



ANNUAL REPORT

2021-2022



Assam Agricultural University
Jorhat 785013, Assam

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Vice-Chancellor
Assam Agricultural University
Jorhat 785013, Assam, India

FOREWORD

It is a great pleasure on my part to present before you the Annual Report of Assam Agricultural University for the session 2021-22. Since its inception, Assam Agricultural University has been striving hard to fulfil the aspirations of the stakeholders. In its pursuit to achieve the set goals, I am happy to state that the university is highly successful in fulfilling its' mandates- education, research and extension in the year gone by. It also gives me immense satisfaction to present the AAU Annual Report 2021-22 within the stipulated time.

The last two years have not been kind to human civilization since the appearance of the Coronavirus in the latter part of 2019. Unfortunately, the menace is not over yet. But the human race has learnt to live with it and survive despite it. Agriculture and allied sectors have also adjusted to the situation.

Gainful and fulfilling employment is the motto of education in this institute. Apart from that, the system of education of the university is oriented in such a way that it motivates students for self-employment and entrepreneurial development. Student number wise the university has accommodated more than 3000 students pursuing bachelor, masters, doctoral degrees and diploma and certificate courses in agriculture and allied subjects. Students are the backbone of any institute, to encourage and motivate the students; the University has enhanced the rates of State Merit Scholarship and other assistance to the students. Apart from that, this year, 247 students of the University were awarded competitive fellowships or qualified in National or State test of which 6 were the recipients of Junior Research Fellowship, 28 Senior Research Fellowship, 34 DBT fellowship, 95 qualified for NET, 60 students were the recipients of other fellowships. In addition, 82 students were awarded AAU merit scholarships. Two students qualified for the ARS mains examination.

The research works being undertaken at the university are on the right track. The scientists of the University are engaged in 203 research projects in its different establishments. During this reporting period, three AAU developed crop varieties i.e brinjal variety ABU (GB-09-12), coconut variety Kamrupa (Assam Green Tall) and toria variety AAU TS 38 have been notified by the Central Variety Release Committee. Some need-based technology like Immunogenically-active thermostable live lentogenic Newcastle disease virus formulation, Piggy flask for long distance carrying of pig semen and Electrically operated revolving barbeque for meat and fish have also been developed by the university scientists during 2021-22.

The Veterinary Clinical Complex at AAU, Khanapara campus has been revamped and some essential equipment for surgery has been procured. The Clinical Complex treats around 100-150 animals daily earning revenue of Rs.72 lakh during 2021-22.

Aiming to encourage academia to develop tangible products/ processes/ technologies Assam Agricultural University invited proposals from faculty members under the age of 50 years under the theme "Generation of Processes & Products for the benefit of farming community and agripreneurs" with the support of the State Government of Assam, to translate research beyond early-stage validation. Responding to the call, 172 concept notes were submitted by the faculty members and finally, 21 concept notes were selected and Rs. 96 lakhs was disbursed as the first year budget outlay.

The Directorate of Extension Education of the university has been continuously striving to better the lives of the farming community through its various programmes. Under the aegis of the Directorate through

its 23 KVKs 1149 training programmes were conducted and these training programmes were attended by 28488 farmers. The 56 publications during the year by the KVK personnel were full of practical advisory on farm and farming-related issues. The personnel of the 23 KVKs located in 23 districts of Assam have been rendering services to farmers by visiting their fields, by method demonstrations, through advisory / helpline service etc.

A rooftop solar power plant of 1 MW production capacity has been installed at Assam Agricultural University, Jorhat campus. This power plant under RESCO (Renewable Energy Supply Company) mode, established as per the guideline of Solar Energy Corporation of India (SECI) is in a zero investment mode.

The University has implemented four Integrated University Management System (IUMS) modules. The four modules i.e. Human Resource Management System, Payroll, Financial Accounting and Bill Tracking System of the University have been implemented and running successfully. The University's IT policy and anti-plagiarism policy have also been streamlined and are in operation.

The University has established Agriculture Marketing Intelligence Unit (AMIU). The Unit has a dedicated website and collects market information on minimum, maximum and modal price and arrival volume of major agriculture and horticulture commodities from 57 wholesale markets spread across 16 districts of Assam. These are collected by the Field Data Enumerators (FDEs) and they are feeding the data into a customized mobile app which is uploaded automatically to the AMIU website after verification centrally by the domain experts of AMIU.

The progress of the Cluster-Based Business Organization (CBBO) has been a cause of delight for the university. NABARD and NCDC put their faith in us by empanelling Assam Agricultural University and the university fully justified the faith bestowed on it. CBBO- Assam Agricultural University has promoted 25 FPC/FPOs in 11 districts, out of which 20 are supported by NABARD while 5 are supported by NCDC. A Coordinating Unit at Jorhat and a Project Implementation Unit at Kahikuchi have specifically been put in place to oversee the smooth implementation of this important scheme. Assam Agricultural University, through its network of KVKs and Research Stations located across the state, has been instrumental in mobilizing farmers, organizing awareness campaigns, registering the FPC/FPOs, undertaking baseline surveys and preparing diagnostic reports, formulating profitable business plans and also in establishing sustainable and remunerative market linkages for them.

Assam Agricultural University is preparing the roadmap for the implementation of the National Education Policy 2020. Keeping in sync with the NEP 2020, AAU aims to disseminate agricultural education in a multidisciplinary and holistic manner. Phase-wise, the course structure is being made more flexible and more interdisciplinary. It will be a boon for the agricultural universities because the Indian Council for Agricultural Research (ICAR) will act as one of the Professional Standard-Setting Bodies (PSSBs) and a member of the General Education Council (GEC) to frame expected learning outcomes for higher education. So, proper guidance from the ICAR will always be there in this regard.

The teachers and scientists of the University have published altogether 762 publications during the year. Out of these 349 were research papers in journals, 110 research abstracts in journals and proceedings, 43 books, 86 book chapters, 67 practical manuals, 44 popular articles, 39 technical bulletins and 24 other publications.

Assam Agricultural University aims to better the lives of the farming community of Assam and the Northeast. Keeping in mind this commitment, an ambitious programme 'AAU Action Plan 2021-25' has been launched with the objective to transform the rural economy of the state by streamlining teaching, research and extension activities. The Action Plan with its 23-point agenda has attained the requisite momentum.

The flagship programme of the university "*Aamar Gaon Aamar Gaurav*" is on the right track. The scientists/faculties are in direct contact with the farmers to hasten the technology dissemination process. Scientists are keeping in touch with farmers to provide information and advisory services on technical and other related requirements in time through personal visits and/or with the help of communication aids. Under the proposed mechanism, farmers are getting relevant information, knowledge and skill for pursuing production and post-production activities.

We were also pleased to host quite a few distinguished dignitaries in different establishments of the university this year; Hon'ble Governor of Assam, Prof. Jagadish Mukhi visited AAU for the 22nd convocation of the University on 3 March 2022 and the Hon'ble Governor was accompanied by Sjt. Atul Bora, Hon'ble Minister of Agriculture and AHD. We are fortunate to host our most esteemed Hon'ble Chief Minister of Assam Dr. Himanta Biswa Sarma twice. Hon'ble Chief Minister visited AAU, Jorhat on 19 August 2021 for inaugurating Agro. Ecotourism Project. He was accompanied by Hon'ble Minister of Agriculture of Assam Sjt. Atul Bora and Sjt. Tapan Gogoi, Sjt. K.P. Tasha and MLA of Jorhat Sjt. Hitendra Nath Goswami in that visit. Hon'ble Chief Minister, Dr. Himanta Biswa Sarma visited Lakhimpur College of Veterinary Science on 12 February 2022 and inaugurated the Joyhing Campus of the College. Hon'ble Chief Minister was accompanied by Hon'ble Minister of Agriculture, Sjt. Atul Bora and Hon'ble Health & Family Welfare minister Sjt. Keshab Mahanta. Dr. P. L.N Raju, Director, NE Space Application Centre, Meghalaya visited the Experimental Garden for Plantation Crops, AAU, Jorhat on 20 April 2021. Dr. Ranoj Pegu, Hon'ble Education Minister, Assam, visited Experimental Garden for Plantation Crops, AAU, Jorhat on 19 June 2021.

I strongly believe the university has the resilience and ability to adapt and convert a challenging situation into an opportunity. I would like to congratulate each member of the AAU family for making a sincere effort to keep the teaching, research and extension activities of the university in the right direction and positive momentum.

On behalf of the entire fraternity of AAU, I would also like to offer my sincere gratitude to the Govt. of Assam, ICAR, Govt of India and other agencies for their financial and technical support. Gratefulness is also due to the various national, international, non-government and private organizations for their continued support. AAU is grateful to the farming community for its unstinted support and guidance and reiterates that AAU is committed and will not be wanting in efforts to live up to its motto '*Vigyana Loksevaratam*'.

With regards,



Bidyut C. Deka

Contents

Chapter 1 The University

- 1.1 Mandate
- 1.2 Vision
- 1.3 Mission
- 1.4 Goals
- 1.5 Organization

Chapter 2 Awards and Recognitions

- 2.1 College of Agriculture, Jorhat
- 2.2 College of Veterinary Science, Khanapara
- 2.3 College of Community Science, Jorhat
- 2.4 Lakhimpur College of Veterinary Science
- 2.5 College of Sericulture, Titabor
- 2.6 College of Fisheries (including FRC, Jorhat), Raha
- 2.7 College of Horticulture, Nalbari

Chapter 3 Important Events

- 3.1 College of Agriculture, Jorhat
- 3.2 College of Veterinary Science, Khanapara
- 3.3 College of Community Science, Jorhat
- 3.4 College of Fisheries, Raha
- 3.5 Lakhimpur College of Veterinary Science, Lakhimpur
- 3.6 Biswanath College of Agriculture, Biswanath
- 3.7 SCS College of Agriculture, Dhubri
- 3.8 College of Horticulture and Farming System Research, Nalbari

Chapter 4 Education

- 4.1 Faculties
- 4.2 Degree Programme
- 4.3 Course Curricula
- 4.4 Intake and Output
- 4.5 Total Students on Roll
- 4.6 Fellowships Awarded to Students, and National Tests Qualified
- 4.7 Publications
- 4.8 Human Resource Development
- 4.9 Trainings/ Seminars/ Workshops Organized
- 4.10 Library
- 4.11 Students' Welfare

Chapter 5**Research**

- (I) Agriculture
 - 5.1. Crop Improvement
 - 5.2. Crop Management
 - 5.3. Crop protection
- (II) Horticulture
- 5.4. Others
- (III) Community Science
- (IV) Veterinary Science
- (V) Fisheries

Chapter 6**Extension Education**

- 6.1 Mandates
- 6.2 Organizational Network
- 6.3 Agricultural Technology Information Centre
- 6.4 Krishi Vigyan Kendras
- 6.5 Photographic Evidence
- 6.6 Extension Activities by the Constituent Colleges

Chapter 7**Developmental Activities**

- 7.1 College of Agriculture, Jorhat
- 7.2 College of Veterinary Science, Khanapara
- 7.3 Biswanath College of Agriculture, Biswanath
- 7.4 College of Horticulture and FSR, Nalbari
- 7.5 College of Fisheries, Raha
- 7.6 Fishery Research Centre, Jorhat
- 7.7 Outstations

Chapter 8**Dignitaries Visit**

- 8.1 College of Agriculture, Jorhat
- 8.2 College of Veterinary Sciences, Khanapara
- 8.3 Lakhimpur College of Veterinary Science, Lakhimpur
- 8.4 College of Fishery Sciences, Raha
- 8.5 College of Horticulture, Nalbari
- 8.6 Fishery Research Centre, Jorhat
- 8.8 AICRPDA
- 8.9 Out stations

Chapter 9**Finance****Appendices**

- Appendix I Salient Research Achievements, 2021-22
- Appendix II Important Policy Decisions
- Appendix III North East Agriculture Technology Entrepreneurs Hub (NEATEHUB)
- Appendix IV Externally Funded Projects

The University



Figure 1.1. A birds-eye view of Assam Agricultural University headquarter at Jorhat

Assam Agricultural University, the first institution of its kind in the entire north-eastern region of India was established on April 1, 1969 by an act called *The Assam Agricultural University Act, 1968* with its headquarters at Jorhat. The base of this new institution comprised of the erstwhile Assam Agricultural College at Jorhat and the Assam Veterinary College at Khanapara.

