वार्षिक प्रतिवेदन
Annual Report
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भा कृ अनु प-कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, अंचल-३
ICAR-Agricultural Technology Application Research Institute, Zone-III
उमियम, मेघालय-७९३१०३
Umiam, Meghalaya-793103

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PREFACE

Greetings from Team ICAR- ATARI, Umiam!

ICAR- Agricultural Technology Application Research Institute (ATARI), Umiam with its headquarters at Umiam, Meghalaya is primarily responsible for systematic coordination, monitoring and reviewing of mandated activities of KVKs such as technology assessment, refinement, demonstrations, training programmes and other extension activities in North Eastern Region of India comprising of eight states. In addition, the institute is also engaged in formulation and implementation of need based research projects as part of strengthening agricultural extension research and knowledge management. During the year 2016-17, the institute completed 2 (two) institute research projects besides implementing 3 (Three) externally funded research projects namely; National Innovation on Climate Resilient Agriculture (NICRA), Attracting and Retaining Youth in Agriculture (ARYA) and Farmer FIRST Projects (FFP).

The ICAR-ATARI, Umiam obtained ISO 9001:2015 for three years during the reporting period. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam received the Fakhruddin Ali Ahmed Award for outstanding research in tribal farming system from ICAR, New Delhi in July 16, 2016. The institute also begged the Best Stall Exhibition Award in Krishi Unnati Mela, 2017 during 15th–17th March, 2017 at IARI, New Delhi. Scientists of the ICAR-Agricultural Technology Application Research Institute, Umiam during 2016-17 published 18 research articles in prestigious national and international research journals. One of the milestones during the period is the initiation of the construction of the Administrative building of the Institute with the financial outlay of Rs. 425.00 lakhs. In addition, the institute brought out a publication entitled *Technology Inventory for Northeast* India incorporating the technologies developed by AAU, CAU, ICAR Complex and other ICAR Institutes of the region besides three other publications. During the reporting period, the online reporting system has been made mandatory for submission of all reports by KVKs including release of fund to the KVKs as part of *Digital India* initiative of the Government of India. The institute also serves as feedback mechanism to research and extension systems while maintaining a very close liaison with ICAR headquarters and has made significant progress in research, capacity building and other extension activities during 2016-17.

Through this document, an attempt has been made to highlight the significant achievements of the institute and the KVKs during 2016-17 in a meaningful and comprehensive manner for the benefit of policy makers, decision makers, research institutes, extension workers, KVKs and other stakeholders including farmers in the region. I express my sincere thanks and gratitude to Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR, Govt. of India, Dr. A.K. Singh, DDG (AE), Dr. V.P. Chahal, ADG (AE), Dr. Randhir Singh Poswal, ADG (AE) and all the colleagues of Agricultural Extension Division in Council HQ for their constant encouragement, guidance and support in executing the mandates of the institute. I also thankfully acknowledge the commendable efforts and contributions made by Dr. A.K. Singha (Pr. Scientist), Dr. R. Bordoloi (Pr. Scientist), Dr. P.C. Jat (Sr. Scientist), Shri J. Wahlang, ACTO, Shri Ashit Biswas, AF&AO and all other administrative and supporting staff including the RA/SRFs/DEOs of the institute in bringing out this publication within a stipulated time period.

Place: Umiam, Meghalaya
Date: June, 2017

(Bidyut C. Deka)
Director

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EXECUTIVE SUMMARY

The ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III and 83 KVKs under its jurisdiction spread over eight North Eastern states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Mizoram, Sikkim and Tripura with their mandated activities have been making all out efforts in fulfilling the needs and aspiration of different stakeholders including farmers in the region. The support received from Directorates of Extension Education of Assam Agricultural University and Central Agricultural Universities as well as 18 host organizations enabled the institute to cater the needs of different stakeholders including KVKs in providing technological as well as methodological backstopping, information support, skill up-gradation, entrepreneurship development etc. in crops and other livestock enterprises.

The institute during the period has completed 2 (two) institute research projects and their reports had already been submitted in the form of RPF-3. These projects are- ***"Cropping intensification and diversification for production enhancement in North East Region"*** and ***"Information need of farmers of NE Region for adoption of Agricultural Technologies"***. The institute is also implementing **3 (three)** externally funded research projects namely; ***National Innovation on Climate Resilient Agriculture (NICRA)*** for technology demonstration on farmers' fields through 23 selected KVKs, ***Attracting and Retaining Youth in Agriculture (ARYA)*** through 5 selected KVKs and 3 (three) "***Farmer FIRST Projects (FFP)"*** through ICAR Research Complex for NEH Region, Umiam, Meghalaya, Assam Agricultural University, Jorhat and Central Agricultural University, Imphal in the region. Scientists of the ICAR-Agricultural Technology Application Research Institute, Zone-III during 2016-17 published **18** research articles in prestigious national and international research journals and two more research papers have been accepted for publication. In addition, the institute was also successful in publication of ***Technology Inventory for North East India*** **(Resource book),** ***Glimpses of Awareness Programme: Pradhan Mantri Fasal Bima Yojna, 2016 in North East India*** **(Technical bulletin)**, ***Climate Resilient Agricultural Interventions in North East India*** **(Technical bulletin)** and ***Training Manual on Refresher Training Programme for Subject Matter Specialist and Programme Assistant of Home Science of KVKs*** **(Training manual)** during the reporting period. During the year 2016-17, ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III was recognised with the **Best Poster Presentation Award** on "Performance of Rapeseed & Mustard in Rice Fallows through Cluster Front Line Demonstrations in North Eastern Region" in International Seminar on Oilseed Brassica (ISOB 2017) held at SIAM, Jaipur, Rajasthan during February 23-27, 2017. The institute also begged the **Best Stall Exhibition Award** in Krishi Unnati Mela, 2017 during 15th – 17th March, 2017 at IARI, New Delhi. The ICAR-ATARI, Umiam obtained the **ISO 9001: 2015** for three years with effect from October 03, 2016 during the reporting period. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam received the **Fakhruddin Ali Ahmed Award for outstanding research in tribal farming system** from ICAR, New Delhi on July 16, 2016.

The institute, through 23 NICRA KVKs under its jurisdiction, was successful in promotion of climate resilient agricultural technologies in North East region such as in-situ moisture conservation with mulch -plastic, biological waste etc and raised bed planters in Field Pea (var Prakash), Bitter gourd (Jyoti Bolder), Cabbage (H-139) Cauliflower (White Contessa), Tomato (Ar*ka Rakshak*, Ginger (Nadia) and Turmeric (Megha Turmeric-1) to conserve soil moisture, reduce evapo-transpiration loss and improve soil health for increased crop yields under natural resource management. While capacity building programmes on different areas like soil health management, life saving irrigation, cropping system, protective cultivation, IPM, soil moisture conservation, livestock production & manegement, value addition were conducted by the NICRA KVKs under extension and technical supervision of the institute.

With close technical support and guidance by ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III, the KVKs of the region made assessment of **720** technologies with **2944** nos. of trials to identify location specific suitable technologies and refined **41** technologies with **301** nos. of trials under different thematic areas of crop enterprises during the period. Besides, the KVKs also made assessment of **152** technologies with **1249** numbers of trials and refined **7** technologies with **349** nos. of trials in different thematic areas of livestock enterprises in the region. The systematic coordination

and monitoring mechanism of ICAR-ATARI, Zone-III helped the KVKs to successfully conduct as many as **12480** frontline demonstrations in **2640.20 ha** area to demonstrate the production potential of newly released technologies in the farmers' fields at different locations in a given farming system. These included frontline demonstrations in oilseeds **(2069),** pulses **(2371),** other crops **(5704),** livestock enterprises **(1441),** and other enterprises **(895).**

The institute during 2016-17 organized **26 (Twenty six)** different HRD programmes for KVK staff, farmers, rural youth and other agri-preneurs of the region in partnership with different allied institutions/ and organizations on different disciplines and thematic areas. A total of **7886** training courses including sponsored and vocational training programmes were conducted by the KVKs under Zone-III which benefitted **1,93,411** of farmers, farm women, rural youth and extension personnel on different thematic areas such as crop production, horticulture, soil health and fertility management, livestock production and management, home science and women empowerment, agricultural engineering, plant protection, fisheries, agro-forestry, capacity building and group dynamics etc. This included **4355** courses and **138331** participants of farmers, **963** courses and **23212** participants of rural youth and **426** courses and **7735** participants of extension personnel. In addition, **1169** courses of sponsored training programme were conducted by the KVKs under the zone for **18419** participants as well as **973** nos. of vocational training courses benefitting a total of **5714** participants particularly rural youth on different areas of income generating activities/ enterprises. As regards women empowerment, KVKs in the region trained as many as **83675** farm women representing **43.26** percent of the total beneficiaries (farmer and farm women) during 2016-17.

KVKs in the region also organised a total of **57183** number of extension activities under close supervision and guidance of this institute for the benefit of **468716** farmers, farm women, agri-preneurs, extension personnel and rural youth including school children in the region to create awareness about improved agricultural technologies and their role in agricultural development. During the period, KVKs under Zone-III produced high quality seeds, planting materials and bio-products which included **2052.41 tonnes** seeds of cereals, pulses, oil seeds, vegetables etc., **43.28** lakh numbers of planting materials of fruits, vegetables, forest species, plantation, ornamental crops etc. and **31981** nos. of livestock strains and **60.80** lakh of fish fingerlings besides **87** nos. of rabbits in the region. As mandated activity, the institute also successfully organised Annual Zonal Workshop of KVKs (2016-17) to review the progress and achievements of KVKs including preparation of annual action plan for the year 2017-18 of KVKs.

As part of regular activity, the institute made sincere efforts in strengthening of the Directorates of Extension Education (DEEs) and Agricultural Technology Information Centres (ATICs) under the zone through regular monitoring mechanism. During the year, the two Directorates of Assam Agricultural University, Jorhat and Central Agricultural University, Imphal made 109 visits to different KVKs under their jurisdiction by the Directors of Extension Education and their scientists to review, monitor as well as supervise KVKs activities, organized 12 review meetings and 13 HRD programmes benefitting 310 KVK participants/ staff. The Directorates also made 119 nos. of publications including extension bulletins (42), technical bulletins (22), training manuals (3) and farm magazine (28) during the period. The KVKs in the region were successful in empowering farmers including farmwomen in the region through regular Kisan Mobile Advisory, launching of KVKs web-sites, e-newsletters and different capacity building programmes.

With sincere efforts by the scientists of the institute, KVKs under zone-III were successful in testing of **36193** nos. of soil samples through various soil testing labs/ Mridaparikshak and analysed the strength and weaknesses of the soil and suggested measures to deal with it with proper fertilizer recommendations. This helped distribution of **44066** nos. of Soil Health Cards (SHCs) to the farmers on the eve of World Soil Health Day on 5th December, 2016.. The ICAR-ATARI, Zone-III has been implementing an innovative initiative "Mera Gaon Mera Gaurav (MGMG)" with the help of KVKs under the zone to promote direct interface of scientists with the farmers to hasten the lab to land process. The main objective of this scheme is to provide farmers with required information, knowledge and advisories on regular basis by adopting villages. Under the programme, a total of **1406** nos. of villages were selected where **4003** nos. of demonstrations and **1254 nos. of** training programmes were conducted by the KVKs under Zone-III.

कार्यकारी सारांश

भा कृ अनु प– कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान (अटारी), अंचल– III के अधिकार क्षेत्र के 83 कृषि विज्ञान केंद्र जो कि पूर्वोत्तर के 8 राज्यो अरूणाचल प्रदेश, असम, मणिपुर, मेघालय, मिजोरम, नागालैंड, सिक्किम एवं त्रिपुरा में फैले है अपने अनिवार्य गतिविधियो द्वारा क्षेत्र के हितधारको की आकांक्षाओ को पुरा करने में प्रयासरत है। असम कृषि विश्वविद्यालय, जोरहट एवं केंद्रीय कृषि विश्वविद्यालय, इम्फाल के कृषि विस्तार निदेशालय और 18 मेजबान संगठन की सहायता से संस्थान हितधारको की फसल एवं दूसरी पशुधन उद्यम जैसी विभित्र जरूरतो जैसे की प्रौद्योगिकी एवं कार्यप्रणाली मदद, जानकारी सहायता, कौशल उन्नयन, उद्यमिता विकास इत्यादि द्वारा क्षेत्र को सक्षम कर रहा है।

वर्ष 2016–17 के दौरान भा कृ अनु प – कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान (अटारी), अंचल–III ने दो संस्थागत शोध परियोजनाओं को पुरा किया एवं उसका आर पी एफ 3 भी जमा कर दिया । ये परियोजनाये है; पूर्वोत्तर क्षेत्र में उत्पादन बढ़ाने हेतु फसल सघनता एवं विविधता और पूर्वोत्तर क्षेत्र में कृषि तकनीको को अपनाने के लिए कृषको की आवश्यकता की जानकारी परियाजना। तीन बाह्य वित्त पोषित क्षेत्र शोध परियोजना का कार्यान्वयन भी संस्थान के अंतर्गत चल रहा है (i) जलवायु परिवर्तन अनुरूप खेती पर राष्ट्रीय पहल (निकरा) के तहत 23 निकरा कृषि विज्ञान केन्द्रो द्वारा किसानो के खेतो में कृषि तकनीकी का प्रदर्शनः, (ii) चयनित 5 कृषि विज्ञान केन्द्रो द्व ारा युवाओ को कृषि की तरफ आकर्षित करना एवं रोकना (आर्या) परियोजना, (iii) फार्मस फर्स्ट परियोजनां असम कृषि विश्वविद्यालय, जोरहट, केन्द्रीय कृषि विश्वविद्यालय, इम्फाल तथा भा कृ अनु परि के उत्तर पूर्वी पर्वतीय कृषि अनुसंधान परिसर, उमियम के सहयोग से चलायी जा रही है। इसके अलावा संस्थान के वैज्ञानिको द्वारा राष्ट्रीय एवं अन्तराष्ट्रीय पत्रिका में 18 शोध पत्र प्रकाशित किए गए एवं दो शोध पत्र प्रकाशन के लिए सम्मिलित किए गये। इसके अतिरिक्त संस्थान ने पूर्वोत्तर भारत तकनीकी समाभाव (पुस्तक), प्रधानमंत्री फसल बीमा योजना 2016 का पूर्वोत्तर भारत में जागरूकता कार्यक्रम की झलकियाँ (तकनीकी बुलेटिन), पूर्वोत्तर भारत में जलवायु अनुरूप कृषि समावेश (तकनीकी बुलेटिन) तथा कृषि विज्ञान केन्द्रों की गृह विज्ञान विषय विशेशज्ञ तथा कार्यक्रम सहायक के पुर्नज्ञान लिए प्रशिक्षण पुस्तिका (प्रशिक्षण पुस्तिका) वर्ष 2016–17 में प्रकाशित किये गये। जयपुर स्थित सियाम में फरवरी 23–27, 2017 में आयोजित अन्तराष्ट्रीय सम्मलेन (आई.एस.ओ. बी.–2017) में धान के बाद सरसों की फसल का प्रथम पंक्ति प्रदर्शन के प्रभाव पर सर्वश्रेष्ठ पोस्टर का पुरस्कार संस्थान को प्राप्त हुआ। संस्थान ने भा कृ अनु स नई दिल्ली में आयोजित कृषि उन्नति मेला मार्च 15–17,2017 में सर्वश्रेष्ठ स्टाल प्रदर्शनी का खिताब भी प्राप्त किया। संस्थान ने आई.एस.ओ. 9001:2015 को आगामी 3 वर्षो के लिए प्राप्त कर लिया हैं। डा. बिद्युत सी.डेका, निदेशक अटारी अंचल–III को जनजातीय क्षेत्र में कृषि प्रणाली पर उत्कृष्ट कार्य हेतु भा.कृ.अन.प. नई दिल्ली द्वारा 16 जुलाई 2016 फकरूदीन अली अहमद पुरस्कार से सम्मानित किया गया।

संस्थान ने अपने अधिकार क्षेत्र के 23 कृषि विज्ञान केन्द्रो द्वारा लचीले जलवायु कृषि तकनीको को पूर्वोत्तर क्षेत्र में सफलतापूर्वक प्रोत्साहित भी किया जैसे कि पलवर द्वारा यथास्थान नमी का संरक्षण, प्लास्टिक, जैविक अपशिष्ट आदि और प्राकृतिक संसाधन प्रबंधन के अंतर्गत मिट्टी की नमी को संरक्षित करने, वाष्पीकरण हानि को कम करने और मिट्टी के स्वास्थ्य में सुधार करके फसल की पैदावार बढ़ाने के लिए के लिए खेत मटर (प्रकाश), करेला (ज्योति बोल्डर), गोभी (एच .139), फूलगोभी (श्वेत कंटैसा) टमाटर (अर्का रक्षक), अदरक (नादिया) और हल्दी (मेघा हल्दी) को उठाए गए बिस्तर पर बुआई की गई। क्षमता विकास कार्यक्रम जो कि विभित्र क्षेत्रो में जैसे, मृदा स्वास्थ्य प्रबंधन, फसल सुरक्षा सिंचाई, फसल प्रणाली, संरक्षित खेती, आई.पी.एम मृदा नमी संरक्षण, पशुधन उत्पादन एवं प्रबन्धन और मुल्य सर्वधन इत्यादि निकरा कृ.वि.केन्द्रों द्वारा आयोजित किये गये।

संस्थान के पर्यवेक्षण एवं देखरेख में कृषि विज्ञान केन्द्रों ने फसलो के विभित्र कार्य क्षेत्रों में 2944 परीक्षणो के साथ 720 तकनीको और 301 परीक्षणो के साथ 41 संशोधित तकनीको का आकलन किया। संस्थान

के कृषि विज्ञान केन्द्रों ने पशुपालन उद्दयम में उपरोक्त के अलावा 1249 परीक्षणों के साथ 152 तकनीकों का तथा 349 परीक्षणों सहित 7 तकनीको का आकलन भी किया। संस्थान के सही साम्ंजस्य तथा निगरानी के साथ ही साथ किसानों के सहयोग से कृषि तकनीकों का उपयोग करते हुए कृषि विज्ञान केन्द्रो ने किसानों के 2640.20 हेक्टेयर भुमि पर 12480 प्रथम पंक्ति प्रदर्शन किया गया। इसमें तिलहन(2069), दलहन (2371), अन्य फसले (5704), पशुधन (144), और अन्य उद्यमों (895) पर प्रथम पंक्ति प्रदर्शन आयोजित किए गए।

वर्ष 2016-17 के दौरान संस्थान ने विभिन्न सहयोगी संस्थानों के साथ साझेदारी में 26 अलग-अलग मानव संसाधन कार्यक्रम केवीके के कर्मचारियों, किसानों, ग्रामीण युवाओं और अन्य कृषि व्यवसायी के लिए विभिन्न विषयों पर आयोजन किया । संस्थान की निगरानी में वर्ष 2016–17 में कृषि विज्ञान केन्द्रो ने प्रायोजित कार्यकर्मो सहित 7886 प्रशिक्षण पाठयकर्मो का आयोजन विभित्र विषयक क्षेत्रों जैसे फसल उत्पादन, बागवानी, मृदा संरक्षण, प्रजनन प्रबंधन, पशुधन उत्पादन और प्रबंधन क्षमता एंव समूह निर्माण तथ गतिशीलता पर आयोजित किया जिससे 193411 किसान, ग्रमीण युवक और प्रसार कार्यकर्ता लाभान्वित हुए। इसमें 4355 विषयो और 138331 कृषक, 965 विषय एवं 23212 ग्रामीण युवा तथा 426 विषय और 7735 प्रसार कार्यकर्ता सम्मिलित हुए। इसके अलावा 1169 विषयो में सहयोग पर आधारित प्रशिक्षणो द्वारा 18419 प्रशिक्षाणार्थी तथा 973 व्यवसायिक प्रशिक्षण विषयो में 5714 ग्रामीण युवा लाभान्वित हुए। वर्ष 2016–17 में कृषि विज्ञान केन्द्रों द्धारा किए गए प्रशिक्षणो में कुल 83675 महिला कृषको ने भाग लिया जोकि कुल लाभाथ्र्यिो (कृषक एवं कृषक महिला) का 43.26 प्रतिशत रहा। संस्थान के पर्यवेक्षण एवं देखरेख में कृषि की नई तकनीकों के प्रति जागरूकता के लिए 57183 कार्यकर्म आयोजित किए गए जिससे 468716 किसान, महिला कृषक, विस्तार कर्मी, ग्रमीण युवक इत्यादि लाभान्वित हुए।

विगत वर्ष के दौरान कृषि विज्ञान केन्द्रों ने 2052. 41 टन खाद्दयानो, दलहनों, तिलहनों तथा सब्जिओ के बीज का उत्पादन, 43.28 लाख की संख्या में फल सब्जियां, मसाले, आयुर्वेदिक फसले और जंगली प्रजातियों की पौध तैयार, 31981 पशुधन प्रजातियाँ, 87 खरगोश प्रजातियाँ तथा 60.80 लाख संख्या में मछली बीजों का उत्पादन किया गया। अनिवार्य गतिविधि के रूप में संस्थान ने केवीके की प्रगति और उपलब्धियों की समीक्षा करने के लिए वार्षिक क्षेत्रीय कार्यशाला (2016-17) और वर्ष 2017-18 के वार्षिक कार्य योजना तैयार करने लिए सफलतापूर्वक कार्यकर्म आयोजित किया। नियमित गतिविधि के रूप में, यथाक्रम निगरानी तंत्र के माध्यम से संस्थान ने क्षेत्र के विस्तार शिक्षा निदेशालयों (डीईई) और कृषि प्रौद्योगिकी सूचना केंद्र (एटीआईसी) को सुदृढ़ बनाने में गंभीर प्रयास किए। विगत वर्ष के दौरान असम कृषि विश्वविद्यालय जोरहट और केन्द्रीय कृषि विश्वविद्यालय, इम्फाल के निदेशालय ने अपने अधिकार क्षेत्र के तहत विभिन्न केवीके के 109 दौरे विस्तार शिक्षा के निदेशकों द्वारा किए गए और उनके वैज्ञानिकों की समीक्षा करने के लिए, साथ ही साथ केवीके की गतिविधियों की निगरानी के लिए 12 समीक्षा बैठकों का आयोजन किया और 13 मानव संसाधन कार्यक्रम का लाभ 310 केवीके प्रतिभागी, कर्मचारी को मिला। वर्ष 2016–17 के दौरान असम कृषि विश्वविद्यालय, जोरहट एव केन्द्रीय कृषि विश्वविद्यालय इम्फाल के कृषि विस्तार निदेशालय ने अपने अधिकार क्षेत्र के किसानो एवं दुसरे हितधारको के लिए 115 प्रकाशन भी किए जिसमें प्रसार बुलेटिन (42), तकनीकी बुलेटिन (22), प्रशिक्षण पुस्तिका (3) और खेती पत्रिका (3) इत्यादि प्रकाशित किये। उन्नत तकनीकों और दुसरे कृषि से सम्बंधित जानकारियो का हस्तांतरण किसान मोबाइल सन्देश, संस्थान के वेबसाइट, ई समाचार पत्रिका और दुसरे क्षमता निर्माण कार्यकर्म के द्धारा किया गया।

संस्थान के वैज्ञानिको के अथक प्रयासों से विभिन्न मृदा परिक्षण प्रयोगशालाओ, मृदा परिक्षक किट द्वारा 36193 नमूनो का मृदा परिक्षण किए गए तथा कृषक को सन्तुलित उर्वरकों की मात्रा तथा मृदा स्वास्थ्य के बारे में उचित जानकारी उपलब्ध करायी गयी। इसकी सहायता से 5 दिसंबर, 2016 को आयोजित विश्व मृदा दिवस को 44066 मृदा स्वास्थ्य कार्ड किसानों को बांटे गए। भा.कृ.अनु.प.–अटारी, अंचल III ने कृ.वि.केन्द्रो के सहयोग सें ''मेरा गाँव मेरा गौरव'' एक नवाचार कार्यक्रम का सूत्रपात किया जिसमें कृषक वैज्ञानिक संवाद तथा प्रयोगशाला से खेत तक के कार्यक्रम को बढ़ावा दिया गया। इसका मुख्य उद्देश्य किसानो को विभिन्न योजनाओं की नियमित जानकारी तथा ज्ञान पहुँचाना हैं। इस कार्यक्रम में 1406 गावों का चयन कर 4003 प्रदर्शन तथा 1254 प्रशिक्षण कार्यक्रम अंचल III के कृषि विज्ञान केन्द्रो द्धारा आयोजित किए गयें।

1.0. INTRODUCTION

1.1. Genesis of Agricultural Technology Application Research Institute (ATARI)

The Indian Council of Agricultural Research created 8 (Eight) Zonal Coordinating Units with a staff strength of 6 (Six) in each unit for implementation of Lab-to-land programme covering 50,000 farm families over the entire country during 1979. Subsequently, the ICAR decided that the KVK Project would be monitored by these units and increased the staff strength to 8 (Eight). During the VIIIth Plan (1992-1997), when the total number of KVKs was 261, the ICAR revised the staff strength of Zonal Coordinating Unit to 15 (Fifteen). During the XIth Plan, on an average, each Zonal Coordinating Unit had to handle an annual budget of about Rs. 55crores. For proper management of large number of KVKs, the Zonal Coordinating Units were upgraded to the status of Project Directorate, called Zonal Project Directorate (ZPD) with total sanctioned staff strength of 17 w.e.f. March 19, 2009. Subsequently, the ZPD was elevated to the level of research institute called Agricultural Technology Application Research Institute (ATARI) in August 11, 2015 considering its revised mandates.

1.2. Agricultural Technology Application Research Institute (ATARI), Zone-III

The ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III with its headquarters at Umiam, Meghalaya is primarily responsible for monitoring and reviewing the technology assessment, refinement, demonstration, training programmes and other extension activities being conducted by KVKs in North East Region, which comprises of eight states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura Besides, the institute is also engaged in providing guidance to the KVKs to accomplish its technical activities, ensuring continuous flow and access of technologies to the KVKs, enabling the Directorates of Extension Education of SAUs and CAU in the region to oversee the activities of KVKs. ICAR-ATARI, Zone-III also takes up need based Human Resource Development (HRD) programmes for KVK staff with adequate financial support, liaison with different stakeholders and other line departments in the region. In view of overriding responsibilities of the institute for effective monitoring, coordinating and reviewing the activities of increased number of KVKs, ICAR-ATARI, Zone-III has been further bifurcated into two zones namely; ICAR-ATARI, Zone-VI, Guwahati and ICAR-ATARI, Zone-VII, Umiam with the administrative approval of the ICAR, New Delhi. The states of Assam, Arunachal Pradesh and Sikkim are under the jurisdiction of ICAR-ATARI, Zone-VI, Guwahati with 43 KVKs and the institute started functioning with effect from April, 2016 with Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam as its Nodal Officer. While the ICAR-ATARI, Zone-VII, Umiam retains the remaining other five states of the North Eastern region with 40 KVKs as on March 31, 2017. During 2016-17, the five new KVKs (2 in Nagaland and 3 in Tripura) have been sanctioned under ICAR-ATARI, Umiam.

