

Proceedings of QRT Review meeting of KVKs of Assam

Inaugural Session

Dr. B. C. Bhowmick, Director of Extension Education, Assam Agricultural University, Jorhat extended a warm and hearty welcome to Dr. P.G. Chengappa, Former Vice-Chancellor, University of Agril Sciences, Bangarulu and Chairman of the QRT; Dr K.K.Jindal, Ex ADG (Hort), ICAR, New Delhi and Member of QRT; ICAR, New Delhi; Dr Y.P.S Dabas, Director of Extension Education, Pantnagar Agril. University and Member of QRT; Dr. A. K. Gogoi, Zonal Project Director; Zone III, ICAR, Barapani and Member Secretary, QRT. Dr. Bhowmick, in his inaugural address, appraised the QRT members about the status, functioning and major achievements made by KVKs of AAU located in different districts of the state. The AAU is very happy that learned members of QRT is going to evaluate the activities of KVKs; their observation and suggestions and guidance would certainly help in improving the functioning of KVKs under AAU.

Dr K. K. Jindal, Ex ADG (Hort), ICAR, New Delhi in his inaugural address shared his long experiences in North East. He stated that Assam has maximum potentiality for Agri-Hort exports especially for citrus fruits. The Northeastern region is rich in natural resources, biodiversity, water resources and socio-cultural diversity and harnessing of these resources is the need of the hour. Dr Jindal stated that the weaknesses and the threats can be identified so that efforts could be made to convert them into success stories and stressed upon the following major thrust areas:

- Integrated farming system
- Rice-fish system in waterlogged areas
- Correction of soil acidity
- Increase in the production and productivity of Cereal crops, fruits and vegetables
- Quality seed and planting material production should be a mandate of all KVKs.

Dr Y.P.S Dabas, Director of Extension Education, Pantnagar Agril. University and member, QRT addressed the house and expressed his gratitude and complemented the KVKs scientists all over India for their tremendous effort in working under difficult situations in remote areas and highlighted on the following points:

- Each KVK should have its own specialty

- KVK scientists should reach out to the farming communities through mobile and SMS services
- Mode of integrated farming system should be adopted
- Replicate good success stories
- Seed replacement should be increased through HYV
- Adoption of micro-irrigation and plastic culture for vegetable production
- Introduction of backyard poultry and cross-bred animals for landless and marginal farmers.

Dr A.K. Gogoi, ZPD, Zone III, ICAR, Barapani in his inaugural speech, expressed his gratitude to QRT members and apprise the house about the purpose of visit. He has raised following issues and which are to be seriously addressed by Programme Coordinators of KVKs.

- Assess the adoption of technologies disseminated by KVKs and their impacts
- Proper utilization of funds to be clearly indicated
- Suggested on drawing road map for the KVKs to proceed further

Dr Gogoi further mentioned,

- the necessity of updating information into KVK data base system
- Keeping in view, the district wise diversity the KVK should adopt situation specific ecologically viable technologies.
- Highlighting the impact of KVK activities
- Stating the difficulties encountered by them in implementing the programmes

Dr. P. G. Chengappa, Chairman of the QRT in his inaugural address stressed on the changing face of Indian extension and the important role played by KVKs in the extension process and emphasized on increasing the sustainability and profitability of Indian agriculture through viable income generating activities. The Chairman, highlighted on the following points:

- Market-led extension
- Coordination of modern technology, sound agricultural policies, extension institutions and farmers is important for the success of agriculture
- Production of quality seeds/planting materials is important to increase crop productivity

- Good scientific storage structures in KVKs is necessary for maintaining quality of seeds
- Application of ICT for technology dissemination

The Chairman further stressed on the constructive propositions based on experiences of extension scientists and the impact of KVKs.

Vote of thanks was offered by Dr J. Goswami, Extension Specialist, Directorate of Extension Education, AAU, Jorhat.

Technical Session

Immediately after inaugural session, technical sessions was started by the presentation of KVKs. Altogether, 21 KVKs presented the activities of KVKs. After presentations, the QRT members interacted with each Programme Coordinator and some salient recommendations has been made for improvement of the progress of KVKs.