The establishment of two rice research stations, one at Karimganj in 1913 in the Barak Valley and the other at Titabar in 1923 in the Brahmaputra Valley sowed the seeds of agricultural education in the North-Eastern part of the country. The trainees produced by these two research stations were not enough to meet the growing demand for scientifically trained manpower in the agricultural and allied sectors in this part of the country. Consequently, the Assam Agricultural College at Jorhat and Assam Veterinary College at Nagaon came into existence in 1948 as a result of exemplary willpower and dedication to the service of Bharat Ratna Late Gopinath Bordoloi, the first Chief Minister of Assam. Both the colleges were affiliated with Gauhati University at first and then with Dibrugarh University before the establishment of Assam Agricultural University in 1969.

1.1 Mandate

- *Imparting technical education in agriculture and allied branches of learning*
- *Furthering the advancement of learning through innovative research in agriculture and allied sciences, and*
- *Taking the technologies to the stakeholders' doorstep to harness optimum benefits in production, profitability and permanency in agriculture.*

1.2 Vision

Provisioning of quality human resource to facilitate technology-led agricultural renaissance revitalizing and rejuvenating post-green revolution agriculture ensuring both production and environmental sustainability targeting a minimum of 4% agricultural growth while addressing the issues of household food and nutritional security, farmers' distress, commerce in agriculture as well as regional, national and global food crisis taking the advantage of innovative technology, market reforms and liberalization.

1.3 Mission

To fill up the talent gap in agriculture and allied sectors to preposition the state to combat the emerging challenges in agriculture and ensure productivity increase in agri-horti-animal-fish crops in the face of shrinking/ fragmented land holdings, ailing soil health, diminishing water resources and increased human population.

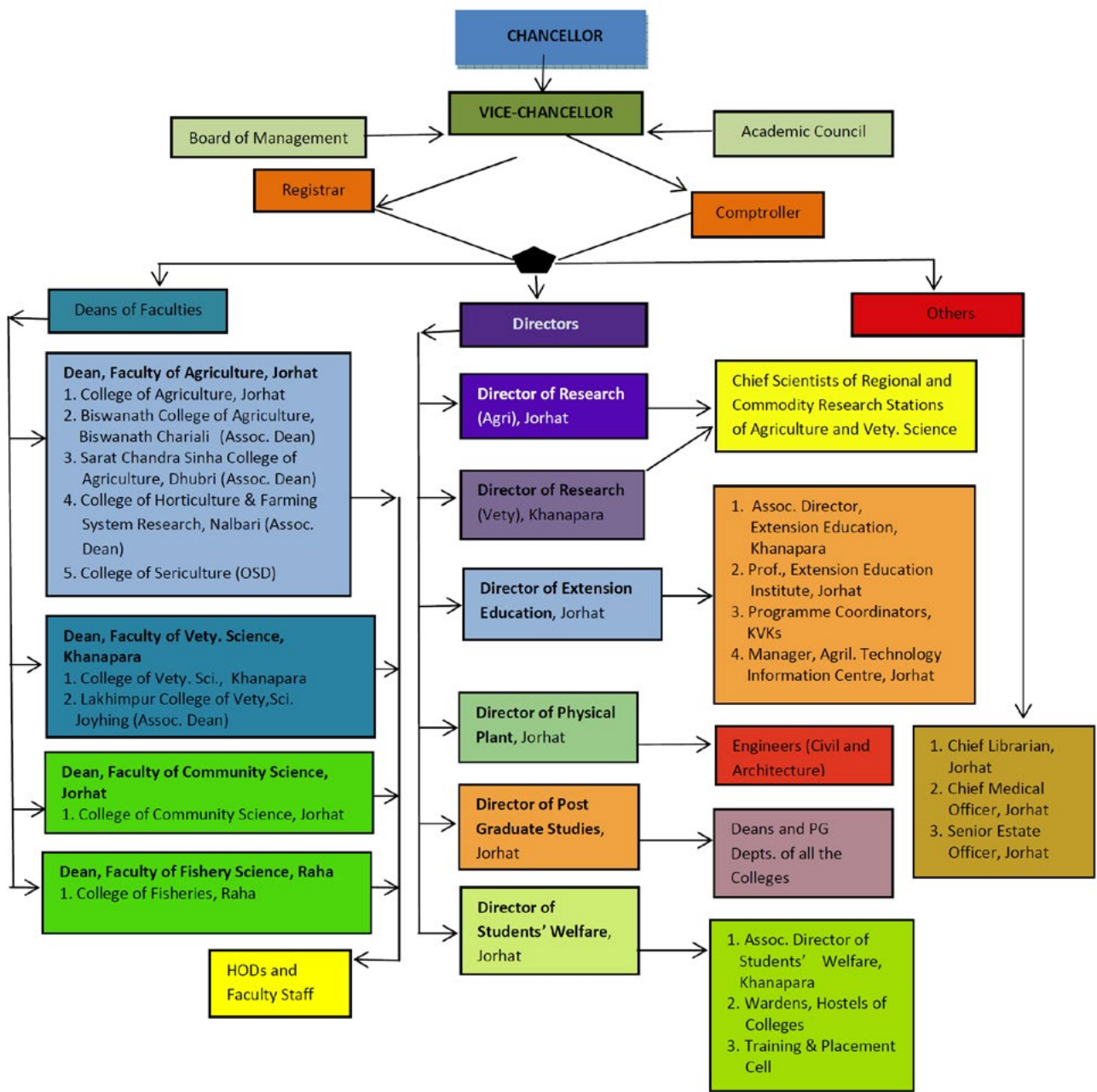
1.4 Goals

- *Provide quality education and training in the areas of agriculture and allied sciences.*
- *Undertake basic, applied and adaptive research relevant to the needs of the farmers and entrepreneurs of Assam.*
- *Transfer the technologies to the stakeholders, particularly, farmers for increasing the production, productivity and income to ultimately improve the socio-economic conditions of the people, and*
- *Play a key role in transforming the state's agriculture of subsistence to agriculture of abundance.*

1.5 Organization

To carry out the education as per mandate, the University has six faculties in the fields of Agriculture, Veterinary, Community Science, Fishery, Horticulture and Sericulture with 9 constituent

colleges - three in agriculture, two in veterinary science and one each in community science, fishery, horticulture and sericulture. Except for sericulture, all the other eight constituent colleges have state of the art facilities for imparting education in designated locations in the state. The Dean is the official head of the Faculty and Chairman of the Board of Studies of the respective Faculty. There is a Director of Post Graduate Studies to coordinate Post-Graduate Studies in all the departments and colleges of the University. To coordinate the research activities, the University has two full-fledged Directorates of Research, one for agriculture and community science headed by the Director of Research (Agriculture) and the other for veterinary science and fishery science headed by the Director of Research (Veterinary). The extension programme of the University is carried out under the Directorate of Extension Education headed by a Director of Extension Education. In addition, the University has a Director of Students' Welfare, a Director of Physical Plant and a Chief Librarian and other important officers as per the Statute. The Director of Students' Welfare is responsible for the arrangement of housing for students, student counselling and placement besides supervising the extra-curricular activities and general needs of the students. The Director of Physical Plant is responsible for all construction-related activities and repair/renovation of the University. The organizational structure of the University is depicted in the organogram presented in Fig 1.2.



*Vice-Chancellor also supervises the Extension Education Institute, Govt. of India and DBT-AAU Centre, AAU, Jorhat

Figure 1.2. Organizational structure of Assam Agricultural University, Jorhat

Awards and Recognitions

Indian Society of Agronomy Fellowship awarded to Dr. Jayanta Deka

A. The Indian Society of Agronomy Fellow for 2018 was awarded to Dr. Jayanta Deka, Dean, Faculty of Agriculture, AAU, Jorhat during the International Agronomy Congress held during 23-27 November, 2021 at Pandit Jayashankar Telangana State Agricultural University, Hyderabad. Dr. Deka is one of very few agronomists from Assam to be conferred with this award. On this occasion, Dr. Deka delivered an invited lead lecture on 'Reorienting Agronomic Education'.



Figure 2.1. ISA Award to Dr. J. Deka, Dean, Faculty of Agriculture

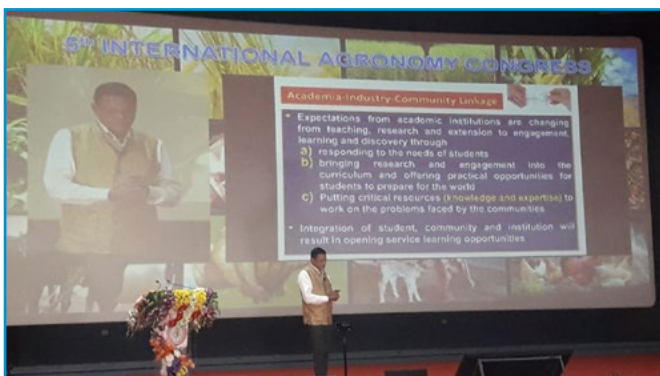


Figure 2.2. ISA Award to Dr. J. Deka, Dean, Faculty of Agriculture

B. The Assam Agricultural University received a patent on 9th Aug, 2021. The title of the patent is "A novel method of storing of healthy whole green gram seed to completely protect it from the infestation of storage insect pest Azuki

been weevil, *Callosobruchus chinensis* at room temperature for a period of nine months". The inventors of this patent are Dr Priyanka Das and Dr Pulin Patgiri. Considering the loss involved in storage of greengram due to infestation of this weevil, it is thought that the present invention will be a safe and capable method to prevent it.