1.3. Mandates of the Institute (ATARI)

- Coordination and monitoring of technology application and frontline extension education programmes, and
- Strengthening agricultural extension research and knowledge management.

1.4. Major achievements at a glance

During 2016-17, ICAR-Agricultural Technology Application Research Institute, (Old Zone-III) had completed 2 (two) institute research projects and their reports had already been submitted in the form of RPF-3. These projects are- ***"Cropping intensification and diversification for production enhancement in North East Region"*** and ***"Information need of farmers of NE Region for adoption of Agricultural Technologies"***. The institute is also implementing **three** externally funded research project namely; ***National***

Innovation on Climate Resilient Agriculture (NICRA) for technology demonstration on farmers' fields through 23 selected KVKs, ***Attracting and Retaining Youth in Agriculture (ARYA)*** through 5 selected KVKs and three "***Farmer FIRST Projects (FFP)"*** through ICAR Research Complex for NEH Region, Umiam, Meghalaya, Assam Agricultural University, Jorhat and Central Agricultural University, Imphal. Scientists of ICAR-Agricultural Technology Application Research Institute, Zone-III during 2016-17 published **18** research articles in prestigious national and international research journals and two more research papers have been accepted for publication.

In addition, ICAR-ATARI, Umiam obtained the **ISO 9001: 2015 for three years** with effect from October 03, 2016. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam received the **Fakhruddin Ali Ahmed Award for outstanding research in tribal farming system** from ICAR on July 16, 2016. The institute was also successful in publication of ***Technology Inventory for North East India*** **(Resource book),** ***Glimpses of Awareness Programme: Pradhan Mantri Fasal Bima Yojna, 2016 in North East India*** **(Technical bulletin)**, ***Climate Resilient Agricultural Interventions in North East India*** **(Technical bulletin)** and ***Training Manual on Refresher Training Programme for Subject Matter Specialist and Programme Assistant of Home Science of KVKs*** **(Training manual)** during the reporting period. During the year 2016-17, ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III was recognised with the **Best Poster Presentation Award** on "Performance of Rapeseed & Mustard in Rice Fallows through Cluster Front Line Demonstrations in North Eastern Region" in International Seminar on Oilseed Brassica (ISOB 2017) held at SIAM, Jaipur, Rajasthan during February 23-27, 2017. The institute also begged the **Best Stall Exhibition Award** in Krishi Unnati Mela, 2017 during 15th – 17th March, 2017 at IARI, New Delhi.

During the period, the institute, through 23 NICRA KVKs under its jurisdiction, was successful in promotion of climate resilient agricultural technologies in North East region such as In-situ moisture conservation with mulch-plastic, biological waste etc and Raised bed planters in Field Pea (var Prakash), Bitter gourd (Jyoti Bolder), Cabbage (H-139) Cauliflower (White Contessa), Tomato (Ar*ka Rakshak*, Ginger (Nadia) and Turmeric (Megha Turmeric-1) to conserve soil moisture, reduce evapo-transpiration loss and improve soil health for increased crop yields under natural resource management. Likewise, flood and drought tolerant varieties of paddy and maize were successfully demonstrated in an area of more than 50 hectares. New breeds like Vanaraja, Gramapriya and Sri Nidhi in poultry, Hampshire-ghungroo cross bred in pig, Khaki Kambell and Chara Chemeli in duck were introduced as one of the components in integrated farming system prevailing in different villages under NICRA. Capacity building programmes on different areas like soil health management, life saving irrigation, cropping system, protective cultivation, IPM, soil moisture conservation, livestock management and value addition were also conducted by the NICRA KVKs under the technical supervision of the institute.

With close technical support and guidance by ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III, the KVKs of the region made assessment of **720** technologies with **2944** nos. of trials and refined **41** technologies with **301** nos. of trials under different thematic areas of crop enterprises during the period. Besides, the KVKs also made assessment of **152** technologies with **1249** numbers of trials and refined **7** technologies with **349** nos. of trials in different thematic areas of livestock enterprises in the region. The systematic coordination and monitoring mechanism of the ICAR-ATARI, Zone-III helped the KVKs to successfully conduct as many as **12480** frontline demonstrations in **2640.20 ha** area to demonstrate the production potential of newly released technologies in the farmers' fields at different locations in a given farming system. These included frontline demonstrations in oilseeds **(2069),** pulses **(2371),** other crops **(5704),** livestock enterprises **(1441),** and other enterprises **(895).**

The institute during 2016-17 organized **26 (Twenty six)** different HRD programmes for KVK staff, farmers, rural youth and other agri-preneurs of the region in partnership with different allied institutions/ and organizations on different disciplines and thematic areas. A total of **7886** training courses including sponsored and vocational training programmes were conducted by the KVKs under Zone-III which benefitted **1,93,411** of farmers, farm women, rural youth and extension personnel on different thematic areas such as crop production, horticulture, soil health and fertility management, livestock production and management, home science and women empowerment, agricultural engineering, plant protection, fisheries, capacity building and group dynamics, agro-forestry etc. This included **4355** courses and **138331** participants of farmers, **963** courses and **23212** participants of rural youth and **426** courses and **7735** participants of extension personnel. In addition, **1169** courses of sponsored training programmes were also conducted by the KVKs under the zone for **18419** participants as well as **973** nos. of vocational training courses benefitting a total of **5714** participants on different areas of income generating activities/ enterprises. As regards women empowerment, KVKs in the region trained as many as **83675** farm women representing **43.26** percent of the total beneficiaries (farmer and farm women) during 2016-17. KVKs in the region also organised a total of **57183** number of extension activities under close supervision and guidance of this institute for the benefit of **468716** farmers, farm women, agri-preneurs, extension personnel and rural youth including school children in the region to create awareness about improved agricultural technologies and their role in agricultural development.

During the period, KVKs under Zone-III produced high quality seeds, planting materials and bio-products which included **2052.41 tonnes** seeds of cereals, pulses, oil seeds, vegetables etc., **43.28** lakh numbers of planting materials of fruits, vegetables, forest species, plantation, ornamental crops etc. and **31981** nos. of livestock strains and **60.80** lakh of fish fingerlings besides **87** nos. of rabbits in the region. As mandated activity, the institute also successfully organised Annual Zonal Workshop of KVKs (2016-17) to review the progress and achievements of KVKs including preparation of annual action plan for the year 2017-18 of KVKs activities.

As part of regular activity, the institute made sincere efforts in strengthening of the Directorates of Extension Education (DEEs) and Agricultural Technology Information Centres (ATICs) under the zone through regular monitoring mechanism. During the year, the two Directorates of Assam Agricultural University, Jorhat and Central Agricultural University, Imphal made 109 visits to different KVKs under their jurisdiction by the Directors of Extension Education and their scientists to review, monitor as well as supervise KVKs activities, organized 12 review meetings and 13 HRD programmes benefitting 310 KVK participants/ staff. The Directorates also made 119 nos. of publications including extension bulletins (42), technical bulletins (22), training manuals (3) and farm magazine (28) during the period. The KVKs in the region were successful in empowering farmers including farmwomen in the region through regular Kisan Mobile Advisory, launching of KVKs web-sites, e-newsletters and different capacity building programmes.

With sincere efforts by the scientists of the institute, KVKs under zone-III were successful in testing of **36193** nos. of soil samples through various soil testing labs/ Mini Soil testing kit and analysed the strength and weaknesses of the soil and suggested fertilizer recommendations. During the reporting period, **44066** nos. of Soil Health Cards (SHCs) were distributed to the farmers through different programmes including World Soil Health Day on 5th December, 2016. The ICAR-ATARI, Zone-III has been implementing an innovative initiative "Mera Gaon Mera Gaurav (MGMG)" with the help of KVKs under the zone to promote the direct interface of scientists with the farmers to hasten the lab to land process. The main objective of this scheme is to provide farmers with required information, knowledge and advisories on regular basis by adopting villages. During the period, a total of **1406** nos. of villages were selected where 4003 nos. of demonstrations and **1254 nos. of** training programmes were conducted by the KVKs under Zone-III.

1.5. Profile of the Institute

1.5.1. Organisational Structure of Agricultural Technology Application Research Institute (ATARI), Zone-III

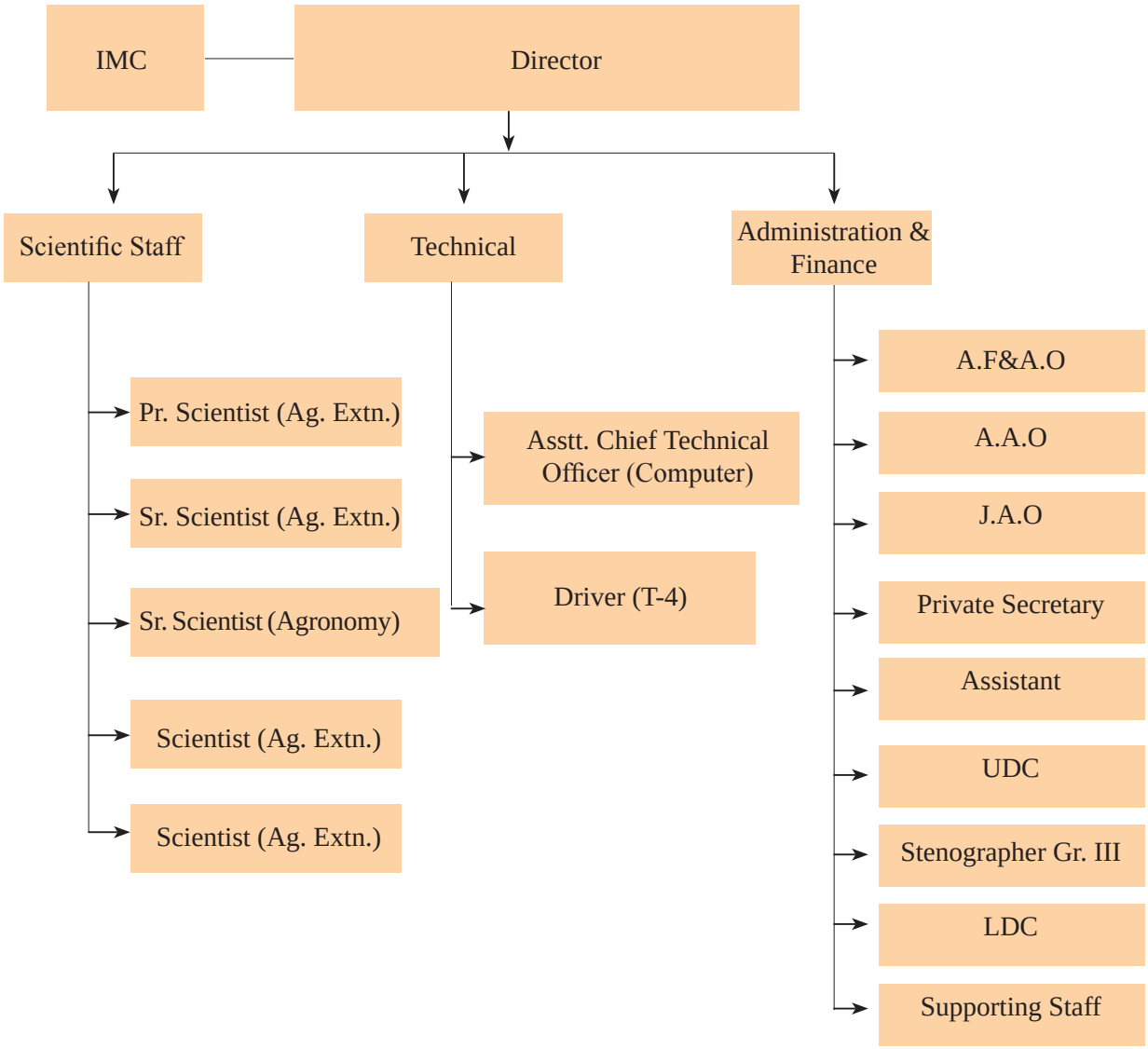
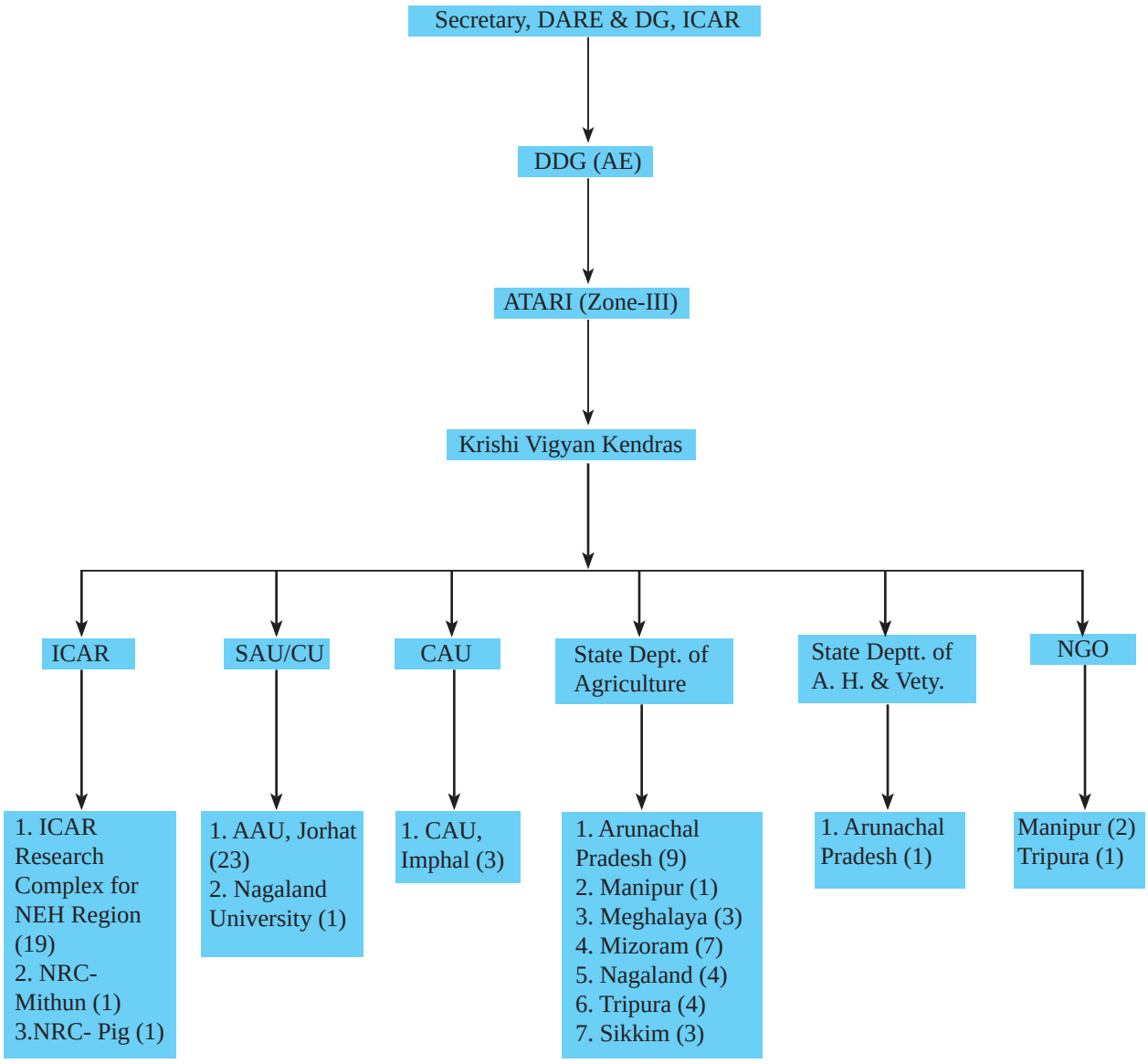


Fig 1 : Organizational Structure of ICAR-ATARI, Umiam

1.5.2. Organisational Structure of KVKs under Zone-III



Note: Figure in parentheses indiacte number of KVKs

Fig 2: Organizational structure of KVKs under Zone-III, Umiam

1.5.3. Operational area

Fig 3 : Map of NE Region

1.6. Staff Position of Agricultural Technology Application Research Institute (ATARI), Zone-III

Out of the sanctioned staff strength of 20, presently the Agricultural Technology Application Research Institute, Zone-III has 13 staff in position. The details of the staff position of the institute are given in Table-1.

Table 1: Present Staff Position of Agricultural Technology Application Research Institute, Zone-III

Sl. No.	Category	Sanctioned Strength	In Position	Vacant
1.	Director	1	**1**	0
2.	**Scientific Post**			
	Principal Scientist	1	1	0
	Senior Scientist	3	2	1
	Scientist	2	1	1
	Total	**6**	4	**2**
3.	**Technical Staff**			
	Asst. Chief Technical Officer	1	1	0
	Driver	1	1	0
	Total	**2**	**2**	**0**
4.	**Administrative Post**			
	Assistant Finance & Accounts Officer	1	1	0
	Assistant Administrative Officer	1	0	1
	Private Secretary	1	1	0
	Junior Accounts Officer	1	0	1
	Assistant	1	0	1
	U.D.C	1	1	0
	Stenographer Grade-III	1	1	0
	LDC	2	0	2
	Total	**9**	**4**	**5**
5.	Supporting Staff			
	(SSG-I, II, III, IV)	2	**2**	0
	Total	**20**	**13**	**7**

1.7. Budget provisions

Table 2: Host institute-wise and sub-head-wise break-up of Revised Estimate for 2016-2017 in respect of ATARI & KVKs, Zone-III, Umiam (Barapani) (NEH + TSP + other than NEH & TSP)

(Rupees in Lakh)

Sl.No.	Host institute	Pay & Allow.	Recurring Contingencies				Non Recurring Contingencies					RF	GRAND TOTAL
			TA	HRD	Contig.	TOTAL	Equip./ Fur.	Works	Lib	Vehicle	TOTAL		
I.	**ATARI, ZONE-III**	163.86	18.00	6.00	51.50	**239.36**	2.00	140.26	0.27	0.00	**142.53**	0.00	**381.89**
II.	**KVK, ZONE-III**												
A.	**ICAR INSTITUTE**												
1	ICAR RESEARCH COMPLEX	1772.67	44.50	22.50	259.00	**2098.67**	77.50	55.10	11.25	8.00	**151.85**	0.00	**2250.52**
2	NRC MITHUN	101.62	3.00	1.50	17.50	**123.62**	10.80	0.00	0.75	8.00	**19.55**	0.00	**143.17**
3	NRC PIG	124.09	2.50	1.50	17.50	**145.59**	0.30	5.00	0.75	8.00	**14.05**	0.00	**159.64**
4	NRC YAK	90.00	1.80	1.00	16.00	**108.80**	1.55	0.00	0.75	0.00	**2.30**	0.00	**111.10**
	TOTAL ICAR KVKs	**2088.38**	**51.80**	**26.50**	**310.00**	**2476.68**	**90.15**	**60.10**	**13.50**	**24.00**	**187.75**	**0.00**	**2664.43**
B.	**AGRIL. UNIVERSITY**												
5	ASSAM UNIVERSITY	2121.52	65.60	42.50	417.50	**2647.12**	123.79	597.66	17.25	8.00	**746.70**	0.00	**3393.82**
6	CENTRAL UNIVERSITY	395.35	11.50	10.50	56.00	**473.35**	6.40	10.00	2.25	16.00	**34.65**	0.00	**508.00**
7	NAGALAND UNIVERSITY	131.65	2.80	1.50	17.50	**153.45**	2.30	0.00	0.75	8.00	**11.05**	0.00	**164.50**
	TOTAL SAU/CAUs KVKs	**2648.52**	**79.90**	**54.50**	**491.00**	**3273.92**	**132.49**	**607.66**	**20.25**	**32.00**	**792.40**	**0.00**	**4066.32**
C.	**STATE GOVT.**												
8	DEPTT. OF AGRIL (A.P)	1031.35	27.00	13.50	148.50	**1220.35**	66.55	52.50	6.75	8.00	**133.80**	0.00	**1354.15**
9	DEPTT. OF AH&V (A.P)	115.60	3.00	1.50	16.50	**136.60**	10.30	52.00	0.75	8.00	**71.05**	0.00	**207.65**
10	MANIPUR	149.69	2.50	1.50	17.00	**170.69**	1.05	5.00	0.75	0.00	**6.80**	0.00	**177.49**
11	MEGHALAYA	174.48	7.70	4.50	52.00	**238.68**	32.15	10.00	2.25	0.00	**44.40**	0.00	**283.08**

12	MIZORAM	770.49	21.00	10.50	122.50	**924.49**	55.35	25.00	5.25	40.00	**125.60**	0.00	**1050.09**
13	NAGALAND	469.89	11.80	6.00	68.00	**555.69**	20.20	5.00	3.00	32.00	**60.20**	0.00	**615.89**
14	SIKKIM	295.05	8.50	4.50	52.00	**360.05**	3.15	5.00	2.25	0.00	**10.40**	0.00	**370.45**
15	TRIPURA	76.20	5.40	2.50	33.50	**117.60**	27.10	5.00	1.50	0.00	**33.60**	0.00	**151.20**
	TOTAL STATE GOVT. KVKs	**3082.75**	**86.90**	**44.50**	**510.00**	**3724.15**	**215.85**	**159.50**	**22.50**	**88.00**	**485.85**	**0.00**	**4210.00**
D.	**NGO**												
16	UTLOU, BISHNUPUR	132.00	2.80	1.50	16.50	**152.80**	16.05	5.00	0.75	0.00	**21.80**	0.00	**174.60**
17	FEEDS, SENAPATI	125.75	2.80	1.50	17.00	**147.05**	4.62	5.00	0.75	0.00	**10.37**	0.00	**157.42**
18	SRSK, KOLKATA	112.64	4.00	1.50	19.00	**137.14**	10.55	0.00	0.75	8.00	**19.30**	0.00	**156.44**
	TOTAL NGOs	**370.39**	**9.60**	**4.50**	**52.50**	**436.99**	**31.22**	**10.00**	**2.25**	**8.00**	**51.47**	**0.00**	**488.46**
	TOTAL KVKs (already established)	**8190.04**	**228.20**	**130.00**	**1363.50**	**9911.74**	**469.71**	**837.26**	**58.50**	**152.00**	**1517.47**	**0.00**	**11429.21**
E	**New KVKs to be Established**	**0.00**	**0.00**	**0.00**	**10.90**	**10.90**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**10.90**
GRANT TOTAL ZONE-III, BARAPANI		**8353.90**	**246.20**	**136.00**	**1425.90**	**10162.00**	**471.71**	**977.52**	**58.77**	**152.00**	**1660.00**	**0.00**	**11822.00**

2.0. ACHIEVEMENTS

2.1. Brief Account of KVK Genesis, Mandate and Growth

2.1.1. KVK Genesis

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 the training needs of a large number of boys and girls of rural areas. The Commission further suggested that such institutions be named as Agricultural Polytechnics. The recommendation of the Commission was thoroughly discussed during 1966-72 by the Ministry of Education, Ministry of Agriculture, Planning Commission, ICAR and other allied institutions. Finally, the ICAR mooted the idea of establishing KVKs as innovative institutions for imparting vocational training to the practicing farmers, school dropouts and field level extension functionaries. ICAR Standing Committee on Agricultural Education 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 in implementing 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 for implementing this scheme. The Committee submitted its report in 1974.

The first KVK, on a pilot basis, was established in 1974 at Puducherry (Pondicherry) under the administrative control of the Tamil Nadu Agricultural University (TNAU), Coimbatore. In 1976-77, the Planning Commission approved the proposal of the ICAR to establish 18 KVKs during the Fifth Five Year Plan. With the growing demand for more such KVKs, the Governing Body (GB) of the ICAR approved 12 more KVKs in 1979 and they were established in the same year from Agricultural Produce Cess Fund (AP Cess Fund). Pending the clearance of Sixth Five-Year Plan scheme on KVK by the Planning Commission, the GB of the ICAR again approved 14 KVKs in 1981, which were established during 1982-83 from AP Cess Fund.

A High Level Evaluation Committee on KVK constituted by the ICAR in 1984, after thorough review of the programme, strongly recommended for establishment of more KVKs in the country. Keeping this in view the Planning Commission approved to establish 44 new KVKs during the Sixth Plan. Thus by the end of Sixth Plan, 89 KVKs had started functioning in the country. During the Seventh Plan, 20 new KVKs were established. The success of KVKs at many locations created a great demand for establishment of more KVKs in the remaining districts of the country. Accordingly, the Planning Commission further approved 74 new KVKs to be established during the period 1992-93. Again in the Eighth Plan (1992-97), 78 new KVKs were approved and the same were established in the country, making the total number of functional KVKs 261 by the end of the Eighth Plan. The number of KVKs increased to 290 during Ninth Plan with the establishment of 29 more KVKs.

On the occasion of the Independence Day Speech on 15th August, 2005 the Hon'ble Prime Minister of India announced that by the end of 2007 there should be one KVK in each of the rural

districts of the country. This has taken the total number of KVKs to 551 at the end of Tenth Plan.
At present, there are **672** KVKs established in the Country. This is an excellent network for exchange of technology and empowerment of farmers to enhance productivity and profitability.

All KVKs are working towards reducing the time lag between generation of technology at the research institution and its application in location specific farmer fields for increasing production, productivity and net farm income on a sustained basis.

2.1.2. KVK Mandates

The mandate of KVK is *Technology Assessment and Demonstration for its wider Application and to enhance Capacity development (TADA-CD)*. To implement the mandate effectively through creation of awareness about improved agricultural technologies, the following activities have been 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 overall agricultural economy in the operational area.

v. Conduct frontline extension programmes and provide farm advisories using ICT and other media on varied subjects of interest to farmers.

vi. Data documentation, characterization and strategic planning of farming practices.

KVK, while acting as a single window Agricultural Technology Information Centre should produce quality technology related inputs/ products (seeds, planting materials, bio-agents, livestock, fingerlings etc,) and make them available to farmers. Besides, identify and document selected farmer-led innovations and converge with ongoing schemes and programmes within the mandate of KVK.

2.1.3. Growth of KVKs under ICAR-ATARI, Umiam

The first KVK in the region was established in Kolasib district of Mizoram in February, 1979 to impart training to equip the farmers with skill and knowledge required for practicing advanced agricultural and allied practices by the farmers. Gradually with the increase in number, the sphere of KVKs also widened to shoulder other responsibilities like conducting front line demonstrations, on-farm trials, providing trainings to other stakeholders etc. During the IX the plan, the zone had only 13 KVKs with most of them were under ICAR administration. Presently the Zone-III has 83 KVKs spread over eight states of the region and 7 are in the process of their establishment. Out of the total number of KVKs in the region, 23 KVKs are with State Agricultural University, 3 with Central Agricultural University, 1 with Central University, 31 with State Department of Agriculture, 1 with State Department of Veterinary Science, 19 with ICAR Research Complex, Barapani, 2 with National Research Centres and then 3 with Non-Government Organizations.

