which could save *kharif* crops. Total area benefitted due to the drainage channel is 500 ha (both in kharif & summer season). It allows farmers to harvest summer/early ahu rice crop that increased the average net return from about Rs. 5,000 to Rs. 23,000 per hectare and benefit cost ratio from 1.3 to 1.8. The total area under rice crop has increased during both kharif and summer season and cropping intensity has increased to 150%.

IMPACT

The drainage channel not only benefited the farmers of villages under NICRA programme but also has benefited some other adjacent villages such as Udmari Part –III, Barsi, Diyabari, Andurjhar etc. covering an area more than 500 ha.

SAFE STORAGE OF GRAINS USING HERMETIC STORAGE BAGS IN SIKKIM

INTRODUCTION

Cereals and pulses (rice,maize,buckwheat,barley,rajma,greengram,blackgram,soybean.,etc.) are the major agricultural produces of Sikkim and they are used as grain, seed and animal feed. Farmers usually store their grains for six months to a year in local storage system and encounter with insect pest and fungal contamination. It has been estimated that one third of the grain crop is lost each year during storage due to infestation of insect-pest and mold growth. Sikkim being an organic state use of any chemicals and other non permissible material in agricultural commodity is strictly prohibited.

KVK INTERVENTION

Keeping in view of the above and based on the need of the farmers Krishi Vigyan Kendra, North Sikkim conducted 3 awareness programmes on seed storage in different locations during 2013-14. In 2014 GrainPro's SuperGrainbags (hermetic storage system) through On Farm Trial (OFT) were tested in farmers' field of Phydang,Tarang, Gnon, Gor, Phodong, phensong, Timchim villages so as to find out an alternative grain storage solution that maintains the quality of seeds. The cost of 50kg capacity bag is Rs. 210 only.

OUTPUT & OUTCOME

Looking into the success of the OFT, the same technology was demonstrated in the farmers field during 2015-16 and the seeds so stored were free from any infestation. The field study indicated that GrainPro's SuperGrainbag had superior ability to protest commodities from stored grain pest *i.e.* weevil, easser grain borer, rice moth, pulse beetle .etc., and molds upto to 2 years. Motivated by this success all together 150 farmers from west district of Sikkim adopted this technology.

Year	Crop tested	% infestation within one year
2014(OFT)	Maize and Paddy	Nil
2015(FLD)	Maize , paddy, barley and rajma	Nil
2016(FLD)	Maize , paddy, barley and rajma, millet and buck wheat	Nil

IMPACT

In 2017 the same was spread to other districts through the KVKs at South Sikkim and West Sikkim including the Department of Agriculture, Govt. of Sikkim. As reported during 2017, 600 farmers from the state have adopted this storage system for storing their seeds of maize, peddy, barley, rajma, millet, soybean and buck wheat.

BROOM GRASS-AN ALTERNATIVE TO *JHUM* CULTIVATION IN MIZORAM

INTRODUCTION

Kolasib District of Mizoram has high potential for the cultivation of broom grass other than Arecanut and Oil palm. Under Kolasib district, Thingdawl village is one of the major areas of Broom grass having an area of 80 ha with an average production of 3200 tonnes. The dwellers of the village used to harvest and collect the broom grass from the forest. Identifying the problems and their lack of knowledge, KVK Scientists surveyed and conducted several trainings on cultivation and management of broom grass and suggested them to adopt the scientific way of cultivation in their farm instead of collecting the same from forest. The main problems identified in Broom grass were mainly heavy infestation of aphids, improper spacing, poor nutrient management etc.

KVK INTERVENTION

Several on and off campus trainings were conducted in Thingdawl village during 2012-2014. FLD on Agronomic practices of broom grass with recommended spacing of 6ft X 6ft plant to plant and 4ft X 4ft row to row with other packages of practices was conducted in the village. Plant protection measures like sparying of Imidachlorpid (0.2%) and Dichlorvos @ 2.5ml in 1 litre of water for controlling Aphids infestation during the month of May and November were also taught during the demonstration.

OUTPUT& OUTCOME

With the adoption of scientific technology economic return of the farmers increased by more than 47 % during 2014-2016. One of the benefitting farmers Mr. Lalfela of Thingdawl village who is having an area of 2.5 ha of broom grass has achieved a Net Return of Rs 97,500.00/ ha in the year 2016 with a B:C ratio of 3.6 in dry forma as compared to Rs 45,000.00/ha with a B:C ratio of 2.1 prior to KVK interventions.

IMPACT

This small intervention of KVK, Kolasib, many farmers of Thingdawl and its neighboring villages have been motivated and came forward for its cultivation thereby adopting the scientific management and cultivation of broom grass for higher economic return. This intervention has also reduced the dependence of farmers in the forest for their livelihood.

NEW TORIA VARIETY BRINGS YELLOW REVOLUTION IN DIBRUGARH, ASSAM

INTRODUCTION

Lezai Miripathar Gaon and Janjimukh village, located near the river *Burhidihing,* under Barbarua block of Dibrugarh district are affected by flood every year. Both the villages are being inundated by the water of *Burhidihing, Sesa* river and the backflow of mighty *Brahmaputra.* In recent times, the village experienced major flood in 2002 and 2016 with severe loss to crop and live-stock. Recurrent flood not only causes damage to winter rice but also delays the sowing of toria resulting in its low production. On the other hand, production of local cultivars of toria being traditionally cultivated here is also very low. Moreover, moisture stress was also a critical problem as observed in this location.

KVK INTERVENTION

Looking into the problems of the flood affected areas; an awareness meeting was conducted involving all the villages of Barbarua block in 2013-14 and thereafter a series of meetings were conducted in the KVK, Dibrugarh with the farmers. Front line demonstration (FLD) on high yielding toria "TS-36" developed by AAU, Jorhat using seed treatment with biofertilizer *Azotobacter* and *PSB* as a part of INM practice (75% recommended dose of fertilizers and 25% biofertilizer) was conducted during 2014-15 in 4 locations covering 46 farmers in 26 ha area in silt deposited area of Lezai Miripathar Gaon and Janjimukh village. The average yield across the locations was 12.38 q/ ha.