SI No	Name of KVK	Presented By	Salient recommendation by	Action
1	KVK Barpeta	Dr R. Sharma, Programme coordinator	<p><u>Recommendation of Chairman</u></p> <ol style="list-style-type: none"> 1. Emphasis on demonstrations in addition to trainings 2. Presentations should be more analytical 3. Low cost vermiculture technology should be adopted <p><u>Recommendation of Members</u></p> <ol style="list-style-type: none"> 1. Oyster mushroom cultivation can be adopted in potential areas 2. Fodder production can be encouraged for providing fodder in lean period 3. Awareness among the farmers about mineral mixtures for farm animals <p><u>Recommendation of ZPD</u></p> <ol style="list-style-type: none"> 1. Introduction of situation-specific varieties 2. Impact & farmers' feed back is important 	<p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p>
2	KVK Cachar	Dr K. Das, Programme coordinator	<p><u>Recommendation of Chairman</u></p> <ol style="list-style-type: none"> 1. Two SAC meetings, Kharif and Rabi to be conducted during the year 2. A technology driven solution to increase the sustainability of small and marginal farmers 3. Innovative technology adoption for better utilization of waste and submerged land 4. The actual status of revolving fund should be stated (Stock & cash in hand) <p><u>Recommendation of Members</u></p> <ol style="list-style-type: none"> 1. Exploit the potentiality of cashew nut, ginger and arecanut cultivation 2. Submergence tolerant variety to be 	<p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>KVK Cachar</p>

SI No	Name of KVK	Presented By	Salient recommendation by	Action
			<p>adopted in the flood prone areas of the KVK and fisheries can be developed</p> <p>3. Explore projects with funding from agencies like NABARD, NHM instead of sponsored training programmes any</p>	All KVKs
3.	KVK Karimganj	Dr M.K. Sarma, Programme coordinator	<p><u>Recommendation of Chairman</u></p> <p>1. Stressed on the exposure visits of the farmers to other states with funding from ATMA</p> <p>2. Automatic weather station to be installed</p> <p>3. Programme on crop insurance should be incorporated into the schedules</p> <p>4. Impact of training programmes to be supported with date and figures</p>	<p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p>
4	KVK Chirang	Dr S.K.Paul, Programme coordinator	<p><u>Recommendation of Members</u></p> <p>1. More effort should be given to mass production of planting materials</p> <p>2. Micro, drip and sprinkler irrigation to be used in vegetable cultivation</p> <p>3. The change in agril scenario should be attributed to the factor involved such as improved varieties & use of fertilizers</p>	<p>All KVKs</p> <p>KVK Chirang</p> <p>All KVKs</p>
5.	KVK Kokrajhar	Dr Y. Prasad, Programme coordinator	<p><u>Recommendation of Chairman</u></p> <p>Emphasis should be laid on poultry & piggery production in the district</p>	KVK Kokrajhar
6.	KVK Golaghat	Dr S. Dutta i/c Programme coordinator	<p><u>Recommendation of Members</u></p> <p>1. School drop out should be levered by giving some trainings on agri-business, nursery components</p> <p>2. Interventions of cropping enterprises should be quantified</p>	<p>All KVKs</p> <p>All KVKs</p>
7.	KVK Dibrugarh	Dr A Baruah SMS (Soil Sc)	<p><u>Recommendation of Members</u></p> <p>1. Impact of training programme to be supported with data and figures.</p>	All KVKs
8.	KVK Kamrup	Dr D.N. Kalita, Programme coordinator	<p><u>Recommendation of Members</u></p> <p>1. Development of improved variety of green gram with synchronized flowering to be taken up in the ZREAC meeting, 2011.</p>	KVK, Kamrup
9.	KVK Dhemaji	Mr P. Neog i/c Programme Coordinator	<p><u>Recommendation of members</u></p> <p>1. Emphasized building contacts with Central Agricultural University</p>	KVK Dhemaji