Table 3: State-wise distribution of KVKs under ICAR-ATARI, Umiam

State	KVK (No.)	Host Institution
Arunachal Pradesh (14)	9	State Dept of Agriculture, Arunachal Pradesh
	1	CAU Imphal, Manipur
	1	Dept of Vety. & A.H, Arunachal Pradesh
	3	ICAR RC for NEH Region, Barapani
Assam (25)	23	AAU, Jorhat
	1	NRC on Pig, Rani, Guwahati
	1	ICAR RC for NEH Region, Barapani
	1	JFPCS Utlou, Manipur (NGO)
Manipur (9)	5	ICAR RC for NEH Region, Barapani
	1	CAU Imphal, Manipur
	1	FEEDS, Hengbung (NGO)
	1	State Dept of Agriculture, Manipur
Meghalaya (5)	3	State Dept of Agriculture, Meghalaya
	2	ICAR RC for NEH Region, Barapani
Mizoram (8)	1	CAU Imphal, Manipur
	7	State Dept of Agriculture Education and Research
Nagaland (11)	5	ICAR RC for NEH Region, Barapani
	4	State Dept of Agriculture, Nagaland
	1	NRC on Mithun
	1	Nagaland University
Sikkim (4)	1	ICAR RC for NEH Region, Barapani
	3	State Dept of Food Security & Agriculture Development, Sikkim
Tripura (7)	4	State Dept of Agriculture, Tripura
	2	ICAR RC for NEH Region, Barapani
	1	Rama Krishna Seva Kendra (NGO), Kolkata
Total	**83**	

2.2. MANPOWER AND INFRASTRUCTURAL FACILITIES IN KVKS

2.2.1. Brief Account of Manpower in KVKs

Presently the KVKs under ICAR-ATARI, Umiam have a total of **1072** staff in different positions like Sr. Scientist & Head (Programme Coordinator), Subject Matter Specialist, Programme Assistant, Assistant, Superintendant, Supporting Staff, Driver and Steno (Table 4), accounting 78.82% staff are in position. The remaining vacancies of different cadres are in the process of recruitment by the concerned host institutes.

Table 4: State wise summary of present staff position of KVKs under ICAR-ATARI, Umiam

Sl. No.	State	No. of staff under different category of post								
		SSH (01)	SMS (06)	PA (02)	Farm Manager (01)	Asst/ Sup. (01)	Steno (1)	Driver (02)	SS (02)	Total (16)
1	Arunachal Pradesh	12	82	24	14	9	10	25	26	202
2.	Assam	23	136	42	24	24	19	46	33	347
3.	Manipur	7	52	13	8	7	9	18	18	132
4.	Meghalaya	5	24	5	4	0	1	5	5	49
5	Mizoram	5	47	16	8	7	8	16	16	123
6.	Nagaland	9	51	15	8	7	9	14	16	129
7.	Sikkim	3	15	7	4	4	4	8	8	53
8.	Tripura	0	16	3	3	1	1	6	7	37
	Total	**64**	**423**	**125**	**73**	**59**	**61**	**138**	**129**	**1072**

SSH – Senior Scientist &Head, SMS – Subject Matter Specialist, PA- Programme Assistant, Asst.- Assistant, Sup. – Superintendant, SS – Supporting Staff

2.2.2. Brief account of infrastructural facilities in KVKs

With regard to infrastructural facilities, 63 out of 83 KVKs have completed construction of their administrative building in their proposed sites and 15 have been approved in the XIIth plan. A total of 28 KVKs have completed construction of farmers' hostels, while 47 farmers' hostels have been approved in the 12th plan EFC. Presently 43 KVKs have staff quarters and 29 are approved. Construction of demonstration units have been completed by 57 KVKs and 20 are approved. In case of fencing, 48 KVKs have completed and 25 are approved in the 12th plan EFC (Table 5). Among the special programmes soil and water testing laboratories have been constructed by 25 KVKs, rain water harvesting structures and portable carp hatcheries by 9 KVKs each and integrated farming systems in 4 KVKs and 5 KVK are equipped with e-connectivity facility.

Table 5: Summary of Infrastructural facilities of KVKs under ICAR-ATARI, Umiam

Sl. No.	Infrastructure	Present Status		
		Existing/ Completed	Ongoing	Approved in 12th Plan
Basic Infrastructure				
1.	Administrative Building	63	0	15
2.	Farmers' Hostel	28	0	47
3.	Staff Quarter	43	0	29
4.	Demonstration Unit	57	0	20
5.	Fencing	48	0	25
Special Programmes				
6.	Soil and Water Testing Lab	25	-	10
7.	E-Connectivity	5	-	20
8.	Rain Water Harvesting Structure	9	-	8
9.	Portable Carp Hatchery	9	-	8
10.	Integrated Farming System	4	-	16
11.	Minimal Processing Facility	-	-	10
12.	Solar Panels	-	-	5
13.	Technology Information Unit	-	-	16
14.	V-KVK & KVK NET	-	-	74
15.	Specialized KVK	-	-	6
16.	Provision of IT Kit to E-Farmers	-	-	25
17.	Micro-Nutrient Analysis	-	-	4
18.	Provision of 25 KVA Silent Genset	-	-	60
19	Mini Seed Processing Facility	-	-	6

2.3. Technology Assessment and Refinement

In order to assess location specificity of agricultural technologies of crops, livestock, fishery and other enterprises under various farming systems, the KVKs under Zone-III made assesment and refinement of different agricultural technologies on farmers' fields during the period. The specific achievements made under this head are given below.

2.3.1. Technology Assessment

During the year 2016-17, a total of **720** technologies were taken up on different areas of crop enterprises by the KVKs for their assessment to identify location specific technologies under local farming situations with **2944** nos. of trials (Fig. 4). The major thematic areas included for assessment were varietal evaluation with 966 nos. of trials, integrated nutrient management (396), integrated pest management (325), integrated crop management (143), drudgery reduction (138), integrated disease management (132), resource conservation technology (109), value addition (67),weed management (44), water management (43), biological control (38), mushroom cultivation (27), farm machineries/mechanization (25), production technology (25), etc. (Table 6).

Table 6: Summary of crop based technologies assessed under different thematic areas during 2016-17

Sl. No.	Thematic area	No. of technology assessed	No. of trial
1	Varietal evaluation	225	966
2	Integrated nutrient management	112	396
3	Integrated pest management	77	325
4	Integrated crop management	39	143
5	Integrated disease management	33	132
6	Integrated farming system	4	12
7	Drudgery reduction	20	138
8	Mushroom cultivation	5	27
9	Value addition	21	67
10	Vermicomposting	1	10
11	Post-harvest lost/ technology	6	21
12	Resource conservation technology (RCTs)	29	109
13	Weed management	6	44
14	Water management	18	43
15	Seed / Plant production	4	13
16	Soil health management	2	6
17	Small scale income generating enterprise	7	19
18	Biological control	6	38
19	Organic cultivation	6	21
20	Farm machineries	6	25
21	Benchmark survey (PRA etc)	3	3
22	Crop management	3	9
23	Crop production	1	1
24	Production technology	5	25
25	Feed and fodder management	1	7
26	Others	80	344
	Total	**720**	**2944**

While a total of **152** technologies with **1249** nos. of trials related to livestock enterprises such as cattle, piggery, fishery, poultry, duckery, goatery, rabbitry etc. were taken up for assessment with major thematic areas of evaluation of breed (475), small scale income generating enterprises (202) disease management (189), nutrition management (127), fish production (97), production and management (82) feed and fodder management (45), etc. (Table 7).

Table 7 : Summary of livestock technologies assessed under different thematic areas during 2016-17

Sl. No.	Thematic area	No. of technology assessed	No. of trial
1	Evaluation of breed	53	475
2	Nutrition management	19	127
3	Fish production	26	97
4	Disease management	11	189
5	Breed introduction	2	13
6	Feed and fodder management	12	45
7	Production and management	13	82
8	Small scale income generating enterprises	10	202
9	Value addition	1	2
10	Others	5	17
	Total	**152**	**1249**

2.3.2. Technology Refinement

A total of **41** technologies related to cereals, oilseeds, vegetables and fruit crops were taken up for refinement with **301** trials at various locations (Table 8). The major thematic areas were integrated pests management with 74 nos. of trials, value addition (55), varietal evaluation (34), integrated nutrient management (32), integrated disease management (30), integrated crop management (12), and resource conservation technology (8) etc. (Table 8).

In livestock sector, only 7 technologies with 349 trials under four thematic areas related to fish production (6), evaluation of breed (134), production and management (24) and small scale income generating enterprises (185) were taken up by the KVKs in the year 2016-17 for their refinement as shown in Table 9.

Table 8 : Summary of technologies refined under different thematic areas during 2016-17

Sl. No.	Thematic area	No. of technology refined	No. of trial
1	Varietal evaluation	6	34
2	Integrated nutrient management	3	32
3	Integrated pest management	7	74
4	Integrated disease management	4	30
5	Integrated crop management	4	12
6	Resource conservation technology (RCT)	3	8
7	Value addition	4	55
8	Others	10	56
	Total	**41**	**301**

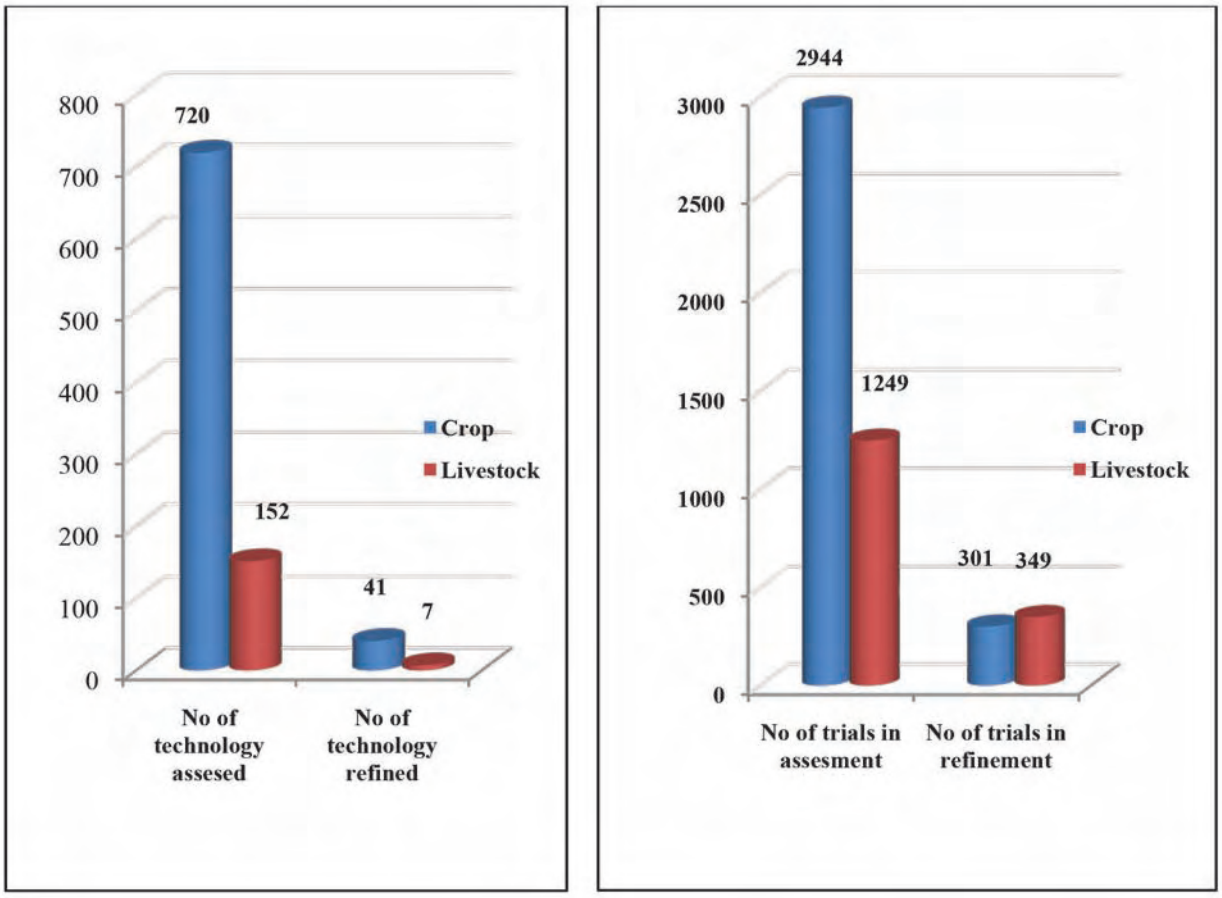


Fig. 4: Distribution of technologies and trials undertaken by the KVKs for assessment and refinement of technologies during 2016-17

Table 9 : Summary of livestock technologies refined under different thematic areas during 2016- 17

Sl. No.	Thematic area	No. of technology refined	No. of trial
1	Fish production	2	6
2	Evaluation of breed	1	134
3	Production and management	1	24
4	Small Scale income generating enterprises	3	185
	Total	**7**	**349**

2.4. FRONT LINE DEMONSTRATIONS

KVKs under ICAR-ATARI, Umiam conducted Frontline demonstrations (FLDs) to demonstrate the production potential of newly released technologies on the farmers' fields at different locations in a given farming system and organize farming and extension activities for farmers and extension workers for dissemination of various technologies. A total of **12480** frontline demonstrations with **2640.20** ha were conducted by the KVKs during 2016-17 in close collaboration with farmers to establish production potential of improved agricultural technologies including oilseeds **(2069)**, pulses **(2371)**, other crops **(5704)**, livestock enterprises **(1441)** and other enterprises **(895)** respectively.

2.4.1. FLD on Oilseeds

During the year 2016-17, a total of **2069** demonstrations were conducted in different oilseed crops like groundnut, rapeseed and mustard, sesamum, soybean, toria and linseed covering **725.18** ha area (Table 10). Demonstration on different varieties of groundnut produced an average yield of **17.92** q/ha compared to **12.05** q/ ha yields of local check with **48.69%** increase over the local check. Similarly, different varieties of rapeseed such as TS-36, RH-30 had shown an average yield of **11.14** q/ha as against only **8.60** q/ ha yield of the local check with **38.2%** yield increase over local check. Among the oilseed crops, the highest number **(698)** of demonstrations was conducted in Toria, covering the largest area **(305.20 ha)** (Fig.5). Percentage increase in yield was observed to be the highest in Niger **(71.43 %)**, with the highest B:C ratio **(2.86)**.

FLD on Toria (TS-38), KVK Tuensang

Table 10: Frontline demonstration on Oilseeds crops during 2016-17

Sl. No.	Crop	No. of farmer/ demo.	Area (ha)	Average yield (q/ha)		Avg. % Increase	Avg. cost of cultivation (Rs./.ha)		Avg. Benefit-Cost ratio
				Demo.	Check		Demo.	Check	
1	Groundnut	110	35.00	17.92	12.05	48.69	43718	35958	2.81
2	Linseed	30	75.00	6.35	4.80	32.29	22525	16300	2.81
3	Rapeseed	458	143.80	11.14	8.05	38.28	17377	14973	2.01
4	Mustard	165	63.00	9.17	6.38	43.79	23357	14505	1.70
5	Sesamum	231	42.98	6.38	4.66	36.74	19330	16892	2.36
6	Soybean	341	53.70	18.51	13.07	41.60	29279	26812	2.38
7	Toria	698	305.20	7.53	5.37	40.32	14799	12864	2.25
8	Niger	3	1.00	6.00	3.50	71.43	10500	9000	2.86
9	Oilpalm	15	4.00	38.25	33.15	15.38	80000	80000	2.13
10	Yellow Sarson	18	1.50	6.20	4.80	29.17	18260	11670	1.07
	Total	**2069**	**725.18**						

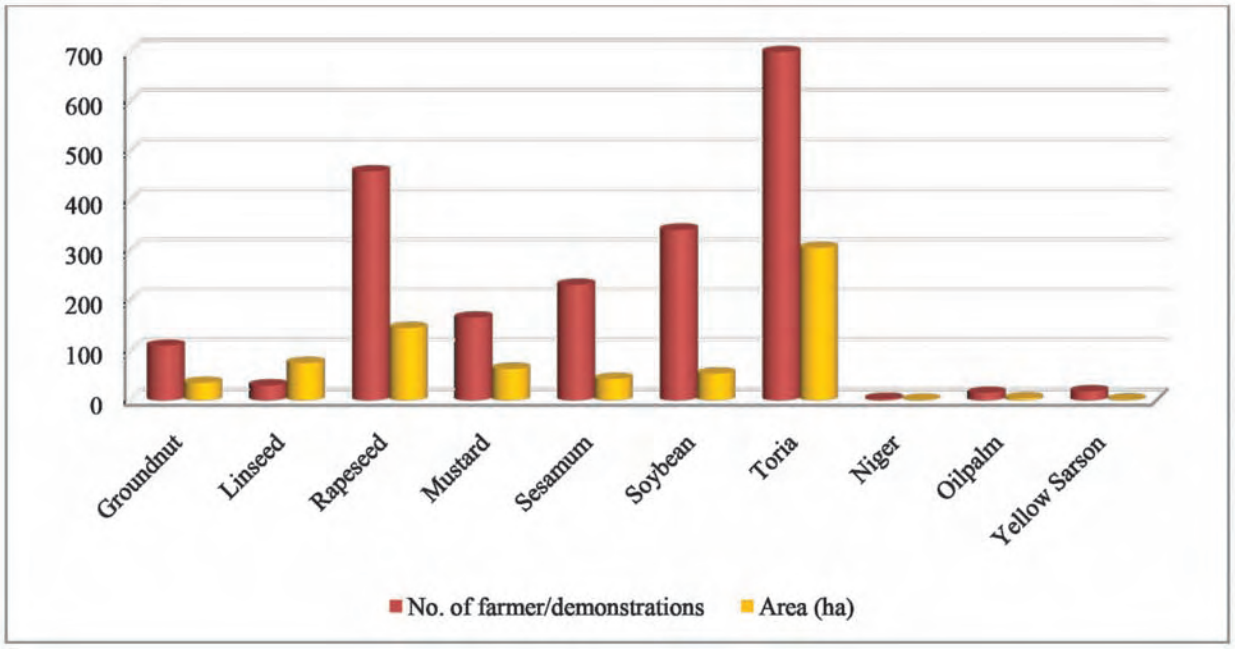


Fig. 5: Number and area under demonstration on different oilseed crops during 2016-17

2.4.2. FLD on Pulses

A total of **2371** demonstrations were conducted on various pulse crops like Black gram, Green gram, Lentil, Arhar, Rajma, French bean, Field pea, Cow pea, Chick pea and Lathyrus etc. covering an area of **655.53** ha (Table 11). Among the pulse crops, the highest numbers of demonstrations were conducted in Lentil **(701)** covering 218 hectares area with highest increase yield level over local check **80.26%** (Fig. 6). The most promising B: C ratio was observed in Rajmah **(2.68)** during the period.

Table 11: Frontline demonstration on Pulses crops during 2016-17

Sl. No.	Crop	No. of farmer/ demo.	Area (ha)	Average yield (q/ha)		Avg. % Increase	Avg. cost of cultivation (Rs./.ha)		Avg. Benefit-Cost ratio
				Demo.	Check		Demo.	Check	
1	Arhar	113	31.5	10.58	6.83	54.83	27130	24700	2.50
2	Blackgram	543	136.7	7.87	5.88	33.85	21117	18854	2.07
3	Field pea	302	86.2	19.55	14.12	38.50	41470	28588	2.20
4	French beans	135	38.33	45.02	38.86	15.85	53675	52117	2.38
5	Peas	175	22.8	54.2	39.75	36.35	31205	21685	2.26
6	Rajmah	364	110.5	33.47	22.02	51.97	50555	41182	2.68
7	Lathyrus	3	1.5	7.00	5.97	17.25	17500	17500	1.60
8	Lentil	701	218	5.58	3.09	80.26	17675	11262	2.01
9	Chickpea	10.0	5.0	8.5	5.2	63.46	23900	20000	2.13
10	Broadbean	4.0	1.0	11.7	8.4	39.95	29230	25120	2.00
11	Ricebean	21.0	4.0	14.2	12.8	10.81	33270	30525	2.12
	Total	**2371**	**655.53**						

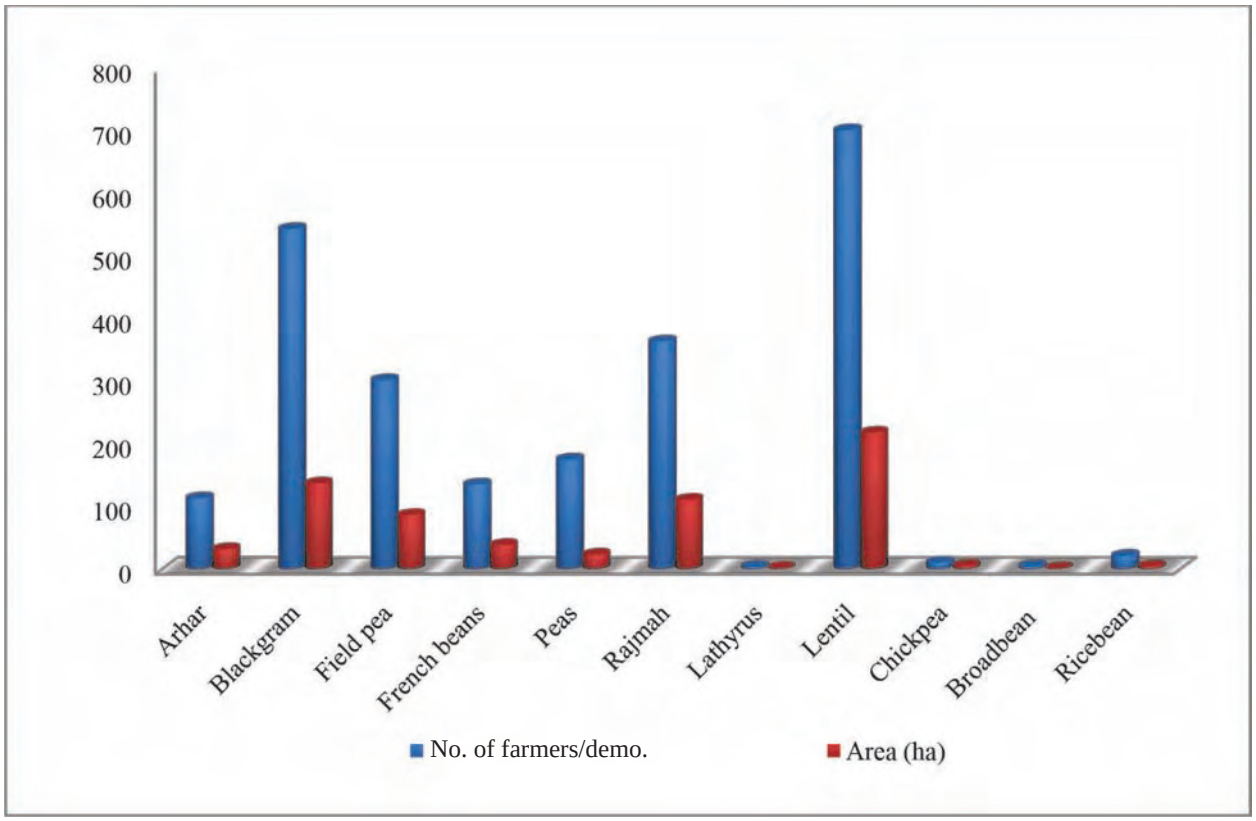


Fig. 6: Number and area under demonstration on different pulse crops during 2016-17

2.4.3. FLD on Other Crops

FLD on Bio-fertilizer in scented rice var. Keteki Joha in Karbi Anglong

A total of **5704** demonstrations were conducted on cereal crops, vegetables, fruits, flowers, spices and condiments, cash crops, cole crops, stem and tuber crops and fodder crops covering an area of 1259.49 ha. Among these crops, the largest area (680.53 ha) was covered under rice. The highest number (2174) of demonstration was also conducted under the same crop. The most promising B: C ratio (5.43) was recorded in Pumpkin among the crops. The highest percentage increase in yield (162.81%) was observed in case of Brinjal followed by Pumpkin (95.27%) and Broccoli (63.79%) among the vegetables. The average demonstration yield of rice was observed to be 44.14q/ ha against 31.21q /ha of local check (Table 12). Demonstrations were also conducted in Mushroom and Honey Bee with a promising B: C ratio of 3.91 and 6.31 respectively. Significant number of demonstrations was conducted in Ginger (560), maize (427), potato (310), Khasi Mandarin (242), Tomato (212) and Cabbage (192) etc.

Success story: Induce breeding and seed rearing of Kawoi in Assam

Induce breeding and seed rearing of Kawoi (Anabas testudenous), an indigenous fish species of Assam is successfully done under the supervision of KVK, Nalbari in a OFT programme on induce breeding of Kawoi. The first breeding operation was done on 19th April, 2016 at Mr Amal Medhi's fish farm of Sandha village. His work also earned him recognition as the Best fish farmer award of the state for the year 2016-17 by Dept. of Fisheries, Govt. of Assam. An innovative methodology is applied for induce breeding using low cost locally available materials as hatchery set up. This is the first report of successful induce breeding of Kawoi at farmers field in Assam. Mr. Medhi produced about 1,00,000 fish seed of Kawoi during the season and have sold to farmers of Nalbari and adjoining districts. He earned nearly Rs. 8,00,000/ from fishery sector out of which about Rs. 2,00,000/- came from Kawoi fish seeds. His activities encouraged various people to take up fish farming as livelihood.