OUTPUT AND OUTCOME

Having seen the performance of FLDs, 49 farmers came forward in 2015-16 and procured the seeds of toria (TS-36) from the fellow farmers who had cultivated in previous year. Thus, the variety introduced by KVK, Dibrugarh spread to 49 new farmers next year who cultivated of their own without any inputs from KVK, except the technology. The yield of the toria variety varies between 11.5-13.5 q/ ha across various locations. Looking into the enthusiasm of the farmers, KVK, Dibrugarh introduced a late sown toria varietiy (TS-67) through FLD in 9 ha under rice-toria sequence after harvesting of long duration winter paddy in the same year. Average yield went up to 10.25/ ha of this variety as second crop after paddy.

Sowing time	Before intervention	After intervention
Toria (TS-36) sown during October-November	8.00 q/ ha with non descript variety	12.38 q/ha with TS -36
Toria (TS-67) sown upto 2nd week December	7.00 q/ ha with non descript variety	10.25 q/ha with TS - 67

IMPACT

By 2016-17 about 100 ha area in these two villages alone had been covered under toria cultivation. Having seen the productivity of the varieties, the neighbouring villages of the Barbaruah block of Dibrugparh had also replaced the non-descript variety with these two varieties in the same year. The impact of the technology (variety TS-36 and TS-67) was also telecasted through AIR and DDK, Dibrugarh and thus, yellow revolution in real sense has taken place in Dibrugarh within three years.

INDUCE BREEDING OF MAGUR (*Clarius batrachus*) FISH IN FARMERS' FIELD

INTRODUCTION

The population as well as availability of indigenous fishes are declining owing to environmental anomalies, cultural mis-practices and commercial exploitation of natural habitations. Magur, a catfish is such an indigenous fish which is traditionally known for its therapeutic value. The market price of this fish in local markets is Rs 400-1500 per kg depending upon size and time. Therefore, it is highly desirable to protect this aquatic species by using efficient breeding tools.

KVK INTERVENTION

With some minor modification in the induce breeding technique of magur developed by ICAR-CIFA, Bhubaneswar Sri Sonmoina Bhuyan, SMS (Fisheries), KVK, Nalbari, Assam with support from his co scientists of KVK started imparting hands on training on induce breeding of magur to interested fish farmers of the district. In the year 2014, three farmers started Magur fish breeding after acquiring skill in the training. Seeing the keen interest of these farmers in seed production of Magur, KVK Nalbari arranged three portable FRP magur hatcheries for them under NEH programme of ICAR-CIFA, Bhubaneswar.

OUTPUT & OUTCOME

The support provided in terms of hands on training and FRP magur hatcheries the trained farmers could breed magur successfully. For last two years, out of capable beneficiaries one could produce 85000 numbers of magur fingerling. Calculated net average income from each magur hatchery owner through seed production per season was about Rs 2 lakh within 3 months period. The success of these farmers in breeding and cultivation of magur fish drew attention and attracted other fish farmers of the district. In fact, farmers from outside the state like Punjab, Bihar, Arunachal Pradesh also contacted these breeders for magur fingerling.

IMPACT

The Nalbari district of Assam is now a centre of attraction and place of availability for magur seed. Farmers from different district of Assam namely Bongaigaon, Jorhat, Sivasagar, Lakhimpur, Kamrup, Darrang, Sonitpur etc. have been procuring seeds of magur from these farmers. The availability of seeds ensures the magur fish farming in the state which ultimately helps in fulfilling the demand for this nutritive fish. Moreover, the success of induce breeding minimizes the pressure of wild catch of magur fish during April to July and thus indirectly increases the natural stock of magur in natural water bodies like beels in Assam.

SUCCESSFUL CASES OF COMPOSITE FISH CULTURE IN BONGAIGAON DISTRICT OF ASSAM

INTRODUCTION

Bongaigaon district of Assam is endowed with rich fisheries resources in the form of ponds/ tanks, bills, swamps, low laying areas, derelict water bodies and a diverse network of river and rivulets. There are 7100 numbers of ponds and tanks (106.81 ha), 46 numbers of beel fisheries (2568.40 ha), 13 numbers of river fisheries (779.70 ha) and 88 numbers of swamps/low lying areas (3562.40 ha). The production of fish seed in the year 2013-14 in the district was 14.18 million numbers. The production of fish in the same year was 7147 tones as against 2, 66,700 tonnes in Assam. Fish seed and fish production increased to 16.49 million numbers and 7407.65 tonnes, respectively during 2015-16. However, the production potentiality of the existing water body in the district is roughly 14000 tonnes at an average productivity of 2.0t/ ha. The bottle neck in increasing the production and productivity is the lack of quality fish seed, feed and non adoption of scientific fisheries management practices.

KVK INTERVENTION

During a training programme, Mr. Abdur Rahman, Programme Assistant (Fisheries), Krishi Vigyan Kendra, Bongaigaon came in contact with Mr. Abdur Razzak, Bhandara village of Manikpur Sub-Division of Bongaigaon district of Assam. Mr. Abdur Razzak informed that he did not get sufficient profit from his pond (Area: 0.27 ha) due to lack of proper knowledge and skill. Krishi Vigyan Kendra, Bongaigaon conducted one Frontline Demonstration(FLD) on Composite fish farming in his pond with active participation of neighbouring farmers. Initially, the FLD programme commenced with a training programme on Composite fish farming system.

The farmers were involved in each and every step of the demonstration where they learned the scientific management practices of fisheries *viz.*, preparation of scientific fish pond, selection of cultivable fish species, fish disease management, application of lime and management aspects. The knowledge gained from the demonstration had helped the farmers to raise the productivity of the existing pond in the village.

OUTPUT & OUTCOME

Before KVK intervention, total cost of fish production per hectare was Rs. 1, 18, 500. After KVK intervention the cost was Rs. 2, 43, 150. The fish production before and after KVK intervention were 2250 kg/ha and 6375 kg/ha respectively. Total net income before KVK intervention and after KVK intervention were Rs. 1, 06, 500/ha and Rs. 3, 94, 350/ha.

