



**REPORT  
OF  
QUINQUENNIAL REVIEW TEAM FOR KVKs AND  
ATARIs OF ZONE -VI AND VII  
(2011-12 to 2018-19)**



**ICAR-Agricultural Technology Application Research Institute, Zone-VII  
Umiam, Meghalaya-793103  
(An ISO 9001:2015 Certified Organization)**

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## **Report of the Quinquennial Review Team, 2011-12 to 2018-19 (Zone-VI and Zone-VII)**

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## ACRONYMS

AAU	Assam Agricultural University
AI	Artificial Insemination
APART	Assam Agribusiness and Rural Transformation Project
ARYA	Attracting and Retaining Youth in Agriculture
ATARI	Agricultural Technology Application Research Institute
ATMA	Agricultural Technology Management Agency
ATIC	Agricultural Technology Information Centres
CAU	Central Agricultural University
CFLD	Cluster Frontline Demonstration
CIG	Commodity Interest Group
CITH	Central Institute of Temperate Horticulture
DAMU	District Agro-Met Unit
DOA	Department of Agriculture
DEE	Directorate of Extension Education
DEO	Data Entry Operator
DFI	Doubling Farmers Income
EFC	Expenditure Finance Committee
e-NAM	National Agriculture Market
FIG	Farmers Interest Group
FLD	Front Line Demonstration
FFS	Farmers Field School
FPO	Farmers Producer Organization
GOI	Government of India
ICAR	Indian Council of Agricultural Research
ICT	Information and Communication Technology
IFS	Integrated Farming System
IMC	Institute Management Committee
ITK	Indigenous Technical Knowledge
KKA	Krishi Kalyan Abhiyan
KVK	Krishi Vigyan Kendra (Farm Science Centre)
LLP	Lab-to-Land programme
MANAGE	National Institute of Agricultural Extension Management
MoU	Memorandum of Understanding



MPTS	Multipurpose Tree Species
NABARD	National Bank for Agriculture and Rural Development
NEC	North Eastern Council
NFDB	National Fisheries Development Board
NEFA	North East Frontier Agency
NEMA	New Extension Methodologies and Approaches
NGO	Non-Governmental Organization
NHM	National Horticulture Mission
NICRA	National Initiative on Climate Resilient Agriculture
NITI	National Institution for Transforming India
NOFRI	National Organic Farming Research Institute
NRC	National Research Centre
NWP	National Watershed Programme
OFT	On Farm Testing
PFMS	Public Financial Management System
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PPV&FRA	Protection of Plant Varieties and Farmers' Rights Authority
PRA	Participatory Rural Appraisal
QRT	Quinquennial Review Team
RF	Revolving Fund
RKC	Rural Knowledge Centre
RKVY	Rashtriya Krishi Vikas Yojana
RWHS	Rain Water Harvesting Structure
RTC	Rural Technology Centre
SAC	Scientific Advisory Committee
SAU	State Agricultural University
SFC	State Financial Corporation
SHG	Self Help Group
SMS	Subject Matter Specialist
SHC	Soil Health Card
SWTL	Soil and Water Testing Lab
TADA	Technology Assessment and Demonstration for its Application
TSP	Tribal Sub-Plan
ZCU	Zonal Coordinating Unit
ZPD	Zonal Project Directorate

## ACKNOWLEDGEMENT

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The Chairman and the Members of the Quinquennial Review Team (QRT) place on record their appreciation and deep sense of gratitude to Dr Trilochan Mohapatra, Secretary, DARE and Director General, ICAR for providing the opportunity to be a part of the QRT of ICAR-ATARIs and KVKs, Zone VI and Zone VII for the period of 2011-12 to 2018-19.

The QRT would like to thank Dr Ashok Kumar Singh, Deputy Director General (Agricultural Extension), ICAR, and Dr Ved Prakash Chahal, Assistant Director General (Agricultural Extension), ICAR, for their valuable support and guidance.

The help and whole-hearted support extended by Dr Bidyut C. Deka, Director, ICAR-ATARI, Zone-VII, Umiam and Dr A. K. Tripathi, Director, ICAR-ATARI, Zone-VI, Guwahati for the smooth conduct of Travel Workshops, Meetings and Interactions of the QRT is duly acknowledged. The team appreciates all the scientific, technical, administrative, and supporting staff of ATARIs and KVKs for their cooperation and assistance during the visits.

Dr K D Kokate, *Chairman*

Dr B S Hansra, *Member*

Dr A K Vasisht, *Member*

Dr S V Ngachan, *Member*

Dr H C Bhattacharyya, *Member*

Dr A K Singha, *Member Secretary*



To  
Dr. T. Mohapatra  
Secretary, DARE and Director General, ICAR,  
Indian Council of Agricultural Research,  
Krishi Bhawan, New Delhi-110001

Dated 20<sup>th</sup> August, 2020

**SUBJECT: The Secretary, DARE and Director General, ICAR constituted a Quinquennial Review Team (QRT) vide Office Order F. No. A. Extn. 9/19/2019-AE-II dated 19<sup>th</sup> June 2019 in respect of ICAR-ATARIs and KVKs, Zone VI and Zone VII for the period of 2011-12 to 2018-19**

Dear Sir,

The QRT constituted by ICAR has reviewed the programmes and activities of KVKs and ATARIs of Zones VI and VII for the period of 2011-12 to 2018-19. The report of the QRT is submitted herewith for kind consideration. The KVKs have played a crucial role in empowering the farmers including farm women, since 1974 when the first KVK was established and proved their worth in addressing the needs of the stakeholders. KVK as an institution working at grassroot level has played role in transforming Indian Agriculture. KVKs are bulwark of agricultural extension network in the country, observed by the Parliamentary Standing Committee on Agriculture (2011-2012). Similarly, FAO applauded, KVK as India's Institutional Innovation inspiring the World of the 21st Century.

That said, for meeting new challenges, particularly present pandemic COVID-19 situation, KVKs need to be more efficient and vibrant to play effective role in economic empowerment and accelerating agricultural growth. It is important to focus on conservation of natural resources, achieving higher productivity and sustainability in agriculture, enhancing farmers' income through bringing in farming to market value chain efficiency. Thus, the KVK system including ATARIs needs strengthening urgently to address the specific problems and priorities in national and global perspective.

The North Eastern Region (NER) of India has a unique topographical terrain completely different from the rest of India with lot of potential in view of *Atma Nirbhar Bharat* due to the diverse flora and fauna. At present there are 89 KVKs functioning under 18 different host organizations of NER.

Keeping in view the Terms of Reference, the committee reviewed the performance of KVKs of Zone VI and Zone VII by organizing Travel Workshops including site visit to selected KVKs in four phases. The methodology adopted for review included a close scrutiny of all the documents provided by the ATARIs and concerned KVKs, inputs received from various stakeholders, discussion with officials of state departments and other organizations, interaction with Senior Scientists and Heads and SMSs of Krishi Vigyan Kendra (KVK) and different host organizations, visit to KVKs laboratories, exhibition stalls arranged by KVKs of respective states and farmers' fields.

The KVKs of Zones VI and VII under the guidance of ATARIs have significantly contributed by the way of showcasing the frontier technologies, capacity development of stakeholders, made available technological information and inputs, adopted participatory approach, and pursued assessment of technologies to suit different agro-climatic conditions. KVKs in both the zones covered as many as 11,766 villages, i.e. 28.22% of the total villages (41,693) till 2018-19 under various programmes and activities.

However, NER has situational and locational disadvantages due to hilly and tribal areas which need to be converted into opportunity by adopting ICT mediated approaches for increasing use of technologies leveraging artificial intelligence (AI) systems to bring in radical changes in promoting resource use efficiency, plant and animal health monitoring, product quality estimation including traceability for export of farm commodities through Farmer Producers Organizations (FPOs). The interplay between

agroecological and socio-economic factors shall play an amplifying role in the agricultural economy of NER. The socio-economic analysis of the integrated production technologies, crop and livestock adoption pattern and techno-economic studies assume importance in this context.

The QRT, after gauging the national and international scenario in agricultural extension including on-farm research, feels that, the times ahead are equally challenging and exciting in its prospects. ICAR-ATARIs and KVKs have the wherewithal in terms of technical competency to meet those challenges. They are uniquely positioned to leverage their existing strengths in addressing the emerging challenges. The QRT has made an earnest effort to address the terms of reference while balancing the national priorities, available resources in terms of finance and manpower and time frames to achieve prioritized targets. Notwithstanding the pulls and pressures of diverse targets, we strongly believe in the capability and competence of ICAR-ATARIs and KVKs of NER to achieve the challenging targets before them, with the strong support from the Council.

We consider it as an honor that ICAR has entrusted this responsibility to our team and we place on record our sincere gratitude to the Council.

Best regards,

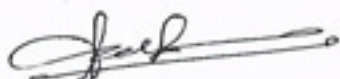
Sincerely yours,



(B. S. Hansra)  
Member



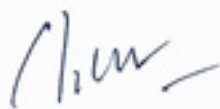
(A. K. Vasisht)  
Member



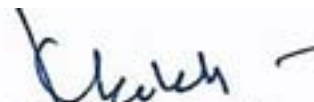
(S.V. Ngachan)  
Member



(H. C. Bhattacharyya)  
Member



(A.K. Singha)  
Member Secretary



(K. D. Kokate)  
Chairman

## EXECUTIVE SUMMARY

The Secretary DARE and Director General, ICAR has constituted a Quinquennial Review Team (QRT) vide Office Order F. No. A. Extn. 9/19/2019-AE-II, dated 19<sup>th</sup> June 2019 in respect of ICAR-ATARIs and KVKs of Zone-VI and Zone VII for the period of 2011-12 to 2018-19.

The Committee met on 15<sup>th</sup> October 2019 at ICAR-ATARI, Umiam and finalized visit programme to different states. The visits to KVKs were organized in four phases. The first phase covered the states of Meghalaya and Sikkim (October 16-22, 2019), second phase included Nagaland and Assam (November 4-8, 2019), the states of Manipur and Mizoram were covered in the third phase (November 20-24, 2019) and the fourth phase covered Tripura and Arunachal Pradesh (December 4-9, 2019). In each phase, there was a travel workshop where an exhibition was organized by the KVKs of the concerned state to showcase the technologies and technological products followed by technical presentation on the performance and salient achievements of KVKs during last eight years (2011-12 to 2018-19) by the Heads of individual KVKs as well as suggestion for improvement and way forward for the next five years. The team also visited 10 KVKs to have direct interaction with KVK staff and other stakeholders as well as to have on-the-spot observation of the activities being performed there. Besides, QRT scrutinized all the documents provided by both the ATARIs.

In all, the team reviewed 89 KVKs in the two zones (Zone-VI, Guwahati-46 KVKs and Zone-VII, Umiam-43 KVKs) in four phases and visited 10 KVKs in the region. The QRT perused the inputs received from Vice chancellors of CAU, Directors of Extension Education of AAU, Jorhat and CAU, Imphal, Chairman of NGO KVKs, Officials of Development/Line Departments, NABARD, ATMA, NGOs, staff of KVKs and Farmers Organizations. The team also had a preliminary meeting with Directors of Extension Education, Directors and

Scientists/ Officials of ICAR-ATARIs (Zone-VI & VII) at Barapani, Umiam on 16<sup>th</sup> October, 2019 to discuss and chalk out the strategy and modus operandi of QRT programmes in both the zones of the region.

ICAR-ATARI, Zone-VII, Umiam has completed six in-house research projects and other six externally funded projects besides accomplishing regular mandated activities during 2011-12 to 2018-19. Fortunately, now the ATARI, Umiam has separate administrative building with state of art facilities completed within record time of 20 months during review period. There are total 43 KVKs under this Zone. The KVKs have assessed 1939 technologies through 7015 trials in crops and livestock related enterprises and conducted 44059 frontline demonstrations at farmers' field during the review period. In view of doubling the farmers' income more than 15000 farm families have been identified for implementing 30 suitable technologies across different states of the region and data in this regard are being generated for upscaling. KVKs have produced 5761.06 tonnes of seeds consisting cereals, oilseeds, pulses, spices, vegetables, and tubers. Further, to promote scientific livestock farming in NER, KVKs have produced and distributed 41.36 lakh fish fingerlings, 1991 piglets, 1.2 lakh poultry birds, 434 goats and 477 rabbits.

The total budget utilized by the ATARI, Umiam for the review period was Rs 33,153.20 lakhs (96.72%) of which capital expenditure was Rs. 1777.76 lakhs. The KVKs under the zone generated revenue from revolving fund for Rs 27,97,471 during the reporting period with closing balance of Rs. 70,01,329 by the end of March, 2018. The NITI Aayog reviewed the progress of 35 KVKs of this zone in 2017 indicated that 16 KVKs got A grade and remaining 19 KVKs got B grade. Thus, performance of all KVKs was very good as no KVK was in C grade. The QRT observed the effective planning and monitoring of KVKs by the ATARI, Umiam despite the staff crunch.

ICAR-ATARI, Zone-VI, Guwahati bifurcated from ICAR-ATARI, Umiam and established in 2016. Under the zone, the total budget utilization during the review period was Rs. 36,317.47 lakhs (94.94%) of which capital expenditure was Rs. 1557.32. There are total 46 KVKs under this zone. The NITI Aayog ranking indicated that out of 39 KVKs reviewed, 31 KVKs got B grade, 5 KVKs got A grade and 3 KVKs got C grade.

The major activities of ICAR-ATARI include-

- Planning, formulating, monitoring, guiding and reviewing the activities of KVKs of the zone.
- Identify, prioritize and implement various activities related to technology integration and dissemination.
- Coordinating with SAUs, ICAR institutes/organizations, host institutes, line departments and voluntary organizations in the zone for implementation of KVK mandated activities.
- Partnering with Directorate of Extension Education of CAU in assured technological backstopping to KVKs and appropriate overseeing of KVK activities.
- Strengthening the Directorates of Extension Education of CAU with financial support.
- Implementing special projects and programmes of ICAR like NICRA, CFLD, ARYA, NEMA, Farmer FIRST, DAMU and others.
- Facilitating financial and infrastructural support to KVKs for effective functioning.
- Maintaining close liaison with ICAR headquarters particularly with Division of Agricultural Extension for preparing reports, write ups and other important documents.

In general, KVKs of both the zones are performing their mandated activities as per the action plans with the support and guidance from ATARI. The KVKs have made efforts to use ICT and mobile extension by sending appropriate advisory through text and voice messages. Further, the KVKs of both the zones have been engaged in

implementing various flagship programmes like CFLD in oilseeds and pulses, PKVY, PM-KISAN, NADCM, *Jal Shakti Abhiyan*, *Krishi Kalyan Abhiyan* and other programmes initiated and announced by the Government of India time to time. KVKs in both the zones covered as many as 11766 villages, i.e. 28.22% of the total villages (41693) till 2018-19 under various programmes and activities with 8364 (27.91%) villages under Zone-VI and 3402 (29%) villages under Zone-VII.

The performance of KVK depends on leadership, team spirit and commitment towards farmers and other stakeholders, passion for work/service, convergence with the development departments, creative innovations, and the patronage of the host institution, which runs the KVK(s). Successful KVKs are characterized by capable leader (Head) and committed staff and getting administrative and financial support from the host institution. The major recommendations of the team for improving the effectiveness of KVKs to serve the farming community in a better way include the following.

### **Administrative**

- As in the case of other ICAR institutes/ Directorates, there is a need to strengthen ATARI by establishing three distinct sections in the areas of (i) Research on Technology Delivery/Application, (ii) Database Management and Process Documentation and (iii) HRD, Coordination and Monitoring. Each section may be provided with Senior Scientist, Scientist and Research Assistant one each.
- The concerned authority of the Council (ICAR) may initiate actions for early recruitment of scientists and other staff lying vacant in ATARIs on priority basis.
- All Subject Matter Specialists in Indian Council of Agricultural Research/State Agricultural Universities/Non-Governmental Organizations/State Government Krishi Vigyan Kendras should be redesignated uniformly as Scientist/Assistant Professor( PB-3, Rs15600-39100 with GP Rs6000 ) to

- ensure much needed parity across teaching, research, and extension positions. The same is recommended by HPCM of KVK in 2014.
- Keeping in view the ever-increasing roles and responsibilities of KVKs, it is necessary to increase the present strength of 6 SMSs in KVK to 10 SMSs. The additional four SMSs may be in the areas of i) Agri-Business Management/ Agricultural Economics and Marketing, ii) Farm Mechanization, iii) Agro-Meteorology and iv) Processing and Value Addition. Special focus must be given to animal husbandry activities as this is one of the most important sectors for farming communities for their livelihood and income generation in all tribal districts of Northeast India. Hence, it is essential to fill up the existing post of SMS in Animal Husbandry at the earliest to cater to the requirements of animal husbandry activities in KVKs. In addition, there is a need to sanction one additional Programme Assistant and two Skilled Support Staff to each of the KVK.
  - It is important to upgrade the Head of KVK to the cadre of Professor/ Principal Scientist for better control and command over the KVKs. This will help to provide intellectual leadership and administrative control as in case of Head of administration in a district
  - Recruitment procedure for the staff of KVKs under different host institutes including ICAR may be as per the rules and regulations of the respective Host Organization subject to the condition that Director, ATARI or his nominee should be one of the members in the selection committees for all posts.
  - Staff transfer in KVKs should be kept at a minimum and if inevitable, must be well planned and obtain prior approval of ICAR so that alternate arrangements will not affect continuity, institutional memory, and progress.
  - The ICAR must take enough care while sanctioning KVKs considering the suitability of the site/ location proposed and credentials of the host institution.
  - The criteria of minimum 20 ha of land for establishment of new KVKs at difficult and hilly terrain may be revisited and moderated, particularly in northeast. It is very difficult to obtain suitable land of 20 ha in hill districts of Northeast India having different land ownership systems for establishment of new KVKs. Therefore, the existing norms of providing 20 ha minimum land with free of cost may be revisited specially for Northeast.
  - KVKs must adhere to the mandated activities as decided by ICAR-ATARI. Additional jobs/ assignments to KVKs should be informed to ATARI well in advance and have to be taken up only after approval by ATARI keeping in view the planned and mandated activities, strength and skills of existing staff, additional resources (manpower and financial) that would be made available to perform the additional jobs etc.
  - A uniform promotional policy for KVK staff needs to be formulated by ICAR exclusively for KVKs irrespective of host Institutes to avoid the difference between the staff of KVKs under ICAR Institutes and other host Institutes.

### Financial

- The recurring contingency support needs its enhancement by 3 times to meet the expenditure towards conducting mandated activities, organizing exposure visits of farmers, TA and boarding charges for farmers while attending trainings/seminars and maintenance of farm etc. A separate fund of Rs. 8-10 lakhs per KVK/ year may be earmarked for KVK farm development.
- Heads of KVKs may be given adequate financial and sanctioning power for effectively implementing the mandated activities.
- More budgetary provision must be made to establish Rural Technology Centers, biocontrol, and processing labs, SWTL, portable carp hatchery, micro-irrigation system, minimal processing unit, demonstration units etc. in all KVKs.



- The actual amount required must be worked out for various infrastructures in KVKs based on the present costs. There should be a greater number of staff quarters for the staff as per necessity because rented house or dwelling facilities are not available in and around most of the KVKs in this region.
- More HRD programmes may be organized on public financial management system (PFMS) and ICT tools for the staff of KVKs dealing with financial transaction and database management.
- Provision for replacement of old vehicle in KVKs and two-wheelers (2 nos.) in each KVK in the region.
- The revolving fund should be increased from one lakh to five lakhs. Revolving Fund Guidelines prepared by the ICAR must be made available to each KVK and should be followed strictly.
- A corpus fund of Rs. 50.00 lakhs per ATARI may be created to give additional financial benefits to outstanding KVKs and to meet other need based urgent requirement by the KVKs.

### Technical

- There is a need to provide technological as well as methodological backstopping by the concerned universities/ ICAR institutes to KVKs to update their knowledge and skills.
- Cross learning across KVKs needs immediate attention to institutionalize it for improved performance by every KVK. Special provision must be made for the exposure visit of KVK staff to best performing KVKs across the country.
- It is recommended that the KVKs must focus on technologies, which address the specific needs of the farmers in the locality.
- Soil testing facilities to all the KVKs with required technical support and additional contingency grant may be provided to improve soil testing and balanced application of nutrients.
- Adequate training must be provided to SMSs of KVKs in marketing, post-harvest technology including value addition, planning, and monitoring and impact assessment studies.
- A booklet may be prepared and be made available to the farming community for each state indicating the information on all state and central governments programmes/ schemes in agriculture and allied fields with their features which are helping the farmers in terms of subsidy, training and provision of other facilities. This must be published in local language.
- The KVKs must publish success stories of the farmers who are doing exceptionally good work for the benefit to other farmers in general.
- The program like market led extension is crucial for linking farmers to markets. Group action approach through formation of SHG, FFS, FIG, CIG, FPO, Farmers Clubs etc. should be considered by the KVKs.
- Strengthen existing single window delivery system and helpline services in each KVK.
- Regular updating of KVK websites to keep it in dynamic mode.
- Establishment of model IFS demonstration unit in all KVKs is suggested considering the local agro climatic conditions, availability of fund, potentiality of the system in the district, marketing, manpower etc. It is also suggested that KVKs must establish IFS models on farmer's fields by identifying progressive farmers for better impact.
- Horticulture based agro-forestry modules may be developed and demonstrated by the KVKs in major shifting cultivation areas with a special funding for this purpose.
- Provision for a generator set and V-SAT facility along with high speed internet for each KVK in the region for improving connectivity and dissemination of information.
- It is suggested to convene SAC meetings on regular basis once in a year instead of two

meetings at present. The Mid-term review, however, could be done at DEE level for better coordination and monitoring.

## Policy

- The monitoring of the KVKs must be strengthened. It is suggested that a committee could be constituted at state level with the retired scientists, officers of the state department of agriculture for effective monitoring and functioning of KVKs.
  - The Director of the concerned ATARIs may be made responsible for arranging apprenticeship /professional training for scientific staff in KVKs. Further, the newly recruited Heads and SMSs must undergo attachment training at the award winning KVKs in the region/ nation for a definite period to enhance their knowledge and skills on field activities through cross learning.
  - The KVK's scientific staff working under the management of NGOs and state Departments should be treated at par with the ICAR/SAU staff in terms of age of superannuation, experience benefits and service conditions to attract scientific talent through lateral entry. This will help in eliminating the inferiority
- complexity in the mind of the staff of the KVKs under state Departments and NGOs.
- The Directors of the concerned ATARIs may identify the best SMS (S) from the Zonal/ National Award winning KVKs who know the system perspective and have all required soft skills. These SMSs may be made responsible for interacting with the KVKs falling in poor performance category and they may accordingly be hired (at least for one week in a month for six months continuously) by the concerned ATARI at its headquarters. The Council may provide financial support for special TA/DA for the same.
  - All reporting and feedback systems must be unified to a single platform including special provision for strengthening the connectivity. The present COVID 19 lockdown situations gave many learning experiences of social distancing with virtual communication and importance of ICT. The KVKs at difficult location, thus, may be connected to satellite communication facilities for timely and urgent dissemination of information.
  - Training policy may be framed so that each staff gets the opportunity for training at least once in five years.



## CHAPTER-1

### 1.0. Introduction

The agriculture and allied sectors are critical to the sustainable growth and development of the country. The issue of growth in agriculture has assumed a global concern in view of meeting the sustainable development goals of producing enough food to end hunger and malnutrition, alleviation of absolute poverty, achieving food security and promoting to end hunger, achieving food security and promoting sustainable agriculture for a rapidly growing world population. In this context, the role of such agricultural technologies which could be integrated into the existing farming systems under different agro-ecological situations for boosting production of various commodities and in turn increasing income of the farmers assumes significance. The agriculture sector in India is pivotal not only to meet the food and nutritional requirements of the people but also for its significant contribution to production, on-farm income, employment and demand generation through various backward and forward linkages.

Extension systems in India have important role to play in addressing these concerns of agriculture. During the post-independence era, agricultural extension in the country was largely the function of State Departments of Agriculture. Some voluntary organisations were also involved in different parts of the country, but with a limited outreach. The Indian Council of Agricultural Research (ICAR) began its participation in agricultural extension through National Demonstrations in 1964. Several institutions have been set up for working towards making agriculture sector competitive. In this context, the Government of India through ICAR has established a wide network of Krishi Vigyan Kendras (KVKs) in all the rural districts of the country. The Northeastern region of India consists of Sikkim and contiguous seven Sister States, viz., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. The region is ethnically distinct from rest of India and has strong cultural ties with Southeast Asia. Linguistically the region is distinguished by a preponderance of Tibeto-Burman languages. North East India has predominantly a humid sub-tropical climate with hot, humid summers, severe monsoons and mild winters.

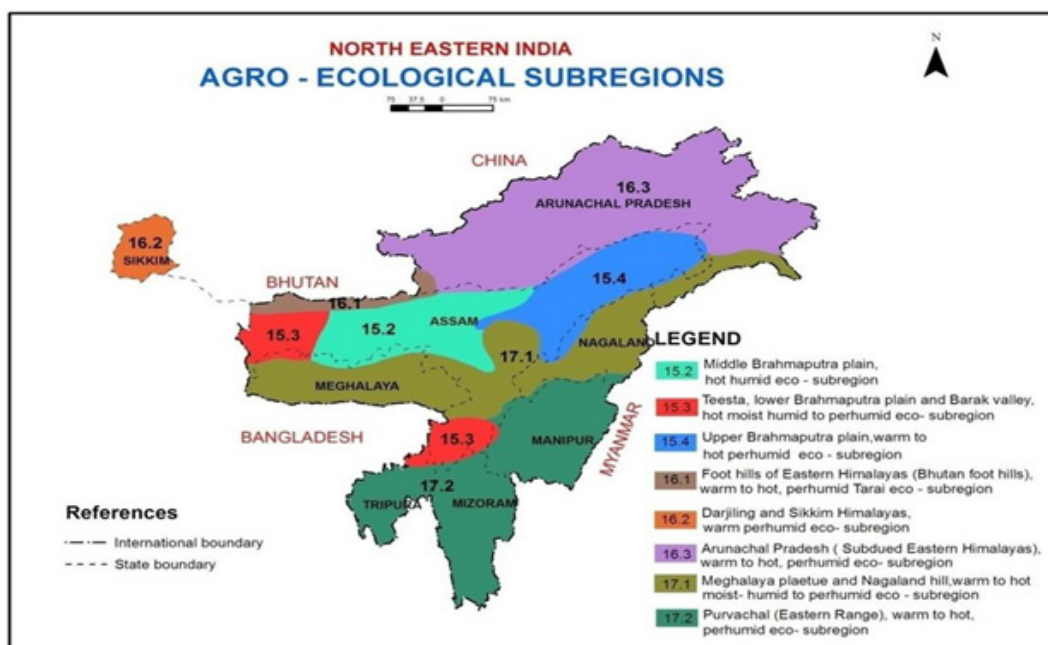


Fig. 1: Agro-ecological sub regions of North Eastern states of India

## 1.1. Brief description of the Seven Sister States and Sikkim

The North Eastern Region of India comprising of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim occupies a strategic location from geographical and political points of view. The region is surrounded on three sides by international borders, in all sides except a narrow passage of about 40 km wide with the rest of the country. The whole region is a meeting place for the people belonging to different religions, and various ethnic groups having different cultural backgrounds and mode of living. This heterogeneous character of the people poses

a big problem to have a better understanding of their various demographic characteristics which are further complicated by the inflow of people from other parts of India and from the neighbouring countries (Bangladesh and Nepal in special). The region has a unique topographical terrain completely different from the rest of India. It is the largest reservoir of biodiversity not only of India but also of the whole world. With the diverse flora and fauna, it is unique in its topography. Therefore, the culture and the tradition of the people are varied in nature. This has a direct implication on the population trend in the region.

**Table-1: Selected demographic indicators of North East (As per 2011 Census, GOI)**

State	Population			Sex ratio	Population density	Decadal population growth rate (%)	Literacy rate (%)
	Male	Female	Total				
Arunachal	7,20,232	6,62,379	13,82,611	920	17	25.92	66.95
Assam	1,59,54,927	1,52,14,345	3,11,69,272	954	397	16.93	73.18
Manipur	13,69,764	13,51,992	27,21,756	987	122	18.65	79.85
Meghalaya	14,92,668	14,71,339	29,64,007	986	132	27.82	75.48
Mizoram	5,52,339	5,38,675	10,91,014	975	52	22.78	91.58
Nagaland	10,25,707	9,54,895	19,80,602	931	119	-0.47	80.11
Sikkim	3,21,661	2,86,027	6,07,688	889	86	12.36	82.20
Tripura	18,71,867	17,99,165	36,71,032	961	350	14.75	87.75

### 1.1.1. Arunachal Pradesh

Arunachal Pradesh, the erstwhile North East Frontier Agency (NEFA) became the 24<sup>th</sup> state of Indian Union on 20<sup>th</sup> February, 1987. It shares international boundaries with Bhutan, Tibet, China and Myanmar to the West, North-East, North and East, respectively and national boundaries with the states of Assam and Nagaland. There are 20 districts in Arunachal Pradesh which are classified into four agro-ecological zones namely, Alpine, Temperate, Sub-Tropical and Tropical zones. The total forest covers amounts to 66, 6878.78 sq km. The terrain of Arunachal Pradesh consists of submontane and mountainous ranges, slopping down to the plains of Assam, divided into valleys

by the rivers Kameng, Subansiri, Siang, Lohit, and Tirap. The capital city of the state is Itanagar. Principal languages spoken in the states are *Monpa, Miji, Aka, Sherdukpen Nyishi, Apatani, Tagin, Hill Miri, Adi, Digaru-Mismi, Idu-Mishmi, Khamti, Miju-ishmi, Tangsa, Nocte, and Wancho*. The state is one of the richest hubs of natural biodiversity in the world.

### Farming scenario

Agriculture is the main source of income of the people of Arunachal Pradesh and they are mainly dependent upon Jhum cultivation. The major crops cultivated are rice, maize, millet, buckwheat, potato, ginger, mustard, large cardamom,

black gram, green gram, red gram, off season vegetables and fruits. Livestock include piggery, goatery, dairy, mithun and poultry as well duckery. Fisheries are also an important component of Integrated Farming System with Trout Farming and Composite Fish Culture viz; silver carp, grass carp and common carp. Encouragement is being constantly given for the cultivation of cash crops like potatoes and horticultural crops like apple, orange and pineapple. Of the total Geographical area (83,743 Sq km), 3164.17 sq km is gross cropped area and the net sown area is 2329 sq km. The cropping intensity is 136%.

### 1.1.2. Assam

Assam is the gateway of North-Eastern region, hence, is the sentinel of North-East India. The state shares international borders with Bangladesh and Bhutan. It is surrounded by Bhutan and Arunachal Pradesh to the North, Manipur, Nagaland, and Arunachal Pradesh to the East and Meghalaya, Tripura, and Mizoram to the South. The state is very much known for its rich forest resources and biodiversity. The forest coverage of the state is 35.24% of the geographical area of the state and 4.08% of the total forest coverage of the country. Principal language spoken in the state is Assamese and the capital city is located at Dispur.

### Farming scenario

Assam is predominantly an agricultural state, and paddy is the major food crop grown here. Cash crops like tea, jute, cotton, oilseeds, sugarcane, potato etc. contribute a considerable acreage. Among the horticultural crops produced in the state, orange, banana, pineapple, areca nut, coconut, guava, mango, jackfruit, Assam lemon and citrus fruits are the important ones. The state has an estimated 40.99 lakh hectares of gross cropped area, of which net sown area is about 28.11 lakh hectare. Livestock and fisheries play an important role in farming system. The cropping intensity is 146% and the total forest covers is 26,832 sq km.

### 1.1.3. Manipur

Manipur has a long and glorious history since the beginning of Christian era. It attained full-fledged statehood on 21<sup>st</sup> January 1972.

Geographically the state is divided into two tracts: the hills comprising of five districts and the plains, with four districts. Manipur is surrounded by Myanmar to the East, Nagaland to the North, Assam and Mizoram to the West and Myanmar and Mizoram to the south. The state is highly rich in biodiversity; large areas being under forest cover (76.53 % of the geographical area). Manipur is the only spot on earth where Brow Antlered Deer (*Cervus eldi*), locally known as *Sangai* is found. Siroy hill range is the abode for Siroy Lily (*Lilium macklineae*), the paradise.

### Farming scenario

Agriculture in Manipur is one of the principal sources of revenue generation and hence, plays an important role in strengthening the state's fiscal backbone. Although, the net cropped area accounts for only about 9.41% of the state's total geographical area, agriculture is the principal source of economic subsistence for over 76% of the workforce. It is interesting to note that 52% of the total agricultural area lies in the valley that sustains the livelihood of more than half the populace of Manipur valley. Paddy is the principal food grain crop. The quintessential Manipuri rice is known all over the country for its sweet flavour and aromatic fragrance. Apart from rice, wheat, maize, pulses, fruits and vegetables are also grown. Relocating and transplanting seeds are the primary modes of cultivation that are practiced in the state. *Jhum* and terrace cultivation are extensively practiced in the hilly areas. Further, Integrated Farming System including Fish-Pig-Vegetables is also practiced in the state.

### 1.1.4. Meghalaya

Meghalaya, literally meaning the 'abode of clouds' is a hilly state, bounded by Assam to the north and east and by Bangladesh to the South and West. The state is predominantly inhabited by the three tribal communities, viz., *Khasi*, *Jaintia* and *Garo*. The Khasi Hills and Jaintia Hills, which form the central and eastern part of the state is an imposing plateau with rolling grassland, hills and river valleys. The southern face of the plateau

is marked by deep gorges and abrupt slopes, at the foot of which, a narrow strip of plain land runs along the international border with Bangladesh. As per the State of Forest Report, 2017 published by Forest survey of India the Forest Cover of the State is 17,146 sq km (76.44 % of Geographical area) and tree cover is 657 sq km (2.92% of Geographical area). Meghalaya was created as an autonomous state within the state of Assam on 2<sup>nd</sup> April, 1970. The full-fledged state of Meghalaya came into existence on 21<sup>st</sup> January, 1972. Khasi, Garo and English are the principal languages spoken in the state. The capital city of Meghalaya is Shillong.

### Farming scenario

Meghalaya is basically an agricultural State. About 80 percent of its population depends primarily on agriculture for their livelihood. The State has a vast potential for the development of horticulture due to agro climatic variations that offer vast scope for cultivation of temperate, sub-tropical and tropical fruit crops and vegetables. Of the total agricultural land in Meghalaya, 62% is used for food grains, 25% for cash crops, 9% for horticultural crops and the rest 4% is used for raising miscellaneous crops. Besides, growing of major food grain crops, viz., rice and maize in which Rice, alone occupies about 44% of the total agricultural land and maize is grown in about 8% of the cropped area, the state is also known for its oranges (Khasi Mandarin), pineapple, banana, jackfruits, temperate fruits like plum, pears and peaches etc. Popularly and traditionally cultivated cash crops like potato, turmeric, ginger, black pepper, areca nut, betel vine, tapioca, short staple cotton, jute and mesta, mustard and rapeseed etc also contribute considerably to the agriculture GDP. Special emphasis is laid presently on non-traditional crops like oilseeds (groundnut, soybean, and sunflower), cashew nut, strawberry, tea, coffee, mushroom, medicinal plants, cut flowers etc. Livestock including piggery, poultry, duckery, dairy and composite fish culture with six species (catla, rohu, mrigal, calbasu, grass carp, common carp) are important livelihood.

### 1.1.5. Mizoram

Mizoram became the 23<sup>rd</sup> state of the Indian Union in February 1987. It was one of the districts of Assam till 1972 before it became a Union Territory. Sandwiched between Myanmar to the East and South and Bangladesh to the West, Mizoram occupies an area of great strategic importance in the north-eastern corner of India. Principal languages spoken in the state are *Mizo* and *English*. The capital is located at Aizawl. Mizoram covers an area of approximately 21,087 square kilometres and about 91% of the state is forest (2011 Forest Survey of India).

### Farming scenario

About 80 percent of the people of Mizoram are engaged in agricultural pursuits. The main system of agriculture followed is *Jhum* or shifting cultivation. Of the total 21 lakh ha of land estimated, 6.30 lakh ha of land is available for cultivation. The existing area under different horticultural crops account for about 4127.6 ha, which is only 6.55 percent of the estimated potential area. In 2013, the area dedicated to horticulture and floriculture increased to 9.4% of 1.2 million hectares potential. This indicates that there is a vast scope for horticultural crops to be grown in Mizoram. The major horticultural crops grown in the state are fruit crops viz., mandarin orange, banana, passion fruit, grapes, pineapple, papaya, etc. and flowers like anthurium, bird of paradise, orchid, chrysanthemum, rose and other subsidiary seasonal flowers. Spices like ginger, turmeric, black pepper and bird's eye chillies are also grown. People have also started cultivation of oilpalm, medicinal and aromatic plants. Besides, piggery, poultry, duckery, goatery, dairy and fisheries also play crucial role as a subsidiary occupation. Mizoram is one of the leading producers of bamboo in India, has 27 species of bamboo, and supplies 14% of India's commercial bamboo. Forest products contribute about 5% to the state's gross product. The state produces about 5,200 metric tonnes of fish a year, about 12% of potential that can be sustainably achieved. Sericulture is an important handicraft industry engaged by nearly 8,000 families in over 300 Mizo villages.

### 1.1.6. Nagaland

Nagaland, the 16th State of the Indian Union, was established on 1st December 1963. It is surrounded by Myanmar to the East, Arunachal Pradesh to the North, Assam to the West and Manipur to the South. The State is mostly hilly except for those areas bordering Assam valley. Mount Saramati is the highest peak in Nagaland with a height of 3,840 metres and its range forms a natural barrier between Nagaland and Myanmar. Out of the total land area of 16,579 Km<sup>2</sup>, forest area occupies approximately 13,719 Km<sup>2</sup>, i.e. 82.75 % of the geographical area. There are wildlife sanctuaries and national parks, viz, Intanki and Puliebadze in Kohima district, Fakim in Tuensang and Rangapahar in Dimapur. The major recognized tribes of Nagaland are *Angami, Ao, Chakhesang, Chang, Khiamnungan, Kuki, Konyak, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchungru and Zeliang*. The Naga languages differ from tribe to tribe and sometimes even from one village to another. *Angami, Ao, Chang, Konyak, Lotha, Sangtam, Sema and Chakhesang* are the principal languages spoken in the state. Nagamese is the common language practised in Nagaland for inter tribe communications. The capital city of Nagaland is Kohima.

#### Farming scenario

Agriculture is the primary source of income for about 70 percent of the total population of Nagaland. The contribution of agricultural sector in the state is very significant. The total geographical area of the State is 16, 57,900 ha. Out of which 7, 22,464 ha are under cultivable area. Rice is the staple food, hence, the major food crop grown across the state. It occupies about 70 percent of the total area under cultivation and constitutes about 75 percent of the total food production in the state. The major land use pattern followed throughout the state is *Jhum* cultivation. Further, livestock is considered as subsidiary income for the rural household. In Nagaland along with agriculture, backyard pig and poultry rearing are integral to livelihoods of farmers.

### 1.1.7. Tripura

Tripura has its own unique tribal culture and fascinating folklore. Initially it was a centrally administered territory, which got the reorganization of state in 1956. In 1972, Tripura attained the status of a full-fledged state. Tripura is strategically situated between the river valleys of Myanmar and Bangladesh. Encircled almost on three sides by Bangladesh, it is linked with Assam and Mizoram in the North-East. Out of total geographical area of 10,491.69 Sq. Km. Open and dense forest occupy around 6294.29 Sq. Km., i.e., 59.99% of the geographical area. The principal languages spoken in the state are *Bengali* and *Kokborak*. The capital city is situated at Agartala.

#### Farming scenario

Out of the total geographical area of 10, 49,169 ha, gross cropped area accounts for 4, 45,681 ha (i.e., 42.48%) and net sown area is 2,53,909 ha (i.e., 24.2%). Area sown more than once in a year is about 1, 91,772 ha, i.e. 43.03% of gross cropped area. The cropping intensity of the state is 186%. Rice is the major food crop grown, followed by potato, sugarcane, mesta, pulses, jute, oilseeds, maize, wheat, and cotton. The state is known for several summer and winter vegetables. Among the horticultural produce mango, jackfruit, pineapple, orange, coconut are the main fruit crops raised. Besides, Integrated Farming System includes Fish, Pig, Duck and Vegetables.

### 1.1.8. Sikkim

Sikkim is a small mountainous state, surrounded by the vast stretches of Tibetan Plateau to the North, the *Chumbi Valley* of Tibet and the Kingdom of Bhutan to the East, the Kingdom of Nepal to the West and Darjeeling (West Bengal) to the South. The world's third highest mountain peak Khangchendzonga dominates the tiny Himalayan state with its awe-inspiring beauty and majesty. Sikkim is one of the eighteen Biodiversity hotspots in the world. More than 5000 species of angiosperms are found in the state, accounting for nearly one third of the total species of angiosperm found in the country. *Rare Blue Sheep, Tibetan*



*Mastiff, Yaks* and *Red Pandas* are found here. The capital city of the state is located at Gangtok. *Lepcha, Bhutia,* and *Nepali* are the three principal languages spoken in the state.

### Farming scenario

Sikkim is the second smallest state of Indian Union. In 2015, the state has declared itself a fully organic state. It is first state in world which is wholly organic. Thus, it holds great potential as well as challenge to sustain and flourish. The state's economy is basically agrarian. More than 64% of the total population depends on agriculture for their livelihood. Farmers commonly follow mixed farming practices, which is ideally suited and fits well in the developmental process of making Sikkim an organic state. Maize, rice, wheat, potato, large cardamom, ginger and orange are the principal crops grown in the state. Sikkim has the largest area and highest production of large brown cardamom in the whole country. Ginger, potato, orange and off-season vegetables are the other important cash crops, grown in Sikkim. Being the organic state livestock and fisheries are important components of farming system. Out of the total geographical area of 7, 096 sq km, 5,841 sq km is forest covers, 11% (i.e.780.56 sq km) is under agriculture. Sikkim is very well known mainly for its orchids of which there are more than 400 species and rhododendrons numbering more than 35 species. The orchids bloom almost

throughout the year depending on the species but most of them flower during springs and autumn.

### 1.2. Genesis and Growth of Agricultural Technology Application Research Institute (ATARI) in North East India

The erstwhile Zonal Coordinating Unit (ZCU), Zone-III, Umiam began its journey from the office attached to ICAR Research Complex for NEH Region, Umiam with administrative and financial management under its control. On the eve of golden jubilee celebration of Indian Council of Agricultural Research (ICAR), New Delhi, the ZCU, Zone-III was established in 1979 at Umiam, Meghalaya as one of the 8 (eight) units across the country with staff strength of 6 (six) for implementation of Lab-to-Land programme (LLP) with financial support from the Cess Fund of ICAR. The unit started functioning with the joining of Dr. D.J. Roy as the Zonal Coordinator since September 14, 1979. Subsequently, the ICAR decided that the Krishi Vigyan Kendra (KVK) project would be monitored by this unit and hence, increased the staff strength to 8 (eight) for monitoring and reviewing the technology assessment, refinement, demonstration, training programmes and other extension activities conducted by KVKs in North Eastern Region, which comprises of eight states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. During



Administrative Building of ICAR-ATARI, Umiam

the VIIIth Plan (1992-1997), when the total number of KVKs was 261 in India, the ICAR revised the staff strength of Zonal Coordinating Unit to 15 (fifteen). In XIth Plan, on an average, each Zonal Coordinating Unit had to handle and manage an annual budget of about Rs. 55crores with increased number of KVKs. Thus, the Zonal Coordinating Units in India were upgraded to the status of Project Directorate, called Zonal Project Directorate (ZPD) with total sanctioned staff strength of 17 with effect from March 19, 2009 for proper financial management as well as effective monitoring, coordinating and reviewing of activities of large number of KVKs. The ZPD again was subsequently elevated to the level of research institute called Agricultural Technology Application Research Institute (ATARI) with effect from August 11, 2015 keeping in view of its revised mandates. In view of overriding responsibilities of the Institute besides effective monitoring, coordinating and reviewing the activities of increased number of KVKs, the ICAR-ATARI, Umiam was further bifurcated into two zones namely; ICAR-ATARI, Zone-VI, Guwahati with 3 states (Assam Arunachal Pradesh and Sikkim) under its jurisdiction and ICAR-ATARI, Zone-VII, Umiam with the remaining other 5 states of the region with the administrative approval of the ICAR, New Delhi.

### **Mandates of the Institute (ATARI)**

- ❖ Coordination and monitoring of technology application and frontline extension education programmes, and

- ❖ Strengthening agricultural extension research and knowledge management.

### **Functions (ATARI)**

The major functions of ICAR-ATARI include-

- Planning, formulating, monitoring, guiding and reviewing the activities of KVKs of the zone.
- Identify, prioritize and implement various activities related to technology integration and dissemination.
- Coordinating with SAUs, ICAR institutes/ organizations, host institutes, line departments and voluntary organizations in the zone for implementation of KVK mandated activities.
- Partnering with Directorate of Extension Education of CAU in assured technological backstopping to KVKs and appropriate overseeing of KVK activities.
- Strengthening the Directorates of Extension Education of CAU with financial support.
- Implementing special projects and programmes of ICAR like NICRA, CFLD, ARYA, NEMA, Farmer FIRST, DAMU and others.
- Facilitating financial and infrastructural support to KVKs for effective functioning.
- Maintaining close liaison with ICAR headquarters particularly with Division of Agricultural Extension for preparing reports, write ups and other important documents.