Table 12: Frontline demonstration in various crops during 2016-17

Sl. No.	Crop	No. of farmer/ demo.	Area (ha)	Average yield (q/ha)		Avg. % Increase	Avg. cost of cultivation (Rs./.ha)		Avg. Benefit-Cost ratio
				Demo.	Check		Demo.	Check	
	CEREALS								
1	Paddy	2174	680.53	41.14	31.21	31.81	33281	30885	1.96
2	Wheat	38	15.40	25.80	21.10	22.27	23933	31367	1.77
3	Maize	427	97.40	39.26	26.94	45.75	29215	24411	2.23
4	Buckwheat	7	2	12.0	8.5	41.18	12500	12300	3.36
	VEGETABLES								
5	Brinjal	38	5.65	417.71	158.94	162.81	115159	61038	2.94
6	Bitter Gourd	22	11	93.9	73.5	27.76	47500	37500	3.87
7	French bean	139	15.53	75.66	57.37	31.89	57383	51188	2.72
8	Potato	310	23.97	173.98	117.28	48.34	77233	67659	2.33
9	Pumpkin	23	2.96	136.63	69.97	95.27	30778	21125	5.43
10	Colocasia	137	3.67	134.75	99.75	35.09	101263	77775	2.06
11	Cabbage	192	41.33	297.68	231.53	28.58	75740	63598	3.12
12	Cauliflower	23	8.2	276.33	210.20	31.46	81931	76921	3.85
13	Carrot	25	1.19	127.2	106.5	19.44	75033	72681	1.29
14	Tomato	212	12.19	253.47	181.19	39.89	92712	74997	2.74
15	Radish	35	3.5	126.75	109.15	16.12	78200	76075	1.86
16	Okra	120	11.13	182.25	130.01	40.18	65258	57359	3.56
17	Broccoli	130	21.49	123.37	75.32	63.79	189647	45894	2.42
18	Capsicum	114	7.72	129.56	101.95	27.07	90373	66116	3.50
19	Garden Pea	30	2.6	75.75	68.75	10.18	153500	135000	2.42
	SPICES								
20	Turmeric	83	8.42	233.84	172.92	35.23	88235	74234	3.92
21	Ginger	560	24.73	133.66	94.69	41.15	215546	76994	3.16
22	Chillies	77	9.30	63.25	46.35	36.44	144822	129838	2.80
	FRUITS								
23	Khasi Mandarin	242	16.26	93.8	60.15	55.94	65531	51092	2.46
24	Sikkim Mandarin	12	10	2310	1450	59.31	300000	272000	4.1
25	Banana	10	0.45	266	174.45	52.48	120093	95845	3.35
26	Pineapple	8	1.63	363	163	122.70	196125	125000	2.78

27	Watermelon	29	10.26	421.9	237	78.02	344000	279400	4.33
28	Orange	20	7	124	69	79.71	46055	42591	4.04
29	Litchi	3	1.5	4.5	4	12.50	20000	20000	2.50
30	Papaya	10	0.35	200	145	37.93	153700	120500	2.20
31	Citrus	22	1.85	37.75	31.5	19.84	37720	31923	2.78
32	Mango	4	9	56	34	64.71	61500	55000	2.00
	FLOWERS								
33	Marigold	48	5.69	49.31	34.38	43.45	336639	482075	3.49
34	Gerbera	26	0.04	123501 Nos.	1400	8721.50	81107	5885	2.6
35	Tuberose	8	0.23	223750 spikes	200000 spikes	11.87	147327	87000	2.72
	PLANTATION CROPS								
36	Sugarcane	29	4.5	503.39	434.13	15.95	76987	72998	2.71
37	Jute	27	13	31.26	25.98	20.33	29608	29185	2.58
38	Tea	6	0.78	18.9 green leaf	17.0 green leaf	11.17	0	0	0
	MUSHROOM								
39	Mushroom	140	134.03 + 840 beds	143.93	33.98	323.62	109783	59000	3.91
	APICULTURE								
40	Honey Bee	15	2colony/ farmers	40kg per colony	19kg per colony	0	1900 per unit	1900 per unit	6.31
	FODDER								
41	Fodder Crops	16	1.63	559.374	0	0	19142.5	0	1.8
	OTHERS								
42	Other activities	113	31.41	65.04	13.10	396.49	11769	5039	3.61
	Total	**5704**	**1259.49**						

2.4.4. FLD on Livestock

In livestock sector, a total of **1441** demonstrations were conducted by the KVKs 2016-17 covering **776092** nos. of animals, poultry and other birds. The demonstrations under livestock comprised of poultry (638), piggery (269), fisheries (263), duckery (68), goatery (51), and dairy (96) (Table 13). The percentage change in parameters ranged from 15.94 % in rabbitry to 56.15% in case of dairy.

Table 13: Frontline demonstration on Livestock enterprise during 2016-17

Enterprise	No. of farmer/ demos	No. of animals, poultry birds etc.	Performance parameters / indicators	% change in the parameter
Dairy	96	291	General health, Milk Production, Growth rate, mortality, resistance to diseases, calving period	56.15
Poultry	638	11366	Egg production, Egg weight, disease resistance, mortality rate	55.87
Goatery	51	244	Litter size at birth & weaning, individual body weight at birth, weaning	29.60
Duckery	68	1789	Body weight, Egg production and Egg weight	45.88
Piggery	269	665	Litter size at birth & weaning, individual body weight at birth, weaning	45.07
Fishery	263	761607	Yield, water quality, duration maturity, average weight	69.96
Rabbitry	56	130	Litter size at weaning, body weight gain and kits production, litter size at birth, No. of crops/ doe/year	15.94
Total	**1441**	**776092**		**45.50**

2.4.5. FLD on Other enterprises

The KVKs had not confined their demonstrations in crops and livestock only. Taking into account the ever increasing importance of secondary agriculture for securing sustainable rural livelihood, the KVKs of the zone had also taken numerous initiatives to popularize several secondary agricultural ventures like bee keeping, mushroom cultivation, utilization of waste materials, production of vermicompost, production and utilization of organic dye etc. During the year 2016-17, a total of **895** demonstrations were conducted in such enterprises like farm implements (115), women empowerment (60), mushroom production (101), muga silk worm (148), value addition (55), natural and chemical dying (90) and nutritional gardening (76), vermicompost (47) etc. (Table 14).

FLD on Oyster mushroom, KVK Udalguri

Table 14: Frontline demonstration on Other enterprises during 2016-17

Enterprise	No. of farmer/ demos	Performance parameters / indicators	% change in the parameter
Vermicompost	47	Decomposition rate, organic matter production	50.00
Mushroom production	257	No. of days required for pinhead formation, average yield	20.84
Fodder	31	Average growth rate, yield	-
Apiculture	11	Average yield of honey	7.95
Bamboo	5	Average growth rate, yield	100
Nutritional Gardening	76	Percentage increase in consumption of vegetables per day, health status, nutritional status	36.75
Natural Dye	90	Fastness against sunlight, colour intensity, profitability	18.33
Muga Silk Worm	148	Production and yield level	97.5
Value addition	55	Increased shelf life, marketability, consumer acceptability	-
Farm implements	115	Labour use efficiency, cost effectiveness	70.85
Women empowerment	60	Income generation, employment generation	41.04
Total	**895**		**40.30**

2.5. Training Programmes

A number of training programmes had been conducted by the KVKs to provide up-to-date knowledge and up-gradation of skills of farmers, farm women and rural youth in improved agricultural and allied practices and to keep the extension functionaries abreast with recent developments in technological breakthroughs, government schemes along with enhancing their managerial skill to effectively deal with the farming community,. The training courses were of varying duration depending upon the extent of knowledge and skill required to be transferred to the intended beneficiaries as well as budget provision for the same. The programmes encompassed a number of thematic areas covering almost all the enclaves of rural livelihood options. During the year 2016-17, a total of **7886** training programmes were conducted by the KVKs in different areas of agriculture and allied activities (Fig. 7 a) benefitting a total of **1,93, 411** farmers and farm women, rural youth, NGOs, Civic bodies and in-service extension personnel etc. (Fig. 7 b).

2.5.1. Training programmes for farmers and farm women

A total of **4355** training courses benefitting a total of **138331** farmers and farm women were conducted during the period under report on various agricultural technologies. Among the participants **77903** were male and remaining **60428** were female (Table 15).The thrust areas under which these programmes had been conducted included productivity enhancement of field crops (654), horticultural crops (697), plant protection (573), livestock production and management (503), soil health and fertility management (417), home science/women empowerment (204), capacity building and group dynamics (254) etc. training programmes had been conducted in different areas of agro forestry (33) and fish production and management (328).

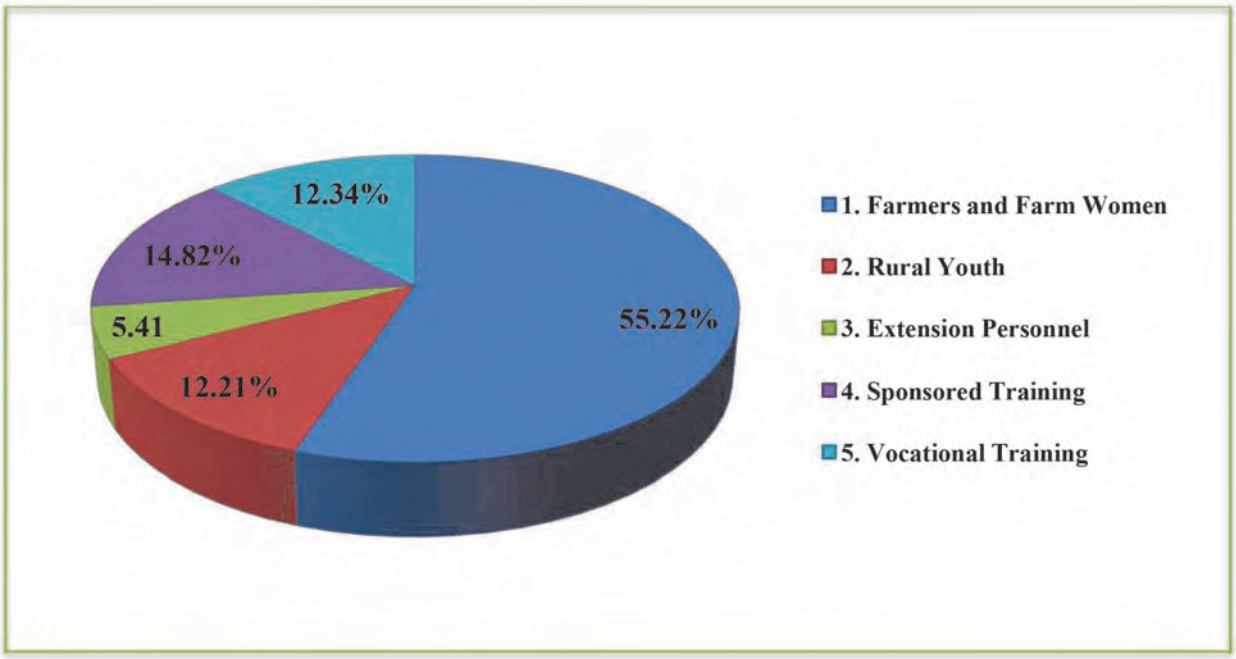


Fig.7 (a): Distribution of training courses offered by the KVKs during 2016-17

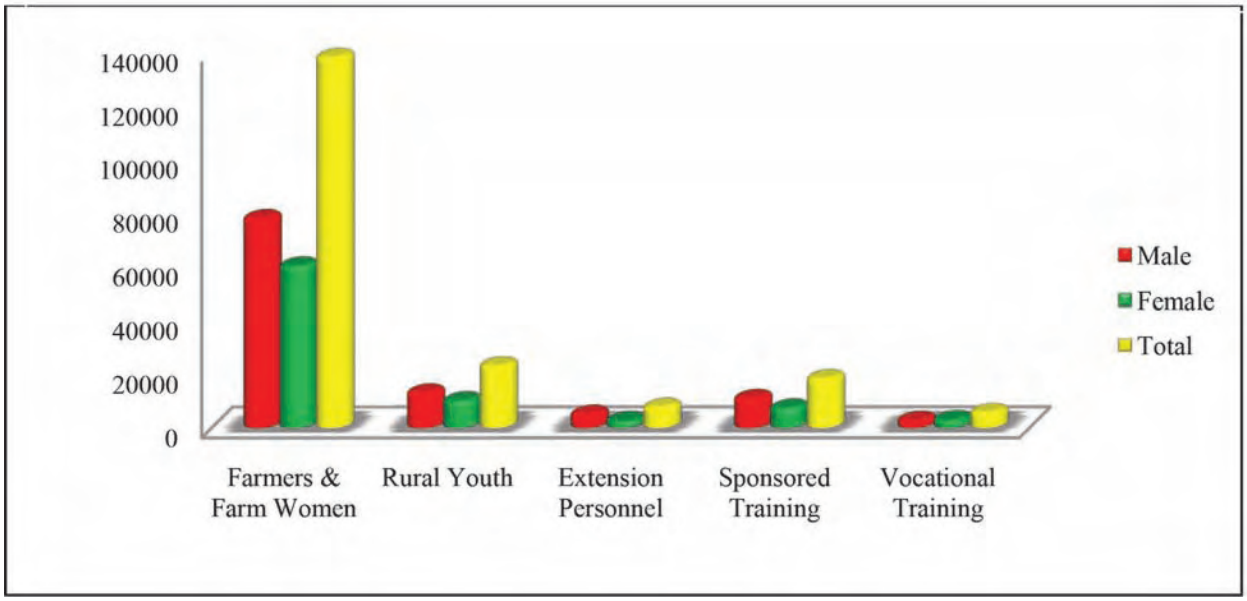


Fig. 7 (b): Distribution of beneficiaries trained by the KVKs during 2016-17

Table 15: Summary of training programmes conducted for farmers and farm women during 2016-17

Sl. No.	Thematic area	No. of course	No. of participant		
			Male	Female	Total
1	Crop Production	654	11764	6955	18719
2	Horticulture	697	20121	15317	35438
	a) Vegetable crops	328	5121	4238	9359
	b) Fruits	69	1150	893	2043
	c) Layout & Management of orchard	38	786	458	1244
	d) Ornamental plants	21	191	360	551
	e) Protective Cultivation	40	735	490	1225
	f) Plantation crops	31	585	329	914
	g) Tuber crops	22	292	345	637
	h) Spices	79	1318	1125	2443
	i) Medicinal and Aromatic Plants	6	9016	6544	15560
	j) Production of organic input	56	804	491	1295
	k) Floriculture	7	123	44	167
3	Soil Health and Fertility Management/INM	417	7275	4068	11343
4	Livestock Production and Management	503	7794	6829	14623
	a) Dairy	72	1127	885	2012
	b) Piggery	122	1912	1769	3681
	c) Poultry	138	1994	1949	3943
	d) Rabbitry	13	162	179	341
	e) Disease Management	76	1138	1002	2140
	f) Feed management	45	822	501	1323
	g) Goatery	10	145	164	309
	h) Production of quality animal products	25	441	366	807
	i) Mithun management	1	37	0	37
	j) Housing management	1	16	14	30
5	Fisheries	328	6195	4016	10211
6	Home Science/Women empowerment	204	851	4558	5409
7	Agril. Engineering	107	1328	918	2246
8	Integrated Pests Management	299	5211	3594	8805
9	Integrated Disease Management	153	2872	1698	4570
10	Integrated Crop Management	161	3397	1196	4593
11	Integrated Farming System	23	296	219	515
12	Production of seeds/planting materials	84	1520	1116	2636
13	Capacity Building and Group Dynamics	254	3596	3532	7128
14	Agro forestry	33	579	392	971
15	Post harvest Technology	11	218	171	389

16	Resource Conservation Technology	60	965	589	1554
17	Value addition	149	685	3006	3691
18	Integrated Water management	33	518	284	802
19	Mushroom cultivation	25	319	276	595
20	Bee Keeping	2	33	27	60
22	Plant Protection	121	1783	1292	3075
23	Production of Inputs at site	37	583	375	958
	Total	**4355**	**77903**	**60428**	**138331**

2.5.2.Training programmes for rural youth

During 2016-17 as many as **963** skill oriented training programmes were organized by the KVKs for **23212** rural youths, which included **13043** male and **10169** female participants. The major thematic areas of the training programmes included Livestock Production and management with 122 courses benefitting 3122 participants, 178 courses in different horticultural technologies with 4234 participants, 21 courses of Soil Health and Fertility Management/ INM benefitting 558 participants, 84 courses of mushroom production, Post harvest technology (16) and 46 courses on value addition which could benefit for 2050, 377 and 980 participants, respectively. Besides, special care was also taken for women empowerment through different homestead activities, hence a total of 43 courses in Home science/ women empowerment benefitting 828 female participants were also organized. A summary of training programmes organized for the rural youth in the region during the reporting period has been produced in Table 16.

Table 16: Summary of training programmes conducted for rural youth during 2016-17

Sl. No.	Thematic area	No. of course	No. of participant		
			Male	Female	Total
1	Crop Production	32	380	324	704
2	Horticulture	178	2401	1833	4234
	a) Vegetable crops	47	670	540	1210
	b) Fruits	37	537	381	918
	e) Floriculture	4	31	65	96
	f) Protected cultivation of vegetable crops	37	523	341	864
	g) Production of organic inputs	53	640	506	1146
3	Soil Health and Fertility Management/INM	21	409	149	558
4	Livestock Production and Management	122	1773	1349	3122
	a) Dairying	13	274	90	364
	b) Piggery	32	430	346	776
	c) Poultry production	42	540	550	1090
	d) Sheep and goat rearing	11	186	97	283
	e) Production of quality animal products	12	147	119	266
	f) Duckery	1	34	16	50
	g) Quail farming	1	17	3	20

	h) Feed management	1	6	19	25
	i) Disease management	2	45	27	72
	j) Rabbitry	6	61	82	143
	k) Mithun husbandry	1	33	0	33
5	Fisheries	72	1369	543	1912
6	Home Science/Women empowerment	43	201	828	1029
7	Agricultural Engineering	15	247	136	383
8	Insect Pest Management	2	4	31	35
9	Integrated crop management	4	75	23	98
10	Integrated Farming	83	1108	684	1792
11	Planting material production	62	1005	433	1438
12	Capacity Building and Group Dynamics	58	903	627	1530
13	Post Harvest Technology	16	163	214	377
14	Resource conservation	5	27	39	66
15	Mushroom Cultivation	84	897	1153	2050
16	Bee Keeping	36	632	209	841
17	Vermi-culture	40	569	273	842
18	Value addition	46	238	742	980
19	Small scale processing	13	104	175	279
20	Soil and Water Testing	8	199	4	203
21	Agro-forestry	1	19	31	50
22	Sericulture	2	11	40	51
23	Nutrition Garden	5	90	96	186
24	Marketing	6	55	81	136
25	Other	9	164	152	316
	Total	**963**	**13043**	**10169**	**23212**

2.5.3. Training programmes for extension personnel

During the year 2016-17 different training programmes for the extension personnel in the region were organized to upgrade their knowledge and skills in the frontier areas of agricultural technology development. A total of **426** courses benefiting **7735** in-service extension personnel had been arranged in the region during the period under report (Table 17). A total of 49 courses benefitting 858 extension personnel were conducted on different areas of horticulture, while 84 courses benefitting 1729 extension personnel were organized in crop production by the KVKs during the year. In plant protection, 50 courses were arranged for 1119 extension personnel. The other important thrust areas covered were Soil Health and Fertility Management/ INM (17 courses, 369 participants), Livestock Production and management (106 courses, 1006 participants), Home Science/Women empowerment (32 courses, 767 participants) etc.

Table 17: Summary of training programmes conducted for extension personnel during 2016-17

Sl. No.	Thematic area	No. of course	No. of participant		
			Male	Female	Total
1	Crop Production	84	1303	426	1729
2	Horticulture	49	611	247	858
	a) Vegetable crops	5	72	38	110
	c) Protected cultivation technology	7	47	34	81
	d) Production and use of organic inputs	16	244	94	338
	e) Floriculture	4	75	0	75
	f) Fruits	17	173	81	254
3	Soil Health Management/INM	17	300	69	369
4	Livestock Production and Management	106	744	262	1006
	a) Piggery management	1	11	4	15
	b) Poultry management	1	-	30	30
	c) Management in farm animals	89	576	158	734
	d) Feed and fodder production	12	111	59	170
	e) Disease management	3	46	11	57
5	Fisheries	10	166	46	212
6	Integrated Farming System	1	2	40	42
7	Home Science/Women empowerment	32	113	654	767
8	Agricultural Engineering	3	38	25	63
9	Integrated Pest Management	47	808	242	1050
10	Integrated Disease management	3	51	18	69
11	Integrated Crop Management	2	38	12	50
12	Integrated Nutrient Management	13	190	54	244
13	Bio control	4	48	35	83
14	Capacity Building and Group Dynamics	36	519	268	787
15	Agro-forestry	3	12	34	46
16	Resource conservation	3	53	12	65
17	Mushroom Cultivation	4	37	60	97
18	Soil and water testing	1	20	2	22
19	Value addition	2	0	57	57
20	Marketing	1	14	16	30
21	Others	5	61	28	89
	Total	**426**	**5128**	**2607**	**7735**

2.5.4. Sponsored training programmes

The KVKs in the region conducted **1169** training courses during the period sponsored by different agencies/organizations which benefitted a total of **18419** participants. Out of the total number of participants, **10972** were male and **7447** were female (Table 18). The participants in the sponsored training programmes comprised of farmers, farm women, rural youth, in-service extension personnel and members of different NGOs and civic bodies. The training programmes were organized to upgrade their knowledge and skills in major areas of Agronomy(69 courses, 1145 participants), Horticulture (239 courses, 3149 participants), Agri. Extension (23 courses, 1206 participants), Fisheries (294 courses, 2822 participants), Plant Protection (120 courses, 2789 participants), Home Science (19 courses, 327 participants) etc.

Table 18: Summary of sponsored training programmes conducted by KVKs during 2016-17

Sl. No.	Thematic area	No. of course	No. of participant		
			Male	Female	Total
1	Agricultural Engineering	19	353	341	694
2	Agricultural Extension	23	725	481	1206
3	Agronomy	69	748	397	1145
4	Animal Science	196	945	1101	2046
5	Crop production	28	448	505	953
6	Fisheries	294	1831	991	2822
7	Home Science	19	91	236	327
8	Horticulture	239	1988	1161	3149
9	Multidisciplinary	8	60	59	119
10	Plant Protection	120	1953	836	2789
11	Plant Breeding	14	244	218	462
12	PPV&FRA	9	508	199	707
13	Soil Science	61	565	387	952
14	Resource Conservation	6	314	37	351
15	Value addition and Mushroom production	64	199	498	697
	Total	**1169**	**10972**	**7447**	**18419**

2.5.5. Vocational training programmes

The KVKs in the region conducted **973** vocational training courses during the period which benefitted a total of **5714** participants. Out of the total number of participants **2690** were male and **3024** were female (Table 19). The participants in the vocational training programmes mainly comprised of farmers, farm women and rural youth. The training programmes were organized to upgrade their knowledge and skills in major areas of crop production and management (53 courses, 216 participants), Horticulture (154 courses, 998 participants), Plant protection (58 courses, 232 participants), Agricultural Extension (38 courses, 125 participants), Livestock and Fisheries (12 courses, 382 participants), livestock and fisheries (90 courses, 739 participants), small scale income generating activities (43 courses, 301 participants), Post Harvest Technology (9 courses, 64 participants) etc.

Vocational training on hand embroidery by KVK Sonitpur

Table 19: Summary of vocational training programmes conducted by KVKs during 2016-17

Sl. No.	Thematic area	No. of course	No. of participant		
			Male	Female	Total
1.	Crop Production and Management	53	147	69	216
2.	Horticulture	154	457	541	998
3.	Plant protection	58	120	112	232
4.	Agril. Extension	38	27	98	125
5.	Agronomy	39	150	90	240
6.	Livestock and Fisheries	90	478	261	739
7.	Integrated Farming System	16	72	45	117
8.	Home science	50	37	213	250
9.	Organic Farming	23	114	46	160
10.	Horticulture	154	457	541	998
11.	Plant Breeding	5	10	0	10
12.	Soil Science	30	92	26	118
13.	Bee-Keeping	26	118	28	146
14.	Mushroom production	81	120	335	455
15.	Marketing	2	5	9	14
16.	Women Empowerment	15	10	74	84
17.	Vermicomposting	25	64	36	100

18.	Agril. Engineering	7	27	12	39
19.	Value addition	50	19	243	262
20.	Post Harvest Technology	9	23	41	64
21.	Small scale income generating activities	43	112	189	301
22.	Others	5	31	15	46
	Total	**973**	**2690**	**3024**	**5714**

Vocational Training Programme on Oyster Mushroom Production Technology by KVK Golaghat

2.6. Extension Activities

During 2016-17, KVKs in the region were involved in a number of extension programmes and activities. Along with traditional media of technology dissemination, the KVKs used the recent technological innovations like ICTs to reach among the unreached. A vast stretch of the region being extreme remote to access technology dissemination is a huge challenge. In this particular context, the efforts put by the KVKs during 2016-17 to disseminate the improved farming technologies by exploiting over thirty types of possible extension approaches suitable for North Eastern region, are praiseworthy.

The KVKs in the region organized **57183** nos. of extension programmes/ activities, reaching over **468716** farmers and other targeted beneficiaries including farm women, rural youth, civil societies and school children in the region in different aspects of agri-preneural opportunities (Table 20). The extension activities conducted by the KVKs had been categorized into five major groups, namely field trips and visits, group activities, mass outreach programmes, camps and campaigns and publications. The highest number **(27874)** of activities was conducted under the group field trips and visits (Fig. 8) while the highest number **(223791)** of beneficiaries had been served through different mass outreach programmes of KVKs. A detail of the extension activities including number of beneficiaries is given in Table 20.