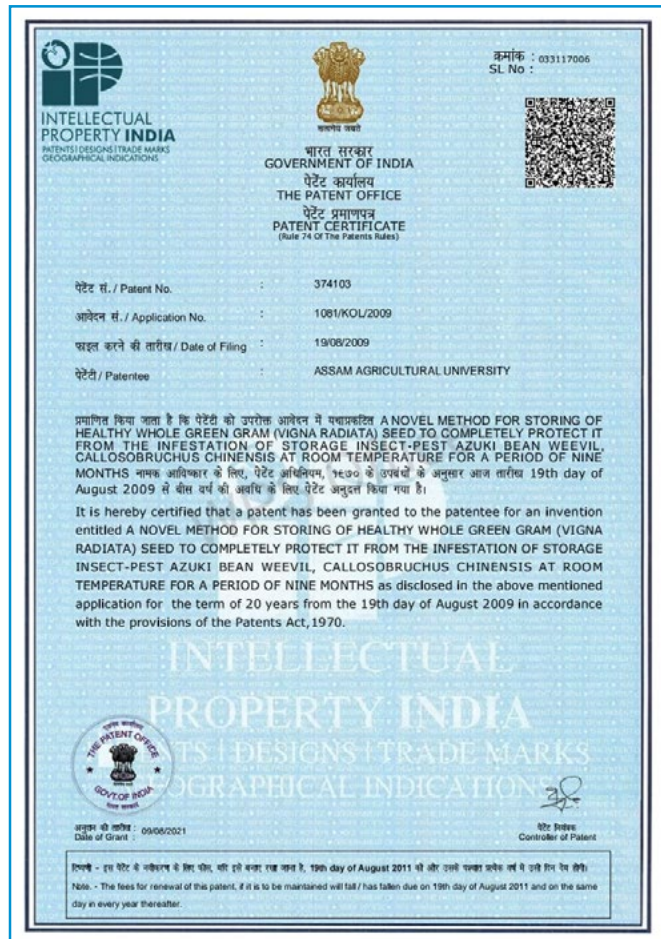


Figure 2.3. The patent certificate awarded to Assam Agricultural University for "A novel method of storing ... nine months".

2.1. College of Agriculture

2.1.1. Teachers

- Dr. Jayanta Deka, Dean, Faculty of Agriculture, AAU
 - Co-Chaired a Technical Session in the International Conference on "Conservation agriculture and Resource Conservation Technology and Watershed Management" held at College of Agriculture, Kyrdemkulai, Meghalaya during 7-9, December, 2021.

- Dr. Sundar Barman, Department of Extension Education, bagged the Certificate of Excellence for contribution as Rapporteur of session VIIth in the successful organization of International Web Conference (ICAAAS 2021) held during July 19-21, 2021.
- Manas Jyoti Barooah, Department of Agricultural Engineering, received the 2nd Best Oral Presentation in TS Engineering Aspects of Food Engineering in International Conference on “Sustainable Approaches in Food Engineering and Technology” (SAFETY- 2021), on 24th-25th June Organized by The Department of Food Engineering & Technology, Tezpur University, Assam, India & University of Georgia, Georgia (US).
- Prof. B.K. Sarmah, ICAR-National Professor, Norman Borlaug Chair and Director DBT-NECAB,
 - Acted as a Member in selection committee for ICAR Norman Borlaug Chair Award, 2021.
 - Acted as Reviewer in the first meeting Special Scientific and Technical Appraisal and Advisory Group (STAG) on Himalayan Bio-resource Mission held at **10:30 AM to 5:30 PM on July 13, 2021** through video conferencing.
- Ms Bhaswati Sarmah, Junior Scientist, Department of Plant Breeding and Genetics, was awarded Research fellowship and funding worth Rs. 10,75,000.00; approximately \$ 14333 to undertake research and training at Cornell University, USA, for a period of 5 months by the World Bank Funded National Agricultural Higher Education Project, Indian council of Agricultural Research.
- Dr. Palash Deb Nath, Professor, Dept. of Plant Pathology,
 - Acted as Resource person in ICAR sponsored Short course entitled “Bioprospecting Plant Microbiome : A Novelty to Plant Health Management in Organic Production System”.
 - Acted as external examiner for Ph.D Thesis viva voce of Ms. J. Vinodhini, Tamil Nadu Agricultural University.
 - Acted as a resource person for STRY training under MANAGE at KVK, Teok.
- Acted as paper setter for Agriculture Paper I and Paper II for Arunachal Pradesh Public Service Commission (APPSC).
- Dr. Munmi Borah, Junior Scientist, Dept. of Plant Pathology,
 - Receive the 2nd Best Brief Oral Presentation on “Influence of Sowing Date on Incidence and Severity of Viral Disease Complex on Soybean under Field Condition” under the theme “Epidemiology and Forewarning in plant Disease Management” in the Golden jubilee international conference entitled “Global Perspective in Crop Protection for Food Security”.
 - Received best poster presentation award, in the technical session 4 in “Recent Advances in Diagnosis and Management of Phytoplasmal Diseases” of the national symposium entitled “Sustainable Plant Health Management Against COVID Pandemic : Challenges and Strategies” organized by the south zone chapter of the Indian Phytopathological Society in association with ICSR- Central Plantation crop Research Institute during 1-3 December 2021 for her presentation entitled ‘ Molecular screening of Citrus Liberibacter species associated with citrus greening disease authored by Amitha Paul, Palash Deb Nath, Rajkumar Kakati and Munmi Borah.
 - Organizing secretary of the Webinar entitled ‘Plant Quarantine and Plant Biosecurity regulations in India’ organised by Deptt. Of Plant Pathology, AAU in collaboration with National Institute of Plant Health Management (NIPHM), Hyderabad dated 07-12-2021.
 - On 16th Dec., 2021 presented a project proposal entitled ‘Soybean Based Market Oriented Infrastructure Development In Assam: A Project Proposal For Soymilk And Tofu Production Factory’ under the theme ‘Popularization and commercialization of the Soybean crop in NEH region’ and got approved by ICAR -NEH fund.
 - Acted as Resource person in ICAR sponsored Short course entitled “Bioprospecting Plant Microbiome : A Novelty to Plant Health Management in Organic Production System”.
- Dr. Anurag Kashyap, Assistant Professor, Dept. of Plant Pathology,

- Gave an Invited Talk on Entrepreneurship Development at NIT, Arunachal Pradesh, from 24th – 26th December, 2021
- Acted as Co-Organizing secretary of the Webinar entitled 'Plant Quarantine and Plant Biosecurity regulations in India' organised by Deptt. Of Plant Pathology, AAU in collaboration with National Institute of Plant Health Management (NIPHM), Hyderabad dated 07-12-2021
- Co-ordinated NAHEP sponsored National Lecture series of more than 10 lectures by Dr. Aundy Kumar, Principal Scientist, IARI, New Delhi on "Molecular aspects of pathogenesis & plant-pathogen interaction", online mode.
- Co-ordinated NAHEP sponsored online mode National level 4 Lectures by Dr. Robin Gogoi, Principal Scientist, IARI, New Delhi, on "Plant pathogens, chemotherapy & their pros and cons".
- Acted as Resource person in ICAR sponsored Short course entitled "Bioprospecting Plant Microbiome : A Novelty to Plant Health Management in Organic Production System".
- Dr. Anurag Kashyap and Professor D. K. Sarmah, Dept. of Plant Pathology,
 - Acted as Resource person "Scientific cultivation of Oyster Mushroom and Organic management of diseases in vegetables", Charaideo district, 21.12.2021.
 - Got the Best poster presentation (1st Prize) Technical session II- Molecular and Nanotechnology approaches in plant disease management, IPS-Zonal Symposium (NEZ).
- Dr. Popy Borah, Assistant Professor, Dept. of Plant Pathology,
 - Conducted as Course Director - ICAR sponsored Short course entitled "Bioprospecting Plant Microbiome : A Novelty to Plant Health Management in Organic Production System".
- Registered as a reviewer of the journal, Journal of Cleaner Production (NAAS 13.25).
- Served as an Visiting Scientist (AREEO, Iran).
- Received the Best presentation Award, National workshop ICAR AICRP on Fruits.
- Dr. Bharat Chandra Nath, Assistant Professor, Dept. of Plant Pathology,
 - Acted as Resource person in ICAR sponsored Short course entitled "Bioprospecting Plant Microbiome : A Novelty to Plant Health Management in Organic Production System".
 - Got the Best oral presentation (1st Prize) Technical session I- Etiological and Epidemiological Studies, IPS-Zonal Symposium (NEZ).
- Dr. Pranjal Kr. Kaman, Junior Scientist, Dept. of Plant Pathology, got Poster presentation (3rd Prize) Technical session II- Molecular and Nanotechnology approaches in plant disease management, IPS-Zonal Symposium (NEZ).
- Dr. Nivedita Deka, Professor and Head, Dept. of Agril. Economics and FM
 - Acted as Chairperson: International Conference on "Advances in Food Science and Technology (AFSTECH-21)" held on October 28, 2021, organised by International Academy of Physical Sciences, North-Eastern Hill University, Tura Campus, Meghalaya, India and Swedish South Asian Network on Fermented Foods, Anand, Gujarat, India.
 - Attended the fourth meeting of the Research Council of Assam Rajib Gandhi University of Cooperative Management, on 6th October, 2021 at the Vice Chancellor's office of the university campus.
 - Served as External Thesis Examiner for Nagaland University. For M.Sc for Department of Agricultural Economics, Thesis title: "Impact of MGNREGA on Rural Income and Employment in South West Khasi Hills District, Meghalaya".

- Appointed as external examiner (letter received on 19th Feb, 2022) for setting question paper for the course: (i) AGECON 502: Macro Economics and Policy, (ii) AGECON 604: Advanced Production Economics, for college of Post Graduate Studies in Agricultural Sciences, CAU, Imphal.
- Delivered radio talk on Union Budget 2022 and Agriculture on 19th February 2022.
- Acted as invited speaker to deliver a lecture to the participant women SHGs on International Women Day on 8th March at KVK Jorhat.
- Acted as Key note speaker for Seminar (virtual) on Contemporary issues of Developing countries on 14th March, 2022, Assam Donbosco University, Guwahati.
- Acted as convenor of the judging committee of the exhibition stalls of Regional Agriculture Fare, 12-14 March, 2022.
- Exposure visit to DEMIC, Tamil Nadu Agril. University and AMIC, Professor Jayashankar Telengana State Agril. University, 22-25 March, 2022.
- Gave a Radio Talk on 10th March, 2022 on "Ways and Means for women empowerment at AIR, Jorhat.
- Vinod Upadhyay, Junior Scientist, RARS, Gossaigaon
 - Bagged 'Young Scientist Award (Agriculture)-2021 in 'National Conference on recent innovation, Trends and Challenges in Plant Sciences and Research' organized jointly by the Society for Plant Research & V.H.N. Senthikumara Nadar College, Virudhanagar, Tamilnadu during March 25-26 in 2021.
 - Received 'Young Scientist Award-2021' in 12th International Conference on Agriculture, Horticulture and food sciences from 29th -30th Dec., 2021 organized by the Society of Tropical Agriculture, New Delhi, India.
 - Recipient of 'Best Poster Presentation' for his paper Presentation on "Management of Sun Scald Damage in Pineapple by Letting Shading Effect from Naturally Grown Weeds" in IPHe-C 2021: Technical Session - 3A of during August 18-20, 2021 at ICAR-IARI, New Delhi, India.
- Dr. Bhabesh Gogoi, Junior Scientist, Advanced Centre for Integrated Farming Systems Research (AICRP on IFS under ICAR-IIFSR, Modipuram), bagged the "Indo Asian Scientific Excellence Award in Soil Science" in the 2022 on the eve of the National Science Day 2022 from the Ratna Prasad Multidisciplinary Research & Education Society, India.
- Dr. A.M. Deka, Junior Scientist, RARS, AAU, Shillongani, Nagaon, acted as "Reviewer" of one research article of the 'Journal of Crop and Weed' (NAAS: 5.46), BCKV, West Bengal.