SI No	Name of KVK	Presented By	Salient recommendation by	Action
			<ol style="list-style-type: none"> 2. There is scope of vegetable cultivation during Rabi season 3. Interventions such as Water-melon cultivation can be implemented in the district 	<p>KVK Dhemaji</p> <p>KVK Dhemaji</p>
10	KVK Nalbari	Dr M. Neog Programme Coordinator	<p><u>Recommendation of members</u></p> <ol style="list-style-type: none"> 1. Documentation of ITK Practices 2. Collection and conservation of indigenous germplasm to widen the genetic base of crops 	<p>All KVKs</p> <p>All KVKs</p>
11	KVK Sivasagar	Dr P Nath, i/c Programme Coordinator	<p><u>Recommendation of members</u></p> <ol style="list-style-type: none"> 1. Plastic/Bamboo Drip Irrigation can be incorporated in Banana High Density Planting 	<p>All KVKs</p>
12	KVK, Jorhat	Dr R Buragohain, Programme Coordinator	<p><u>Recommendation of Chairman</u></p> <ol style="list-style-type: none"> 1. Fish cum vegetable cultivation to be popularized in the respective districts 2. Apiary to be commercialized as a self employment venture instead of being used only for increasing pollination in Toria 3. Water use efficiency in FPARP trial to be focused nationally 	<p>All KVKs</p> <p>All KVKs</p> <p>All KVKs</p>
13	KVK Hailakandi	Mr Samsheer Singh, SMS Horticulture	<p><u>Recommendation of ZPD and QRT Team</u></p> <ol style="list-style-type: none"> 1. KVK personnel should visit other KVKs to discuss the formulation of the action plan to learn the other mandatory works 	<p>KVK Hailakandi</p>
14	KVK Tinsukia	Dr A C Sarmah Programme Coordinator	<p><u>Recommendation of Members</u></p> <ol style="list-style-type: none"> 1. Adequate Technology to be developed for pest and Disease Management of Citrus crops 2. Adoption of ITKs for Pest and disease management of Citrus. 3. Documentation of rejuvenated Citrus orchards 	<p>KVK Tinsukia</p> <p>KVK Tinsukia</p> <p>KVK Tinsukia</p>
15	KVK Sonitpur Dr P.C. Deka	Dr P.C. Deka Programme Coordinator	<p><u>Recommendation of Members</u></p> <ol style="list-style-type: none"> 1. Approach PVPFR to apply GI for Assam Lemon 2. Thematic areas of Horticulture to be geared up 3. Litchi and Pomegranate orchard to be developed in the KVK 	<p>All KVKs</p> <p>All KVKs</p> <p>KVK Sonitpur</p>
16	KVK Darrang	Mrs Rinkumoni Phukan, SMS Horticulture	<p><u>Recommendation of Members</u></p> <ol style="list-style-type: none"> 1. Exposure visit of Scientists to the Banana Fibre extraction unit in Navsari, Gujrat for training on better utilization of 	<p>All KVKs</p>

SI No	Name of KVK	Presented By	Salient recommendation by	Action
			Banana fibre	
17	KVK Karbi Anglong	Dr A Deka Programme Coordinator	<p><u>Recommendation of Members</u> 1.Suggested wasteland reconstruction through Agroforestry and cultivation of Horticultural crops</p> <p><u>Recommendation of ZPD</u> 1. IFS for hill areas should be a thrust area for 12th plan</p>	KVK Karbi Anglong KVK Karbi Anglong
18	KVK Lakhimpur	Dr N. K. Deka Programme Coordinator	<p><u>Recommendation of Members</u> 1 Groundnut to be introduced into the Cropping Sequence 2. FLDs should be continued for 3-4 years for impact</p>	KVK Lakhimpur All KVKs
19	KVK Goalpara	Dr U Baruah Programme Coordinator	<p><u>Recommendation of Members</u> 1. Piggery based farming system should be introduced</p>	KVK Goalpara
20	KVK Dhubri	Dr S Saikia Programme Coordinator	<p><u>Recommendation of Chairman</u> 1The number of farmers in the trials should be clearly indicated.</p> <p><u>Recommendation of Members</u> 1. Banana cultivation by using micro propagules should be adopted by KVKs 2. Crop diversification by incorporating lentil and jute in the cropping sequence</p> <p><u>Recommendation of ZPD</u> 1. In water management programmes quantification of water saved is necessary</p>	All KVKs All KVKs KVK Dhubri All KVKs
21	KVK Nagaon	Dr T P Saikia, Programme Coordinator	<p><u>Recommendation of Members</u> Energy saved through zero tillage operation in wheat should be quantified</p> <p><u>Recommendation of Chairman</u> At least two KVKs should be equipped with farm machinery to demonstrate the application in the farmers field.</p>	KVK Nagaon DoEE, AAU, Jorhat

Recommendations/Suggestions

a) Research - Extension Convergence/ linkages/ interface Programmes of KVKs

1. Regular SAC meeting with member of all line departments and important stakeholders.
2. Participation of members of all line departments in ZREAC meeting should be made mandatory
3. Directive from the Production Commissioner to all the line departments to have collaboration with KVK
4. Formation of Joint monitoring mechanism
5. Responsibility sharing to be made mandatory by all the stakeholders in policy making
6. Frequent interface meetings with the line departments

b) Training/FLD/OFT/Innovative Extension programs/group actions/Information management

1. Formation of CIG (Commodity Interest Group)
2. Training programme should be target oriented
3. On farm large scale demonstrations for greater visibility of technology
4. Identification of operational area in a Cluster mode
5. Introduction of KVK Bandhu/Mitra village-wise
6. Inventory of technology of Animal Sciences should be developed
7. Updating of agricultural technology inventory should be done in a phased manner
8. Cafeteria of technology (on campus) mainly for animal science should be developed in the KVK
9. Identification of Focus farmers for extension of KVK activities at village level
10. Continuous technology back-stopping should be done
11. More vocational training programme with the involvement of well experienced professional as resource person
12. Availability of quality input should be ensured in the OFT and FLD programme
13. Organization of extension programmes by taking opportunity of panchayat-gathering
14. Rapport building with the village head for conducting village extension programmes.
15. Involvement of Mahila Mandal for enhanced empowerment of women
16. Involvement of Krishi pandit as Resource Person in farmers' interface
17. Promotion of Farmer's Field School
18. Establishment of system for special recognition of farmers by KVK
19. Popularization of Street drama for extension works
20. Inventory of home science technology should be prepared for OFT and FLD programme

21. Mass Campaign of recommended technology by all KVKs in specific time during cropping period
22. Publicity of success story in the Naam Ghar/religious places/market place, etc.