Table 20: Summary of extension activities organized by KVKs during 2016-17

Category	Extension activities	No. of programmes	No. of participants		
			Male Total	Female Total	Grand Total
Field Trips and Visits	Diagnostic visits	7091	12592	6705	19297
	Scientists visit to farmers field	8753	15210	7758	22968
	Exposure visits	150	2916	1854	4770
	Farmers Visit to KVK	11880	24566	8796	33362
	Total	**27874**	**55284**	**25113**	**80397**
Group activities	Farmers Scientist Interaction	150	4339	2727	7066
	Group meetings/ Discussion	1276	11185	7968	19153
	Kisan Gosthi	54	2225	1186	3411
	Mahila Mandal Conveners' meetings	10	76	139	215
	Self Help Group Conveners meetings	70	408	689	1097
	Method Demonstrations	1331	10056	8810	18866
	Farm Science Club Conveners meet	39	406	236	642
	Lecture delivered as resource person	692	6418	4572	10990
	Ex-trainees meet	11	133	171	304
	Total	**3633**	**35246**	**26498**	**61744**
Mass outreach programmes	Advisory Services	19647	22002	12434	34436
	Kisan Mela	82	9125	5399	14524
	Film show	447	10669	7799	18468
	Exhibition	241	64916	42626	107542
	Farmers Seminar/ workshop	137	3058	1409	4467
	Field Day	511	10128	5542	15670
	PRA	59	1353	555	1908
	Celebration of important days	364	16153	10623	26776
	TV Talks	132	-	-	-
	Radio talks	200	-	-	-
	News paper coverage	1249	-	-	-
	Total	**23069**	**137404**	**86387**	**223791**

Camps and Campaigns	Animal Health Camp	129	4967	2527	7494
	Plant health camp	58	2391	1133	3524
	Awareness Camp	318	15940	7163	23103
	Swacch Bharat campaign	21	437	369	806
	Soil health/ testing Campaigns	254	7655	2896	10551
	Soil Health distribution programme	5	1195	341	1536
	Jai Kisan Jai Vigyan/ Technology week	8	522	435	957
	Total	**793**	**33107**	**14864**	**47971**
Publications	Training/ practical manual	127	1650	2435	4085
	Extension literature	260	4719	3074	7793
	News letter	44	300	200	500
	Research papers	97	300	200	500
	Technical report/ article	138	2802	1700	4502
	Literature delivered to resource person	684	11076	6935	18011
	Electronic media	11	1228	765	1993
	CD publication	15	152	65	217
	Technical bulletins	49	307	200	507
	Leaflets/folders	266	12360	3850	16210
	Other	123	302	193	495
	Total	**1814**	**35196**	**19617**	**54813**
	Grand Total	**57183**	**296237**	**172479**	**468716**

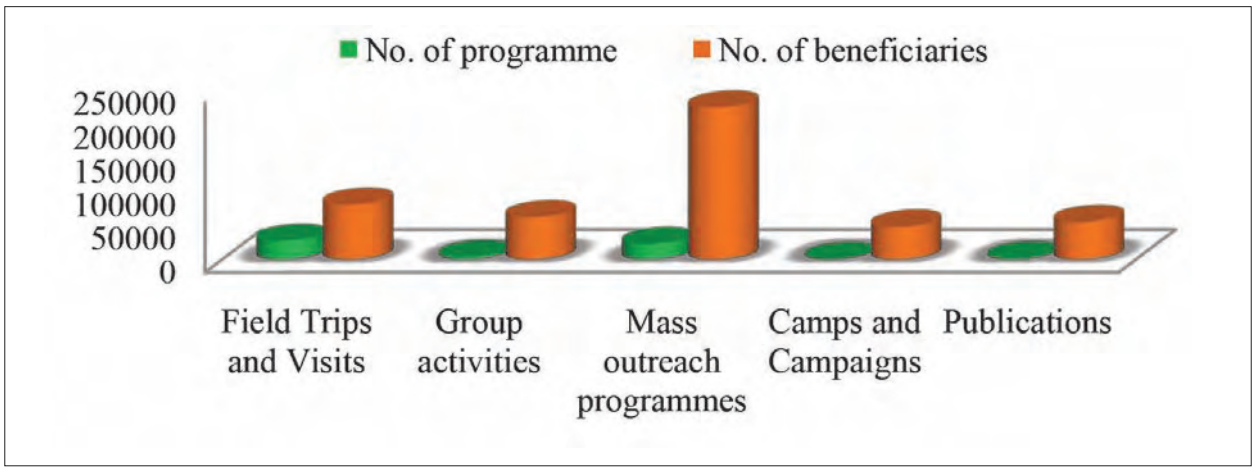


Fig. 8: Major category-wise of extension activities conducted by the KVKs during 2016-17

2.7. Women Empowerment through Technological Interventions

Women training on value addition

In a bid to empower the farm women, female rural youth and female extension personnel different activities such as capacity building, skill improvement, drudgery reduction, formation of SHGs, resource mobilization etc. was arranged by the KVKs in the region during 2016-17. A total of **83675** women representing **43.26** percent of the total beneficiaries (193411) were imparted skill oriented trainings in different areas of crop and livestock enterprises/ farming. A total of 10169 female rural youth representing 43.81 percent of the total beneficiaries (male and female rural youth) were trained for skill improvement and entrepreneurship development. Out of a total of 7735 extension personnel trained during 2016-17, 2607 were female extension personnel (33.70%). Women empowerment was thoroughly taken care while conducting the sponsored and vocational training programmes also. A total of 7447, accounting 40.43 percent of the total number of beneficiaries (18419) participating in the sponsored training programmes was female. About 52.92 percent of the total number of beneficiaries (5714) participating in the vocational training programmes was female. The training programmes mainly included the specific aspects like nursery raising, post harvest processing and value addition, vermin-compost production, drudgery reduction through use of farm implements and tools, duckery, tailoring, mushroom cultivation, bee keeping, goatery, piggery, poultry, dairying and floriculture.

2.8. Production of Seeds, Planting materials and Bio-products

Production of quality seeds and planting materials by the KVKs and their supply to the farmers were among the important activities undertaken by the KVKs in the region. During the period, KVKs of the zone produced **2052.41** tonnes of quality seeds, **43.28** lakh of planting materials, **145.87** q of bio-products, **33349** nos. of livestock offspring/strains and **60.80** lakh fish fingerlings. A total of **865.65** tonne cereals seeds, **225.24** tonne seeds of pulses, **193.34** tonne seeds of oilseeds, **2.34** tonne seeds of vegetables, **29.56** tonne seeds of spices and **735.28** tonnes of seeds of other crops such as fruits, fodder, fibre crops etc. were produced by the KVKs in the region. Planting materials of fruits (3118925 nos.), plantation crops (41760 nos.), vegetables (1053602 nos.), flowers (55318 nos.), spices (41287 nos.) and others (17500 nos.) such as forest species, medicinal plants etc. were produced for supply and distribution to farmers. The KVKs of the region also produced a total of 145.87 q of bio-products including 41.79 q of bio-agents, 68.01 q of bio-fertilizers and 36.07 q of bio-pesticides besides 5 lts. of Neem pesticides and 175 lts. of Plant Extract. Among the livestock products produced by the KVKs during the reporting period were 1281 nos. of livestock, 31981 nos. of livestock strains and 60.80 lakh of fish fingerlings besides 87 nos. of rabbits in the region (Table 21).

Table 21: Production of Seeds, Planting materials and Bio-products during 2016-17

Sl. No.	Major Group/ Class	Quantity
A.	**Seeds (in tonne)**	
1	Cereals	865.65
2	Pulses	225.24
3	Oilseeds	193.34
4	Vegetables	2.34
5	Spice	29.56
6	Others	736.28
	Total	**2052.41**
B.	**Planting materials (No.)**	
1	Fruits	3118925
2	Plantation crops	41760
3	Vegetables	1053602
4	Flowers/Cutting	55318
5	Spices	41287
6	Others	17500
	Total	**4328392**
C.	**Bio-Products (in quintal)**	
1	Bio-agents	41.79
2	Bio-Fertilizers	68.01
3	Bio-Pesticides	36.07 and (5 lts. of Neem pesticides and 175 lts. of Plant Extract)
D.	**Livestock component (No.)**	
1	Livestock	1281
2	Livestock strains	31981
3	Fingerlings (in lakh)	60.80
4	Others (Rabbits)	87

2.9. Scientific Advisory Committee (SAC) Meetings

A total of **74** Scientific Advisory Committee (SAC) meetings were held during the year 2016-17 by the KVKs (Table 22). In the SAC meetings, a detailed review of the progress of activities made by the individual KVKs during the reporting period was made by the committee members and plan of actions for the next year was discussed and finalised for the concerned districts. Members from various line departments including input agencies, mass media, farmer representatives as well as financial institutions participated in the meetings and suggestions were made accordingly for further improvement and well functioning of the KVKs in their respective districts.

Success story: Integrated Disease Management of Ginger Rhizome Rot

Every year, in Hnahthial Village of Lunglei district of Mizoram, there is shoot borer (*Conogethes punctiferalis*) infestation as well as sporadic to serious infection by *Pythium aphanidermatum/ P. vexans/ P. myriotylum* which causes the ginger rhizome rot leading to drastic loss in production and productivity. Realizing the seriousness of the situation, KVK Lunglei intervened by training and farmer field school on Integrated Pest Management and Integrated Disease Management of ginger. The intervention has led to bountiful harvest and this is a landmark victory for the Kendra and the ginger growers are happily spreading the intervention made by KVK. Progressive farmer Mr. Lalbawliana earned a net return of Rs. 5, 20,000/- from 1(one) hectare of ginger cultivation in 2016 with a B:C Ratio of 5.0:1 which encouraged various other farmers because rhizome rot of ginger is one of the most notorious diseases all over Mizoram.

Ginger infected by Rhizome rot

Mr. and Mrs. Lalbawliana received fungicides from Scientist (Plant Protection)for controlling Ginger rhizome rot

Table 22: Scientific Advisory Committee meetings of KVKs during 2016-17

Sl. No.	State	No. of SAC conducted
1	Arunachal Pradesh	13
2	Assam	24
3	Manipur	9
4	Meghalaya	5
5	Mizoram	6
6	Nagaland	9
7	Sikkim	4
8	Tripura	4
	Total	**74**

2.10. Institute Management Committee (IMC) Meeting

During the reporting period, **2** (two) Institute Management Committee (IMC) Meetings of ICAR-ATARI, Umiam were organised on August 29, 2016 and February 04, 2017 at KVK Ribhoi, Umiam, Meghalaya under the Chairmanship of Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam. The meeting recommended the construction of Administrative building of ICAR-ATARI, Umiam; KVK Morigaon and KVK Udalguri in Assam at a cost of 425.00 lakh, Rs. 154.11 lakhs and Rs. 177.03 lakhs, respectively besides procurement of vehicles for KVKs. The IMC also recommended the construction of boundary fencing of KVK, Kokrajhar and Karimganj under AAU for the estimated cost of Rs. 13.31 lakh and 12.39 lakh, respectively.

2.11. Revolving Fund

A total of **Rs. 1,01,59,504** was reported by KVKs as the opening balance as on 1st April, 2017 and generated income of **Rs. 87,17936** during the year 2016-17. The revolving funds were used for generating income and resources from the available land of the KVK farm. KVKs are producing quality seeds and planting materials of different crops/enterprises like rice, oilseeds, pulses, fruits, vegetables, spices, ornamental crops, plantation crops, bio-fertilizers, bio-agents, bio-pesticides, piglets, fingerlings, chicks etc. and supplied to farmers and the concerned line departments for further supply and distribution to farmers during the period. The state-wise opening balance and the present status of revolving funds of KVKs are given below (Table 23).

Table 23: Status of Revolving Fund of KVKs during 2016-17

Sl. No.	States	No. of KVK	Opening Balance	Income generated during the year (Rs)	Closing balance (as on 31st March, 2017)
1	Arunachal Pradesh	14	1180634.00	280492.00	1461126
2	Assam	25	3536819.00	6225666.00	9762485
3	Manipur	9	528442.00	106044.00	634486
4	Meghalaya	5	658221.00	145390.00	803611
5	Mizoram	8	1026920.00	454508.00	1481428
6	Nagaland	9	1110568.00	701309.00	1811877
7	Sikkim	4	1430797.00	540140.00	1970937
8	Tripura	4	687103.00	264387.00	951490
	TOTAL	**78**	**1,01,59,504**	**87,17936**	**18877440**

2.12. Special Programmes

2.12.1. Cluster FLDs under National Mission on Oilseed and Oil Palm (NMOOP) and National Food Security Mission (NFSM) during 2016-17

Under ICAR-ATARI, Umiam, there were 53 Numbers of KVKs included for Cluster Demonstrations. KVKs conducted Cluster frontline demonstration (FLDs) to demonstrate the production potential of newly released technologies on the farmer's fields at different location in a given farming system and organized farming and extension activities for farmer and extension workers for dissemination of various technologies.

Achievements during 2016-17

During 2016-17, the Cluster FLD on oilseeds and pulses was taken up by the 53 selected KVKs under National Mission on Oilseed and Oil Palm (NMOOP) and National Food Security Mission (NFSM). A total of 1540 hectare of area was allocated for cluster FLD on oilseeds, of which 1500 hectare area was covered for the purpose with 3622 nos. of demonstrations. The cluster demonstration on oilseeds included rapeseeds and mustard (var. TS-36, TS-38, TS-46, TS-67, JT-90-1) and linseeds (var. T-397, Padmini, NL 165 and Ruchi). While a total of 2412 hectare area were covered for cluster demonstration on pulse crops out of the allocated area of 2490 hectares. Thus, a total of 6103 nos. of demonstrations on pulses were conducted by the selected KVKs in the region. These included Pea (var. Prakash, HUP-2, Rachna, Anupam), Lentil (Hul-57, Maitree), Blackgram (var. IPU-94-1, Tripura Maskolai), Greengram (Pratap) and Rajmah (var. Jwala, Anupam). The details are given in Table 24. The state- wise average productivity of major pulse and oilseed crops under NMOOP during 2016 -17 are presented in Table 25 and Table 26, respectively and their respective graphs are shown in Fig 9 and Fig 10. From the Tables and Figs, it is observed that the average productivity of Blackgram was found to be highest in Sikkim with production rate of 10.2 q/ha followed by Arunachal Pradesh (9.88 q/ha), Tripura (8.05 q/ha), Assam (7.44 q/ha) and Manipur (5 q/ha). The average production rate of rapeseed and mustard during 2016-17 was found to be highest for Assam (9.55 q/ha) followed by Tripura (9.2 q/ha).

CFLD on Blackgram (PC-31), KVK Kamrup

CFLD on Toria (TS-38) by women in Darrang

Table 24: State-wise allotment of KVKs for CFLD on Pulses & Oilseeds during 2016-17

State	Area (ha) allocated		Demo allocated (No.)		Area (ha) covered		Demo conducted (No.)	
	Oilseeds	Pulses	Oilseeds	Pulses	Oilseeds	Pulses	Oilseeds	Pulses
Arunachal Pradesh	-	200	-	500	-	200	-	480
Assam	1120	1550	2800	3875	1080	1472	2570	4068
Manipur	60	250	150	625	60	250	115	473
Mizoram	-	80	-	200	-	80	-	94

Nagaland	160	60	400	150	160	60	344	113
Sikkim	-	80	-	200	-	80	-	220
Tripura	200	270	500	675	200	270	593	655
Total	**1540**	**2490**	**3850**	**6225**	**1500**	**2412**	**3622**	**6103**

Table 25: State-wise productivity of Pulse crops under NMOOP during 2016-17

Sl. No.	State	Avg. Productivity (q/ha) of Pulses Crops					
		Blackgram	Greengram	Rajma	Lentil	Field pea	Pigeon pea
1	Arunachal Pradesh	9.88	-	23.60	5.73	8.75	11.4
2	Assam	7.44	7.95	15.72	7.92	10.04	-
3	Manipur	5.00	-	-	6.20	11.87	-
4	Mizoram	-	-	11.00	4.20	10.41	-
5	Nagaland	-	-	-	6.40	13.50	-
6	Sikkim	10.2	8.93	16.6	-	-	-
7	Tripura	8.05	7.25	-	8.46	12.26	-

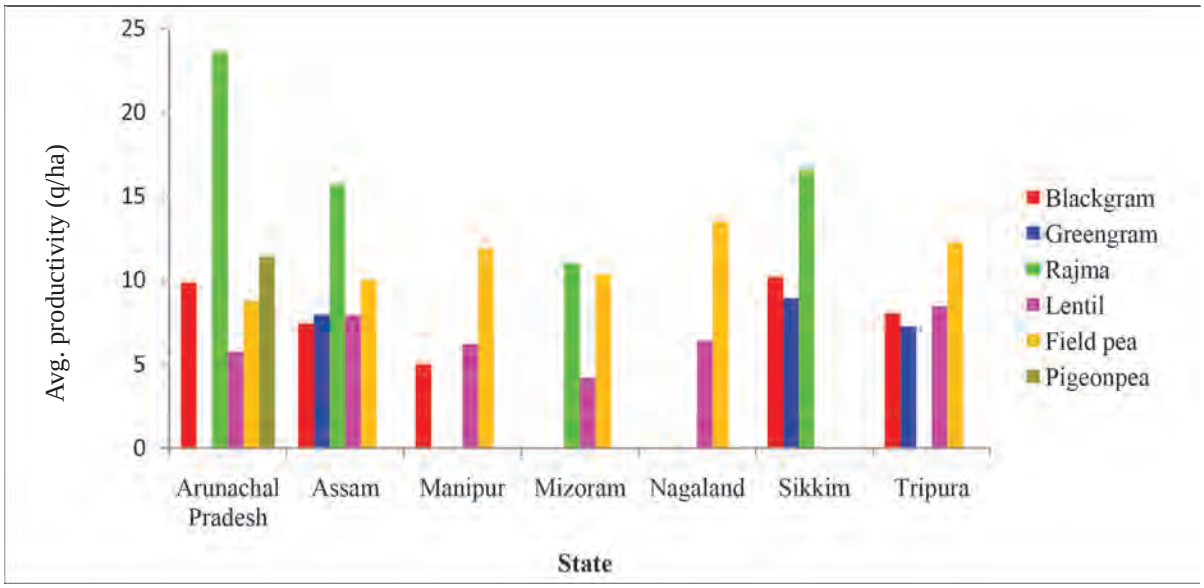


Fig.9: State-wise productivity of Pulse crops under NMOOP during 2016-17

Table 26: State-wise productivity of Oilseed crops under NMOOP during 2016-17

Sl. No.	State	Avg. productivity (q/ha)				
		Soybean	Sesame	Groundnut	Rapeseed & Mustard	Linseed
1	Assam	-	5.55	-	9.55	7.57
2	Manipur	-	-	-	8.18	-
3	Nagaland	8.94	-	-	7.94	7.08
4	Tripura	-	2.50	10.75	9.2	9.63

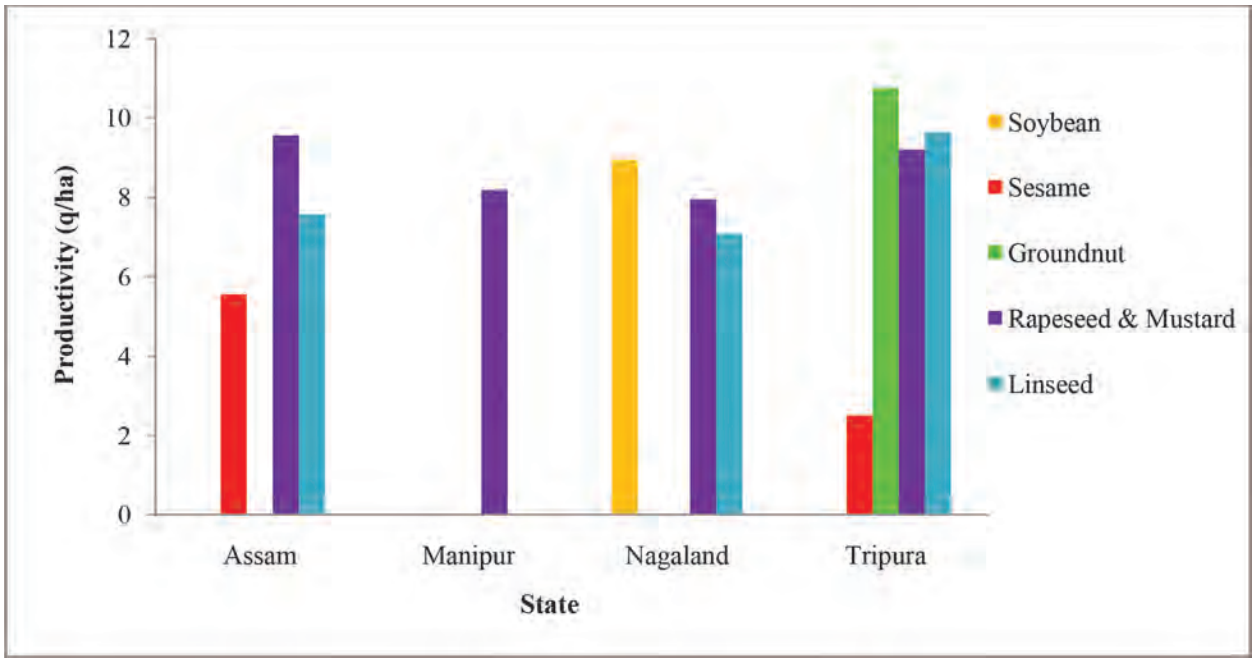


Fig. 10: State-wise productivity of Oilseed crops under NMOOP during 2016-17

2.12.2. Rain Water Harvesting Structure

During 2016-17, a total of **9** KVKs conducted several kinds of activities related to rain water harvesting and its management including training, demonstration, production of planting materials and other extension activities like field visits, farmers-scientists interactions etc. for enhancing knowledge and skills of farmers on construction and use of rain water harvesting structures. Some of the KVKs under the zone are also putting concerted efforts on awareness generation in rain water harvesting for timely utilization during lean season in fields. A detail of the achievements of rain water harvesting structure and its management by the KVKs is given in Table 27.

Water harvesting structure (Jalkund) in hill top of Tuensang dist.

During the period under report, as many as 17 training programmes and 46 demonstrations were conducted by the KVKs on construction and use of rain water harvesting structures using locally available resources which could help in production of 5001 numbers of planting materials. During the same period, a total of **1294** farmers visited to the KVKs for the said purpose and 91 visits were made by the KVK scientists to the farmers' fields to guide efficient construction of the structures.

Table 27: Achievement of rain water harvesting structures during 2016-17

KVK	No. of training programme	No. of demonstration	No. of planting materials produced	Visit by farmer	Visit by KVK staff
Anjaw	1	2	-	32	6
East Siang	2	5	500	748	15
Goalpara	1	1	1	300	7
Imphal East	3	1	-	35	12
Churachandpur	-	12	-	-	12
Chandel	2	14	4500	84	16
Serchip	1	5	-	-	10
Kohima	2	-	-	85	6
Longleng	5	6	-	10	7
Total	**17**	**46**	**5001**	**1294**	**91**

2.12.3. Soil and Water Testing

2.12.3 .a. Sample Analysis

Along with their mandated activities, the KVKs under Zone-III during 2016-17 rendered special assistance to the farmers in terms of laboratory based analysis of soil, water and plant samples. During the period under report, the KVKs analyzed a total of 36517 samples comprising of soil samples (36193), water samples (74) and plant samples (250). In the process, a total of 1984 villages had been covered and as many as 47963 farmers were benefitted (Table 28).

Table 28: Status of soil & water testing labs in KVKs under Zone-III during 2016-17

Sl. No.	Samples tested/ Analysed	No.	Farmer beneficiary	Village covered
1	Soil sample	36193	47461	1954
2	Water sample	74	252	20
3	Plant Samples	250	250	10
	Total	**36517**	**47963**	**1984**

2.12.3. b. Soil Health Cards (SHCs)

Under the scheme, the government plans to issue soil health cards to farmers which will carry crop wise recommendations of nutrients and fertilizers required for the individual farms to help farmers to improve productivity through judicious use of inputs. KVKs in the region tested soil samples in various soil testing labs and analysed the strength and weaknesses (micro-nutrients deficiency) of the soil and suggested measures to deal with it. The result and suggestion are displayed in the soil health cards (SHCs). As many as **44066** numbers of Soil Health Cards (SHCs) were distributed to **55674** farmers on the eve of World Soil Health Day on 5th December, 2016 and other farmers' programmes organised by KVKs in the region.

Table 29: State-wise details of Soil Health Cards (SHCs) distributed to the farmers during 2016-17

Sl. No.	State	No. of SHC distributed	No. of farmer benefitted
1	Arunachal Pradesh	3973	3973
2	Assam	29386	39664
3	Manipur	2502	386
4	Meghalaya	2550	2844
5	Mizoram	1550	2833
6	Nagaland	2901	4770
7	Sikkim	250	250
8	Tripura	954	954
	Total	**44066**	**55674**

2.12.4. Kisan Mobile Advisory Services rendered by KVKs during 2016-17

During 2016-17, KVKs rendered Kisan Mobile Advisory Services in connection with transfer of technologies by providing information, advices, solutions and suggestions to various problems related to agriculture and allied activities as well as collection of feedback from the farmers for further assessment and refinement for generating location specific technologies. As many as 20487 number of text messages had been sent benefitting 776255 no. of farmers in remote districts of the region. The messages (Table 30) included crops (9538), livestock (4680), weather (1557), marketing (414), awareness generation (2444) and other enterprises (1854).

Table 30: Kisan Mobile Advisory Services rendered by KVKs during 2016-17

Enterprise/Activity	Type of message	No. of message	No. of beneficiary
Crop	Text only	3932	396427
	Voice only	4320	5087
	Voice and Text both	1286	1596
	Total	**9538**	**403110**
Livestock	Text only	1688	103973
	Voice only	2535	2806
	Voice and Text both	457	874
	Total	**4680**	**107653**
Weather	Text only	948	123621
	Voice only	251	394
	Voice and Text both	358	502
	Total	**1557**	**124517**
Marketing	Text only	177	13136
	Voice only	157	162
	Voice and Text both	80	85
	Total	**414**	**13383**

Awareness	Text only	1272	52418
	Voice only	973	1290
	Voice and Text both	199	447
	Total	**2444**	**54155**
Other enterprise	Text only	811	72075
	Voice only	708	871
	Voice and Text both	335	491
	Total	**1854**	**73437**
	Grand Total	**20487**	**776255**

2.12.5. Mera Gaon Mera Gaurav (MGMG)

The flagship programme of the Prime Minister of India, "Mera Gaon Mera Gaurav" has been under implementation by the KVKs in the region by adopting villages for promoting best farming practices and government's policies among the farmers. During the period, a total of 78 functioning KVKs involved in the programme by adopting 1406 no. of villages. The notable activities under the programme included 4003 nos. of field demonstrations on various agriculture and allied technologies as well as 1254 nos. of training programmes for farmers and farm women (Table 31).

Preparation of vermicompost under MGMG porgramme

Table 31: Achievements under Mera Gaon Mera Gaurav (MGMG) during 2016-17

Sl. No.	Name of state	No. of KVK	No. of village selected	No. of demonstration	No. of training
1	Assam	25	549	1386	480
2	Arunachal	14	308	614	274
3	Manipur	9	64	449	163
4	Meghalaya	5	109	133	51
5	Mizoram	8	112	298	156
6	Nagaland	9	127	241	46
7	Sikkim	4	81	176	54
8	Tripura	4	56	706	30
	Total	**78**	**1406**	**4003**	**1254**

2.12.6. Kisan Sammelan/Awareness Programmes during 2016-17

With a view to create awareness and sensitizing towards various improved, cost effective, location specific agricultural and allied technologies for rabi season among the farming communities in the region, KVKs under Zone-III could organise as many as 55 awareness programmes for pre-rabi programmes with 9829 number of participants as shown in Table 32.

Table 32: State-wise details of the Kisan Sammelan/Awareness programme during 2016-17

Sl. No.	State	No. of KVK	No. of programme organized during Pre-Rabi	No. of participant
1	Arunachal Pradesh	14	6	698
2	Assam	25	22	5721
3	Manipur	9	7	1062
4	Meghalaya	5	4	598
5	Mizoram	8	3	476
6	Nagaland	9	7	582
7	Sikkim	4	3	363
8	Tripura	4	3	329
	Total	**78**	**55**	**9829**

2.12.7. Skill development training programme during 2016-17

With a view to provide training/skill development on various job roles in the region, KVKs under ICAR-ATARI, Umiam could organise as many as 48 training courses of minimum 16 hours duration with 1150 number of participants during the year 2016-17. A total of 18 courses of more than 200 hours duration were conducted by the KVKs which could benefit a total of 350 rural youths and farmers during the period. A detail in this regard is given in Table 33.

Skill development training in KVK Anjaw

Table 33: Skill development training programme conducted during 2016-17

Sl. No.	KVK	Training courses of minimum 16 hours and less than 200 hours duration		Training courses of minimum 200 hours and more duration	
		No. of course	No. of participant	No. of course	No. of participant
1	Tawang	-	-	2	40
2	Karimganj	8	200	2	31
3	Bishnupur	2	40	2	40
4	Imphal East	-	-	2	40
5	Ri Bhoi	4	65	2	40
6	Dimapur	26	796	2	38
7	Wokha	-	-	2	40
8	Mamit	-	-	2	41
9	Lunglei	2	40	-	-
10	South Sikkim	6	9	2	40
11	West Tripura (Khowai)	-	-	2	40
	Total	**48**	**1150**	**18**	**350**

Success story : Safe storage of grains using hermetic storage bags

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

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

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

2.12.8. Creation of Seed Hubs for increasing indigenous production of Pulses during 2016-17

For increasing the production of Pulses in the region during 2016-17, 6 Seed Hub KVK Centers under ICAR-ATARI, Umiam were selected for creation of Seed Hubs to meet the seed requirement of the farmers in the region. These KVK centres could produce as much as 1160 q of pulses seeds of black gram, green gram, lathyrus, lentil, chick pea, field pea etc. covering an area of 250.5 ha during the period as depicted in Table 34.