2.1.2. Students

- Ms. Surbhi Sahewalla was awarded with Dharmananda Das Memorial award (best tea graduate) with a cash award of Rs. 20,000 with a Silver Trophy.
- Ms. Swapnali Goswami and Mr. Varna Murali received the Best Poster Presentation Award in the International Web Conference (ICAAAS 2021) held July:19-21, 2021.
- Ms. Shenaz Sultana Ahmed bagged the Best M Sc Thesis award 2021 conferred by "Global initiative in Agricultural Forestry and Applied Science for food security, environmental safety and sustainable development" of the "Agricultural and environmental Technology development Society" Dehradun, Uttarakhand on 17-18, October, 2021.
- Ms. Amitha Paul received the Best Poster Presentation Award, in the technical session 4 in 'Recent advances in diagnosis and management of Phytoplasmal diseases' of the national symposium entitled "Sustainable Plant Health Management against covid pandemic : Challenges and strategies" organized by the south zone chapter of the Indian Phytopathological Society in association with ICSR- Central Plantation crop Research Institue during 1-3 December 2021 for her presentation entitled ' Molecular screening of citrus germplasm for simultaneous detection of *Cadidatus liberibacter* species associated

with citrus greening disease authored by Amitha Paul, Palash Deb Nath, Rajkumar Kakati and Munmi Borah.

- Ms. T.C. Lalruatfeli got the 2nd Best Brief oral Presentation under the theme «Epidemiology and Forewarning in Plant Disease Management» in the Golden jubilee international conference entitled “Global Perspective in Crop Protection for Food Security”.
- Ms. Kanuri Komala received the 3rd Prize in Poster Presentation, IPS- Zonal Symposium (NEZ).
- Ms. Surbhi Sahewalla received the 2nd Prize in Online Poster presentation in the International Conference on “Biotechnological Initiative for Climate Resilient Agriculture” held at DRPCAUI, Pusa, Samastipur, Bihar from January 7-9, 2022.
- Ms. Meghna Choudhury received the 3rd Prize in Online Poster presentation in the International Conference on “Biotechnological Initiative for Climate Resilient Agriculture” held at DRPCAUI, Pusa, Samastipur, Bihar from January 7-9, 2022.
- Mr. Partha Pratim Gyanudoy Das received the “Prof. Md. Sharifullah Memorial Gold Medal” (2019).
- Ms. Uddipana Shandilya received the “Prof. Md. Sharifullah Memorial Gold Medal” (2020).
- Ms. Gourismita Nath received the University Gold medal (2019) as well as the Dr. Satya Ranjan Barooah Cash Prize (2019).
- Ms. Shineyka Baruah received the University Gold medal (2021).
- Ten students (Ms. Gracia PKumari, Ms. Manjistha Baruah, Ms. Paromita Saikia, Ms. Reshma Ahmed, Ms. Sanjukta Singha, Ms. Subhrota Bordoloi, Ms. Mamta Bhattacharjee, Ms. Sandhani Saikia, Ms. Richita Saikia, Mr. Sushil Kumar Singh) were selected as per merit by the AdaptNET selection committee and have confirmed to undergo a 3-month training period from March 2022 until the end of the programme in one of the European AdaptNET organizations.
- Ms. Sukanya Pachani bagged the Second Best Paper in oral presentation session ‘Managing Agro-Chemicals for Crop and Environmental Health’ during February 25-26, 2022. The title of

her paper was: ‘Synthesis, characterization and release of nano-enabled phosphorus fertilizer in acid soils of Assam’.

- Rupak Jena, a Ph.D student of the Department of Nematology bagged “Man of the Series” in the all Assam Inter-University Cricket Tournament.
- Nidhishree, A student of M.Sc. (Agri) from Department of Agricultural Economics and Farm Management, CA, participated SCIENTIFIQUE: Oral presentation under School of Humanities and Social Sciences during Research and Industrial Conclave 2022 organised by Students’ Academic Board, IIT, Guwahati.
- Afsana Rahman, Department of Extension Education, CA, qualified in the UGC NET examination.
- Pompei Dutta, Department of Agricultural Economics & FM, CA, qualified in the ICAR-NET examination.
- Lipika Talukdar, Department of Agronomy, CA, qualified in the ICAR-NET examination.
- Madhuryya Mohan Khonikor, CA, qualified in the ICAR-NET examination in Plant Breeding.

2.2. College of Veterinary Science, Khanapara

2.2.1. Faculty /Scientists

- Dr. Kushal Konwar, Professor & Head, Department of Surgery and Radiology
 - Awarded with Doctor of Science (DSc) by the AAU, Jorhat.
- Dr. Dulal Chandra Roy, Professor and Head, Department of Pharmacology and Toxicology
 - Incredible Academicians and Researchers of India, 2021 (Record owner).
 - Asia’s top 50 Academicians and Researchers, 2021 (EET CRS).
- Dr. Nagendra Nath Barman, Professor & Head, Department of Microbiology
 - Sir F M Burnett Memorial Award, 2021-22 from Indian Society for Veterinary Immunology and Biotechnology.

- Dr. Probodh Borah, Professor & Head, Dept. of Animal Biotechnology obtained following appointments
 - Chairman of the Advisory Committee constituted by ICAR for the NASF project entitled, "Production of double-musled mass farm animals using CRISPR" since March 2021.
 - Co-Chairman of the Selection Committee for selection of students (schools and colleges) and Community Citizens under SwachhtaSaarthi Fellowship (SSF) 2021 constituted by the Office of the Principal Scientific Adviser (PSA), Government of India under the Waste to Wealth Mission.
 - Member of the Technical Committee constituted by ICMR for the Task- force project entitled "Surveillance of Foodborne Pathogens (FBP) from North-East India".
 - Member of the Institutional Management Committee of ICAR-NRC on Yak, Dirang, Arunachal Pradesh since April, 2021.
 - DBT nominee for Institutional Biosafety Committee of Girijananda Institute of Pharmaceutical Sciences, Azara, Guwahati since September, 2021.
 - Member of the Research Council of Nowgong College (autonomous) since October, 2021.
- Dr. Razibuddin Ahmed Hazarika, Professor & Head, Department of Veterinary Public Health
 - Received award of honour from the Association of Public Health Veterinarians on the occasion of World Zoonoses Day, 2021.
- Dr. Devoiyoti Dutta, Professor, Department of Veterinary Physiology
 - Received ICAR-NAHEP Fellowship under Faculty Development Programme to undergo 15 days training in foreign country (Belgium, UK).
- Dr. Saidul Islam, Professor and Head, Department of Veterinary Parasitology
 - Acted as Chairperson in Session-I of the 30th NCVP and National Symposium held at the Department of Veterinary Parasitology, College of Veterinary & Animal Science, Parbhani, MAFSU, Nagpur, (MS) under the aegis of Indian Association for the Advancement of Veterinary Parasitology (IAAVP) from 14th to 16th December, 2021.
- Awarded with Best Oral Paper presentation award in the 30th NCVP and National Symposium in Session-VII held at the Department of Veterinary Parasitology, College of Veterinary & Animal Science, Parbhani, MAFSU, Nagpur, (MS) from 14th to 16th December, 2021.
- Acted as guest faculty under NAHEP class of UG to the students of UP Pt. Deen Dayal Upadhyaya Pashu Sikitsha Vigyan Vishwavidyalaya, Mathura on the topic "Wildlife Parasites of Zoonotic Importance" on 28.7.2021 (Online).
- Delivered a lecture on the topic "Wildlife Zoonosis and Human Health in connection with 21days Advanced National Training Programme on (ANTP-2021) Strategies for One Health Approach to Parasitic Diseases" (Through Online Mode) Organized by CVSc and Animal Husbandry, Jabalpur.
- Dr. (Mrs) Munmun Sarma, Professor, Department of Veterinary Anatomy & Histology
 - Received Certificate of Recognition as "Guest Speaker" of seven days online Training programme on "Application of Anatomy for Clinical Practice and Forensics" organized by Department of Veterinary Anatomy, College of Veterinary Science and Animal Husbandry, Anjora, Durg, Chhatisgarh from 5th to 12th October, 2021.
 - Received Reviewer Excellence Award as Reviewer of Indian Journal of Animal Research from Editors of ARCC on 14.10.2021.
- Dr. Dhruva Jyoti Kalita, Professor and Head, Dept. of Veterinary Biochemistry
 - Selected as member of Research Advisory Committee to monitor the research activities of Medical research Unit, Gauhati Medical College and Hospital as per the guide lines for establishing Multi disciplinary Research

- Unit (MRUs) in the Government Medical Colleges / Research Institution for 5 years during 15th Finance Commission Period (2021-2025-26) by Principal cum Chief Superintendent, GMCH, Guwahati-32.
- Selected as member to prepare the modalities for collaboration of Central Council for Research in Ayurvedic Sciences (CCRAS) with Assam Agricultural University by Dean, FVSC, Khanapara.
- Dr. Nikhil Chandra Nath, Assistant Professor, Department of Veterinary Physiology
 - ICAR-NAHEP Fellowship under Faculty Development Programme to undergo 6 months training in foreign country (University of East London, UK).
 - Dr. Luit Moni Barkalita, Assistant Professor, Dept. of Animal Biotechnology
 - Completed the requirements of PhD from KU Leuven, Belgium under Netaji-Subhash ICAR International Fellowship.
 - Dr. Kanta Bhattacharjee, Assistant Professor (S-2), Department of Veterinary Parasitology
 - Awarded the rank of Lieutenant and promoted as Associate NCC Officer (ANO) of 47 Assam R&V Sqn, NCC and awarded the rank of Lieutenant on 9th October 2021 after undergoing 2 months Pre-commissioned training in RVC Centre & College, Meerut.
 - Dr. Jakir Hussain, Deptt. Of LPM CVSc, AAU, Khanapara
 - Post Graduate Diploma in Animal Welfare (PGDAW) under IGNOU.
 - Reviewer Excellent Award: Agricultural Science Digest, ARCC Journals for the research article "Poultry Waste Control Policy in South East Nigeria: Exploring the Determinants of Choice Using Attributes and Alternative Specific Constant (ASC)" dated:01-02-2022.
 - Reviewer Excellent Award: Agricultural Science Digest, ARCC Journals for the research article "Physiological characters and alimentary needs of both divergent lines of the Barbary partridge (*Alectoris Barbara*, Bonnatere, 1792) in Algeria" dated: 06-10-2021.
- Reviewer Certificate: eJManager Journal Management Services "Effect of turmeric powder supplementation on carcass characteristics of Japanese quails) in IJLR-2021-09-161 dated:24-10-2021.
 - Reviewer Excellent Award: Asian Journal of Dairy and Food Research, ARCC Journals for the research article "Morphological and morphometrical studies on the crosses of local cows of Kashmir with Holstein-Friesian or Jersey sires" dated: 23-07-2021.
 - Reviewer Excellent Award: In recognition of an outstanding contribution to the quality of the Journal-Annual Research & Review in Biology, dated: 30-09-2021.
- Dr. Purabi Kaushik, Assistant Professor, Department of ILF, CVSc, AAU, Khanapara
 - Selected to undergo 6(six) months International Training under National Agricultural Higher Education Project (NAHEP), ICAR in the University of East London, University Way, London, E162RD, United Kingdom.
 - Dr. Anil Deka, Assistant Professor, Department of Veterinary Anatomy & Histology
 - India Prime 100 Professor Award, 2021 organized by Fox clues.
 - BharatjyotiSaraswatiSamman Award 2021 organized by MVLA Trust.
 - Certificate of Excellence Reviewing of article of Journal of Advance in Biology and Biotechnology and certificate.
 - Certificate of Excellence Reviewing of article of Journal of Advance in Biology and Biotechnology and certificate .
 - Certificate of Excellence Reviewing of article of International Journal of Tropical Diseases & Health and certificate.
 - Associate Editor in Chief in Theriogenology Insight Journal