## Organisational Structure of ICAR-Agricultural Technology Application Research Institute (ATARI)

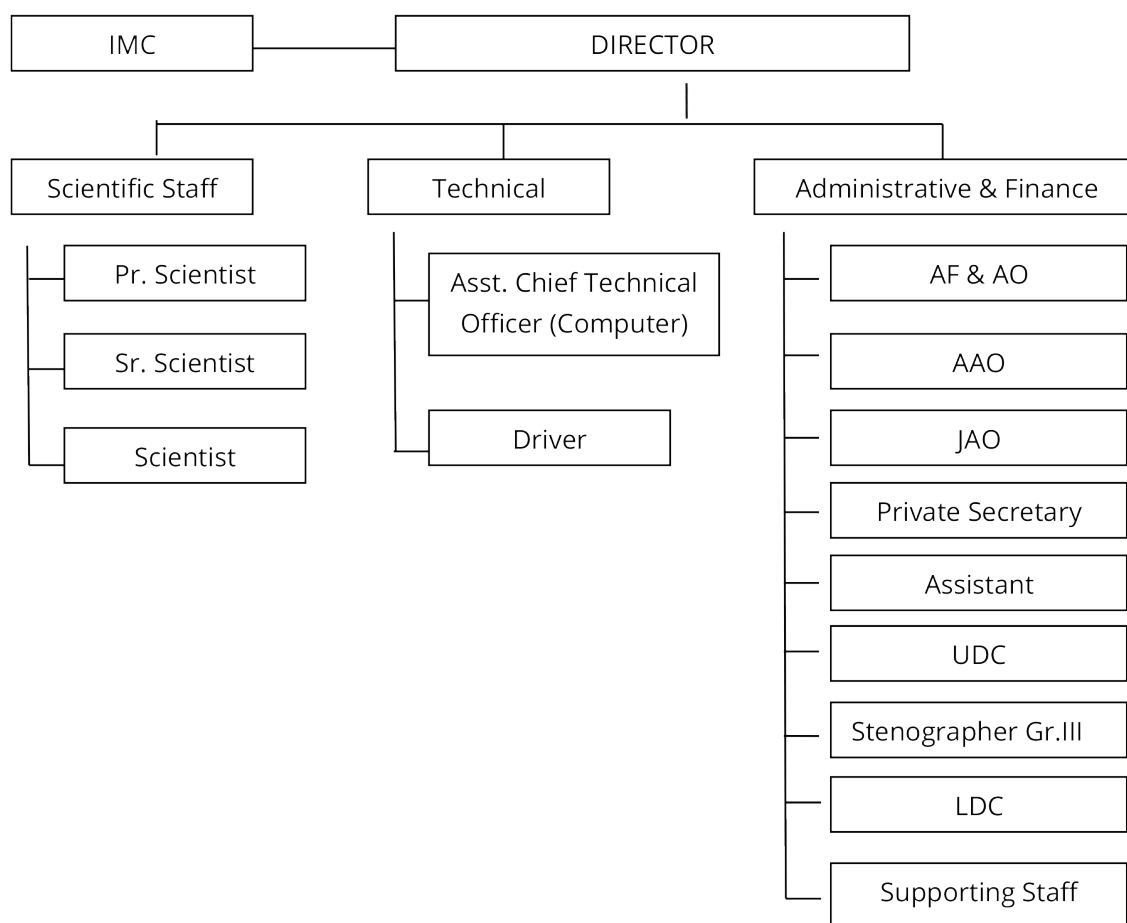


Fig-2: Organizational Structure of ICAR-ATARI

### 1.3. Genesis, Origin and Growth of Krishi Vigyan Kendra

As the number of unskilled rural youth was fast increasing, the Education Commission (1964-66) recommended that a vigorous effort be made to establish specialized institutions to provide vocational education in agriculture and allied fields at the pre- and post-matriculate levels to cater to the training needs of a large number of boys and girls of rural areas. Further, it was suggested that such institutions be named as Agricultural Polytechnics. The recommendations of the Commission were thoroughly discussed during 1966-72 in the inter-ministerial meetings including Ministry of Education, Ministry of

Agriculture, Planning Commission, ICAR and other allied institutions. Finally, the ICAR mooted the idea of establishing Krishi Vigyan Kendras (KVKs) as innovative institutions for imparting vocational training to the practicing farmers, school dropouts and field level extension functionaries. ICAR Standing Committee on Agricultural Extension, in its meeting held in August 1973, observed that since the establishment of KVKs was of national importance which would help in accelerating the agricultural production and also in improving the socio-economic conditions of the farming community, the assistance of all related institutions should be taken to implement this scheme. The ICAR therefore, constituted a committee in 1973

headed by *Dr. Mohan Singh Mehta* of Seva Mandir, Udaipur (Rajasthan) for working out a detailed plan. The Committee submitted its report in 1974 and as part of the report, the first KVK on a pilot basis was established in 1974 at Pondicherry (now Puducherry) under the administrative control of Tamil Nadu Agricultural University (TNAU), Coimbatore.

KVKs are grass root level organizations meant for application of technology through assessment, and demonstration of proven technologies under different 'micro farming' situations in a district. With this in mind, transfer of technology *per se* is not the primary function of KVKs, but field extension activities are carried out to facilitate on-farm assessment of the newly released technologies, demonstrate the proven ones and train farmers and extension functionaries on the same. The purpose is to develop models of different cost-effective farming systems which could be upscaled by the State Extension Services. Over a period, the Vision, Mission, Mandate, Staff set-up etc. of KVKs have undergone many changes to make it more demand driven. At present, the Vision, Mission and Mandate of KVK are as follows:

### **Vision**

Science and technology-led growth leading to enhanced productivity, profitability and sustainability of agriculture

### **Mission**

Farmer-centric growth in agriculture and allied sectors through application of appropriate technologies in specific agro-ecosystem perspective

### **Mandate**

The mandate of KVK is *Technology Assessment and Demonstration for its Application and to enhance Capacity development (TADA-CD)*

To implement the mandate effectively through creation of awareness about the improved agricultural technologies, the following activities are defined for each KVK: (i) On-farm testing to assess the location specificity of agricultural technologies under various farming

systems, (ii) Out-scaling of farm innovations through frontline demonstration to showcase the specific benefits/worth of technologies on farmers' fields, (iii) Capacity development of farmers and extension personnel to update their knowledge and skills in modern agricultural technologies and enterprises, (iv) Work as Knowledge and Resource Centre for improving the overall agricultural economy in the operational area, (v) Conduct frontline extension programmes and provide farm advisories, (vi) Using ICT and other media on varied subjects of interest to farmers and (vii) Data documentation, characterization and strategic planning of farming practices. KVKs are also required to produce quality technology related inputs/products (seeds, planting materials, bio-agents, livestock, fingerlings etc.) and make them available to farmers, besides identifying and documenting selected farmer-led innovations and converging with the ongoing schemes and programmes within the mandate of KVK.

## **1.4. Growth of KVKs in NE Region**

The KVK Scheme of ICAR is implemented through different host organizations under their administrative control. The first KVK in the region was established in Kolasib district of Mizoram in February, 1979 during Rolling year (1978-1980). Presently in North East Region, KVKs are functioning under 18 different host organisations namely; ICAR Research Complex for NEH Region, Umiam (20), Assam Agricultural University, Jorhat (23), Central Agricultural University, Imphal (6), Department of Agriculture, Govt. of Arunachal Pradesh (9), Department of Agriculture, Govt. of Manipur (1), Department of Agriculture, Govt. of Meghalaya (3), Department of Agriculture, Govt. of Nagaland (4), Department of Agriculture (Research & Education), Govt. of Mizoram (7), Dept. of Agriculture and Farmers Welfare, Govt. of Tripura (4), Dept. of Food Security & Agricultural Development, Govt. of Sikkim (3), Department of Veterinary & A.H., Govt. of Arunachal Pradesh (1), State Horticulture Research & Development Institute, Dept. of Horticulture, Govt. of Arunachal Pradesh (1), National Research Centre (NRC) for Pig, Rani (1), Keshav Smarak Nyas, Haflong

(1), NRC on Mithun, Jharnapani, Nagaland (1), Nagaland University, Kohima (1), Joint Farming Cum Pisciculture Co-operative Society, Bishnupur, Manipur (1), Foundation for Environment &

Economic Development Services (FEEDS), Senapati, Manipur (1) and Sri Ramakrishna Seva Kendra, Kolkata, West Bengal (1). The plan-wise growth of KVKs in the region is given below in figure.

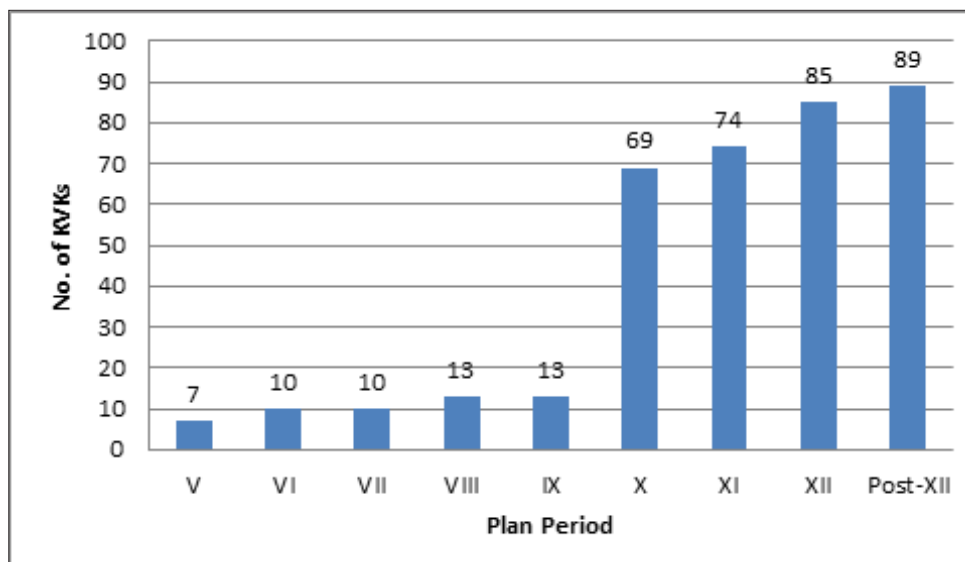


Fig 3. Growth of KVKs over five year plans in North East India

The details of KVKs both state-wise and host-wise under Zone-VI and VII are given in Tables-2, 3, 4 & 5).

**Table-2: State-wise list of KVKs under Zone-VI, Guwahati**

Sl. No.	State	Sl. No.	KVK	Year of establishment
		1	Changlang	2011
		2	Lohit	2006
		3	East Kameng	2006
		4	Tirap	2004
		5	Papum-Pare	2006
		6	Lower Subansiri	2006
		7	Lower Dibang Valley	2004
		8	East Siang	2006
I	Arunachal Pradesh	9	Anjaw	2013
		10	West Siang	1979
		11	Tawang	2006
		12	Upper Siang	2006
		13	Upper Subansiri	2007
		14	West Kameng	2004
		15	Longding	2017
		16	Kurung Kumey	2017

II	Assam	17	Dhemaji	2005
		18	Sonitpur	1979
		19	Baksa	2014
		20	Barpeta	2004
		21	Chirang	2004
		22	Dibrugarh	2006
		23	Hailakandi	2009
		24	Bongaigaon	2014
		25	Karbi Anglong	2004
		26	Karimganj	2004
		27	Kokrajhar	1985
		28	Lakhimpur	2004
		29	Sivsagar	2003
		30	Udalguri	2012
		31	Morigaon	2014
		32	Golaghat	1994
		33	Darrang	2006
		34	Jorhat	2006
		35	Cachar	1994
		36	Nagaon	2004
		37	Nalbari	2004
		38	Tinsukia	2004
		39	Goalpara	2006
		40	Dhubri	2005
		41	Kamrup	2004
		42	Dima Hasao	2017
III	Sikkim	43	East Sikkim	1982
		43	West Sikkim	2005
		45	South Sikkim	2005
		46	North Sikkim	2004

**Table-3: Host Institute-wise list of KVKs under Zone-VI, Guwahati**

Sl. No.	Host-institute	Sl. No.	Name of the KVK
1.	ICAR Research Complex for NEH Region, Barapani	1	Anjaw
		2	Namsai
		3	West Siang
		4	Longding
		5	Hailakandi
2.	National Research Centre (NRC) for Pig, Rani	6	East Sikkim
		7	Goalpara

3. Department of Agriculture, Govt. of Arunachal Pradesh	8	Changlang
	9	East Kameng
	10	Lower Dibang Valley
	11	Lower Subansiri
	12	Tawang
	13	Tirap
	14	Upper Siang
	15	Upper Subansiri
4. Central Agricultural University, Imphal	16	West Kameng
	17	East Siang
5. Department of Veterinary & A.H., Govt. of Arunachal Pradesh	18	Papumpare
6. State Horticulture Research & Development Institute, Dept. of Horticulture, Govt. of Arunachal Pradesh	19	Kurung Kumey
	20	Dima Hasao
7. Keshav Smarak Nyas, Haflong (NGO)	21	Barpeta
8. Assam Agricultural University, Jorhat	22	Cachar
	23	Chirang
	24	Darrang
	25	Dhemaji
	26	Dhubri
	27	Dibrugarh
	28	Golaghat
	29	Jorhat
	30	Kamrup
	31	KarbiAnglong
	32	Karimganj
	33	Kokrajhar
	34	Nagaon
	35	Nalbari
	36	North Lakhimpur
	37	Sibsagar
	38	Sonitpur
	39	Tinsukia
	40	Udalguri
	9. Dept. of Food Security & Agricultural Development, Govt. of Sikkim	41
42		Morigaon
43		Bongaigaon
44		West Sikkim
45		South Sikkim
46		North Sikkim

**Table-4: State-wise list of KVKs under Zone-VII, Umiam**

Sl. No.	State	Sl. No.	KVK	Year of establishment
I	Manipur	1	Bishnupur	2003
		2	Chandel	2006
		3	Imphal East	2005
		4	Imphal West	1979
		5	Thoubal	2005
		6	Senapati	2002
		7	Ukhrul	2008
		8	Tamenglong	2005
		9	Churachandpur	2005
II	Meghalaya	10	Ri-Bhoi	2002
		11	East Garo Hills	2017
		12	South Garo Hills	2017
		13	East Khasi Hills	2004
		14	West Khasi Hills	2004
		15	Jaiñtia Hills	2004
		16	West Garo Hills	1979
		17	Mamit	2005
III	Mizoram	18	Kolasib	1979
		19	Aizawl	2005
		20	Champhai	2004
		21	Lawngtlai	2005
		22	Saiha	2005
		23	Lunglei	1994
		24	Serchhip	2005
IV	Nagaland	25	Peren	2016
		26	Kohima	2005
		27	Kiphre	2017
		28	Dimapur	1979
		29	Tuensang	2005
		30	Mokokchung	2002
		31	Mon	2006
		32	Wokha	2006
		33	Zunheboto	2005
		34	Phek	2002
		35	Longleng	2011



V	Tripura	36	Khowai	1979
		37	North Tripura	2005
		38	South Tripura	1984
		39	West Tripura (Jirania)	2016
		40	Dhalai	2005
		41	Unakoti	2017
		42	Gomati	2017
		43	Sepahijala	2018

**Table-5: Host Institute-wise list of KVKs under Zone-VII, Umiam**

Sl. No	Host Institute	Sl. No.	Name of the KVK
1.	ICAR Research Complex for NEH Region, Barapani	1	Chandel
		2	Churachandpur
		3	Imphal West
		4	Tamenglong
		5	Ukhrul
		6	Ri-Bhoi
		7	West Garo Hills
		8	Dimapur
		9	Kiphire
		10	Longleng
		11	Peren
		12	Wokha
		13	South Tripura
		14	West Tripura
2.	NRC on Mithun, Jharnapani, Nagaland	15	Phek
3.	Central Agricultural University (CAU), Imphal, Manipur	16	Aizawl
		17	Imphal East
		18	East Garo Hills
		19	South Garo Hills
		20	Sepahijala
		21	Zunheboto
4.	Nagaland University, Kohima.	22	Thoubal
5.	Dept. of Agriculture, Govt. of Manipur, Imphal	23	East Khasi Hills
6.	Dept. of Agriculture, Govt. of Meghalaya, Shillong	24	Jaintia Hills
		25	West Khasi Hills

7. Dept. of Agriculture (Research & Education), Govt. of Mizoram, Aizawl	26	Champai
	27	Saiha
	28	Kolasib
	29	Lawngtlai
	30	Lunglei
	31	Mamit
	32	Serchip
8. Dept. of Agriculture, Govt. of Nagaland, Kohima	33	Kohima
	34	Mokokchung
	35	Mon
	36	Tuensang
9. Dept. of Agriculture and Farmers Welfare, Govt. of Tripura, Agartala	37	Dhalai
	38	Gomati
	39	North Tripura
	40	Unakoti
10. Joint Farming Cum Pisciculture Co-operative Society, Utlou, Bishnupur, Manipur	41	Bishnupur
11. Foundation for Environment & Economic Development Services (FEEDS), Hengbung, Senapati, Manipur	42	Senapati
12. Sri Ramakrishna Seva Kendra (NGO), Kolkata, West Bengal	43	Khowai

## CHAPTER-2

### 2.0. Constitution and Composition of QRT

The Secretary, DARE and Director General, ICAR constituted a Quinquennial Review Team

(QRT) vide Office Order F. No. A.Extn. 9/19/2019-AE-II dated 19<sup>th</sup> June 2019 in respect of ICAR-ATARIs, Zone VI and Zone VII for the period of 2011-12 to 2018-19.

#### The QRT comprised the following:

Dr. K. D. Kokate Former DDG (AE), ICAR New Delhi	Chairman
Dr. B. S. Hansra Former ADG (AE), ICAR New Delhi	Member
Dr. A. K. Vasisht Former ADG, PIM, ICAR New Delhi	Member
Dr. S.V. Ngachan, Former Director, ICAR Research Complex for NEH Region, Umiam, Meghalaya	Member
Dr. H. C. Bhattacharyya Former DEE, AAU, Jorhat	Member
Dr. A.K. Singha, Principal Scientist, ICAR-ATARI, Zone-VII, Umiam	Member Secretary

#### The terms of reference of the QRT are as follows.

- a) To review the KVK programmes and activities and their relevance, keeping in view the identified and prioritized farmers needs of the area.
- b) To assess the superiority of the technology/products demonstrated on the farmer's fields through on-farm trials and frontline demonstrations.
- c) To assess the efforts made in transfer of technology through training of farmers and extension personnel, extension activities, and production of seeds and planting materials and other technology inputs.
- d) To evaluate the innovative extension methodology developed and the procedures adopted by the KVKs to prioritize, monitor and assess the impact of programmes.
- e) To suggest a road map for KVKs to work as single window knowledge, resource and capacity development centre in the district.
- f) To assess the existing provision for manpower and infrastructure in KVKs and ATARIs in view of their roles and responsibilities; review the monitoring, coordination, overseeing, liaisoning, reporting, budgeting, technology flow and backstopping mechanisms; and
- g) To suggest measures for organizational and administrative changes for strengthening and overall improving the visibility and efficiency of KVK system.

## CHAPTER-3

### 3.0. Visits and Methodology Adopted

The ICAR-ATARIs, Zone VI and Zone VII comprise of the states of Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Assam, Arunachal Pradesh and Sikkim and have 89 KVKs. The committee decided to review the performance of KVKs of Zone VI and Zone VII by organizing Travel Workshops including site visit to selected KVKs in four phases. The methodology adopted for review included a close scrutiny of all the documents provided by the ATARIs and concerned KVKs, inputs received from various stakeholders, discussion with officials of state departments and other organizations, interaction with Senior Scientists and Heads and SMSs of Krishi Vigyan Kendra (KVK) and different host organisations, visit to KVKs laboratories, exhibition stalls arranged by KVKs of respective states and farmers' fields. The team reviewed all the 89 KVKs of their performance during state-wise travel workshops; however, the team considered only those 78 KVKs which have completed 5 years of establishment up to 2018-19 for the purpose of QRT review. The concerned Sr. Scientists & Heads of KVKs made presentations on their achievements, constraints and future programmes/ way forward during travel workshops. The minutes/ proceedings of all these travel workshops and reports on field visits are given in Annexures. As part of the programme, the QRT visited KVKs- East Khasi Hills and KVK East Sikkim during 16<sup>th</sup> to 22<sup>nd</sup> October 2019 in the 1<sup>st</sup> phase, Dimapur, Nagaon and Kamrup during 4<sup>th</sup> to 8<sup>th</sup> November 2019 in 2<sup>nd</sup> phase, Imphal East, Bishnupur, Mamit and Kolasib during 20<sup>th</sup> to 24<sup>th</sup> November 2019 in 3<sup>rd</sup> phase and Khowai and Papumpare during 4<sup>th</sup> to 9<sup>th</sup> December 2019 in 4<sup>th</sup>

phase. The details of the programme schedule have been furnished in **Annexure-I**.

### 3.1. The Process

The process of reviewing started with discussion with Deputy Director General (Agril. Extn.) of ICAR on 4<sup>th</sup> September 2019 at New Delhi for reviewing the activities of KVKs and ATARIs as per terms of reference of the QRT. The team planned to organize Travel Workshops in four phases during the months of October, November and December 2019 as detailed in the programme schedule. During each workshop, the QRT interacted with the stakeholders of KVKs along with the review of each participating KVKs through exhibition and presentation regarding their salient achievements, way forward and suggestions. Further, the QRT also visited 10 KVKs to have an on-the-spot evaluation and interaction with the stakeholders, staff of KVKs and farmers in terms of linkage, infrastructure and work atmosphere. During the travel workshops, the team had interaction with Vice Chancellor and Directors of Extension Education of Central Agricultural University (CAU), Imphal and Assam Agricultural University, Jorhat, Director/ Joint Directors of ICAR Institutes, Directors/ Representatives of Dept. of Agriculture/ Veterinary and A.H. and Chairpersons of NGOs who are having KVKs. The team also held in-depth discussion with the two Directors of ATARIs, Zone-VI, Guwahati and Zone-VII, Umiam on 16<sup>th</sup> October 2019 on matters and issues related to KVKs functioning in the two zones of the region. The team met at ICAR-ATARI, Umiam on 20<sup>th</sup> June, 2020 over webinar for finalization and submission of the report.

## CHAPTER-4

### 4.0. The Review Report

Keeping the Terms of Reference in view, the detailed report of the travel workshops is synthesized and furnished under the following heads.

- A. Salient achievements, way forward and suggestions from the KVKs
- B. Brief account about the travel workshops and visits (KVKs and farmers fields)
- C. Expectations of the farming community
- D. Suggestions of officials of the Line Departments/NABARD/ATMA/NGO

### 4.A. Salient achievements, Way forward and Suggestion of KVKs of Zone VI and VII

During each travel workshop, the KVKs were asked to make a brief presentation of their salient achievements, way forward and suggestions for the better functioning of KVKs in their respective districts. The details of phase-wise, state-wise and KVK-wise salient achievements, way forward and suggestions are given in **Annexure-II**.

### 4. B. Brief Account about the Travel Workshops and Visits (KVKs and farmers fields)

After each travel workshop, the QRT made visits to demonstration units of KVKs as well as farmers' fields under the KVK districts and interacted with staff and other concerned stakeholders. During all the four workshops, a total of 10 KVKs were visited by the QRT. The details of the report (**Phase I to IV**) have been furnished below.

### 4. B.I. Phase I (Brief account of Travel workshop and Field visits)

The Phase I covered two states of Meghalaya and Sikkim and the Travel Workshop of

Quinquennial Review Team (QRT) for ICAR-ATARIs, Zone-VI and VII and KVKs of Meghalaya was held at ICAR-ATARI, Umiam on 16<sup>th</sup> October 2019 covering review for 7 KVKs from Meghalaya. The travel workshop for 4 KVKs of Sikkim was held on 21<sup>st</sup> October 2019 at ICAR-NOFRI, Tadong, Sikkim. The technical session began with the presentation on achievements of KVKs under Zone-VI and Zone-VII during 2011-12 to 2018-19 by the two directors of ATARIs. The session also covered overall grading of KVKs by NITI Aayog, future strategies for strengthening of ATARIs and KVKs.

### 4. B.I.(a). Brief Achievements of KVKs during 2011-12 to 2018-19 in NE Region

In general, KVKs in North East India are performing not only their mandated activities as per action plans such as On-farm testings (OFTs), frontline demonstrations (FLDs), training programmes for farmers, rural youth, extension personnel to upgrade their knowledge and skills and extension activities/ programmes, they are also implementing different special programmes and activities duly assigned by Central government and other developmental organisations from time to time for the benefit of farming community in the region with strong coordination and monitoring support from Agricultural Technology Application Research Institute (ATARI). KVKs, while acting as a single window Agricultural Technology Information Centre (ATIC), are also producing quality technology related inputs/products (seeds, planting materials, bio-agents, livestock, fingerlings etc.) and make them available to farmers. Besides, KVKs identify and document selected farmer-led innovations, success stories and converge with ongoing schemes and programmes within the mandate of KVK. The Zone-wise details of achievements of KVKs in NE region during 2011-12 to 2018-19 are given below in Table-6 and Table-7.



Demonstration on management practices of rice cultivation



Commercial rose cultivation under polyhouse at Helipong village, Tuensang (Nagaland)

**Table-6: Year-wise achievements of KVKs under Zone-VI during 2011-12 to 2018-19**

Activity	ZONE-VI (Guwahati)								Total
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	
On Farm Trials (No. of technologies)	151	119	136	129	219	477	524	565	<b>2320</b>
FrontLine Demonstration (No.)	3972	5650	5705	2775	7164	6189	6260	6587	<b>44301</b>
Training of Farmers (No. of participants)	45032	53066	55430	31000	64356	56346	48800	134000	<b>488029</b>
Training of Rural youths (No. of participants)	8393	9819	10308	9350	15574	11350	8636	16550	<b>89980</b>

Training of Extension Personnel (No. of participants)	3538	2919	2761	2560	3410	3976	3674	6200	<b>29038</b>
Extension Activities (No. of participants)	89068	158654	202813	104420	204013	341278	344000	462000	<b>1906246</b>
Production of seeds ( in tonne)	568.99	131.25	1642.02	759.59	92.53	1467.52	294.52	415.71	<b>5372.13</b>
Planting materials (in Lakh)	4.51	5.29	3.37	7.11	13.88	4.54	26.86	34.36	<b>99.91</b>
Livestock strains/ Fingerlings (in Lakh)	1.93	2.10	2.45	3.75	3.18	4.16	2.09	2.78	<b>22.46</b>
Soil and Water Testing (No. of samples)	2810	4364	1829	1421	45000	52291	59390	94500	<b>261605</b>
Soil Health Card Distributed (Nos.)	0	0	0	0	10750	13077	23604	66505	<b>113936</b>
Kisan Mobile Advisory (KMA) (No. of farmers benefitted (in Lakh)	0.12	0.26	0.52	0.74	4.00	9.14	9.85	10.95	<b>35.58</b>

**Table-7: Year-wise achievements of KVKs under Zone-VII during 2011-12 to 2018-19**

Activity	ZONE-VII (Umiam)								Total
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	
On Farm Trials (No. of technologies)	136	107	119	105	178	443	442	409	<b>1939</b>
Front Line Demonstration (No.)	3564	5070	4992	4300	4959	6289	8022	6862	<b>44059</b>
Training of Farmers (No. of participants)	40413	47623	48502	41752	52382	52414.46	51656	53635	<b>388378</b>
Training of Rural youths (No. of participants)	7533	8811	9019	7611	12676	10558.07	11791	12268	<b>80267</b>
Training of Extension Personnel (No. of participants)	3176	2619	2416	2786	3317	2801	3921	4306	<b>25342</b>

Extension Activities (No. of participants)	79933	142381	177462	159000	98003	185296	209953	212025	<b>1264053</b>
Production of seeds ( in tonne)	510.63	117.78	1436.77	385.1	74.95	507.79	1037.09	1690.95	<b>5761.06</b>
Planting materials (in Lakh)	4.05	4.74	2.95	6.09	10.74	2.031	10.85	19.006	<b>60.46</b>
Livestock strains/ Fingerlings (in Lakh)	1.74	1.89	2.15	3.25	1.31	2.09	20.40	8.53	<b>41.36</b>
Soil and Water Testing (No. of samples)	2522	3916	1601	872	17344	10888	10087	12559	<b>59789</b>
Soil Health Card Distributed (Nos.)	0	0	0	0	8750	12165	13288	17072	<b>51275</b>
Kisan Mobile Advisory (KMA) (No. of farmers benefitted (in Lakh)	0.10	0.24	0.46	0.67	1.26	0.73	1.73	1.46	<b>6.65</b>

The total budget utilized by the ATARI, Umiam for the review period was Rs 33,153.20 lakhs (96.72%) of which capital expenditure was Rs. 1777.76 lakhs. While under the zone, the total budget utilization during the review period

was Rs. 36,317.47 lakhs (94.94%) of which capital expenditure was Rs. 1557.32. The state-wise summary of budget allocation and expenditure of KVKs during 2011-12 to 2018-19 under Zone-VI and Zone-VII is presented in Table -8 and Table-9.



**Table-8: State-wise summary of budget allocation and expenditure of KVKs during 2011-12 to 2018-19 under Zone-VI**

State	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19		TOTAL		
	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	% of Expenditure
ASSAM	2040.08	2040.08	1401.48	1401.48	1871.35	1866.25	2455.06	2449.96	2618.96	2618.96	3712.61	3072.09	2871.80	2768.11	4249.26	3831.11	21220.60	20048.04	94.47
AP	1215.20	1215.20	1062.72	1062.72	1500.59	1334.27	1560.64	1386.24	1861.56	1861.56	2068.50	1987.50	1871.70	1821.89	2331.23	2223.29	13472.14	12892.67	95.70
SIKKIM	361.39	361.39	243.75	243.75	359.02	337.92	401.20	380.10	427.25	427.25	494.85	476.65	698.70	579.70	575.00	570.00	3561.16	3376.76	94.82
	<b>3616.67</b>	<b>3616.67</b>	<b>2707.95</b>	<b>2707.95</b>	<b>3730.96</b>	<b>3538.44</b>	<b>4416.90</b>	<b>4216.30</b>	<b>4907.77</b>	<b>4907.77</b>	<b>6275.96</b>	<b>5536.24</b>	<b>5442.20</b>	<b>5169.70</b>	<b>7155.49</b>	<b>6624.40</b>	<b>38253.90</b>	<b>36317.47</b>	<b>94.94</b>

**Total Allocation-38253.90, Total expenditure-36317.47, Total Expenditure under Capital Head-1557.32**

**Table-9: State-wise summary of budget allocation and expenditure of KVKs during 2011-12 to 2018-19 under Zone-VII**

State	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19		TOTAL		
	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	R.E	Exp	% of Expenditure
MANIPUR	1083.06	1083.06	706.40	706.40	1209.90	1131.90	1103.00	1016.00	1294.81	1294.81	1446.95	1427.01	1427.01	1427.01	1714.00	1714.00	10033.99	9820.13	97.87
MEGHALAYA	208.35	208.35	233.21	233.21	417.20	398.70	430.00	399.50	473.22	473.22	573.80	562.30	524.18	524.18	1159.65	1159.65	4019.61	3959.11	98.49
MIZORAM	785.67	785.67	476.00	476.00	985.30	816.00	932.17	730.87	1021.20	1021.20	1197.89	1185.99	840.03	840.03	1241.80	1241.80	7480.06	7097.56	94.89
NAGALAND	753.79	753.79	743.57	743.57	1127.81	927.31	1226.75	1010.25	1159.15	1159.15	1456.81	1441.61	1432.65	1432.65	1810.45	1810.45	9710.98	9278.78	95.55
TRIPURA	206.45	206.45	202.37	202.37	325.83	321.96	344.75	338.40	344.90	344.90	428.94	403.92	416.28	416.28	763.35	763.35	3032.87	2997.62	98.84
<b>TOTAL</b>	<b>3037.32</b>	<b>3037.32</b>	<b>2361.55</b>	<b>2361.55</b>	<b>4066.04</b>	<b>3595.87</b>	<b>4036.67</b>	<b>3495.02</b>	<b>4293.28</b>	<b>4293.28</b>	<b>5153.25</b>	<b>5040.77</b>	<b>4640.14</b>	<b>4640.14</b>	<b>6689.25</b>	<b>6689.25</b>	<b>34277.50</b>	<b>33153.20</b>	<b>96.72</b>

**Total Allocation-34277.50, Total expenditure-33153.20, Total Expenditure under Capital Head-1777.76**

#### 4.B.I.(b). Grading of KVKs by NITI Aayog

The NITI Aayog made ranking of KVKs considering the following parameters.

- Infrastructure Status and assigning only 15 % weightage.
- Technology Assessment, Dissemination and assigning the maximum of 35 % weightage.
- Impact of KVKs' mandated activities with a maximum weightage of 30 %
- Allied activities and accolades with 20 % weightage.

The points obtained on the above categories were normalized by preparing an index for ranking of KVKs based on indicators/weights obtained. The formula for preparing the index used was as follows:

$$Ax = (\text{Actual Value}) - (\text{Minimum Value})$$

$$Bx = (\text{Maximum Value}) - (\text{Minimum Value})$$

$$\text{Index } Ix \text{ (of a particular KVK)} = Ax/Bx$$

All the absolute values obtained were converted into relative values with the help of above normalization of values for each KVK.

Thus, all the KVKs were brought into a uniform framework of relative performances ranging from 0 to 1.0. An index for each KVK has been prepared for its ranking based on the data received from filled-in questionnaires. Thus, all KVKs have been categorized into A, B, C and D grade based on this index and points obtained. Further, the KVKs were grouped into four categories in accordance with the range of scores for each category. The ranges of marks under each category are illustrated below:

The KVKs getting up to 0.25 score out of 1.0 would be categorized as D. Similarly, KVKs getting a score ranging from 0.26 to 0.50 would be categorized as C, a score between 0.51 to 0.75 as B and a score ranging between 0.76 and above would be categorized as A. Under Zone-VI, out of 39 KVKs with assessment by NITI Aayog, 5 KVKs were graded in A category (12.82%), 31 KVKs in B category (79.48%) and 3 KVKs were in C category (7.69%). While 16 KVKs under Zone-VII were graded in A category (45.71%) and 19 KVKs in B category (54.28%) out of total 35 KVKs under review by NITI Aayog during the same period. The zone-wise and KVK-wise ranking/ grading by NITI Aayog are given in Table-8 (Zone-VI) and 9 (Zone-VII).

**Table-10: Ranking of KVKs under Zone-VI by National Institute of Labour Economics Research and Development (NILERD), NITI Aayog, GOI, 2017**

ATARI, Zone-VI, Guwahati-Overall Ranking			
Sl. No.	State	KVK District	Rank
1	Arunachal Pradesh	East Siang (Pasighat)	A
2	Assam	Kamrup	A
3	Assam	Golaghat	A
4	Assam	Nagaon	A
5	Sikkim	North Sikkim	A
6	Arunachal Pradesh	West Siang	B
7	Arunachal Pradesh	Lower Dibang valley	B
8	Arunachal Pradesh	East Kameng	B
9	Arunachal Pradesh	Namsai	B
10	Arunachal Pradesh	Upper Siang	B
11	Arunachal Pradesh	Changlang	B
12	Arunachal Pradesh	West Kameng	B
13	Arunachal Pradesh	Tirap	B
14	Arunachal Pradesh	Papum- Pare	B

15	Arunachal Pradesh	Tawang	B
16	Assam	Dhemaji	B
17	Assam	Sonitpur	B
18	Assam	Jorhat	B
19	Assam	Hailakandi	B
20	Assam	Karimganj	B
21	Assam	Goalpara	B
22	Assam	Darrang	B
23	Assam	Lakhimpur	B
24	Assam	Kokrajhar	B
25	Assam	Dibrugarh	B
26	Assam	Chirang	B
27	Assam	Cachar	B
28	Assam	Sivsagar	B
29	Assam	Dhubri	B
30	Assam	Nalbari	B
31	Assam	Barpeta	B
32	Assam	Tinsukia	B
33	Assam	Karbi Anglong	B
34	Sikkim	East Sikkim	B
35	Sikkim	West Sikkim	B
36	Sikkim	South Sikkim	B
37	Arunachal Pradesh	Lower Subansiri	C
38	Arunachal Pradesh	Upper Subansiri	C
39	Assam	Udalguri	C

**Table-11: Ranking of KVKs under Zone-VII by National Institute of Labour Economics Research and Development (NILERD), NITI Aayog, GOI, 2017**

ATARI, Zone-VI, Barapani-Overall Ranking			
Sl. No.	State	KVK District	Rank
1	Manipur	Imphal East	A
2	Manipur	Senapati	A
3	Meghalaya	Ri- Bhoi	A
4	Meghalaya	East khasi Hills	A
5	Mizoram	Mamit	A
6	Mizoram	Lunglei	A
7	Mizoram	Serchhip	A
8	Mizoram	Aizawl	A
9	Nagaland	Kolasib	A
10	Nagaland	Mokokchung	A
11	Nagaland	Dimapur	A

12	Nagaland	Wokha	A
13	Nagaland	Mon	A
14	Tripura	North Tripura	A
15	Tripura	South Tripura	A
16	Tripura	Khowai	A
17	Manipur	Imphal west	B
18	Manipur	Bishnupur	B
19	Manipur	Chandel	B
20	Manipur	Churachandpur	B
21	Manipur	Thoubal	B
22	Manipur	Tamenglong	B
23	Manipur	Ukhrul	B
24	Meghalaya	West Jaintia Hills	B
25	Meghalaya	West Khasi Hills	B
26	Meghalaya	West Garo Hills	B
27	Mizoram	Siaha (Chhimtuipui)	B
28	Mizoram	Champai	B
29	Mizoram	Lawngtlai	B
30	Nagaland	Phek	B
31	Nagaland	Tuensang	B
32	Nagaland	Zunheboto	B
33	Nagaland	Longleng	B
34	Nagaland	Kohima	B
35	Tripura	Dhalai	B

#### 4.B.I.(c). Future Strategies for Strengthening ATARIs and KVKs

Regarding ATARIs, QRT observed that many sanctioned posts have not been filled in both the ATARIs. ATARI, Zone-VI, Guwahati is functioning with only one Principal Scientist attached from ATARI, Zone-VII, Barapani. This is hampering in their functioning of normal activities. With only one vehicle (under custody of Director), the Scientists of the institutes are facing problems for visit to KVKs situated in different states of the region in connection with monitoring, supervision and review of KVKs activities. Since huge additional tasks are assigned to KVKs other than mandated activities, ATARIs are also equally responsible for collection, compilation and submission of information/ reports to the Council for which one Data Entry Operator (DEO) may be sanctioned

in each ATARI. In view of such circumstances and keeping into account the issues raised by ATARIs, the QRT put forward the following recommendations for effective functioning of ATARIs in the region.

- As in the case of other ICAR institutes/ Directorates, there is a need to strengthen ATARI by establishing three distinct sections in the areas of (i) Research on Technology Delivery/Application, (ii) Database Management and Process Documentation and (iii) HRD, Coordination and Monitoring. Each section may be provided with Senior Scientist, Scientist and Research Assistant one each.
- Lack of administrative building especially newly established ATARI, Guwahati is also a matter of concern. Immediate actions may

- be taken for establishment of administrative building of ATARI, Guwahati as per approved estimate and guidelines.
- The concerned authority of the Council (ICAR) may initiate actions for early recruitment of scientists and other staff lying vacant in ATARIs on priority basis.
  - An additional vehicle preferably BOLERO may be sanctioned for the Scientists and other staff of the institute for smooth monitoring, review and supervising KVKs activities in Northeast as a special case.
  - The recruitment of the staff of the KVKs may be as per the rules and regulations of the respective Host Organization subject to the condition that Director, ATARI or his nominee should be one of the members in the selection committee for all posts. Further the academic qualifications, experience etc. for the posts should not be less than what is prescribed in ICAR and promotional policy, including the pay and eligibility criteria, will not be relaxed and should be strictly followed as applicable to similar posts in ICAR.
  - One Data Entry Operator (DEO) may be sanctioned in each ATARI to facilitate collection, compilation and submission of information and reports to the Council.
  - Internal monitoring system of KVKs must be strengthened by authorizing Directors, ATARIs to develop their own monitoring system with additional financial support.
  - Capacity development for the staff of ATARIs particularly on data base management system, e-office, PFMS etc.
  - More budgets may be provided to KVKs under Capital head for development of infrastructure and modern demonstration units.
  - Maintenance of Asset Register at KVK level must be ensured.
  - Staff working in remote KVKs be given priority for their capacity development.
  - Implementation of PFMS and e-office in KVKs must be ensured.

#### 4.B.I.1. Travel Workshop (KVKs in Meghalaya)

The travel workshop for KVKs in Meghalaya included the presentations by all the 7 KVKs in Meghalaya on their activities and programmes as well as achievements made during review period. The presentation covered district profile, KVK staff position, available infra-structure facilities, achievements on mandated activities such as OFTs, FLDs, different training programmes, extension programmes and activities, production of quality seeds and planting materials including bio-products/ bio-agents as well as various flagship/ special programmes carried out by KVKs including revolving fund status and revenue generation etc during the period. This was followed by meaningful and constructive discussion among the committee members and participants on various aspects of KVKs functioning in the region which emerged the important recommendations.



Travel Workshop of QRT for ATARIs and KVKs of Meghalaya

Presently the state of Meghalaya has 7 (seven) functioning KVKs with 3 under State Department of Agriculture, Govt. of Meghalaya, 2 under ICAR RC for NEH Region, Umiam and 2 under Central Agricultural University, Imphal. Five (5) KVKs with more than 5 years of existence were considered for performance assessment by NITI Aayog, Govt. of India, 2017. Out of these 5 KVKs, 2 KVKs- Ribhoi and East Khasi Hills were ranked in 'A' category and the remaining 3 KVKs (West Khasi Hills, Jaintia Hills

and West Garo Hills) were ranked in 'B' category. On an average, each KVK covered 172 villages (861 total villages covered) under various KVK activities/ program till 2018-19 (since inception), accounting 20.69% of the total villages (4160) under 5 KVKs. The proceedings of travel workshop for two ATARIs as well as KVKs in Meghalaya are presented in **Annexure-III**. While number of villages covered under various programmes and activities of KVKs of Zone-VI and Zone-VII till 2018-19 are given in Table-10 and Table-11.

**Table-12: State-wise coverage of villages by KVKs under Zone-VI and Zone -VII**

Sl. No.	State	Total No. of KVKs	Total No. of villages	Total No. of villages covered by KVKs	Percentage of coverage
<b>A. Zone-VI</b>					
1	Assam	26	24692	6448	26.11
2	Arunachal Pradesh	16	4716	1631	34.58
3	Sikkim	4	555	285	51.35
<b>Total</b>		<b>46</b>	<b>29963</b>	<b>8364</b>	<b>27.91</b>
<b>B. Zone-VII</b>					
4	Manipur	9	2831	1085	38.33
5	Meghalaya	7	5550	923	16.63
6	Mizoram	8	820	376	45.85
7	Nagaland	11	1342	623	46.42
8	Tripura	8	1187	395	33.28
<b>Total</b>		<b>43</b>	<b>11730</b>	<b>3402</b>	<b>29.00</b>
<b>Grand Total (VI and VII)</b>		<b>89</b>	<b>41693</b>	<b>11766</b>	<b>28.22 (Av.)</b>

**Table-13: State-wise and KVK-wise number of villages covered under Zone-VI and Zone -VII (Upto 2018-19)**

Zone VI					
Sl. No.	State	KVK	Total villages in the KVK district (No.)	Total No. of villages covered under various KVK activities/ programs till 2018-19 (since inception)	Percentage (%) of coverage
<b>I Assam</b>					
1		Dhemaji	1150	252	21.91
2		Sonitpur	910	334	36.70
3		Baksa	690	161	23.33
4		Barpeta	825	135	16.36
5		Chirang	508	157	30.91

6	Dibrugarh	1353	173	12.79
7	Hailakandi	330	111	33.64
8	Bongaigaon	563	87	15.45
9	Karbi Anglong	2712	177	6.53
10	Karimganj	943	101	10.71
11	<b>Kokrajhar</b>	<b>1068</b>	<b>612</b>	<b>57.30</b>
12	Lakhimpur	1153	102	8.85
13	Sivsagar	535	148	27.66
14	Udalguri	802	371	46.26
15	Morigaon	629	59	9.38
16	Golaghat	1125	576	51.20
17	Darrang	565	232	41.06
18	Jorhat	867	332	38.29
19	Cachar	1047	349	33.33
20	Nagaon	1431	238	16.63
21	Nalbari	464	236	50.86
22	Tinsukia	1186	239	20.15
23	Goalpara	837	643	76.82
24	Dhubri	1020	241	23.63
25	Kamrup	1284	357	27.80
26	Dima Hasao	695	25	3.59
<b>Total</b>		<b>24692</b>	<b>6448</b>	<b>26.11 (Av.)</b>
<b>II Arunachal Pradesh</b>				
1	Changlang	<b>362</b>	<b>256</b>	<b>70.72</b>
2	Lohit	326	178	54.60
3	East Kameng	328	147	44.82
4	Tirap	113	79	69.91
5	Papum-Pare	488	63	12.91
6	Lower Subansiri	417	250	59.95
7	Lower Dibang Valley	314	200	63.69
8	East Siang	153	65	42.48
9	Anjaw	260	78	30.00
10	West Siang	168	66	22.83
11	Tawang	184	42	22.83
12	Upper Siang	112	20	17.86
13	Upper Subansiri	843	46	5.46
14	West Kameng	208	115	55.29
15	Longding	72	26	36.11
16	Kurung Kumey	368	-	-
<b>Total</b>		<b>4716</b>	<b>1631</b>	<b>34.58 (Av.)</b>

<b>III Sikkim</b>				
1	East Sikkim	127	58	45.67
2	<b>West Sikkim</b>	<b>125</b>	<b>76</b>	<b>60.80</b>
3	South Sikkim	140	55	39.29
4	North Sikkim	163	96	58.90
<b>Total</b>		<b>555</b>	<b>285</b>	<b>51.35 (Av.)</b>
<b>Zonal</b>		<b>29963</b>	<b>8364</b>	<b>27.91 (Av.)</b>

**Zone VII**

Sl. No.	State	KVK	Total villages in the KVK district (No.)	Total No. of villages covered under various KVK activities/ programs till 2018-19 (since inception)	Percentage of coverage
<b>I Manipur</b>					
1		Bishnupur	49	14	28.57
2		Chandel	437	121	27.69
3		Imphal East	214	92	42.99
4		Imphal West	178	106	59.55
5		<b>Thoubal</b>	<b>119</b>	<b>105</b>	<b>88.24</b>
6		Senapati	728	297	40.80
7		Ukhrul	194	58	29.90
8		Tamenglong	174	78	44.83
9		Churachandpur	738	214	29.00
<b>Total</b>			<b>2831</b>	<b>1085</b>	<b>38.33 (Av.)</b>
<b>II Meghalaya</b>					
1		Ri-Bhoi	635	77	12.13
2		East Garo Hills	586	32	5.46
3		South Garo Hills	804	32	3.98
4		East Khasi Hills	975	30	3.08
5		<b>West Khasi Hills</b>	<b>814</b>	<b>282</b>	<b>34.64</b>
6		Jaiñtia Hills	499	88	17.64
7		West Garo Hills	1237	382	30.88
<b>Total</b>			<b>5550</b>	<b>923</b>	<b>16.63 (Av.)</b>

<b>III Mizoram</b>					
1		Mamit	90	62	68.89
2		<b>Kolasib</b>	<b>49</b>	<b>39</b>	<b>79.59</b>
3		Aizawl	175	41	23.43
4		Champhai	94	41	43.62
5		Lawngtlai	158	61	38.61
6		Saiha	53	28	52.83
7		Lunglei	159	73	45.91



8	Serchhip	42	31	73.81
<b>Total</b>		<b>820</b>	<b>376</b>	<b>45.85 (Av.)</b>
<b>IV Nagaland</b>				
1	Peren	87	19	21.84
2	<b>Kohima</b>	<b>90</b>	<b>85</b>	<b>94.44</b>
3	Kiphire	110	50	45.45
4	Dimapur	204	84	41.18
5	Tuensang	144	62	43.06
6	Mokokchung	101	66	65.35
7	Mon	131	63	48.09
8	Wokha	133	58	43.61
9	Zunheboto	192	49	25.52
10	Phek	98	51	52.04
11	Longleng	52	36	69.23
<b>Total</b>		<b>1342</b>	<b>623</b>	<b>46.42 (Av.)</b>
<b>V Tripura</b>				
1	<b>Khowai</b>	<b>117</b>	<b>105</b>	<b>89.74</b>
2	North Tripura	137	76	55.47
3	South Tripura	169	91	53.85
4	West Tripura (Jirania)	178	20	11.24
5	Dhalai	151	72	47.68
6	Unakoti	93	-	-
7	Gomati	173	17	9.83
8	Sepahijala	169	14	8.28
<b>Total</b>		<b>1187</b>	<b>395</b>	<b>33.28 (Av.)</b>
<b>Zonal</b>		<b>11730</b>	<b>3402</b>	<b>29.00 (Av.)</b>
<b>North East (VI+VII)</b>		<b>41693</b>	<b>11766</b>	<b>28.22 (Av.)</b>

#### 4.B.I.2. Visit to KVK East Khasi Hills and Farmers' Field

The QRT visited KVK East Khasi Hills on 17<sup>th</sup> October 2019 accompanied by the staff of KVK and other stakeholders. The administrative building of the KVK was under construction as per ICAR guidelines and presently the KVK is functioning from State Soil Testing Laboratory, which is located adjacent to the construction site. The team also made a field visit to progressive farmer *Shri Wallam*

*Kupar Lyngrah* of *Mawsiathnam* village in East Khasi Hills district of Meghalaya and had interaction with local farmers about the agricultural situation, technology application and dissemination through various extension activities and programme and problems faced by farmers including the role of KVKs towards farmers' income generation. The team also visited different sites of farmers' fields where crops and livestock-based enterprises are in practice such as poultry, piggery, fisheries and horticultural crops.