Interface with Govt. department

1. Department of Agriculture, Veterinary, Fishery, Sericulture, Forestry, Agril. Marketing Board, SIRD, DRDA, NHB, Commodity Boards, APEDA, NERAMAC, MPEDA, NEDFi, Health department and Industries should be involved
2. Information on district programmes should be disseminated (e.g. JFM programme)

Farmers' access through SMS/ICT

1. Revenue generation from SMS service (e. g. by selling database)
2. Advertisement of agril Input producing agencies in KVK website for resource generation.
3. Community Radio/ FM Radio may be used for increased accessibility of farmers
4. Declaration and celebration of KVK Day should be proposed to national authority.
5. Innovations for KVK-Farmers' contact e.g. disseminating messages to farmers through farmwomen.

Strengthening of KVK activities: Organisation, HR, Structure, financial management, resource generation

1. Need of skilled manpower
2. Job status permanency of SMS, Prog. Asstt. & Farm Manager should be decided.
3. Training of KVK personnel for exposure to new technology
4. Exposure of KVK Scientist to management training
5. Decentralization and enhancement of financial power for better performance of the KVK
6. Seed/planting material production should be done in the KVK for resource generation
7. Explore possibilities of financial help from the developmental agencies like NABARD, DRDA, ATMA, NFSM, NHM, RKVY, Agril. Marketing Board, DMI
8. Contingency & TA should be doubled in context of new Pay Band & market price rise.

Way forward for enhancing the vibrancy/ effectiveness of KVKs

1. e-Extension & private extension should be initiated.
2. More emphasis should be given on market-led extension
3. Commodity based extension
4. Linkage of Production, Crop Insurance, Storage and marketing
5. Professionalism to the KVK system
6. Focus activities of KVK through audio-visual aids

COMPILED REPORT OF QRT

Assam has a total geographical area of 78, 43,800 ha with 27 districts and there are 21 KVKs in the state of Assam. As much as 19 KVKs are under Assam Agricultural University, Jorhat and rest two under NRC on Pig and ICAR Research Complex for NEH Region. Most of the KVKs are new in Assam which was mostly established in the year of 2004-06.

The Quinquennial Review Team (QRT) visited Assam from April 24 to 27, 2011 and reviewed the activities undertaken by KVKs and by and large the mandated activities of the KVKs were found to be satisfactory. The team also verified the activities of KVKs by the presentation of Programme Coordinators of the KVK. From the presentation made by the Programme Coordinators, the following observations may be made by the team for evaluation of the KVKs of Assam.

1. Performance of KVK against mandate and functioning in the light of changing production and marketing situation in the district:

- Winter rice (*Sali*) is the main crop of Assam covering an area of 80% of the cultivable land. The farming community is predominantly engaged in mono-cropping of rainfed winter (*Sali*) rice in the state. Many pockets of the state are flooded in the rainy season totally destructing the traditional winter rice varieties. With natural vagaries and low yield of the traditional varieties the production and productivity of rice is very low in the state. Seed replacement rate with HYV were also not appreciably high due to the farmers lack of knowledge and technological support. A good number of problems have been diagnosed in the farmers field by the KVK scientists during the Winter rice (*Sali*) season were - low yield of *Sali* rice variety Ranjit due to absence of seed replacement, flood damage of *Sali* rice, poor crop yield due to delayed transplanting with old seedlings under adverse climatic condition, non-availability of suitable submergence tolerant HYV of *Sali* rice, injudicious use of chemical fertilizer, pesticide, stem borer infestation, imbalance use of nutrients, lack of adequate water management practice, non availability of winter rice variety suitable for low input condition, non availability of quality seed, crop failure due to flood/ drought like situation, recurring flood in the district, submergence at harvesting due to pre-flood, low yield of traditional glutinous rice varieties etc. etc.. In this regard, KVKs have disseminated the following technologies like-Staggered planting with *Sali* rice varieties Gitesh, varietal evaluation of submergence tolerance varieties like “Jalkuwari” and “Jalashree”, improved IPM package like release of bio-agent “Trichogramma” @ 50,000/ha/week for 6 weeks and INM package in *Sali* rice which has helped farmers to expand rice cultivation in an economical way to the low lying areas. Many HYV of glutinous rice varieties like ‘Aghoni’ and ‘Bhogali’ have been introduced which have helped farmers’ to expand the area under glutinous rice in some districts. In the hill district of Karbianglong a low input responsive winter rice variety “Srimanta” has been introduced in some pockets.
- A number of problems has also been diagnosed during the summer rice (*Boro*) season in the state like-poor yield in local *Boro* rice, unavailability of a suitable HYV of *Boro* rice, low yield due to long duration & cold injury, high irrigation cost, long duration, flood damage at maturity etc. With introduction of improved summer rice varieties in the farmers’ field like Joymati, Kanaklata which yield on an average of 5.5-6 tons during the summer rice season farmers are now able to cultivate dual crop