- Certificate of Excellence in Peer- Reviewing of article of Utttar Pradesh Journal of Zoology and certificate.
 - Certificate of Excellence in Peer- Reviewing of article of Utttar Pradesh Journal of Zoology and certificate.
 - Certificate of Excellence in Reviewing of article of Journal of Pharmaceutical Research International and certificate.
 - Consolation prize in cooking competition held on 8th October, 2021 in College of Veterinary Science, Assam Agricultural University, on the occasion of world egg day.
 - Certificate of Excellence in Peer- Reviewing of article of Journal global Ecology and Environment and certificate.
- Dr. Snehangsu Sinha, Assistant Professor, Department of Anatomy & Histology
 - Appointed as Reviewer of Indian Journal of Animal Research (ARCC Journal).
 - Awarded Fellow by Scholars Academic and Scientific Society with title FSASS.
 - Certificate of Excellence in Reviewing awarded by Asian Journal of Medicine and Health.
 - Dr. S.M. Tamuli, Professor and Head, Department of Veterinary Pathology
 - Acted as resource person in the National Level Seminar entitled Livestock Diseases and their Impact on Sustainable Production organized by the Department of Veterinary Pathology, CVSc & AH, NDVSU, Rewa, MP from 5th to 6th October, 2021 under the aegis of Indian Association of Veterinary Pathologist on online mode.
 - Dr. D. J. Dutta, Professor , Department of Veterinary Physiology
 - Delivered a radio talk on A1 radio channel on 9th June on the topic *Bijan Sanmata Kukura Palon*.
 - Acted as Co-Chairperson in 30th Annual Conference of SAPI (SAPICON 2022) in the technical Session-II entitled Adaptation, Behaviour, Growth and Environmental Physiology organized by the Department of Veterinary physiology, Nagpur Veterinary College , Animal and Fishery Sciences University, Nagpur from 17th to 19th February, 2022.
 - Dr. Anubha Baruah, Professor and Head, Department of Veterinary Physiology
 - Acted as Co-Chairperson in 30th Annual Conference of SAPI (SAPICON 2022) in the technical Session-IV entitled Digestive Metabolism and Nutritional Physiology organized by the Department of Veterinary physiology, Nagpur Veterinary College , Animal and Fishery Sciences University , Nagpur from 17th to 19th February, 2022.

2.2.2. Students

- Mr. Azizur Rahman, a 3rd year BVSc&AH student bagged the followings prizes:-
 - 1st position in All Assam Article Writing Competition, 2021-22 organized by Boitamari Students' Union (Regional)
 - 1st position in All Assam article writing Competition, 2021-22 organized by Farkhating College.
 - 2nd position in All Assam Essay Writing Competition, 2021-22 organized by All Assam Law Students' Union.
 - 2nd position in All Assam Essay Writing Competition, 2021-22 organized by Indian Students' Federation.
 - 3rd position in All Assam Article Writing Competition, 2021-22 organized by Cotton University AASU Unit.
 - 2nd position in All Assam Article Writing Competition, 2021-22 organized by All Assam Syed Welfare Trust.
 - 2nd position in All Assam Quiz Competition, 2021-22 organized by All Assam Syed Welfare Trust.
 - Special Jury Award in All Assam Essay Competition 2022 organized by Nalbari College AASU Unit.

- Kh. Monita Singha (Regn. No. 18-VK-41)
- SUO Kh. MonitaSingha student of 4th year BVSc & AH class and a cadet of College of Veterinary Science has been selected from the NE Directorate for JivanRakshaPadak held on 22nd January, 2022 at HQ DGNCC Camp Parade Ground, Delhi Cantt.
- Cadets from College of Veterinary Science, Assam Agricultural University, Khanapara participated in Dibrugarh Horse Show held from 7 - 9th January, 2022 and brought laurels by winning medals in various events.
 - SUO Prakash Nehra won silver medal, bronze medal and 4th position in cadet and police jumping competition, open top score and open tent pegging event.
 - Mharoni Jami won bronze medal in ladies hacks competition.



Figure 2.4. Cadets from College of Veterinary Science, Assam Agricultural University, Khanapara receiving awards in Dibrugarh Horse Show

- **Day Cadre Training Camp**
 - Cadets of 2nd and 3rd year class of College of Veterinary Science participated in the Day Cadre Training Camp held at College of Veterinary Science playground for 5 and 7 days duration, respectively in order to make them eligible for appearing in B and C certificate examination.



Figure 2.5. Cadets undergoing Day Cadre Training Camp

2.3 College of Community Science

2.3.1. Faculties

- Dr. Jinamoni Saikia, Principal scientist & in-charge Head, department of Human Development and Family Studies was invited as a Key Speaker from North east in a National Convention organized by the Ministry of Social Justice and Empowerment and National Trust held on 7th August 2021.
- Dr. Sampreety Gogoi, Assistant Professor, department of Human Development and Family Studies received International Excellent Young Researcher Award in International Women Summit and Conference on “Women Global Leaders-vision of Tomorrow” organized by Saksham Society, Jaipur, Rajasthan on 1st and 2nd August 21.
- Dr. Moonty Baruah, Assistant Professor, Department of Family Resource Management and Consumer Science, received Indo Asian Education Excellence Award 2022 offered by Ratna Parshad Multidisciplinary Research Educational Society, India.

2.3.2. Students

- Ms. Chandrani Borkotoky, PhD student of the department of Human Development and Family Studies, received Young Researcher Award in the International Multidisciplinary Conference on ‘New Trends in Education’ organized by International Benevolent Research Foundation (IBRF), Kolkata on the occasion of World teachers’ Day on 5th October, 2021.

- Ms. Urmimala Baruah, PhD student of the department of Food Science and Nutrition, received Young Researcher Award on 12th April 2021, from Institute of Scholar, Karnataka.
- Ms. Asha Gohain, Ph.D. student of the department of Family Resource Management and Consumer Science, received Best Paper Presentation award on 3rd International Conference on Empirical and Theoretical Research (ICETR), 2022.
- Ms Kshiptimayee Patra, M.Sc. student of the department of Human Development and Family Studies, received Best Thesis Award (M.Sc.) on the occasion of Sabujeema Award Ceremony-Honoring Excellence in Teaching and Research on the Eve of World Teachers Day (2021).
- Recipients of Gold medals and Cash prizes in 22nd Convocation of Assam Agricultural University held on 9th February, 2022
- Three students won the University Gold medal in B.Sc. (H.Sc.) degree programme: Shubhangi Bordoloi (2019), Gita Doley (2020), Ginisha Kalsi (2021).
- Dr. (Miss) G.V. Subaima Cash Prize for Highest GPA in the General Courses of Food Science and Nutrition in B.Sc. (H.Sc./C.Sc.) Degree programme was won by three students: Pranatusmi Sharma (2019), Kabyashree Bora (2020), Ginisha Kalsi (2021).
- Late Jinti Bhattacharjee Sarma Memorial Cash Prize for Highest CGPA In M.Sc. (H.Sc./C.Sc.) In Food Science And Nutrition Degree programme was won by Mansi Tiwari (2019) and Ishita Nath (2021).
- Dr. (Miss) G.V. Subaima Cash Prize for Highest CGPA in M.Sc. (H.Sc./C.Sc.) Degree programme was won by Brishti Angkita (2019) and Ishita Nath (2021).
- Lt. Dr. Madhurima Chaliha Kalita Memorial Gold Medal for Best Graduate in the UG Programme across the faculties was won by Ginisha Kalsi (2021).
- Pramila Pandit Barooah Cash Prize for Highest CGPA in the Graduate courses of Child Development/HDFS in B.Sc. (H.Sc./C.Sc.) Degree Programme was won by Shubhangi

Bordoloi (2019), Gita Doley (2020) and Ginisha Kalsi (2021).

2.4 Lakhimpur College of Veterinary Science

2.4.1. Students

- Dr. Satyabrat Dutta (2014 batch passed out) won the Best Graduate (2014 batch), AAU UG Gold medal (Veterinary Science) 2019.
- Dr. Mahfuza Begum (2015 passed out) won the Best Graduate (2014 batch), AAU UG Gold medal (Veterinary Science) 2020.

2.5 College of Sericulture

2.5.1. Students

- Ms. Arhata Nath, Regn. No.: 2018-ST-01 Get selected in the Republic Day Parade Team for the year 2022.



Figure 2.6. Ms. Arhata Nath (second from left), in the Republic Day Parade in New Delhi

2.6 College of Fisheries (including FRC, Jorhat)

2.6.1. Faculties

- Dr. Bibha Chetia Borah, Fishery Research Centre, Jorhat
 - Invited speaker for National Seminar on COVID 19: Impact on Aquaculture Practices, organised by Adikavi Nannaya University, Andhra Pradesh on 22nd June, 2021.

- Member of District level Implementation Committee for Prime Minister's *Matsya Sampada Yojana* (PMMSY), Jorhat District.
- Acted as resource person for virtual training programme on Potential of Integrated fish Culture in NE India organised by NFDB- NER on 9th Sept, 2021.
- Acted as External Expert, NRL Ideation for start up application on 8.1.2022.
- Resource Person for Farmer Scientist Interaction in the Regional Agri Fair, 2022 held at AAU during March 12-14, 2022.

2.7 College of Horticulture

2.7.1. Students

- Ms. Kareena Saikia received the Best graduate award for College of Horticulture in the academic year.

Important Events

A. Convocation of Assam Agricultural University

The 22nd Convocation of AAU was held on 3rd March, 2022 in Dr. MC Das Auditorium of the university headquarter. The gorgeous ceremony was attended by the Hon'ble Chancellor & His Excellency the Governor of Assam, Prof. Jagdish Mukhi; Hon'ble Minister of Agriculture, Horticulture including Food Processing, AH & Vety., Urban Development and Town & Country Planning, GoA, Mr. Atul Bora as the Guest of Honour; Dr. (Mrs.) Ajanta Borgohain Rajkonwar, Hon'ble Vice-Chancellor, Assam Women's University as the Special Guest; Hon'ble Member of Parliament (*Rajya Sabha*), Sri Kamakhya P Tasa; Secretary, Department of Agricultural Research and Education & Director General, ICAR & recipient of Doctor of Science (*Honoris causa*) Dr. Trilochan Mohapatra; Padma Shri & recipient of Doctor of Science (*Honoris causa*) Dr. Kushal Konwar Sarma; members of the Board of Management and Academic Council of the University; invited guests from across the state, faculty members and degree recipients. The nine constituent colleges comprising of four faculties produced 871 graduates, 510 Masters and 220 PhDs in the year. Altogether 1,601 students were awarded the degrees in this convocation out of which 1,369 received their degrees in the ceremony online or offline. The Hon'ble Vice Chancellor gave the details of the progress of the university in various fronts during the year.