Table 34: Creation of Seed Hubs for indigenous production of pulses in during 2016-17

Sl. No.	KVK/Seed Hub Centre	Crop	Name of the variety	Area (ha)	Production (q)
1	Jorhat	Blackgram, Greengram, Lathyrus	PU 31, IPU 94-1 IPM-02-3 Ratan	65	490
2	Kamrup	Blackgram, Lentil	PU-31 KLS-218	50	360
3	Karimganj	Blackgram	PU-31	30	100
4	Nalbari	Blackgram, Lentil, Lathyrus	PU-31 Moitree Ratan	34.5	45
5	Lakhimpur	Blackgram	PU-31/ IPU-2-43	50	Crop Infested with YMV
6	Thoubal	Lentil Chickpea Field Pea	HUL-57 JG-16 Vikash, Prakash	21	165
	Total			**250.5**	**1160**

2.13. Swachta Pakhwada

The Swacchta Pakhwada programme was organized in ICAR-ATARI, Umiam during 16th-31st May, 2017 with an oath taking event by the Scientists and other staff of the institute. The first day of the programme started with the oath taking ceremony in the presence of Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam. The various activities which were carried out during the 15 days programme included cleaning drive of the office premises, cleaning of old files and materials, arrangement and cataloguing of file and other important documents as per sequence, awareness and demonstration on the importance of human and animal hygiene and sanitation were elucidated at some of the LP schools in the nearby villages of Ri-Bhoi district. Deworming tablets were also distributed to the pig rearers along with hands-on demonstration of hygienic maintenance of animal farm as part of the programme.

Oath taking ceremony of the Swacchta Pakhwada Programme

Cleaning of office and clearing of old files

Cleaning drive in local L.P. School

Demonstration on deworming of Pig

2.14. Awards and Recognition

ICAR-ATARI, Umiam obtained the **ISO 9001: 2015** for three years with effect from October 03, 2016 during the reporting period. Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam received the **Fakhruddin Ali Ahmed Award for outstanding research in tribal farming system** from ICAR in July 16, 2016. During the year 2016-17, the Scientist of ICAR-Agricultural Technology Application Research Institute (ATARI), Umiam was awarded with the **Best Poster Presentation Award** on "Performance of Rapeseed & Mustard in Rice Fallows through Cluster Front Line Demonstrations in North Eastern Region." during International Seminar on Oilseed Brassica (ISOB 2017) from February 23-27, 2017 at SIAM, Jaipur, Rajasthan. The institute also begged the **Best Stall Exhibition Award** in Krishi Unnati Mela, 2017 during 15th – 17th March, 2017 at IARI, New Delhi.

The KVKs under ICAR-ATARI, Umiam received a number of awards and recognitions during 2016-17 for their outstanding achievements in different areas of agricultural development. Among those, the most significant ones were- the **Pandit Deendayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar 2016-17 (Zonal)** jointly to KVKs-East Siang & Jorhat, **Pandit Deendayal Upadhyay Antyodaya Krishi Puraskar, 2016-17** to Mr. Phani Bora, Burakuri, Jorhat and Miss Thejano Makritsu, village-Sethikema A, Dimapur, Nagaland and **Jagjivan Ram Abhinav Kisan Puruskar 2016** to Mr. Pankaj Kalita, village-Pub Balitara, Nalbari and Sh. R. D. Peter, Village-Purul Akutpa ,Distt.-Senapati, Manipur

Pandit Deendayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar 2016-17 to KVKs East Siang & Jorhat

Fakhruddin Ali Ahmed Award, 2016 to Dr. Bidyut C. Deka, Director, ICAR-ATARI, Umiam

2.15. Linkages and Collaboration

During 2016-17, ICAR-ATARI made strong linkages with National Fisheries Development Board (NFDB), Hyderabad for dissemination of latest technologies to the farmers through 52 nos. of training programmes by KVKs of the region with the financial assistance from NFDB. The collaborative programme was undertaken with PPV&FRA for organizing awareness programme and registration of farmers' variety. During the reporting period 9 nos. of awareness programmes were conducted by KVKs of the region besides submitting 120 applications for registration of farmers' variety.

The KVKs in North East are maintaining strong enabling, functional as well as diffusion linkages with different stakeholders including their host institutes, ATARI, Umiam, all line departments of their respective state governments and farmers of the respective districts in matters related to implementation of their mandated and other collaborative programmes such as conduct of on farm testing, frontline demonstration, identification and selection of trainees and training needs of farmers, rural youth and extension personnel for training programmes and conduct of several kinds of extension activities etc. KVKs have also close coordination with other agencies including NGOs and other public and private sectors. KVKs are directly involved in preparation of SREP of ATMA districts and in implementation of various schemes like Mission for Integrated Development in Horticulture, NREGS, SGSY, RKVY etc. Programme Coordinators and Subject Matter Specialists of KVKs also acted as resource persons for different collaborative HRD programmes sponsored by different organizations such as Assam Agricultural University, ICAR Research Complex for NEH Region, DRDA, NABARD, ATMA including HRD programmes organized by ICAR-ATARI, Zone-III.

2.16. Performance of Agricultural Technology Information Centres (ATICs)

There are two ATICs in the region, one at Assam Agricultural University, Jorhat and the other at ICAR Research Complex for NEH Region, Barapani. Both were sanctioned in 1999 by Indian Council of Agricultural Research. The rationale for establishment of ATIC were-

- To provide diagnostic services for soil and water testing, plant and livestock health
- To supply research products such as seeds and other planting materials, poultry strains, livestock breeds, fish seed, processed products etc. emerging from the institution for testing and adaptation by various clientele
- Providing information through published literature and communication materials as well as audio-visual aids
- Providing an opportunity to the institution/ SAU to generate some resource through the sale of their technologies.

Salient Achievements of ATIC, ICAR Research Complex for NEH Region, Umiam during 2016-17

- A total of 29.83 q of cereal, 8.60 q of oilseed, 10.12 q of vegetable and 92.35 q of spice were sold which could benefit a total of 1401 farmers during 2016-17.
- A total of 1659 copies of books & technical bulletins and 440 no. of technology inventory were distributed to 1200 farmers in the region.
- Mobile advisory through 6000 SMSs were sent to the farmers during the period.
- Organized 16 nos. of training programme and 25 video shows benefitting a total of 900 farmers in the region.
- A total of 1659 no. of farmers visited the ATIC during the year for technological information and technological products related to crop and livestock farming, respectively.

Salient Achievements of ATIC, Assam Agricultural University, Jorhat during 2016-17

- A total of 19.12 q of tea (CTC), 0.12 q Orthodox tea, 4.25 kg Green tea, 120 kg. Biofor PF-2 and 70 kg. Biozen PTB etc were produced and sold during the reporting period benefiting 2300 farmers.
- A total of 456 farmers were benefitted through plant diagnostic services during the year.
- Distributed 127 copies of Technology Inventory to farmers.
- A total of 6006 farmers were benefitted through Kisan Call Centre/other Phone calls.
- A total of 5310 farmers visited the ATIC during the year for technological information and technological products related to crop and livestock farming respectively.

2.17. Technology Backstopping through Directorates of Extension Education

The Directorates of Extension Education (DEEs) of Assam Agricultural University, Jorhat and Central Agricultural University, Imphal are providing technological backstopping to the KVKs through different activities at university level. During 2016-17, a total of 109 visits were made by Directors of Extension Education (DEEs) and his other scientists in KVKs under their jurisdiction. The Directorates also organised 12 nos. of review meetings to oversee the activities of KVKs and organised 13 HRD Programmes for knowledge empowerment and technology backstopping to the KVKs benefitting 310 KVK participants/ staff. As many as 119 publications including extension bulletins (42), technical bulletins (22), training manuals (3) and farm magazine (28) were brought out by the two Directorates during the period (Table 35).

On and Off-Campus training programme

Table 35: Summary of Monitoring and Review of KVK activities by Directorates of Extension Education during 2016-17

Sl . No.	Particular	DEE AAU	DEE CAU
1	No of Visits by DEE to KVKs	46	19
2	No of visits of other scientists to KVKs	33	11
3	No of Review meetings held	1	2
4	Any other monitoring and review meeting held	4	5
5	HRD Programme conducted for knowledge empowerment and technology backstopping to the KVKs		
	a) No of programme	4	9
	b) No of participants	92	218
6	Other Extension Activities conducted for knowledge empowerment and technology backstopping to the KVKs (SMS)		
	a) No of programme	3	
	b) No of participants	18	-
7	Technology inventory developed(No)	1	-
8	Other publications, bulletins, CDs etc. brought out (No)	-	3
9	Extension bulletin (in various topics)	42	-
10	CD Materials	-	-
11	Technical bulletins	21	1
12	Technology Inventory	1	-
13	Leaflets	7	-
14	News letters	4	6
15	Farm Magazine	24	4
16	Kisan Diary	-	1
17	Books (including proceedings of workshops)	-	-
18	Training Manuals	3	-
19	Calendar	1	1

3.0. RESEARCH AND DEVELOPMENT PROJECTS FOR HUMAN RESOURCE DEVELOPMENT

3.1. Institutional Research Projects

3.1.1. Cropping intensification and diversification for production enhancement in North East Region

PI : Dr. P.C. Jat
Co PI : Dr. A.K. Gogoi
Dr. A.K. Singha
Dr. S. Paul and
Shri A.K. Bhalerao

Objectives

1. To identify the suitable cropping system for different states as well as agro-climatic conditions of NE Region.
2. To study the impact of crop Intensification and Diversification on livelihood of the farmers.
3. To evaluate the economics of promising cropping system.

Salient Findings

a. Suitable cropping systems for different states as well as agro-climatic conditions of NE Region

The following are the major and suitable cropping systems found for different districts in the region-

i. Rice-Toria cropping system having the average yield of 48.5q/ha in rice and 12.3 q/ha in Toria, was found in Sonitpur district of Assam

ii. Rice-Potato cropping system is the major cropping system followed in Phek district of Nagaland with the average of yield 44.5q/ha in rice and 164.86 q/ha in potato

iii. In 3 years FLD data, it was found that Rice-Toria followed by Rice –Pulse was found to be the best cropping system in NEH region.

b. The impact of crop Intensification and Diversification on livelihood of the farmers

The productivity of both season crops under Front Line Demonstrations was found satisfactory and farmers got more production rather than single crop in a year. The study revealed that continuous adoption of Rice-Rice cropping system deteriorated the soil quality resulting in a serious threat to its sustainability in the high rainfall areas of the region. Therefore, crop diversification is being promoted to restore the soil quality. Crop diversification showed lot of promises in alleviating these problems besides, fulfilling basic needs for cereals, pulses, oilseeds and vegetables and thereby regulating farm income, withstanding weather aberration, controlling price fluctuation, ensuring balanced food supply and conserving natural resources.

c. The Economics of promising cropping system

The summer Rice-winter Rice cropping system was more profitable (Rs. 104400/ha) followed by Rice-Pea (Rs. 91200) in Dhubri district and winter Rice-Toria (Rs. 85700) in Sonitpur district. In Kolasib and Dimapur districts, the Rice-Toria cropping system were found more profitable and farmers got average income of Rs.92400 and Rs. 93500 respectively. The winter Rice-Toria also found more profitable in Sonitpur, Dhubri, Kolasib, West Tripura and Dimapur. After observations of above results, it could be concluded that Rice-Toria and Rice-Pea and Rice-Rice are found most economical for the farmers. However, the continuous adoption of Rice-Rice cropping system has led to deterioration of soil quality resulting in a serious threat to its sustainability in high rainfall areas. Therefore, crop diversification with wider choice of crops is the option to restore the soil quality.

3.1.2. Information need of farmers of NE Region for adoption of Agricultural Technologies

PI : Dr. R Bordoloi
Co-PI : Dr A.K. Singha
Dr S. Paul
Dr. A.K. Gogoi and
Mr. U. K. Singh

Objectives

1. To study the extent of information need of farmers with respect to adoption of various agricultural technologies disseminated by KVKs.
2. To find out the information sources utilized by the farmers for adoption of scientific technologies.
3. To examine the credibility level of different information sources as perceived by the farmers.
4. To determine the problems faced by the farmers in fulfilling their information needs.

Salient Findings

a. Extent of information needs on adoption of improved practices

Major Crops

The information needs on major crop rice was found to be mostly needed (48.82%) followed by somewhat needed (35.38%) and least needed (15.80%) on adoption of improved practices of major crops. In district-wise comparison, the information on rice was found to be mostly needed in West Tripura, Cachar, Lower Dibang Valley, Senapati, East Sikkim, Lunglei and Dimapur districts and interestingly only in East Khasi Hills district it was found to be somewhat needed; while the information on major crop maize was found to be mostly needed (46.20%) followed by somewhat needed (35.26%) and least needed (18.54%) respectively. The other major crops included black gram, green, gram, field pea, chick pea and other vegetable crops like cabbage, cauliflower, brinjal, oilseed crops, sesamum, tomato etc.. The information on other major crops was found to be mostly needed (45.90%) followed by somewhat needed (35.17%) and least needed (18.93%). In KVK wise comparison, the information on rice was found to be mostly needed in West Tripura, Cachar, Lower Dibang Valley, East Sikkim, Lunglei and Dimapur districts and somewhat needed in Senapati and East Khasi Hills districts.

Poultry

As per the responses of the respondents, majority (55.72%) of the responses towards information need of poultry were found to be mostly needed followed by somewhat needed (33.95%) and least needed (10.33%). In KVK-wise comparison, majority of the responses with regards to the problems faced by the farmers were somewhat serious in all the KVKs i.e West Tripura, Cachar, Lower Dibang Valley, Senapati, East Sikkim, East Khasi Hills and Dimapur.

Piggery

It was observed that in pooled data, based on the responses of the respondents, the information need on piggery were found to be mostly needed (54.62%) followed by somewhat needed (38.20%) and least needed (7.18%). KVK-wise data revealed that the information on piggery was found to be mostly needed in West Tripura, Cachar, Lower Dibang Valley, Senapati and Lunglei. Interesting finding was observed in Dimapur district where equal responses were observed where the information on piggery was found to be equal. i.e. mostly needed and somewhat needed.

Fishery

The information need on fishery was found to be mostly needed by 56.73% respondents followed by somewhat needed (32.56%) and least needed (10.71%). In KVK-wise comparison, the information on fishery was found to be mostly needed in West Tripura, Cachar, Lower Dibang Valley, Senapati, Lunglei and Dimapur districts followed by somewhat needed in East Sikkim and East Khasi Hills district.

b. Information sources utilized by the farmers for adoption of scientific technologies

Based on the information sources utilized by the farmers for adoption of scientific technologies,

it was observed that majority (40.61%) of the respondents utilized information sources sometimes only followed by never (33.56%). Only 25.83% utilized different information sources regularly. KVK-wise distribution revealed that majority of the responses in West Tripura, Cachar, Senapati, East Khasi Hills and Lunglei KVKs were in somewhat category when it comes to utilization of information sources followed by never in Lower Dibang Valley, East Sikkim and Dimapur KVKs. The information sources like KVK, Marketing Board, Mobile app, Relatives, NGOs, Training were mostly used by the respondents.

c. Credibility level of different information sources as perceived by the farmers

Based on the credibility level of different information sources as perceived by the farmers, it was observed that majority (47.97%) of the respondents had somewhat credible level towards information sources followed by mostly (31.49%) and least (20.54%) level of credibility towards information sources. KVK-wise distribution exhibited that majority of the responses in West Tripura, Senapati, East Sikkim, East Khasi Hills, Lunglei and Dimapur KVKs were in somewhat category when it comes to credibility level of information sources followed by mostly in Cachar and Lower Dibang Valley. Most of the respondents accorded highest credibility towards sources like Field trial, Exhibition, KVK, Agricultural trainings, Progressive farmers etc.

d. Problems faced by the farmers in fulfilling their information needs

Based on the problems faced by the farmers in fulfilling their information needs, it was observed that majority (46.91%) of the responses of the respondents indicated that the problems that they faced were somewhat serious followed by least serious (30.61%) and most serious (22.48%). KVK-wise distribution exhibited that majority of the responses with regards to the problems faced by the farmers were somewhat serious in all the KVKs i.e West Tripura, Cachar, Lower Dibang Valley, Senapati, East Sikkim, East Khasi Hills and Dimapur. The most serious problems faced by the respondents for fulfilling information needs were Poor communication, Non-understandability of language in mass media, untimely message, Non accessibility of news paper, Erratic power supply etc.

3.2. Externally funded Projects

3.2.1. National Innovation on Climate Resilient Agriculture (NICRA)

NICRA is a network project of the Indian Council of Agricultural Research (ICAR) and was launched during February, 2011. During the year 2011 to 2015, there were 17 numbers of KVKs representing different agro-climatic conditions with designated problem areas were distributed in the 8 North East States and in the year 2015-16, Six new NICRA KVKs were included in the Six districts of North East viz., KVK Karbi Anglong in Assam , KVK Ukhrul in Manipur, KVK Jaintia Hills in Meghalaya, KVK Serchhip in Mizoram, KVK Mon in Nagaland and KVK Dhalai in Tripura and altogether a total numbers of 23 KVKs are under NICRA Project as presented in Table 36.

Module-wise interventions under Technology Demonstration component

I. Natural resource management

A number of interventions were made in the NICRA villages during 2016-17 as climate resilient practices. In-situ moisture conservation were practiced with mulch-plastic, biological waste etc and Raised bed planters in Field Pea, Bitter gourd, Cabbage, Cauliflower ,Tomato, Ginger and Turmeric to conserve soil moisture, reduce evapo-transpiration loss and improve soil health and ultimately higher yield. This activity benefitted 249 numbers of farmers and covered 48.25 ha of land. Improved drainage in flood prone areas with Drainage Channel and ring bund reduced crop damage due to water logging leading to better yield. Conservation tillage was conducted with No Tillage practices, Minimum tillage and Zero tillage in Lentil, Vegetable Pea, Field Pea, Rapeseed, Yellow Sarson. This activity benefitted 150 numbers of farmers and covered 59.7 ha of land. Water saving irrigation methods with water pump set, diversion channel, sprinkler irrigation and drip irrigation benefited 71 numbers of farmers and covered 15.4 ha of land.

Table 36: State wise distribution of NICRA KVKs along with their climate Vulnerability

State	District	Village Name	Agro-climate	Vulnerability
Arunachal Pradesh	Tirap,	Sipini	Humid Sub Tropical Zone	Drought/water stress
	West Siang	Dali, chisi and Padi	Sub Tropical Zone	
	West Kameng	Sangti	Temperate Zone	Cold stress
Assam	Dibrugarh	Panimirigaon	Upper Brahmaputra Valley Zone	Flood
	Cachar	Salchapra Part-I	Barak Valley Zone	
	Sonitpur	Punioni- Baghchung	North Bank Plain Zone	
	Dhubri	Udmari part IV & V	Lower Brahmaputra Valley Zone	Drought
	Karbi Anglong	Hambong Enghee	Hill Zone	Drought
Manipur	Senapati	Hengbung & Hengbung-I	Sub Trop Plain Zone	Drought/water stress
	Imphal East	Chingtha	Mild Tropical Hill Zone	
	Ukhrul	Ramva	Sub Tropical Hill Zone	Frost /Soil Erosion
Mizoram	Lunglei	Hnathial	Sub Tropical Hill Zone	Water stress
	Serchipp	N.Vanlaiphai	Mid Tropical Plain Zone	Drought
Meghalaya	Ri-bhoi	Kyrdem	Mid Tropical Hill Zone	Drought/water stress
	West Garo Hills	Marapara, Sananggre, Rongbokgre	Sub Tropical Hill Zone	
	Jaintia Hills	Umjalasiaw	Sub Tropical Hill Zone	Drought/ Flood
Nagaland	Phek	Thipuzumi	High hill Zone	Drought/water stress
	Dimapur	Dhansiripar	Mid Tropical Plain Zone	
	Mokokchung	Aliba	Mild Hill Zone	
	Mon	Ngangching	Upper Brahmaputra Valley Zone	Drought/ Soil erosion
Sikkim	East Sikkim	Nandok	Humid Sub Tropical Zone	Soil erosion & Water stress
Tripura	Dhalai	Methirmia	Mid Tropical Plain Zone	Flood/ Soil erosion
	West Tripura	North Pulinpur village	Mid Tropical Plain Zone	Drought

II. Crop production

Different climate resilient crop varieties were introduced in different NICRA villages of the region during the period under report. Flood tolerant varieties of paddy (Bahadur sub-1, Dipholu, Gitesh, Jalashree, Jakunwari, Panindra, Padumoni & Swarna sub-1) and drought tolerant varieties of paddy (Dehangi & Gitesh) were demonstrated in the farmer's field. Likewise, short duration paddy varieties (Dishang, Luit & Kolong),

Construction of Drainage Channel in flood prone areas

Growing of Dhaincha and incorporation before rice transplanting

quality protein rich maize varieties (HQPM-1 & RCM 1-3) were also introduced. Introduction of water saving paddy cultivation methods (SRI, aerobic, direct seeding) with different paddy varieties (CAU-R1, IR-36,, Lalat, RC Maniphou-10, Ranjit , RCM 10, SARS- 6 & Sawarna Mashuri) benefited 206 numbers of farmers having the coverage of 73.9ha of land. Location specific cropping sequences of Maize –Blackgram, Maize - French bean, Cabbage – Pea, Maize - Cowpea were introduced benefitting 191 numbers of farmers with an area of 15.72 ha of land.

Demonstration of Short duration rice variety 'Dishang'

Demonstration of Late sown Toria in Rice-Toria sequence

III. Livestock and Fisheries module

Community lands for fodder production during droughts / floods were used for cultivation of green fodder like Oat (HJ 114 & Kent); Sorghum (Co. F.S. 29); Congo Signal & Maize (African Tall) benefiting

Rearing of fishes in cages in flood affected

Backyard Poultry Farming unit

149 numbers of farmers. Improved fodder/feed storage methods with Mineral mixture, dewormer and disinfectant solution were introduced in some of the selected NICRA villages that benefited 91 numbers of farmers having 161 numbers of livestock. Vaccination of cattle against FMD, Pig against Swine fever, poultry against Ranikhet disease were demonstrated among 482 numbers of farmers benefiting 1291 Number of livestock. Improved shelters for reducing heat stress were also 56 locations of the region. Improved breeds of Poultry (Vanaraja, kamrupa Gramapriya & Kuroiler), Piggery (Hampshire); Goatery (Beetal), Duckery (Chara-Chemballi & Muscovy) were introduced in no. of villages benefiting 314 numbers of farmers.

IV. Institutional interventions

Seed production programme of specific varieties of Rice (CAU-R1, Gitesh, Joymati, Swarna sub 1), Maize (HQPM-1), Toria (TS 36) and Pea (Prakash, WBL-77) was taken up in participatory mode by involving 44 numbers of farmers in 25.6 ha area. Interventions on Custom hiring centre benefitted 510 numbers of farmers by covering 176.91ha area.

Interventions on Custom Hiring Centre

HRD programmes in areas like Soil health management, Life saving irrigation, Cropping system, Protective cultivation, IPM, Soil moisture conservation, Livestock management, Life saving irrigation, Cropping system & Value addition were conducted covering 184 numbers of courses with 4375 numbers of farmers (Male: 2384 & Female: 1991). Different extension activities such as Method demonstrations, Agro advisory services, Awareness, Exposure visits, Group discussion, Diagnostic visit, Kishan gosthi, Farmers scientist interaction & Group meeting with VLMC of the village etc were also conducted in NICRA villages benefiting and 4708 number of farmers (Male: 2912 & Female: 1796) through 451 no of programmes.

Training programme

Training on IPM in cabbage

3.2.2. Farmer FIRST Programme (FFP)

The Farmer FIRST as a concept of ICAR is developed as farmer in a centric role for research problem identification, prioritization and conduct of experiments and its management in farmers' conditions. The focus is on farmer's Farm, Innovations, Resources, Science and Technology (FIRST). Two terms 'enriching knowledge' and 'integrating technology' qualify the meaning of Farmer FIRST in Indian context. Enriching knowledge signifies the need for the research system as well as farmers to learn from each other in context to existing farm environment, perception of each other and interactions with the sub-systems established around. Technology integration is looked from the perspective that the scientific outputs coming out from the research institutions, many times do not fit as such in the farmers' conditions and thus, certain alterations and adaptations are required at field level for their acceptance, adoption and success. 'Farmer FIRST' programme aims at enhancing farmer-scientist interface for technology development and application. It will be achieved with focus on innovations, technology, feedback, multiple stakeholder's participation, multiple realities, multi method approaches, vulnerability and livelihood interventions.

Achievements during 2016-17

Three projects are presently being implemented by Assam Agricultural University, Jorhat, Central Agricultural University, Imphal and ICAR RC for NEH Region, Umiam, Meghalaya with the total budget provisions of Rs. 94.25 lakh, Rs. 57.46 lakh and Rs. 95.10 lakh, respectively. The achievements of the project during 2016-2017 are given below -

A. Assam Agricultural University, Jorhat

Crop based modules

- Toria – variety TS 36 was demonstrated in 32 ha with involvement of 20 farmers.
- Blackgram – variety KU 301 was demonstrated in 0.85 ha with involvement of 9 farmers.
- Sesame - variety Kaliabor (L) was demonstrated in 0.45 ha with involvement of 10 farmers.
- Ahu rice–variety Inglongkiri, Dehangi and Luit was demonstrated in 1.3 ha with involvement of 4 farmers.
- Maize– variety PAC 751 was demonstrated in 0.40 ha with involvement of 10 farmers.
- Demonstration on Sali rice (var. Ranjit & Gitesh) with an area of 29.00 ha with the involvement of 67 participating farmers is being conducted.

Horticulture based module

- Bhut jalakia (King chilli) was demonstrated in 1.0 ha with involvement of 19 farmers.
- Tomato-variety Kranti was demonstrated in 1.01 ha with involvement of 18 farmers.
- Cabbage –variety Savitri was demonstrated in 0.33 ha with involvement of 24 farmers
- Brinjal– variety Indam 902 was demonstrated in 0.20 ha with involvement of 18 farmers

Livestock based module

- Altogether 120 farmers for piggery, 220 farmers for poultry and 67 farmers for duckery and 12 farmers for fishery have been identified.
- Improved breed/ variety of piglets have already been distributed among 100 farmers. While among identified farmers for receiving improved poultry breeds, 110 farmers have received the chicks, 50 farmers have received ducklings and all 12 farmers have received fish fingerlings.