The higher returns in fishery sector of Mr. Razzak after intervention of improved technology spread horizontally into the neighbouring villages. Trainings and demonstrations from KVK, Bongaigaon, has motivated Mr. Rana Sarkar and Mr. Rajib Sarkar of Nowapara village of Bongaigaon district to start fish farming in 1.0 ha pond area. In another location of Bongaigaon district, Maa Laxmi, a Self Help Group (SHG) from Sajanabhita village under Boitamari Sub-Division of Bongaigaon district had also started scientific fish farming in another 1 ha area during 2015-16. The group got net income of Rs. 3, 89,500/ha as against Rs. 1, 04, 500/ha in the previous year. Following the success of Maa Laxmi, Mr. Nabendra Talukdar, a fish farmer of Raghunandanpur village near Sajanabhita village came forward and adopted the composite fish culture technology in his newly constructed pond (Area: 0.4 ha) with the guidance of KVK Bongaigaon.

IMPACT

During 2016-17, 50 farmers of Ambari, Tilabari & Baregarh, villages of North Salmara Sub-Division and 20 farmers of Basbari, Kokila, Moulavipara villages of Manikpur Sub-Division adopted composite fish farming system with the technical assistance from KVK Bongaigaon.

INTEGRATED RICE CUM FISH CUM DUCK CULTURE IN NAMSAI, ARUNACHAL PRADESH

INTRODUCTION

Namsai District of Arunachal Pradesh is endowed with rich natural fisheries resources in the form of ponds/tanks, bills, swamp, low laying areas and diverse network of rivers. Namsai district received heavy rainfall varies from 110-3645 mm and distributed round the year, however least rainfall is received in the month of January. Temperature varied from 5 to 36oC. Though, climatic and topographic condition is most suitable for integrated farming system however, rice based mono cropping agriculture is most prevalent activity of rural farmers. Rice is grown in 11654 ha with an average yield of 26q/ha due to least use of fertilizer and pesticides.

KVK INRTERVENTION

To improve the production and maximize the utilization of natural resources, KVK Namsai, conducted demonstrations on 'Integrated rice cum fish and duck culture' at farmers field of different village of Namsai District. Under the demonstration, a 5 days duration training programme were conducted. During the training programme, the farmers was involved in each and every step of the demonstration where they learned the scientific management practices of fisheries *viz.*, preparation of scientific fish pond, selection of cultivable fish species, fish disease management, application of lime and management aspects. Preparation of fish pond and management of duckling, ducks and construction of house at bank of pond were also demonstrated during the training programme..

OUTPUT & OUTCOME

The knowledge gained from the demonstration had helped the farmers to raise the productivity of the existing pond in the village. Earlier there was no such type of practice throughout the district. The following table indicates the output of the integrated rice-fish- duck farming as against the mono culture of rice.

Sl no	Particulars	Before intervention		After Technology introduced	
1.	Rice (Bihari/ Ranjit)	3.5 ton / ha	Rs. @9/kg = 31,500/	6.0 ton/ha	Rs. @9/kg = 54,000/
2.	Fish (IMC)/grass carp/ common carp	nil	-	500kg/	Rs. @130/kg = 65,000/
3.	Duck- Khaki Campbell	nil	-	Duck meat- 100kg And egg- 800 nos.	Meat Rs. 100/kg = 10,000/ And egg Rs. @10/pc = 8,000/
	Total Income	-	**Rs. 31,500/**	-	**Rs. 1,37,000/**

IMPACT

During 2016-17, the farmers of Khowji, Guhaingoan villages of Lekang circle and Sengsap village of Namsai circle continued the 'Integrated rice cum fish and duck culture'. Looking into the higher income of the system the farmers of six more villages have come forward to adopt this technology.

WATER REED CUM FISH FARMING ENHANCES FARMERS' INCOME IN MANIPUR

INTRODUCTION

Mr. Soraisam Dilip Meitei, is an enthusiastic and progressive farmer from Huikap village of Imphal East District having the enthusiasm to increase his farm business by expanding and integrating his farm with different enterprises. The farmer was cultivating only paddy for the past so many years in his entire field of 1 hectare. He was upset by experiencing low return from his paddy cultivation. His effort, however, was continued in search of suitable technology to increase his farm income. In the process, he met the scientists of Krishi Vigyan Kendra, Andro, Imphal East sometime during February, 2013. After a careful listening, the KVK Scientist understood his problem and assured him for guidance.

KVK INTERVENTION

The KVK after detail deliberation with the farmer advised him to adopt integrated farming for enhancing his farm income. The KVK scientists carefully surveyed his land and asked him to convert 25 % of his land into fish culture integrated with water reed, an aquatic weed having commercial value. The water reed is used for preparation of carpet, foot mate and other decorative items etc. For subsidiary income, the KVK also prescribed for mushroom cultivation as he had the required paddy straw from his paddy field. Accordingly, KVK supported him for a mushroom unit under TSP. The KVK also conducted an FLD in 1000 m^2 area for integrated fish culture with water reed in 2013 in his field.

OUTPUT & OUTCOME

The untiring effort of his family member has helped them in doubling their farm income from Rs. 40000.00 from paddy in the previous year to Rs. 80500.00 from mushroom unit and paddy field in 2014. Seeing the benefit from the advice of the KVK and result of the FLD in integrated fish culture with water reed, he expanded his pond area to 0.25 ha and went ahead with integrated farming of fish culture with water reed and utilized the dyke to grow king chilli and other seasonal vegetables. In 2016, the total net income of the farmer from his 1 ha area was Rs. 375000.00 with the B: C ratio of 3.6.

IMPACT

Mr. Soraisam Dilip Meitei is planning to expand his farm to 3 ha within next 2 years. He has now become the role model in his village. The farmers from different parts of his district as well as from other districts of Manipur have approached him for his help and expressed their desire for taking up such farming system in their field as well.