Figure 3.1. Dignitaries in the dias, on the occasion of the 22nd Convocation of AAU



Figure 3.2. A student is receiving his degree in the 22nd Convocation of AAU

B. Inauguration of the New Campus of LCVSc

The second veterinary college of the state, named as Lakhimpur College of Veterinary Science (LCVSc) was established on 1st April, 1987 at a temporary site in Azad. Later, the college was shifted to a permanent campus at Joyhing, approx. 17 km away from the Azad campus. The newly constructed campus of LCVSc at Joyhing was inaugurated by Dr. H.B. Sarma, Hon'ble Chief Minister, Govt. of Assam on 15th February, 2022. Mr. Atul Bora, Minister of Agriculture and Mr. Keshab Mahanta, Science and Technology Minister were two other important Cabinet Ministers of the state who were also present in the occasion. The inauguration was followed up by a plantation programme by the Chief Minister. The Chief Minister also addressed the College community and motivated the students to work for the society.



Figure 3.3. The Hon'ble CM of Assam, Dr. H.B. Sarma, addressing the audience in the inauguration ceremony of LCVSc, Joyhing



Figure 3.4. The Hon'ble CM of Assam, Dr. H.B. Sarma, inaugurating the new building of LCVSc, Joyhing

C. Felicitation of the recipient of Shanti Swarup Bhatnagar Award, Dr. B.K. Saikia

Dr. Binay Kumar Saikia, the recipient of Shanti Swarup Bhatnagar Prize, 2022 and a Scientist from NEIST, Jorhat, was felicitated by Assam Science Society – Assam Agricultural University branch on 9th December, 2021. The function was attended by Hon'ble Vice Chancellor, AAU; Dean, FA; Dr. (Mrs.) P. Das, Retd. Professor of College of Community Science, and Dr. R.C. Borah, Retd. Professor of College of Agriculture. The President, Secretary and the members of the Executive Body of the branch were also present in the meeting. In response to the felicitation, Dr. Saikia thanked the university and explained about his works in brief, for the audience.



Figure 3.5. The dignitaries in the felicitation meeting of Dr. B.K. Saikia, CSIR-NEIST. Sitting from left, Dr. RC Bora, President, Axom Xahitya Xabha – Jorhat Branch & Retd. Professor, CA; Dr. J. Deka, Dean, FA and Advisor, Assam Science Society – AAU Branch (ASS-AAU); Dr. B.C. Deka, Vice-Chancellor, AAU; Dr. B.K. Saikia, the Shanti Swarup Bhatnagar awardee; Dr. (Mrs.) P. Das, Advisor, ASS-AAU & Professor, CCSs; and Dr. (Mrs.) R. Bhattacharyya, President, ASS-AAU and Professor, CCSc.

D. 74th Foundation Day of the College of Agriculture

The College of Agriculture, Jorhat, established in the year 1948, which is the foundation stone of today's Assam Agricultural University, celebrated its 74th Foundation day on 16th August, 2021, with limited programmes following the COVID-protocols. The programme was started by *Smriti Tarpan* by the Hon'ble Vice-Chancellor, Dr. B.C. Deka. Dr. J. Deka, the Dean of the College hoisted the College Flag. Both the Vice-Chancellor as well as the Dean said that the day is indeed a historic day; the Vice-Chancellor also mentioned the plan of the university to open a photo-gallery showcasing the proud history of the college. So far, the college has conferred BSc (Agri) degree to 4694, Masters to 2685 and PhD to 493 students. A virtual cultural programme was held in the evening, in which several alumni from inside and outside of the country took part.



Figure 3.6. Dean of CA, Jorhat, Dr. J. Deka is hoisting the flag of the College, while Dr. B.C. Deka, Hon'ble Vice-Chancellor and Dr. S. Alam, Professor, Dept. of Horticulture looks on

E. 48th Foundation Day of the College of Community Science

The College of Community Science, which was earlier known as the College of Home Science, celebrated its 48th Foundation Day on August 8th, 2021. The proud occasion was celebrated with a day-long programme. The College Flag was hoisted by the Dean; it was followed by Invocation. The Hon'ble Vice Chancellor, Dr. B.C. Deka presented the Foundation Day Speech in the virtual mode due to the pandemic situation. All the Heads, the faculty members, and the students attended the function.



Figure 3.7. A flex prepared informing about the 48th Foundation Day of the College of Community Science, Jorhat

F. The 74th Foundation Day of CVSc, Khanapara

The 74th Foundation Day of CVSc, Khanapara was celebrated on 19th August, 2021 with a daylong programme. The programme started with hoisting of the College Flag by the Dean of the Faculty. The Inaugural Speech was delivered the Hon'ble Vice Chancellor of the University, Dr. B.C. Deka. The Foundation Day lecture on the topic "Advances in Vaccine Research" was presented online by Dr. Girish Sarma, an alumnus of the College, presently working as the Vice President of Hygieia Biological Laboratories, USA. He also took part in a face-to-face programme with the students.

3.1. College of Agriculture, Jorhat

- As a part of the "Clean India" Campaign of Govt of India, a *Swachhta Abhiyaan* and a popular talk on "Waste to Wealth" was organised on October 12, 2021.

- Celebrated "Rastriya Ekta Divas" on 31st October, 2021 in collaboration with National Service Scheme.



Figure 3.8. The main entrance of CVSc, under illumination at night. The college has completed 74 years of its existence and service

- World Aids Day 2021 was celebrated by AAU NSS cell in NSS adopted village (Malati Gaon) on 1st December, 2021.
- A quiz competition was organized in the auditorium, as a part of celebration of *Azadi Ka Amrit Mahotsav* on 8th January, 2021.
- An Elocution competition was organized in the auditorium, as a part of celebration of *Azadi Ka Amrit Mahotsav* on 8th January, 2021.
- An one week International Workshop on 'Skill Development through Impact Analysis of Emerging Data with Agricultural Technology in Population Sciences' from 11th to 17th March, 2022.
- Several other programmes including awareness campaigns and students' welfare activities were organized by CA, Jorhat as a part of celebration of *Azadi Ka Amrit Mahotsav*.



Figure 3.9. An awareness programme organized by CA, Jorhat as a part of celebration of *Azadi Ka Amrit Mahotsav*

3.2. College of Veterinary Science, Khanapara

- Department of ILFC, CVSc, AAU, Khanapara organized an Online Training on Scientific Duck Rearing on 28th June, 2021, which was sponsored by DBT.
- Department of ILFC, CVSc, AAU, Khanapara organized a Training on Scientific Duck Rearing on 11th November, 2021 at Koniha, Rangia which was sponsored by DBT.
- Department of Veterinary Biochemistry, CVSc, AAU, Khanapara organized a Research Advisory Committee meeting of the Multidisciplinary Research Unit to select the research proposals submitted by the faculties of GMCH for onward submission to Department of Health Research, Govt. of India on 7th October, 2021 which was sponsored by Gauhati Medical College and Hospital, Guwahati.
- AICRP on PHET, Department of Livestock Products Technology, CVSc, AAU, Khanapara organized a State Level Training on Hygienic Production and Processing of Meat and Slaughter House By-Products Utilization for Entrepreneurship Development on 30th September and 1st October, 2021 sponsored by ICAR-AICRP on PHET, Khanapara Centre, CVSc, Khanapara at *Krishi Vigyan Kendra*, Kamrup, Kahikuchi.
- Department of Livestock Products Technology, CVSc, AAU, Khanapara under the DBT sponsored project on Value Chain on Duck Meat Processing organized a State Level One day Training cum Awareness Programme on 7th December, 2021, which was sponsored by ICAR-AICRP on PHET, Khanapara Centre, CVSc, Khanapara at *Sipahar Sahitya Sabha* Bhawan, Sipajhar, Darrang.
- Department of Livestock Products Technology, CVSc, AAU, Khanapara under the DBT sponsored project on Value Chain on Duck Meat Processing organized a State Level One day Training cum Awareness Programme on 22nd December, 2021, which was sponsored by ICAR-AICRP on PHET, Khanapara Centre, CVSc, Khanapara at *Krishi Vigyan Kendra*, Nagaon
- Department of Veterinary Medicine, CVSc, AAU, Khanapara, Guwahati-22, celebrated World Rabies Day-2021 and organized a quiz competition for final year BVSc & AH students, CVSc, AAU, Khanapara, on 28th September, 2021 which was sponsored by Ancalima Lifescience Ltd.
- Department of Veterinary Epidemiology & Preventive Medicine, CVSc, AAU, Khanapara, organized a National Webinar on World Zoonosis Day, 6th July, 2021 at CVSc, AAU, Khanapara, which was sponsored by Venky's India.
- Department of Veterinary Epidemiology & Preventive Medicine, CVSc, AAU, Khanapara, organized an outreach program on 'Livestock Health for Livelihood Augmentation & Women Empowerment in Hill Districts of Assam' during 15th to 18th March, 2022 which was sponsored by ICAR-NRC Meat, Chengicherla, Hyderabad-500 092.
- Department of Veterinary Anatomy & Histology, CVSc, AAU, Khanapara, organized a Two day Compulsory virtual refresher training course of IFS officers on 'Wildlife Forensics and Crime Control' on 21st and 22nd October, 2021 sponsored by Ministry of Environment, Forest & Climate Change, GOI, New Delhi.
- Department of Veterinary Anatomy & Histology, CVSc, AAU, Khanapara, organized the One week compulsory training course of IFS officers on "Utilizing Forensics for Wildlife Offences" on 21st to 25th March, 2022 which was sponsored by Ministry of Environment, Forest & Climate Change, GOI, New Delhi.
- Department of Animal Nutrition, CVSc, AAU, Khanapara, organized a Training programme on "Scientific Feed Formulation and Feed Analysis" on 17th to 25th January, 2022 which was sponsored by AH & Veterinary Department, Govt. of Meghalaya.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, celebrated World Rabies Day on 28th September, 2021 which was sponsored by NCDC, New Delhi.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, celebrated World Zoonoses Day on 6th July, 2021 which was sponsored by NCDC, New Delhi.

- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, organized a Regional Level Workshop cum Training Programme on Diagnosis, Prevention and Control of Foot and Mouth disease during 27th to 29th October, 2021 which was sponsored by ICAR-AICRP on FMD in collaboration with ICAR- DFMD.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, celebrated World Science Day on 10th November, 2021 which was sponsored by NCDC, New Delhi.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, organized a Training cum Awareness Programme on Emerging Zoonotic Diseases their Surveillance, Prevention & Control on 29th December, 2021 which was sponsored by NCDC, New Delhi.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, organized a Training cum Awareness Programme on Neglected Zoonotic Diseases their Surveillance, Prevention & Control at CVSc, AAU, Khanapara on 24th March, 2022 which was sponsored by NCDC, New Delhi.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, organized a Training cum Awareness Programme on Neglected Zoonotic Diseases their Surveillance Prevention & Control at RSETI, Nalbari on 29th March, 2022 which was sponsored by NCDC, New Delhi.
- Department of Veterinary Microbiology, CVSc, AAU, Khanapara, organized a Training cum Chick Distribution Programme under SCSP programme of AICRP ADMAS project at Dakhinpat, Nagaon on 25th March, 2022 which was sponsored by the NICRA programme of ICAR NIVEDI, Bengaluru.