of rice in a year. Due to the technological intervention and gradual adaptation by farmers a vast portion of the low lying areas of the state which gets inundated during the *Sali* season has been covered with HYV of *Boro* rice. Farmers have started dual crop of rice and have also started producing seeds in their own farms with guidance from KVK scientists for seed certification especially in the districts of Goalpara, Lakhimpur, Chirang, Kokrajhar, Karimganj, Nagaon and Golaghat.

- Problem diagnosed during Autumn rice season (Ahu) is non adoption of high yielding short duration transplanted *Ahu* varieties. With technological intervention farmers have adopted HYV of hill rice Inglongkiri and HYV transplanted ahu var. Haccha in the hill district of Karbi Anglong. To combat low yield and high cost of irrigation, HYV of autumn rice has been practiced with SRI in the Nagaon district and long duration var. 'Jaya' have been replaced by short duration var. 'Luit' (110 days) in the Nalbari district.
- Among the oilseed crops farmers predominantly practice rapeseed cultivation after the harvest of winter rice in Assam. However, in some areas where farmers grow long duration winter rice varieties the farm land remains occupied during the rapeseed/mustard growing season. Due to low yield of the traditional varieties or unavailability of appropriate late sown varieties the farmers are unable to expand the area under this crop. With KVKs intervention 80% of the farmers have adopted improved varieties like TS-36, TS-38 for their improved yield (12-15q/ha) and 'TS-67' suitable for late sowing in the districts of Cachar, Darrang, Golaghat, Dhemaji, Chirang, Jorhat and Kokrajhar. Improved INM package and irrigation practices have also been adopted by 50 % of the farmers in some of the districts of Assam. Improved variety of Sesamum AST 1683 has been adopted by 40% of the farmers in the Kokrajhar district.
- Problem diagnosed in pulse production is low yield of traditional varieties of pulses and poor marketability. Technological interventions with improved varieties in pulses like 'Uday', 'Utkash' of Rajmah, 'PU-1' variety of blackgram and 'Azad' variety of pea farmers' have now expanded the area under pulses from earlier 20% to 30%.
- Among fiber crops Jute cultivation is generally practiced among the farmers of Darrang and Nagaon districts. HYV ' Tarun' has been adopted in these districts for better quality and yield.
- Due to poor yield and higher incidence of diseases of inferior planting material in improved sugarcane vars. like 'Dhansiri', 'Luhit', 'Barak' has been introduced and 35% of the farmers have adopted these varieties in the Nagaon district.
- Among horticultural crop high density plantation of banana with varieties like 'Malbhog', tissue cultured plantlets of 'Amritsagar' and 'Grand-9' has been adopted by 40% of the farmers of some districts of Assam. About 10% of the farmers have been exposed to technologies like fiber extractions from banana pseudostem. Khasi mandarin Orchards has been rejuvenated by adopting prophylactic measure to control trunk borer. To combat low non farm income and spoilage of seasoned fruits and vegetables fruit preservation with value addition has been adopted as an income generation activity. Improved Tomato variety 'Arka-Shrestha' has been introduced in Golaghat district and IPM practice to control bacterial wilt has been introduced in tomato in the Tinsukia district.
- The impact of vocational training programme is demonstrated by 40% adoption of low cost compost preparation using value addition in water hyacinth and

vermicompost in various districts. Cultivation of Oyster mushroom is another technological intervention benefiting 50% of the beneficiaries in the district of Kokrajhar and Karimganj.