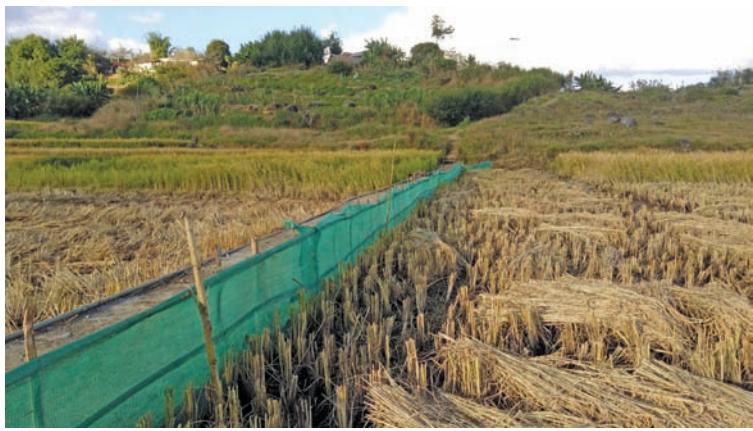
Field day at Farmer Field

Director ATARI, Umiam visiting the farmer field

RICE-FISH CULTURE: A NEW DIMENSION OF FARMING IN MEGHALAYA

Paddy field before intervention

Harvested fish



Rice-fish Fencing with shade net

INTRODUCTION

In recent years, many farmers shows keen interest in fish culture and hence, construction of ponds came up in many feasible areas but sadly, there are also many farmers who convert their productive paddy fields into fish ponds since most of them have no choice as they are small land holders. Even though many farmers take up fish culture, yet there is no encouraging results in terms of productivity and profitability due to poor management, lack of technical knowhow and also because they cannot afford to buy fish feed (rice/ wheat bran and mustard oil cake). Integrated Farming Systems hold special position as in this system nothing is wasted, which can also help poor small farmers who have very small land holding to diversify farm production, reduce input cost and exploitation of unutilized resources.

KVK INTERVENTION

Integration of fish in the paddy fields is the best option for those who do not have land for pond construction. Front Line Demonstration (FLD) on integrated rice-fish farming was therefore conducted by the KVK West Khasi Hills at Nonglwai village in the paddy field of Smt. Sketina Kharbani, a progressive farmer from the District. Her paddy field was modified by digging canals or trenches of 0.5 - 0.6 m deep and 1 m wide connecting (intersect) to the small central sump in the middle of the field. The dykes had been elevated and installed with inlet and outlet protected with fine screening. Fencing with netting material was also done at the lower part of the field to prevent fish from escaping during heavy rains. Local rice variety (ba lwai) was transplanted when the field is ready. After two weeks of transplantation, fingerlings of Common carp (main species), silver carp, gonius, etc were stocked @ 6000 nos. per hectare of paddy area. Minimal feed were given with rice bran and mustard oil cake in the ratio of 1:1. Liming and manuring were also done regularly.

OUTPUT & OUTCOME

Before intervention, the yield of paddy was about 15 q/ha but after intervention, the yield of paddy enhanced to 20 q/ha and what is more interesting, she also got fish from the same plot. The yield of fish from the paddy field was 500 kg/ha. According to her, this technology is very simple and low cost with high economic return. The increase in rice production is also a result of stocking fish (common carp as the main species) as a component of integrated pest management.

Due to the integration of fish in the field, use of pesticides is completely stopped. But there are also difficulties because many paddy fields are not feasible for fish integration due to the hilly terrain that restricts the size of the field. 1 ha of paddy field having different form and size of trenches (Average: 0.5 m deep and 1 m wide) with common carp as the main species gave a net profit of Rs 70,315.

IMPACT

The technology is gaining acceptance not only in Nonglwai village but also in other villages because of the simplicity of the technology and improved production. Now rice-fish culture in the district is a regular cropping practice in many of the villages in the district.

A SUCCESSFUL CASES OF COMPOSITE FISH CULTURE IN EAST SIANG, ARUNACHAL PRADESH

INTRODUCTION

East Siang District has a network of numerous rivers, streams, natural ponds providing vast scope for fisheries development. The district has around 390 km of riverine fisheries and a total of around 250 ha beels, lakes and swamps. The principal river of the district is Siang. There is a requirement of around 1050 t of fish per year in the district and production is only 180 t. There is a huge gap between production and the requirement. The farmers of the district is facing difficulty in fish farming due to lack of quality fish seed, feed and non adoption of scientific fisheries management practices.

KVK INTERVENTION

During a farmers-scientist interaction programme, Krishi Vigyan Kendra, East Siang came in contact with Mr. Obit Mibang, Mangnang village of Ruksin Block of East Siang district of Arunachal Pradesh. Looking into the enthusiastic and progressive nature of Mr. Mibang, he along with few progressive farmers of the district were taken on an exposure visit to College of Fisheries Sciences, Central Agricultural University, Agartala, Tripura in the year 2013. After visiting Agartala, Mr.Mibang invested on digging pond of approx. 0.5 ha. area for fish farming with a hope of additional earning. With the advice of KVK, East Siang he started composite fish farming with catla, rohu, mrigala, silver carp, grass carp and common carp.

OUTPUT & OUTCOME

With KVK intervention, Mr. Mibang earned a net income of Rs. 92370.00 from his half hectare fishery pond. Seeing the profit he dug out two new ponds of 0.5 ha each in 2016. Having a better harvest of fish after adopting good management practices, Mr. Mibang is planning to expand his aquaculture business in coming days integrated with piggery.

IMPACT

Having observed the good management practices and increased productivity of Mr. Mibang, 08 farmers from nearby villages approached the KVK for technical assistance. At present 12 farmers from nearby villages adopted the composite fish farming system with a regular guidance from the KVK.