- The department of Family Resource Management and Consumer Science organized state level training on 'Organic Soap Making' sponsored by Numaligarh Refinery Ltd. on 11th to 17th November, 2021.



Figure 3.10. Training on Organic Soap making in the CCSc, Jorhat

- A state level symposium was organized on the occasion of 'Ozone Day' on 16th September, 2021.
- The department of Food Science and Nutrition organized series of National webinar on 'World Breastfeeding Week' from 1st to 7th August, 2021 on the Theme: 'Protect Breastfeeding: A Shared Responsibility'. It was sponsored by Nutrition Society of India (NSI).



Figure 3.11. An information flex prepared by CCSc to observe the World Ozone Day

3.3. College of Community Science, Jorhat

- The department of Extension Education and Communication Management organized a poster competition in connection with World Environment Day on 5th June, 2021 and organized a Poster presentation in connection with World Diabetic Day on 14th November, 2021.

- National Webinar on Maternal and Child Nutrition was organized by the department of Food Science and Nutrition on the occasion of National Nutrition Month on 21st September, 2021. The programme was sponsored by National Commission for Women, Govt. of India, New Delhi.

- The department of Human Development and Family Studies organized National Webinar that was sponsored by NAHEP, AAU on 'Healthy ageing: role of youth and community' on 1st October, 2021.



Figure 3.12. CCSc, Jorhat organized a NAHEP-sponsored National Webinar on Healthy Ageing : Role of Youth and Community on 1st February, 2021

- Training on 'Life Skill Education' was conducted from 1st to 8th March, 2022. The training was sponsored by IDP-NAHEP, AAU.



Figure 3.13. Two views from NAHEP-sponsored Training on Life Skill Education, organized by CCSc, Jorhat

- The department of Textiles and Apparel Design organized series of national lectures sponsored by IDP-NAHEP, AAU.
- Lecture on 'Scope and emerging opportunities in the field of Apparel Designing for Entrepreneurship development and coping strategies for the challenges ahead', on 22nd July, 2021.
- Lecture on 'Wealth from vegetable fibres grown in north eastern part of India for entrepreneurship' on 24th July, 2021.
- Lecture on 'Reduce, reuse and recycle - A segment of sustainable fashion entrepreneurship development' on 23rd July, 2021.

3.4. College of Fisheries, Raha

- Two days specialized training programme on "Fish processing and value addition" was held on 17 & 18 February, 2022.
- Writershop on Fish Knowledge Bank was held on 28th October, 2021.
- Zonal Worksop on under SCoPIF-III on 20th March, 2022.



Figure 3.14. LCVSc celebrates the National Science Day, 2022

3.5. Lakhimpur College of Veterinary Science, Joyhing

- LCVSc observed the National Science Day 2022 on 28th of February, 2022 with the theme "Integrated Approach in Science & Technology for a Sustainable Future". Dr. Prasanta K. Pathak, Senior Scientist & Head, KVK, North Lakhimpur

graced the occasion as Guest speaker and had a lively interactive session with the students. A competition was organized as a part of the program where students gave presentations on different relevant topics.

3.6. Biswanath College of Agriculture, Biswanath

- A virtual Cultural Programme, *Nite Pulse* was organized by the Students' Society, BNCA on 24th August, 2021.
- World Environment Day was observed on 5th June, 2021. An Essay writing competition was held on the topic, 'The Relevance of world environment day in the present context of COVID-19'.
- NSS Day was observed on 24th September, 2021.
- *Rashtriya Ekta Divas* was organized on 31st October, 2021, with programmes like 'Run for Unity'.
- Constitution Day was observed on 26th November, 2021.
- Agricultural Education Day was observed on 3rd December, 2021 with an Essay writing competition on the topic, 'Agricultural Education in present day context'.
- Rivers of India Programme was held on 17th December. In this programme, the stream run within a nearby village, Dagaon, and few cooperative ponds were cleaned.



Figure 3.15. Rivers of India Programme in Dagaon

3.7. SCS College of Agriculture, Dhubri

- Awareness Camp for adolescent girls on sanitation was held on 30th March, 2022 at Choibari, Hindupara.
- Farmers'- Scientist Interaction & Awareness on Plant Variety Registration was held on 13th August, 2021 at KVK-Dhubri.



Figure 3.16. Awareness Camp for adolescent girls on sanitation

- Awareness cum Training Programme on "Nutrition Garden and Human Nutrition" was organized on 17th November, 2021 at Khutapara village.

3.8. College of Horticulture and Farming System Research

- National Girl Child Day 2022 organised on 24th January, 2022 where selfie/photography competition.
- The week-long NSS special week was organized from 28th February to 6th March 2022 in NSS adopted village, Malati Gaon.
- Training on "Improving Livelihood of Rural Youths and Women Groups of Kokrajhar District through Horticulture" was held from 28th February to 4th March, 2022 at NTPC, Salakati.
- NAHEP-sponsored short training was held on "Sensitization on entrepreneurship development for agro-based industries" from 1st to 3rd March, 2022 at AAU, Jorhat.

Education

4.1. Faculties

Assam Agricultural University is the only agricultural university of the state, and the first agricultural university in the northeastern India. Education is the frontier mandate of the University like any other agricultural university in the country. There are four faculties in the University to carry out this mandate. They are (1) Faculty of Agriculture with its headquarters at Jorhat (2) Faculty of Veterinary Science at Khanapara (3) Faculty of Community Science at Jorhat and (4) Faculty of Fishery Science at Raha, Nagaon. Colleges of Horticulture and Sericulture are under the Faculty of Agriculture.

4.2. Degree Programme

Assam Agricultural University offers courses in six areas of science, viz., Agriculture, Veterinary, Community Science, Fishery Science, Horticulture and Sericulture. Bachelor's Degree is offered in all the six areas while postgraduate (Master's and Ph. D.) Degree is offered in the first four areas, viz., Agriculture, Veterinary, Community Science and Fishery Science. With the implementation of the 5th Deans Committee's recommendation from the academic session 2016-17 (in all the Faculties except Veterinary), the 4 year Bachelor's Degree is broken into two parts. The first three consecutive years are devoted to course work and in the final year, the students are exposed to the 'Student READY' (Rural Entrepreneurship Awareness Development Yojana) Programme of 40 credits – 20 credits each in the 7th and 8th semester. The duration of the B.V.Sc. Degree also has been increased in the same academic session from 5 years to 5 ½ years comprising course work of 4 ½ years and internship for 1 year. Besides, the nomenclatures of the degrees have also been changed in the areas of Agriculture, Community Science, Horticulture and Sericulture in accordance with the recommendations of the ICAR.

In addition to the degree courses, the University also offered 15 Certificate courses during the year through its Directorate of Extension Education, Jorhat. These courses include (i) Aquaculture Production & Management (ii) Tea Production Technology&Management(iii)Cutflowerproduction and Flower Design (iv) Bakery (v) Designing and Value Addition of Marketable Products for Home Furnishing (vi) Food Preservation (vii) Apiculture

(viii) Management of Day Care Centre (ix) Nurshing Management of Horticultrual Crops (x) Dyeing and printing of Textiles (xi) Dairy farming and fodder production (xii) Floral Design (xiii) Biofertilizer Production (xiv) Poultry Farming, and (xv) Plant Tissue Culture.

4.3. Course Curricula

Assam Agricultural University is implementing the undergraduate Course Curricula prescribed by the 5th Deans Committee of ICAR in the Faculty of Agriculture, Community Science and Fishery Science. However, the colleges under the Faculty of Veterinary follow the course curricula approved by the Veterinary Council of India as per the MSVE, 2016. The present UG Curricula is a market/time driven curriculum as it includes the 'Student READY' Programme (prescribed by the ICAR 5th Deans Committee from the year 2016-17) designed to develop much needed skill and entrepreneurial mind-set among the graduates to take up self-employment. The 'Student READY' Programme is being offered in all the colleges of the University since the academic Session 2016-17.

4.4. Intake and Output

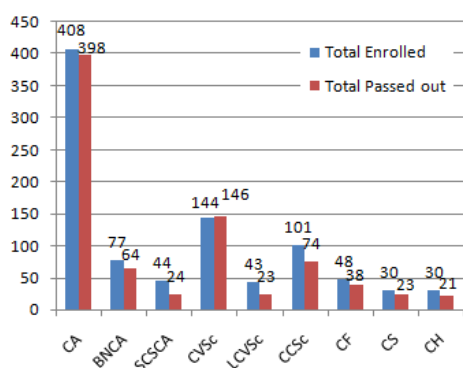
During 2020-21, 925 students were admitted in the University of which 601 in Bachelor's, 246 in Master's and 78 in Ph.D. degree programmes. In regards to output, 811 students obtained degrees during the year, of which 420 were Bachelor's Degree, 298 Master's Degree and 93 Ph.D. Degree holders. The constituent college wise student enrolment and output under different degree programmes is shown in Table 4.1.

For easy representation in this section and elsewhere, the following abbreviations would be used for different the colleges under AAU.

Colleges	Abbreviations
College of Agriculture, Jorhat	CA
Biswanath College of Agriculture, Biswanath	BNCA
SCS College of Agriculture, Dhubri	SCSCA
College of Veterinary Science, Khanapara	CVSc
Lakhimpur College of Veterinary Science, Joyhing	LCVSc
College of Community Science, Jorhat	CCSc
College of Fisheries, Raha	CF
College of Sericulture, Titabor	CS
College of Horticulture and Farming System Research, Nalbari	CH

Table 4.1. Fresh students enrolled and students passed out in different degree programmes of the University during 2021-22

Colleges	Bachelor's Degree		Master's Degree		PhD Degree		Total	
	Enrolled	Passed out	Enrolled	Passed out	Enrolled	Passed out	Enrolled	Passed out
CA	182	139	167	193	59	66	408	398
BNCA	45	42	32	22	-	-	77	64
SCSCA	44	24	-	-	-	-	44	24
CVSc	121	82	16	52	7	12	144	146
LCVSc	43	23	-	-	-	-	43	23
CCSc	77	41	15	19	9	14	101	74
CF	29	25	16	12	3	1	48	38
CS	30	23	-	-	-	-	30	23
CH	30	21	-	-	-	-	30	21
Total	601	420	246	298	78	93	925	811

**Figure 4.1. Total fresh students enrolled and students passed out in different degree programmes of the University during 2021-22**

4.5. Total Students on Roll

Altogether, 2,833 students were on roll in the University during 2021-22 academic year of which nearly 55 per cent were girl students (1,574). Out of the total students on roll, 2,148, 382 and 303 were in

Bachelor's, Master's and PhD degree programmes, respectively. The college wise details of total and girl and boy students are given in Table 4.2 and Figure 4.2.

4.6. Fellowships Awarded to Students, and National Tests Qualified

During the year, 247 students of the University were either awarded fellowships or qualified for national or state test of which 6 were awarded Junior Research Fellowship, 28 Senior Research Fellowship, 95 qualified for NET, 34 students received DBT fellowship and nearly 60 students received other fellowships like (*Ishan Uday*, Post-matric etc.). In addition, 82 students (UG & PG) were awarded merit scholarships during the year. Two students qualified for the ARS mains.