- Improved hatcheries and integrated rice cum fish farming system has been adopted in the Goalpara district of Assam and farmers are practicing scientific management of the fisheries with application of lime.
- Problem diagnosed under livestock are - low productivity of animals and breed up gradation, poor performance under low nutrient feeding system, health hazard, low body weight, low quality milk production. With the introduction of “Beetle” cross breed goat, “Ghungroo” breed of pig in the districts 50% farmers have replaced their local livestock with the improved breeds. Feeding the local livestock breeds with concentrated feeds have led to the increase in body weight of the local breeds. Scientific management practices in poultry and introduction of improved breeds have helped farmers to initiate small entrepreneurship like broiler farming and improve egg production in poultry.
- Through KVKs intervention, most of the districts carrying out seed production programme are now able to market foundation and certified seed of rice to seed producers and farmers of other districts. To motivate the farmers for group marketing, the KVK had organized training programme under RKVY and MITCON. A sale point in Agricultural Technology Information Center (ATIC), AAU, Jorhat has been set up for KVK beneficiaries. Department of Agriculture and NGOs involved in dairy development are also extending their help for sustainable marketing of their produce.
- Contract Farming System has been catalyzed for efficient disposal of farmers produce and Commodity Future Market for rice, jute, dry chilli and rapeseed-mustard has been promoted in Nagaon districts. In some districts of the state farmers group has been organized for marketing their produce. Marketing knowledge of SHGs/Farmers’ clubs has been developed through training programmes on Commodity Future Market and marketing dimensions in the Nalbari district. Market linkages of certified seed produced by farmers have been facilitated through liaison with seed purchasers.
- For increasing production and productivity of the major crops of the districts, training programmes on improved cultivation technology of rice, rapeseed, potato, vegetables, banana has been conducted. In KVK intervention sites a quantum jump in production and productivity, particularly of *Sali* rice and rapeseed, has been observed due to adoption of water management technology. Increase in rapeseed production has been observed from 6.5 q/ha to 9 q/ha in the districts of Jorhat, Golaghat, Nagaon after the introduction of HYV var. TS-38 due to high oil content as compared to their local varieties. Likewise, KVK, conducted demonstration and training programme on *Sali* rice cultivation with improved production technology, the productivity in the intervention site has increased consequently.
- As a part of mandated activities 10241 extension personnel have been trained for the recent advancement of the agricultural technology including some burning issues like climate change and its impact on agriculture, awareness to mushroom poisoning, intellectual property rights and farmers’ varieties, pesticide contamination of farm produce etc. through 413 training programme. To facilitate employment generation, rural youth including school drop outs have been trained and to minimize the gap in research yield and farmers yield a total of 76,836 practicing farmers, rural youth and farm women have been trained through 3623 trainings. Remarkable impact have been

observed in the floriculture, mushroom production, vermi-composting, dairy and poultry sector.

- Four hundred and ninety three different on farm trials (OFT) have been tested for their performance and location specificity in different district. A positive response was observed as 60% of the farming communities have replaced seeds with HY *Sali* rice variety “Ranjit” and in KVK intervention areas farmers have started producing certified seeds in their own farm.
- A total of one thousand three hundred and twelve frontline demonstrations of proven technologies have been conducted as a result of which 40% of the flood effected area and the areas not suitable for *Sali* rice cultivation have adopted improved varieties like ‘Jalashree’, ‘Jalkuwari’ developed by Regional Rice Research Station, Titabor under Assam Agricultural University. The 20% of the potential flood prone areas have also adopted HY summer rice varieties like “Joymati” and “Kanaklata” developed by Regional Rice research Station, Titabor under Assam Agricultural University which gives a yield of 5.5-6 tons/ha as against local check varieties yield of 3-4 tons. The late sown toria variety ‘TS-36’ developed by AAU has spread extensively in many districts. Sixty percent of the farmers have adopted this technology in the village where toria was not cultivated at all earlier. In regards to the pulse crop, the pea variety ‘Azad Pea 1’ which was demonstrated in the village replaced other varieties because of its high productivity and marketability and about 30% of farmers adopted this technology. Among horticultural crops improved varieties of like Amritsagar and Malbhog banana have been introduced into farmers’ field.

2. Research -Extension linkage at District/block/panchayat levels:

- At the district level all KVKs irrespective of being under ICAR/AAU are actively involved as Technical support Institution (TSI) in the formulation of C-DAP and also as a member of the District Agricultural Planning Unit (DAPU) for implementation and monitoring of RKVY programmes. Besides this the KVKs are members of ATMA (AMC and GB) for planning implementation and evaluation of programmes, NFSM (Rice and Pulse) for seed production, District Development Committee (DDC), DACC, DLMIC (TM-Hort), District Agricultural Pest Surveillance Unit (DAPSU), DMC for implementation of National Medicinal Plant Mission and DRDA. The District heads of all line departments are the members of KVK SAC meetings. At the Block level KVKs are involved as master trainers for BAPU and RKVY for the preparation of Block Agricultural Plan and also for BTT under ATMA.
- At the panchayat level KVKs are involved in the capacity building of PRI personnel and as master trainers for PAPU under RKVY for the preparation of Panchayat level Agricultural Plan. The effective Research and Extension Linkages are established through the ZREAC meeting organized by AAU where in different problems faced by Extension Personnel were placed and discussed and researchable issues forwarded to the concerned authority. The KVKs are also associated with All India Radio through which Radio Talks on Agriculture and the allied subjects are broadcasted for the benefit of the rural population.