**Visit by QRT to Hydroponic unit of KVK East Khasi Hills**

A face-to-face interaction session with KVK staff and farmers had taken place which was followed by visit to on-going construction site of administrative building and different demonstration units of the KVK such as poly house, vermicomposting unit, Integrated Farming System (IFS), Hydroponics, Post Harvest Technology (PHT) and value addition etc. The team observed that there is enough scope for fisheries, straw berry, khasi mandarin, off-season vegetables and animal components in the district. During interaction, most of the farmers expressed their requirement for mushroom spawn, fingerlings and quality seeds and planting materials from KVKs with technical supports so that they can take up various income generating activities/ enterprises in their farming systems. The report of field visit is given in **Annexure-IV**.

#### **4.B.I.3. Travel Workshop (KVKs in Sikkim)**

In phase-I, the team as per programme schedule organised the Travel Workshop for KVKs of Sikkim on 21<sup>st</sup> October 2019 at ICAR-NOFRI, Tadong, Sikkim. There are 4 KVKs in Sikkim and out of that 3 are under the administrative control of state agriculture department and 1(one) is under ICAR RC for NEH Region, Umiam. Further, as per NITI Aayog 3 KVKs have B grade and 1 KVK has A grade. On an average 71 (51.35%) villages were covered by each KVK in Sikkim. The showcasing of various technologies and technological products

through exhibition was arranged meticulously by the KVKs of Sikkim. It was observed that the existing mechanism of technological backstopping by ICAR-NOFRI, Tadong to KVKs in the state was appropriate with relevant demonstrations. There were brief presentations on different achievements of KVKs during last 8 years by Heads of individual KVKs of the state wherein important issues were also discussed for agricultural development in the state through effective functioning of KVKs.

The farmers expressed their needs for help in the construction of farm ponds/ irrigation system, trainings on organic package of practices, post-harvest technologies including marketing, pest intelligence and control measures etc. The proceedings of travel workshop with specific recommendations with respect to KVKs in Sikkim are presented in **Annexure-V**.



**Travel Workshop for KVKs in Sikkim**



**Visit to Exhibition Stalls of KVKs by QRT**

#### 4.B.I.4. Visit to KVK East Sikkim and Farmers' field

The QRT members visited the *Marchak Campus* of KVK East Sikkim as well as different demonstration farms on 20<sup>th</sup> October 2019. The Chairman and other members of the team interacted with the staff of the KVK East Sikkim. During visit, Dr. Avasthe, Joint Director, ICAR-NOFRI raised the issue of boundary wall/ fencing in both the campuses of KVK and requested for new administrative building, staff quarter, farmers' hostel for conducting vocational training, drinking water facility etc. Later, the team proceeded to Timpyem village for farmers' field visit which was one of the adopted villages of KVK East Sikkim. The village was dominated by the *Lepcha tribes* of Sikkim. After reaching the village, the Chairman and other team members interacted with the farmers about their agricultural scenario of the village including land holding, agricultural practices, pig and poultry farming, water harvesting etc. The Mahindra Krishi Samridhi Award winner woman farmer of the village *Smt. Penki Lepcha* explained how her income has been increased by the adoption of scientific package of practices recommended by KVK East Sikkim. This is worthy to mention here that *Smt. Lepcha* got an opportunity to interact with the Hon'ble Prime Minister of India, Shri. Narendra Modi about her farming practices for enhancing the farm income through video conferencing. The team then proceeded for the second adopted village i.e. Thanka Lingtam village.



Farmers interaction at Timpyem village, East Sikkim during field visit by QRT

The Chairman and the team members interacted with farmers of the village and shared their experiences of working with the KVK of ICAR. They explained how their profit margin has been increased with the different technological interventions especially piggery, backyard poultry farming with Vanaraja birds, no-till cultivation of vegetable pea, Red Cherry Peeper (*Dalleychilli*) cultivation with black plastic mulching etc. Later, the QRT along with other dignitaries and KVK officials visited few farmers' fields and interacted with them. The report of field visit is given in **Annexure-VI**.

#### 4.B.II. Phase II (Brief account of Travel workshop and Field visits)

The Phase II Travel Workshops of Quinquennial Review Team was held at Dimapur and KVK Kamrup during 4<sup>th</sup>-8<sup>th</sup> November 2019 and reviewed 37 KVKs from Nagaland and Assam. The workshops included the technical presentations on different achievements of KVKs including mandated activities and other special/ flagship programmes of the governments during last 8 years by Heads of individual KVKs of the two states before the committee members and other stakeholders including representatives of host institutes of KVK wherein important issues were discussed for agricultural development in the state through effective functioning of KVKs.

##### 4.B.II.1. Travel Workshop (KVKs in Nagaland)

The travel workshop for KVKs in Nagaland was held at Hotel Saramati in Dimapur on 5<sup>th</sup> November 2019. The workshop consisted of presentation by all 11 KVKs on their achievements during QRT reporting period and exhibition of technologies and technological products arranged by KVKs of the state. Some of the major suggestion included enhancement of revenue generation under revolving fund, proper benchmarking and mapping of instructional farm of the KVKs of the state, patent of their specific innovations through prescribed norms and procedures and utilization of locally available feed ingredients to optimize livestock production. Over 30 participants including

KVKs staff, representatives from line departments, NGOs and other stakeholders participated in the workshop. The proceeding of travel workshop for KVKs in Nagaland is given in **Annexure-VII**.



Technical presentation by KVK during Travel Workshop



Visit by QRT to Exhibition Stall of Nagaland KVKs

#### 4.B.II.2. Visit to KVK Dimapur and Farmers' field

The team could not visit to the site of KVK Dimapur at Jharnapani due to complete road blockade caused by massive landslides during the period. However, the team managed to visit Seithekima-A village under Dimapur district on 5<sup>th</sup> November 2019 where the team moved around different citrus orchards (*Assam lemon*), plantations (Arecanut and banana) as well as livestock farms such as dairy, poultry etc. in order to understand how KVK interventions reached to farmers for doubling their farm income. An interaction programme with the local farmers and leaders was also held in the village on different issues

including agricultural scenario, scope, potential for integrated farming systems, post harvest and value addition, marketing and problems faced by farmers in adoption of new technologies. The committee appreciated the farming activities taken up by women farmer Smt. Thejana Matrith and her role in dissemination of technologies to other farmers particularly women farmers through SHGs and improvement of economic conditions of the farmers.



Farmer field visit at Seithekima-A, Dimapur by QRT

During interaction, most of the women farmers expressed their requirement for quality seeds and planting materials as well as more number of training programmes from KVKs to upgrade their knowledge and skills with technical and financial supports so that they can take up various income generating activities/ enterprises. The team observed that there was enough scope for fisheries, off-season vegetables and other livestock-based farming systems in the areas which must be encouraged and promoted by KVK.

The team also made interaction with different categories of farmers including women farmers of the village and collected first hand information pertaining to problems and prospects as well as different major farming systems practiced by farmers for their livelihood and income generation. The committee members after critical observation shared their views and experiences with the farmers for development of hill farming in the state. The report of field visit by QRT under KVK Dimapur is given in **Annexure-VIII**.

### 4.B.II.3. Travel Workshop (KVKs in Assam)

The travel workshop for the KVKs in Assam was organized at KVK Kamrup. The main constraints experienced by KVKs included, manpower shortage in KVKs, instability of staff, CAS for KVK staff, lack of vehicles, inadequate HRD programs, no labs and permanent exhibition halls, no seed processing centres, technical skills in report preparation, library and record room, fencing, no provision for exposure visits, limited contingency budget, poor farm mechanization, water scarcity etc.



Presentation during Travel workshop



Visit to Exhibition Stalls of KVKs of Assam

The major suggestions included promotion of farm mechanization particularly in valley areas, village level master trainers, KVK as a hub of seed production, mechanization in rice cultivation, ensuring supply of quality seeds of pulses and oilseeds, adequate supply of poultry birds and fingerlings, establishment of advanced processing units and training centre, advanced IPM centre, bringing more area under banana cultivation,

upscaling of precision farming, developing/ promotion of submergence resistant rice varieties, promotion of farm ponds, introduction of mobile sprinkler units, establishment of community nursery, value addition in vegetables, increasing productivity in banana, spread of SRI cultivation etc. Out of 21 KVKs under QRT review, 3 KVKs namely; Kamrup, Nagaon and Golaghat were ranked with 'A' grade by NITI Aayog and remaining 18 KVKs were ranked with 'B' grade. On an average, each KVK covered 248 (26.11%) villages till date under different KVKs activities. The Proceedings of travel workshop for KVKs in Assam held at KVK Kamrup are given in **Annexure-IX**.

### 4.B.II.4. Visit to KVK Kamrup

As a part of the travel workshop, the QRT made a visit to KVK Kamrup in the morning and its instructional farm. The KVK is located at the outskirts of Guwahati city under Kamrup district with 10.11 ha area. It has most of the infrastructure facilities including administrative building, farmers' hostel, Soil Testing Lab, Seed storage facility and permanent mini ATIC for an exhibition of its technologies and products etc. within the KVK campus. The instructional farm with an area of 7.20 ha is maintained appropriately for imparting skill oriented training programmes. The multi-storied model of farming (Pineapple+ Black pepper+ Banana+ Arecanut) maintained by the KVK needs to be replicated by other KVKs in Assam. The QRT opined the importance of impact study of KVK activities and more specially the quantification of impact of different technologies tested or demonstrated by the KVK particularly the HYVs of different crops.



Interaction Session with farmers and NGOs at KVK Kamrup

#### 4.B.II.5. Visit to KVK Nagaon and Farmers' field

The QRT visited *Bengenati* village under Nagaon district on 6<sup>th</sup> November 2019. The KVK Nagaon demonstrated and promoted *Assam Lemon* in this *Bengenati* village during 2011-12 which now expanded horizontally up to 93 ha area covering 16 villages benefitting 110 farmers. An interaction with the local farmers and leaders was also held in the vicinity of the village on different issues including agricultural scenario, scope for integrated farming systems, post harvest value addition, marketing and problems faced by farmers in adoption of new technologies. The committee appreciated the farming activities taken up by entrepreneur *Sri Anuwar Hussain* and his role in dissemination of technologies to other farmers particularly in the village through formation of farmers club and SHGs and improvement of economic conditions of the farmers. After visit to the farmers' field, the team also went to KVK Nagaon and visited different instructional farms of the KVK including poultry, piggery, goatery, fisheries, integrated farming systems, horticultural and field crops etc. The instructional farm of 13 ha area maintained well with IFS model including cereals, fruit crops, poultry, and fisheries component and Sali rice seed production of variety *Ranjit Sub-1*. The field visit report in respect of KVK Nagaon is given in **Annexure-X**.



Field visit to KVK Nagaon Instructional farm

#### 4.B.III. Phase III (Brief account of Travel workshop and Field visits)

The Phase III Travel Workshops of Quinquennial Review Team was held at CAU, Imphal/ KVK Imphal East and KVK Kolasib during 20<sup>th</sup> -24<sup>th</sup> November 2019 covering review for 17 KVKs from Manipur and Mizoram. The workshop consisted of brief presentations by Heads of individual KVKs on various achievements of mandated activities of the KVK of the two states as well as other special programmes taken up during review period in the district.

##### 4.B.III.1. Travel Workshop (KVKs in Manipur)

The travel workshop for KVKs in Manipur was organized at KVK Imphal East on 21<sup>st</sup> November 2019. The Hon'ble V.C. of CAU, Imphal *Prof. M. Premjit Singh* while welcoming the Chairman and members of QRT, expressed the urgent needs to assess the various activities and interventions made by KVKs for the upliftment of farming community of the state and the contributions towards the GDP of the country on a broader perspective. In Manipur, there are total 16 districts including newly created 7 districts but only 9 districts have KVKs. Out of 9 KVKs 2 have A grade and 7 have B grade of NITI Aayog. The KVKs have organized the exhibition depicting the glimpses of activities and achievements made across the state. Further, brief presentations were made by Heads of individual KVKs on various achievements of mandated activities of the KVK as well as other special programmes taken up during review period in the district.



Travel Workshop for KVKs in Manipur



Visit to Exhibition by QRT

On an average, 120 (38.33%) villages of the district are covered by each KVK. The proceedings of travel workshop for the KVKs in Manipur are given in **Annexure-XI**.

#### 4.B.III.2. Visit to KVK Imphal East and Farmers' field

The QRT visited the farmers' field at Yambem village where different activities under Farmer FIRST programme (FFP) were being implemented by CAU, Imphal such as horticulture based module like introduction of Makhana *var. Swarna Vaidehi* from Patna under Manipur condition and comparative studies with local genotype in 0.25 ha, demonstration of Fish cum Paddy Farming System, Fish cum Livestock cum Horticulture Integrated Farming System in 1.5 ha area. The team also visited Nungbrung village under KVK Imphal East where various activities under NICRA and DFI were being undertaken at farmers' field. The various activities for doubling farmers' income included integrated farming system comprised of fisheries, vegetables, livestock and other horticultural components. This was followed by interaction with farmers and farm women where farmers raised different issues related to infrastructure facilities at village level, marketing, agricultural inputs including availability of irrigation facilities and need based vocational trainings in frontier areas of agricultural development. On the same day, the team with all its members along with *Dr. M. Premjit Singh*, Hon'ble V.C. of CAU and *Dr. R.K. Saha*, Director of Extension Education, CAU, Imphal also visited different instructional farms of KVK Imphal

East. This included poultry, piggery, duckery and horticulture based different farming systems. Suggestion was made to work out component wise benefit cost ratio for up scaling of IFS models. The report of field visit under KVK Imphal East is given in **Annexure-XII**.



Visit to Farmers' field at Nungbrung village by QRT

#### 4.B.III.3. Visit to KVK Bishnupur

The QRT as per its visit programme visited KVK Bishnupur. This KVK is under the administrative control of Utlou Joint Farming cum Pisciculture Cooperative Society (NGO), located at *Utlou village* in Bishnupur district having an area of 25.95 ha. The infrastructure facilities such as administrative building, farmers' hostel, staff quarters, soil testing lab, ICT, Home Science lab, exhibition hall, library and Plant Protection lab are available. The suggestions during the interface with the staff of KVK and host institute included, establishment of community radio center, mobile lab, more funding to KVKs, replacement of old vehicle, establishing custom hiring services, creating awareness on IPR activities in KVK, provision of more field staff and SMSs to KVK.

#### 4.B.III.4. Travel Workshop (KVKs in Mizoram)

The Travel Workshop of QRT pertaining to KVKs in Mizoram was held on 22<sup>nd</sup> November 2019 at KVK Kolasib. Total 11 districts are there in Mizoram state including 3 newly created districts and 8 KVKs are functioning at present. Out of 8 KVKs 4 KVKs have A grade and 4 KVKs have B grade. On an average 47 villages (45.85%) were covered by each KVK in the state under various

activities and programmes. An exhibition was arranged by KVKs in Mizoram to showcase the technological products and other innovations promoted by KVKs for the benefit of farmers. KVKs have effectively demonstrated the products prepared from waste material. The inauguration session of the workshop began with the formal welcome address by Dr. H. Saithantluanga, Director of Agriculture (Research and Extension), Govt. of Mizoram. The technical presentations on different performance and achievements of activities of KVKs during the past 8 years (2011-12 to 2018-19) was made by the individual Heads of KVKs of the state, wherein valuable comments and suggestions for improvement, based on their presentation were made by the QRT Chairman and Members. The interactive session with the farmers and state representatives suggested more support and cooperation by host institute i.e; Dept. of Agriculture, Mizoram through collaborative programmes for the development of farming communities in the state.



Visit of QRT to Exhibition stalls of Mizoram KVKs

Efforts may be made for commercialization of technologies/ products through KVK after processing / value additions, honey production at field level must be promoted, production and promotion of mushroom spawn and round the year mushroom production by KVK are some of the major suggestions. The proceedings of travel workshop for KVKs in Mizoram are given in **Annexure-XIII**.

#### 4.B.III.5. Visit to KVK Kolasib and Farmer's field

The QRT team visited the instructional farms of KVK Kolasib such as poultry farm/ piggery, plantation/ orchard of different horticulture crops, integrated farming systems being maintained by the KVK on 23<sup>rd</sup> November 2019 in the morning. This was followed by visits to KVK Infrastructure-Administrative Buildings, Laboratories and Demonstration cum Instructional units along with the staff of the KVK to assess the present status of such infrastructure and land utilization pattern of KVK. On 24<sup>th</sup> November 2019, the QRT visited farmers' field in Buhchangphai village where KVK activities under different programmes are being implemented including the Government flagship programme of 'Doubling Farmer's Income by 2022'. The QRT visited three selected farmers' fields and had a successful and fruitful interaction with the farmers.



Technical Presentation by KVKs before QRT



Visit by QRT to Home Science Lab of KVK Kolasib





Visit to farmers' field at Buhchangphai village

It was observed that farmers followed the ITKs wherein the pseudo stems of the wild banana were used to protect the crops from damage from direct sunlight. Further, the Integrated Farming System at farmer level as promoted by KVK Kolasib is noteworthy as the same has been benefitted to the farmers in their sustainable income generation. The report of field visit under KVK Kolasib is given in **Annexure-XIV**.

#### 4.B.III.6. Visit to KVK Mamit

The KVK Mamit is located within 1 km from the Lengpui Airport of Mizoram. The facilities like soil testing lab, mushroom spawn production unit and home science lab are well maintained by KVK. However, the instructional farm of KVK approximately 5 kms from KVK site at Dialdawk village require more efforts and time of the staff for development, maintenance and conducting the mandated activities of KVK in a scientific spirit. Water harvesting with micro irrigation facility and suitable afforestation in phase manner needs to be implemented on the farm on priority. Focus is also required on rearing of livestock in view of potential in the district. There must be provision of custom hiring facility of paddy transplanter and combined harvester. Further, other actionable points include more publicity about KVK and its activities in the villages of the district, establishment of greater number of SHGs and providing market tie-up. The interaction with stakeholders highlighted the need to strengthen the KVK activities as per the assessed needs of farmers. There is synergy among the development departments, which should be capitalized.

#### 4.B.IV. Phase IV (Brief account of Travel workshop and Field visits)

The Phase IV Travel Workshops of Quinquennial Review Team were held during 4<sup>th</sup>-9<sup>th</sup>December 2019 covering 24 KVKs from Tripura and Arunachal Pradesh. The workshop included visit to exhibition stalls arranged by KVKs of the state which displayed various technological products and values. The technical presentation on different programmes and activities carried out during last eight years was made by individual KVKs of the two states as part of the programme of the workshop.

##### 4.B.IV.1. Travel Workshop (KVKs in Tripura)

The travel workshop of KVKs in Tripura was organized on 5<sup>th</sup>December 2019 at College of Fisheries Science (CoFSc), CAU, Lembucherra. There are 8 districts in Tripura and each district is having KVK. But 58% of the posts are lying vacant in 8 KVKs and there are 3 KVKs (Dhalai, Gomati and Unakoti) under State Department of Agriculture having only one working staff. Out of 8 KVKs, 4 are old and 4 are new. Interestingly out of 4 old KVKs, 3 are having A grade and remaining 1 is having B grade of NITI Aayog. The suggestions from farmers of the State included increase the scientific staff of KVK, use of progressive farmers as resource persons, fix remunerative prices to produces including fruits and vegetables, storage facilities at village level, regular trainings to farmers, supply of quality seeds and planting materials, mushroom spawn,

fingerlings, livestock strains, promote integrated farming, develop technologies to reduce cost of production, promote organic farming, establish



Travel workshop for KVKs in Tripura

soil testing facilities and promote best package of practices. The proceedings of travel workshop for KVKs in Tripura are given in **Annexure-XV**.



Visit to Exhibition stalls of Tripura KVKs

#### 4.B.IV.2. Visit to KVK Khowai and Farmers' field

The QRT visited KVK Khowai (an NGO KVK under Sri Ram Krishna Seva Kendra, Kolkata) as well as *East R.C. Ghat* village (Adopted Village of Pilot Project on Doubling Farmers Income) of Khowai district of Tripura on 4<sup>th</sup> December 2019. Initially the team visited the farm of *Shri Bijoylal Majumdar* of *East R.C. Ghat* Village, who is recipient of prestigious ICAR Pandit Deen Dayal Upadhyay Antodaya Puraskar-2017. The practices adopted by *Mr. Majumdar* in cultivation of Bottle Gourd as paira crop in his plot with zero tillage after growing Chilli was of innovative in nature, which could enhance his profit per unit area by reducing the cost of cultivation. The next visit was made to the field of *Mr. Babul Das* where successful integrated farming system comprising of fisheries, arecanut, citrus, banana, coconut, sugarcane and pineapple

are grown. The team also visited the Custom Hiring Centre of Prabin Farmers Club situated at *East R.C. Ghat* Village. The dignitaries encouraged the farmers to utilize benefits of the custom hiring centre to the best possible way for the betterment of the farming community of the village. An interaction session with the Farmers-QRT members was organized in the village itself where the various regional and national level award winning farmers of Khowai district were felicitated by the QRT and other dignitaries. At last the team visited the instructional farms of KVK Khowai and provided valuable suggestions and advices to the staff of KVK for successful implementation of the activities of KVK and development of agriculture in the district. This included development of storage infrastructure, processing, value addition, strengthening of marketing networks and custom hiring in the district for farmers benefits. The report of field visit is given in **Annexure-XVI**.



Farmer's field visit at East R.C. Ghat by QRT

### 4.B.IV.3. Travel Workshop (KVKs in Arunachal Pradesh)

The travel workshop for the KVKs in Arunachal Pradesh was held on 7<sup>th</sup> December 2019 at KVK Papumpare to review the achievements and performance of KVKs of the state during last eight years (2011-12 to 2018-19). In Arunachal Pradesh, there are 25 districts and 16 KVKs have been established in the state. Out of 16 KVKs, 10 KVKs have B grade, 2 KVKs have C grade and only one KVK has A grade of NITI Aayog and remaining 3 KVKs were established after 2015-16 which have not been evaluated by Aayog. Over 40 participants from different organizations including the Sr. Scientists and Heads of KVKs of the state, representatives from the Department of Agriculture, Department of Livestock and Animal Husbandry, Government of A.P., Dean (i/c) CHF, CAU and Joint Director, ICAR RC for NEH Region, Arunachal Pradesh participated in the programme. The travel workshop included exhibition of various technologies and technological products promoted by KVKs. The technical presentation by all KVKs in Arunachal Pradesh was made to highlight their performance and achievements of programmes and activities during last eight years.

Some of the suggestions from farmers of the State included, increase the staff of KVK, strengthening of market intelligence to farmers, use of progressive farmers as resource persons, fix remunerative prices to farm produces including fruits and vegetables, storage facilities at village level, regular trainings to farmers, supply of quality seeds and planting materials, mushroom spawn, fingerlings, livestock strains, promote integrated farming system, feeds, custom hiring facility to be routed through KVKs, develop technologies to reduce cost of production, promote organic farming, establish soil testing facilities, promote cold storage facilities, mass awareness campaign on technologies and best package of practices, intensification of FFSS, arrange crop insurance etc. The proceedings of travel workshop are given in **Annexure-XVII**.



Travel workshop for KVKs in Arunachal Pradesh



Visit to Exhibition stalls of Arunachal Pradesh KVKs

### 4.B.IV.4. Visit to KVK Papumpare and Farmers' field

The QRT visited instructional farms of KVK Papumpare on 8<sup>th</sup> December 2019. The team expressed satisfaction with different activities being carried out in different demonstration units; however, the team also identified lot of scope for their further improvement in terms of scientific and quality management of the different demonstration units to act as model to farmers and other stakeholders. The team also visited farmers' field at *Upper Jumi village* and *Kimi village* which are about 87 kms distance from the KVK location where different programmes and activities such as integrated farming system, poultry, piggery, duckery, fisheries and sericulture nursery components are being practiced by farmers with technical support and cooperation of KVK Papumpare.



Visit to KVK Instructional farm of Papumpare



Field visit to Upper Jumi village,  
Arunachal Pradesh

Some of the important suggestions to improve further included planning of farm lay-outs scientifically in consultation with experts in KVK campus and their management, proper display of boards of demonstration units along with database, proper utilization of shade net house and poly house of KVK farm in view of local potential of various horticulture- vegetables commodities, economic analysis of IFS components etc. The report of field visit under KVK Papumpare is given in **Annexure-XVIII**.

#### 4.C. Expectations of the Farming Community

The QRT had the opportunity for direct interaction with farmers and farm women during its field visits as well as specially organized farmers interaction programmes in villages on various issues pertaining to problems and prospects of agricultural development in different states of the

two zones. Some of the major expectations and suggestion given by farmers are given below.

- Multi-storied model of farming system practiced by KVK Kamrup may be replicated in other KVKs as well.
- Mobile Advisory Services through text in local language and voice is required for quicker access of information on marketing, weather forecast and pest and disease incidences etc.
- KVK programmes and activities to be popularized through both print and electronic media, to have wider awareness among the farmers and their subsequent benefit to the farming community.
- More number of vocational training programmes needs to be conducted to promote entrepreneurship and encourage the young generation to remain with farming as primary profession.
- Convergence among KVKs and line Departments needs to be strengthened so that farmers visiting to KVKs may also know about the various programmes and schemes available with other departments.
- Effective market linkage and facilities for agricultural produces including livestock, flower products, processed and value-added products etc.
- Need for Custom hiring centres at village level to promote farm mechanization as the farm machines are costly and individual farmers cannot afford to purchase.
- Post-Harvest Technology and value addition to be encouraged on a wider scale to reduce loss due to handling and storage and to increase income of the farmers.
- Availability of quality seeds and planting materials in time as critical inputs to farmers.
- Help for farm mechanization with minimum financial support from the concerned departments and agency.
- Adequate storage facilities for grains, horticulture and dairy products need to be

created at the village level to fetch better price of their produce.

- High-density multi species cropping system has to be popularized to increase farmers' income from per unit area as the land available for agriculture is declining in the states of Northeast India.
- Exposure visit for farmers to research institutes and successful farmers' fields/ demonstration units at regional and national level may be arranged on regular basis.
- KVKs need additional infrastructures such as bio-control lab, soil testing facilities especially for testing micronutrients and processing lab.
- KVKs staff not to be transferred frequently and all vacant posts to be filled up on priority, so that KVKs can serve better for the farmers in society.
- Regular publication on significant achievements of KVK activities and success stories in local newspapers must be encouraged.
- Livestock based farming systems for tribal and farmers of hill districts may be developed for livelihood security through profitable farming.
- Focus on organic based farming systems for the state of Sikkim, Arunachal Pradesh and Meghalaya.
- Financial and technical support for rainwater harvesting and proper irrigation systems during lean period may be provided by the concerned organizations/ agencies/ departments.
- Ensure crop insurance to compensate loss due to crop failure and other extraneous factors.

#### **4.D. Suggestions of Officials of Line Departments/NABARD/ATMA/NGOs**

The state officials as well as officials from NABARD, ATMA and members of various NGOs in different states in the region expressed their

views and suggestion keeping in view the present scenario of agriculture in the region and local agro-ecological characteristics. Some of the suggestions for agriculture development in the region are given below.

- Host institutes specially the Department of Agriculture can extend more support to KVK programmes by providing funds available under different schemes and flagship programmes.
- Trainings for extension functionaries of line departments have to be increased by KVKs on advanced/ frontier technologies of agricultural development.
- Departments may be encouraged for construction of storage godowns, drying yards, small-scale agro-processing units etc.
- Various schemes of NABARD may be utilized to provide assistance for improving rural infrastructure through KVKs.
- There is need to have frequent meetings and follow-up actions between KVKs, ATMA and line departments, so that burning issues in agriculture and its allied sectors can be jointly addressed by KVKs, ATMA and line departments in the interest of farming community.
- KVKs can promote and popularize successful technologies among the farming community involving with the large-scale demonstration programmes available with the state departments under various schemes.
- Proposal for increase number of Animal Scientists in KVKs particularly in hills and tribal districts of northeast where livestock is the major/ dominant component in farming/ agriculture.
- Cost effective and location specific small farm mechanization need to be adopted and promoted for the benefit of small and marginal farmers through KVKs.
- Awareness may be created among the farmers about the various central and state

sector schemes being operated by different departments and NABARD for the welfare of the farmers.

- Almost all the vehicles in KVKs in the zone are very old which need replacement at the earliest.
- There must be provision for two wheelers (2 nos.) in each KVK of the two zones.
- The post of Senior Scientist and Head should be upgraded to the rank of Principal Scientist/ Professor and enhanced SMSs position from 6 to 10 numbers.
- Development of Soil Laboratory and Biolab in all KVKs in the region.
- Attachment of KVK staff with host institute must be stopped/ discontinued with immediate effect.
- More funds are required for performing the mandated activities of the KVK, since more than 75% of the annual budget goes for salary only for the KVK staff.
- Timely release of fund with clarity in guidelines for effective execution of farmer oriented programmes and activities in KVKs.
- All reporting and feedback systems must be

unified to a single platform including special provision for strengthening the connectivity. The present COVID 19 lockdown situations gave many learning experiences of social distancing with virtual communication and importance of ICT. The KVKs at difficult location, thus, may be connected to satellite communication facilities for timely and urgent dissemination of information.

- A separate financial provision should be made to facilitate Nodal Cell at the Institute/ department having a greater number of KVKs under its administrative control to monitor and support to the KVKs.
- Many KVKs do not have farm boundaries/ fencing. Separate budget should be earmarked for erecting fencing/ boundary walls to protect the Government land and farm from theft, land encroachment and damage by stray and wild animals etc.
- A provision of double HRA may be extended to the employees of those KVKs which lack basic amenities viz., housing, education, hospital, communication, medical and markets etc. within 10 km radius by keeping their families at home / other stations.

## CHAPTER-5

### 5.0. Overall Assessment

- In all, KVKs are performing well in their respective districts with the support and appropriate guidance of ATARIs in both the zones despite having shortage of scientific and technical manpower.
- Benchmark survey must be conducted through PRA by all KVKs before undertaking any intervention by KVKs to see the changes after its implementation.
- The progress/performance of KVK depends on leadership, staff commitment and the interest of the institution, which runs the KVK. Majority KVKs under the zones are observed with strong coordination among the staff and dedication towards their duties in the interest of farming communities.
- The staff strength in KVKs needs reexamination in view of expanding mandates and extent of new tasks assigned. The new job requires constant change, diversification and newer skills. The emphasis on science plus (Research for Development) in research system is a new development.
- Staff transfers should be minimum and if becomes inevitable has to be well planned, informed to ATARI so that alternate arrangement will not affect continuity, institutional memory and progress.
- Cross learning and correction are very less across KVKs. The institutional diversity in managing KVKs is an uncommon opportunity for cross learning and correction. Process documentation of successful ones can contribute to progress of less successful ones. Needs immediate attention to institutionalize it for improved performance of every KVK in the region.
- Strengthen the knowledge and skills of KVK staff in proper planning, implementation, monitoring and systematic impact assessment of interventions.
- Documentation and technical report writing on various achievements of the KVK activities is very poor. This skill, if not improved soon, will make these useful institutions redundant. Special training programmes may be conducted at ATARI level with experts in technical writing skills.
- The KVKs have the tendency on compulsion to add activities/ programmes without caring for proper maintenance of ongoing activities/ facilities/ staff strength etc. Good facilities like plant health labs, soil and water testing labs etc. are to be established in all KVKs with technical staff provision.
- The farm development, which is the key for the show in several KVKs, needs priority attention. The host Institution must help for proper planning and development of their KVKs with their own resources and technical support from ICAR.
- Proper documentation and publication of farmers' innovations and success stories are of immense importance. Regular updates and incorporation of new farmers' innovations, ITKs and success stories are recommended for proper documentation.
- Subject Matter Specialists and other staffs of KVKs should be encouraged to participate in refresher courses/ training programmes organized by different ICAR Institutes / Agricultural Universities/ MANAGE, etc. from time to time to keep them updated in their respective fields. These capacity building programmes should be made mandatory and may be linked to the promotion/ career advancement of the individual staff member.

- Formation of more number of farmers' organizations and SHGs like FPO, CIG, FIG for group empowerment in implementation of KVKs programmes.
- Establishment of marketing facility and support is a must for successful technology transfer, adoption and benefit.
- Labour scarcity is universal and therefore farm mechanization should be promoted, for which ensuring supply of farm machines and adequate facilities for repair and maintenance has to be organized particularly in valley areas of Assam, Manipur and Tripura.
- The criteria of minimum 20 ha land for sanctioning of new KVKs at difficult and hilly terrain must be revisited at Council level and moderated accordingly.
- A common transfer policy for the staff of KVKs may be developed keeping in view the difficult areas they serve in.
- There is need for more convergence between KVKs, ATMA and ATICs under ICAR Institutes/ SAUs for better technology application among the farming community.



## CHAPTER-6

### 6.0. Recommendations

THE KVKs UNDER Zone-VI and Zone-VII are undertaking many programmes and activities to accomplish the mandate of technology assessment, demonstration and application across the region in the best possible manner despite having situational and locational disadvantages in hilly and tribal areas of Northeast. KVKs in both the zones covered as many as 11766 villages, i.e. 28.22% of the total villages (41693) till 2018-19 under various programmes and activities with 8364 (27.91%) villages under Zone-VI and 3402 (29%) villages under Zone-VII. The present set-up consists of continuous technology back-stopping, linkage with other line departments, preparation and application of technology matrices as per prevailing farming systems and available resource endowments, and above all a feedback loop for NARS. It is therefore, recommended that the ICAR may make all out efforts to nurture this institutional set-up for enhancing 'technology' reach with richness to achieve the goal of increased sustainable income of the farmers. The support of ICAR-ATARIs is remarkable in terms of their strong coordination, monitoring and review of KVKs activities and linkages with other line departments and host organisations. As it has been observed, KVKs are committed to carry out their mandated activities laid down by the ICAR. However, the pressure of conducting the programmes of State and Central Governments as well as host institutes hinders the execution of their mandated activities in effective and efficient manner and thus adds extra workload on the Scientists. If KVKs are exempted from other 'duties', then they would be able to focus on their core activities more effectively. On the other hand, the performance of KVK depends on leadership, staff attitude and commitment towards farmers and other stakeholders, passion and dedication for work/service, rapport with the development departments, creative innovations and the patronage of the host institutions, which run the

KVKs. The KVKs are performing well both in crop sector as well as livestock/ fisheries in the region. Successful KVKs are characterized by capable head and committed staff, and getting administrative and financial support and empowerment from the host institutions. While poor performing KVKs are fraught with locational disadvantage, poor infrastructures, frequent transfers and vacancies of staff including heads and lukewarm support from the host institutions.

The specific recommendations of the QRT are broadly classified under administrative, financial, technical and policy which are presented below.

### 6.1. Administrative

#### 6.1.1. Re-examination of staff strength

The staff strength of KVKs needs re examination in view of expanding mandates, nature, extent and volume of new tasks assigned. The new job requires constant change, diversification, newer knowledge and skills. The emphasis on science plus (Research for Development) in research system is a new concept. The virtual collapse of the public extension system has increased the responsibilities, expectation as well as the dependency of the farmers on KVKs. If not cared, planned, and monitored, KVKs will wither under their own weight and ICAR cannot afford this. In this regard, it is suggested that the existing staff strength of 16 per KVK may be enhanced to 20 in each KVK. This is fully justified in the interest of efficient functioning of KVKs and also recommended by The High Power Committee on Management of KVK (HPCM of KVK) in 2014.

#### 6.1.2. SMSs and Supporting Staff

Keeping in view the ever-increasing roles and responsibilities of KVKs, it is necessary to increase the present strength of 6 SMSs in KVK to 10 SMSs. The additional four SMSs may be in the areas of i) Agri-Business Management/Agricultural Economics and Marketing, ii) Farm Mechanization, iii) Agro-Meteorology and iv) Processing and

Value Addition. Special focus must be given to animal husbandry activities as this is one of the most important sectors for farming communities for their livelihood and income generation in all tribal districts of Northeast India. Hence, it is essential to fill up the existing post of SMS in Animal Husbandry at the earliest to cater to the requirements of animal husbandry activities in KVKs. In addition, there is a need to sanction one additional Programme Assistant and two Skilled Support Staff to each of the KVKs.

### 6.1.3. Redesignation of SMSs as scientist

All Subject Matter Specialists in Indian Council of Agricultural Research/State Agricultural Universities/Non Governmental Organizations/State Government Krishi Vigyan Kendras should be redesignated uniformly as Scientist/Assistant Professor (PB-3, Rs. 15600-39100 with GP Rs. 6000) to ensure much needed parity across teaching, research, and extension positions. The same is recommended by HPCM of KVK in 2014.

### 6.1.4. Retirement benefits

Payment of retirement benefits in the form of Gratuity and Contributory Provident Fund for Krishi Vigyan Kendra staff must be made applicable by all host organizations. Further, the benefit of study leave to the staff of NGO Krishi Vigyan Kendras may also be extended as per Central Civil Service Leave Rules, 1972.

### 6.1.5. Directorate of Extension and ATIC

To strengthen the Directorate of Extension at SAU/ CAU in the monitoring, overseeing and supervision of increasing number of KVKs as well as increasing role of ATIC in technology documentation, publication and dissemination, special grant may be provided from ICAR with proper guidelines on priority.

### 6.1.6. Agricultural Technology Application Research Institute (ATARI)

In view of increased number of KVKs and for effective coordination and monitoring of the activities of KVKs, it is necessary to fill up the existing vacant position of scientific staff of ATARI. As in the case of other ICAR institutes/ Directorates, there is a need to strengthen ATARI by establishing three distinct sections in the areas of (i) Research

on Technology Delivery/Application, (ii) Database Management and Process Documentation and (iii) HRD, Coordination and Monitoring. Each section may be provided with Senior Scientist, Scientist and Research Assistant one each.

### 6.1.7. Up gradation of Senior Scientist AND Head

If the status of KVKs has to be raised and to attract and retain competent staff as Senior Scientist and Head, it is necessary to upgrade the Head to the cadre of Professor/ Principal Scientist for maintaining better control and command in the KVKs. This will help to provide intellectual leadership and administrative control as in case of Head of administration in a district.

### 6.1.8. Recruitment of staff in KVKs

Recruitment procedure for the staff of KVKs other than ICAR may be as per the rules and regulations of the respective Host Organization subject to the condition that Director, ATARI or his nominee should be one of the members in the selection committee for all posts. Further the academic qualifications, experience etc. for the posts should not be less than what is prescribed in ICAR and promotional policy, including the pay and eligibility criteria, will not be relaxed and should be strictly followed as applicable to similar posts in ICAR. All posts of KVK should be filled on priority and host institutions have the right to recruit all the sanctioned positions without taking permission or approval of any authorities. Besides, KVKs are exempted from any kind of general restrictions on recruitment other than those imposed by ICAR. Invariably, advertisements should appear well in advance of the retirement date so that the new incumbent will be in position on the day the post becomes vacant. In the case of KVKs under the SAUs/CUs/PSUs/ICAR Institutes, the concurrence of ATARI in respect of disciplines and qualifications of all posts should be obtained. In the case of KVKs under the Non-Government Organizations, the following procedure may be followed.

- The concurrence of ATARI should be obtained for recruitment of staff and advertisement thereof in Employment News/leading local newspaper and details are to be posted on Host organization's website.

- Circulation of advertisement to all ATARIs.
- The applications received are to be screened by a committee having one of its members from ATARI.
- The section committee for the staff of KVK must have one member from ATARI.

### 6.1.9. Transfer of Staff

It is noticed that the staff of KVKs including Heads are being subjected to frequent transfer, which is more pronounced in case of KVKs under SAU and state departments leading to instability and poor performance of the concerned KVKs. Therefore, staff transfer should be kept at a minimum and if inevitable, has to be well planned and obtain prior approval of ICAR/ ATARI so that alternate arrangements will not affect continuity, institutional memory and progress.

### 6.1.10. Capacity Building for Staff

Since leadership has emerged as an important requirement for success of KVK, it is necessary that the Heads of KVKs have to be adequately trained in leadership and organizational management. In the changing agricultural scenario, marketing problems are dominating over the production problems. Marketing support (processing, storage, grading, packing, certification, transportation etc.) is a must for successful technology transfer, adoption and benefit. But the existing structure of KVK neither has the wherewithal (means) nor the competency to handle post-harvest and marketing problems. Similarly, they also lack in skills/capacity of assessing the impacts of the KVKs in a systematic way. Therefore, adequate training must be provided to SMSs of KVK in marketing, post harvest technology including value addition, planning, monitoring, evaluation and impact assessment etc. A proper training policy may be framed so that each staff gets the opportunity for training atleast once in five years. Further, staff working in the remote KVKs should be encouraged through special incentives in the form of capacity development.

### 6.1.11. Establishment of new KVKs

The farmers as well as different stakeholders are requesting for establishing more and more KVKs probably because the farmers look towards

KVK with credibility as a functional unit through which they are getting several benefits. The ICAR must take enough care while sanctioning KVKs taking into consideration the location/ site suitability and credentials of the host institution.

### 6.1.12. Criteria for minimum land

The criteria of minimum 20 ha of land for establishment of new KVKs at difficult and hilly terrain may be revisited and moderated particularly in hilly areas of northeast. It is very difficult to obtain suitable land of 20 ha in hill districts of Northeast having different land ownership system for establishment of new KVKs. Therefore, the existing norms of providing 20 ha minimum land with free of cost may be revisited specially for Northeast.

### 6.1.13. KVKs must adhere to the mandated activities

The KVKs are overloaded with many assigned activities and programmes besides mandated activities without any concomitant increase in resources (both financial and manpower) and as a result the work performance of the mandated activities is suffering. If the present trend of overloading with additional jobs of KVKs continues, it is feared that KVKs will wither away under their own weight like the collapse of the public extension system. Hence, it is suggested that the KVKs must adhere to the mandated activities as decided by the ATARI. Additional jobs to KVKs if any, should be informed to ATARI well in advance and have to be taken up after approval only keeping in view the planned and mandated activities, strength and skills of existing staff, additional resources (manpower and financial) that would be made available to perform the additional jobs etc. It should be well articulated and argued that anything that will be counter-productive to the performance and image of KVKs should be resisted as far as possible.

### 6.1.14. Effective convergence among stakeholders

For effective coordination and monitoring of KVKs activities, there is a need for effective convergence among all concerned including allied line departments, ATMA, NABARD, ICAR, NGOs,

farmers organisation, civic bodies etc. and regular meetings should be organised by KVK once in a month to review agricultural situation, technology, service, support, supply and plan of work for next month in the district. This will help in ascertaining the present status of implementation of various programmes and activities and their problems, timely correction of defects as well as avoiding duplication of works in the interest of farming communities. This should be made mandatory for all KVKs. The venue for such meetings may be rotated across the district so that farmers in different locations can also take advantage of the presence of officials representing different development departments, get exposure to the exhibits if arranged and express their problems and seek solutions.

## **6.2. Financial**

### **6.2.1. Enhancement of recurring contingency grant**

Most of the budget sanctioned by ICAR is used for salaries of staff leaving very small amount for operational activities. The recurring contingency support needs enhancement by 3 times to meet the expenditure towards implementing mandated activities, KVK farm management, organizing exposure visits of farmers, TA and boarding charges for farmers while attending trainings/seminars and maintenance of farm (including watch and ward and labour) and labs. Further the current ceiling on meals/refreshments for training may be enhanced at par with other central sector schemes like ATMA, National Watershed Programme (NWP), NHM etc. Enhancement of funds under "Grant-in-Aid-Capital" may be considered, as KVKs need to develop proper infrastructure facilities like construction of demonstration units and for purchasing farm machineries and implements.

### **6.2.2. Financial empowerment to head of KVKs**

ICAR regularly releases funds for conducting the mandated activities of KVK. However, many KVKs are not able to utilize the funds as Heads of the KVKs are not fully empowered with adequate sanctioning authority and imprest amounts; this is

particularly seen in KVKs run by state Department of Agriculture as well as SAU/CAU. It is necessary that Heads of KVKs may be given adequate sanctioning powers for effectively implementing the mandated and other special activities. An administrative provision could be made so that ATARI may transfer the funds directly to the KVKs with intimation to the host institution(s) to avoid delay in fund transfer to KVKs.

### **6.2.3. Additional budget**

Additional budgetary support is required for establishing the following facilities:

#### **6.2.3.1. Rural Technology Centres**

Budgetary provision must be made to establish Rural Technology Centres (RTCs) in KVKs so that farm machines/ implements can be made available to the farmers on custom hiring basis, the need expressed by many farmers across the region. The KVKs must facilitate to repair and maintenance of farm machineries by providing the list of service providers.

#### **6.2.3.2. Establishment of bio-control and processing Labs**

Proper processing of agricultural produce not only prevents losses and adds value to the products but also increases the marketability of the products which in turn provides enhanced income to the producers. Therefore, to train the farmers in post harvest processing and value addition to their produce for enhanced income, it is suggested for the biocontrol and processing labs in each KVKs with budget provisions/ support by the concerned authority.

#### **6.2.3.3. Transport Facility**

With increased number of KVKs in the zones and for effective monitoring and supervision of KVKs, a vehicle (Bolero) meant for Scientists/ Staff of ATARI needs to be provided. Almost all the vehicles in KVKs in the zones are also very old which need for their replacement. Urgent actions may be taken for providing new vehicles as replacement of old vehicles in old KVKs. In addition, there must be provision for two wheelers (2 nos.) in each KVK of Northeast.

#### 6.2.3.4. Upward revision of Revolving Fund

There is a justified demand from most of the KVKs to enhance the Revolving Fund (RF) up to Rs.5.00 lakh for each KVK. Some of the new KVKs are not provided with revolving fund of Rs. 1.00 lakh as seed money for KVK income generation. The Revolving Fund (RF) in enhanced rate may be released at the time of sanction of new KVKs. Revolving Fund Guidelines prepared by the ICAR must be made available to each KVK and should be followed strictly.