BANANA & PINEAPPLE LEAF FIBER BRING PROSPERITY TO WOMEN FARMERS IN NAGALAND

Extraction of Banana Fibre

INTRODUCTION

The female members of the Jharnapani and Molvom villages are daily wage earner and most of them are engaged in pineapple cultivation in nearby Molvom village of Dimapur. Most of them collect wild banana and other food items from the nearby forest and their jhum fields for their daily requirement. With the meagre income it was a very difficult task for them to satisfy various needs of their children. To help the women folk of Jharnapani village KKV Dimapur through an awareness programme motivated them to form a Self Help Group. Noune Kro SHG thus formed in the year 2008 with 15 female members at Jharnapani village. Initially the group started their venture with the membership amount of Rs 50/month for their activities. Different activities like working as daily wages labour, selling of new clothes, tea leaves and mushroom cultivation etc were carried out.

Different Decorative items with Banana fiber prepared by Noune Kro SHG Jharnapani village

KVK INTERVENTION

Seeing the enthusiasm and interest of the members of the SHG, KVK, Dimapur organised one day awareness training programme in 2011 to highlight the importance of the of banana and pineapple leaves, which are abundantly available in their doorstep. During 2011, 3 hands on training programme on fibre extraction from banana pseudo-stem and pineapple leaves were organised, wherein women in large number from Jharnapani, Medziphema and Molvom village participated. On the recommendation of KVK Dimapur Central Institute of Horticulture, Medziphema provided them a fibre extraction machine in the month of October 2012. Training on making of different decorative items such as tea coasters, door and table mats, sling bags, hats and flowers was given by KVK Dimapur. The group received financial assistance of Rs 10,000/- from ATMA, Dimapur on 05/07/2014 as seed money. The amount is being utilized for purchase of materials like colour dyes & accessories etc.

OUTPUT & OUTCOME

Now the group has started preparing good quality handicraft items like decorative flower basket and Sunshade hats etc. The group was recognized as "BEST ORGANIZED SELF HELP GROUP AWARD (2013-2014)" on Independence Day Celebration 2014 for Dimapur District. The SHG is now earning nearly Rs 15,000 to 20,000/month from the preparation of fibre products.

HOME SCALE PROCESSING OF GOOSEBERRY BRINGS PROSPERITY TO FARMERS

INTRODUCTION

Wild Amla (Gooseberry) is naturally grown in Serchhip District of Mizoram without any kind of human intervention. Although Gooseberry is having lots of medicinal values and high economic potential but, about 2/3rd of the total produce is wasted due to lack of knowledge among the local people including farmers about processing of the fruit.

KVK INTERVENTION

Krishi Vigyan Kendra, Serchhip district, Mizoram intervened on the transfer of technology on Gooseberry processing with the promising entrepreneur Mr,Vanlalfela, Rahsi Veng, N.Vanlaiphai through Training and Demonstration. Mr, Vanlalfela started gooseberry processing enterprise on 2013 without mechanization back up. He upgraded his enterprise step by step as per the advice of the KVK and started producing various value added products like fresh amla juice, amla candy, salted amla and amla powder.

OUTPUT & OUTCOME

Mr.Vanlalfela is now a successful entrepreneur and bagged the award of 'Best Entrepreneur' in Mizoram. The value added products of Gooseberry is now popular and available for the consumer in market. In 2013 when he started the enterprise, he did not have mechanization back up and he earned Rs.32,400/- only. With the upgradation of his unit in 2015, he earned around 1.9 lakhs besides providing direct employment to three villagers

IMPACT

Before the intervention, Mr.Vanlalfela (Entrepreneur) did not have a permanent job to support his family but after establishing the enterprise now he is generating employment for the villagers besides earninng livelihood for himseld and his family.

BEEHIVE BRIQUETTE AS AN ECO-FRIENDLY BIO-FUEL FOR RURAL COOKING

INTRODUCTION

The excessive and unregulated use of fuel wood for house hold cooking, space heating and wood based rural industries have led to the destruction of Manipur's forests leading to serious ecological and environmental consequences. Time has come to reduce the consumption of fuel wood by substituting it with the efficient utilization of agro-residues and forestry wastes. Beehive briquettes may be an alternative to fuel wood in the rural areas. The beehive briquette is a circular shape briquette having multiple holes made from char and clay mud mixed in certain proportion. Due to the holes, it looks like beehive, thus the name came Beehive Briquette. Dried beehive briquette produces smokeless burning for 3.0 to 3.5 hrs. It can be burnt in the metal *Chulha* (*Meiphu*) or even in the *Moreh Chulha*. It can be used for cooking, boiling of water and heating. The calorific value of this briquette is approximately 18-20 MJ/kg.

KVK INTERVENTION

There are more than 30 numbers of brick farm under Lamsang Sub-division, Imphal West district, Manipur and huge amount of charcoal are removed everyday from these brick farms. These charcoals are not economical to use for heating or burning, but the same charcoal can be used for briquette making. Therefore, KVK, Imphal West organised a training programme on briquette making in its campus and trained more than 25 persons during 2012. Mr. Lamdeng Mayai Leikai after attending the training programme had shown his interest for initiating a small enterprise on briquette making. Thereafter, he took one week hands on training on briquette making in the KVK and started his enterprise in 2013.

Stocking of dried beehive briquette for sale

OUTPUT & OUTCOME

In the beginning Mr. Leikai started his enterprise by himself with the support from family members and started producing 150 to 200 briquettes per day in the peak demand period during November to March. Now he is producing 500 to 600 briquettes per day and his average income is Rs. 60000 per month. This small enterprise has not only helped him earning for his family but also gave employment to 4 lady workers of his village

IMPACT

Now more than 20 farmers from different villages of Lamdeng, Khonghampat, Sangaithel, Khabi Bamdiar, and Kiyam village under Lamsang block, Imphal West district, Manipur have started manufacturing beehive briquettes and earning their livelihood. The case study on beehive briquette revealed that it can save huge amount of natural resources and act as an alternative to fuel wood besides providing employment opportunities to rural youth.

Drying of beehive briquette

CUSTOM HIRING CENTRE INCREASES CROPPING INTENSITY IN DHEMAJI, ASSAM

INTRODUCTION

Dhemaji is one of the backward districts of Assam and Agriculture is the backbone of the economy of the district. Lack of farm mechanization is one of the important factors of low economic return from farm sector in the district. However, the youth of the districts are very enthusiastic to take up agriculture as an option for their livelihood using the latest technology including farm machinery.