3. Resource Mobilization:

- The KVKs of Assam have received funds from various sources such as RKVY under the Government of Assam, Ministry of Water Resources, Govt. of India, Forward Market Commission, GOI, DBT, DRDA, DST, MITCON, NABARD, Coconut Development Board, ATMA, AACP, IGNOU, NFSM for conducting trainings, Field demonstrations and Demonstration units.

4. Response from farmers with reference to technology backstopping

- The KVKs of Assam while performing their mandatory activities of training, OFT, and FLD have successfully exposed the farming community to modern Agricultural Technology and its application in the field. Farmers are gradually realizing the importance of a dual cropping system for increased economic gains. The seed replacement rate with HYV seed is gradually increasing in several districts of Assam and farmers are now on a lookout for HYV varieties with shorter duration and have grain quality which has better marketability. Simple technologies such as seed treatment, maintenance of plant stand have considerably lowered the cost of fertilizer application and added to the yields and are being well accepted by the farmers.
- Besides rice Toria is another upcoming important crop. Farmers are replacing traditionally grown varieties with varieties such as TS-38 which can be grown as a late sown crop after rice and gives high yields. Apiaries in the mustard cultivations have two advantages such as increased pollinations and honey bee production as a means of value addition.
- The IPM and INM modules have shown positive results in the crop growth and soil health status but the timely availability of the critical inputs is a necessary factor. In Jute growing areas the variety Tarun has been well accepted. The development of crop management practices for Char like areas is desirable.
- In almost all the districts women SHG groups are involved in the preparation of pickles jams and jellies with seasonally available fruits and vegetables but the absence of a regular market for such products is a delimiting factor.
- Commercial production of Oyster Mushroom has been adopted by farmers but the unavailability of spawn is a major drawback. With the commercialization of Agriculture farmers are fast realizing the importance of farm mechanization improved storage structures and the development of assured market linkages is necessary for greater economic returns

Problems/ Constraints/ policy- Organization structure, finance/ funding

- Majority of the KVKs of Assam are yet to develop adequate infrastructure facilities such as soil testing laboratories, mushroom spawn production laboratories, ICT facilities, post harvest infrastructure and equipments thereof to keep pace with the increased activities of the KVK including construction of boundary walls is absolutely necessary around the KVK sites against stray cattle and for campus security. A Single office vehicle is inadequate for increased mandated activities and follows up of the conducted programmes. Another important factor which contributes to the increase in the productivity of crops is availability of quality seed and planting material on time. There is also a non uniformity of varieties promoted by the Government and KVKs.

Keeping in view the climate change there is a need to develop contingency plan for stress situations like flood and drought. The Flood affected districts of Assam such as Dhemaji and Lakhimpur have heavy sand and silt deposition which makes cultivation of crops impossible. Development of contingency plans for such areas is also necessary. The migration of agricultural laborers to non farm sectors creates major problems in the major cropping seasons. There is also a need for clear policies on marketing and minimum support price.

Way forward- short, medium and long term

Short term

1. Enterprise diversification for livelihood security linking extension and research activities
2. Refocusing Public Private Partnership for introduction of ICT mediated agriculture
3. Value addition of potential agri-products for profit maximization of farmers
4. Popularizing available low investment technologies
5. Skill up gradation of practicing farmers

Medium term

1. Converting validated innovations to product for development of market-driven enterprise
2. Validating, protecting and patenting traditional innovations for domestic and global market
3. Contingency crop planning
4. Establishing single commodity villages such honey bee village , mushroom village, seed village
5. Improvement of local breeds of animals through artificial insemination
6. Professionalizing agricultural extension for technology diffusion, refinement and application
7. Formation of farmers club and common interest groups
8. Self sufficiency in quality seed of major crops like Rice and Toria
9. Promotion of agricultural insurance including weather insurance Attainment of quality fish seed and animal breed sufficiency.
10. Attainment of quality fish seed.
11. Promotion of IFS and *bari* development
12. Easy access to credit facilities

Long term

1. Gender mainstreaming –through special programmes for women and SC/ST
2. Capacity building of stake holders through HRD trainings.
3. Household food and livelihood security through sustainable agricultural growth
4. Intensification of farm mechanization to support production systems in view of growing shortage of agricultural labour
5. Promotion of precision farming practices for efficient utilization of resources for boosting up production.
6. Storage facility for agricultural produce.
7. Development of rural agri-business hub for cereal, oilseed, pulse, jute and vegetables for domestic and cross border trade
8. Narrowing the gap between existing and desirable levels of production and productivity
9. Promotion of low volume high value crop