#### 6.2.3.5. Strong financial support

If the KVKs are to shoulder greater responsibilities at the district and state level, financial support to KVKs is a must from every departments and agencies to a considerable extent. Assigning more activities to KVKs without manpower and financial support/ resources will make them non-functional. All KVKs may be encouraged to apply for grants from other funding agencies.

#### 6.2.4. Strengthening Infrastructure Facilities

The infrastructure viz. administrative building, staff quarters, farmers' hostels, and demonstration units in some of the KVKs have already been established and construction work is in progress in many of the KVKs. However, the present pattern of fund allocation is not sufficient to meet the overall expenditure of the proposed activities. The committee is of the opinion that, the actual amount required need to be worked out based on the present cost and provided to KVKs. There should be more number of staff quarters for the staff as per necessity because rented house or dwelling facilities are not available in and around most of the KVKs in this region.

#### 6.2.5. Demonstration units at KVKs

Demonstration units in different components must be developed in all KVKs to act as models to farmers with sufficient financial support. However, most of the KVKs have not been able to develop demonstration units due to lack of adequate funding and infrastructure. Inadequacy of such prerequisites has resulted in poor utilization

of allotted revolving funds. A one time grant of development fund based on the requirement of the KVKs may be considered.

### 6.3. Technical

#### 6.3.1. Technical backstopping by Universities/ ICAR Institutes

The KVKs in northeast, notwithstanding the host institutes they belong must get full technical support and guidance from the universities- both AAU, Jorhat and CAU, Imphal as well as ICAR Research Institutes in different frontier areas of agricultural development. The Directors of Extension Education of the two universities must provide technological as well as methodological backstopping to KVKs through organization of HRD programmes, technology demonstrations and publication of state-wise different technology inventories etc. They should also closely involve with the ATARIs in review process of KVKs activities besides field visits and organizing university level workshops and conferences.

#### 6.3.2. Cross learning across KVKs

Cross learning for enhancing knowledge and skills needs to be strengthened across KVKs in the region. The institutional diversity (operated by ICAR, SAUs, NGOs and Government) and availability of immense innovations across KVKs is an uncommon opportunity for cross learning and correction. Some KVKs are performing very well and some are very poor in their performance. Process documentation of successful ones is a must as it can contribute to progress of less successful ones. This needs immediate attention to institutionalize it for improved performance of every KVK. Special provision for the exposure visit of KVK staff to best performing KVKs across the country may be made.

#### 6.3.3. Identification of Champion farmers

The KVKs as extension intervention are yet to reach the unreached. The coverage as it appears is less than 20% of the farming community and with the existing manpower, the KVKs will not be able to increase the coverage. Identification of champion farmers followed by training to them on different aspects of agricultural development will

be helpful to use them as trainers, with suitable compensation. This will increase coverage of large number of uncovered farmers in the district. The present practice of continuing with few successful farmers as permanent examples should be discontinued. The KVKs may be made mandatory to publish success stories of the farmers who are doing exceptionally good work which shall be the motivational means to other farmers. The tribal women farmers should be provided with skill-based training in farming and other vocations on community basis.

#### **6.3.4. Information on government schemes**

It is a fact that the Governments at the centre and state are implementing several schemes/programmes (including the schemes of NABARD and other agencies) for the benefit of the farming community. But most of the farmers are not aware of these schemes. Hence, information on all government schemes in agriculture and allied fields with their features and benefits should be made available to the farming community using appropriate mass media (print and electronic). A booklet may be prepared for each state indicating state and central programs which are helping the farmers in terms of subsidy, training and provision of other facilities. This must be published in local language.

#### **6.3.5. Selection of appropriate technologies by KVKs**

The concept of providing standard package to each KVK for implementation needs to be reconsidered. The technologies or practices, which are being tested or refined or transferred, are almost same across almost all the KVKs. It clearly indicates that the KVKs are not able to utilize the "flexibility principle" in focusing only on the technologies including non-farm enterprises like vermicomposting, beekeeping etc suitable to the area based on need assessment. Therefore, it is recommended that the KVKs must focus on technologies which address the specific needs of the farmers in the locality. It is also suggested to prepare a separate note regarding utilization of TSP (Tribal Sub-Plan) funds. The information about

socio-economic upliftment of tribal farmers needs to be documented.

#### **6.3.6. Up scaling of KVK operations**

If the KVK technologies have to be considered as superior, the present scale of operation of KVKs is inadequate both in number and quality of analysis. Both need to be improved keeping in view the productivity, profitability, stability and sustainability of the technologies in local farming situation. The program like market led extension is crucial for linking farmers to markets. Group action approach through formation of SHG, FFS, FIG, Farmers cooperation etc. should also be considered by KVKs.

#### **6.3.7. Strengthening of Soil testing labs**

The Northeast region is endowed with a fragile ecology and prone to soil and water degradation due to shifting cultivation and deforestation in some of the districts. There is a greater need for sustainable management and improvement of soil health through integrated nutrient management practices by utilizing local resources including practices like green manuring, vermicomposting etc. Soil testing facilities to all the KVKs with required technical support and additional contingency grant may be provided to improve soil test based and balanced application of nutrients. The soil testing labs in some of the KVKs are not equipped for testing micronutrients in soil samples. Hence, ICAR may also provide separate budget for strengthening Soil Testing Labs for micronutrient analysis, including provision for manpower (may be) on contractual basis.

#### **6.3.8. Integrated Farming System (IFS) Model**

IFS as a component of farming system considers the concepts of minimizing risk, increasing production and profit along with improving the utilization of organic wastes and crop residues. In view of the above, it is suggested for establishment of IFS Demonstration facility in all KVKs considering the availability of fund, potentiality of the system in the district, marketing, manpower etc. to demonstrate appropriate location specific IFS module to the farmers. It is also

suggested that KVKs must establish IFS models on farmer's fields by identifying progressive farmers for better impact keeping in view the local agro climatic conditions.

### 6.3.9. Shifting cultivation

The region is presently having 1.466 million ha of area (NEC, 2015) under shifting cultivation. There is enormous soil and nutrient loss every year. Now, the Jhuming cycle is also decreased due to the population pressure as well as more need for food and fibre in this region. In these degraded areas, one of the promising opportunities is to grow fruit trees along with the multipurpose tree species (MPTS) by adopting horticulture based agro-forestry system. The committee recommends that horticulture based agro-forestry modules be developed and demonstrated by the KVKs in major shifting cultivation areas. Also, a special funding may be provided for this purpose.

### 6.3.10. Rainwater Harvesting Structure (RWHS) with Micro Irrigation System

To demonstrate the efficacy of providing supplemental irrigation through rainwater harvesting to prevent crop failure due to moisture stress under dry land farming situation, only few KVKs were provided with RWHS. Considering the favourable response of farmers to adopt the technology, it is recommended to extend the facility to other KVKs as well in the current plan based on scope of water harvesting, potential use during lean period, crops grown and availability of fund etc.

### 6.3.11. Minimal processing facility

Proper processing of agricultural produce not only prevents losses and adds value to the products but also increases the marketability of the products which in turn provides enhanced income to the producers. Therefore, in order to train the farmers in post harvest processing and value addition to their produce for enhanced income, it is suggested for the minimal processing facility to select KVKs considering the availability of fund, manpower and potential of the facility in the district.

### 6.3.12. Portable carp hatchery for KVKs

The availability of quality fish seed is prerequisite for rapid expansion of aquaculture in the region. Due to lack of basic infrastructure, carp breeding is rarely adopted by the farmers. Moreover, the establishment of carp hatchery is a costly proposition. Therefore, considering the successful demonstration of the technology to the farmers, it is recommended to provide the facility to those KVKs based on budget availability, manpower in fisheries, infrastructure facilities and scope of fisheries in the district.

### 6.3.13. Connectivity for KVKs

In Northeast, most of the KVKs are in remote areas and as such availability of telephone, power and internet connectivity is a real constraint for effective communication. Providing a generator set and VSAT facility along with high speed internet for each KVK will help a great deal in improving connectivity and thereby dissemination of scientific information to farmers. In view of COVID 19 lockdown situation and social distancing experience connectivity of KVKs of Northeast should be strengthened on priority with required capacities including skills of KVK staff.

### 6.3.14. Recognition of Farmer's Innovation

It is well known that there are innovative farmers in different localities and some KVKs have done well in recognising and encouraging such innovators. It is necessary to capture such innovations which may be well suited and adopted in the prevailing farming system. Hence, the KVKs must assess, validate (through OFTs) and refine farmers' innovations in different farmers' fields and demonstrate them for wider application. The contribution of such innovative farmers must be recognized appropriately, and such innovations must be documented properly for future reference and use. If possible KVKs can facilitate those farmers in obtaining patents.

### 6.3.15. Revenue/ Resource generation

It is brought to the notice of the team that the revenue generated using funds by KVKs are neither informed to the ICAR nor ploughed back

to KVKs for further development. Instead the funds are deposited into the accounts of the host institutes and are being utilized for purposes other than KVKs. Hence, it is suggested that the concerned host institutes must ensure that the funds are utilised for the purpose for which they have been sanctioned. It is also advised that KVK-wise information on resource generation needs to be tabulated. Further, efforts are required continuously to enhance revenue/resource generation by the KVKs and every year 10-20 percent increase should be there.

### **6.3.16. Scientific Advisory Committee (SAC) meetings**

It has been observed that some of the KVKs are not conducting the Scientific Advisory Committee (SAC) meetings regularly. The Committee recommended that all the KVKs should conduct SAC meeting at least once in a year and the Director, ATARI should strictly monitor the conduct of this meeting with their active participation. The Mid-term review could be done at DEE level for better coordination.

### **6.3.17. Mass awareness campaign**

Mass awareness campaign regarding the presence and activities of KVKs in every village must be given top priority through regular KVKs programmes and activities for attraction and greater participation by farmers in programme planning, implementation and evaluation on KVKs activities.

## **6.4. Policy**

### **6.4.1. 'Policy window' for continuous monitoring of KVKs**

There is a need at the ICAR level to develop a 'Policy Window' for continuous monitoring and taking policy decisions for ensuring long term efficiency of the system. The ICAR Headquarters may come up with a policy paper including road map for up scaling the KVKs with poor

performance. This can preferably be undertaken in the next EFC. The monitoring of the KVKs must be strengthened. It is suggested that a committee could be constituted at state level of the retired scientists, officers of the state department of Agriculture who are aware of the functioning of KVKs.

### **6.4.2. Apprenticeship for scientific staff of KVK**

The Director of the concerned ATARIs may be made responsible for arranging apprenticeship for scientific staff in KVKs. Further, the newly recruited Heads and SMSs must undergo attachment training at the award winning KVKs in the region/nation for a definite period of time to enhance their knowledge and skills on field activities through cross learning.

### **6.4.3. Uniformity in service conditions**

The KVK's scientific staff working under the management of NGOs should be treated at par with the ICAR/SAU staff in terms of age of superannuation, experience benefits and service conditions to attract scientific talent through lateral entry. This will help in eliminating the inferiority complexity in the mind of the staff in NGO KVKs.

### **6.4.4. Utilization of service of best KVK staff**

The Directors of the concerned ATARIs may identify the best SMS (S) from the award winning KVKs at the national/ zonal level who know the system perspective and have the required skills to train his fallow colleagues in other KVKs. These SMSs may be made responsible for interacting with the KVKs falling in poor performance category and their services may be hired at least for one week in a month for six months continuously at ATARI headquarters. The Council may provide financial support for special TA/DA for the same.



## CHAPTER-7

### 7.0. Issues pertaining to KVKs and ATARIS and QRT recommendations (ZONE-VI and VII)

It emerged during the discussion with Directors and staff of the ATARIs of two zones that KVKs under different host organizations are having varied recruitment and promotion policies, while their mandate is same. As of now, there is no uniform service rule for the KVKs falling under various management types like no pay parity or uniform promotion policy etc. Due to co-terminus nature of recruitment, the staffs of KVKs develop a sense of insecurity in their mind and therefore, many staff leave job as and when they get better option resulting continuous vacancies in many KVKs. While highlighting the issues, the ATARI Directors expressed that lack of infrastructure, human resource (as posts remain vacant for longer duration), vehicles and lack of financial independence are the major impediments for poor performance of the KVKs in the region. Even KVKs under the administration control of ICAR are lacking the infrastructure and manpower of sanctioned posts. Due to multiple tasks assigned to KVKs, the core and specialized activities of KVKs are getting diluted and thus, affecting the overall functioning of KVKs. The staff structure and pattern were fixed decades ago keeping in view the working condition at that time which needs to be revisited. It was brought to the notice that since large number of KVKs are under state governments ownership in north eastern region, there are certain administrative problems- state governments are not able to provide facilities as per the MoU such as electricity, water supply, approach roads, drainage facilities, retention walls etc. and KVKs are suffering on this account. It is also the fact through the interaction with Director's of the two ATARIs that some well performing KVKs are not good in documentation while some of the KVKs are very good in documentation and presentation. As some of the KVKs have

excellent track record which is not reflected in the 'A' category of rank through evaluation made by NITI Aayog, indicates that the information was not properly and fully shared by these KVKs regarding their achievements. It has also come to the notice of QRT that despite having poor infrastructure, manpower shortage and connectivity problems, most of the KVKs are performing their mandated activities to the satisfactory level in the region.

About ATARIs, it is observed that many sanctioned posts have not been filled in both the ATARIs. ATARI, Zone-VI, Guwahati is functioning with only one Principal Scientist attached from ATARI, Zone-VII, Umiam. This is hampering in their functioning of normal activities. With only one vehicle (under custody of Director), the Scientists of the institutes are facing problems for visit to KVKs situated in different states of the region in connection with monitoring, supervision and review of KVKs activities. Since huge additional tasks are assigned to KVKs other than mandated activities, ATARIs are also equally responsible for collection, compilation and submission of information/ reports to the Council for which one Data Entry Operator (DEO) may be sanctioned in each ATARI. In view of such circumstances and keeping into account the issues raised by ATARIs, the QRT put forward the following recommendations for effective functioning of KVKs as well as ATARIs in the region.

### 7.1. KVKs and QRT recommendations (ZONE-VI and VII)

- There should be uniform service rules for all KVKs, and appropriate service rules should be mentioned in the respective MoU.
- While allocating KVKs to any host institution, ICAR may ensure that the host institution is able to provide basic requirements as per MoU.
- With the passage of time, the workload of KVKs has increased manifold, additional

- staff may be allocated to KVKs specially SMSs in disciplines of importance such as Veterinary, Soil Science, Agri-business, Post harvest management, Agril. Engineering, Meteorological fields for smooth functioning.
- More funds are needed to create infrastructure and for modernization of the existing infrastructure. Budget needs to be increased on technical heads. Maximum part of the budget consists of salary component. If the budget is increased suitably, KVK's potentiality can be exploited fully.
  - Cost of inputs is also very high in some states of the region; hence, minimum price of the produce of farmers should be kept region-specific.
  - There is no well-established information system/database preserved at KVK for retrieval of information which is a perennial problem for KVK. Some of the SMSs are being trained on voluntary basis to handle the huge database of KVK. There is a need for appointing and training of at least one Data Entry Operator who is well versed with the data handling, entry, documentation and retrieval of such data/information.
  - Maintenance of Asset register at KVK level must be ensured.
  - Many innovations are being made in some KVKs, for which there is need to file for patents.
  - Year-wise targets and achievements of KVKs need to be documented for SFC/EFC process.
  - All KVKs websites should be dynamic and updated.
  - Staff working in remote KVKs be given priority for their capacity development.
  - Priority must be given on adoption of cutting-edge modern technology.
  - Implementation of e-office in KVKs must be ensured.
  - Web programme such as e-NAM may be introduced in KVKs within its mandate.
  - Explore linkage of KVKs with industries to enhance value chain in marketing of organic products like ginger, turmeric etc. in North East.
  - It was further highlighted during the visit that financial autonomy to Heads of KVKs may facilitate the functioning of KVKs and enhance their overall effectiveness.
  - Improving the facilities for seed storage at KVK may reduce the post-harvesting loss of seeds. Funds are required for the establishment of seed grading unit at KVK which may be utilized by the farmers which will be of great help in doubling the farmers' income.
  - Additional financial support for buying latest farm equipments/tools and development of some more demonstration units is needed. There is a lot of demand for custom hiring centres of implements at KVKs by farmers. Due to paucity of funds KVKs are not being able to maintain this centre.
  - Some of the KVKs are emphasizing on organic farming, it emerged that certification of organic products is needed for popularizing organic products, which is costly to obtain. Some subsidy may be provided to farmers for obtaining this certificate. Important markets may be identified for organic products to motivate farmers to venture into organic farming.
  - Almost all the vehicles in KVKs in the zones are also very old which need for their replacement. Urgent actions may be taken for providing new vehicles as replacement of old vehicles in old KVKs. In addition, there must be provision for two wheelers (2 nos.) in each KVK of Northeast.

## 7.2. ATARIS and QRT recommendations (ZONE-VI and VII)

- As in the case of other ICAR institutes/ Directorates, there is a need to strengthen ATARI by establishing three distinct sections in the areas of (i) Research on Technology Delivery/Application, (ii) Database Management

- & Process Documentation and (iii) HRD, Coordination and Monitoring. Each section may be provided with Senior Scientist, Scientist and Research Assistant one each.
- Lack of administrative building especially newly established ATARI, Guwahati is also a matter of concern. Immediate actions may be taken for establishment of administrative building of ATARI, Guwahati as per approved estimate.
  - The concerned authority of the Council (ICAR) may initiate actions for early recruitment of scientists and other staff lying vacant in ATARIs on priority basis.
  - An additional vehicle preferably BOLERO may be sanctioned for the Scientists and other staff of ATARI for smooth monitoring, review and supervising KVKs activities in northeast.
  - One Data Entry Operator (DEO) may be sanctioned in each ATARI to facilitate collection, compilation and submission of information and reports to the Council.
  - Internal monitoring system of KVKs must be strengthened by authorizing Directors, ATARIs to develop their own monitoring system with additional financial support.
  - Formulation of state level policy guidelines for strengthening convergence of KVKs with different stakeholders.
  - Corpus fund of Rs. 50 lakh per year may be provided to ATARI under contingency planning for effective functioning of KVKs in the respective zones depending on their performance.

## CHAPTER-8

### 8.0. Action Taken Report of Previous QRT

The previous Quinquennial Review Team (QRT) was constituted vide F.No. 3-9/99/AE-II, dated 1<sup>st</sup>February 2011 to review the programmes and activities of KVKs under erstwhile Zone-III comprising all the eight states of Northeast region namely; Assam, Manipur, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Sikkim and

Tripura for the period 2005-06 to 2009-10. The team comprised of the following members:

1. Dr. P.G. Chengappa, Chairman
2. Dr. K.K. Jindal, Member
3. Dr. Y.P.S. Dabas, Member
4. Dr. A.K. Gogoi, Member Secretary

The QRT has given the following recommendations and the action taken on each of these items is given below:

Recommendation	Action Taken
<b>A. Human Resource Management</b>	
<p><b>a.</b> The North East is more dependent on agriculture as compared to rest of the country and as such agricultural extension plays a crucial role for growth of agriculture in the region. Keeping this in view the total sanctioned posts of KVKs need to be increased in order to expand the extension reach. Four more SMSs and two more technical staff may be considered for recruitment at each KVK. There should be one SMS each in the disciplines of Agronomy, Horticulture, Plant Pathology, Entomology, Soil Science and Animal Science. Other four disciplines may be identified as per the need of the district. These disciplines could be Agri-Business Management, Agricultural Extension, Fishery, Agro-forestry, Agricultural Engineering and Home science.</p>	<p>Keeping in view the emerging role of KVKs in the overall development of agriculture, the High Power Committee under the Chairmanship of Dr. R.S. Paroda recommended for increase of four more SMSs from the existing 6 SMSs per KVK with the total sanctioned staff position upto 22 from the current 16 staff in each KVK. These disciplines of SMSs could be Agri-Business Management, Agricultural Extension, Fishery, Agro-forestry, Agricultural Engineering and Home science. The report with recommendation in this regard was submitted for administrative approval at the highest level of authority for consideration and approval.</p>
<p><b>b.</b> In many KVKs, certain posts are still vacant. This, to a great extent, is affecting expected performance of the mandated activities of KVKs. The vacant posts need to be filled up on priority and a fixed time frame may be given to the host institutions for taking up necessary action.</p>	<p>After bifurcation of Zone-VI, Guwahati from erstwhile Zone-III, the Zone-VII, Umiam has 43 KVKs with a total 522 staff out of 687 sanctioned staff at present, accounting 75.98% staff are in position. Most of the vacant posts are however with the KVKs under ICAR RC for NEH region, Barapani. Similarly, Zone VI Guwahati has a total 625 staff out of 736 sanctioned posts i.e. 84.91% are in position. However, the concerned host institutes are in the process of recruitment of vacant posts of KVKs under their administrative control.</p>

c. It is observed that the existing staff strength of Zonal Project Directorate, Zone-III is not adequate to meet the mandated activities effectively and also most of the scientific posts are still lying vacant. The spread of KVK network in the region is quite vast covering 85 districts with poor access. In order to monitor the KVKs effectively it is suggested that North Eastern region be split into two zones.

As per recommendation, the erstwhile Zone-III, Umiam has been splitted into two zones namely; Zone-VI, Guwahati covering Assam, Arunachal Pradesh and Sikkim under its jurisdiction and Zone-VII, Umiam covering the remaining other states of the region in order to facilitate effective monitoring, coordination and review of KVKs activities and programmes w.e.f August, 2015.

## B. Financial Management

a. ICAR has regularly released funds for conducting the mandated activities of KVK. However, many KVKs are not able to utilize the funds as programme coordinators are not empowered with adequate sanctioning power and imprest amounts; this is particularly seen in KVKs run by state department of Agriculture. It is necessary that programme coordinators may be given adequate powers for effectively implementing the mandated activities.

The matter has been a cause of concern in the financial management of KVKs in discharging their duties and responsibilities and the same has been placed before the higher authority for consideration and subsequent direction to all concerned. As per report of High Power Committee, the financial powers as recommended by the Committee should be delegated to the Head of Krishi Vigyan Kendra, irrespective of host organizations, which should, however, be subject to budget provision.

b. Most of the KVKs have not been able to develop demonstration units due to lack of adequate funding and infrastructure. Inadequacy of such prerequisites has resulted in poor utilization of allotted revolving funds. A onetime grant of development fund based on the requirement of the KVKs may be considered during 12th plan.

The issue has been submitted to the Council for consideration, approval and sanction. However, in few KVKs demonstration units have been established during 2015-2019.

c. The infrastructure viz. administrative building, staff quarters, demonstration units and farmers hostels in some of the KVKs have already been established and construction work is in progress in many of the KVKs. However, the present pattern of fund allocation is not sufficient to meet the overall expenditure of the proposed activities. The committee is of the opinion that, the actual amount required has to be worked out based on the present cost and provided to KVKs. There should be more number of staff quarters for the staff as per necessity because rented house or dwelling facilities are not available in and around most of the KVKs in this region.

Presently Zone-VII, Umiam has 25 KVKs with administrative building, 25 KVKs with staff quarters, 16 KVKs with farmers' hostels and there are 106 Demonstration units. Similarly, Zone-VI, Guwahati has 28 KVKs with administrative building, 6 KVKs with staff quarters, 9 KVKs with farmers' hostels and there are 51 demonstration units and 37 are under construction. The High Power Committee on Management of KVK under the Chairmanship of Dr. R.S. Paroda, in its report recommended for increase number of infrastructure in each KVK including more number of staff quarters, demonstration units, fencing etc. in each KVK.

### C. Infrastructure and Connectivity

In Zone III, most of the KVKs are located in remote areas and as such availability of telephone, power and internet connectivity is a real constraint for effective communication. Providing a generator set and VSAT facility along with high speed internet for each KVK will help a great deal in improving connectivity and thereby dissemination of Information.

a. Conservation and management of natural resources need utmost consideration in the north east region. Presently, there is a provision for two demonstration units in each KVK farm, which are utilized for hands on practices during training. However, considering the need of the region, more number of demonstration units need to be established. A novel approach would be establishing such units in the progressive farmer's fields to have a real demonstration and participatory extension effect. In this direction, the ZPD should develop a model action plan for the 12th plan period.

b. FLD should be strengthened on rain water conservation. Awareness on "Jalkund" should be extensively propagated for efficient use of water in lean period to sustain Rabi crops. Similarly, use of farm implements need to be encouraged so as on to reduce drudgery in agricultural operations.

In order to facilitate for effective communication system, this institute has provided solar panel to 2 KVKs namely, KVKs- Senapati and Khowai and provision of e-connectivity to 21 KVKs in the zone for improving connectivity and dissemination of information.

There are 106 demonstration units established by KVKs in their instructional farm which are utilized for hand on practice during training in Zone-VII. Moreover, under zone VI, Guwahati 51 demonstration units are established for carrying out similar activities. Besides, IFS have been established in 6 selected KVKs in the zone. KVKs also established farming system based demonstration units under different sponsored special programmes such as NICRA, ARYA, CFLD, NARI etc. Most of the demonstration units are concentrated in adopted villages for doubling farmers' income.

KVKs as part of their mandated activities are organizing awareness programme on effective and efficient use of rain water in lean period. During 2018-19, a total of 12 demonstrations were conducted on mechanized paddy harvesting, 2 demonstrations on Jalkund and 10 nos. on power operated paddy thresher, 3 demonstrations were conducted on Low-cost pump, Treadle pump for irrigation of vegetables. Besides, KVKs were successful in organization of 10 nos. Jal Shakti Abhiyan Mela programme in 10 identified blocks of the zone during the current year. With respect to Zone-VI Guwahati, during 2018-19, a total of 5 demonstrations were conducted on mechanized paddy harvesting, 20 demonstrations on Jalkund and 5 nos. on power operated paddy thresher, 5 demonstrations were conducted on Low-cost pump Treadle pump for irrigation of vegetables. Besides, KVKs were successful in organization of 6 nos. Jal Shakti Abhiyan Mela programme in 6 identified blocks of the zone during the current year. Moreover, KVK Longding and KVK Namsai under the zone have tested the farm tools and implements developed by VPKAS, Almora.

c. Citrus, especially Khasi Mandarin is one of the major horticultural crops in the hilly regions of this zone. However, the productivity of the existing plantations of this crop has greatly declined as they are old. A special drive may be made by the concerned KVKs to rejuvenate these old orchards. Training programmes and demonstration need to be enhanced in this regard by securing assistance under National Horticultural Mission and involving the line departments.

During last 5 years, KVKs under zone-VII taken up various programmes for citrus rejuvenation to ensure production and productivity of citrus cultivation in hilly areas of northeast. Citrus such as Khasi Mandarin, Mandarin orange, citrus microptera, kachai lime were taken up for their rejuvenation programmes by KVKs. During the period a total of 105.5 ha was covered by KVKs under rejuvenation of citrus and conducted 89 training programmes and 62 demonstrations which could benefit 295 farmers in the zone. Similarly, during last 2 years, KVKs under Zone-VI taken up various programmes for citrus rejuvenation to ensure production and productivity of citrus cultivation in hilly areas of northeast. Citrus such as Khasi Mandarin, Mandarin orange, were taken up for their rejuvenation programmes by KVKs. During the period a total of 10 ha was covered by KVKs under rejuvenation of citrus and conducted 10 training programmes and 22 demonstrations which could benefit 240 farmers in the zone.

d. Keeping in view the small size of holdings and consumption pattern: mainly non vegetarian diet there is a vast scope for the development of livestock sector through integrated farming approach. Piggery, Goattery and Dairy are the major sources of earning for marginal farming communities of this region and hence should invariably form the major component of IFS model. A number of integrated farming systems models have been identified by ICAR NEH Complex and its regional stations at different states of the zone. However, due to the socio-economic constraints faced by the farmers, these modules are not adopted by the farmers. KVKs of the zone need to identify and prioritise feasible low cost modules for higher income generation involving these enterprises. The successful modules practiced like piggery and Rabbitery in Phek, Goattery in West Tripura, and Dairy in Kamrup should be further replicated and upscaled.

Farmers in Northeast hilly states are practicing livestock enterprises including poultry, piggery, rabbitery and fisheries as the major components in integrated farming systems for their livelihood and income generation. During 2016-17 to 2018-19, a total of 483 demonstrations were conducted by KVKs in piggery sector with Hampshire Cross, Gungroo, Yorkshire Cross, LWY, Local etc. and distributed 1713 piglets. In Poultry sector, 1581 nos. of demonstrations were conducted by KVKs and distributed a total of 34403 poultry birds among the farmers. During the period, 106 nos. of demonstration were conducted and included in their farming systems. IFS models in few KVKs like Khowai, Zunheboto, Thoubal, Mamit and East Khasi hills have been recently established.

e. Capacity building of scientific staff of the KVKs in emerging areas such as climate change mitigation, precision farming, and carbon trading and agri business management is necessary. Zonal Project Directorate should arrange for appropriate training programmes at reputed institutions for the KVKs of the region so that a set of master trainers are developed.

f. Vast areas of NE states especially, Arunachal Pradesh and Sikkim have temperate climate. According to a "rowing committee" constituted by DG, ICAR, in 2012, over 7 lac hectares are suitable for cultivation of temperate fruit crops. Selected KVKs should gear up to take up this activity with an action plan on priority.

g. Introduction of elite varieties of temperate fruit crops with pollinizers from CITH, Srinagar (J & K) and Dr. Y.S. Parmar University of Horticulture with proven cultivars and rootstocks for ascertaining the suitability, further selections and multiplications.

h. Specialised training courses for SMSs of KVK of 4 districts in Arunachal and 2 districts in Sikkim need to be arranged at Dr. Y.S. Parmar University of Horticulture and Forestry, Solan and CITH, Srinagar. The CIH, Medziphema, Nagaland be equipped to organise training of trainers, Farmers training courses for temperate fruits, initially for Apple, Kiwi and Walnut in temperate districts and low chilling fruits in sub temperate districts in NE. The training courses for farmers of selected districts may be organised by SMS (Hort.) of KVKs of temperate zone districts in consultation with respective state Directorate of Horticulture.

i. KVKs are located in different altitudes to cater to the technology needs of different agro-climatic zones. It is therefore recommended that technologies developed for a specific agro-climate zone be compiled and adaptive trials be conducted for the same.

The ICAR-ATARI, Umiam conducted as many as 60 HRD programmes during last 3 years for KVK personnel under the zone on different frontier areas in collaboration with various national institutions and agricultural universities to upgrade their knowledge and skills in the changing agricultural scenario.

KVK West Kameng is popularizing Low chilling Variety of Apple at farmers' fields.

In collaboration with the ICAR Central Institute of Temperate Horticulture, Sri Nagar, KVK West Kameng has popularized high yielding varieties of Walnut (CITH- W-1) and CITH-W-10, Apricot variety CITH-Apricot- 1 to Apricot-3. And also Apple New Spur type bearing cultivators Red Chief, Silver Spur, Wall Spur, Bright M. Early, Gold Spur were collected from Palampur.

Specialized training was arranged during 2012, by CIH, Medzephema on Temperate fruits in Jan 2012 for SMSs of Horticulture on Improved Production Technology on Temperate fruit.

Action in this regard has already been taken by this institute after collecting relevant technologies in different disciplines from different ICAR institutes and agricultural universities. The technologies were compiled and published in the form of "Technology Inventory for Northeast India" in 2017 and the same has been supplied to all KVKs in Northeast.



j. ICT tools should be effectively used for quicker and low cost Transfer of Technology and Information dissemination as well as for the purpose of Intra & Inter institutional communication, reporting, monitoring and coordinating activities of KVKs.

KVKs are adopting different ICT tools as primary means for communication with ICAR-ATARI and other concerned organizations. Online reporting system is effectively used for monitoring and review of most of the activities being implemented by KVKs. Mobile advisory system, internet, e-mail, whatsapp groups etc. are the prominent means of communication.

k. The NEH region is endowed with a fragile ecology and prone to soil and water degradation due to shifting cultivation and deforestation in some of the districts. There is a greater need for sustainable management and improvement of soil health through integrated nutrient management practices by utilizing local resources including practices like green manuring, vermicomposting etc. Presently, 25 soil testing laboratories have been established at different KVKs but are not adequate to meet the requirement of all the districts. Soil testing facilities to all the KVKs with required technical support and additional contingency grant may be provided to improve soil test based and balanced application of nutrients.

Presently all the functioning KVKs under the zone are provided with soil testing facilities including mini soil testing labs and *Mridaparikshak* for soil testing and recommendation for balanced fertilizers to farmers. During 2016-17 to 2018-19, a total of 57767 samples of soil were tested by KVKs and distributed 74426 Soil Health Cards (SHCs) to 90190 farmers.

With respect to Zone-VI, During 2016-17 to 2018-19, a total of 61071 samples of soil were tested by KVKs and distributed 160704 Soil Health Cards (SHCs) to farmers.

l. The farm mechanization in NEH is low. In order to improve the input use efficiency and minimizing the cost of production, the use of simple tools and implements in different crops needs greater attention. The committee recommends that each KVK should make all out efforts to demonstrate the use of different tools and improved tools in farmers' fields. Provision of laser land leveller, zero till drill and other implements to selected KVKs for better resource conservation may be given priority. There is also need for promoting some NGOs/SHGs to act as Service Providing Centres. Zonal Project Director should explore the feasible modules/protocols for promotion of this concept wherever possible.

As per recommendation and action plan, KVKs under the zone demonstrated as many as 551 nos. of demonstrations on different improved farm implements and equipments such as power operated paddy thresher, paddy harvester, Groundnut Decorticator, Maize Sheller, Grain Cleaner, Solar Dryer, Cono Weeder for weeding, Adjustable Row Marker, Seed Drill etc. during last 3 years. Moreover, KVKs under the zone-VI demonstrated as many as 172 nos. of demonstrations on different improved farm implements and equipments such as power operated paddy thresher, paddy harvester, Groundnut Decorticator, Maize Sheller, Grain Cleaner, Solar Dryer, Cono Weeder for weeding, Adjustable Row Marker, Seed Drill etc. during last 3 years. Moreover, 8 KVKs of the zone have been provided Rs. 32 lakh per KVK for purchasing farm machineries.

m. NEH Region approximately has 5.63 lakh ha of water bodies that are totally underutilized. In recent years inland fishery has been promoted by the Fisheries departments of different states mostly through production of fish fingerlings which is crucial for integrated farming. Nine identified KVKs have introduced portable carp hatchery for the promotion of fishery sector in the region. A specific work plan for expanding fish fingerlings production should be prepared for the zone based on the resource and manpower availability. Providing sufficient technical and financial support is crucial for the success of their progress.

n. Market led extension is crucial for linking farmers to markets. This enhances sustainable livelihood by complementing their income. Group action approach, through formation of Self Help Groups (SHGs), Commodity Interest Groups (CIGs), Farmers' Interest Groups (FISs), Farmers' cooperatives, Producers' Companies has to be followed wherever possible.

o. Northeast should emerge as a horticultural hub. KVKs should facilitate not only production of horticultural produce but also processing and other value addition activities. For this purpose, a value chain approach consisting of forward and backward linkages may be established.

Fish farming as important component in enhancing farmers' income has been encouraged and promoted among farming community in the region through KVKs. A number of activities and programmes have been taken up by KVKs such as production of fingerlings, composite fish farming and integrated fish farming. As high as 109.16 lakh fingerlings were produced by KVKs during 2016-17 to 2018-19 for the benefit of farmers in the zone. With respect to Zone-VI, 5.06 lakh fingerlings were produced by KVKs during 2016-17 to 2018-19 for the benefit of farmers in the zone.

Market led extension as an innovative extension approach is helpful to enhance sustainable livelihood of farmers by complementing their income. Formation of different SHGs, FCGs, FIGs, FPOs etc was done by KVKs in the zone. KVKs namely; Ukhrul, Thoubal, East Khasi Hills, Aizawl, Dimapur, South Garo Hills were successful in formation of FPOs for commodity-wise production and income and employment generation among the farmers. KVKs under Zone-VII conducted as many as 119 training programmes on different aspects of group formation, group dynamics and their effective functioning during 2018-19 for the benefit of 3551 farmers in the zone. Likewise, KVKs under Zone-VI conducted as many as 105 training programmes on different aspects of group formation, group dynamics and their effective functioning during 2018-19 for the benefit of 2830 farmers in the zone.

KVKs under Zone-VII are undertaking number of programmes and activities for development of horticulture including value addition and small scale processing by establishing marketing linkages for profitable and remunerative production. During last 3 years KVKs in the zone organized a total of 372 training programmes on value addition of different horticultural produces which could benefit 7494 farmers and farm women, 18 training programmes on small scale processing for 381 beneficiaries and 9 trainings on marketing for 180 beneficiaries. Besides, during last 3 years KVKs in the zone organized a total of 1391 training programmes on value addition of different horticultural produces which could benefit 11094 farmers and farm women, 7 training programmes on small scale processing for 176 beneficiaries and 6 trainings on marketing for 82 beneficiaries.

p. The Government of India is promoting a “Look East Trade Policy” for promoting trade in North East so that it will serve as a regional hub for capturing the business in Myanmar, Bangladesh, and Bhutan. This will throw lots of opportunity for export of agricultural commodities particularly horticulture commodities. There is a need to prepare the farmers to produce quality products for exports. The KVKs need to train selected personnel in this direction so that they can impart the required training to the farmers.

Considering the importance of export quality of agriculture and horticulture commodities, the competent authority of the Council has approved and provided fund for implementation of cluster demonstrations on organic farming under PKVY on major agriculture and horticulture crops with 20 ha per KVK. A total of 37 KVKs under the zone VII and 41 KVKs Zone VI have been identified respectively for the purpose. The preliminary actions in this regard including collection of GPS based information through benchmark survey on soil nutrient status, PH, organic matter, major nutrients; soil types of the site of the districts have been completed.

q. The NE region is home of several tribal communities, There is a need to undertake special training programmes so that basic skills in farming is imparted to these communities making use of both the state and central government schemes.

The Zone-VII, Umiam has 27 KVKs out of total of 43 at present under its jurisdiction as TSP districts with over 50% population are tribal. All the activities and programmes meant for KVKs are directly benefitting tribal communities. During 2018-19, out of 32485 total beneficiaries of various training programmes, 29481 were tribal beneficiaries, accounting 90.75%. Whereas, the Zone-VI, Guwahati has 11 KVKs out of total of 45 at present are under its jurisdiction as TSP districts with over 50% population are tribal. All the activities and programmes meant for KVKs are directly benefitting tribal communities. During 2018-19, out of 1,83,000 total beneficiaries of various training programmes, 33500 were tribal beneficiaries, accounting 18.31%.

r. Proper linkages have to be established between NGOs and other developmental agencies for the development of tribal people in this region. Convergence of tribal development schemes is crucial.

KVKs are functioning in convergence with different stakeholders in the zone including line departments, host institutes, NABARD, ATMA, NFDB, PPV&FRA, ICAR institutes, agriculture universities, farmer groups, NGOs etc. for the common cause of improving farmers' livelihood through agricultural development.

s. A Special Scientific Advisory Committee is to be constituted for establishing and strengthening the temperate fruit production involving selected KVKs drawing scientists from CITH, Srinagar, Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, CIH, Medziphema, Nagaland and ICAR Complex for NEH Umiam. This committee will provide technical backstopping to a group of KVKs on a continuum basis. The Project Director Zone-III will coordinate the committee meetings and implementation of transfer of technology programmes.

In process

t. The NEH Region is presently having 34,566 Km<sup>2</sup> of area under shifting cultivation. There is enormous soil and nutrient loss every year. Now, the Jhuming cycle is also decreased due to the population pressure as well as more need for food and fibre in this region. In these degraded areas, one of the promising opportunities is to grow fruit trees along with the multipurpose tree species (MPTS) by adopting horticulture based agro-forestry system. The committee recommends that need based horticulture based agro-forestry modules be demonstrated by the KVKs in major shifting cultivation areas. Also, a special funding be provided for this purpose.

In addition to horticulture and allied sectors, KVKs under the zone are taking up different need based horticulture based agro-forestry modules for demonstrations in their respective districts especially by KVKs having SMS in Agro-forestry. This included activities like plantation of multipurpose tree species (MPTS) by adopting horticulture based agro-forestry farming system including promotion of cardamom, broom grass, tree bean, lak etc. in the region.

u. Jhoomia farmers or shift cultivating farmers should be encouraged to take up Horti-silvi-pastoral farming systems.

KVKs are encouraging farmers for adoption of different suitable horti-silvi-pastoral farming system particularly in areas where shifting cultivation practices are continuing. Different training programmes were also conducted on different horticulture based farming systems as alternatives to shifting cultivation. During 2017-19, 194 training programmes on improved technologies of fruit crops benefitting 5186 farmers were conducted by KVKs. Moreover, 30 trainings for 782 farmers on ornamental crops and 53 trainings were conducted for 1429 farmers on plantation crops during the period. With respect to Zone-VI during 2017-19, 182 training programmes on improved technologies of fruit crops benefitting 4870 farmers were conducted by KVKs. Likewise, 28 trainings for 450 farmers on ornamental crops and 66 trainings were conducted for 1020 farmers on plantation crops during the period.

#### D. Policy Recommendation

- a. The North Eastern hill region is presently having 85 rural districts in eight states with a total geographical area of 2, 62,230 Km<sup>2</sup>. Most of the villages in these districts are very poorly connected and hence, accessibility to these villages is extremely poor. In this region, some of the districts are also having geographical area to the extent of 2,448 Km<sup>2</sup> (Ri Bhoi). To undertake extension programmes in more and more number of villages, the concept "Satellite KVKs" be tried on the line of two KVKs, in the larger districts of the country. These satellite KVKs be tried on a pilot basis in ten (10) districts.
- The decision in this regard has already been communicated to the concerned KVKs and host institutes for effective functioning of KVKs by sharing specialized manpower and infrastructure of the nearby KVKs. This will enhance in exchanging ideas and experiences besides establishing enabling and functional linkages among the KVKs. During last three years 14 new districts have been created in Manipur, Meghalaya and Mizoram.
- b. Presently, a Jeep has been provided to each KVK for mobility of the scientific staff to conduct off campus demonstrations and training programmes. In most of the occasions, KVK staff is unable to reach the distant places of the district due to extreme remoteness (where four wheelers cannot move), and high wear and tear expenditure. Considering the need for higher mobility and access to the remote areas, providing two motorbikes (two wheelers) to each of the KVK is recommended.
- The proposal in this regard has been placed for consideration before the competent authority of the Council for increased facility of mobility of KVK staff and the approval and decision of the same is awaited from the Council.
- c. It has been observed that most of the KVKs are not conducting the Scientific Advisory Committee (SAC) meetings regularly. Many of them have not conducted even a single meeting in a year. The Committee recommended that all the KVKs should conduct two SAC meetings regularly and the Zonal Project Directorate should strictly monitor the conduct of this meeting with their active participation.
- With strong direction and interventions by the ICAR-ATARI, Zone-VII, all functioning KVKs under the zone are now conducting Scientific Advisory Committee (SAC) meetings regularly to review KVKs activities and formulation of meaningful action plan. During 2018-19, all the functioning 40 KVKs conducted SAC meetings in the zone. Likewise, all the functioning 42 KVKs conducted SAC meetings in the zone VI Guwahati during 2018-19.

## Annexure- I

### Programme Schedule of Travel Workshops of QRT (Zone VI and VII) (2011-12 to 2018-19)

Trip/ Phase	Tentative Date	State	KVKs to be visited	Particular/ Activity	Mode of Journey
I (Oct 16-22, 2019)	16-10-2019	Arrival of Chairman and other Members of QRT at Barapani and halt at ICAR Guest House.			By road
	17-10-2019	Meghalaya	KVK East Khasi Hills	<ul style="list-style-type: none"> <li>• Presentations by Directors ATARIs, Zone-VI &amp; VII</li> <li>• Travel Workshop with all KVKs of Meghalaya at KVK East Khasi Hills</li> </ul>	By Road
Meghalaya- 7 KVKs	18-10-2019	Meghalaya	KVK East Khasi Hills	<ul style="list-style-type: none"> <li>• Visit to KVK East Khasi Hills</li> <li>• Discussion with the staff of KVK</li> <li>• Field visit and return to ICAR Guest House for night halt</li> </ul>	By Road
Sikkim-4 KVKs	19-10-2019	Arrival of Chairman and other Members of QRT at Bagdogra Airport, via Guwahati Airport and proceed to Gangtok for night halt			By Air/ Road
	20-10-2019	Sikkim	KVK East Sikkim	<ul style="list-style-type: none"> <li>• Visit to KVK East Sikkim</li> <li>• Discussion with KVK staff</li> <li>• Field visit and return to Gangtok for night halt</li> </ul>	By Road

	21-10-2019	Sikkim	KVK East Sikkim	<ul style="list-style-type: none"> <li>Travel Workshop and exhibition with all KVKs in Sikkim at KVK East Sikkim</li> </ul>	By Road
	22-10-2019	Departure for Bagdogra Airport			By Road
	4-11-2019	Arrival of Chairman and other Members of QRT at Dimapur, Field visit and halt			By Air/ Train/Road
II (Nov 4-8, 2019)	5-11-.2019	Nagaland	KVK Dimapur	<ul style="list-style-type: none"> <li>Visit to KVK Dimapur and discussion with KVK staff</li> <li>Travel Workshop and Exhibition. All KVKs of Nagaland shall take part at ICAR, Nagaland Centre</li> </ul>	By Road
Nagaland-11 KVKs					
Assam-26 KVKs					
	6-11-.2019	Assam	Proceed to Nagaon, Assam		By Road
	6-11-.2019	Assam	KVK Nagaon	<ul style="list-style-type: none"> <li>Visit to KVK Nagaon and discussion with KVK staff</li> <li>Field visits and proceed to HRS, Kahikuchi, Guwahati for night halt</li> </ul>	-

	7-11-.2019	Assam	KVK Kamrup	<ul style="list-style-type: none"> <li>Travel Workshop and exhibition. All KVKs of Assam shall participate at KVK Kamrup and night halt at HRS, Kahikuchi</li> </ul>	By Road
	8-11-.2019	Continue of Travel Workshop and Proceed for Guwahati airport			By Road
	20-11-2019	Arrival of Chairman and other Members of QRT at Imphal Airport and proceed to CAU, Imphal			By Air
III (Nov 20-24, 2019)  Manipur-9 KVKs	20-11-2019	Manipur	CAU, Imphal	<ul style="list-style-type: none"> <li>Travel Workshop with all KVKs of Manipur at CAU, Imphal and night halt</li> </ul>	By Road
	21-11-2019	Manipur	KVK Imphal East	<ul style="list-style-type: none"> <li>Exhibition and Continue of Travel Workshop at KVK Imphal East. All KVKs will take part.</li> <li>Visit to KVK Imphal East Farm and discussion with KVK staff</li> <li>Field visits and return to CAU, Imphal for night halt</li> </ul>	Road





	22-11-2019	Manipur	KVK Bishnupur	<ul style="list-style-type: none"> <li>• Visit to KVK Bishnupur and interaction with staff followed by KVK instructional farm visit</li> </ul>	Road
Mizoram- 8 KVKs	22-11-2019	Proceed to Imphal Airport			By Road
	22-11-2019	Arrival of Chairman and other Members of QRT at Aizawl Airport and proceed to KVK Mamit for visit to KVK farm and interaction with KVK staff and proceed to KVK Kolasib for night halt			By Air/ Road
	23-11-2019	Mizoram	KVK Kolasib	<ul style="list-style-type: none"> <li>• Visit to KVK Kolasib instructional farm</li> <li>• Travel Workshop and Exhibition. All KVKs of Mizoram shall participate at KVK Kolasib and halt</li> </ul>	-
	24-11-2019	Mizoram	KVK Kolasib	<ul style="list-style-type: none"> <li>• Field visit and interaction with farmers</li> <li>• Proceed to Silchar town for night halt</li> </ul>	By Road
	25-11-2019		Departure from Silchar Airport		By Air/ Road



IV (Dec 4-9, 2019)	4-12-2019	Arrival at Agartala Airport and proceed to CFSc, CAU Guest House		By Air/ Road
Tripura-8 KVKs	4-12-2019	Tripura	CFSc, CAU	By Road
	5-12-2019	Tripura	KVK Khowai	By Road
A.P.-16 KVKs	6-12-2019	Departure from Agartala Airport for Lilabari Airport (Assam) via Kolkata Airport and proceed to Itanagar for night halt		By Air/ Road
	7-12-2019	Arunachal Pradesh	KVK Papumpare	By Road
	8-12-2019	Arunachal Pradesh	KVK Papumpare	By Road/Air
	9-12-19	Arunachal Pradesh	Departure from Lilabari air port to Delhi via Kolkata Wrap up and completion of QRT Report (Venue will be decided later on)	

## Annexure- II

### The details of phase-wise, state-wise and KVK-wise salient achievements, way forward and suggestions-

#### Phase I (Meghalaya and Sikkim)

##### State: Meghalaya

#### 1. KVK East Khasi Hills (State Dept. of Agriculture, Meghalaya)

##### Salient Achievements

- Intervention of off-season Broccoli in *Lumwahkrem* village due to which farmers got an additional income of Rs. 2,88,084/- per ha.
- Introduction of Oyster mushroom gave an additional income of Rs. 30,160/- per unit.
- Introduction and horizontal spread of Baby corn in district.
- Upscaling of backyard poultry with improved breeds and integrated farming system.