KVK INTERVENTION

To address this issue KVK, Dhemaji established a Custom Hiring Centre (CHC) in 2013-14 as an institutional arrangement under TSP project entitled "Promotion of Agriculture Centric Sustainable Livelihood Security for Tribal Farmers of Assam" at 1 No. Holokhani village. The center is strengthened with Tractor, Rotavator, Paddy Reaper, Power tiller, Power sprayer, Seed cum Fertilizer drill, Power weeder, Paddy thresher and Maize seed sheller. To keep these implements a concrete shed was also constructed under the project. To run the CHC effectively 11 member village level Monitoring Committee was constituted. The required training and demonstration were provided to the member of the committee and the village youth. Ten (10) numbers of village youth were trained on farm machinery organized by SIRD at Guwahati and FMTTI, Biswanath Chariali.

OUTPUT AND OUTCOME

The Custom Hiring Centre has now become an income generating venture for 10 tribal youth directly. The farmer of the village opted for double cropping; some youth become real farmer, farm operation become easier and able to complete time bound farm operation. At the end of the financial year of 2015-16 the gross income of the centre was Rs.2, 40,000.00 (Rupees two lakh forty thousand) only with a net income Rs.79, 000.00 (Rupees seventy nine thousand) after payment to driver, workers and recurring expenditure besides purchasing a disc harrow worth Rs. 38,000.00 (Rupees thirty eight thousand) only. The gross income of the centre increased to Rs. 4, 00,000.00 (Rupees four lakh) only with a net income Rs. 1, 20, 000.00 (Rupees one lakh twenty thousand) in 2016-17.

Till date approximately 500 farm families of nearby areas have been benefitted directly or indirectly from the center. With the commissioning of the centre the farmers of the village in the district were able to go for double and triple cropping, which otherwise remained fallow after cultivation of Paddy. The initiation of double/triple cropping had enhanced the economic and social standards of the people in the village.

IMPACT

Witnessing the benefits of the Custom Hiring Centre, youth from nearby villages showed interest in mechanization of Agriculture in their respective areas. The youths of those areas are now keen to practice mechanized agriculture and take up farming as a source of livelihood.

Operating Paddy reaper under CHC

WOMEN EMPOWERMENT THROUGH BACKYARD POULTRY FARMING IN DIMAPUR, NAGALAND

INTRODUCTION

Mrs. Thezano from Sethikema A village of Dimapur district, Nagaland is an educated unemployed rural woman, who was engaged in agricultural activities with traditional animal husbandry as a subsidiary component. She used to rear few indigenous fowl, occasionally few broiler birds, and to cultivate maize and tuber crops for home consumption. Lack of awareness, technical know-how about scientific livestock rearing and non-availability of quality germplasm at the nearby areas were the major stumbling block for her success. She and other farmers of the village did not have much knowledge about the suitability of latest breeds like Vanaraja, Gramapriya, Giriraja, Kamrupa in backyard farming system.

KVK INTERVENTION

The awareness campaign conducted at Sethikema A, Dimapur during 2012 by KVK Dimapur, sensitized Mrs. Thezano about the prospects of Vanaraja birds for backyard farming at low input production system. Looking into her enthusiasm KVK, Dimapur arranged hands on training on 'scientific poultry production at backyard' during the same year. This training had opened her eyes to initiate a small scale semi intensive poultry unit at her backyard. As per her request, a low cost poultry house with locally available materials bamboo, wood and thatch grass was constructed utilising the fund under TSP at the backyard of her house with a floor space (1000 sq. ft). Mrs. Thezano procured 400 Vanaraja birds of 3 weeks old from ICAR Complex, Nagaland Centre, Jharnapani. The birds were maintained at deep litter system made with locally available paddy husk as per the advice of the KVK scientists. The birds were allowed to scavenge in daytime in the backyard and the available green grass was consumed that reduced the feed cost in subsequent period.

OUTPUT & OUTCOME

The dual purpose Vanaraja birds started laying eggs at 23 weeks of age. The major source of income was the sale of live birds at five months of age. She sold 456 kg live weight from 198 birds at Rs 150 per kg in local market and neighbouring villages. Thus, she earned a sum of Rs 68400. The remaining 185 birds were maintained for another 45 days, and average body weight was recorded as 3.25 kg. Those birds were sold at same rate and further, Rs. 90188 was earned. Thus the total income was Rs 158588. The income from eggs and price of litter materials were not considered as those were used for home consumption and manure for gardening, respectively. The net profit from the unit in 7 months was Rs 39,818.

IMPACT

The scientific knowledge learned from the KVK, Dimapur, experiences gained from her own farm, and benefit realized has empowered Mrs. Thezano to extend the poultry unit for maintaining a stock of 1000 birds all the time. She is now earning an average of Rs 10,000 per month from her poultry unit. The success of Mrs. Thezano had motivated the fellow farmers in the village and neighbouring villages in the region. At least five SHGs had been formed in neighbouring Sethike Basa villages and the members of SHGs started rearing Vanaraja birds for additional income and nutritional security and made them self sustainable. Mrs. Thezano received Pandit Deen Dayal Upadhaya Krishi Puruskar 2016 from ICAR for her successful work.

PIG FARMING OPENS A NEW WINDOW FOR ECONOMIC EMPOWERMENT OF TRIBAL YOUTHS

INTRODUCTION

'Mising', a tribal community of Assam has been rearing pig in almost every household from time immemorial as a part of their traditional culture. Pork constitutes an integral part of offering in social functions like marriage, death ceremony and other religious and social functions. Rearing pigs by the Mising community is practiced not only to meet the requirement of meat, but also to generate additional income from the sale of surplus pigs as meat and piglets. However, they have been rearing indigenous breed with low productivity and follows traditional management practice which is unscientific. Through extensive survey in the tribal villages KVK Jorhat realized that integration of improved breeds of pig and scientific management practices alone could solve the problem of low productivity of rural piggery sector. At the same time the availability of improve piglets need to be assured locally.