APPENDIX-I
Research – Extension Linkages and Resource Mobilization

Sl. No	Funding Source	Year	Amount (Rs)	Particulars	Name of the KVK
1	Ministry of Water Resources, Govt of India	2007-08, 08-09 & 09-10	508100.00	Demonstration of water management technology in major crops	KVK Dhubri
		2007-08, 2008-09, 2009-10)	475000.00	FPARP	KVK Kamrup
			1,59,200.00	Popularization of latest water management technologies in different crops at farmers field under FPARP	KVK Nalbari
		-	497900.00	FLD	KVK Golaghat
		2007-08, 08-09 & 09-10	1,25,000.00	Demonstration of water management technology in major crops	KVK Kokrajhar
		2007-08, 08-09 & 09-10	3,00,000.00	Demonstration of water management technology in major crops	KVK Chirang
		2007 08,08 09 &09 10	508000.00	Demonstration of water management technology in major crops	KVK Nagoan
		-	350000.00	Water management demonstration in cereal, oilseed and vegetables	KVK Sonitpur
2	RKVY, Govt. of Assam	2008-09	2,00,000.00	Capacity building of farmers group in marketing	KVK Dhubri
		2009-10	20,00,000.00	Large scale quality seed production in PPP mode	KVK Dhubri
		2009-10)	367000	Technology Showcasing (Seed production Programme,	KVK Kamrup

		2009-10		Set up of different demonstration unit i.e. Goatery unit, dairy unit, Composting unit and mushroom unit and a part of boundary wall.	KVK Sivasagar
		2008-09	2,00,000.00	Capacity building of farmers group in marketing	KVK Tinsukia
		2008-09	2,00,000.00	Capacity building of farmers group in marketing	KVK Chirang
		2009-10	15,00,000.00	Large scale quality seed production in PPP mode	KVK Chirang
		2008-09	2,00,000.00	Capacity building of farmers group in marketing	KVK Kokrajhar
		2008-09	2.00	Capacity building of farmers group in marketing	KVK Nagoan
		2009-10	46.89	Demo units	KVK Nagoan
		-	200000.00	Training programme on marketing	KVK Sonitpur
3	Forward Market Commission, GOI	2009-10	1.00	Capacity building programme in commodity future market	KVK nagoan
		2009-10	1,00,000.00	Capacity building programme in commodity future market	KVK Dhubri
		-	12,500	Sensitization and creating awareness amongst farmers regarding the concept, advantage and modalities of Commodity Future Market	KVK Nalbari
		2009-10	100000	Capacity building programme in commodity future market	

4	DBT, GOI	2009-10	70,000.00	Generation of quality planting material in farmers field	KVK Dhubri
5	DRDA		108800.00	Banana Fibre Extractor	KVK Darrang
			81650	Production of Quality Planting material in Shade Net House	KVK Darrang
			29000	Celebration of Women's Day	KVK Darrang
		2009-10	505000	Estt. of Hort. Nursery	KVK Karimganj
6	NABARD		125000	Exposure Visit to CTRI, Razamundri	KVK Darrang
		2009-10	20000	Technology week celebration	KVK Nagoan
7	DST	2010	100000	Two months training programme on Raising of Modern and Commercial Nursery	KVK Kamrup
8	MITCON	2010	200000	Awareness Programme on Future commodity market (2010)	KVK Kamrup
9	ATMA	2009-10	122000	FS interaction, OFT, FLD	KVK Karimganj
		2009-10	1,00,000.00	Demonstration, FLD etc	KVK Lakhimpur
10	DBT led Organic Farming	2010-11	14,83,000.00	Organic farming of vegetable crops like french bean, tomato & chilli	KVK Lakhimpur
		-	1192214.00	Organic Production of Tomato, King Chilli and Ginger	KVK Golaghat
11	IGNOU	-	-	Utilization of rainwater for increasing agricultural productivity	KVK Nalbari
12	Deptt. Of Agriculture, Govt of Assam	-	1,24,000.00	Production of quality certified seeds of rice var. Ranjit and Luit, Toria var. TS-36	KVK Nalbari
13	AACP(World Bank Funded Programme)	-	38,213.00	Conduct on farm trials for technology assessment & refinement	KVK Nalbari

14	National Food Security Mission, Govt. of India	-	34,000.00	Production of foundation seed of HYV of winter rice, var. <i>Ranjit</i>	KVK Nalbari
		-	220900.00	Seed Production	KVK Golaghat
15	Coconut development board, Guwahati	-	20000.00	Construction of vermicompost unit	KVK Sonitpur

List of Participants

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