##### Way forward

- Intensifying value addition of high value horticultural crops and protected cultivation.
- Setting up of an entrepreneurship incubation centre for identifying and handholding support to young entrepreneurs.
- Large scale investment for setting up of bio agents and bio fertilizers production units

##### Suggestions

- Preparing an annual action plan with year wise calendar of special program along with sanctioned funds for implementing mandated activities in effective manner.
- Development of model KVK at farm with Integrated Farming Systems (IFS) and farmers hostel.

#### 2. KVK West Khasi Hills (State Dept. of Agriculture, Meghalaya)

##### Salient achievements

- Introduction of oyster mushroom in the district with the horizontal expansion of 20

villages covering as many as 50 farmers in the district.

- Successful expansion of fish cum paddy culture in 30 ha of land covering 80 number of farmers in 30 different villages.
- Establishment of kiwi orchards in 4 villages covering 10 farmers.
- Upscaling of *Megha Tomato-3* variety of tomato in 10 villages covering 100 farmers.
- Introduction and popularization of *Vanaraja* breed of poultry covering 35 villages with 220 farmers.

##### Way forward

- Vegetable seed production and value addition of fruits and vegetables.
- Nutritional Kitchen gardening for empowering women and children.
- Promotion of fodder crops and introduction of feed mill (both for livestock and fisheries) for processing of raw materials for livestock and fish feed.
- Proper marketing channel for farmers' produce and formation of FPOs.

##### Suggestions

- Setting up of hatchery units in KVK farm so that fingerlings and chickens will be easily available for the farmers.
- The impact of successful technology demonstrations may be evaluated.
- Improved varieties of rice may be used for successful demonstration of rice-fish culture.
- Parameters for bringing out the output of extension activities may be investigated.

### 3. KVK Ri-Bhoi (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Horizontal expansion of turmeric variety *Megha Turmeric 1* and Ginger variety *Nadia* benefiting 525 farmers.
- Tested, demonstrated and upscaled single bud method of propagation of ginger and turmeric for seed cost reduction benefiting 140 farmers.
- Demonstrated low cost polyhouse technology for vegetable nursery raising and off-season vegetables production resulted in establishment of 25 polyhouses through SHGs.
- Horizontal spread of mass trapping of fruit fly using ME bottle trap in fruits and vegetables covering 10 ha area through 5 SHGs.
- Promotion of oyster mushroom production technology through eight women SHGs covering 80 women farmers in the district.
- Horizontal expansion of Vermi-composting and NADEP composting for production of Organic Manure benefiting 140 and 300 farmers from 22 villages.
- Demonstrated successfully Soil amelioration through liming @ 500 kg/ha+ 50% RDF in Maize (var RCM 1-3/RCM 76) covering 35 ha area involving 130 farmers in the district.
- Successful demonstration of HYV Groundnut variety *ICGS 76* covering 145 farmers and 35 ha area.

#### Way forward

- Value addition and marketing channel of turmeric and ginger are to be explored.
- As there is a great scope for piggery in the district, convergence/ linkages are to be created with the state department to meet the demand of piglet production.
- Pilot scale demonstration on Turmeric and Ginger with High yielding/improved varieties.

#### Suggestions

- Establishment of Demonstration unit with proper fencing and enhancement of Farm income.
- Storage facilities with working shed for seeds and planting material production.
- Establishment of soil testing lab with equipments and distribution of soil health cards.
- Demonstration for popularization of AI in pig.

### 4. KVK Jaiñtia Hills (State Dept. of Agriculture, Meghalaya)

#### Salient Achievements

- Year-round Oyster Mushroom cultivation has spread across 20 villages in the district benefitting 171 farmers.
- Vegetable based cropping system which has spread across 24 ha area of the district.
- Introduction and horizontal spread of Low-cost Rainwater Harvesting Structure Jalkund across 20 villages benefitting 330 farmers.
- Successful dissemination of technology on management of Soft Rot disease in Ginger across 18 villages benefitting 297 farmers.

#### Way forward

- Identification of location specific technologies that will address the needs of the farmers.
- To encourage farmers to adopt the technologies for maximizing the yield/income per unit of time and area under different resource conditions.
- To develop the KVK farm as a knowledge and resource centre for the farming community.
- To strengthen the existing quality and quantity of training and technology dissemination programmes.
- To inculcate the younger generations on agriculture and allied sciences on an entrepreneurial mode.

### Suggestions

- More number of incomes generating projects may be taken up at the KVK.
- Collaboration with line departments is essential for obtaining more funds.
- More number of demonstration units may be established.
- The outreach programmes can be more in number covering 70-80% of the villages in the district.

## 5. KVK West Garo Hills (ICAR RC for NEH Region, Umiam)

### Salient achievements

- Upscaling of staggered transplanting of paddy *var. Gitesh* among the farming community covering 15 villages in 3 blocks.
- Awareness with respect to fodder cultivation, improved livestock rearing, deworming and mineral supplementation covering 55 villages in 4 blocks.
- Horizontal expansion of bio-pesticides especially *Trichoderma spp.* across 60 villages in 5 blocks for managing soil borne pathogens.
- Effective demonstration of locally available resources for Vermicomposting spread in 35 villages of 4 blocks.
- Creating awareness across 54 villages in 5 blocks on potential use of paddy straw for cultivating oyster mushroom as well as mulching.

### Way forward

- To increase farmers' footprints in KVK.
- Horizontal spread of successful technologies.
- Keeping the KVK website updated in a dynamic mode.
- To increase seed replacement rate.

### Suggestions

- Establishment of unit for production of quality inputs and their timely availability (seeds, organic fertilizer, bio-pesticides and like).

- Strengthening of KVK with full-fledged manpower.
- Construction of new office building and replacement of old vehicle.
- Boundary wall needs to be strengthened to avoid damage of standing crops by stray cattle.
- Development of laboratories, demonstration units, farm machinery shed, threshing units, godowns, farm roads etc.
- Enhance KVK budget and timely release of budget.

### General Recommendations for the state of Meghalaya

- The occupancy/utility report of the farmer's hostels of the KVKs may be submitted.
- The district-wise data on ICT facilities may be compiled and prepared in document form.
- All the KVKs should maintain instruction farm/demonstration units as a model farm.
- Convergence and linkages with ATMA, RKVY, NABARD may be strengthened to support the KVKs.
- KVKs need to give higher priority on documentations and publications including research articles out of assessment, refinement and demonstrations of technologies on farmers' fields.
- Every KVK should have website in dynamic mode with regular uploads and updates.
- Need based training programmes must be organized by KVKs.
- Enhance the status of Revolving Fund (RF) with minimum closing balance of Rs. 5 lakhs at the end of financial year.
- KVKs may initiate action for establishment of Crop Cafeteria as model for demonstration to farmers.
- Impact study on different activities and programmes like trainings, demonstrations, other field activities etc. may also be taken up by KVK.

- More number of seeds and planting material must be produced.
- Publication of research papers in reputed journals may be given top priority

## State: Sikkim

### 1. East Sikkim (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Effectively demonstrated no-till vegetable pea cultivation under rice fallow which adopted in 12 villages covering 121 ha area benefiting 484 farmers.
- Horizontal promotion of small-scale pig breeding farm with low cost deep litter housing system in 9 villages benefiting 95 farmers.
- Promotion of improved backyard poultry birds (*Vanaraja*) benefiting 1120 farmers from 98 villages.
- Upscaling of sequential vegetable cultivation under low cost plastic tunnel through 08 SHGs and establishment of 121 low cost poly tunnels in 21 villages.
- Demonstrated successfully Black gram var. SKPD-3 benefiting 165 farmers in 65 ha area of 8 villages.
- Promotion of rain water harvesting through Jalkund technology of 72 Jalkund benefiting 128 farmers.

#### Way forward

- Strengthening the organic seed chain through collaborative approach.
- More focus on conservation agriculture, in-situ and ex-situ soil moisture conservation and other water harvesting mechanism.
- In view of the high demand of meat and egg production, small scale pig breeding units need to be established and large scale *Vanaraja* poultry farming is to be promoted.

## Suggestions

- Priority should be given for infrastructure development.
- Separate fund should be allocated for farm development and labour wages.
- Need to increase contingency fund at least 20% of the total staff's salary.
- Immediate action is required for filling up the vacant posts.

### 2. KVK West Sikkim (State Dept. of Agriculture, Sikkim)

#### Salient achievements

- Promotion of poultry breed *Kamrupa* through backyard poultry farming benefiting 376 farmers from 7 villages.
- Effective demonstration of Azolla supplements @ 1.5 kg/cattle/day benefiting 298 farmers from 8 villages.
- Organic seed multiplication of paddy var. *HPR 2612/ Palaum Basmati 01* covering 5 ha area at *Mangsari* village.
- Horizontal expansion and seed multiplication of Buckwheat var. *Methey* (Local cultivar) in 45 ha area benefiting 200 farmers.
- Organic cultivation and seed production of finger millets var. *VL-347* and local cultivar covering 368 farmers in 75 ha area.
- Reclamation of acidic soil through liming @ 200-400 kg/ha covering 98 villages.
- Promotion of low-cost vermicomposting unit and NADEP pit benefiting 48 SHGs and 150 farmers, respectively.
- Upscaling of low-cost poly house technology for off season vegetable nursery covering 238 farmers targeting 24 SHGs.
- Organic cultivation of Large Cardamom var. *Seremna*.
- Grain storage in Biodegradable Super Grain Pro Bag benefiting 642 progressive farmers from 24 villages.

### Way forward

- Value addition, post harvest management and agri-entrepreneurship development of fruit crop and livestock products.
- Area expansion of fodder in waste land as well as conservation for lean period needs to be encouraged to meet the requirement of fodder for dairy farming.
- Rejuvenation of Sikkim mandarin orchards in convergence with State Horticulture Department.

### Suggestions

- Establishment of soil testing lab with good equipments.
- Establishment of soil testing lab with good equipments for analysis of different soil samples.
- Establishment of feed mill, hatchery unit, storage facilities for different agricultural produce.
- Requirement of vehicle for smooth conduction of different mandated activities.

## 3. KVK North Sikkim (State Dept. of Agriculture, Sikkim)

### Salient achievements

- Horizontal spread of paddy *var. Abhishek* covering an area of 150 ha.
- Promotion of Walk-in tunnel technology for off season vegetable covering 150 beneficiaries in 5 villages.
- Horizontal expansion of use of plastic mulching for vegetable cultivation during the rainy season benefiting 128 farmers in 9 villages.
- Successfully demonstrated turmeric *var. Megha Turmeric-1* benefiting 85 farmers in 4 ha of land.
- Horizontal spread of hermetic storage system for management of stored grained pest benefiting 1200 farmers.
- Promotion of low-cost oyster mushroom production through 12 women SHGs having

land holding less than 0.2 ha.

- Introduction and promotion of *Ghungroo* breed of pig benefiting 50 farmers and horizontal spread through SHGs.
- Upscaled dual purpose poultry birds (*Vanaraja*) benefiting 70 farmers.

### Way forward

- Collection, Conservation and Maintenance of local germplasm and registration of farmers' variety under PPV& FRA.
- Adoption of a greater number of villages for skill and entrepreneurship development, value addition and market channelization in the district.
- Incorporation of apiculture in agricultural and horticultural farming practices.
- Increasing area and production under oilseed and pulse crops.
- Encouraging more number of farmers to adopt Integrated Farming System (IFS).
- Soil fertility assessment of different villages for judicious nutrient management.

### Suggestions

- Development of infrastructure, establishment of farmers' hostel and installation of boundary wall and fencing.
- Establishment of Oyster Mushroom spawn production unit at KVK farm.
- Separate fund for KVK should be allocated for livestock demonstration units.
- New vehicle is very much required for carrying out KVK activities.

## 4. KVK South Sikkim (State Dept. of Agriculture, Sikkim)

### Salient achievements

- Horizontal expansion of Vermi-composting Technology to 7 farmer's club and 2 SHG's benefiting 136 farmers.
- Promotion of Oyster Mushroom production Technology through 10 farmers Club and 6 SHG's covering 175 farmers.

- Formation of Farmers Producer Organization (FPO) from the 10 *Wadi* villages brought 400 acres of land to Orchard (Orange and Guava) based farming system.
- Horizontal spread of pheromone traps for fruit fly management in Chilli-Cherry Pepper benefiting 120 farmers in 12 ha.
- Empowering women farmers through *Angora* rabbit farming covering 10 women farmers of SHG's with 10 *Angora* Housing Units.

### Way forward

- Promotion of micro irrigation system.
- Promote micro irrigation through sprinkler and drip irrigation system.
- Identification, validation and documentation of ITKs for sustainable Agriculture and Livelihood Security.

### Suggestions

- Establishment of Agro- Service Centre.
- To install drip and sprinkler irrigation in the KVK farm.
- Strengthen the KVK demonstration/ instructional farm.
- Proper documentation of the technology disseminated and technology adopted by the framers/farmers groups/ clusters.

### General Recommendations for the state of Sikkim

- Suggested to form Framer Producer Company/ Organisation (FPO).
- Suggested to speed up the filling of vacant positions in KVKs under ICAR.
- More focus should be given on organic seed and planting materials production.
- Suggested to give more focus on vegetable production as well as meat, milk and egg production to achieve the goal of doubling the farmers' income by 2022.
- In-situ and ex-situ soil moisture conservation and other water harvesting mechanism.
- Need based discipline-wise training programme should be conducted at ICAR-

NOFRI for Subject Matter Specialists of KVKs of Sikkim.

- One or two villages to be promoted as the cleanest village in the district by linking with *Swachh Bharat Abhiyan* and *organic farming*.
- Top priority must be given to KVKs mandated activities with other government flagship programmes assigned from time to time.
- Avoid research experimentation like evaluation of germplasm.
- KVKs should focus on output-outcome of the technologies for the information and use of policy makers .
- Actionable strategic planning may be done based on the problems and prospects of farmers in the district.
- ATARI, Zone-VI should focus more on providing trainings to the SMSs of different disciplines.
- Priority should be given on major commercial crops of the district/state.
- KVKs should give proper feed back to strengthen research system through proper mechanism.
- Linkages between research and extension should be strengthened.
- Installation of micro irrigation systems in all KVK demonstration farms may be considered.
- Collection of baseline data to assess the income through KVK interventions and activities.
- Formation of interested farmers' WhatsApp group and use of ICTs for transfer of technologies.
- The impact of the technological interventions to be documented in clusters/groups.
- Advocated landholding-wise interventions and to record intervention-wise farmers' list.
- Website of Sikkim KVKs must be dynamic with regular update.
- Improve the present status of Revolving Fund (RF).



## Phase II (Nagaland and Assam)

### State: Nagaland

#### 1. KVK Dimapur (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Promoted paddy *var. RCM-9* covering 62 ha through 88 farmers in the district.
- Upscaling of Toriavar.*TS-38* covering 510 ha and 484 beneficiaries.
- Effectively demonstrated jackfruit chips making through 23 SHGs covering 199 beneficiaries.
- Promotion of improved poultry birds like *Vanaraja* and *Srinidhi* benefiting 68 farmers.
- Established pig breeding units with *Large Black Cross* and *Rani* benefitting 48 farmers.
- Demonstrated rabbitry with *New Zealand White* and *Soviet Chinchilla* among 120 farmers.

##### Way-forward

- Post-harvest technology and mechanization in turmeric processing.
- Value addition and marketing channel for pineapple in the district.
- Entrepreneurship development of RY in the district especially in piggery and poultry.
- Skill oriented training programmes for dropouts and educated unemployed youth.

##### Suggestions

- Filling up of vacant posts to implement effectively the mandated activities.
- Establishment of demonstration farms with boundary walls/fencing.
- Construction of staff quarters.
- New vehicle for smooth functioning of the KVK activities.

#### 2. KVK Kohima (State Dept. of Agriculture, Nagaland)

##### Salient achievements

- Promoted Maize *var. HQPM-1*, covering 35 ha involving 134 farmers.

- Horizontal spread of Pea *var. HUDP-15* covering an area of 21 ha from 18 villages.
- Upscaled Broccoli *var. Green Magic* covering 7.75 ha area and 177 farm women.
- Effectively demonstrated backyard poultry (*Vencobb-400*) for nutritional sustenance benefiting 45 farmers from 5 SHGs.
- Horizontal spread of tricho-cards for managing stem borer covering 20 ha area benefiting 300 farmers.

##### Way forward

- There is a huge scope for backyard poultry production.
- Potential of Maize production for commercial purpose.
- Commercialization of organic Potato production in the district.
- Potential for promotion of large cardamom.

##### Suggestions

- Establishment of all basic facilities and manpower with staff quarters.
- Establishment of demonstration unit and storage facilities.
- Establishment of mushroom spawn production unit and plant pathology laboratory.
- Establishment of soil testing laboratory.

#### 3. KVK Longleng (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Development of IFS model *horti-silvi and fisheries* in 9.5 ha across 5 villages.
- Popularized polyhouses in 2 villages benefitting 11 farmers.
- Construction of 42 low cost scientific rainwater harvesting structures in 7 villages.
- Promotion of SHGs for Large cardamom cultivation covering 16 ha area. ..
- Effective demonstration of *Vanaraja, Srinidhi* and improved pig cross breed.

### Way forward

- Integrated farming system model for sustainable agriculture.
- Emphasis should be given on marketing linkage facilities.
- Water harvesting and conservation for increasing cropping intensity.

### Suggestions

- Immediate action is required for filling the vacant post for KVK Longleng.
- Priority should be given for infrastructure development.
- Documentation of locally available fruits, vegetables and ITKs.
- Skill and entrepreneurship development, value addition and marketing channelization.
- Separate fund for KVK should be allocated for farm development and labour wages.

## 4. KVK Mokokchung (State Dept. of Agriculture, Nagaland)

### Salient achievements

- Promoted tapioca *var. Shree Jaya* and Maize *var. HQPM* benefiting 432 farmers.
- Upscaled oyster mushroom production through 7 women SHGs covering 96 farmers.
- Importance of Bio-agents and Bio-pesticides demonstrated effectively.
- Popularization of Bio-agents and Bio-pesticides through trials and demonstrations.
- Demonstrated Tomato *var. Chiranjevi* and chilli *var. Guntur Hope* successfully as 153 farmers adopted these varieties.
- Horizontal expansion of broccoli *var. Green Magic* covering 39 ha area of 147 farmers.
- Demonstrated effectively mid duration HYV of paddy (*CAU R1*) in lowland covering an area of 25 ha.
- Upscaled maize variety *RCM 76* benefitting 48 farmers covering 13 ha in the district.

### Way forward

- Value addition and marketing channel for tomato and chilli needs to be explored.
- Livestock production has great potential in the district, especially piggery and poultry. Hence, proper linkages are to be developed with the state department and financial institutions.
- Medicinal and Aromatic local plants have great scope in the district, proper identification and documentation need to be taken up for benefiting the farmers.

### Suggestions

- Establishment of Bio-control lab for production and supply of critical inputs (Bio-agents).
- Borewell for irrigation of crops during dry season.
- Establishment of demonstration units and enhancement of fund for farm development.

## 5. KVK Mon (State Dept. of Agriculture, Nagaland)

### Salient achievements

- Promotion of Pea *var. Prakash/ Aman* in rice fallow benefiting 460 farmers in 120 ha.
- Upscaling of Toria *var. TS-38* in rice fallow benefiting 510 farmers in 160 ha area.
- Promoted oyster mushroom production techniques through 20 farm women SHGs.
- Upscaling of large cardamom production benefiting 22,500 farmers in the district.
- Demonstrated dual purpose *Srinidhi* birds as backyard poultry benefiting 120 household.

### Way forward

- Value addition, grading and marketing channel of cured capsule of Large Cardamom.
- Oil extractor, value addition and marketing channel of Toria seeds produced.
- Linkages with ICAR for timely supply of piglets and chicks for production.

### Suggestions

- Establishment of Farmers' hostel, staff quarters and storeroom for implements with appropriate road connectivity.
- Establishment of soil testing lab with equipment and distribution of soil health cards.
- Establishment of boundary wall for Instructional/demonstration farm.
- Storage facilities with working shed for grading quality seeds and planting materials

## 6. KVK Phek (NRC, Mithun)

### Salient achievements

- Horizontal increase in areas of *kiwi* cultivation from 5ha area (2011) to 78 ha (2018).
- Upscaled low cost polyhouse technology benefiting 200 farmers from 20 villages.
- Horizontal spread of vermi-composting in 12 villages.
- Successfully demonstrated low cost polyhouse technology benefiting 200 farmers from 20 villages.
- Horizontal spread of vermi-composting in 12 villages.
- Successfully demonstrated potato var. *Kufri Girdhari* in 9 villages.
- Mass demonstration of duck farming in 31 villages and rabbit farming in 25 villages.
- Developed 4 (four) farmers friendly technologies: DE-SAVE mineral block dispenser for *Mithun* (submitted for patent); DE-SAVE low-cost meat dryer (submitted to ITMU); DE-SAVE Maize dispenser for poultry birds (submitted to ITMU) and DE-SAVE killing cone for poultry (submitted to ITMU).

### Way forward

- To create awareness on organic farming, water conservation and IFS model.
- Efforts for formation of FPOs in collaboration with NABARD and other agencies.

- Agri-preneurs incubation centre to be established in the KVK.
- Upgradation of existing infrastructure facilities like laboratories and demonstration units.

### Suggestions

- To construct drying and storage facilities for seeds and planting materials.
- To construct Post harvest laboratory.
- To establish poultry hatchery unit.
- To strengthen full- fledged manpower in KVK.

## 7. KVK Tuensang (State Dept. of Agriculture, Nagaland)

### Salient achievements

- Successful demonstration of SRI resulted in to its complete adoption which brought down Jhum cultivation from 167 to 47 households.
- Promotion of Potato Seed village concept in *Chendang* village and replicated in two new villages under livelihood project by NEIDA.
- Effective application of tree plantation cum trenching technology in Citrus orchard in 11 villages.
- Upscaled improved sugarcane var. *Kolong (COBLN 9102)* in 3 blocks covering 9 villages.
- Demonstrated maize var. *NMH 1247* through Augmenting Lead Crop project covering 50 ha area.

### Way forward

- Cold storage for perishable vegetables needs to be established in cluster.
- Processing unit for oilseeds and coarse cereals.
- Seed policy and certification.
- Demonstration and promotion of high value crops.

### Suggestions

- Establishment of farmers hostel, staff quarters, library and soil testing laboratory.
- Black topping of approach road

## 8. KVK Wokha (ICAR RC for NEH Region, Umiam)

### Salient achievements

- Development of five Rainwater Harvesting Pond increased the net income of *Jhum* farmers from Rs 52,000 to Rs 2, 46, 000/ha.
- Establishment of 113 *Jalkund* structures increased net income of 110 households.
- Crop Diversification through pulses and oilseeds in 110 ha and 150 ha area respectively covering 780 farmers.
- Promotion of *Vanaraja /Srinidhi* birds covering 105 farmers from 10 villages.
- Upscaling pig farming with quality breed of *Hampshire cross/Rani* covering 46 farmers.
- Promotion of entrepreneurial activities for 120 unemployed educated youth.

### Way forward

- Networking of farming community with ICT based tools.
- Promotion of Organic farming along with emphasis on bio-pesticide/fertilizer production.
- Processing and value addition of locally available fruits (passion fruit, guava, etc.).
- Up gradation of existing pig population through AI in Pig.
- Establishment of livestock feed mill based on locally available feed ingredients.

### Suggestions

- Recruitment of KVK staff.
- Immediate replacement of KVK vehicle for ease of monitoring of field activities.
- Improvement of KVK campus roads with proper drainage system.
- Enhancement of the contingency budget of KVK.
- Improvement of facilities like generator, cold storage, godown, implement shed etc.

## 9. KVK Zunheboto (Nagaland University)

### Salient achievements

- Successful demonstration of Soybean *var. JS-9560* in 50 ha covering 9 villages benefiting 450 farmers.
- Promoted jackfruit chips and jam for 8 women SHGs covering 140 women.
- Upscaling of Oyster Mushroom production through 10 women SHGs covering 6 villages.
- Demonstration of Yellow Sticky Trap in *Jhum Rice* at 2 villages covering 105 households.
- Promotion of Field Pea *var. Aman* in 30 ha covering 6 villages benefiting 150 farmers.
- Horizontal spread of backyard poultry *Vanaraja* birds covering 17 villages benefitting 42 farmers.
- Demonstration of Ginger *var. Suprapha* and Turmeric *var. Megha* Turmeric covering 12 ha benefiting 65 farmers.

### Way forward

- Establishment of breeding unit for *Vanaraja* birds and Hampshire cross breeds.
- Large scale demonstration on Ginger and Turmeric to generate more income.
- Marketing linkages needs to be explored for Large Cardamom, Turmeric and Ginger.
- PHT needs to be scaled up to minimize the loss during bumper harvest.
- Spawn production unit may be created since mushroom production is gaining popularity.

### Suggestions

- Establishment of demonstration units, staff quarters, farmers hostel and fencing.
- Funds for farm development may be allocated separately.
- Establishments of Farm manager office, storage and water harvesting structures.
- Creation of soil testing lab, spawn production unit and water supply facilities.

### General Recommendations for the state of Nagaland

- Revenue generation under revolving fund should be enhanced.
- Proper benchmarking and mapping of instructional farm of the KVKs of the state.
- All deserving KVKs should apply for best KVK Award (Zonal/ National).
- Efforts are required to apply for patent for innovations created by the KVKs.
- Exposure tours of farmers to different successful farms and institutes including best KVKs must be arranged.
- Emphasis should be given on conducting PRAs to ascertain and depict the existing agricultural status in the district.
- Seed certification/Seed policy of the state should be in position.
- Utilization of locally available feed ingredients to optimize livestock production.
- Livestock Mela in the line of Mithun Mela may also be considered to organize at state level in collaboration with concerned departments of the state.
- Intervention to be taken up for scientific storage of seeds for conservation of germplasms.
- Each KVK should have quality seeds and planting material unit at the farm itself.
- All KVKs must maintain the website in dynamic mode with regular updates.
- Benefit Cost ratio of different components of IFS including livestock and fisheries needs to be worked out systematically for upscaling.
- Livestock based farming system models may be prepared and developed at farmers' field.
- Identify and explore the most effective marketing channels/ facilities for maximum profit and remuneration to producers.
- Floriculture may be encouraged as profitable venture since the state has huge potential.

- Cultivation of oilseed (eg.Toria) after paddy and sesame need to be promoted.
- Cultivation of oilseed (eg. Toria) after paddy to be increased.
- Interventions taken up under NICRA village may also be replicated to other villages of the district.
- Long duration/ vocational training programme especially for rural youth should be conducted for knowledge and economic empowerment.
- Perennial water shortage problem may be resolved with natural and rainwater harvesting technologies.
- Round the year Oyster mushroom production should be taken up. Button mushroom is also recommended.
- Honeybee production should be encouraged.
- Utilization of locally available feed ingredients to optimize livestock production.

### State: Assam

#### 1. KVK Hailakandi (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Establishment of 300 NADEP compost pits benefiting 300 families covering 25 villages.
- Introduction of improved Backyard poultry breed "*Vanaraja*" to replace the local breed.
- Promotion of Papaya *var. Pusa Nanha* and *Red Lady* benefiting 180 families.
- Household food and nutrition security of Hailakandi district through nutrition gardening.
- Utilization of fallow land by cultivating maize to increase their income and cropping area.
- Introduction of arecanut HYV (*Kahikuchi Selection-1*).
- Women empowerment through small scale food processing unit benefiting 100 SHG members.

- Introduced brush cutter as reaper for promoting farm mechanization in the district.
- Upscaling of oyster mushroom cultivation.

#### Way forward

- Establishment of Poultry Hatchery Unit as there is great demand of chicks and ducklings.
- Establishment of mushroom spawn production unit and market linkage for raw production as well as value addition of mushroom.

#### Suggestions

- Construction of Office building with proper storage facilities, soil laboratory and work shed for farm machineries.
- Extra manpower for soil collection and testing.
- Extra fund for development of farm, maintenance and upkeep of demonstration units.

## 2. KVK Dibrugarh (AAU, Jorhat)

#### Salient achievements

- Upscaled paddy var. *Ranjit-sub-1* in 1000 ha area covering 201 farm families.
- Expansion of pheromone trap and sticky trap across 200 ha and 1000 ha area, respectively.
- *Arecanut* based cropping system under homestead gardening covered more than 5000 ha.
- Promotion of Year-round cultivation of mushroom *Oyster 444* through 7 SHGs.
- Effectively demonstrated HYV *Toria* (*TS 36* and *TS 38*) benefiting 300 farm families in 1000 ha area.
- Promoted backyard farming of *Kamrupa* and *Vanaraja* birds in 12 villages.
- Horizontal expansion of *HY Hampshire cross* and *Yorkshire breed* of pig benefiting 151 farm families.

#### Way forward

- Entrepreneurship development through weaving of traditional *Assamese Gamosa*.

- Establishment of nutritional cum herbal garden under homestead gardening.
- Year-round mushroom production for development of rural youth and SHGs.
- Multi-storeyed cropping system comprising of tea, *arecanut* and black pepper.

#### Suggestions

- Incorporation of two/three Field Assistant for monitoring the activities at farmer's field.
- Enhancement of operational fund under contingency head.

## 3. KVK Darrang (AAU, Jorhat)

#### Salient achievements

- Upscaling of late sown *Toria var. TS 67* across 115 ha covering 345 farmers of 42 villages.
- Demonstrated successfully and upscaled high yielding rice *var. TTB 404* across 88 ha covering 192 farmers.
- Promoted Oyster mushroom among 672 farmers/ farm woman/ rural youth.
- Demonstration of low cost Vermicompost unit benefiting 155 farmers.
- Upscaled *Beetle buck* for breed up-gradation benefited 173 farmers of 7 villages.
- Promotion of rice var. *Ranjit Sub 1* and *Bahadur Sub 1* in flood prone areas covering 306 farmers in 44 villages.

#### Way forward

- Conversion of mono crop area to multiple crop area.
- Soil Health Management and environmentally friendly pest management.
- Commercialization of agricultural commodities.
- Encourage farmers in Waste management.

#### Suggestions

- Establishment of Mushroom spawn production unit.
- Sufficient manpower and vehicle for smooth implementation of KVK.

#### 4. KVK Jorhat (AAU, Jorhat)

##### Salient achievements

- Conducted large scale demonstrations cum seed production of new HYVs of various crops.
- Implementation of a large scale, flagship seed production programme for winter paddy varieties.
- Implementation of Rural Knowledge Centre (RKC), AIP mobile solutions programme and KRISHI NIDAN mobile app.
- Demonstrated Three Tier (Pig cum Poultry cum Fish) IFS in five villages benefiting 90 farmers.
- Introduction of plastic mulching in *Bhutjolokia* which could increase the yield by 35%.
- Commercial vegetables production by 200 and 80 farmers in Dhekorgarah and *Allengmora* villages.
- Commercial scale production of carry over fish seed taken up by 22 farmers.
- Eight commercial mushroom production venture by women SHGs at *Kaliapani*.

##### Way forward

- Utilization of Kharif Rice-fallow area during Rabi season for raising farm output.
- Formation of Rural Agricultural Market with assistance from NABARD for marketing of products of women SHGs.
- Organic production, Value addition, processing and marketing of produce in association with FPOs.
- Emphasis on allied agricultural activities with a motto "to reach the unreached and touch the untouched".

##### Suggestions

- Smart classroom facilities with all modern amenities.
- Establishment of modern soil testing laboratory and mushroom spawn production unit.

- Hatchery unit for poultry and fish seed production.
- Well equipped post harvest technology laboratory at KVK.
- Agri-clinic and Farm Machinery hub facility at KVK.

#### 5. KVK Goalpara (NRC for Pig, Rani)

##### Salient achievements

- Achieved Rank 1 position in India in *Krishi Kalyan Abhiyan*- Phase I (KKA-I).
- Up gradation of pig production through introduction of Artificial Insemination technology.
- Formation of "*Amguripara Black Rice Producer's society*"- for expansion of black rice.
- Promotion of scientific cultivation of oyster mushroom benefiting more than 500 farmers.
- Engaging rural youths in banana cultivation for their self employment.

##### Way forward

- Enhancement of Farm mechanization in the district.
- Bringing rice fallow areas under potato cultivation in medium land situation.
- Promotion of Jute cultivation as an alternative to plastic.
- Productivity improvement of horticultural crops and market linkages.
- Strategies to increase the productivity of different components of Animal Husbandry sector.
- Strategies for enhancement of productivity of different components of Fishery sector.
- Adoption of more villages for skill and entrepreneurship development.

##### Suggestions

- Vacant posts should be filled up.
- Priority for infrastructure development (boundary wall, Farmers hostel, staff quarters etc).

- Increase the contingency fund to at least 50 lakhs as more than 50% was spent on POL, electricity bill and labour wages.
- Separate funds should be given for construction of demonstration units in the KVK farm.
- *Darrangiri* banana market should be upgraded to a regulated market under E-NAM.

## 6. KVK Dhubri (AAU, Jorhat)

### Salient achievements

- Effective demonstration and upscaling of submergence tolerance rice varieties covering 6113 beneficiaries in 2031 ha area.
- Promoted low cost vermicomposting technology among the farmers covering 16 villages.
- Upscaled Oyster Mushroom by 17 farmers covering 10 villages.
- Successfully demonstration of HYV Toria (*TS-38, TS-36, TS-46, TS-67*) covering 338 ha area.
- Two FPO and one cooperative Society is being formed under the KVK guidance.

### Way forward

- Quality fish seed production to be promoted in coordination with fishery department.
- Promotion of Vermicompost and Mushroom production as business enterprise.
- Formation of FPO and Farmers' Cooperative Societies.
- Promotion and development of Integrated Farming System model in the villages.
- Developing few RY farmers as organized seed producer by maintaining Seed Banks

### Suggestions

- Establishment of administrative buildings and other demonstration unit with fencing.
- Need of Double Row Seating Capacity Pick-up Van for delivering inputs to farmers.
- Establishment of Soil Testing Laboratory for analysis of soil samples and distribution of SHC.

## 7. KVK Dhemaji (AAU, Jorhat)

### Salient achievements

- Promotion of HYV of rice increases the average productivity by 22.45 per cent.
- Introduced HYV and late sown varieties of Toria to facilitate Rice-Toria cropping sequence.
- Upscaled backyard poultry breed *Vanaraja, Rainbow Roster* and '*Kamrupa*'.
- Promoted low cost Vermicomposting benefiting four villages with more than 65 units.
- Promotion of scientific rearing of pigs and development of 206 piggery unit under TSP.
- Established 26 IFS models in operational villages. (Pig-Fish-Horti & Duck-Fish-Agri IFS model).

### Way forward

- Mechanization of post harvest sericulture operation (Reeling, spinning, weaving) with its product diversification and merchandising.
- Value addition of locally available fruits and vegetables through processing with the help of SHGs.
- Promotion of suitable technologies for sand and silt deposited areas.
- Organized marketing of *Red Kernel Bao* rice produced organically along with value addition.
- To meet the increasing demand of quality piglet convergence and linkage are to be created with government, non-government and private organization.

### Suggestions

- Establishment of the KVK in permanent campus, soil testing laboratory, food processing unit, demonstration unit and one farm machinery unit with modern machineries and implements.
- Fill up of vacancies in various KVK staff positions.



## 8. KVK Nalbari (AAU, Jorhat)

### Salient achievements

- Preponing of off-season cultivation of pumpkin during Rabi season covering 2000 ha land.
- Promotion of rice var. *Ranjit sub-1* and *Bahadur sub-1* covering 1000 ha flood prone area.
- Promotion of organic farming through *Vermicomposting* benefiting 1500 farmers.
- Backyard farming of *Vanaraja* and *Kamrupa* benefiting more than 5000 farmers.
- Large scale production and value addition of oyster mushroom benefiting 150 farmers.
- Commercial seed production of Indian and exotic major carps (*Kawoi* and *Magur*) benefiting 100 rural youths.

### Way forward

- Promotion of organic farming for improving soil health and sustaining crop productivity.
- Commercial fish and fish seed production by adopting modern cultivation practices.
- Promotion of IFS through efficient recycling of waste and farm by products.
- Quality seeds and planting materials production in KVK and farmers fields.
- Entrepreneurship development through agriculture and allied disciplines.

### Suggestions

- Establishment of soil testing lab with equipment and distribution of soil health cards.
- Number of SMS should be increased to 10 along with one account assistant.
- Needs one additional vehicle for efficient execution of extension activities.
- Provision of roads, boundary walls, irrigation facilities and extension of office buildings.

## 9. KVK Barpeta (AAU, Jorhat)

### Salient achievements

- Promotion of Oyster mushroom through 12 SHGs and 25 farmers benefiting 165 farmers.
- Upscaling of *Toria var. TS-38* and *TS-67* through 43 villages benefiting 1050 farmers in 420 ha.
- Promoted HYV variety of rice *Shrabani (TTB-404)* covering 187 farmers in 75 ha.
- Upscaled *Vermicomposting* and NADEP compost pits benefiting 335 farmers.
- Horizontal expansion of Poultry breed *Kamrupa* across 31 villages benefiting 85 farmers.
- Promotion of Strawberry production and management through 10 farmers covering 8 villages.

### Way forward

- Creation of market linkages and formation of FPOs for agri-horti products.
- Facilitation of farmers to meet up required chicks of *Kamrupa* in the district.
- Regular supply of earthworm for *Vermicomposting*.

### Suggestions

- Extension of demonstration units of poultry and construction of duckery unit.
- Construction of boundary wall for instructional/demonstration farm.
- Storage facilities with working shed for seeds and planting materials production.
- Extension of existing training hall with well-equipped facilities.

## 10. KVK Karbi Anglong (AAU, Jorhat)

### Salient achievements

- Upscaled turmeric var. *Megha Turmeric-1* covering 309 farm families from 28 villages.
- Area expansion of Strawberry cultivation from 2 to 12 villages involving 45 farmers.

- Promoted Oyster mushroom production technology among SHGs and rural youths.
- Promoted vermicompost production through 50 units in 15 villages.

#### Way forward

- Access and promotion of quality seed/planting material and pure breed piglet production.
- Scope for promoting double cropping to increase the cropping intensity.
- Promotion of dryland agricultural technologies under rain shadow area.

#### Suggestions

- Construction of administrative building, boundary wall, demonstration units, working shed, storage, irrigation facilities, approach roads etc. at new site should be expedited.
- Establishment of well-equipped soil testing lab
- Supporting staff should be increased.

### 11. KVK Kamrup (AAU, Jorhat)

#### Salient achievements

- Commercial cultivation of *Malbhog banana* covering more than 467 ha of land.
- Popularized Turmeric var. *Megha Turmeric 1* covering 10 ha and 75 farm families.
- Increased supply of local commercial flowers in the *Hajo* region involving 2000 farm families from 12 villages.
- Promotion of year-round mushroom cultivation involving more than 320 farm families.
- Promotion of handloom products and natural dyeing for entrepreneurship development involving 250 farm women and rural youth.

#### Way forward

- More villages to be adopted in the line of 'one village one product' for entrepreneurship development, secondary agriculture to achieve the goal of DFI.
- Formation of FPC and promotion of IFS and Bari system of farming.

- Application of ICT in agriculture and Market-led extension.
- Create self-employment opportunities in the field of agriculture and allied sectors.
- Large scale cultivation of lemon grass and citronella in *Ukiam* for oil extraction.

#### Suggestions

- Number of SMS and contingency amount may be increased.
- Provision for two vehicles for KVK Kamrup.
- Boundary fencing and staff quarters.

### 12. KVK Lakhimpur (AAU, Jorhat)

#### Salient achievements

- Promoted HYV Toria (*TS-36* and *TS-38*) benefiting about 2150 farmers in 4340 ha area.
- Upscaled medium duration HYV of *Salirice (Shraboni)* benefiting 315 farmers in 135 ha area
- Promotion of Apple Ber (*Ziziphus mauritiana*) in an area of 26 ha covering 97 farmers.
- Expansion of Mushroom cultivation through 20 SHGs involving 415 numbers of farmers.
- Successfully demonstrated submergence tolerant rice varieties in flash flood areas covering 450 farmers.

#### Way forward

- Entrepreneur needs to be promoted about pig breeding farms of different breeds.
- *Muga* and Agri eco-tourism need to be explored and their value addition and marketing of *Muga* Silkworm.
- Better scope of low cost Polyhouse for vegetable nursery and off-season vegetable cultivation.
- Apiculture need to be promoted along with honey processing unit. Entrepreneurship development through mustard oil processing unit need to be developed.
- Entrepreneurship development through value addition of red rice need to be explored.

### Suggestions

- Establishment of water supply and irrigation facilities in KVK farm.
- Construction of farmers' hostel at KVK campus for on-campus training.
- Renovation of demonstration unit such as pig stay and dairy unit.
- Renovation of green house, shade net and feed mill.

### 13. KVK Nagaon (AAU, Jorhat)

#### Salient achievements

- Successfully demonstrated Paddy *var. Ranjit* and Toria *var. TS 36* covering 1595 ha area.
- Promotion of quality seed production of Toria, Linseed and Pulses varieties in 320 ha area.
- Horizontal expansion of Assam Lemon to 93 ha area covering 16 villages.
- Empowered 1758 rural women through skill development training.
- Organized 6 Soil Health/Testing Campaigns and distributed 2250 SHCs.

#### Way forward

- Agro Service Centres and seed selling counters in block level are to be established.
- Exploration of mechanized farming as a tool for time saving, cost effective and meeting the upcoming crisis of labour in farmer's field.
- Value addition of weed fishes for empowering rural women.
- Exploration of low-cost biodegradable utensils to combat plastic menace.
- Enhance chicks' production locally to reduce market price.
- Production of improved breed piglets for enhancing meat production.
- Rainwater harvesting and usage in multiple purposes in rain shadow belts of Nagaon.
- Value chain development of speciality rice.

#### Suggestions

- Development of farm road facilities, fencing, drainage system and vehicle shed.

- Establishment of Food Processing Unit in KVK Campus.
- Installation of *Kiosk* at KVK and more computer facilities for SMS and other staff.
- New office vehicle for proper mobility.
- Increasing the recurring contingency and manpower.
- Watch man room for KVK Office and farm.

### 14. KVK Tinsukia (AAU, Jorhat)

#### Salient achievements

- Demonstrated management practice of Citrus Trunk Borer for enhancing the yield of *Khasi* mandarin benefiting 250 farmers.
- Upscaled HYVs (*TS-67*, *TS 38* and *TS 46*) of Toria to 203 ha covering 414 farm families.
- Expansion oyster mushroom cultivation benefiting 250 farm families.
- Promoted HYV sugarcane variety *Barak* covering 24.6 ha area.
- Demonstrated Seracole variety of Marigold covering 5 ha area in the district
- Horizontal spread of *Vanaraja* and *Kamrupa* breeds as backyard poultry covering 295 farm families.

#### Way forward

- Emphasis on Resource Conservation Technologies (RCTs).
- Improvement of linkages between the stakeholders in agriculture for DFI.
- Prioritize demand driven and resource-based production technologies with focus on small farmers and emerging marketing opportunities.
- Emphasis on post harvest management.
- Convergence is to be created with the state department to meet the demand of *Kamrupa* breed production.

#### Suggestions

- Establishment of demonstration unit with proper fencing and enhancement of farm

- development fund with boundary wall instead of fencing.
- Storage facilities with working shed for seeds and planting materials production.
- Establishment of mushroom spawn production laboratory for large scale production.
- Increasing the Scientific as well as supporting staff with streamline of the discipline of SMSs and sufficient infrastructure creation.
- Prioritization of activities of *Kendra* with more emphasis on mandated activities.

### 15. KVK Karimganj (AAU, Jorhat)

#### Salient achievements

- Demonstrated short duration *Ahu* rice *var. Dishang* in 40 ha area benefiting 140 farmers.
- Promoted submergence tolerant rice *var. Ranjit Sub-1* in flood affected areas covering 500 ha.
- Horizontal expansion of late duration rapeseed *var. TS-67* in 35 ha area covering 120 farmers.
- Demonstrated high value vegetable crop Broccoli with an expansion in 15 ha area.
- Upscaling of HYVs of blackgram (*PU-31*) in *kharif* season covering 170 farmers in 50 ha.
- Soil testing and distribution of 2595 numbers of Soil Health Cards to farmers through different programmes.
- Distribution of backyard poultry breeds *Vanaraja* to 6000 farmers of the district.

#### Way forward

- Due to higher demand of improved breeds of duck and poultry in the district, linkages are to be created with the state department and district administration.
- In collaboration with Assam Government a fishery hatchery unit is sanctioned under blue revolution scheme in PPP mode. This is to be implemented effectively.
- Pilot scale project on production of organic inputs i.e. compost, vermicompost, azolla etc.

- Cultivation and processing of medicinal plants need to be explored.
- Large scale demonstration on improved duck breeds *Vogova Super M*.
- Introduction of improved bird species Japanese quail for meat and egg purpose.