KVK INTERVENTION

Krishi Vigyan Kendra, Jorhat introduced improved pig breed in 10 selected tribal villages under Dhakargarah Development Block of Jorhat to replace the existing low productive indigenous breed and to increase the availability of improve piglets locally. KVK, Jorhat had selected Hampshire cross, an improved breed as a need based intervention for solving the problem with indigenous low productive breed. To meet the requirement of improve piglets of the new improved breed, one breeding unit was established in each of the 10 selected villages with 10 female pigs and two boars. Further, KVK, Jorhat introduced the technology of improved housing and feed management in the villages of the Allengmora area. KVK scientists regularly monitored the performance of the breed, besides providing health care and technical support. Vaccination against infectious disease was also done on a regular basis. Extensive trainings on piggery management were also provided to the farmers.

OUTPUT & OUTCOME

Among the beneficiary farmers, Mrs. Mahilarani Misong w/o Mr. Atul Misong, a progressive farmer from Neolgaon of Allengmora area has emerged as most successful in rearing and production of piglets of the new breed. During the year 2015-16 she sold 140 piglets of Hampshire cross breed to the nearby villages and earned Rs. 4, 05,000.00 from the sale of piglets. In addition to the spread of new breed, local female pigs were also crossed with Hampshire cross boar for improvement of the local breed for which the beneficiary farmer charges Rs 300.00 per service. More than 120 female pigs were crossed at Mrs Misong's farm from which she has earned additional Rs 36,000.00 during 2015-16. Mrs Misong has extended her farm with 3 new sheds with new piglets for which she has invested from her own.

Today, almost all the beneficiaries of the selected villages under the programme are maintaining their farm very scientifically and earning a substantial amount from the sale of pig for meat as well as piglets. Due to instant good result and return from new Hampshire cross breed, the farmers of the nearby villages are either purchasing the piglets from the breeding units or crossing the local female with the Hampshire cross boar at the farms of the beneficiary farmers and thereby improving the local breeds of the locality.

IMPACT

Due to high demand of good quality piglets and meat, the farmers did not have any problem in selling the piglets and pork. In fact, there is advance booking for the Hampshire cross piglets in most of the farms. The piglets are also sold even to nearby district like Sivasagar and Golaghat. The present rate of piglets is Rs 3000.00 per piglet and Rs 200.00 per kg of meat.

BLACK BENGAL GOAT ENHANCES THE INCOME OF SMALL AND MARGINAL FARMERS

INTRODUCTION

Although goat meat rank 4th in preference among tribal population (first three being pork, chicken and beef) in West Garo hill district of Meghalaya, it is first in preference among the non- tribal population which also constitute a sizable population and therefore its production needs to be supported through introduction of good quality goat breed. Moreover, goat is a very important livestock for small, marginal and landless rural farmers as a source of their subsidiary income. Due to their ability to survive and produce under extreme climatic condition and poor management goat assures income to rural farmers with almost zero input cost. But due to the poor performance of non descript local goats, the income from the goat production is not to the tune it ought to be.

KVK INTERVENTION

Black Bengal is a famous breed known for high prolificacy, superior meat quality, best quality skin, early sexual maturity, low kidding interval and very good adaptability. Therefore, nine Black Bengal kids (3 males and 6 females) were provided to 3 selected farmers (1 male and 2 female goats to each farmer) of West Garo Hills under Front Line Demonstration of KVK in the year 2013. Those beneficiaries acquired knowledge about managemental aspects of goat farming from the training conducted by KVK were supported for deworming, vaccination and treatment. Goats were reared totally on grasses, shrubs and various tree leaves available in Garo Hills without any supplement feed. Goat houses were constructed with locally available materials by the farmers themselves.

OUTPUT & OUTCOME

The average age at first kidding for Black Bengal and local was found to be 12.8 months and 17.6 months respectively. There was three kidding in two years with average 2 kids per kidding. Gestation period was found to be 147 ±2 days in comparison with 150±2 days in local goats. Average interkidding interval was found to be 215±5days. Nambe Marak from Kemagre village, was immensely benefited from goat production. Likewise, Pronilla Sangma from Marapara village under Dalu block of Meghalaya also earned Rs 9000 by selling of kidding within a year

IMPACT

Looking into the success of Nambe Marak and Pronilla Sangma other farmers were also motivated. Both Nambe and Pronilla leased out some of their goats to their neighbours. With the technical advice of KVK, local NGOs are coming forward to popularize the goat farming in the district. One SHG (Nolsing Gittim SHG) in Marapara village organized awareness cum training programme on "Goat production" for the farmers of Marapara village on 23rd April 2015 with the financial support of Rs10000/- from District Planning Dept, West Garo Hills, Meghalaya.

INCREASING FARMERS' INCOME THROUGH "VANARAJA" POULTRY BIRDS

INTRODUCTION

Backyard poultry is a source of livelihood among the farming community. However, low egg production and weight gain of desi bird is the major problem in the backyard poultry. To minimize the gap between the demand and availability of poultry products like meat and egg in the district, improved breeds of poultry birds- Vanaraja and Gramapriya were introduced for backyard with better performance like growth, egg production and capacity to withstand the changing climate and diseases compared to the local/ desi birds.

KVK INTERVENTION

Krishi Vigyan Kendra, Hailakandi introduced new improved breed suitable for backyard poultry in order to replace the local breed which has low productivity. The technology was demonstrated through OFT with the hope of solving the problem with indigenous bird. Beneficiaries were given 15 numbers of 3 weeks old birds of Vanaraja for backyard poultry to up-grade the local flock of poultry. They constructed the shed with easily available low cost materials on their own. KVK, Hailakandi was the first to introduce the technology of improved feeding and brooding practices of backyard poultry to reduce early chick mortality. Apart from this, regular monitoring was done by KVK scientists to observe the system of rearing as well as to record data on body weight etc. and overall growth performances of the distributed birds for assessment of their performance.