B. Central Agril. University, Imphal

- After the preliminary survey, two awareness Cum PRA exercises on crops, livestock, fisheries, and horticulture (fruits and vegetables) components were conducted at Yairipok Yambem & Top Chingtha, Villages, Imphal East on dated 21st and 22nd Feb., 2017 respectively.
- One day training programme on Cultivation of First Crop (Paddy) was held on 24th February 2017. A total of 25 rice growing progressive farmers participated in the training programme.
- Inputs (CAUR-2 early rice variety seed and the insecticides and fungicides) were distributed to the rice growing progressive farmers of the two villages on 24/2/2017 at the University premises Imphal.

C. ICAR Research Complex for NEH Region, Umiam

Crop based modules

- Vegetable pea cultivation in rice fallow was conducted with nearly 100 beneficiary farmers in the adopted villages viz., Borgang, Parangang, Lalumpam, Borkhatsari, Nalapara, Umtham, and Sarikhusi. Seeds along with other inputs recommended under the package of practices of Pea (Var. Arkel & AP-3) were provided to the selected farmers for conducting demonstration in the adopted villages. The seeds were sown in the month of November-December and have shown a good result with an Average Green Pod yield of 58-65q/ha having an average market price of @ 30/kg.
- Demonstration on zero tillage using lentil (var. HUL 57 and PL-8) as test crop was also conducted in rice fallow with a cluster of 5 farmers from each village. The intervention did not yield the expected result due to the occurrence of a hail storm in the first week of April resulting in almost 90% crop damage. The farmers had themselves experimented the cultivation of Lentil in rice fallow (With Zero Till, Minimum tillage and Complete tillage without any external inputs like compost, FYM or any other fertilizer) as well as (Complete Tillage without FYM, 50% Recommended FYM and 100% Recommended FYM). The problems were identified and discussed with the farmers to modify the technology accordingly for further experimentation during next cropping season for obtaining the best results.

Raised and sunken bed cultivation of vegetables

Horticulture based module:

- Training on scientific cultivation practices of organic ginger and turmeric cultivation was organised in the adopted village.
- Tentative estimate of planting materials of Ginger and Turmeric requirement from each adopted village has been taken and planting materials has been procured to conduct the demonstration in their respective farms.
- A total of 194 Demonstration on Organic Ginger Production and 193 Demonstration on Organic Turmeric Production will be conducted based on the need of the farmers.

Livestock based module:

- Farmers of the adopted villages had constructed low cost scientific Backyard Piggery houses (Deep Litter Housing) and Poultry sheds (Low Cost Poultry Sheds) for which two trainings have been conducted. Around 35 piglets (breed: Hampshire Cross) and 3000 poultry chicks (Breed: Vanaraja) had been distributed to more than 50 selected beneficiaries. Timely inspections were carried out to check whether the piglets and chicks had been kept in proper conditions.
- Three different experiments are being carried out in case of the poultry birds. In the first experiment, the birds are being given only local feed. In the second, mixed feed i.e., local as well as concentrated feed is being given, and in the third, only concentrated external feed is being given. It has been found that the birds provided with external feed are performing the best with an average weight of 2-2.5 kg and first laying of eggs was also recorded recently on the 15th July, 2017. The birds provided with mixed and local feed is showing comparatively slower growth with an average weight of 1.5-2kg. Egg laying has also not been recorded yet among these birds.

Enterprise based module:

- Site inspection for setting up of the processing unit has been conducted and farmers have been advised to renovate and construct the necessary building and infrastructure. Training was also given to the farmers regarding how to operate and handle the equipments. Women Groups who are interested have also been identified for trainings on processing of fruit & other products.

NRM based module:

- To ensure corrective measures required for managing the problematic soil, the soil samples from the adopted villages were collected and tested. Acidic soil and iron (Fe) toxicity were found to be the major problems for which farmers were advised to take up site and nutrient specific treatments. Farmers have also been advised to apply lime in their fields to manage iron toxicity. Soil Health Card has also been distributed to farmers.

Input distribution programme under FF project

Demonstration on production of vegetable crops

Integrated Farming System (IFS) module:

- Demonstration of Integrated farming system model in the adopted village was made on the manageability and profitability of the different components such as crop husbandry, piggery, poultry, duckery, fisheries, mushroom cultivation, vermin-composting, vegetable farming, agro forestry etc. To serve this purpose, a Fishery based IFS model with crop husbandry, piggery, poultry, duckery, fisheries, mushroom cultivation, vermicomposting, vegetable farming and agro forestry component in the Nalapara village were developed. This demonstration unit will serve as a model for development of IFS at their respective farm of the different farmers.
- The site selected for the IFS model had a pre-existing pond, an agro-forestry component comprising of medicinal plants and trees for rearing muga silkworm. The pond is surrounded with various fruit trees on the bunds and a huge agricultural land for growing agronomic and vegetable crops. An additional pond has been dug near the existing pond of the same size, and a vermicompost unit is also being prepared. Bamboo sheds/houses have also been constructed for keeping poultry birds and ducks near by the ponds. About 50 poultry birds and 10 ducks have been given to the IFS unit.

3.2.3. Attracting and Retaining of Youth in Agriculture (ARYA)

In order to create interest and confidence among rural youth in agriculture, there is need to make agriculture more profitable. Retaining youth in agriculture and making agriculture more profitable are thus, big challenges. There is a continuous increase in migration of rural youth to urban areas. On the other hand, small holdings are on the rise which posses challenge to food security for increasing population. Thus, it was felt to bring a comprehensive model for the development of rural youth in general and agricultural youth in particular. Thus, realising the importance of rural youth in agricultural development especially from the point of view of food security of the country, ICAR has initiated a programme on "Attracting and Retaining of Youth in Agriculture (ARYA)".

Skill development training under ARYA

Mushroom production unit under ARYA

Achievements during 2016-17

Under ICAR-ATARI, Umaim 5 KVKs namely; Senapati in Manipur, Karbi Anglong in Assam, Wokha in Nagaland, Lunglei in Mizoram and North Sikkim in Sikkim are implementing the ARYA project for the benefit of rural youth in their respective districts. A brief achievement made by the implementing KVKs during 2016-17 is given in Table 37.

Table 37: Achievement of ARYA project during 2016-17

KVK	Name of enterprise / activity undertaken	Rural Youth benefitted (No.)	Achievement
Karbi Anglong	Poultry	26	• Created awareness programme on ARYA- based on its aims and objectives to the rural youth successfully. • Held 4 awareness cum skill training programmes on Piggery, poultry, pineapple and mushroom production technology. • Imparted skill training programme to the selected youth for up gradation of skill & knowledge on scientific faming. • Piggery and poultry sheds at farmers' field were set up. • Inputs like chicks, vaccine, medicine, feeds, equipments, planting materials, herbicide, fertilizers, sprayers etc. were distributed. • Market linkages initiated.
	Piggery	25	
	Pineapple	20	
	Mushroom	40	
Senapati	Mushroom cultivation	10	• Skill based techniques were imparted to the youths through training and demonstration on all the enterprises taken up. • Awareness cum orientation programme was conducted with a total number of 123 youths participated. • 22 units (5 in poultry, 4 in piggery, 5 in fishery and 10 in large cardamom) have been established. • Fish ponds had been constructed and renovated, cardamom sets for 20 ha were purchased and supplied to the identified youth. • Poultry shed, pig breeding unit, pig rearing shed had been constructed. • Linkages had been developed with the local markets within the district and outside the district.
	Piggery	21	
	Poultry	12	
	Fishery	27	
	Large Cardamom	50	

Lunglei	Piggery	50	• Four skill based training programmes were conducted on piggery production and distribution of piglets to the selected youths. • Five youths are trained to rear the pigs and the units are functional. • Four numbers of training were conducted on poultry production and Rainbow Booster poultry were distributed to the farmers. • Five nos. of youths (1unit) in the village started the hatchery unit. • 70 nos. of youths involved in poultry rearing are busy in this enterprise wherein previously they were mostly school dropout who used to work as normal labour looking out for opportunity to migrate to the city. Now they are retained in the village. • Bee hive box were distributed among 25 selected youth.
	Poultry	70	
	Mushroom	10	
	Bee Keeping	15	
Wokha	Mushroom	23	• Enterprise-wise skills were imparted through 4 nos. of skill training programmes of 4-5 day duration. Skill trainings in housing, breeding, feeding, healthcare and managements of pig and poultry, preparation of mushroom materials, spawn, packaging of bags and other activities related to mushroom production, and poly house management and activities related to cut flower production were imparted. • A skill training programme of 200 hours duration on Piggery Farmer (QP-AGR 24502) was conducted. • Market linkage has developed with the state marketing board and private groups.
	Poultry	23	
	Piggery	24	
	Floriculture-cut flowers	20	
North Sikkim	Off-season Vegetable production under Walk-in Tunnel	**50**	• 15 awareness programmes (6 on off-season vegetable production, 6 on cardamom cultivation and 3 on piglet production) were conducted. • 4 training programmes (2 on off- season vegetable production and 2 on piglet production) were completed for imparting skill on selected youths. • 20 units have been initiated under walk-in tunnel and 16 units in piglet production.
	Cardamom cultivation under protected condition	20	
	Piglet production	20	

4.0. PUBLICATIONS

4.1. Papers in Research Journals (National/ International)

Bhalerao, A.K., Tripathi, A.K., Kumar, B., Paul, S., Singha, A. K., Jat, P.C. and Bordoloi, R (2016). Traditional media of North East: An Effective tool for technology transfer, Journal of Global Communication, 9 (Conf), 30-39.

Chatterjee, D., Kumar, R., Kuotsu, R., Deka, B.C (2016). Validation of traditional weed control method through common salt application in the hill region of Nagaland. Current Science, 110 (8): 1459-1467.

Deshmukh, N.A., Patel, R.K., Rymbai, H., Jha, A.K., Deka, B.C. (2016). Fruit maturity and associated changes in Khasi mandarin (Citrus reticulata) at different altitudes in humid tropical climate. Indian J. Agric. Sci. 86 (7): 854–859.

Kharbamon, K., Jha, A.K., Verma, V.K., Choudhury, B.U. and Deka, B.C. (2016): Effect of planting time and phosphorus dosages on growth, yield and quality attributes of Indian bean (lablab purpureus L.). Indian J. Hill Farming, 29 (1): 65-71.

Kumar Rakesh and Deka B.C (2016) Response of Fertility Levels and Seeding Rates on Production Potential and Moisture Use Efficiency of Linseed under Foot Hill Condition of Nagaland. Indian J. Hill Farming, 29 (1): 1-5.

Kumar Rakesh, Hangsing Neivah. Ao M. Zeliang P K. Deka B. C. (2016) Exploration Collection and Conservation of Local Maize Germplasm of Nagaland. Indian J. Hill Farming, 29 (1): 7-93.

Kumar Rakesh, Hangsing Neivah. Deka B.C. Kumar Manoj (2016). Evaluation of Different Sesame lines (Sesamum indicum L.) for Enhancing the Cropping Intensity and Productivity under Foot Hill Condition of Nagaland. Indian J. Hill Farming, 29 (1): 29-35.

Kumar, R., Chatterjee D., Deka, B.C. and Ngachan, S.V. (2017). Validation of common salt application on productivity, profitability, nutrient uptake and soil health of upland rice (Oryza sativa L.) under shifting cultivation area of Nagaland. Indian Journal of Traditional Knowledge, 16 (2): 341-349.

Patra, M.K, Sanchu, V., Ngullie, E., Hajra, D.K., Deka, B.C. (2016). Influence of egg weight on fertility and hatchability of backward poultry varieties maintained under institutional farm condition. Indian J. Animal Sciences. 49(2): 198-203.

Paul, S., Tripathi, A.K., Singha, A. K., Bhalerao, A., Kumar, B., Bordoloi, R. and Jat, P.C. (2016) Performance of the Public Agricultural Extension System in Disadvantageous Settings: Evidences from Krishi Vigyan Kendras in North Eastern Region of India, Economic Affairs-Quarterly Journal of Economics, 61(4): 725-730.

Singha, A. K., Bordoloi, R., Jat, P.C., Singha, J.K. and Devi, M. 2016). Socio-Economic Profile of the Common Adopters of Improved Practices of Crops and Livestock Enterprises and their Problems and Suggestive Measures-A case study in Adopted and Non-adopted villages in North Eastern India, Economic Affairs, 61(2): 289-298.

Singha, A. K., Bordoloi, R., Jat, P.C., Singha, J.K. and Devi, M. (2016). Socio-Economic Profile of the Common Adopters of Improved Practices of Crops and Livestock Enterprises and their problems and Suggestive Measures-A case study in Adopted and Non-adopted villages in North Eastern India, Economic Affairs, 61(2): 289-298.

Singha, A. K., Jat, P.C., Bordoloi, R., Singha, J.K., Devi, M. and Bhuyan, P.C. (2016). Determinants of adoption of poultry technology by the farmers of adopted and non-adopted villages in North Eastern states of India, Economic Affairs, 61 (4): 633-640.

Singha, A. K., Jat, P.C., Bordoloi, R., Singha, J.K., Devi, M. and Bhuyan P.C. (2016). Determinants of adoption of poultry technology by the farmers of adopted and non-adopted villages in North Eastern states of India, Indian Journal of Fisheries, 64(1): 101-105.

Singha, A. K., Tripathi, A. K., Jat, P.C., Bordoloi, R., Singha, J.K. and Devi, M. (2016). Extent of Adoption of Improved Pig Farming Practices by the Farmers and their Effective Determinants in North Eastern States of India, Indian Journal of Hill Farming, 29(1):1-8.

Singha, A. K., Tripathi, A. K., Jat, P.C., Bordoloi, R., Singha, J.K. and Devi, M. (2016). Extent of Adoption of Improved Pig Farming Practices by the Farmers and their Effective Determinants in North Eastern States of India. Indian Journal of Hill Farming, 29(1): 10-17.

Singha, A. K., Tripathi, A. K., Jat, P.C., Bordoloi, R., Singha, J.K. and Devi, M. (2016). Comparative Analysis of Socio-economic and Psychological Behaviour of Adopted and Non-Adopted Farmers in Scientific Rice (Oryza sativa L.) Cultivation Practices in North Eastern Region, Journal of Agril. Sciences (Accepted).

Tripathi, A. K., Kanwat, M., Kumar, P.S. and Jat, P.C., (2016). Folklore claims on medicinal plants used by Adi, Galo, Nishi and Tgain tribes of Arunachal Pradesh against various ailments, Current Advances in Agricultural Sciences, 8(1): 82-87.

4.2. Book/ Book Chapter

B.C. Deka, H. Rymbai, N.A. Deshmukh and H.D. Talang (2017). Horticulture based farming systems: The engine for prosperity in Northeast India In Doubling Farmers Income through horticulture, ed. By Chadha, K.L., Singh, Kalia, P, Dhillon, W.S., Behera, T.K. and Prakash Jai and published by Daya Publication House, New Delhi-110002. Pp: 915-220.

R. Bordoloi, Bidyut C. Deka, A.K. Singha, P.C. Jat & Bagish Kumar (2017). Technology Inventory for North East India, published by ICAR-ATARI, Zone-III, Umiam, Meghalaya. Total page: 461.

Pankaj Kumar Sinha, Bagish Kumar, Ms. AnjooYumnam, A. K. Tripathi. 2016. Making ICTs Services more Accessible and Affordable in Rural Areas In Manual of ICAR Short Course on "ICT for Sustainable Agricultural Development" organized by CAU-College of Post Graduate Studies Umiam Meghalaya. Pp. 101-108.

4.3. Technical bulletin

Bagish Kumar, A.K. Singha, R. Bordoloi, P.C. Jat &and M. Mokidul Islam (2016). Glimpses of Awareness Programme: Pradhan Mantri Fasal Bima Yojna, 2016 in North East India published by ICAR-ATARI, Umiam. Pp: 82

P.C. Jat, Bidyut C. Deka, A.K. Singha, R. Bordoloi , Bagish Kumar C.K. Sarma & A.M. Pasweth (2016). Climate Resilient Agricultural Interventions in North East India published by ICAR-ATARI, Umiam. Pp: 84

Rymbai, H., Jha, A.K., Deshmukh, N.A., Deka, B.C., Ngachan, S.V., Roy, A.R., Assumi, S.R., Misra, L.K. and Keri S. (2016). Sohiong (Prunus nepalensis Serr.): Advance propagation techniques published by ICAR Research Complex for NEH Region. Pp: 25

4.4. Training Manual/ Abstract

R. Bordoloi, Bidyut C. Deka, A.K. Singha, P.C. Jat and Bagish Kumar (2016).Training Manual on Refresher Training Programme for Subject Matter Specialist and Programme Assistant of Home Science, published by ICAR-ATARI, Zone-III, Umiam, Meghalaya.

Abstract on "Performance of Rapeseed & Mustard in Rice Fallows through Cluster Frontline Demonstrations in North Eastern Region", International Seminar on Oilseed Brassica, February 23-27, 2017, SIAM, Jaipur, Rajathan (India).

4.5. Presentation in Conference/Symposia/ Seminar/ Other

B. C. Deka. KVK mandates: Its concept, methodology and implementation for increasing food security in NE India-An overview in a the Orientation training programme for KVK officials on August 27, 2016 conducted by ICAR Complex during August 27-September 02, 2016

B.C. Deka. Pulse promotion through KVKs in Northesat India at the workshop on"Promotion of pulses in NEH region of India" on September 19, 2016 organised by IIPR, Kanpur

B. C. Deka. Horti farming system: the engine for prosperity in Northeast India in 7th Horticulture Congress at New Delhi on November 18, 2016

B. C. Deka. Achievements under NICRA during last five years (2011-16) in ATARI, Zone III on the NICRA Annual Review Workshop held at NASC Complex, New Delhi during December 9-10, 2016

B. C. Deka. KVK mandates in the training programme for the Sr. Scientists cum Head for MDP programme on January 31, 2017 held at ICAR-ATARI, Umiam

B. C. Deka. Achievements under CFLD on oilseeds during 2016-17 Annual Review Workshop held at IGKV, Raipur, during February 17-18, 2017

B. C. Deka. IFS: An option for sustainable livelihood improvement in Northeast India in a workshop on "Strategies for designing sustaintable projects for livelihood and income enhancement of farmers in Northeast India" organized by TERI at Guwahati on March 8, 2017

P..C.Jat, B.C. Deka, A K Singha, R. Bordoloi and Bagish Kumar. "Performance of Rapeseed & Mustard in Rice Fallows through Cluster Front Line Demonstrations in North Eastern Region." International Seminar on Oilseed Brassica (ISOB 2017) during February 23-27, 2017 at SIAM, Jaipur, Rajasthan.

4.6. Others

- Singha, A.K. Jat, P.C., Bagish Kumar, Bordoloi, R., and Wahllang, J. (2016). Annual Report of ICAR-ATARI, Umiam (English).
- Jat, P.C., Bagish Kumar, Singha, A.K., Bordoloi, R., and Wahllang, J. (2016). Annual Report of ICAR-ATARI, Umiam. (Hindi).
- Monthly Reports of KVKs, ICAR-ATARI, Umiam
- Quarterly Reports of KVKs under ICAR-ATARI, Umiam
- Quarterly Monitorable Target Reports of KVKs under ICAR-ATARI, Umiam
- Half yearly Reports of KVKs under ICAR-ATARI, Umiam
- Monthly RFD report of ICAR-ATARI, Umiam
- Quarterly TSP report during 2016-17.
- Annual Reports of KVKs
- Monthly Report on Citizen Client Charter Report of ICAR-ATARI, Umiam
- Monthly Report on Skill Oriented Training programmes for Farmers and Rural Youth under ICAR-ATARI, Umiam
- Compilation of information for DARE report of ICAR for the 2016-17.
- Proceedings of Zonal Workshop of KVKs under ICAR-ATARI, 2015-16.
- Preparation of report and ATR of Regional Committee Meeting of ICAR-ATARI, Umiam.

5.0. PARTICIPATION IN MEETINGS/ WORKSHOPS

Dr. Bidyut C. Deka, Director

- Attended the Annual Zonal Workshop of ICAR-ATARI, Umiam at Gangtok during April 22-24, 2016.
- Attended the Zonal Review meeting of NICRA at AAU, Khanapara campus, Guwahati during May 6-7, 2016 organized by ICAR-ATARI, Umiam.
- Attended the workshop on HRD in Fisheries organized by ICAR-ATARI, Umiam in collaboration with NFDB, Hyderabad on 13th May, 2016 at CIFRI, Guwahati.
- Meeting with Secretary, DARE & DG, ICAR on 13th May 2016 at ICAR Complex, Umiam.
- Attended the National Workshop on Oil seeds and pulses at New Delhi on 16th – 17th May, 2016.
- Attended SMD meeting on 18th May, 2016 at KAB-I, Pusa, New Delhi.
- Visited KVK, Sonitpur and KVK, Udlaguri on 28th May, 2016 in connection with Prime Minister Fasal Bima Jojana (PMFBY).
- Visited KVK Baksa on 29th May, 2016 in connection with Prime Minister Fasal Bima Jojana (PMFBY) at Kadamtal Chowk, Barama.
- Attended the PMFBY programme at KVK, Kamrup and Created the account for ATARI, Guwahati on 31st May 2016.
- Attended the PMFBY programme on 1st June, 2016 at KVK, Nagaon.
- Attended the Foundation Day of NRC-Mithun as Guest of Honour on 2nd June, 2016.
- Attended Meeting with the PCs to discuss about the FLDs on oilseed and pulses at Guwahati on 4th June, 2016.
- Attended the PMFBY programme at KVK, Golaghat on 9th June, 2016.
- Attended Meeting with Union Agril. Minister and DG ICAR on 17th June, 2016 at AAU, Khanapara campus.
- Attended interactive meeting of State Officials Dept of Agriculture and allied departments, ICAR Institutes with Hon,ble Union Minister of Agriculture and Farmers Welfare, Chief Minister Assam, State Agriculture Minister, Assam and Secretary, DARE & DG, ICAR, New Delhi on 18th June, 2016 at hotel Taj Vivanta.
- Attended the meeting of Preparedness of Contingency plan organized by CRIDA, Hyderabad on 27th June, 2016 at Krishi Bhawan, Guwahati for Assam state.
- Attended the meeting on Preparedness of Contingency plan organized by CRIDA, Hyderabad on 28th June, 2016 at ICAR Complex for Meghalaya state.
- Attended Meeting with the Director, CPCRI at Kahikuchi in connection with the land for ICAR-ATARI, Guwahati on 8th July 2016.
- Visited KVK, Nalbari and participated in Farmer-Scientist Interaction as a part of "National Fish Farmer Day. Distributed 9 nos. of FRP Magur and Carp hatcheries to progressive farmers as part of collaborative programme with ICAR-CIFA, Bhubnaswar on 14th July 2016.
- Attended the Foundation Day programme at Vigyan Bhawan, New Delhi and received the Fakhruddin Ali Ahmed Award for outstanding research in tribal farming system on 16th July, 2016.
- Attended the Mid-term review meeting of Regional Committee meeting on 19th July, 2016 at ICAR Complex, Umiam.
- Visited Jirania, Agartala for selection of KVK site for West Tripura district on 24th July, 2016.
- Visited Unakoti, Agartala for selection of KVK site for Unakoti district on 25th July, 2016.

- Visited Sepahijala and Amarpur for selection of KVK sites for Sipahijola and Gomati districts of Tripura on 26th July 2016.
- Reviewed the activities of SMSs of KVKs of Tripura. This is the first review meeting of the SMSs of a particular state on 27th July, 2016.
- Attended Selection Committee meeting for Nodal Training Institute under central sector scheme of Agri-Clinics and Agri-Business Centre (AC & ABC) and MANAGE, Hyderabad on 1st August, 2016.
- Chaired the meeting of the Computer Programmer of the KVKs under ICAR-ATARI, Umiam at KVK, Kamrup, Kahikuchi on 2nd August, 2016.
- Attended the State Coordination Committee (SCC) meeting for Second Green Revolution organised by ICAR Complex for Eastern India, Patna at AAU, Khanapara on 2nd August, 2016.
- Attended the Kisan Mela and Foundation Stone laying ceremony of KVK-Paren at Jaluki on 6th August, 2016.
- Attended the Foundation Stone laying ceremony of College of Veterinary Science & AH under CAU at Jaluki on 6th August, 2016.
- Attended the Foundation Stone laying ceremony of the Guest house of NRC on Mithun at Jharnapani on 7th August, 2016.
- Attended Meeting with the Union Minister for Agriculture and Farmers Welfare in connection with the role of KVKs for development of Nagaland on 7th August, 2016.
- Attended the review meeting of Kharif pulses chaired by the Secretary, DARE & DG, ICAR at Krishi Bhawan, New Delhi on 9th August, 2016.
- Attended the SMD meeting chaired by the DDG (AE) at KAB I, Pusa, New Delhi on 9th August, 2016.
- Attended a meeting in connection with the distribution of soil health cards at KVK, Baksa on 20th August, 2016.
- Attended meeting with ADG, CPWD and his engineers regarding ICAR-ATARI, Guwahati Administrative building in its office at Lokhra, Guwahati on 24th August, 2016.
- Discussion with the members of Site Selection Committee at HRS, Kahikuchi for finalization of the proceedings of the visit to Garo hills during 22nd -24th August, 2016.
- Reviewed the activities of the SMSs of all the KVKs of Meghalaya in the conference hall of KVK, East Khasi hills on 26th August, 2016.
- Chaired the meeting of the Institute Management Committee. All most all the members attended the meeting on 29th August, 2016.
- Attended the review meeting of the Directors of ICAR Institutes of Eastern India called by the Secretary, ICAR in connection with the implementation of FMS-IMS and ERP at NBSS & LUP, Kolkata on 31st August, 2016.
- Chaired the inaugural programme of the training programme on Advances in oilseed production organized by ICAR-ATARI, Umiam at AAU, Jorhat. About 30 Sr. Scientist & Head and SMSs of the KVKs of Assam and Nagaland attended the two days training programme during 2nd -3rd September, 2016.
- Visited KVK, Jorhat and interacted with the staff on 2nd September, 2016.
- Visited KVK, Sibsagar and interacted with the staff on 3rd September, 2016.
- Chaired the inaugural programme of the training programme on oilseed production organised by ICAR-ATARI at KVK, Kamrup Kahikuchi on 8th September, 2016.
- Visited the FLD on turmeric conducted by KVK, Kamrup at Bagan village, Chandubi, Rani on 8th September, 2016.
- Reviewed the activities of the ARYA programme of the KVKs at KVK, Kamrup Kahikuchi and Chaired the valedictory programme of the training programme on oilseed production organised by ICAR-ATARI at KVK, Kamrup Kahikuchi on 9th September, 2016.
- Reviewed the activities of the SMSs of all the KVKs of Sikkim on 15th September, 2016.