#### Suggestions

- Establishment of bio pesticide production unit and mushroom spawn production unit.
- Establishment of Fish Hatchery Unit and farmers' hostel.
- Recruitment of laboratory assistant in soil laboratory.

### 16. KVK Sivsagar (AAU, Jorhat)

#### Salient achievements

- Promoted paddy *var. Ranjit* benefiting farm families of 403 villages.
- Processing of local fruits and vegetables benefiting women entrepreneur.
- Upscaled *Vanaraja* poultry breed that benefited farmers of 143 villages with net income Rs. 5489/10 birds.
- Horizontal expansion of high yielding pumpkin *var. Arjuna F1* in 10 villages.
- Upscaled Oyster Mushroom in 113 villages benefiting farm women.
- Demonstrated effectively vermicompost as income generating avenue for farmers through 200 SHGs.

#### Way forward

- Value addition and marketing channel for mushroom, processed and traditional food items.
- Production of improved breed piglet to fulfil the huge demand in piggery.
- Seed production of high yielding submergence tolerant rice varieties.
- Promotion of organic vegetable production.

#### Suggestions

- Establishment of thrashing floor, demonstration unit, irrigation facility and farm road.

- Increase in contractual labourer, laboratory assistant and scientific staff.
- One more vehicle is needed to fulfil the increasing demand of field visits.
- VSAT connection for better internet connectivity.

## 17. KVK Cachar (AAU, Jorhat)

### Salient achievements

- Promoted variety *Disang* in pre and post flood situation through 13 SHGs and ATMA benefiting 225 farmers.
- Upscaled low-cost Vermicomposting through 11 SHGs covering 110 farmers in 9 villages.
- Expansion of oyster mushroom through 23 SHGs of 57 villages covering 10 blocks.
- Horizontal spread of Intercropping of Potato-Rajma in 105 villages benefiting 143 farmers.
- Upscaling of improved poultry breed *Rainbow Rooster*, *Kamrupa* and *Vanaraja* in 19 villages.
- Successfully demonstrated submergence tolerant variety of rice in 19 villages benefiting 554 farmers.

### Way forward

- As the demand for improved poultry and duck breed is high, hatchery unit should be established to supply chicks.
- Upscaling the Duck cum fish IFS and Horti cum fish IFS technology in Cachar district.
- Spawn production and Value addition of mushroom and their marketing channel are to be explored.

### Suggestions

- Increase revolving fund and develop the system.
- Develop Hatchery from own funds or through convergence.
- The KVK should apply for KVK award.

## 18. KVK Golaghat (AAU, Jorhat)

### Salient achievements

- Promoted winter paddy HYVs (*Ranjit*) covering around 90% of the kharif paddy area.

- Horizontal expansion of late sown Toria *var. TS-67* covering more than 1000 ha of rice fallow areas.
- Upscaled Black gram *var. PU- 31* covering more than 500 ha of land.
- Promotion of Oyster mushroom technology through 8 women SHGs and 150 growers.
- Undertaken Farm Mechanization to accelerate crop intensification.

### Way forward

- Establishment of the Community Agricultural Sales Outlet for agricultural products.
- Value addition and marketing channel of locally available agro products.
- Large scale multiplication and commercialization of annual Horticultural Crops, Poultry and Livestock through commodity village with organized Farmer's group.

### Suggestions

- Establishment of small-scale cold storage facilities for seeds and other produces of KVK and farmers.
- Establishment of well equipped Food Processing Unit and construction of boundary wall.
- Establishment of demonstration units and seed and planting material generation areas.
- Two vehicles are required to improve the mobility of scientists and staffs for supervision.
- Repairing and expansion of the current KVK building for a comfortable working environment.

## 19. KVK Kokrajhar (AAU, Jorhat)

### Salient achievements

- Horizontal expansion of hybrid maize for higher economic and nutritional gain across 3808 ha.
- Demonstration of *G-9* and *Jahanji* varieties of banana in Panama wilt affected area.

- Successfully demonstrated Zn application in rice @ 25kg/ha with adoption up to 350 ha.
- Upscaling of oyster mushroom cultivation with adoption by 22 SHGs.
- Introduction of broiler duck (*Vigova Super-M*) in backyard management condition.
- Promotion of Ghungroo cross pig covering 510 families with adoption of 554 %.
- Demonstration of *Chara-Chemballi* duck since 2012-13 benefiting 155 families.

#### Way forward

- Cropping sequence-based farming technologies incorporating bio-intensive plant protection modules to increase cropping intensity, farmers' income and sustainability.
- Development of economic model unit encompassing integrated farming system of rearing poultry, livestock and fish for doubling farmers' income.
- Scaling up participation of youth and women folk in agriculture and allied activities for self-employment or subsidiary income to the family.

#### Suggestions

- Construction of quarters for SMS and other staff as there is huge demand.
- Construction of farmers' hostel, fencing and renovation of existing infrastructure including sole quarter.
- Providing a pickup van with seating capacity for KVK personnel and a vehicle with all accessories fitted for conducting training, awareness and other programme.
- Providing solar lighting system for buildings and campus to develop a 'green' campus.
- Scaling up of library infrastructure for regular access to online journal and books.
- Enhancing fund allocation in recurring contingency on yearly basis and increasing fund allocation on refreshment and training material under training head.

## 20. KVK Sonitpur (AAU, Jorhat)

### Salient achievements

- Horizontal Expansion of HYV rice var. *Ranjit, Bahadur, Shraboni*.
- Adoption of climate resilient technologies in rice (*Jalashree, Jalkuwari, Ranjit sub1*)
- Promotion of Organic farming through Vermicomposting involving RY and SHGs.
- Entrepreneurship development in mushroom production, fruits and vegetable preservation.
- Upscaling of farm mechanization under APART programme.
- Promotion of some commodity based FPOs in the district.

### Way forward

- Conversion of 10% of conventionally cultivated area in the district into organic.
- Promotion of IFS model in the district.
- Area and production enhancement of GI tagged *Tezpur Litchi*.
- Scaling up of farmers' friendly farm mechanization implements/tools in the district.

### Suggestions

- Establishment of new administrative building, farmer's hostel, staff quarter and guest house.
- Provision of new vehicle, automatic green house and minimal processing facility.
- Covered threshing floor and development of *pakka* farm road.

## 21. KVK Udalguri (AAU, Jorhat)

### Salient achievements

- Scientific cultivation of *Malbhog* banana benefiting more than 600 farmers.
- Conversion of rice fallow areas to double cropping of Rice-Toria involving 225 farmers.
- Upscaling of *Japanese quail* among the tribal farmers benefiting 123 households.
- Horizontal expansion of Vermicomposting by installation of 20 units in 7 villages covering 105 farm families.

- Demonstrated IFS of fish with duck and horticulture covering 3 farmers from 3 villages.
- Horizontal spread of Oyster Mushroom cultivation to 8 SHGs comprising 98 farm women.
- Capacity building through value addition of locally available minor fruits involving 7 SHGs.

#### Way forward

- IFS models should be extended in collaboration with line departments for DFI.
- Large scale production, value addition and marketing of *Megha turmeric-1*.
- Large scale Pig farming and piglet production shall be explored in tribal dominated areas.
- Large scale plantation programme to be pursued including a bamboo nursery at KVK.
- Linkages of KVK with other organizations, line departments and agencies shall be established.

#### Suggestions

- Establishment of demonstration units and construction of boundary wall needs to be prioritized.
- Provision of generator, internet connection, drinking water, storage facilities, farm equipments etc.
- Establishment of Farmers hostel and Soil Laboratory with manpower (Lab Assistant).
- Vehicle needs to be replaced and if possible, provision for second vehicle may be considered.
- Provision for block level field staff on temporary/contract basis may be considered.
- Provision for 15-20 percent institutional charges for external projects/additional activities may be helpful for the KVK.

## 22. KVK Bongaigaon (AAU, Jorhat)

#### Salient achievements

- Promoted low cost vermicomposting technology in 32 villages covering 194 farmers.

- Formation of Farmers' Producer Company- '*Manikpur Vegetable Producers Company*'.
- Horizontal expansion HYVs of Toria TS 36 and TS 46 through CFLD benefiting 342 farmers.
- Introduction of improved duck breeds *Khaki Campbell, Sara chambeli and Vigova Super M* in 89 villages covering 209 farm families.
- Upscaling of mushroom production technology in 12 villages covering 128 farmers.
- Demonstrated composite fish culture technology gives an additional income of Rs.1,06,000/ha.
- Production of Value-added products of Jute gives an average annual income of Rs.18,000/SHG.
- Tailoring promoted by 19 farm women gives an average annual income of Rs.10,000/SHG.
- Promotion of food processing and value addition of locally available fruits & vegetables by 58 farm women in 8 villages.

#### Way forward

- Organic production, value addition, processing and marketing of produce in association with organic FPOs.
- Formation of Rural mart with the assistance from NABARD for marketing of products of women SHGs.
- Utilization of kharif Rice-fallow area during Rabi season for raising farm output.
- Emphasis on allied agricultural activities like poultry, duckery, mushroom production etc.
- Employment generation through capacity building.

#### Suggestions

- Documentation of KVK activities through publication of research papers.
- Efforts for obtaining GI and Patent.
- More Seed production in KVK farm for revenue generation.
- Development of Infrastructure and farm facilities after release of fund from ICAR.

### 23. KVK Morigaon (AAU, Jorhat)

#### Salient achievements

- Horizontal expansion submergence tolerant paddy varieties in 32 villages covering 804 farm families.
- Promoted Toria *var.TS-38, 46, 67, 36, NRCHBC-101* covering 202.5 ha area.
- Demonstration of Maize in 10 villages covering 148 ha with 102 farm families.
- Horizontal expansion of duck farming with improved breeds in 8 villages.
- Scaling up of Ahu paddy *Disang* from 5 to 10 villages covering 48.49 ha area.

#### Way forward

- More focus on short duration and submergence tolerant varieties of paddy through a collaborative approach with the FPOs, NGO, Seed Companies, APART, KVKs and DOA.
- Small scale village level pig breeding units are to be established and improved poultry and goattery farming is to be encouraged on a large scale.

#### Suggestions

- Development of boundary wall/Fencing, demonstration units, farmers hostel, drinking water facility, staff quarter *etc.*
- Full fledged soil testing laboratory to cover more farmers.
- Separate fund for KVK should be allocated for farm development and labour wages.
- Provision for organic input production unit for promotion of organic farm/farming.

### 24. KVK Baksa (AAU, Jorhat)

#### Salient achievements

- Demonstration of papaya *var. Sapna* with scientific management practices in 5 ha of land.
- Upscaled Tuberose *var. Suvasini* in *Bishnupur* benefiting more than 30 rural youth

- Horizontal expansion of tuberose and gladiolus in 6 ha and 3 ha of land, respectively.
- Demonstrated medium duration rice variety (*TTB-404*) in 5 villages covering 20 ha of land.
- Low cost polyhouse for nursery and year-round vegetable production through 4 SHGs.
- Expansion of Vermicomposting and NADEP that benefited 60 and 300 farmers, respectively.

#### Way forward

- Convergence with the line departments to meet the demand of Piggery in the district.
- Value addition and marketing channel are to be explored in *Colocasia* and Mushroom.
- Replacement of cereal and pulses seeds.

#### Suggestions

- Development of demonstration unit, soil testing lab, working shade for seed and planting materials, storage and irrigation facilities.

### 25. KVK Chirang (AAU, Jorhat)

#### Salient Achievement

- Area expansion of *Malbhog* banana cultivation covering 600 farmers from 42 villages.
- Promotion of Oyster mushroom in the district through 25 SHGs benefiting 258 farmers.
- Commercialization of *Megha* turmeric through FPC benefiting 200 farmers.
- Cultivation of high values crop like watermelon and potato that benefited 150 farmers in 15 villages.
- Horizontal expansion of pheromone traps in rice for controlling YSB covering 12 ha area.
- Promoted lentil variety '*Moitree*' covering about 25% of lentil areas.
- Foundation and certified seed production of *Toriavar.TS-36, TS-46* and *TS-67* in the district.
- Certified seed production of *Ranjit Sub-1* and *Ranjit* replaced the seeds in about 30 % areas.



### Way forward

- Production of certified rice seeds for seed replacement.
- Introduction of improved breed of livestock with availability of feed and fodder.
- Capacity building of progressive farmers and intensification of HRD programmes.
- Promotion of agricultural insurance including weather insurance.
- Farm mechanization and implementation of seed village programme.
- Development of agro-based industry, fruit processing unit and financial linkage.
- Advancement in disease diagnosis and screening procedure of common livestock diseases.

### Suggestions

- Construction of boundary wall, farm roads, irrigation, drainage facilities and threshing floor.
- Provision of Tractor and Power Tiller with accessories.
- Establishment of planting material production unit.
- Facilities for Soil and Water testing laboratories.
- Establishment of Incubator cum Hatchery unit.

### General Recommendations for the state of Assam

- All KVKs must maintain the KVK Websites in dynamic mode with regular update of activities and performance.
- All KVKs must develop farming system-based models in collaboration with ICAR/ Agricultural Universities.
- Impact assessment of major KVK activities and programme must be taken up.
- Efforts should be taken for timely availability of quality seeds and planting materials/ fingerlings/ bio-agents etc. to farmers.

- Create database for all components/ enterprises of farming systems taken up by KVKs.
- Status of Revolving Fund (RF) must be improved/ enhanced.
- All KVKs with SMS in Agronomy must produce quality fodder for animals by adopting scientific fodder cultivation practices.
- Promote those technologies only which are validated and recommended by ICAR/ universities in farmers' fields.
- Establish market linkage in seeds production and supply.
- Multi-storied model of farming system practiced by KVK Kamrup may be replicated in other KVKs as well.
- Work out Benefit-Cost ratio of various components/ enterprises for the benefit of farmers.
- Change in area and productivity of crops due to KVK interventions should be shown by all KVKs.
- While claiming enhanced farmers' production/ productivity and income, KVKs must specify technology/ variety/ breeds / management technology etc. before and after interventions.
- All KVKs must develop bench mark matrix for all the components to assess the doubling of farmers' income.
- Custom hiring centres need to be promoted by the KVKs in convergence mode.
- Development of Soil Laboratory and Bio-lab in all KVKs.
- Complementary and speciality agriculture as well as technology oriented and market linked activities.
- Large scale seed production should be taken up in KVK farm for revenue generation.
- Develop benchmark matrix to assess the doubling of farmers' income for all KVKs.
- Focus must be on value addition of the local horticultural produces for enhancement of farmers' income.

- Community based farming system may also be explored for coverage of large areas under pulses.
- Increase number of vermicompost units at village level through group mobilisation of rural youth and capacity building.

### Phase III (Manipur and Mizoram)

#### State: Manipur

#### 1. KVK Chandel (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Horizontal expansion of Rice *var. RC Maniphou-10* and 7 in 98.50 ha and 68 ha, respectively.
- Horizontal expansion of Groundnut *var. ICGS -76* in 113 ha comprising of 420 farmers.
- Promoted Lentil *var. HUL -57* in 28 ha benefitting 75 farmers.
- Horizontal spread of *Vanaraja* birds benefitting 325 farmers from 30 villages.
- Established five IFS in Chandel district to enhance the livelihood security.
- CFLD on oilseeds and pulses under NFSM in 150 ha and 100 ha, respectively.
- Promotion of fruits and vegetables processing enterprise in 6 villages through SHGs.
- Promotion of organic agriculture in 25 villages through Vermicomposting.
- Successful application of *Jalkund* Technology in 12 villages during last 6-7 years.

##### Way forward

- Value addition and marketing channel of citrus, Pineapple fruit and turmeric.
- Explore marketing channel for Seed
- Convergence/linkages are to be created with the state department to meet the demand of poultry and piggery production.

##### Suggestions

- Special fund should be allocated for farm development for KVKs (approx. Rs.5 lakhs / years)

- Boundary fencing of KVK farm and vehicle is highly required.
- Farmers Hostel is required to conduct long duration on-campus training programme.
- Extension of KVK administrative building to 750 sqm along with proper tiles flooring.

#### 2. KVK Churachandpur (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Promotion of Organic oyster mushroom production technology through 10 women SHGs.
- Horizontal expansion of HYV Groundnut variety *ICGS-76* covering 228.25 ha area in 340 farmers.
- Upscaling of HYV Rice *var. RC Maniphou-10* and *RC Maniphou-13* benefitting 460 farmers.
- Horizontal expansion of Vermicomposting benefitting 200 farmers in 10 villages.
- Promoted poultry bird breed *Vanaraja* in 42 village covering 850 farmers in the district.
- Effectively demonstrated Bee-Hive Briquette making in 21 village covering 220 farmers in the district.

##### Way forward

- Value addition and marketing channel of underutilized fruits and Spices are to be explored.
- As there is a great scope for piggery in the district convergence /linkages are to be created with the state department to meet the demand of piglet production.

##### Suggestions

- Enhancement of Farm development fund with boundary wall of Instructional/ demonstration farm.
- Installation of 5000 eggs capacity incubator cum hatchery for supplying quality chicks.
- Installation of mini grinding cum mixing feed plant to supply feeds to the farmers at affordable cost.

- Establishment of soil testing lab with equipments for ease of analysis and distribution of SHCs.

### 3. KVK Imphal East (CAU, Imphal)

#### Salient achievements

- Successfully demonstrated SRI on paddy *var. CAU R1* across 286 ha in the district.
- Promoted Composite Fish Culture using *Jayanti Rohu* across 120ha.
- Developed climate resilient IFS (Water weed cum Fish farming) model that gives a B: C ratio of 5.13 in the second year.
- Area expansion of pulses (Black gram, Green gram, Field pea) in 110 ha.
- Improved zero tillage cultivation of rapeseed and mustard in 1200 ha across 28 villages.
- Established credit linkage of Rs. 69, 29,000.00 that benefitted 48 farmers from 6 farmers' club of KVK.
- Demonstrated soil and water conservation measures through 30 *Jalkunds* and 8 farm ponds.

#### Way forward

- Value chain development of important cash crops (*black rice, mushroom*) through value addition, processing and good market linkage.
- Entrepreneurship development and branding for value added products through licensing, improved packaging and proper market linkage.
- Capacity building of farmers through formation of Farmers' Club and Farmers Producer Company on cluster basis.

#### Suggestions

- Proper and permanent fencing of KVK Farm; Fitting of CCTV surveillance camera for better monitoring of KVK Farm.
- Permanent threshing yard and storage facilities with working shed for seeds and planting materials production.

- Multipurpose Community Hall type structures for exhibitions and other programmes.
- Establishment of soil testing lab for soil sample analysis and soil health card distribution.
- Establishment of Tissue Culture Lab for quality planting material production.

### 4. KVK Imphal West (ICAR RC for NEH Region, Umiam)

#### Salient Achievement

- Successfully demonstrated rice *var. RC Maniphou-7*, 10 and 12 that increased yields from 13.87% to 47.6%.
- Promoted 44 Farmers Clubs through 176 SHGs along with technical and financial support.
- Upscaling of Rapeseed and mustard (*TS-36* and *NRCBH-101*), Groundnut (*ICGS-76*) and Soybean (*JS-335*, *DSB-19*) varieties in 424 ha involving 1725 farmers.
- Demonstration of pulses (Field pea, Lentil and Blackgram) varieties benefiting 463 farmers.
- Promotion of back yard poultry farming of *Vanaraja* and duckery of *Khaki Campbell*.

#### Way forward

- To accelerate momentum of TOT and enhance farmer's livelihood through funded projects.
- To make available of quality seeds/ planting materials through Participatory Seed Production.
- To generate huge revenues from revolving fund, planting materials, biological materials etc.
- Strengthening of three existing FPOs for self sustenance and entrepreneurship.
- Better and refined linkages with host and other organizations.
- Backstopping of farmer's need in terms of farm and communities' requirements.

#### Suggestions

- Construction of Administrative building, Staff Quarters, Laboratory facilities etc.

- Promotion of FPO and Farmer Clubs through funding from NABARD and SFAC.
- Number of SMSs may be increased from 6 to 10 nos.
- Processing and warehouse facilities may be provided to each KVK.
- Implement-shed with tools and implements may be established.

## 5. KVK Senapati (NGO KVK)

### Salient achievements

- Promoted oyster mushroom production benefiting 134 farmers and farm women.
- Horizontal expansion of Kiwi fruit spread over 142 ha area in eleven villages.
- Demonstrated maize *var. HQPM-1* in 10 ha area covering about 92 farmers.
- Introduced high value vegetable-Broccoli (*var. KTS-1*) in 3ha involving 18 farmers.
- Upscaled HYVs of pulses in 230 ha area under CFLD benefiting 580 farmers.
- Introduced improved /HYV oilseed crops in 95 ha benefiting 245 farmers.

### Way forward

- Promotion of beekeeping technology in the district.
- Demonstration on cultivation practices for organic broad bean, pineapple and turmeric.
- Demonstration on production technology of fish seed and fingerlings

### Suggestions

- Replacement of old office vehicle.
- Setting up of small-scale bio-pesticides production unit.
- Establishment of poultry hatchery unit, storage facilities and working shed.

## 6. KVK Thoubal (State Dept. of Agriculture, Manipur)

### Salient achievements

- Promoted hybrid rice (*PAC-801, 807, 744*) in 30 villages covering an area of 350 ha.

- Scaling up of mustard variety *NRCHB-101* in 10 villages through Farmers Clubs.
- of Traps and lures technology for pest management in cucurbits and brinjal covering 120 ha.
- Promotion of SRI and Seed production across 50 villages benefiting 255 farmers.
- Establishment of 10 micro-food processing units with *fsai* registration.

### Way forward

- Emphasis on skill development for rural youths.
- Value addition of fruits and vegetables to enhance income and save the wastage of the produces.
- Upgrading of Local cattle through AI with Indian *Milch* Breed.
- Popularization of *Amur crap* and *Jayanti Rohu* in the district.
- Seed productions for cereals, pulses, and oilseeds.

### Suggestions

- Shortage of region-specific technology from institutions and Research Stations.
- Marketing channels for selling large scale produce of important crops.
- Training hall and farmer hostel for residential training programme.
- Soil testing lab with equipments and distribution of SHC.
- Demonstration unit for technology showcasing.
- New vehicles are required.

## 7. KVK Bishnupur (NGO KVK)

### Salient achievements

- Introduction of protected cultivation through 87 shade net houses covering 4.35 ha area.
- Promotion of agro textile in agriculture under Ministry of Textile, Govt. of India.
- Successfully demonstrated Zero tillage cultivation of rapeseed covering 1500 ha of land.

- Promoted Tomato *var. Arka rakshak* in three villages covering 28 ha area.
- Demonstrated nutrient management in rice-rapeseed cropping sequence covering 200 ha.
- *RC-Maniphou-7* under SRI has been promoted covering 150 ha area.

#### Way forward

- Promotion of INM in crops and area expansion under double and multiple cropping.
- Horizontal expansion of IFS and cultivation of low volume high value crops.
- Diversification of aquaculture, other than carps and Community Based Enclosure culture techniques in large water bodies.

#### Suggestions

- Creation of infrastructure for value addition to minimize loss of vegetables, fruits, fishes, etc.
- Creation of infrastructure for promotion of Rural Animal Husbandry Practices.
- Infrastructure for production of quality seed and planting materials for fruits and vegetables.
- Creation of infrastructure for fish seed production.

### 8. KVK Tamenglong (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Promoted Backyard Poultry Production covering more than 270 farm families.
- Established new Tamenglong/ Nagpur Orange orchard in 35 ha area benefitting 89 farmers.
- Demonstrated Zero Tillage Operation on Rapeseed (*M- 27*) involving 863 farm families.
- Upscaled HYVs of Rice (*RC Maniphou-6* and *RC Maniphou-10*) in 320 ha area.
- Established Quality seed production of rice *var. RC Maniphou-5* and 10 in 03 Subdivisions.

#### Way forward

- Participatory Seed Production model is to be established and developed with ICAR Manipur

Centre to meet the demand of quality seeds and planting materials in the district.

- Identification, selection, collection and maintenance of Jhum rice (*Mazinlu, Chakhangba, etc.*) germplasm in-situ and to increase per hectare yield of the Jhum cultivation.
- Demonstrations through Animal based IFS for sustained livelihood of the District.

#### Suggestions

- Vehicle for smooth operation of KVK activities in operational area.
- Development of approached road from zero point to office premises.
- Establishment of staff quarters and Farmer's hostel in office premises.
- Development of demonstration Farm in hilly terrain.
- Establishment of Livestock Production and Management Unit.

### 9. KVK Ukhrul (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Upscaling of HYVs of rice (*RC Maniphou-10* and *RC Maniphou-13*) in 56 ha of land.
- Application of *Jalkund* technology for off-season garden pea production in 8 villages covering 136 ha.
- Established 2 tuber processing units in two villages with support of CTCRI and TSP fund.
- Introduction of Kiwi *var. Hayward, Bruno, Alison* etc. across 120 ha.
- Promotion of carp production through training of 140 numbers of youth.
- Promotion of Rice-Fish culture with common carp across 200 ha.
- Horizontal expansion of *Kachai* lemon covering 25 ha area and increased yield from 49 to 87 q/ha.

#### Way forward

- Entrepreneurship development of rural youth under food processing fisheries, livestock, poultry etc.

- Assist farmers for market linkage through SHC/FC.
- Promotion of organic certification.

### Suggestions

- Provision of vehicle and Farm development.
- Establishment of staff quarters, farmer's hostel and water supply system.
- Establishment of library, laboratory, food processing unit and mushroom unit.
- Storage facilities for seeds and planting materials.

### General Recommendations for the state of Manipur

- For every enterprise viz. agriculture, fisheries and animal husbandry, the state wise data-based GDP should be included.
- More emphasis on Doubling Farmers Income. More number of interventions and activities may be conducted by the KVKs.
- KVKs should present results of OFTs which have significant positive impact.
- KVKs should maintain proper records of the activities and relevant data base.
- KVKs should develop and maintain a good and quality Instructional Farm.
- KVKs should not promote old varieties of crops in farmers' field.
- Land development program should be initiated in every KVK.
- Upscaling of milk and egg production should be targeted by each KVK.
- Specific crops and other enterprises for each district should be identified.
- Conservation of indigenous germplasm should be encouraged by every KVK.
- Deserving KVKs must apply for the awards in National, State and Zonal levels.
- The target for Soil Health Card (SHC) should be 1000. per year for each KVK.
- Convergence with line departments and stakeholders to be given paramount importance.

- Funds under the HRD component may be utilized for visiting the best KVKs at zonal and national levels.
- All KVKs must maintain their websites in dynamic mode with regular updates.
- Presentation should include a success story highlighting the significant impacts.
- More focus on climate resilient agriculture should be given .
- Contingent planning should be prepared for mitigating any unforeseen situation and development.
- KVKs should increase the revolving funds amounting upto 10 lakhs.
- KVKs having more coverage of forest area should try rearing mithun in consultation with NRC Mithun for income generation.
- Feedback of *KMAS* may be collected from farmers to ascertain the impact of the initiative.
- Increase the target production of pulses and other crops especially through seed hub programme to meet the quality seed requirement in other districts of the region.
- Ascertain the enterprise-wise expenditure, income and profit for the benefit of farmers.
- The KVK should focus on farmer centric, location specific and low-cost technologies.
- Rainwater harvesting with the help of *Jalkund* technology at farmers level may be encouraged for irrigation purpose during lean period.
- Varieties with less than 5 years old may be given priority for consideration and recommendation to farmers.
- Proper documentation and publication on impacts of different activities and programmes.
- Identification of high value crops and value addition must be taken up for enhancing farmers' income.
- More efforts for replication of successful intervention among farmers in the district

## State: Mizoram

### 1. KVK Aizawl (CAU, Imphal)

#### Salient achievements

- Promoted rice *var. CAU R-1*, covering 42 ha area in 11 villages benefiting 84 farmers.
- Upscaled pea *Var. Azad Pea-3* covering 24 villages with 29.8 ha area benefitting 149.
- Horizontal spread of Broccoli *var. Solan Head* in 11 villages benefitting 125 farmers.
- Promotion of tomato *var. Arka Rakshak* under low cost polyhouse in 21 villages.
- Scaling up of pig breed *Large White Yorkshire* in 41 villages benefiting 410 farmers.
- Horizontal expansion Briquette *Chulha* and briquette maker in 10 villages.
- Horizontal spread of IDM of soft rot of Ginger in hilly areas (22 villages) in 80.5 ha area.

#### Way forward

- Doubling of farmers' income in adopted villages.
- More number of operational villages for OFTs and FLDs.
- Enhancement in the production and area of high value crops.
- Entrepreneurship development of rural youth under livestock and poultry.
- Emphasis on improvement of market linkages.
- More focus on post harvest management activities and value addition of farm produce.
- Emphasis on the Skill development training for school dropouts.

#### Suggestions

- Establishment of mushroom spawn production unit, poultry hatchery unit and fish seed production unit in the KVK campus/ farm.
- Farm implements and storage structure required for the storage of seeds, fertilizer, etc.

- Ministerial staff like storekeeper, office assistance is required to run the office smoothly.
- The promotion for KVK staffs should be ensured and it should be implemented timely.
- Minibus is required for execution of trainings and extension activities.

### 2. KVK Champhai (Dept. of Agriculture, Research and Education, Mizoram)

#### Salient achievements

- Upscaled tomato *var. Arka rakshak* and *Arka samrat* for off-season benefiting 40 farmers.
- Introduction of garlic variety *G-282* covering 13 ha area benefiting 30 farmers.
- Promotion of Oyster Mushroom for self-employment covering 380 rural youth and farmers.
- Demonstrated young paddy seedlings, line planting by use of wooden marker and use of pre-emergence weedicides at three adopted villages benefitting 165 farmers.
- Promotion of seed treatment, use of healthy rhizome of ginger through trainings, trials and demonstration at 8 villages, covering 40 ha area.
- Promotion of vermicompost for rural youth and farmers at 5 villages benefitting 27 farmers.

#### Way forward

- Development of IFS model and infrastructure for PHT and Value addition. Marketing channel of ginger, pineapple, *Mizo chilli* and other indigenous/ locally available important crops are to be established.
- Promotion of double cropping and rainwater conservation in convergence with the line department of the district.
- Exploration of medicinal and aromatic plants are to be done while keeping in view of their conservation aspects.
- Improvement of *jhuming* scenario through fusion of modern scientific approaches with

farmers' practices, alongside collection, validation and dissemination of ITKs.

### Suggestions

- Establishment of Farmers Service Centre, Information support system and plant nutrition diagnostic Centre with advance equipment.
- Establishment of disease-free seedling production unit, farm shed, godown, working shed for seed and planting materials production.
- Establishment of model organic farm and herbal garden at KVK Demonstration Farm/ unit.
- Provision of boundary wall fencing and development funds for establishment of farm approach roads and internal roads with farm electrification.

### 3. KVK Kolasib (Dept. of Agriculture, Research and Education, Mizoram)

#### Salient achievements

- Promotion of rice variety *CAUR-1 (Tampha Phou)*, enhanced the productivity to 48q/ha.
- Demonstrated Zero Tillage of oilseeds crops covering an area of more than 15ha.
- Timely supply of Quality Planting materials through Community Nursery covering five potential villages of the districts.
- Promotion of Broom cultivation with suitable scientific intervention in degraded *Jhum* fallows and wasteland.
- Horizontal spread of *Vanaraja*, *Gramapriya*, *Kamrupa* and *Rainbow Rooster* through 15 SHGs and 5 farmers' club benefiting 1120 farmers.

#### Way forward

- Establishment of permanent nursery for quality planting materials especially for fruit crops and plantation crops.
- Production of day-old chicks by setting up high capacity-Incubator and Hatchery unit.
- Pig based Breeding unit may be set up for production of high-quality breeds of piglets.

- Filling up of vacant post (i.e., SMS in Agronomy) at the earliest.

### Suggestions

- Construction of new infrastructures (Administrative Building, Farmer's Hostel and additional Staff Quarters).
- Permanent/brick wall fencing of KVK Complex due to heavy encroachment.
- Construction of high volume/capacity Water Harvesting Structures with Micro-irrigation facilities for Demonstration cum Instructional Farm.
- Additional/Separate funding for improvement and development of instructional farm and demonstration unit.
- Establishment of Mushroom Spawn Production Unit.

### 4. KVK Lawngtlai (Dept. of Agriculture, Research and Education, Mizoram)

#### Salient achievements

- Promotion of improved Soybean *var. JS 335* covering 30 ha benefiting 180 farmers.
- Demonstrated improved Groundnut *var. ICGS 76* with polythene covering an area of 27 ha area.
- INM in cabbage covering an area 17 ha benefiting 23 numbers of farmers in the district.
- Upscaled vitamin and mineral supplementation with regular deworming in pigs covering 12 villages benefiting 320 numbers of farmers.
- Demonstrated value addition on mango benefitting 250 farmers in the district.

#### Way forward

- Promotion of oyster mushroom production technology through SHG.
- Large scale production of Vermi-compost.
- Value addition and marketing channel of Mango.



- Scaling up of Improved Pig breed (*Large White Yorkshire*).

#### Suggestions

- Repairing and maintenance of administrative building, staff quarters, farmers' hostel and demonstration units.
- Establishment of mushroom spawn's production unit, vermi-compost production and hatchery unit.
- Maintenance of internal link road of KVK Complex.
- Timely release of Fund to implement mandated activities as per schedule.

### 5. KVK Lunglei (Dept. of Agriculture, Research and Education, Mizoram)

#### Salient achievements

- Introduction of Maize *var. HQPM -1* across 26 ha increased the productivity to 34.72%.
- Adoption of acid soil management in lowland paddy by 75 farmers covering 50 ha area.
- Demonstration of vermicomposting through 14 units at 5 villages.
- Demonstrated Citrus rejuvenation through NPK application covering 70 farmers.
- Upscaled dual purpose breed of poultry covering 5 villages benefiting 100 farmers.
- Sustainable production of poultry using hatchery covering 10 villages.
- Promotion of entrepreneurship development in the field of PHT and value addition.
- Promotion of entrepreneurship in pig breeding among RY by establishing 5 units.
- Promoted HYVs of tomato, chilli, french bean and cabbage benefiting 125 farmers.
- Scaling up of Nutrient management in Dragon fruit technology covering 10 ha area.

#### Way forward

- Entrepreneurship development of rural youth under post harvest, livestock and poultry.
- Emphasis on the Skill development training

for the drop outs and educated unemployed youth.

- Resource conservation technology and Climate resilient production technologies.

#### Suggestions

- Establishment of storage facilities, better soil testing laboratory and distribution of soil health cards.
- Power back up facilities for continuous functioning of laboratory, machineries, office woks and like.

### 6. KVK Mamit (Dept. of Agriculture, Research and Education, Mizoram)

#### Salient achievements

- Successfully demonstrated Okra *var. (Arka Anamika)* and French bean (*Arka Komal* and *Arka Anoop*) in 60 ha benefiting 231 farmers.
- Upscaled backyard poultry bird *Vanaraja* in 19 villages with 194 beneficiaries.
- Effectively demonstrated Paddy cum Fish culture in WRC area benefiting 73 farmers in 17 ha of area.
- Promoted composite fish culture of Indian and exotic carps benefiting 147 farmers.
- Demonstration of year-round vegetables cultivation by constructing 35 Shade net house.
- Disbursement of Oyster mushroom spawns has benefited 93 farmers.
- Horizontal expansion of NADEP composting by establishing 300 NADEP pit covering 300 farmers in 15 villages.

#### Way forward

- To promote integrated farming system in the district for sustainable development.
- Great Scope for fishery, piggery and poultry in the district. Convergences/ linkages are to be created with line department to meet the demand of the district.
- Promotion of protected cultivation of vegetables for round the year production.

- Post harvest management and value addition of agriculture and its allied for increasing farmer's income.

### Suggestions

- Enhancement of farm development fund for better farm management.
- Permanent fencing of instructional/demonstrational farm boundary and replacement of barbed wire fencing of office compound with permanent fencing.
- Replacement of KVK tractor which was beyond repaired due to an accident.
- Renovation and furnishing of farmer hostel.

## 7. KVK Saiha (Dept. of Agriculture, Research and Education, Mizoram)

### Salient achievements

- Horizontal spread of scientific cultivation of cabbage across 36 ha covering 5 villages.
- Integrated Pest Management of fruit fly at *Koachao East* village covering 31 ha of land.
- Large scale demonstration of SRI Method across 59 ha covering three villages.
- Promotion of high-quality protein maize *HQPM-1* in 37ha covering four villages.
- Promotion of nutritional garden covering 107 households.
- Cultivation of *Mizo chilli* under *Jhum* condition covering 108ha in 5 villages.

### Way forward

- Value addition and marketing channel of *Mizo chilli*, ginger, turmeric, mango and dried flower.
- Convergence/linkages are to be created with the state department to meet the demand of piglets and chicks for higher production.
- Large scale demonstration on different strawberry variety and maize germplasms.
- Promotion of semi intensive management of mithun for higher production.
- Mushroom spawns' production and Bee keeping increasing income of the farmers.

### Suggestions

- Complete Repairs and Renovation of Administrative building, Farmer hostel and four Staff Quarters.
- Construction of modern training hall with all necessary equipments and facilities.
- Expansion of farm area with proper fencing besides enhancing farm development fund..
- Establishment of various agriculture and allied demonstration unit.
- Construction of godown, water reservoir and rainwater harvesting structures.
- Establishment of Plant health clinic, Animal clinic, Home Science Laboratory, Tissue culture laboratory and Soil, Seed and Water testing laboratory with all the necessary equipments.
- Job security like pension benefits is imperative for the staff to ensure maximum performance.
- KVK Staff strength and pay structure as per High Power Committee demand.

## 8. KVK Serchhip (Dept. of Agriculture, Research and Education, Mizoram)

### Salient achievements

- Large scale demonstration of Gooseberry processing technique by 102 farmers covering 38 ha in four villages.
- Promoted intercropping of Ginger with Soybean under rainfed terrace cultivation covering 42 ha area benefitting 53 farmers.
- Promotion of cultivation of lentil in rice fallow by 55 farmers covering 30 ha area.
- Demonstrated successfully Citrus rejuvenation among 127 farmers covering an area of 78 ha area.
- Promoted Zero tillage of late sown Toria (*var. TS-67*) in 38 ha benefiting 67 farmers.

### Way forward

- Convergence with line Departments for better horizontal spread of the technology assessed by KVK without creating conflicts.
- Establishment of proper Piggery Demonstration units with proper fencing and

recruitment of permanent staff as there is a great demand for piglet production.

- Establishment of mushroom spawn production unit on a pilot scale.

### Suggestions

- Establishment of demonstration units for poultry hatchery and Oil extraction on a pilot basis.
- Enhancement of Farm development fund with boundary wall of Instructional farm.
- Storage facilities with working shed for seeds and planting materials production.
- Establishment of soil, water and plants tissue testing lab and distribution of SHC.
- New vehicles, farm machineries and implements are urgently needed for the smooth functioning of KVK activities.

### General Recommendations for the state of Mizoram

- While appreciating the remarkable support rendered by host institute of KVKs, the QRT suggested for extending more support and cooperation with the KVKs in Mizoram through collaborative programmes for the development of farming communities in the state.
- Efforts may be taken for commercialization of technologies/ products through KVKs after processing / value additions.
- Honey production at field level must be promoted through KVKs.
- Specify the components-wise expenditure, income and profit in integrated farming system.
- Increase quality seeds and planting materials production to meet the requirements of farmers.
- Increase Revolving Fund (RF) status by all KVKs.
- Citrus rejuvenation particularly *Khasi mandarin* may be taken up at the earliest by the KVKs.

- Storage and marketing facilities at district level may be improved for high remuneration to the farmers.
- Fish breeding programme (*Silver Barb*) may be taken up by the KVKs, more particularly KVK-Mamit
- Production and promotion of spawn and round the year mushroom by KVK.

## Phase IV (Tripura and Arunachal Pradesh)

### State: Tripura

#### 1. KVK South Tripura (ICAR RC for NEH Region, Umiam)

##### Salient achievements

- Promoted medium duration rice *variety Gumati* in 10 villages covering 1280 ha.
- Demonstrated African marigold *var. Pusa Narangi, Gaindaand Pusa Basanti* in 3 villages with 26 numbers of rural youth in 4 ha of land.
- Upscaling of *BND* chicken breed as backyard farming in 18 villages benefiting 826 farmers.
- Promotion of *Amur* as a candidate species for pond fish farming covering 23 villages and 246 fish farmers in four blocks.
- Demonstration of carp fry and fingerling production technology in seasonal ponds covering 16 villages and 52 farmers.

##### Way forward

- There is a great scope for piggery in the district as substantial portion of the population belongs to Schedule Tribe. Artificial insemination technology may be promoted.
- Value addition and marketing channel are to be explored in jackfruit and such available potential materials/ agricultural crops or commodities.
- Promotion of organic farming technology.

##### Suggestions

- A full flagged soil testing laboratory is highly demanding due to high demand of Soil test among farmers.

- Facilities like working shade for seed and planting materials, storage facilities for fertilizers, plant protection chemicals, farm implements etc. is utmost necessary.
- Shortage of KVK staff hampers most of the activities, so vacant staff position should be filled up for smooth functioning of KVK activities.
- Establishment of mushroom spawn production unit as there is no such unit in the entire South Tripura district.
- Replacement of office vehicle.

## 2. KVK Dhalai (State Dept. of Agriculture and Farmers Welfare, Tripura)

### Salient achievements

- Promoted drought tolerant HYV paddy variety *Sahabhazi dhan* covering 220 ha area.
- Demonstrated Straw mulching in bitter gourd covering 30 ha area and 170 farmers.
- Large scale demonstration of submergence tolerant variety *Swarna sub-1* in the flood prone area covering more than 700 ha of area.
- Introduced Minimum tillage in lentil cultivation in rice fallow area covering 750 ha.
- Horizontal expansion of NADEP composting for production of Organic Manure through 300 NADEP pits covering 300 farmers in 25 villages in the district.
- Upscaled oilseed production through CFLD on oilseed covering 250 ha area.
- Plantation programme involving rubber and fruit plants in 96 ha area benefiting 356 farmers and additional 25 ha area is brought under irrigation through establishment of 56 farm pond under PMKSY project.

### Way forward

- Promotion of oilseed and pulses in the district to utilize vast area of fallow land during the Rabi season by zero tillage method.

- To meet with climatic aberration more effort on climate resilient technologies to be taken up mainly to overcome flood and drought.
- Effort on *Jhum* areas for increasing production and productivity through organic practice.

### Suggestions

- Establishment of demonstration unit with proper fencing and enhancement of farm development fund with boundary wall of Instructional/demonstration farm.
- Strengthening KVK by filling up all vacant posts.
- Development of storage facility and other infrastructure facilities.

## 3. KVK North Tripura (State Dept. of Agriculture and Farmers Welfare, Tripura)

### Salient Achievements

- Successful demonstration of TPS to Tuberlet production with TPS var. *HPS III/ 67* with horizontal expansion through Farmer and rural youth covering 52 ha area in 37 villages benefiting 315 farmers in the district.
- Demonstration of polyculture of Pabda Fish (*O. bimaculatus*) with IMC in the district with horizontal expansion through farmer and rural youth covering 39 ha area in 24 villages benefiting 245 farmers in the district.
- Upscaling of INM in paddy along with azolla dual cropping in the district with horizontal expansion through Farmer and rural youth covering 45 ha area in 17 villages benefiting 135 farmers in the district.
- Promotion of IIHR tomato var. *Arka Rakshak* in the district with horizontal expansion through Farmer and rural youth covering 29 ha area in 16 villages benefiting 195 farmers in the district.
- Demonstrated IFS module on Duck cum fish culture with *Khaki Campbell* var. in the district with horizontal expansion through Farmer and rural youth covering 32 ha area in 21 villages benefiting 220 farmers in the district.

- Promoted *BND* cross of poultry in backyard farming system in the district with horizontal expansion through Farmer and rural youth covering 15 villages benefiting 150 farmers in the district.
- Horizontal expansion of high yielding and ultra short duration variety of paddy *CO-51* in the district with horizontal expansion covering 80 ha area in 17 villages benefiting 246 farmers in the district.
- Promoted high yielding and ultra short duration variety of paddy *Dishang* in the district with horizontal expansion covering 105 ha area in 18 villages benefiting 265 farmers in the district.
- Upscaled value addition in fishes and production of value-added fish products in the district through women SHGs covering 23 SHGs and 235 nos. women farmers.
- Promotion of oyster and milky mushroom production technology through farmer / rural youth / SHGs covering 430 farmers in the district.

#### Way forward

- As there is a great scope for fishery integration with duck and piggery in the District convergence / linkages are to be created with the state department to meet the demand of duckling and piglet production.
- Large scale demonstration on IFS, mushroom and floriculture with improved varieties is required for financial upliftment.
- *Catfish / Pabda* hatchery are to be increased in number/ capacity to meet the requirement of catfish seed/ *pabda* seed in the district.

#### Suggestions

- Establishment of demonstration units in KVK farm with proper boundary wall fencing and enhancement of Farm development fund.
- Establishment of soil testing lab for better analysis of soil samples of farmers and ease in distribution of soil health cards.

- Establishment of mushroom spawn production unit in KVK.
- Establishment of farmers' hostel for ease in conducting residential / vocational training programme.
- Establishment of value addition unit with modular kitchen for more value addition related works in Fishery/Agri./ Hort sectors.

#### 4. KVK Khowai (NGO KVK-Ram Krishna Seva Kendra, Kolkata)

##### Salient achievements

- Horizontal expansion of Paddy *var. Gomoti* through Farmers Clubs covering an area of 5000 ha.
- Introduced Scientific Oilseeds and Pulses cultivation through farmers clubs covering 140 ha.
- Formation of 92 Farmers Clubs and Management of Farmers Clubs for TOT.
- Increase in Cropping Intensity (from 116% to 170%) in NICRA adopted village through Climate Smart Technologies.
- Introduction of Soil Test Based Nutrient Management and recommendations based on SHCs covering 69 villages.
- Demonstrated Management of fruit fly in Bitter gourd in 38 ha area of the district.
- Upscaled cultivation of ginger through two farmers clubs covering an area of 15 ha.
- Promoted Household pig cum fish farming in the district.
- Demonstrated carps under different stocks and harvest system in 42 ha area of the district
- Promotion of oyster mushroom production through 14 farmers clubs benefitting 160 farmers.

##### Way forward

- Strengthening of marketing channels of spine gourd and pointed gourd.

- Climate resilient technologies that have been found to be effective in the NICRA adopted villages are to be scaled out to the whole district in a convergence mode with the Line Departments.
- Pilot Scale Demonstration of Organic Pineapple, Lemon cultivation with Certification needs to be carried out in a Convergence mode.
- It was suggested that Breeder's seed may not be possible to produce by the KVKs.
- Enhance production of quality seeds and planting materials as critical inputs.
- Instructional farms of KVKs must be developed as model farm of the district.
- Technology backstopping to KVKs by CAU and ICAR in frontier areas of agricultural development may be ensured.