OUTPUT & OUTCOME

Md. Lutfur Rahman Choudhury of Village Narayanpur Part-1 P.O Chandpur West, Hailakandi Block after getting training from KVK Hailakandi started his poultry unit with 15 numbers of Vanaraja bird. He reared with proper care under the guidance of KVK Scientists. He had generated an income of Rs. 2160.00 by disposing surplus male birds @ Rs 180 per kg live weight after retaining two males for breeding. He also sold 1300 eggs @ Rs. 6.00 per egg and thus an income of Rs.7800.00 was generated by selling eggs alone. He also produced chicks by incubating fertile eggs under free range condition. Now he has about 35 chicks of different age group hatched by his local hen and 22 fertile eggs kept for regulation by natural incubation. Now he has about 30 birds and earned Rs. 60-80 per day from the selling of eggs which is an additional income.

The performance of the backyard poultry has instilled a sense of eagerness amongst the farmers of the village and nearby villages to undertake backyard poultry. As a result the demand for chicks and eggs increased three fold. Now, 52 households of the locality have adopted vanaraja poultry as income generating activities of the women folk.

IMPACT

Due to easy accessibility of eggs at doorsteps, other farmers also started backyard poultry. It generated employment opportunities for rural youth and farmers were enriched with knowledge for large scale production

GHUNGROO BREED OF PIG IMPROVES FARMERS' INCOME IN WEST GARO HILLS, MEGHALAYA

INTRODUCTION

Almost every tribal household of West Garo hills rear at least one or two pigs in backyard, but still a wide gap exists between the demand and availability of pork. The main reason for insufficiency in pork production is that the pigs reared by the farmers are mostly of nondescript type, whose productivity is relatively poor and hence the pork production is hardly adequate for the population. The state of low productivity is again due to the lack of knowledge of the farmers about the scientific management, housing and breeding of pigs.

KVK INTERVENTION

In view of these facts and realizing the need for the development of pigs and their role for the economic upliftment of the farmers in the district, KVK, West Garo Hills introduced Ghungroo breed of pig through its OFT and FLD programmes. In the year 2011-12, the KVK provided 12 nos of Ghungroo pigs (3males and 9 females) procured from ICAR- National Research Center on Pig, Rani, Guwahati to 3 SHGs in Marapara village of Dalu Block under its FLD programme. Training was organized for all the beneficiaries about housing, feeding and disease management in respect of pig farming. Pigs were reared in low input production system. Feeding was done with locally available materials like rice bran, kitchen waste, colocasia etc. However, mineral mixtures were supplemented by KVK.

OUTPUT & OUTCOME

A summary of productive and reproductive performances of Ghungroo breed revealed that there had been 39.75% increase in average litter size, 58.62% increase in average litter weight at birth, 64.92% increase in average litter size at weaning and 82.60 % increase in average litter weight at weaning than local pigs available in the villages. A glimpse of the result of Ghungroo is presented below.

Parameter	Result
Litter size at birth	9-11 nos
Litter size at weaning	8-9 nos
Body weight at 9 months of age	44.21kg
Farrowing interval	210±5 days
B:C ratio	2.17

IMPACT

Encouraged with the results, Luchiana C.H.Momin, a 43 years old woman farmer of Mebonpara village purchased two more Ghungroo piglets (1male and 1 female) from one SHG in 2012-13. From first farrowing of her female pig, Luchiana got 9 piglets and earned Rs. 18000 by selling the piglets. After 7 months, Luchiana got 11 piglets from 2nd farrowing of her Ghungroo pig. Now she earns Rs 19045 annually. The breed is now well adopted in the climatic condition of Marapara village. Over a period of two years 39 families have adopted this breed and the total number of pigs rose to 265 in the village. Now the farmers in the village and nearby villages adopted this variety of pigs and they are performing well.

VANARAJA POULTRY -A REMUNERATIVE ENTERPRISE FOR RURAL MASSES

INTRODUCTION

There is a huge demand of meat and egg due to non-vegetarian dietary habits. But low egg production and lesser weight gain is major problem in local poultry (Zoar). Moreover, there is unavailability of good quality dual purpose poultry breed. So, there was a need of introduction of a good quality dual purpose poultry breed. Keeping in view the need of the local people, improved dual purpose breed Vanaraja had been introduced as a suitable alternative to local birds for rearing under backyard system. Vanaraja is a dual purpose multicoloured poultry which is very suitable for hilly areas like Serchhip district of Mizoram. The disease resistance capacity is also an advantage of this breed.

KVK INTERVENTION

The Vanaraja bird was introduced by Krishi Vigyan Kendra (KVK), Serchhip through On Farm Testing (OFT) programme. Both on campus as well as off campus training on "Backyard Poultry Farming with Vanaraja Bird" were organized to make the farmers and the rural youth aware about the Vanaraja breed. Five farmers from different areas of Serchhip district were selected and they were specially trained about the housing, feeding and disease management of Vanaraja poultry for easy rearing in their backyard. Day-Old- Chicks (DOC) of Vanaraja were provided from KVK, Serchhip district for rearing in backyard system @ 15 nos. / Farmer.

OUTPUT & OUT COME

Vanaraja breed was gladly accepted by the farmers specially Miss Vanlalrawni of Bangla Veng, North Vanlaiphai who is a school dropout (Class VI passed) from a poor family. She took keen interest on backyard farming with Vanaraja poultry and worked hard for success with hope to earn greater income for her family. Day by day her flock grows in size. Now, she has a Vanaraja flock of 27 birds which includes 20 females and 2 males after selling out 5 males for meat purpose. Presently her flock is producing 120-140 numbers of eggs per hen per year in comparison to local birds producing 40 to 50 eggs per hen per year. Which gave a very good economic support to her family.

Gradually, the expansion of Vanaraja breed has been started among another 5 farmers of the village. Farmers are very much satisfied with the performance of Vanaraja.

IMPACT

Now, those farmers have decided to increase their flock density for greater benefit and sustainability. From their successful venture, now approximately 20 farmers have got inspired for Vanaraja bird rearing as it involves a very less capital, gives suitable economic returns and provides a profitable livelihood enterprise.

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