- Visited the KVK farm of East Sikkim and had discussion with the Joint Director and KVK staff on 16th September, 2016.
- Visited KVK, South Sikkim on September 17, 2017
- Attended the workshop on promotion of pulses in NEH region of India at Agartala on 19th September, 2016.
- Attended the workshop on promotion of pulses in NEH region of India at Agartala on 20th September, 2016.
- Reviewed the progress of the SMSs of all KVKs of Mizoram on 22nd & 23rd September, 2016.
- Organized Award Ceremony of Pandit Deen Daya Upadhaya Krishak Puraskar at College of Fisheries, CAU, Agartala on 25th September, 2016.
- Attended Meeting with the DDG (AE), Director (Works), Director (Personal) and other officers at KAB-I and Krishi Bhawan, New Delhi in connection with ICAR-ATARI, Guwahati on 28th September, 2016.
- Reviewed the progress of the SMSs of the KVKs in Manipur on 30th September & 1st October, 2016.
- Attended the SMD at KABI, ICAR, New Delhi on 6th October, 2016.
- Visited KVK, Sonepat, Haryana with the DDG (AE) and Meeting with US (AE) and other staff in connection with different official matters on 7th October, 2016.
- Visited demonstration plots under cluster demonstration of pulses in different villages under KVK, Golaghat and Reviewed the progress of SMSs of KVK, Golaghat at its KVK premises during 18th October, 2016.
- Attended the inaugural programme of four day training programme of SMSs and Programme Asstt in Home Science at AAU, Jorhat on 19th October 2016.
- Discussion with the Vice Chancellor, AAU, Jorhat regarding implementation of Seed hubs under pulse programme on 20th October 2016.
- Reviewed the progress of the SMSs of KVK, Dibrugarh and Tinsukia and Visited the OFT and FLD sites under KVK, Dibrugarh on 21st October 2016.
- Attended the valedictory programme of four day training programme of SMSs and Programme Asstt in Home Science at AAU, Jorhat on 22nd October 2016.
- Visited the site of the KVK of Dima Hasao district of Assam with the SSC members on 26th October 2016.
- Visited KVK Nalbari and reviewed the activities of KVK, Nalbari, Baksa and Barpeta on 4th November, 2016.
- Visited KVK Chirang and reviewed the activities of Bongaigaon, Chirang, Kokrajarh and Dhubri on 4th November, 2016.
- Attended the one day orientation programme of PIs and CO-PIs of Farmers FIRST project at ICAR-ATARI, Kolkata on 9th November, 2016.
- Attended the Regional Agri Fare at Imphal organized by CAU, Imphal. The honorable Union Minister for Agriculture and Farmers Welfare was the Chief Guest on 10th November, 2016.
- Visited the KVK, Bishnuur and its CFLD field on Black gram at farmers' field on 11th November, 2016.
- Attended the 7th Horti congress at IARI, New Delhi and Meeting with DDG (AE) and Director (works) at KAB I on 17th November, 2016.
- Delivered a lead talk on "Horti farming system: the engine for prosperity in Northeast India" and Met DDG (AE) and Director (works) and other officials at KAB I and KAB II, ICAR, New Delhi on 18th November, 2016.
- Chaired the Zonal Meeting to screen the projects received under Farmers FIRST project on 19th November, 2016 at KVK, Kamrup, Kahikuchi, Guwahati.
- Attended the Awareness programme cum Farmer-scientist interaction rearing of Mithun

in Meghalaya organized by KVK, East Khasi Hills and NRC on Mithun at Maphlong as Guest of Honor on 22th November, 2016.

- Attended the SAC meeting of KVK, West Siang, Arunachal Pradesh on 3rd December, 2016.
- Attended World Soil Health Day at KVK Nalbari in the morning and Attended World Soil Helath Day at KVK, Baksa in the afternoon on 5th December, 2016.
- Attended the NICRA Annual Review Workshop at NASC Complex, New Delhi on 9th December, 2016.
- Attended the inaugural programme of ASSOCHAM's one day conference on "Linking prospective food entrepreneurs with government schemes & markets" on 15th December, 2016 at ICAR Complex, Umiam.
- Attended the closing ceremony of International Pulse year at ITC-Mugal hotel, Agra organised by IIPR, Kanpur on 22nd December, 2016.
- Attended National workshop of Skill development in Agriculture organized by DAC on December 05, 2016 at NASC Complex, New Delhi
- Attended Review workshop of ARYA project at NASC Complex, New Delhi during Junuary 17-18, 2017.
- Chaired the IMC meeting of ICAR-ATARI, Umiam on 4th February, 2017.
- Attended Zonal Review meeting of Oilseed and Pulses at HRS, AAU, Kahikuchi on 7th & 8th February, 2017.
- Participated in the National Seminar on Farmer FIRST for conservation of soil and water in Northeast India organized by ICAR-Indian Institute of Soil and Water Conservation at AAU, Khanapara on 9th February, 2017.
- Attended the Directors' Conference at NASC Complex, New Delhi during February 14-15, 2017 on 14th & 15th February, 2017.
- Attended the National Review Workshop on oilseeds at IGKV, Raipur during 18th -19th February, 2017.
- Attended the Exhibition-cum-Workshop on traditional farming and indigenous foods of North East at ICAR Complex, Umiam on 25th February, 2017.
- Attended the Academic council meeting of AAU, Jorhat and Attended Foundation laying ceremony of Training hostel of NBSS &LUP, Jorhat on 27th February, 2017.
- Attended the 28th Convocation of AAU, Jorhat and Visited KVK, Golaghat on 28th February, 2017 as Member, Academic Council.
- Attended the conference of Bharatiya Kisan Sangha (Assam state unit) as Chief Guest at Raha, Assam on 4th March, 2017.
- Attended the Pig variety release function organized by ICAR Complex, Barapani on 6th March, 2017.
- Attended SAC meeting at KVK, Cachar and Karimganj on 7th March, 2017.
- Attended the SAC meeting of KVK, Dhalai, Tripura on 15th March, 2017.
- Attended the Awareness programme on PPV&FRA organized by KVK, Khowai on 16th March, 2017. The honoutable Governor of Tripura was the Chief Guest
- Attended Meeting with the Union Minister for Agriculture and Farmers Welfare in State Guest House, Agartala on 18th March, 2017. Union Minister for Agriculture and Farmers Welfare addressed the gathering of scientist, teachers, KVK staff in College of Fisheries, CAU, Agartala on 19th March, 2017.
- Attended the Coordination Committee meeting for Doubling Farmers Income in Assam at AAU, Khanapara campus on 20th March, 2017.
- Attended the Coordination Committee meeting for Doubling Farmers Income in Meghalaya at ICAR Complex organized by ICAR-ATARI on 21st March, 2017.
- Addressed the trainee on doubling farmers' income through horticulture at KVK, Kamrup on 25th March, 2017.

- Attended the training programme on Improved farming practices for enhancing the productivity and income of farmers for DDM of NABARD, Assam circle as Guest of Honour organized by NABARD, Assam circle on 27th March, 2017.
- Attended the inaugural programme of Kharif Sanmelan organised by KVK, Ri-bhoi on 29th March, 2017.

Dr. A.K Singha, Pr. Scientist (AE)

- Attended interface meeting of KVKs in Sikkim on 4th April, 2016 at Gangtok, Sikkim.
- Attended Pradhan Mantri Fasal Bima Yojana programme of KVK East Sikkim on 5th April, 2016 at ICAR RC, Sikkim Centre.
- Attended training programme on "Computer and ICTs Applications for Enhencing Performance" on 7th -13th April, 2016 at ICAR-ATARI, Zone-III, Barapani.
- Attended Annual Zonal Workshop of KVK, 2015-16 on 22nd -24th April, 2016 at Chintan Bhawan, Gangtok, Sikkim.
- Attended MDP programme on Leadership Development on 7th -18th June, 2016 at NAARM, Hyderabad.
- Attended review meeting of KVKs under ARYA on 9th September, 2016 at KVK Kamrup, Assam as Convener and Member Secretary of the project.
- Attended training programme as a member from ICAR-ATARI, Umiam on Oilseeds Demonstration under NMOOP & NFSM on 9th September, 2016 at KVK Kamrup, Assam.
- Attended Review Workshop on Pulse production and promotion in North East on 19th September, 2016 at Agartala, Tripura.
- Attended Brainstorming session of SMSs of KVKs in Agril. Extension on 4th October, 2016 at KVK Ribhoi, Meghalaya.
- Attended review meet on the performance of the SMSs of KVKs Jorhat and Sivasagar of Assam on 11th November, 2016 at KVK Jorhat.
- Attended as representative of Director, ATARI in the training programme on "Mobile APP Development for Programme Assistants of KVKs under ICAR-ATARI, Umiam on 20-21 December, 2016 at the Dept, of Information Technology, Govt. of Meghalaya, Shillong.
- Attended Technology Week cum Jai Kisan Jai Vigyan programme organized by KVK Ribhoi, Meghalaya on 23rd December, 2016 at KVK Conference Hall.
- Attended review meet on the performance of the SMSs of KVKs Lakhimpur and Dhemaji of Assam on 3rd February, 2017 at KVK Dhemaji.
- Attended Kisan Mela cum Exhibition organized by KVK Dhemaji on 3rd February, 2017.
- Attended Exhibition cum farmer-scientist interaction programme organized by ICAR RC for NEH Region, Umiam, Meghalaya on 10th February, 2017.
- Attended National sensitization cum Workshop under Farmer FIRST project on 18th -19th March, 2017 at NAARM, Hyderabad.
- Attended SAC meeting of KVK Senapati on 21st March, 2017.
- Attended District Committee (DC) under ARYA project of KVK Senapati on 21st March, 2017.

Dr. R. Bordoloi, Pr. Scientist (Agriculture Extension)

- Attended three Awareness programmes on PMFBY from 3rd April to 5thApril, 2016 in KVK Dhalai, South Tripura and West Tripura, respectively.
- Attended 7th Project Review Steering Group Meeting (PSRG) of the Project" Deployment and Development of Mobile based Agro Advisory system (m4agriNE1) in NE India-phase ii" at CPGS CAU on 12th May, 2016.

- Attended inaugural session for the training programme on Financial Management for KVK staff on 19th - 20th May 2016, held at KVK Ri Bhoi.
- Attended Review meeting of KVKs and ICAR Institutes of the region with Hon,ble Union Minister of Agriculture and Farmers Welfare as well as DG ICAR New Delhi on 17th June, 2016 at AAU Khanapara.
- Attended interactive meeting of State Officials Dept of Agriculture and allied departments, ICAR Institutes with Hon,ble Union Minister of Agriculture and Farmers Welfare, Chief Minister Assam, State Agriculture Minister Assam ,all Secretaries as well as DG ICAR New Delhi on 18th June, 2016 at hotel Taj Vivanta .
- Attended an interactive meeting with DG ICAR New Delhi on 18th June, 2016 at AAU Khanapara for fulfilling various plan of Union Minister.
- Attended a brainstorming session on "Strengthening Agricultural Extension Research and Education" held at NASC complex ICAR NewDelhi on 9th July 2016.
- Attended meeting on "Technology Inventory for Northeast" for ATARI Umiam on 11th July, 2017.
- Attended a meeting on "Seed Hub" at Conference hall of CVSc AAU Khanapara on 13th August, 2016.
- Attended meeting on "Review of Soil Health Card Scheme" at Office Chamber of Addl. Chief Secy (Agril), Govt. of Assam on 1st September, 2016 under the chairmanship of Addl.Chief Secretary, Agriculture ,Govt.of Assam.
- Attended inaugural session for the training on Oilseed Production Technology in the North East organized at Conference Hall of DEE AAU Jorhat in collaboration with AAU on 2nd September, 2016.
- Attended an interactive session of Scientists with Former DG, Dr Mangala Rai, held at Conference Hall of ICAR Research Complex Barapani on 9th September, 2016.
- Attended review meeting of KVKs Mizoram state held at KVK Aizawl 22nd – 23rd September, 2016.
- Organized a refreshers training programme for SMS and Programme Asstts of Home Science in collaboration with college of Home Science AAU Jorhat during 19th - 22nd October, 2016.
- Organized Trainers Training Programme for the KVK Scientists of Zone II and Zone III in collaboration with ASCI held at NIRD Guwahati on 10th -12th November, 2016.
- Attended Inauguration of the Project on "Developing market Strategies for horticultural crops in Meghalaya and Tripura" organised by Division of Social Science ICAR Complex for NEH Region on 18th November, 2016.
- Attended Zonal Project Management Committee Meeting for Farmers First Project held at KVK Kamrup on 19th November, 2016.
- Attended Stakeholders meet for Agricultural Development held at ICAR Nagaland Center on 21st November, 2016.
- Attended "World Soil Health Day" on 5th December, 2016 organized by KVK RiBhoi and Division of NRM, ICAR Complex Barapani at Conference hall of ICAR, Barapani.
- Organized Training programme on Mobile Application Development for Programme Assistants (Computer Science) of KVKs under Zone-III on 20th -21st December, 2016 at Dept. of Information Technology, Govt. of Meghalaya.
- Attended SAC meeting of KVK West Tripura on 31st January, 2017.
- Attended 5th IMC of ICAR-ATARI held on 4th February, 2017 at Conference Hall of KVK Ri-Bhoi.
- Attended Zonal Workshop on CFLD held at Conference Hall of HRS Kahikuchi during 7th -8th February, 2017.
- Attended Technological Exhibition and Farmers Scientists Interaction organized by Division of Agril. Engineering, ICAR RC for NEH region on 10th February, 2017.

- Attended Training for Competency enhancement of HRD Nodal Officers of ICAR Institutes held at NAARM Hyderabad 20th – 22nd February, 2017.
- Attended Exhibition cum workshop on Traditional Farming Practices and Traditional Food of North East held at ICAR Complex for NEH Region Umiam during 25th -27th February, 2017.
- Attended National Science Day celebrated by KVK Ri-Bhoi along with ICAR RC Barapani on 28th February, 2017.
- Attended SAC meeting of KVK West Garo Hills and Pre Kharif Sammelan/input distribution ceremony on 3rd March, 2017.
- Attended ARYA Project Review meeting at KVK, Karbi Anglong on 14th March, 2017.
- Attended ARYA Project Review meeting at KVK Wokha on 15th March, 2017.
- Attended meeting of the Coordination Committee for doubling farmers' income in the State of Meghalaya held on 21st March, 2017 at ICAR Barapani.
- Attended Awareness cum Training Programme on PPV&FRA at KVK RiBhoi on 25th March, 2017.

Dr. P.C. Jat, Sr. Scientist (Agronomy)

- Attended PMFBY Awareness programme on 4th &5th April, 2016 at KVK Papumpare & Lower Subansiri, Arunachal Pradesh.
- Attended International Conference on Emerging Trends in Science, Technology, Agriculture & Management– 2016 and National Workshop on Soft Computing Modeling Food Processing &Export Management on 21st -22nd April, 2016 at CAEPHT, Ranipool, Sikkim
- Attended Annual Zonal Workshop of ICAR-ATARI, Umiam on 22nd -24th April, 2016 at Chintan Bhawan, Gangtok, Sikkim.
- Attended Review workshop of NICRA in North East on 6th -7th May, 2016 at CVSc., Khanapara, Assam.
- Attended Workshop under Bilateral Co-operation between India and Germany on Seed Development to be held on 23-24 May, 2016 at NASC Complex, New Delhi on 23rd -24th May, 2016 at NASC, New Delhi.
- Attended Group meeting of KVKs for Cluster FLDs on Oilseed & Pulses on 4th June, 2016 at CVSc., Khanapara, Assam.
- Attended ZPMC of Farmers First project on 7th June, 2016 at ICAR-ATARI-III, Umiam, Meghalaya.
- Attended Meeting with Hon,ble MoA & DG, ICAR on 17th June, 2016 at CVSc., Khanapara, Assam.
- Attended Zonal award screening (Atal Rastriya Krishi Protsahan Puruskar) Committee Meeting on 18th June, 2016 at ICAR-ATARI, Umiam, Meghalaya.
- Attended Review meeting of progress of SMSs of KVKs in Meghalaya on 26th August, 2016 at KVK East Khasi Hills.
- Organized the training programme for KVKs of Assam on Oilseed crops under NMOOP on 2nd -3rd September, 2016 at AAU, Jorhat, Assam.
- Organized the training programme for KVKs of Assam on Oilseed crops under NMOOP on 8th -9th September, 2016 at KVK, Kamrup, Kahi-kuchi, Guwahati, Assam.
- Attended Review meeting of Attracting and Retaining Youth in Agriculture on 9th September, 2016 at KVK Kamrup, Assam.
- Attended Review meeting for KVKs of Sikkim state on 15th September, 2016 at ICAR Research Centre Sikkim.
- Attended two day Workshop-cum- Review meeting of NFSM and NMOOP for NE states on 19th&20th September, 2016 at Agartala, Tripura.
- Organized Award ceremony and Kisan gosty on Deen Dayal Uppadhyaya birthday on 25th September, 2016 at CAEPHT, Ranipool. Sikkim.

- Organized the a training programme for KVKs of Manipur and Tripura states on Oilseed crops under NMOOP on 29th -30th September, 2016 at KVK Senapati, Manipur.
- Attended Review workshop on progress of activities of Manipur KVKs on 30th September & 1st October, 2016 at KVK Senapati, Manipur.
- Attended Workshop on Strategizing pulses production in Rice Fallow areas in Eastern India on 7th October, 2016 at Bhubaneshwar, Odisha.
- Attended 5th Annual workshop of NICRA on 9th -10th December, 2016 at NASC, New Delhi.
- Attended Review cum Workshop on ARYA Project on 17th -18th January, 2017 at NASC, New Delhi.
- Attended National Review cum Workshop on CFLD for Oilseeds 17th -18th February, 2017 at IGKVV, Raipur, Chhattisgarh.
- Attended 5th MDP training (7no. PCs) on 30th January -3rd February, 2017 at KVK, Ri-Bhoi Barapani, Meghalaya.
- Attended Review meet on performance of KVKs under ICAR RC for NEH Region, Meghalaya on 3rd February, 2017 at ICAR RC for NEH Region, Umiam, Meghalaya.
- Attended International Seminar on Oilseed Brassica on 23rd -27th February, 2017 at SIAM, Durgapura, Jaipur.
- Organised Zonal Workshop cum Training for Pulses under NFSM, 2016-17 on 7th -8th February, 2017 at HRS, AAU, Kahikuchi, Guwahati, Assam.
- Attended Krishi Unnati Mela 2017 on 15th -17th March, 2017 at IARI, New Delhi.

Dr. Bagish Kumar, Scientist

- Co-Coordinator for Seven days training programme entitled "Computer and ICT applications for enhancing performance for the scientific, administrative and Technical staff of ICAR-ATARI, Umiam" held during April, 7-13, 2016.
- Attended Annual Zonal Workshop of ICAR-ATARI, Umiam on 22-24th April, 2016 at Gangtok, Sikkim.
- Organized one day "Stakeholder workshop for Human Resource Development in Fisheries" at ICAR-CIFRI, Regional Centre, Guwahati on 13th May, 2016.
- Course Coordinator for two days training programme entitled "Training Programme on Administrative and financial management for KVK staff under ICAR-ATARI, Umiam on 19-20th May, 2016 at ICAR-ATARI, Zone III, Umiam.
- Organized Pandit Deen Dayal Upadhayay Antyodaya Krishi Puruskar 2016 at College of Fisheries, Agartala, Tripura on 25th September, 2016.
- Attended Interface meeting organized by College of Post Graduate Studies, CAU, Umiam on 7th October, 2016.
- Participated in the Brain storming workshop on Policy Framing for Up-scaling Farm Machinery Custom Hiring Centers on 17th October, 2016 at ICAR-CRIDA, Hyderabad.
- Attended Workshop of Nodal Officers of ICAR Research Data Repository for Knowledge Management during January 24-25, 2017.
- Delivered lecture on "Developing data base of district agriculture and compilation of inventory of technologies and extension service and input providers" during 5 days Training programme for PCs of KVKs at ATARI, Zone III under MDP on 30th January, 2017.
- Delivered lecture on "Application of relevant innovative approaches of agricultural extension in KVKs to enhance its relevancy, efficiency and outreach" during 5 days Training programme for PCs of KVKs at ATARI, Zone III under MDP on 30th January, 2017.
- Conference on FARMERS FIRST for conserving soil and water resources in North Eastern region (FFCSWR - 2017) on 09-11th February, 2017 at Guwahati, Assam.
- "Exhibition-cum- workshop on "Traditional Farming and Indigenous Foods of North East" on 25-27th February, 2017 at Umiam, Meghalaya.

6.0. WORKSHOPS/ TRAINING AND CAPACITY BUILDING PROGRAMMES

The Director and the Scientists of the ICAR-Agricultural Technology Application Research Institute (ATARI), Umiam made a number of monitoring visits to the KVKs of different North Eastern states during 2016-17. Different officials from the Council, Agricultural Universities, Research Institutes and other developmental agencies also made visits to the KVKs to review and monitor the ongoing mandated activities of KVKs in the region. The Agricultural Technology Application Research Institute (ATARI), Umiam during 2016-17 organized 26 HRD programmes for KVK staff, Rural Youth and Agri-preneurs of the region in collaboration with KVKs and other institutions/organizations like CVSc, AAU, Khanapara, Guwahati, AAU, Jorhat, Assam, CIFRI, Guwahati, ICAR Research Complex for NEH Region, Umiam, Dept. of Agriculture, Govt. of Meghalaya, Arunachal Pradesh, Manipur, Mizoram, Sikkim etc. (Table-38). The HRD programs had been conducted by the institute in different thematic areas like organic farming, livestock production & management, fisheries & aquaculture management, climate resilient agriculture, home science, group dynamics etc. Besides extension and research prioritization, review of progress of KVK activities and action plan formulation programs were also organized by this institute during the year.

Annual Zonal Workshop of KVKs

Annual Review Workshop of NICRA KVKs

Group Meeting of CFLD on Pulses under NFSM

Refresher training for SMS and PA (Home Science)

Table 38: Meetings/workshops/ HRD programmes conducted during 2016-17

Sl. No.	Title/ Topic of the programme	Date	Venue	No. of participant
1	Computer and ICT Applications for Enhancing Performance	7th -13th April, 2016	ICAR-ATARI, Zone-III	22
2	Annual Zonal Workshop of KVK, 2015-16	22nd -24th April, 2016	Chintan Bhawan, Gangtok, Sikkim	120
3	Zonal Review Meeting on NICRA	6th -7th May, 2016	CVSc, AAU, Guwahati	40 KVK SMS/ PCs
4	Training Programme on Financial and Administrative Management of KVK staff	19th -20th May, 2016	KVK Ribhoi	37 PA/ other staff of KVKs
5	Group Meeting on Cluster FLD on Pulses	4th June, 2016	CVSc, AAU, Guwahati	56 SMSs/ PCs
6	Review meeting of progress of SMSs of KVKs in Tripura	27th July, 2016		21
7	Review meeting of progress of SMSs of KVKs in Meghalaya	26th August, 2016	KVK, East Khasi	24
8	Training on Oilseed crops under Cluster FLD for Assam KVKs (Upper Assam)	2nd -3rd September, 2016	AAU, Jorhat	40 SMSs/ PCs
9	Training on Oilseed crops under Cluster FLD for Assam KVKs (Lower Assam)	8th -9th September, 2016	KVK Kamrup	45 SMSs/ PCs
10	Review meeting of Attracting and Retaining Youth in Agriculture	9th September, 2016	KVK Kamrup	11 PCs/SMSs
11	Review meeting of progress of SMSs of KVKs in Sikkim	15th September, 2016	ICAR RC , Sikkim Centre	23
12	Review meeting of progress of SMSs of KVKs in Mizoram	22nd -23rd September, 2016	KVK Aizawl	42 SMSs/ PCs
13	Organisation of Award Ceremony Programme of Pandit Deendayal Upadhaya Antyodaya Kisan Puruskar, 2016	25th September, 2016	CAE&PHT, Ranipool	250 farmers
14	Training on Oilseed crops under Cluster FLD for states of Manipur and Tripura	29th -30th September, 2016	KVK Senapati	10 PCs/SMSs
15	Review meeting of progress of SMSs of KVKs in Manipur	30th September-1st October, 2016	KVK Senapati	45 SMSs, 5PCs
16	Brainstorming Session for the SMSs of Agril. Extension of KVKs in North East	4th October, 2016	KVK Ribhoi	23 SMSs

17	Refreshers Training programme for the SMSs of Home Science of KVKs in North East	19th -22th October, 2016	AAU, Jorhat	45
18	Skill development programme for 11 KVKs under Zone-III, 12 KVKs under Zone-II	10th -12th November, 2016	NIRD, Guwahati	45
19	Review meet on performance of SMSs of KVKs-Jorhat and Sivasagar	11th November, 2016	KVK-Jorhat	20
20	Training programme on Mobile Application Development for Programme Assistants (Computer Science) of KVKs under Zone-III	20th -21st December, 2016	Dept. of Information Technology, Govt. of Meghalaya, Shillong	37
21	5-day 5th MDP programme Phase-III for newly recruited Senior Scientist cum Heads of KVKs under Zone-III	30th January to 3rd February, 2017	ICAR-ATARI, Zone-III	7
22	Review meet on performance of KVKs under ICAR RC for NEH Region, Meghalaya	3rd February, 2017	ICAR RC for NEH Region, Umiam, Meghalaya	25
23	Review meet on performance of SMSs of KVKs-Lakhimpur and Dhemaji	3rd February, 2017	KVK Dhemaji/ Silapathar	15 SMSs
24	Zonal Workshop for CFLD on Pulses under NFSM, 2016-17	7th -8th February, 2017	HRS, Kahikuchi, Kamrup	70 PCs/SMSs (50 KVKs)
25	State Coordination Committee meet on Doubling Farmers' income of Meghalaya state	21st March, 2017	ICAR RC for NEH Region, Umiam	45
26	Review meet of ARYA project (District Committee) of KVK Senapati	22nd March, 2017	KVK Senapati	20


Training Programme on Mobile Application Development for Programme Assistants of KVKs, 2016

7.0. PROMOTIONS/ TRANSFERS

APPOINTMENT

1. Shri Ashit Biswas took over the charge of AF&AO, ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-III w.e.f. 23rd December, 2016.

TRANSFER

1. Dr. Bagish Kumar, Scientist (AE) of this institute was transferred to ICAR Research Complex for NEH Region, Umiam, Meghalaya on 31st March, 2017.

8.0. PERSONNEL

I. Scientific

Dr. Bidyut C. Deka	Director
Dr. A. K. Singha	Principal Scientist (Agricultural Extension)
Dr. R. Bordoloi	Principal Scientist (Agricultural Extension)
Dr. P.C. Jat	Senior Scientist (Agronomy)
Shri. A. K. Bhalerao	Scientist (Agricultural Extension): On study leave

II. Technical

Shri. J. Wahlang	Asst. Chief Technical Officer (ACTO)
Shri. K. K. Dutta	Driver (T-4)

III. Administration

Mrs. A. Nongrum	PS to Director
Mrs. B. Syiem	Junior Stenographer
Shri Ashit Biswas	Asst. Finance & Accounts Officer
Mrs. A. Pyrtuh	Upper Division Clerk

V. Supporting

Mrs. J. Lakhiat	Skilled Supporting Staff
Mrs. K. Kalita	Skilled Supporting Staff

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