### Suggestions

- Construction of Office building, Farmers hostel, Boundary wall/fencing, Staff quarter.
- Need to increase contingency fund at least 20% of the total staffs' salary.
- Timely disbursement of fund for different Flagship programmes.
- New vehicle is required for carrying inputs.
- ICAR Rules to be followed in all aspects including promotion of staffs, leave rules and other allowances.
- New extension approaches such as ICTs applications, whatsapp groups, mobile advisory services etc. for larger coverage of farmers in remote areas in time.
- KVKs website must be functional in dynamic mode with regular updates.
- Increase Revolving Fund (RF) status with minimum balance of Rs. 5 lakhs for each KVK.
- Promote Integrated farming system model among the farmers and develop database on component wise share in the total gross income.

### General Recommendations for the state of Tripura

- The vacancies of posts in KVKs may be filled up as soon as possible either on contractual or permanent mode.
- It was suggested that district-wise specific strategies for fish yield enhancement (production and productivity) to be prepared by College of Fisheries, Lembucherra in collaboration with all KVKs in the state.
- Benchmark survey through PRA to ascertain the present status of agriculture and allied sectors and issues relevant to agricultural development in the state.
- Suggested to develop of low cost / farmer friendly catfish and pabda fish seed production hatchery by College of Fisheries, Lembucherra which may be promoted through KVKs.
- KVKs may not necessarily to take up varietal evaluation for OFT / FLD experiments but only varietal testing of feasibility through assessment and refinement at farmers' fields.
- QRT also encouraged KVKs to publish their field-oriented researches and other activities to the Journals having high impact factor, may be in a journal having a NAAS rating of more than 6.
- Maintain proper records of daily farmers visit to KVKs with their purpose of visits.
- Number of Soil health cards (SHCs) may be increased to 1000 per year and increase TV/ radio talks by KVK scientists.
- Calculate B:C ratio for IFS models in KVKs.
- Promote tuber crops like elephant foot yam, tapioca etc.
- Focus may be given on fishery, no-till, conservation tillage, tilla land agriculture etc for the state of Tripura.
- Implementation of community-based nursery, location specific integrated farming system model.
- Weed management practices, weedicides/ herbicides tested under Tripura condition

may be used in consultation with Directorate of Weed Science Research, Jabalpur.

- Promote rabi crops with low residual moisture.

## State: Arunachal Pradesh

### 1. KVK Namsai (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Promoted Rice variety *Ranjit* in more than 100 ha benefiting more than 300 farmers.
- Horizontal spread of 'Composite Fish Culture' technology covering more than 60 ha area.
- Horizontal spread of Paddy cum Fish Culture technology covering more than 50 ha area.
- Demonstrated successfully Fish cum duck (*var. Khaki Campbell*) / Pig (improved cross breed *var.*) integrated farming covering more than 50 farmers from 19 villages.
- Promotion of Oyster mushroom production through women SHGs in 17 villages.
- Scaling up of Backyard poultry farming (*Kamrupa, Vanaraja and Kalinga Brown*) in 21 villages.
- Constructed 300 NADEP pits covering 300 farmers in 15 villages for the promotion of organic farming under KKA -I.

#### Way forward

- Establishment of nursery for providing the disease-free quality planting materials of Ginger, Turmeric and other horticultural crops.
- Value addition and Processing of locally available indigenous fruits and Vegetables.
- Establishment of Hatchery units and Pig/Goat breeding centre by KVK Namsai.
- Establishment of aquarium fish breeding unit and recirculatory aquaculture system (RAS) at KVK.

#### Suggestions

- Documentation of the success story of A.I done by the KVK under KKA.

- Documentation of the success story on composite fish farming, calculate the profitability of each components in IFS model.
- Application for the Best KVK Award at National Level.
- Complete documentation on details of KKA must be submitted to the ATARI.
- Compile the Success Story of Mushroom of entire state and submit to ATARI.

### 2. KVK Upper Subansiri (State Dept. of Agriculture, Arunachal Pradesh)

#### Salient achievements

- Promotion of IFS with transplanted rice gives an annual income of approx. Rs.4.5 lakhs.
- Adoption of vermi-composting technology gives an annual income of Rs. 92, 400.
- Paddy-cum-fish culture benefits 14 farmers and farm women with Rs.1,31,000/-per annum.
- Promoted paddy *var.TTB 404* gives an additional income of Rs.10,850/- per ha.
- Upscaled value addition of tapioca into chips benefiting 281 farmers from 8 villages.

#### Way forward

- Encourage farmers for proper grading and scientific packaging for transportation and sale in auction centre outside the district and through e-NAM for higher profitability.
- Value addition of *king* chilli are to be explored.
- Promotion of new HYV of paddy, maize, soya bean and other crops.

#### Suggestions

- Infrastructure development (office building with staff quarter, farm with fencing and farm equipments).
- Full strength of staff in the KVK must be maintained in all the time for better achievement.

### 3. KVK Lower Subansiri (State Dept. of Agriculture, Arunachal Pradesh)

#### Salient achievements

- Promoted babycorn *var. HM-4* through 5 SHGs covering 4 ha benefiting 80 farmers.
- Upscaled Maize variety *HQPM 1* and *2* through 10 farmers club benefitting 200 farmers.
- Promotion of oyster mushroom production technology through 8 women, 5 farmers club and 4 SHGs benefitting 120 farmers.
- Scaling up of vermi-composting and established 23 vermi- units in 7 villages.
- Demonstrated *Onion cultivar Agrifound Dark Red* as summer crop under high hill rainfed conditions covering 3.2 ha benefiting 140 farmers.
- Demonstration of *Azolla cariolina* in Ziro area benefitting 200 farmers from 10 villages.
- Promotion of organic nutrient management (Azolla compost @5t/ha+200gm Azotobacter mixed PSB at leaf initiation on strawberry) benefitting 20 farmers from 4 villages.
- Introduction of *Onion cultivar Agrifound Light Red* as Rabi crop for winter fallow land covering 160 farmers and 4.2 ha.
- Promoted plastic mulching in vegetables for weed management covering 7 ha area.

#### Way forward

- Value addition and marketing channel of turmeric and ginger are to be explored.
- Convergence /linkages are to be created with the state department to meet the demand of poultry and piglet production.
- Promotion and area expansion under polyhouse and poly walk in tunnel for off season vegetable cultivation in temperate zones of the district.

#### Suggestions

- Need more land for KVK farm since present area is only 2 ha including area under administrative building. This needs to be resolved by the state department at the earliest.

- Establishment of demonstration unit with proper fencing and enhancement of farm income.
- Storage facilities with working shed for seeds and planting materials production.
- Establishment of soil testing lab with equipment for analysis of soil samples and distribution of soil health cards.
- Establishment of Water storage structures through water harvesting structures and tanks.
- Construction of staff quarters within KVK Campus for smooth functioning of KVK.
- Proper Impact analysis of Technologies demonstrated needs to be done.
- Mapping of operational villages by the KVKs.
- Undergo training programme on technical writing/ report writing.

### 4. KVK Papumpare (State Dept. of Vety. and A.H. Arunachal Pradesh)

#### Salient achievements

- Promoted inter-cropping of *Khasi Mandarin* with *HDP Pineapple* among 800 farmers.
- Kendra facilitates the formation of one FPO registered as *Arunachal Farmers Producer Cooperative Society* during 2018 consisting of more than 200 members from 30 established farmers clubs.
- Demonstrated Agro textile shade net house technology for vegetables nursery raising and off-season vegetables production to 124 farmers.
- Promoted Community Mithun Rearing and Conservation Centre at *Doimukh* and *Kimin* benefiting 144 farm families.

#### Way forward

- Promotion of Integrated Farming System.
- Utilization of fallow land after harvesting of Paddy with Oilseeds, Pulses and Vegetable crops.
- Establishing scientific demonstration and production units at KVK campus to showcase income generating technologies.



- Promotion of Multi-storied cropping system in the district.
- Mapping of Operational Villages by the KVKs.

### Suggestions

- To enhance the performance and sincerity in discharging duties, timely salary of staff and terminal benefits like NPS, gratuity must be extended.
- Staff Quarters are required to encourage the staffs for monitoring of farm activities and farmers hostel for on-campus training programme.
- Establishment of Scientific Demonstration and Production unit with proper bio-security measures.
- Boundary wall, approach road, Gen-set, E-connectivity, irrigation facilities, Storage facilities (Godown) with threshing yard and farm mechanization shed should be provided.

## 5. KVK Upper Siang (State Dept. of Agriculture, Arunachal Pradesh)

### Salient achievements

- Promoted *Khasi* Mandarin cultivation by providing 10000 quality seedlings to the farmers.
- Promotion of mushroom cultivation among the SHGs gives a total income of Rs. 60000/-
- Development of Large cardamom plantation, orange plantation and fisheries brought an annual income of around 1.3 lakh rupees.
- Demonstration of French bean variety *Anupama*.
- Promotion of Integrated farming system with piggery and fishery.

### Way forward

- Intensive and extensive cultivation for increasing production and productivity.
- Reducing post-harvest losses and value addition.
- Need based and realistic based capacity building for knowledge and skill development.

### Suggestions

- Establishment of soil testing lab with equipment for ease in analysis of soil samples and distribution of soil health cards.
- Establishment of demonstration unit with proper fencing and boundary wall.
- Establishment of mushroom spawn production lab.
- Establishment of value addition lab for locally available produces like ginger and large cardamom.
- Expedite the matter related to land encroachment with the support of District Administration and Host Institute.

## 6. KVK East Kameng (State Dept. of Agriculture, Arunachal Pradesh)

### Salient achievements

- Promoted paddy variety *TTB-404* in 30 ha involving around 40 farmers in 16 villages.
- Established 26 Vermicomposting units in the KVK operational area.
- Demonstration of edible mushroom cultivation technology through woman farmers has led to commercialization of mushroom by individual farmers, 7 SHGs and 70 farmers.
- Horizontal spread of IFS (Fish-Poultry-Horti) in 30ha area covering 29 farmers in 12 villages.
- Promoted Potato variety *Kufri Pokhraj* and *Kufri Jyoti* in 150 ha benefitting 110 farmers.
- Demonstrated citrus rejuvenation among the old orange farmers in 32 ha area.
- Promotion of an improved soybean variety *JSS 3355* in 36ha area covering 4 villages.
- Introduced banana variety *G-9* in more than 17 ha of areas involving 30 farmers.
- Demonstrated Cow pea varieties *Kashisudha* and *Kashikanchan* in 22ha area.

### Way forward

- More focus on promotion of organic module of IFS for sustainable income generation.

- Value addition of soybean, mushroom, ginger and turmeric must be explored with reliable marketing channel.
- Backyard poultry and piggery have enormous scope for sustainable income generation.
- Promotion of apple seedling nurseries for quality seedling production and supply to farmers of the district and other parts of Arunachal Pradesh.

#### Suggestions

- Provision of fencing for proper protection and demonstration programmes.
- Installation of irrigation channels for better performance of KVK farm area.
- Maintenance of office building with staff quarters.
- Replacement of 10 years old vehicle is required.

### 7. KVK Tawang (State Dept. of Agriculture, Arunachal Pradesh)

#### Salient achievements

- Demonstration of groundnut variety *GG-8* in 29 ha area benefiting 69 farmers of 6 villages.
- Promotion of paddy variety *CAUR-1* in 30 ha area benefiting 49 farmers of 7 villages.
- Upscaling of soybean variety *JS-9560* in 42 ha area benefiting 73 farmers of 9 villages.
- Demonstration of eco-friendly management of insect pests in cole crops benefiting 63 farmers.

#### Way forward

- Value addition and marketing of potato finger millet, local vegetables are to be explored.
- Area expansion of *Walnut* and *Kiwi*.
- Establishment of Mushroom spawn production laboratory.

#### Suggestions

- Establishment of Storage facilities with working shed for seeds and planting materials production.

- Establishment of soil testing lab with equipment for ease in analysis of soil samples and distribution of soil health cards.
- Issues of approach road should be resolved at the earliest.

### 8. KVK East Siang (CAU, Imphal)

#### Salient achievements

- Promoted rice *Var. CAU-R1* in 200 ha covering 93 villages benefiting 400 farmers.
- Upscaled Toria *Var. TS-38* in 150 ha covering 48 villages and 198 farmers.
- Promoted dual purpose *Vanaraja* bird spread over 750 farmers covering 20 villages.
- Successfully demonstrated of Poly culture of Indian Major Carps (*Rohu, Catla and Mrigala*) with Exotic carp (*Grass carp, Silver carp and Common carp*) in 12 villages covering 20 ha.
- Promotion of Paddy mechanization using Rotavator, Mechanical paddy transplanter, Paddy reaper, High capacity paddy thresher in 6 villages that benefitted 130 farmers.
- Upscaled Sesame cultivation in 131 ha benefiting 128 farmers from 27 villages.
- Horizontal spread of low cost vermicompost in 12 villages.
- Horizontal spread of low cost cultivation of Oyster Mushroom in 10 villages.

#### Way forward

- Entrepreneurship development programmes for rural youth
- Vegetable and oilseed cultivation in rice fallow for increasing cropping intensity and DFI
- Farmer's participatory seeds and planting materials production along with storage facilities.

#### Suggestions

- Establishment of Laboratory facilities (Soil testing, processing) and Farmers' Hostel.
- Establishment of Demonstration unit of Poultry and fish hatchery

- Establishment of processing unit for ginger and turmeric.

## 9. KVK West Kameng (State Dept. of Agriculture, Arunachal Pradesh)

### Salient achievements

- Upscaled garden pea in Yewang covering 15 ha and benefitting 70 farmers & farm women.
- A progressive farmer of Namthung village was conferred the “Krishak Samrat Samman” 2017 under the category of more than 20 acre area for developing an innovative technology that reduced the cost of production and increasing the number of plants per acre.
- Promotion of low cost vermicomposting in DFI adopted Chug village covering 40 farmers.
- Demonstration of paddy cum fish farming under Chug village covering 10 beneficiaries.
- Seed treatment of legumes with *Rhizobium* through training cum demonstration to improve the nodules formation through symbiotic-Nitrogen fixation for higher return.

### Way forward

- Market linkage for Kiwi, Persimmon to fetch higher return.
- Area expansion for cold season vegetables can be explored.
- Agro Processing unit can be set up for value addition

### Suggestions

- Proper fencing /boundary wall to carry out demonstration at farm.
- Approach road to KVK for all weather condition.
- Construction of quarters for all the staffs.
- Maintain database of the Farmers of the districts.
- Details of demonstrations on Composite fish culture must be documented.

## 10. KVK Tirap (State Dept. of Agriculture, Arunachal Pradesh)

### Salient achievements

- Promoted Sali rice variety *CAUR-1* in 25 villages covering area of 340 ha and summer rice variety *Dehangi* in 43 villages covering 460 ha areas.
- Integrated weed management in summer rice with *butachlor* 1.5 kg *a.i.* /ha and wheel hoe increased 58% yield over farmers practice with horizontal spread in 21 villages.
- Promoted up gradation of pig with 75% *Hampshire* spreading across 34 villages.
- Horizontal spread of scientific low-cost pig sty in 32 villages benefitting 410 farmers.
- Promotion of plastic mulching in high value crops across 6 ha area benefitting 75 farmers.

### Way forward

- Double cropping by utilizing fallow areas after harvesting of kharif rice with pulses, oilseeds, and vegetable crops.
- Farm mechanization and irrigation facilities.
- More emphasis to animal husbandry, fishery and horticulture.
- Employment generations activities through secondary and tertiary agriculture.
- Proper convergence with other line departments for effective functioning of KVKs.
- Maintain and update Farmers database/ demography of the entire district.
- Expedite the Soil health Card distribution activities in the district.
- Establishment of integrated farming system model for more income from less area.

### Suggestions

- Development of instructional farms of KVK in a scientific way in consultation with experts.
- Increase the status of revolving fund through income generating activities.

- Establishment of storage facilities with working shed for seeds and planting materials production.
- Establishment of poultry and piggery farms as there is high demand for meat in the district.
- Drip and sprinkler irrigation facilities in farms.

## 11. KVK Lower Dibang Valley (State Dept. of Agriculture, Arunachal Pradesh)

### Salient achievements

- Promoted INM and IDM in Ginger covering 145 ha area benefitting 127 farmers.
- Upscaled oyster mushroom production benefitting 47 SHGs covering 486 farm women.
- Demonstrated *Vanaraja* breed of poultry benefitting 59 farmers in the district.
- Promoted Vermicomposting production for organic farming benefitting 64 SHGs and rural youth.
- Value addition and food processing of locally available fruits and vegetables benefitting 55 SHGs.
- Promoted Community fish smoking Kiln (*CoFISKI*) and distribution to 28 SHGs.

### Way forward

- Effort to explore the ways of establishing spawn production laboratory.
- Production of quality seeds and planting materials within KVK campus.
- Exploring linkages for farmers and markets for quality chicks, input supply and thus catapulting poultry farming to a new high in the district.

### Suggestions

- Establishment of hatchery unit for quality day old chick production.
- Storage unit facilities for germplasm preservation.
- High tech polyhouse for production of quality planting materials.

- Animal health care unit at KVK campus.
- Small processing unit for value addition of locally available fruits and vegetables.
- Maintain database of the Farmers of the districts.
- Increase the revenue through proper utilization of revolving fund.

## 12. KVK West Siang (ICAR RC for NEH Region, Umiam)

### Salient achievements

- Tested and promoted *Vanaraja* chicken covering 12 villages with 105 farmers.
- Demonstrated and established 5 low cost polyhouse technologies for off season vegetables production through 5 SHGs along with 6 *Jalkunds*.
- Promotion of oyster mushroom production technology through three SHGs and farmers covering 50 farmers.
- Tested 527 numbers of soil samples covering 29 villages and distributed 2194 numbers soil health cards.
- Horizontal spread of mass trapping of fruit fly using Cue Lure bottle trap in cucurbit crops covering 141 ha area.

### Way forward

- Value addition and marketing channel of orange, turmeric and ginger are to be explored.
- To meet the demand of piglets, pig breeding units should be established with convergence /linkages with the state departments.

### Suggestions

- Establishment of demonstration units with proper fencing and additional fund should be allocated for Farm development.
- Storage facilities with working shed for seeds and planting materials production.
- Establishment of soil testing lab with equipments.

### 13. KVK Changlang (State Dept. of Agriculture, Arunachal Pradesh)

#### Salient achievements

- Promoted Rice varieties *CAU-R-1* and *TTB-404* in 150 ha area benefiting 310 farmers.
- Scaling up of Toria and Black gram *var. TS-46* and *SBC-40* in 350 ha benefiting 725 farmers.
- Horizontal expansion Turmeric and Ginger variety *Megha Turmeric 1* and *Nadi* in 150 ha area.
- Demonstrated low cost polyhouse technology for vegetable nursery raising and off-season vegetables production.
- Promotion of oyster mushroom production through 15 women SHGs covering 215 women farmers.
- Horizontal expansion of low cost vermi-compost for production of Organic Manure covering 176 farmers in 23 villages.
- Promotion of beetel buck crossed with local goats benefiting 15 farmers.
- Demonstration of pickles, jam, candy, sauce making through 10 SHGs group covering 230 women farmers.

#### Way forward

- Value addition and marketing channel of crops are to be explored.
- As there is a great scope for poultry and piggery in the district convergence/ linkages are to be created with the state department to meet the demand of piglet production.
- Pilot scale demonstration on plantation crops, *Khasi mandarin*, Pineapple, Turmeric and Ginger with High yielding/improved varieties.
- Farmers Oriented and need based training programmes / extension activities should be conducted.
- Impact analysis of each activity should be done by the KVK.

#### Suggestions

- Establishment of Demonstration unit in a scientific manner with proper fencing and enhancement of Farm income.
- Storage facilities with working shed for seeds and planting materials production.
- Permanent irrigation Facilities need to be established to compensate the water requirement during lean period.

### 14. KVK Anjaw (ICAR RC for NEH Region, Umiam)

#### Salient achievements

- Demonstration of Soybean variety *dsb-19* covering 15 ha area benefitting 38 farmers.
- Promotion of Kiwi variety *Allision* and *Hayward* covering 20.15 ha benefiting 102 farmers.
- Scaling up of Oyster mushroom *var. Pleurotussajor-caju* and *Pleurotus florida* production technology covering 65 women farmers.
- Demonstration of Salt and mineral licking block (SMLB) technology for Mithun.
- Promotion of Smart NE *Kisan* Application (Offline based Android Mobile App).

#### Way forward

- Establishment of Hatchery unit for quality poultry chick production.
- Establishment of nursery for providing quality planting materials for horticultural and spice crops.
- Value addition and processing unit for locally available indigenous fruits and vegetables.
- Establishment of small-scale feed pellet unit for concentrate feeds.
- Documentation of the ICT initiatives taken by the KVK.

#### Suggestions

- Administrative building, demonstration units and fencing of instructional farm should be completed on priority basis.

- Establishment of shed with store for farm implements, seeds, farm produce, planting materials, threshing, office vehicle etc.
- Farmer Hostel cum Guest house needs to be constructed.
- Emphasize on nursery establishment for large cardamom and other spices to make them available for farmers.
- Documentation of collected local germplasm and print the same for wider publicity.

### **General Recommendation for the state of Arunachal Pradesh**

- Increase the revenue generation from farm activities.
- KVKs should popularizing horticulture based farming systems for ensuring nutritional security among the tribal population.
- Exposure of KVK staff to neighbouring award winning KVKs.
- Resolves the land issues with immediate effect in consultation with respective host institute.
- KVK should adopt new farm innovation, ICT, KMAS to reach the unreached farming communities.
- Mapping of Operational Villages by the KVKs should be done.
- KVK should apply for G.I. tagging of their important commodities.
- KVK should explore the possibilities of convergence with NABARD, NHB, MSME, SFSC, DBT, ATMA, MANAGE etc., and get the financial assistance for performing the activities on field.
- KVKs should develop the producer organizations/ company because they are compatible to deal with the most vulnerable part of agri-value chain, which starts from the farm and goes on till processing and the far-away markets.
- Design and implement innovative extension strategies for individual, group and mass awareness about technology related to prioritized problems. Use of ICT tools and techniques like e-extension, web-based technology content including modules and capsules, e-farmers, v-KVK and KVK-net for reaching the unreached for knowledge empowerment and technology dissemination.
- Aim for specific targeted programmes like soil, water and plant testing and issuance of soil health cards to farmers in cluster villages.
- Activities on Organic Farming should also be documented by KVKs.
- Give emphasis on quality seed production in the district.
- Farmers' data should be submitted to the ATARI along with Aadhar no. or mobile number of the farmers under quality seed production programme.
- Maintain and update the KVKs websites in dynamic mode, develop the own channel by taking the help of KVK Anjaw and upload all the relevant information like TSP report, Success stories, on websites and Facebook for better mass awareness.
- Group based approaches for entrepreneurial development such as FPOs and FIGs need to be promoted in the tribal areas. KVK should focus on this aspect and work accordingly.
- Location specific IFS models need to be promoted in the tribal areas for ensuring sustainable livelihood.
- Impact assessment of increase in income, adoption of technology, increase in area and demo yield over local, savings of input cost and skill development of the farmers.
- Maintenance of Asset Register.
- Maintain the proper documentation of work done under the doubling of farmers Income.
- Develop the better convergence with external funding agencies and get the financial assistance with proper documentation of external fund received along with the source.

- Develop marketing linkages with other external agencies.
- Promote low cost farm mechanization technologies developed by CIAE, Bhopal.
- Impact Assessment of technologies and generation of Proper Planning.
- Give Emphasizes on In-situ conservation.
- Promotion of Custom Hiring Centre among the farming community and maintain the record properly.
- Mobilize the fund from different external agencies through projects and other extension- oriented activities viz. Exposure Visit, Meeting, Demonstration, Kisan Mela, Conference etc.
- Organic farming needs to be promoted in tribal areas by establishing market linkages through involvement of different stakeholders for providing better returns to the farmers.

## Annexure- III

### Proceedings of Travel Workshop of QRT for ICAR-ATARIs (Zone-VI and VII) and KVKs in Meghalaya (2011-12 to 2018-19) held at ICAR-ATARI, Umiam on 16<sup>th</sup> October, 2019

#### Members present

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
3. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
4. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
5. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
6. Dr. A.K. Tripathi, Director, ICAR-ATARI, Guwahati
7. Dr. Kandpal, Director, ICAR RC for NEH, Umiam
8. Dr. A.K. Jha, Principal Scientist & Nodal Officer (KVKs), ICAR RC, Umiam
9. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI, Umiam and Member Secretary, QRT.
10. Dr. Mokidul Islam, Head and Sr. Scientist, KVK Ri-Bhoi, Meghalaya
11. Smt. Badahunlang W., Head and Sr. Scientist, KVK East Khasi Hills, Meghalaya
12. Dr. A. Haribhushan, Head and Sr. Scientist, KVK South Garo Hills, Meghalaya
13. Dr. Joyoshree Mahanta, Head and Sr. Scientist, KVK West Garo Hills, Meghalaya
14. Dr. B. S. Rajawat, Head and Sr. Scientist, KVK East Garo Hills, Meghalaya
15. Mr. P. N. Wahlang, Head and Sr. Scientist, KVK West Khasi Hills, Meghalaya
16. Dr. Dodo Pasweth, Head and Sr. Scientist, KVK Jaintia Hills, Meghalaya
17. Dr. Amol K. Bhalerao, Scientist (AE), ICAR-ATARI, Umiam, Meghalaya
18. Mrs. Divya Parisa, Scientist, ICAR-ATARI, Umiam, Meghalaya

The Travel Workshop of Quinquennial Review Team (2011-12 to 2018-19) was held at ICAR-ATARI, Umiam on **16<sup>th</sup>October, 2019** under the Chairmanship of Dr. K.D. Kokate in presence of all the QRT members and other dignitaries. At the outset, Chairman welcomed the members and all the participants and indicated the terms of reference (ToR) of QRT for KVKs/ ATARIs. Further, it was emphasised that the methodology need to be decided for visit of different KVKs and the KVKs less than 5 years old may not be considered. Besides, he drew the attention of Directors of ATARIs, Zone VI and VII to formulate a roadmap for the effective functioning of KVKs to work as a single window knowledge system. Dr. Hansra emphasised the importance of regular feedback mechanism from KVKs to research systems for development of location specific suitable technologies for the benefit of farmers. Dr. Vasisht opined that the Public Financial Management System (PFMS) should be implemented up to last level, i.e. KVKs as soon as possible for effective result oriented transaction of funds. Dr. Bhattacharyya in his remarks appreciated the new initiatives taken by both the ATARIs in the changing role of KVKs across the region.

The technical session began with the presentation by Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VI, Guwahati on the base report which included state-wise present agriculture scenario as well as achievements of KVKs during last 8 years (2011-12 to 2018-19) and way forwards for the next five years. Dr. Bidyut C. Deka, Director, ICAR-ATARI,



Umiam while presenting the achievements of KVKs during the same period highlighted the significant steps taken during 2016-19 for improvement of KVKs having B grade and put forwarded his views for way forward. Dr. Deka also highlighted the future course of actions for the institution in the form of strategies derived from SWOT analysis of KVKs. The two ATARIs have prepared and submitted the *Background Information Report for QRT* to all members and other stakeholders for their basic understanding and references about agricultural scenario and achievements of KVKs for farming communities in their respective zones of the region. It was also discussed about the strengthening of ATARIs in view of manpower and structure including strategic research/ capacity development and ICT units in ATARIs.

The post lunch session included the presentations by all the 7 KVKs in Meghalaya on their activities and programmes and achievements made during review period. The presentation covered district profile, KVK staff position, available infra-structure facilities, achievements on mandated activities such as OFTs, FLDs, different training programmes, extension programmes and activities, production of quality seeds and planting materials including bio-products/ bio-agents as well as various flagship/ special programmes carried out by KVKs including revolving fund status and revenue generation during the period. This was followed by meaningful and constructive discussion among the committee members and participants on various aspects of KVKs functioning in the region which emerged the following important recommendations.

#### General Recommendations

- A road map may be formulated for all KVKs in the region to work as a single window knowledge system.
- Highlight the innovative extension methodologies to prioritize monitoring and access of the information.
- Need based training programmes have to be organized by KVKs and the ATARIs may bring out the output, outcome and impact of these training programmes/capacity building programmes.
- The importance of the KVKs in science mode approach and the role of KVKs in technology dissemination at Zonal and national level may be highlighted.
- The organizational and administrative changes and the linkages at KVK level may be strengthened.
- The scenario of patents filed and the varieties registered under PPV&FRA may be depicted by the KVKs.
- Every KVK should have web-site in dynamic mode with regular uploads and updates
- KVKs need to give higher priority on documentations and publications including research articles out of assessment, refinement and demonstrations of technologies on farmers' fields.
- Establish and strengthen the linkages/ collaborations with allied line departments and research institutes/ universities including ATMA and NGOs.
- Efforts must be made for generation and adoption of location specific, farmers centric and cost effective technologies by KVKs with financial and research support by all concerned.
- Efforts are to be made for further strengthening of KVKs with enhanced staff position and infrastructure facilities.

#### Specific Recommendations for Zone VI, Guwahati

- The data base of Sikkim w.r.t the statistics of irrigated area may be made available.
- The mobility status of the KVKs w.r.t the KVK infrastructure including vehicle may be clearly depicted.
- Budget details may be given in separate heads like allocation, release and expenditure.
- The number of programmes per each KVK may be mentioned clearly.



- Proper documentation and publications (Research papers) of ATARI and KVKs may be made with utmost care.
  - Convergence and linkages with ATMA, RKVY may be strengthened to support the KVKs.
  - State-wise scenario and interventions made for doubling farmers' income may be highlighted.
  - A one page write up w.r.t the perspectives scenario and way forward for organic farming may be submitted.
  - More emphasis on value-chain, post-harvest, value additions and marketing may be given.
- PFMS may be implemented immediately in KVKs system.

#### **Specific Recommendations for Zone VII, Umiam**

- The occupancy/utility report of the farmer's hostels of the KVKs may be submitted.
- Research projects may be proposed with International collaboration at ATARI level.
- The district-wise data on ICT facilities may be compiled and prepared in document.
- All the KVKs should maintain instruction farm/demonstration units as a model farm

## Annexure- IV

### Report of Field Visit and Visit to KVK East Khasi Hills, Meghalaya by QRT on 17<sup>th</sup> October, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
3. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
4. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
5. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
6. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
7. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
8. Ms. Badahunlang Wahlang, Head (i/c), KVK East Khasi Hills
9. Mr. Shanmedanhan, SMS (AE), KVK East Khasi Hills
10. Ms. Afrida Lyngdog, SMS (Agronomy), KVK East Khasi Hills
11. Ms. Bakordalin Chyne, SMS (PP), KVK East Khasi Hills
12. Ms. Aibanrihunlang Lyngdoh, SMS (Hort), KVK East Khasi Hills
13. Mr. Samborlang Malngiang, SMS (Fishery), KVK East Khasi Hills

The Quinquennial Review Team visited the KVK East Khasi Hills on **17<sup>th</sup> October, 2019**. The team made a field visit to progressive farmer Shri Wallam Kupar Lyngrah of Mawsiathnam village in East Khasi Hills district of Meghalaya and had interaction with local farmers about the

agricultural situation, technology application and dissemination through various extension activities and programme and problems faced by farmers including the role of KVKs towards farmers' income generation. The team also visited different sites of farmers fields where crops and livestock based enterprises are in practice such as poultry, piggery, fisheries and horticultural crops. Thereafter, the team proceeded to KVK East Khasi Hills where direct interaction with KVK staff and farmers was taken place which was followed by visit to on-going construction site of administrative building and different demonstration units of the KVK such as poly house, vermicomposting unit, Integrated Farming System (IFS), Hydroponics, Post Harvest Technology (PHT) and value addition etc. The team observed that there is enough scope for fisheries, straw berry, khasi mandarin, off-season vegetables and animal components in the district. During interaction, most of the farmers expressed their requirement for mushroom spawn, fingerlings and quality seeds & planting materials from KVKs with technical supports so that they can take up various income generating activities/ enterprises.

The team suggested the following recommendations during the visit.

- Emphasis may be given for horizontal spread of different horticultural crops
- Improvement in livestock and fishery based IFS may be promoted
- The KVK may initiate action for establishment of Crop Cafeteria as model for demonstration to farmers
- SMS (Agril. Extension) may conduct assessment on different methodologies to see their effectiveness amongst the farmers in the process of transfer of technology.

- Impact study on different activities and programmes like trainings, demonstrations, other field activities etc. may also be taken up by KVK.
- There is urgent need for technological backstopping to KVK staff from ICAR Research Complex, Umiam in the changing agricultural scenario.
- Formation and strengthening of linkages with SHGs, FPO, FIG, CIG etc.
- KVK should have dynamic website and regular update with KVK activities and programmes.
- More number of seeds and planting material have to be produced
- Hands on training to the farming community on value addition
- Publication of research papers in reputed journals may be given top priority

### **Brief Profile of KVK East Khasi Hills**

- ❖ **Host Institute:** Department of Agriculture, Govt. of Meghalaya
- ❖ **Year of establishment:** 22<sup>nd</sup> October, 2004
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 15 nos.
- ❖ **Total area/ land under KVK:** 10.20 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- V

### Proceedings of Travel Workshop of QRT in respect of KVKs in Sikkim held on 21<sup>st</sup> October, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vashisht, Former ADG, PIM, ICAR New Delhi and Member, QRT
3. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam, Meghalaya and Member, QRT
4. Dr. H.C. Bhattacharya, Former Director of Extension Education, Assam Agricultural University, Jorhat, Assam and Member, QRT
5. Dr. A.K. Singha, Principal Scientist, ICAR-ATARI, Umiam and Member Secretary, QRT
6. Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VI, Guwahati, Assam
7. Dr. R.K. Avasthe, Joint Director, ICAR-NOFRI, Tadong, Gangtok, Sikkim
8. Dr. Raghavendra Singh, Sr. Scientist and Head (I/c), KVK East Sikkim
9. Sh. T.T. Bhutia, Sr. Scientist and Head (I/c), KVK North Sikkim
10. Sh. I.P. Shivakoti, Sr. Scientist and Head (I/c), KVK South Sikkim
11. Sh. Dinesh Basnett, Sr. Scientist and Head (I/c), kvk West Sikkim
12. Dr. Prasanta Kr. Pathak, SMS (Animal Science), ICAR-KVK, East Sikkim, Ranipool

The Quinquennial Review Team (QRT) as per programme schedule held the Travel Workshop of KVKs of Sikkim on **21<sup>st</sup> of October, 2019** at ICAR-NOFRI, Tadong, Sikkim. In his formal welcome address, Dr. Avasthe thanked all QRT members for visiting Sikkim and for their appreciation about the work done by KVK East Sikkim. He also

acknowledged with thanks the support rendered by the different line departments, Govt. of Sikkim. Besides, an exhibition was arranged to showcase KVKs innovations and technological products in Sikkim.

The Travel Workshop of KVKs began with brief self-introduction by QRT members and dignitaries and KVK participants. At the very outset, the Chairman of the committee appreciated the showcasing of the technologies through exhibition by the KVKs of Sikkim. He also expressed satisfaction over the existing mechanism of technological backstopping of ICAR-NOFRI, Tadong to KVKs in the state. The travel workshop included the technical presentations on different achievements of KVKs during last 8 years by Heads of individual KVKs of the state before the committee members wherein important issues were also discussed for agricultural development in the state through effective functioning of KVKs. All the members of QRT provided their individual critical observations and suggestions as actionable points considering the existing scenario of agriculture in the state and available local resources and district potentialities. The following points emerged as general recommendations for effective functioning of KVKs in the state.

#### General Recommendations

- Recommended to form Framers' Producer Company/ Organization (FPO)
- Recommended to speed up the filling of vacant positions in KVKs under ICAR
- More focus should be given on organic seed and planting materials production
- Suggested to give more focus on vegetable production as well as meat, milk and egg

- production for achieve the goal doubling the farmers income by 2022.
- In-situ and ex-situ soil moisture conservation and other water harvesting mechanism.
  - Need based discipline-wise training programme should be conducted at ICAR-NOFRI for Subject Matter Specialists of KVKs of Sikkim.
  - One or two villages to be promoted as the cleanest village in the district by linking with *Swachh Bharat Abhiyan* and *organic farming*.
  - Top priority must be given to KVKs mandated activities with other government flagship programmes assigned from time to time
  - Avoid research experimentation like evaluation of germplasm
  - KVKs should focus on outcome as planners need the technologies on output-outcome
  - Actionable strategic planning may be done based on the problems and prospects of farmers in the district.
  - ATARI, Zone-VI should focus more on providing trainings to the SMSs with experts in different disciplines
  - Priority should be given on major commercial crops of the district/state
  - KVKs should give proper feed back to strengthen research system through proper mechanism
  - Linkages between research and extension should be strengthened.
  - Installation of drip irrigation systems in all KVK demonstration farms may be considered
  - Collection of baseline data to assess the income improved through KVK interventions and activities
  - Formation of interested farmers' WhatsApp group and use of ICTs for transfer of technologies
  - The impact of the technological interventions to be documented in clusters/groups.
  - Advocated landholding-wise interventions and to record intervention-wise farmers' list
  - Website of Sikkim KVKs must be in dynamic with regular update.
  - Increase the present status of Revolving Fund (RF)

## Annexure- VI

### Report of Field Visit and Visit to KVK East Sikkim, Sikkim by QRT on 20<sup>th</sup> October, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vashisht, Former ADG, PIM, ICAR New Delhi and Member, QRT
3. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam, Meghalaya and Member, QRT
4. Dr. H.C. Bhattacharya, Former Director of Extension Education, Assam Agricultural University, Jorhat, Assam and Member, QRT
5. Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VI, Guwahati, Assam
6. Dr. R.K. Avasthe, Joint Director, ICAR-NOFRI, Tadong, Gangtok, Sikkim
7. Dr. A.K. Singha, Principal Scientist, ICAR-ATARI, Umiam and Member Secretary, QRT
8. Dr. Raghavendra Singh, Sr. Scientist and Head (I/c), KVK East Sikkim
9. Dr. Prasanta Kr. Pathak, SMS (Animal Science), ICAR-KVK, East Sikkim, Ranipool

As per programme schedule, the Quinquennial Review Team (QRT) under the Chairmanship of Dr. K. D. Kokate, former DDG (AE), ICAR visited different demonstration Units/ plots of agriculture, horticulture, livestock and fodder demonstration Units/ plots at Saramsa Farm, KVK East Sikkim in the morning of **20<sup>th</sup> October, 2019** and expressed satisfaction on the quality of maintenance of farm in a very scientific way. At the end, the dignitaries planted tree saplings in the farm premises and proceeded to the main campus of KVK East Sikkim. The team members also visited the **Marchak Campus** of KVK as well as different demonstration farms. The Chairman and member of the team interacted with the staff of the KVK East Sikkim.

During visit, the Joint Director, ICAR-NOFRI raised the issue of lacking boundary wall/ fencing in both the campuses of KVK and requested for new administrative building, staff quarter, farmers' hostel for conducting vocational training, drinking water facility etc. Later on, the team proceeded to **Timpyem** village for farmers' field visit which was one of the adopted villages of KVK East Sikkim. The village was dominated by the Lepcha tribes of Sikkim. After reaching the village, the Chairman and other team members interacted with the farmers about their agricultural scenario of the village including land holding, agricultural practices, pig and poultry farming, water harvesting etc. The *Mahindra Krishi Samriddhi* Award winner women farmer of the village Smt. Penki Lepcha explained how their income has been increased by the adoption of scientific package of practices of technologies disseminated by KVK East Sikkim. The Chairman also expressed his happiness, when he came to know that Smt. Lepcha got the opportunity to interact with the Hon'ble Prime Minister of India, Shri. Narendra Modi about her farming practices through video conferencing. The team then proceeded for the second adopted village i.e. *Thanka Lingtam* village. The Chairman and the team members interacted with farmers and farmers of the village were happy to share their experiences of working with the KVK of ICAR. They explained how their profit margin has been increased with the different agricultural interventions especially piggery, backyard poultry farming with Vanaraja birds, no-till cultivation of vegetable pea, Red Cherry peeper (Dalley chilli) cultivation with black plastic mulching etc. Later on, the QRT team along with other dignitaries and KVK official visited few farmers' field and expressed their satisfaction.

### Specific Recommendations for KVK East Sikkim

- Efforts to be made to generate more fund externally
- Suggested for landholding-wise interventions and to record intervention-wise farmers' list
- Suggested to focus on farm mechanization for reduced drudgery
- Recommended to form Framers' Producer Company (FPO)
- Recommended to speed up the filling of vacant positions in KVK
- More focus should be given on organic seed production.
- Suggested to give more focus on vegetable production as well as meat, milk and egg production for achieve the goal doubling the farmers income by 2022.
- In-situ and ex-situ soil moisture conservation and other water harvesting mechanism.
- Formation of interested farmers' WhatsApp group and use of ICTs for transfer of technologies
- One or two villages to be promoted as the cleanest village in the district by linking with *Swachh Bharat Abhiyan* and *organic farming*.
- Avoid research experimentation like evaluation of germplasm.
- KVKs should focus on outcome as planners need the technologies on output-outcome.
- The impact of the technological interventions to be documented in clusters/groups.
- Actionable strategic planning may be done based on the problems and prospects of farmers in the district.
- Priority should be given on major commercial crops of the district/state.
- Linkages between research and extension should be strengthened.
- Installation of drip irrigation systems in all KVK demonstration farms may be considered
- Website of the KVK must be in dynamic with regular update

#### Brief Profile of KVK East Sikkim

- ❖ **Host Institute:** ICAR RC for NEH Region, Umiam, Meghalaya
- ❖ **Year of establishment:** 31<sup>st</sup> March, 1982
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 12 nos.
- ❖ **Total area/ land under KVK:** 6.09 ha
- ❖ **NITI Ayog Grade:** A



## Annexure- VII

### Proceedings of Travel Workshop of QRT in respect of KVKs in Nagaland held on 5<sup>th</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
6. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
7. Dr. S.S. Hamah, Scientist, NRC on Mithun, Jharnapani
8. Mr. B.N. Pttom, Jt. Director (Agri), Govt. of Nagaland
9. Dr. Ebibeni, (i/c), KVK Dimapur, Nagaland
10. Dr. Santosh Kumar Baishya, Head, KVK Wokha
11. Dr. Kedar Lal Meena, Head, KVK Longleng
12. Dr. Keviletsü Khate, Head, KVK Tuensang
13. Dr. Ruokuovilie Mezhatu, Head, KVK Mon
14. Dr. R.K. Chaurasia, Head, KVK Zunheboto
15. Mr. N. Khumdemo Ezung (i/c), KVK Kiphire
16. Dr. Babita Devi, i/c KVK Peren
17. Dr. Pijush Kanti Biswas, Head KVK Mokokchung
18. Dr. V. Akashe Zhimomi, Head, KVK Kohima
19. Dr. T. Esthu Longkumar (i/c), KVK Phek

#### Rapporteurs:

1. Dr. Paihem Michui, ACTO (Animal Science. KVK Mon)

2. Dr. Debojyoti Borkotoky, ACTO (Animal Science. KVK, Phek)

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate conducted the travel workshop for KVKs in Nagaland on 5<sup>th</sup> November, 2019 at Hotel Saramati in Dimapur (since the venue for QRT programme was shifted from ICAR, Nagaland Centre, Jharnapani to Dimapur due to sudden massive landslides on National Highway which caused blockade to all movements of vehicles during the period). At the very outset, the Chairman of the team appreciated the exhibition for showcasing of the technological products and inputs arranged by KVKs of Nagaland. He also made a brief introduction about QRT programme and its role in the review of programmes and activities of KVKs. The travel workshop included the technical presentations on different achievements of KVKs during last 8 years by Heads of individual KVKs of the state before the committee members and other stakeholders including representatives of host institutes of KVK wherein important issues were also discussed for agricultural development in the state through effective functioning of KVKs.

#### General recommendations:

- Revenue generation under revolving fund should be enhanced
- Proper benchmarking & mapping of instructional farm of the KVKs of the state
- All KVK should apply for best KVK Award (Zonal/ National)
- All KVK should try to patent of their specific innovations through prescribed norms and procedures.
- Exposure tours of farmers to different successful farms and institutes including best KVKs must be arranged.

- Success stories should highlight the salient points only during presentation
- Emphasis should be given on conducting PRAs to ascertain and depict the existing agricultural status in the district.
- Seed certification/Seed policy of the state should be in position
- Utilization of locally available feed ingredients to optimize livestock production
- Livestock Mela in the line of Mithun Mela may also be considered to organize at state level in collaboration with concerned departments of the state.
- Intervention to be taken up for scientific storage of seeds for conservation of germplasms
- Each KVK should have quality seed planting material unit at the farm itself
- All KVKs must maintain the website in dynamic mode with regular updates
- Economy of different components including livestock and fisheries may be worked out systematically
- Livestock based farming system models may be developed for the state of Nagaland

## Annexure- VIII

### Report of Field Visit under KVK Dimapur, Nagaland by QRT on 5<sup>th</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
6. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
7. Dr. Ebibeni, (i/c), KVK Dimapur, Nagaland
8. Dr. Babita Devi, i/c KVK Peren
9. Mr. N. Khumdemo Ezung (i/c), KVK Kiphire

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate as part of its programme visited Seithekima-A village under Dimapur district on 5<sup>th</sup> November, 2019 where the team moved around different citrus (Assam lemon), plantations (Areca nut and banana) as well as livestock farms such as dairy, poultry etc. in order to understand how KVK interventions reached to farmers for doubling their farm income. An interaction programme with the local farmers and leader was also held in the village on different issues including agricultural scenario, scope, potential for integrated farming systems, post harvest & value addition, marketing and problems faced by farmers in adoption of new technologies. The committee was impressed with the farming activities taken up by women farmer Smt. Thejana Matrith and her role in

dissemination of technologies to other farmers particularly women farmers through SHGs and improvement of economic conditions of the farmers. During interaction, most of the women farmers expressed their requirement for quality seeds & planting materials as well as more number of training programmes from KVKs to upgrade their knowledge and skills with technical and financial supports so that they can take up various income generating activities/ enterprises. The team observed that there was enough scope for fisheries, off-season vegetables and other livestock based farming systems in the areas which must be encouraged and promoted by KVK.

The team also made interaction with different categories of farmers including women farmers of the village and collected first hand information pertaining to problems and prospects as well as different major farming systems practiced by farmers for their livelihood and income generation. The committee after critical observation made the following important suggestions in the light of present farming situation in the district/state for development of agriculture.

#### General recommendations

- Bench mark survey through PRA may be conducted to ascertain the existing scenario in different enterprises/ components in the district before interventions by KVK.
- Livestock based farming system models may be developed at farmer's field.
- Identify and explore the most effective marketing channels/ facilities for maximum profit and remuneration to producers.
- Floriculture may be encouraged as profitable venture in the district.

- Focus should be made to bring more area under sesame.
- Cultivation of oilseed (Toria) after paddy to be increased.
- KVK should have quality seeds and planting materials units at the farm itself.
- Interventions taken up under NICRA village may also be replicated to other villages of the district.
- Intervention to be taken up for scientific storage of seeds for conservation of germplasms.
- Long duration/ vocational training programme specially for rural youth should be conducted for economic empowerment.
- Perennial water shortage problem may be resolved with natural and rain water harvesting technologies.
- Round the year Oyster mushroom production should be taken up. Button mushroom is also recommended.
- Honey bee production should be encouraged.
- Utilization of locally available feed ingredients to optimize livestock production.

### Brief Profile of KVK Dimapur

- ❖ **Host Institute:** ICAR RC for NEH Region, Umiam, Meghalaya
- ❖ **Year of establishment:** 1979
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 10 nos.
- ❖ **Total area/ land under KVK:** 20 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- IX

### Proceedings of Travel Workshop of QRT in respect of KVKs in Assam held on November 7-8, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. B.S. Hansra, Former ADG(AE), ICAR, New Delhi and Member of QRT
3. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
4. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
5. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
6. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
7. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
8. Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VI, Guwahati
9. Dr. P.K.Pathak, Director of Extension Education, AAU, Jorhat
10. Dr. M. Neog, Assoc. Director of Extension Education, AAU, Jorhat
11. Dr. R. Bordoloi, Principal Scientist, ICAR-ATARI, Zone-VI, Guwahati
12. Dr. Hirampry Dey, Dy. Project Director, ATMA
13. All Sr. Scientist & Heads of KVKs, Assam
14. Farmer representatives (both men and women)

#### Rapporteurs:

1. Dr. Sanjoy Borthakur, Senior Scientist and Head, KVK Tinsuka
2. Dr. Gunjan Gogoi, I/C Head, KVK Dhemaji
3. Dr. Bonti Gogoi, SMS (Agronomy), KVK Nagaon

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate held travel workshop for the KVKs in Assam on **7<sup>th</sup>-8<sup>th</sup> November, 2019** at KVK Kamrup. The team visited different demonstration farms of KVK Kamrup in the morning and had interaction with the Scientists of KVK followed by tree plantation by the QRT members in the KVK premises. An exhibition was also arranged by KVKs in Assam to showcase the technologies and technological products which was inaugurated by Dr. B.S. Hansra, former ADG(AE), ICAR and member of QRT accompanied by all other members including Chairman, Director of Extension, Director, ICAR-ATARI, Zone-VI, Guwahati and KVK personnel. The Travel Workshop of KVKs began with the formal welcome address by Dr. P.K. Pathak, Director of Extension Education, AAU, Jorhat followed by brief self-introduction by QRT members and dignitaries and KVK participants. At the very outset, the Chairman of the committee expressed his satisfaction over the quality of maintenance and management of different demonstration farms of the KVK Kamrup in a very scientific way. He was also impressed with the exhibition for showcasing of the technologies arranged by KVKs of Assam. The Chairman also made a brief introduction about QRT programme and its role in the review of programmes and activities of KVKs. The travel workshop included the technical presentations on different achievements of KVKs including special and other flagship programmes organised by KVKs during last 8 years by Heads of individual KVKs of the state before the committee members wherein important issues were also discussed for agricultural development in the state through effective functioning of KVKs. KVK-wise actionable strategies and action points were chalked out for the next five years keeping in view the specific district potentials in agriculture.

### General Recommendations

- All KVKs must maintain the KVK Websites in dynamic with regular update of activities and performance
- All KVKs must develop farming system based models in collaboration with ICAR/ Agricultural Universities
- Impact assessment of major KVK activities and programme must be taken up
- Efforts should be taken for timely availability of quality seeds and planting materials/ fingerlings/ bio-agents etc. to farmers
- Create database for all components/ enterprises taken up by KVKs
- Status of Revolving Fund (RF) must be improved/ enhanced
- All KVKs with SMS in Agronomy must produce quality fodder for animals by adopting scientific fodder cultivation practices
- Promote those technologies only which are validated and recommended by ICAR/ universities in KVKs activities on farmers fields
- Establish market linkage in seeds production and supply
- Multi-storied model of farming system practiced by KVK Kamrup may be replicated in other KVKs as well
- Work out expenditure/ profits (economy) of various components/ enterprises to focus on farmers
- Change in area and productivity of crops due to KVK interventions should be shown by all KVKs
- While claiming enhanced farmers production/ productivity and income, KVKs must specify technology/ variety/ breeds / management technology etc. before and after interventions
- All KVKs must develop bench mark matrix for all the components to assess the doubling of farmers income

### Interaction with farmers

An interaction was held with the farmers present in the workshop where ten farmers expressed their experiences and problems faced by them. The Chairman, QRT, Dr. K.D. Kokate as well other members of QRT especially Dr. H.C. Bhattacharyya, Dr. B.S. Hansra and Dr. S.V. Ngachan shared their experiences with the farmers.

1. Mushroom farmer from Rangia area of Kamrup district raised the issue of difficulties of housing for cultivation
2. One Banana cultivator from Kamrup district narrated his success story how he has increased his banana cultivation from 1 bigha (0.13ha) to 22 bighas (7ha) with technical help of KVK. At present his monthly income is Rs. 75000 per month
3. One floriculturist mentioned how due to KVK intervention income has increased his income from Rs. 20000 to Rs. 40000 per month. He requested the house for help in market linkage.
4. A fish farmer from Kamrup district has mentioned how he could earn Rs. 2 lakhs during last year and Rs. 2.5 lakhs in the current year with the intervention of KVK. Now he wants to expand the fishery for which need financial help.
5. Sri Banamali Choudhury, farmer from Kamrup district practised composite farming. He also requested for market linkage and help for mechanization.
6. Biva Das, a master trainer developed by KVK, Kamrup narrated her story how she develop herself over the years from 2013. Dr. B.S. Hansra, Member, QRT appreciated the lady and advised the Director, ATARI to send her to Delhi for exposure visit.
7. Another lady farmer from Kamrup district narrated how she was trained by KVK. She is now marketing the Eri silk product through online marketing. All total 66 SHGs were linked with her in production.

8. A livestock farmer, Phoonmai raised the issue of importance of training for rural youth for attracting the youth to Agriculture
9. Sri Renu Nath, an entrepreneur on pickle and mushroom also described her success story how she was benefited from KVK, Kamrup in her journey since 2012
10. A farmer involved in vermicompost production since December 2018 after receiving training from KVK, Kamrup narrate her story in detail.

### Concluding session

The Chairman of QRT, Dr. K.D. Kokate, Ex DDG (Agril Extension), ICAR started the concluding session with thanks to each and everyone involved in last two days and divulged the chronologies to be followed in the session and accordingly he requested to give views. Dr. M. Neog, Associate Director of Extension Education, Assam Agricultural University, Jorhat presented brief report of the activities of DEE, AAU, Jorhat. He gave the details of HRD programmes and backstopping provided to the KVKs and staff position as well as infrastructural development in the KVKs under the University. Director of Extension Education, Dr. P. K. Pathak thanked the QRT team and Chairman of the team in particular for critical assessment of the KVKs of Assam. He acknowledged significant roles that the KVKs are playing now in the overall development of farmers income and also advised the KVKs to work carefully in a vigilant way so that they could make their efforts more visible. Dr. R. M. Bordoloi, Principal Scientist, ATARI, Zone VI addressed the house and stressed for the need based HRD programmes for the KVK personnel. Dr. H. C. Bhattacharyya, QRT member praised the Chairman for his critical assessment. He mentioned few points for consideration:

- i) Almost all the vehicles in KVKs in the zone are very old which need their replacement
- ii) There must be provision for two wheelers in the KVKs of the zone
- iii) Demonstration units in different components to be developed in all KVKs

- iv) Custom hiring centres to the KVKs (2-3 nos. Per district) for farm mechanization in the district
- v) The post of Senior Scientist and Head should be upgraded to the rank of Principal Scientist and enhanced SMSs position from 6 to 10 number
- vi) Development of Soil Laboratory and Biolab should be developed in all KVKs
- vii) Mandated activities are to be given more emphasis
- viii. Attachment of KVK staff with host institute must be stopped/ discontinued

He advised the KVKs to go for complementary and speciality agriculture as well as technology oriented and market linked activities are to be emphasised to make the KVK a light house in the district. Dr. S.V. Ngachan, Member, QRT appreciated the KVKs of Assam for taking steps to make its presence in the district. He advised the KVKs to give importance to activities on Animal Science and requested the Director ATARI to increase the number of Animal Scientist in the KVK. He stated that farm mechanization has been increased but still more needs to be done in this sector. He also stressed upon complementary and speciality agriculture. He also mentioned the importance of vehicles and two wheelers along with water facilities both for drinking and irrigation purpose. Dr. A.K. Vasisth, Member, QRT advised the KVKs to submit quarterly report of fund to the desk board through ATARI and document the resource generation of fund from different agencies. The Chairman of QRT, Dr. K.D. Kokate thanked for logistic and hospitalities provided to Dr. D. Kalita and complemented all for their spirited efforts. He advised the KVKs to keep on working on diversification. He appreciated AAU for support given in financial as well as technical front. He advised the KVKs to document the resource generation and to take steps to work upon ICT. He requested Director of Extension Education to publish upgraded technology inventory.

Member Secretary, QRT, Dr. A.K. Singha requested all KVKs to submit the following information within 7 days-

- (i) At least 5-6 numbers of most significant and successful technologies emerged out of assessment and demonstration on farmers fields
- (ii) Most important Way forward for next five years for the concerned KVK
- (iii) Comments and observation as well as recommendations by QRT
- (iv) At least one most successful success story in bullet form with photograph and brief profile and photograph of the farmer
- (v) Major activities and interventions undertaken by KVKs (5-6 nos.) for DFI

(vi) Recast the presentation if required and resubmit

(vii) KVK Nagaon and Kamrup has to submit the report of the visit by QRT and farmers interaction with photographs

The Director, ATARI, Zone VI, Dr. A.K. Tripathi thanked the QRT in general and the Chairman in particular for meticulous and critical assessment of the KVKs of the Zone. He also thanked the KVKs of Assam for their efforts in their respective districts. He advised the KVKs to carefully verify their data during presentation. He stressed on impact study of KVK activities and more specifically the quantification of impact of different technologies tested or demonstrated by the KVKs more specifically the HYVs of different crop. The Chairman of QRT Dr. K.D. Kokate concluded the session with thanks to everyone.



## Annexure- X

### Report of Field Visit and Visit to KVK Nagaon, Assam by QRT on 6<sup>th</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. r. B.S. Hansra, Former ADG(AE), ICAR, New Delhi and Member f QRT
3. r. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
4. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
5. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
6. Dr. A.K. Singha, Principal Scientist (AE), ICAR- ATARI and Member Secretary, QRT.
7. Dr. A.K. Tripathi, Director, ICAR-ATARI, ZoneOVI, Guwahati
8. Dr. P.K.Pathak, Director of Extension Education, AAU, Jorhat
9. Dr. M. Neog, Assoc. Director of Extension Education, AAU, Jorhat
10. Dr. Niranjana Deka, Head, KVK Nagaon
11. All SMSs of KVK Nagaon

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate as part of its programme schedule visited Bengenati village under Nagaon district on **6<sup>th</sup> November, 2019**. The committee learnt that KVK Nagaon Demonstrated and popularized Assam Lemon in one village in Nagaon district i.e Bengenati during 2011-12 which now expanded horizontally up to 93 ha area covering 16 villages benefitting 110 nos. of farmers. An interaction programme with the local farmers and leader was also held in the village on different issues including agricultural scenario, scope, potential for integrated farming systems, post harvest & value addition, marketing

and problems faced by farmers in adoption of new technologies. The committee was impressed with the farming activities taken up by entrepreneur Sri Hussain and his role in dissemination of technologies to other farmers particularly in the village through formation of farmers club and SHGs and improvement of economic conditions of the farmers. During interaction, most of the women farmers expressed their requirement for quality seeds & planting materials as well as more number of training programmes from KVKs to upgrade their knowledge and skills with technical and financial supports so that they can take up various income generating activities/ enterprises. After visit to the farmers' field, the team also went to KVK Nagaon and visited different demonstration farms of the KVK including poultry, piggery, goatery, fisheries, integrated farming systems, horticultural and field crops etc. The team was impressed with the quality and scientific management of KVK farms.

#### Recommendations for KVK

- Mushroom production may be promoted as well as database on mushroom in the district may be developed
- Sericulture in the district may be promoted further for empowerment of women
- Seed production should be conducted in KVK farm for revenue generation
- Develop bench mark matrix to assess the doubling of farmers income
- Work out the spread over effect of Ranjit Sub-1 properly
- Maintain the existing management quality of demonstration farms/ units in the KVK
- KVK must develop farming system based models in collaboration with ICAR/ Agricultural University which may be popularised by

- line department of the state for large scale adoption
  - Focus must be on value addition from the local horticulture products for enhancement of farmers' income.
  - KVK may help in linking with the marketing system to increase profit of farmers
  - After rice fallow land may be utilised with black gram.
  - Community based farming system may also be explored for coverage of large areas under pulses.
  - Explore the possibility for hatchery units at village level to reduce per unit cost of chicks.
  - Increase number of vermicompost units at village level through group mobilisation of rural youth and capacity building.
  - Work out expenditure/ profits (economy) of various components/ enterprises to focus on farmers.
- Efforts should be taken for timely availability of quality seeds and planting materials/ fingerlings/ bio-agents etc. to farmers

### Brief Profile of KVK Nagaon, Assam

- ❖ **Host Institute:** Assam Agricultural University, Jorhat
- ❖ **Year of establishment:** 5<sup>th</sup> February, 2004
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 16 nos.
- ❖ **Total area/ land under KVK:** 19 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- XI

### Proceedings of Travel Workshop of QRT in respect of KVKs in Manipur held on November 20-21, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. M. Premjit Singh, Vice-Chancellor, CAU, Imphal
3. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
4. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
5. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
6. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH and Member, QRT
7. Dr. A.K. Singha, Principal Scientist (AE), ICAR- ATARI and Member Secretary, QRT.
8. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
9. Dr. R.K. Saha, Director of Extension Education, CAU, Imphal
10. Dr. Ph. Ranjit Sharma, Professor & PI, Farmer First Programme (FFP), CAU
11. Dr. Chittaranjan Singh, , Addl. Director of Agriculture, Govt. of Manipur
12. Mrs. Molibala Devi, Head (i/c), KVK Imphal East
13. Mrs. Nandini Devi, SMS (Agronomy), KVK Imphal East
14. Dr. Kh. Hera Singh, Head (i/c), KVK Imphal West
15. Dr. Y. Rama Krishna, Head, KVK Ukhrul
16. Dr. R.K. Imptomba Singh, Head, KVK Bishnupur
17. Dr. Jotsna Devi, Head KVK Senapati

18. Dr. Roma Devi, Head (i/c), KVK Churachandpur
19. Dr. P.K. Saraswat, Head KVK Tamenglong
20. Dr. S. Jeshmarani, Head, KVK Thoubal
21. Dr. N. Tomba Singh, SMS(Agronomy), KVK Thoubal
22. Dr. Priyadarshani Devi, SMS(Hort), KVK Imphal East

The Quinquennial Review Team (QRT) meeting under the Chairmanship of Dr. K.D. Kokate, former DDG (AE), ICAR, New Delhi was held at Central Agricultural University (CAU), Imphal on 20<sup>th</sup> November, 2019 in the Office chamber of Hon'ble Vice-Chancellor. The Hon'ble V.C. of CAU, Prof. M. Premjit Singh gave a heartiest welcome to the Chairman and team of QRT, Senior Scientists & Heads of all KVKs in Manipur. He expressed the urgent needs to assess the various activities and interventions made by KVKs for the upliftment of farming community of the state and the contributions towards the GDP of the country on a broader perspective.

The Chairman of QRT, Dr. K.D. Kokate made his opening remark about the programme and its importance to the participants followed by methodology to be followed for the review of KVK programmes and activities during last eight years (2011-12 to 2018-19). The Senior Scientists & Heads of KVK Imphal East, made the presentation on achievements of various mandated activities of the KVK as well as other special programmes taken up during review period in the district. The technical presentation was further continued by 3 more KVKs (Imphal West, Senapati and Churachandpur) before the QRT and other stakeholders. The 1<sup>st</sup> day technical session ended with remarks and suggestion by the chairman and

other members of the team while appreciating the KVKs for their efforts and activities and to follow the recommendation suggested during the workshop for the development of agriculture in their respective districts.

The Travel Workshop of QRT for the remaining other KVKs was held at KVK Imphal East, Andro on 21<sup>st</sup> November, 2019 which included exhibition organized by KVKs of the state to showcase the technological products and other innovations promoted by KVKs for the benefit of farmers as well as technical presentation by KVKs. The 2<sup>nd</sup> day programme ended with the concluding remarks given by the Chairman and team members of QRT. The general recommendations of the KVKs as given below-

#### General Recommendations-

- For every enterprise viz. Agriculture, fisheries and animal husbandry, the State wise data based GDP should be included
- For every KVK, specific focus of the programme organized should be catered
- More emphasis on Doubling Farmers Income. Villages should be given more interventions and activities by the KVKs
- KVKs should present OFT which have significant positive impact
- KVKs should maintain proper records of the activities and relevant data base
- Action taken on recommendations should always try to benefit the farmers
- KVKs should develop and maintain a good and quality Instructional Farm
- KVKs should not promote old varieties of crops in farmers' field
- Land development program should be initiated in every KVK
- Up scaling milk and egg production should be targeted by each KVK
- Specific crops and other enterprises for each district should be identified
- Conservation of Indigenous germplasm should be encouraged by every KVK
- The chairman directed all the Sr. Scientist & Head of the KVKs to apply for the awards in National, State and Zonal levels
- The target for Soil Health Card (SHC) should be 1000 nos. per year for each KVK
- Convergence with line departments and stakeholders to be given paramount importance
- Funds under the HRD component may be utilized for visiting the best KVKs
- All KVKs must maintain their websites in dynamic mode with regular updates
- Presentation should include a success story highlighting the significant impacts
- More focus on climate resilient agriculture should be taken up
- Contingent planning should be prepared for mitigating any unforeseen situation and development
- KVKs having more coverage of forest area should try rearing mithun in consultation with NRC Mithun for income generation
- Crop cutting experiment needed for the KVK Chandel
- Feedback of KMAS may be collected from farmers to ascertain the impact of the initiative
- Increase the target production of pulses and other crops specially through seed hub programme to meet the quality seed requirement in other districts of the region.

## Annexure- XII

### Report of Field Visit and Visit to KVK Imphal East, Manipur by QRT on 21<sup>st</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. M. Premjit Singh, Vice-Chancellor, CAU, Imphal
3. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
4. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
5. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
6. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
7. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
8. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam
9. Dr. R.K. Saha, Director of Extension Education, CAU, Imphal
10. Dr. Ph. Ranjit Sharma, Professor & PI, Farmer First Programme (FFP), CAU
11. Mrs. Molibala Devi, Head (i/c), KVK Imphal East
12. Mrs. Nandini Devi, SMS (Agronomy), KVK Imphal East

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate visited the Farmers field at Yambem village where different activities under Farmer FIRST programme (FFP) were being implemented by CAU, Imphal such as horticulture based module like introduction of Makhana var. Swarna Vaidehi from Patna under Manipur condition & comparative studies with local genotype in 0.25 ha, Popularization of Fish cum Paddy Farming System, Popularization of

Fish cum Livestock cum Horticulture Integrated Farming System in 1.5 ha etc. The team also visited Nungbrung Village under KVK Imphal East where various activities under NICRA and DFI were being undertaken at farmers field. The team was happy with the ongoing activities for doubling farmers' income with integrated farming system which comprised of fisheries, vegetables, livestock and other horticultural components. This was followed by interaction with farmers and farm women in which farmers raised different issues related to infrastructure facilities at village level, marketing, agricultural inputs including availability of irrigation facilities and need based vocational trainings in frontier areas of agricultural development. On the same day, the team with all its members along with Dr. M. Premjit Singh, Hon'ble V.C. of CAU and Dr. R.K. Saha, Director of Extension Education, CAU, Imphal also visited different instructional farms of KVK Imphal East. This included poultry, piggery, duckery and horticulture based different farming systems. The team appreciated with the quality of maintenance of such farms and urged the KVK to find out the economy of specific components in terms of expenditure and income before recommendation to farmers for large scale adoption. Some of the recommendations/ suggestions out of field visits are given below-

#### Recommendations-

- For every enterprise viz. Agriculture, fisheries and animal husbandry, the State and district-wise data base on GDP may be developed
- Ascertain the enterprise-wise economy in terms of expenditure and income for the benefit of farmers
- The KVK should focus on farmer centric, location specific and low cost technologies

- Rain water harvesting with the help of Jalkund at farmers level may be encouraged for irrigation purpose during lean period
- Varieties with less than 5 years old may be given priority for consideration and recommendation to farmers
- Quality maintenance of fishery pond and horticultural crops under FFP must be maintained to show its visibility to farmers as model
- Enhancement of milk and egg production at farmers field
- Proper documentation and publication on impacts of different activities and programmes
- Identification of high value crops and value addition must be taken up for enhancing farmers income
- More efforts on replication of successful intervention among farmers in the district
- Convergence with other stakeholders and allied organizations for collaborative programmes
- Conservation of Indigenous germplasm should be encouraged

### **Brief Profile of KVK Imphal East**

- ❖ **Host Institute:** Central Agricultural University, Imphal
- ❖ **Year of establishment:** 29<sup>th</sup> June, 2005
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 14 nos.
- ❖ **Total area/ land under KVK:** 27 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- XIII

### Proceedings of Travel Workshop of QRT in respect of KVKs in Mizoram held on 23<sup>rd</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. M. Premjit Singh, Vice-Chancellor, CAU, Imphal
3. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
4. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
5. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
6. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
7. Dr. A.K. Singha, PS (AE), ICAR-ATARI, Umiam and Member Secretary, QRT.
8. Dr. H. Saithantluanga, Director of Agriculture, Govt. of Mizoram
9. Dr. R.K. Saha, DEE, CAU, Imphal
10. Lalvensenfa Pachuau, KVK Aizawl
11. Vanlalhuaka Ngenle, KVK Serchip
12. S. Sisi, KVK, Siaha
13. PC Larinthega, SMS(Horticulture), KVK Kolasib
14. Dr. K.P. Choudhury, Head, KVK Aizawl
15. Dr David Malsawardaunghian, KVK Kolasib
16. Rebeca Lalbickngheti, SMS (Plant Protection), KVK Aizawl
17. Sinjit Singh Ashun, SMS (Agronomy), KVK Lunglei
18. Dr Rohit Shukla, SMS(Horticulture), KVK Mamit
19. Dr Om Prakash, SMS(Agronomy), KVK Champhai
20. C Rualthankhuna, SMS(Agro), KVK Lawngtlai
21. Dr Lungmuana, Scientist, ICAR, Mizoram Centre, Kolasib
22. Dr Lithruapuii, Scientist, ICAR, Mizoram Centre, Kolasib
23. Lyncy Lalrindiki, Directorate of Agriculture(Research& Extension), Govt. of Mizoram
24. Dr S. Lalhiansanga Directorate of Agriculture (Research and Extension), Mizoram

As per programme schedule, the Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate, former DDG(AE), ICAR, New Delhi visited the instructional farms of KVK Kolasib such as poultry farm/ piggery, plantation/ orchard of different horticulture crops, integrated farming systems being maintained by the KVK on 23<sup>rd</sup> November, 2019 in the morning. This was followed by visits to KVK Infrastructure-Administrative Buildings, Laboratories and Demonstration cum Instructional Farms along with the staff of the KVK to assess the present status of such infrastructures and land utilization pattern of KVK. Valuable comments and suggestions were made by the QRT Chairman and members, regarding ways for improvement and better utilization of available land of the KVK, especially in connection to improvement of Instructional Farm and Demonstration Units. The Travel Workshop of QRT i.r.o. KVKs in Mizoram started with the inauguration of exhibition arranged by all KVKs in Mizoram to showcase the technological products and various agricultural innovations of the state. The team was highly impressed with the quality display of various value additions specially reuse of waste materials. The inauguration session

began with the formal welcome address by the Director of Agriculture (Research & Extension), Government of Mizoram. This was followed by opening remark by the Chairman of the team. The technical presentation on different performance and achievements of activities of KVKs during the past 8years (2011-12 to 2018-19) was made by the individual Heads of KVKs of the state, wherein valuable comments and suggestions for improvement, based on their presentation were made by the QRT Chairman and Members. The final concluding remark with a vote of thanks was proposed by the QRT Member Secretary, Dr. A.K. Singha, Principal Scientist, ATARI, Zone-VII. Some of the recommendations out of the workshop are given below.

#### **Suggestions/ Recommendations-**

- While appreciating the remarkable support rendered by host institute of KVKs, the QRT requested for extending more support and cooperation with the KVKs in Mizoram through collaborative programmes for the development of farming communities in the state.
- Efforts may be taken for commercialization of technologies/ products through KVKs after processing / value additions
- Honey production at field level must be promoted through KVKs
- District-wise components/ enterprise speciality of production and promotion may be come out by KVKs in the state
- Specify the components-wise expenditure and income in integrated farming system
- Increase quality seeds and planting materials production to meet the requirements of farmers
- Increase Revolving Fund (RF) status by all KVKs
- Citrus rejuvenation particularly Khasi mandarin may be taken up at the earliest by KVK Serchhip
- Storage and marketing facilities at district level may be improved for high remuneration to the farmers
- Study on comparison of disease incidence between varieties Arka Raksa and Arka Samrat of tomato for KVK Champhai.
- Fish breeding programme (Silver Barb) may be taken up by KVK Mamit
- Production and promotion of spawn and round the year mushroom by KVKs.



## Annexure- XIV

### Report of Field Visit and Visit to KVK Kolasib, Mizoram by QRT on 24<sup>th</sup> November, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
3. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
4. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
5. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
6. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI, Umiam and Member Secretary, QRT.
7. Dr. R.K. Saha, DEE, CAU, Imphal
8. Dr. K.P. Choudhury, Head, KVK Aizawl
9. Dr. Lalmaunzovi, Head, KVK Lunglei
10. PC Larinthega, SMS(Horticulture), KVK Kolasib
11. Dr David Malsawardaunghian, KVK Kolasib

The Quinquennial Review Team (QRT) visited the instructional farms of KVK Kolasib such as poultry farm/ piggery, plantation/ orchard of different horticulture crops, integrated farming systems being maintained by the KVK on **23<sup>rd</sup> November, 2019** in the morning. This was followed by visits to KVK Infrastructure- Administrative Buildings, Laboratories and Demonstration cum Instructional Farms along with the staff of the KVK to assess the present status of such infrastructures and land utilization pattern of KVK. Valuable comments and suggestions were made by the QRT Chairman and members,

regarding ways and means for improvement and better utilization of available land of the KVK and Instructional Farm and Demonstration Units. An interaction session with the beneficiaries of different flagship programmes, members of SHGs, Farmer's Club was also held after the travel workshop in the evening where the members and beneficiaries expressed their satisfaction over the initiatives taken and cooperation received from the KVK in their upliftment of livelihood status. The Chairman acknowledged with thanks to all the members of different farmers clubs and SHGs for their support in the journey of agricultural development in the state.

On **24<sup>th</sup> November, 2019** the QRT visited farmers' field in Buhchangphai village where KVK activities under different programmes are being implemented. This particular village is also the adopted village under the Government flagship programme of 'Doubling Farmer's Income by 2020'. The QRT visited three selected farmers fields and had a successful and fruitful interaction with the farmers. The QRT members highly appreciated the performance of the farmers and were deeply impressed by the ITK wherein the stems of the wild banana were used to protect the crops from damage from direct sunlight. They were also deeply impressed by the Integrated Farming System (IFS) being taken up by one of the farmers who is being promoted by KVK Kolasib. After the field visit there was an interactive session with the farmers, wherein, valuable comments and suggestion were provided by the QRT Members, not only to the farmers but also to all the heads of KVKs in Mizoram.

#### Brief Profile of KVK Kolasib

- ❖ **Host Institute:** Department of Agriculture (Research & Extension), Govt. of Mizoram
- ❖ **Year of establishment:** 2<sup>nd</sup> February, 1979
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 16 nos.
- ❖ **Total area/ land under KVK:** 25.20 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- XV

### Proceedings of Travel Workshop of QRT in respect of KVKs in Tripura held on 5<sup>th</sup> December, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI and Member Secretary, QRT.
6. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Zone-VII, Umiam
7. Dr. P.K. Pandey, Dean, CoFSc, CAU, Lembucherra
8. Dr. K.K. Barman, JD, ICAR Tripura Centre, Lembucherra
9. Dr. S. Sarkar, Head, KVK Sepahijala
10. Dr. Biswajit Debnath, SMS(Fishery), KVK South Tripura
11. Dr. I. Gohain, SMS (HS), KVK South Tripura
12. Dr. Amitab Chakraborty, ADA, Govt. of Tripura
13. Dr. Mondira Chakraborty, Head (i/c), KVK West Tripura
14. Mr. Dipankar Dey, Head (i/c), KVK Khowai
15. Mr. Rajib Das, SMS (Extension), KVK Khowai
16. Mr. Ardhendu Chakraborty, SMS (PP), KVK Khowai
17. Mr. Suresh Biswas, SMS(HS), KVK Khowai
18. Mr. Debasis Choudhury, Head (i/c), KVK Unakoti
19. Mr. F. Islam, Head (i/c), KVK Gomati

20. Mr. Pradip Das, Head (i/c), KVK Dhalai

21. Mr. Ranedhir Sarma, SMS (Agro), KVK North Tripura

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate attended the Travel Workshop of KVKs in Tripura on **5<sup>th</sup> December, 2019** at College of Fisheries Science (CoFSc), CAU, Lembucherra to review the achievements made by all KVKs of Tripura during 2011-12 to 2018-19. The travel workshop included visit to exhibition stall arranged by KVKs of the state which displayed various technological products. After the visit to exhibition stalls and interaction with KVKs staff, the inaugural programme of the workshop began with the formal welcome address by Dr. P.K. Pandey, Dean of the college followed by self introduction by visiting dignitaries and other stakeholders including KVK participants. On his opening remark, the Chairman of QRT, Dr. K.D. Kokate expressed his satisfaction over the impressive display of technologies and their products. He urged upon all KVKs for developing proper digital database including impacts of different technologies in terms of horizontal spread and economy of interventions in the district. The technical presentation on different programmes and activities carried out during last eight years was made by individual KVKs. Important general recommendations/ suggestions of travel workshop are given below-

#### Recommendations/ Suggestions-

- The vacancies of posts in KVKs may be filled up as soon as possible either on contractual or permanent mode. (Action: ICAR & Dept of Agriculture, Govt. of Tripura).
- It was suggested that District wise specific strategies for fish yield enhancement

- (production and productivity) to be prepared by College of Fisheries, Lembucherra in collaboration with all KVKs in the state.
- Benchmark survey through PRA to ascertain the present status of agriculture and allied sectors and issues relevant to agricultural development in the state.
  - Suggested to develop of low cost / farmer friendly catfish and pabda fish seed production hatchery by College of Fisheries, Lembucherra which may be popularized through KVKs.
  - KVKs may not necessarily to take up varietal evaluation for OFT / FLD experiments but only varietal testing of feasibility through assessment and refinement at farmers' fields.
  - It was suggested that Breeder's seed may not be possible to produce by the KVKs.
  - Enhance production of quality seeds and planting materials to provide to farmers as critical inputs
  - Instructional farms of KVKs must be developed as model for the farmers of the concerned district
  - Backstopping to KVKs may be taken up by CAU and ICAR in frontier areas of agricultural development
  - New extension approaches such as ICTs applications, whatsapp groups, mobile advisory services etc. for larger coverage of farmers in remote areas in time.
  - KVKs website must be dynamic mode with regular updates
  - Increase Revolving Fund (RF) status with minimum balance of Rs. 5 lakh for each KVK
  - Promote Integrated farming system model among the farmers and develop database on component wise share in the total gross income
  - QRT also encouraged KVKs to publish their field oriented researches and other activities to the Journal having high impact factor, may be in a journal having a NAAS rating of more than 6.
  - Maintain proper records on daily farmers visit to KVKs with their purpose of visits
  - Number of Soil health cards (SHCs) may be increased to 1000 per year and increase TV/ radio talks by KVK scientists
  - Calculate B:C ratio for IFS models in KVKs
  - Promote more nutritive value crop and tuber crops like elephant foot yam, tapioca etc.
  - Focus may be given on fishery, no-till, conservation tillage, tilla land agriculture etc for the state of Tripura
  - Implementation of community based nursery, location specific integrated farming system model
  - ICAR varieties developed by ICAR, Tripura Centre and released by Tripura Govt. may be used for demonstration
  - Weed management practices, weedicides/ herbicides tested under Tripura condition may be used in consultation with Directorate of Weed Science Research, Jabalpur
  - Promote rabi crops with low residual moisture.

## Annexure- XVI

### Report of Field Visit and Visit to KVK Khowai, Tripura by QRT on 4<sup>th</sup> December, 2019

#### Members Present-

1. Dr. B. S. Hansra, Former ADG (AE), ICAR New Delhi and Member, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. A.K. Singha, Principal Scientist (AE), ICAR- ATARI and Member Secretary, QRT
6. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Zone-VII, Umiam
7. Mr. Dipankar Dey, Head (i/c), KVK Khowai
8. Mr. Rajib Das, SMS (Extension), KVK Khowai
9. Mr. Ardhendu Chakraborty, SMS (PP), KVK Khowai
10. Mr. Suresh Biswas, SMS (HS), KVK Khowai

The Quinquennial Review Team (QRT) under the leadership of Dr. B.S. Hansra, former ADG (AE) visited the KVK Khowai campus as well as East R.C Ghat (Adopted Village of Pilot Project on Doubling Farmers Income) of Khowai district of Tripura on 4<sup>th</sup> December, 2019. Initially the team visited the farm of Shri Bijoylal Majumder of East R.C Ghat Village, who has been awarded with prestigious ICAR Pandit Deen Dayal Upadhyay Antodaya Puraskar-2017. The QRT was highly impressed after observing the innovative practices in the field of Mr. Majumdar. The Progressive farmer was cultivating Bottle Gourd as paira crop in his plot with zero tillage after growing Chilli followed by visit to field of Mr. Babul Das where successful integrated farming system comprising of fisheries,

Arecanut, citrus, banana, coconut, sugarcane and pineapple are grown. The team also visited the Custom Hiring Centre of **Prabin Farmers Club** situated at East R.C Ghat Village. The dignitaries encouraged the farmers to utilize benefits of the custom hiring centre to the best possible way to for the betterment of the farming community of the village. An interaction session with the Farmers-QRT members was organized in the village itself where the various regional and National level award Winning farmers of Khowai district were felicitated by the QRT and other dignitaries. Dr. B.S. Hansra, Member of the QRT and Ex- ADG of Agricultural Extension, ICAR has addressed the farmers. He explained on various strategies which can be effective on doubling farmers income by 2022. He also appreciated the efforts of KVK, Khowai on improving the economic condition of the farmers of the Khowai district of Tripura. The team further visited the exhibition stalls of different farmers clubs of Khowai district of Tripura at KVK Khowai. At last the team visited the instructional farms of KVK Khowai and provided valuable suggestions and advices to the staff of KVK for successful implementation of the overall activities of KVK and development of agriculture in the district.

#### Suggestion/ Recommendations-

- Proper documentation and record keeping on interventions made by KVK in different enterprises and components of farming system
- The innovative model of Paira crops with zero tillage may be popularized among the farmers
- Increase production of quality seeds and planting materials to meet farmers requirement

- True Potato Seeds (TPS) may be promoted further to augment more income generation of farmers
- Proper spacing of plantation crops such as Arecanut, coconut, banana and pineapple must be maintained
- Proper utilization of Custom hiring centre by maintaining permanent register and the income generated out of the service
- Publication of successful interventions and technologies for mass awareness and popularization
- Strengthening linkage with other allied departments for the benefit of farming community in the district
- Encourage innovative farmers to outreach their success stories to others

### **Brief Profile of KVK Khowai, Tripura**

- ❖ **Host Institute:** Sri Ram Krishna Seva Kendra, Kolkata (NGO)
- ❖ **Year of establishment:** 24<sup>th</sup> May, 1979
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 15 nos.
- ❖ **Total area/ land under KVK:** 23.26 ha
- ❖ **NITI Ayog Grade:** A

## Annexure- XVII

### Proceedings of Travel Workshop of QRT in respect of KVKs of Arunachal Pradesh held on 7<sup>th</sup> December, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. A.K. Singha, Principal Scientist (AE), ICAR- ATARI and Member Secretary, QRT.
6. Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VII, Guwahati
7. Dr. D .B. Ahuja, Dean (I/C) CHF, Pasighat
8. Dr. H. Kalita, Joint Director, ICAR for NE region
9. Dr. Taba Heli, Deputy Director, DAHV & DD
10. Mr. T. Game, SNO, KVKs Directorate of Agriculture
11. Mr. Chandra Kumar Singh, SMS (Agronomy), KVK Tawang
1. Dr. N. Kumar, SMS Head KVK Changlang
2. Dr. M. C. Debnath, SMS, KVK East Kameng
3. Dr. Bangkeng Perme, Head, KVK Papumpare
4. Mr. Pem Thinley, SMS (Agronomy) KVK West Kameng
5. Mr. Arvind Pratal, SMS (Agronomy), KVK Upper Subansiri
6. Dr. Santosh Kumar, SMS (Animal science) KVK Anjaw
7. Dr. Rita Nangthombam, ACTO (PB), KVK West Siang
8. D.r M. C. Debnath, SMS , Head KVK East Kameng
9. Dr. D. S. Chonkar, SS & Head, KVK Tirap
10. Dr. S. K. Chaturvedi, SMS (Horticulture) KVK Lower Subansiri
11. Narang Laling, AMO, KVK Namsai
12. Mamomi Panging, SMS (Agro Metrology )
13. Tadu Game, Joint Director of Agriculture, Govt. of A.P.

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate organized Travel Workshop to review the achievements and performance of KVKs in Arunachal Pradesh during last eight years (2011-12 to 2018-19) at KVK Papumpare on **7<sup>th</sup> December, 2019**. Over **40** participants from different organizations including the Sr. Scientists & Heads of KVKs of Arunachal Pradesh, representatives from the Department of Agriculture, Department of Livestock & Animal Husbandry, Govt. of A.P., Dean (i/c) College of Horticulture & Forestry, CAU and Joint Director (i/c), ICAR RC for NEH Region, Arunachal Pradesh participated in the programme. The travel workshop included exhibition of various technologies and technological products promoted by KVKs in the state. After inauguration and visit to exhibition stalls arranged by different KVKs of the state, the technical programme started with the formal welcome address by Dr. T. Heli, Dy. Director of Agriculture, Govt. of A.P. On his opening remark, Dr. K.D. Kokate, Chairman of the team expressed his happiness over the arrangement for exhibition made by KVKs of the state. The technical presentation by all KVKs in Arunachal Pradesh was made to highlight their performance and achievements of programmes and activities during last eight years. The following points were put forward as suggestions for further strengthening of KVK activities in the state-

- There is a need for popularizing horticulture based farming systems for ensuring nutritional security among the tribal population.
- There is a need to make application of modern agricultural techniques in the tribal areas also so that the quality of life of tribes could be uplifted up to a satisfactory level.
- Proper institutional arrangements keeping the farmers in center needed for development in tribal areas.

- Proper documentation and validation of traditional knowledge and biodiversity in tribal areas are of paramount importance.
  - KVKs may act as resource center for producing quality/ certified seeds and planting materials for the farmers in the state.
  - Employment avenues should also be generated by the KVKs through skill development programmes and income generating ventures.
  - KVKs should emphasize on Natural Resource Management in Arunachal Pradesh
  - Prepare the roadmap to cover the farmers under Soil Health Cards distribution programme.
  - Centralized group approach based on a planned schedule of visits to farmers and training of change agents and subject matter specialists is highly significance
  - Establishment of strong linkage between research and extension systems is essential in the process of technology generation and dissemination
  - Provision to supply farm machinery on subsidized rate to the farmers for value addition.
  - Encouragement to farmers for self-marketing (non-branded agro produces).
  - Local and inferior quality seeds should be replaced with high quality seeds and for that the "seed village program" needs a focused attention.
  - To meet the growing demand for seed, Public Private Partnership (PPP) mode of seed production should be promoted.
  - Seed storage facility should be created at village level through FPO or other pertinent groups to address the issue of timely availability of seeds and make seed village program more effective.
  - The Pabda fish species of Agartala, Mandarin have a very good scope for farmers' income generation in the state.
  - Promote off season horticultural crop cultivation with financial support from state government.
  - Establishment of suitable market for selling organic horticultural products for better earning of farmers.
  - Instructional farm & Demonstration farm to be maintained as models to others.
  - Best KVK award to be applied by the good performing KVK of the state
  - Proactive role and support is sought from state department and regular visit to interior KVKs of the state
  - KVKs should work on science mode and only critical inputs to be given to the farmers by the KVKs.
  - Celebration of seasonal horticultural crop festivals should be promoted by KVK
  - Promote Horti-Tourism by establishing relevant infrastructure and guidelines.
  - Develop quality mother orchard of major fruit crops in the district.
  - Establish permanent Technology Demonstration Units, Integrated Farming System Units and Technology Cafeteria.
  - Produce technological inputs and products like seeds/seedlings/livestock/bio-Products etc., using revolving fund, in order to ensure their availability to farmers and other stakeholders.
- Specific Recommendations given by QRT-**
- The Geographical areas of the state is vast, there is scope of increase in Cropping Intensity especially for Rice, maize, Millet, Horticultural crops.
  - Promote low cost farm mechanization with technologies of CIAE, Bhopal
  - Impact Assessment of technologies and preparation of Proper Planning.
  - Give Emphasizes on In-situ conservation.
  - Popularization of Custom Hiring Centre among the farming community and maintain the record properly.
  - Mobilize the fund from different external agencies through projects and other extension oriented activities viz. Exposure Visit, Meeting, Demonstration, Kisan Mela, Conference etc.

- Increase generation resources from the KVK farm.
- Organic farming needs to be promoted in tribal areas by establishing market linkages through involvement of different stakeholders for providing better returns to the farmers.
- Impact assessment in terms of increase in income, adoption of technology, increase in area and demonstration yield over local, savings of input cost and skill development of the farmers may be conducted at KVK level.
- Maintenance of Asset registration
- Maintenance of proper documentation of work done under the doubling of farmers Income.
- Develop the better convergence with external funding agencies and get the financial assistance with proper documentation of external fund received along with the source
- Activities on Organic Farming should also be documented by KVKs
- Give emphasizes on Quality Seed Production in the district.
- Farmers Data should be submitted to the ATARI along with Adhar no./ mobile number of the farmers under quality seed production programme
- Maintain and update the KVKs websites in dynamic, develop the own channel by taking the help of KVK Anjaw and uploaded all the relevant information like TSP report, Success stories, on websites and Facebook for better mass awareness.
- KVK Staffs should not be engaged anywhere rather than KVK, and engaged staff should be sent back to the KVK with immediate effect otherwise their salary will be stopped
- Group based approaches for entrepreneurial development such as FPOs and FIGs need to be promoted in the tribal areas.
- Location specific IFS models need to be promoted in the tribal areas for ensuring sustainable livelihood.
- Increase the revenue generation from farm activities
- KVK should popularizing horticulture based farming systems for ensuring nutritional security among the tribal population.
- Exposure of KVK staff to neighboring zonal and national award winning KVKs
- Resolves the land issues with immediate effect in consultation with respective host institutes
- KVK should adopt new farm innovation, ICT, KMAS to reach the unreached farming communities.
- Mapping of Operational Villages by the KVKs should be done.
- KVK should apply for G.I. tagging of their important commodities
- KVK should explore the possibilities of convergence with NABARD, NHB, MSME, SFSC, DBT, ATMA, MANAGE etc., and get the financial assistance for performing the activities on field.
- KVKs should develop the producer organizations/ company because they are compatible to deal with the most vulnerable part of agri-value chain, which starts from the farm and goes on till processing and the far-away markets.
- Design and implement innovative extension strategies for individual, group and mass awareness about technology related to prioritized problems. Use ICT tools and techniques like e-extension, web-based technology content including modules and capsules, e-farmers, v-KVK and KVK net for reaching the unreached for knowledge empowerment and technology dissemination.

Dr A.K. Singha Principal Scientist & Member Secretary, QRT offered his vote of thanks to all QRT members specially the Chairman for their sincere cooperation and dedicated efforts in the entire exercise of review of KVKs programmes and activities in northeast which began the journey since 16<sup>th</sup> October, 2019. He also requested all KVKs to work with sincerity and seriousness as per the suggestion made by the QRT for the benefit of the farming community.



## Annexure- XVIII

### Report of Field Visit and Visit to KVK Papumpare, Arunachal Pradesh by QRT on 8<sup>th</sup> December, 2019

#### Members Present-

1. Dr. K. D. Kokate, Former DDG (AE), ICAR New Delhi and Chairman, QRT
2. Dr. A. K. Vasisht, Former ADG (PIM), ICAR New Delhi and Member, QRT
3. Dr. H. C. Bhattacharyya, Former DEE, AAU, Jorhat and Member, QRT
4. Dr. S. V. Ngachan, Former Director, ICAR- RC for NEH, Umiam and Member, QRT
5. Dr. A.K. Singha, Principal Scientist (AE), ICAR-ATARI, Umiam and Member Secretary, QRT.
6. Dr. A.K. Tripathi, Director, ICAR-ATARI, Zone-VII, Guwahati
7. Dr. Bangkeng Perme, Head, KVK Papumpare
8. Shri. Hemanta Ngangbam, SMS(Hort), KVK Papumpare
9. Dr. Nabam Gama, farm Manager, KVK Papumpare

The Quinquennial Review Team (QRT) under the Chairmanship of Dr. K.D. Kokate made a visit to instructional farms of KVK Papumpare on **8<sup>th</sup> December, 2019**. The team expressed satisfaction with different activities being carried out in different demonstration units, however identified lot of scope for their improvement in terms of scientific and quality management to act as model to farmers and other stakeholders. The team also visited farmers' field at Upper Jumi village and Kimi village which are about 87 kms distance

from the KVK location where different programmes and activities such as integrated farming system, poultry, piggery, duckery, fisheries and sericulture nursery components are being practiced by farmers with technical support and cooperation of KVK Papumpare. The team made the following remarks and suggestions/ recommendations for improvement-

#### Suggestions/ Recommendations-

- Plan appropriately in consultation with expert in regard to management of instructional farm activities for skill oriented capacity development
- Proper display board of demonstration units along with database need to be done
- Shade net house and poly house of KVK farm need to be utilized in view of local potential of various horticulture- vegetables commodities.
- There is need for effective technology backstopping of KVK staff by ICAR/Agriculture University experts.
- Economic analysis of IFS component wise of Farmers field to be worked out.
- Proper Area/ unit to be recorded for each component
- Agro-ecological zone wise water management models and adaptation strategy could be formulated by different knowledge partners.

#### Brief Profile of KVK Papumpare, Arunachal Pradesh

- ❖ **Host Institute:** Dept. of Vety. & A.H., Govt. of Arunachal Pradesh
- ❖ **Year of establishment:** 27<sup>th</sup> March, 2006
- ❖ **Staff position (as on 1<sup>st</sup> October, 2019):** 16 nos.
- ❖ **Total area/ land under KVK:** 20 ha
- ❖ **NITI Ayog Grade:** B



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