Table 4.2. Total students on roll in different colleges of the University during 2021-22

Colleges	Bachelor's Degree			Master's Degree			PhD Degree			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
CA	281	316	597	48	119	167	51	112	163	380	547	927
BNCA	87	93	180	23	39	62	-	-	-	110	132	242
SCSCA	89	71	160	-	-	-	-	-	-	89	71	160
CVSc	249	267	516	39	37	76	43	33	76	331	337	668
LCVSc	86	74	160	-	-	-	-	-	-	86	74	160
CCSc	85	146	231	2	43	45	5	45	50	92	234	326
CF	51	50	101	18	14	32	13	1	14	82	65	147
CS	41	58	99	-	-	-	-	-	-	41	58	99
CH	47	57	104	-	-	-	-	-	-	47	57	104
Total	1016	1132	2148	130	252	382	112	191	303	1256	1574	2833

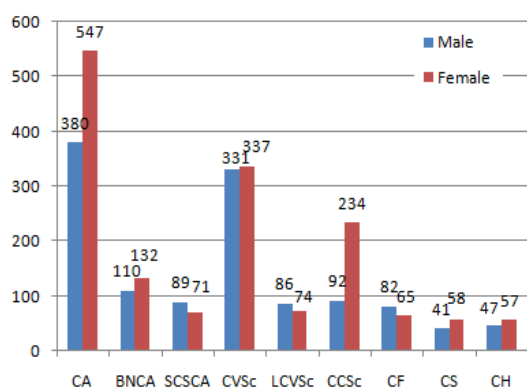


Figure 4.2. Total students on roll in different colleges of the University during 2021-22

4.7. Publications

The teachers and scientists of the University have published altogether 905 publications during the year. Out of these 449 were research papers in journals, 101 research abstracts in journals and proceedings, 18 books, 82 practical manuals, 109 book chapters, 36 popular articles, 105 technical bulletins and 5 other publications. College of Veterinary Science, Khanapara had the maximum number of publications (272), which was closely followed by College of Agriculture, Jorhat with 259 publications. The college wise breakup of the publications is shown in Table 4.3 and depicted in Figure 4.3.

Table 4.3. Publications from different constituent colleges of the University during 2021-22

Particulars	Number of Publications										Total
	CA	BNCA	SCSCA	CVSc	LCVSc	CCSc	*CFSc	CS	CH		
Research papers in journals	104	34	25	163	28	51	15	15	14	449	
Research abstracts in proceedings	27	6	4	39	1	6	8	1	9	101	
Books	5	5	-	3	2	-	3	-	-	18	
Practical manual	4	-	36	26	-	13	-	2	1	82	
Book chapters	28	21	8	6	-	27	10	1	8	109	
Popular articles	22	2	-	12	-	-	-	-	-	36	
Technical bulletin	69	3	-	22	-	5	-	-	6	105	
Others	-	-	-	1	-	-	-	-	4	5	
Total	259	71	73	272	31	102	36	19	42	905	

* including Fishery Research Centre, AAU, Jorhat

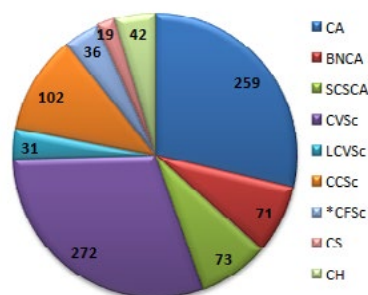


Figure 4.3. Publications from different constituent colleges of the University during 2021-22

4.8. Human Resource Development

Altogether 497 teachers/scientists of the University were deputed for attending regional/national/international level training/workshop/seminar etc during 2021-22. The College of Veterinary Science deputed the maximum number of teachers (162). The college wise and event wise breakup of the number of teachers deputed from the University is given in Table 4.4 and Figure 4.4.

Table 4.4. Teachers deputed for attending trainings, seminars, workshops, conferences etc. during 2021-22

Particulars	No. of teachers attending										Total
	CA	BNCA	SCSCA	CVSc	LCVSc	CCSc	*CFSc	CS	CH		
International training	4	3	1	4	2	0	-	-	-	14	
National training	51	10	15	28	16	19	9	2	15	165	
Regional training	13	2	-	7	-	3	6	-	-	31	
International seminar	-	6	1	-	-	0	-	-	-	7	
National seminar	-	20	12	3	2	24	4	-	-	65	
Regional seminar	-	-	1	-	-	0	-	-	-	1	
International conference	-	2	-	1	-	3	-	-	1	7	

Particulars	No. of teachers attending									Total
	CA	BNCA	SCSCA	CVSc	LCVSc	CCSc	*CFSc	CS	CH	
National conference	-	4	6	12	-	2	-	-	4	28
Regional conference	-	1	-	-	-	0	-	-	-	1
International workshop	2	2	1	2	-	0	1	1	1	10
National workshop	12	4	-	2	1	3	3	1	1	27
Regional workshop	5	-	-	-	1	3	4	-	-	13
Others	2	4	-	103	-	19	-	-	-	128
Total	89	58	37	162	22	76	27	4	22	497

* including Fishery Research Centre, AAU, Jorhat

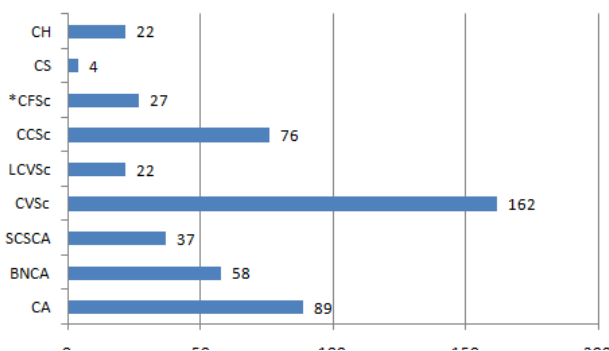


Figure 4.4. Teachers deputed for attending trainings, seminars, workshops, conferences etc. during 2021-22

4.9. Trainings/ Seminars/ Workshops Organized

The University organized 158 regional /national level trainings/ workshops/ seminars etc. during the year. The College of Agriculture, Jorhat (organizing 66 events) was ahead of other colleges of the University in organizing such events. The breakup of the organized events in different colleges of the University is presented in Table 4.5 and Figure 4.5.

Table 4.5: Training, seminar, workshop organized in the colleges during 2021-22

Particulars of Events	Training, seminar, workshop etc organized (No)								
	CA	BNCA	SCSCA	CVSc	LCVSc	CCSc	*CFSc	CH	Total
International training, Seminar, Workshop	6	-	-	1	-	-	-	-	7
National training Training, Seminar, Workshop	30	-	-	2	-	2	6	1	41
Regional training Seminar, Workshop	13	1	-	5	1	1	9	-	30
State training, Seminar, Workshop	17	6	2	14	2	19	3	3	66
Others	-	-	-	5	-	9	-	-	14
Total	66	7	2	27	3	31	18	4	158

* including Fishery Research Centre, AAU, Jorhat

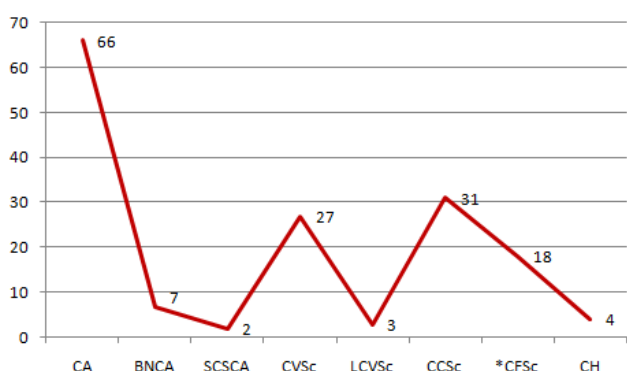


Figure 4.5: Total number of training, seminar, workshop etc. organized in the colleges during 2021-22

4.10 Library

The Central Library, located at the University headquarter in Jorhat, is called the Rev. B M Pugh Library (RBMPL). RBMPL is serving as the knowledge resource center on Agriculture and allied areas since its inception in the year 1969 to the diverse user community consisting of students, teachers/scientists, research scholars and the staff. The RBMPL offers it's Library and Information Services to the four colleges housed within the University Head Quarter, Jorhat viz., College of Agriculture, College of Community Science, College of Horticulture and

College of Sericulture. Besides RBMPL, the University has its branch libraries in the following colleges such as College of Veterinary Science, Khanapara, Guwahati; College of Fisheries Science, Raha; Biswanath College of Agriculture, Biswanath Chariali; Lakhimpur College of Veterinary Science, Joyhing, Lakhimpur and SCS College of Agriculture, Dhubri.

4.10.1 Library Holdings

The total library holdings in the University during 2021-22 were 2,75,307 which include 2,02,608 text books, 39,564 reference books; 39 journals; 302 periodicals and 19,996 back volume of periodicals, 4,581 e-books, 2,633 e-journals and 5,584 theses. The Rev. B. M. Pugh Library, Jorhat constitutes the maximum (approx. 76 per cent) of the total holdings of the University. College-wise details of

the types of printed collection during the year are given in Table 4.6. The e-resources available in the RBMPL are accessible to registered users from the other colleges and research stations through the EZ-Proxy server. During the year 2021-2022, about 9,000 nos of text book have been weeded out during stock verification in the library. ICAR fund had not been received for procurement of new books in the year; however, 204 nos of text book added in text book bank section of the library.

On the other hand, in the library in CVSc, during the year, 45 MVSc dissertations and 10 PhD theses were included. Again, in the library in CFSc, during the year, 25 MFSc dissertations and 1 PhD theses were added, and in the BNCA library, 7 Masters theses were added.

Table 4.6: Books and other printed collection of the libraries of constituent colleges of the University during 2021-22

Particulars of collections	Libraries of the constituent colleges of the University							Total
	CA	BNCA	SCSCA	CVSc	LCVSc	CFSc	CH	
Text Books	1,46,242	10,985	3,678	33,300	3,602	5,502	1,401	2,04,710
Reference Books	36,108	2,716	-	-	100	640	-	39,564
Journals	33	4	-	-	-	-	2	39
Periodicals	6	8	-	-	-	291	-	305
e - book	3,924	-	-	470	-	86	101	4,581
e - journals	2,633	-	-	-	-	-	-	2,633
Back Volume of Periodicals	16,911	210	-	2,720	-	155	-	19,996
Theses	3,903	76	-	1,567	-	38	-	5,584
Total	2,09,760	13,999	3,678	38,057	3,702	6,712	1,504	2,77,412

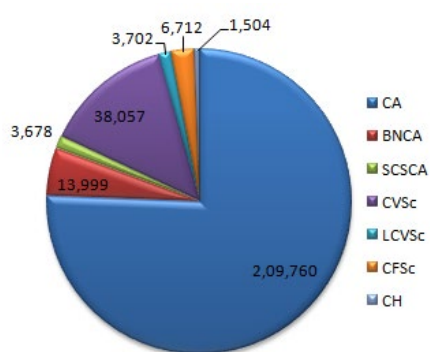


Figure 4.6: Books and other printed collection of the libraries of constituent colleges of the University during 2021-22

4.10.2 Rev. B M Pugh Library and its Activities

Some of the facilities/services of “Rev. BM Pugh Library (RBMPL)” and its activities during the year under report are discussed below.

4.10.2.1 E-Resources Availability

- **CeRA:** Consortium of e-resources in Agriculture: Access to full text electronic journal on Agriculture and allied areas. About 3765 e-journals are available under CeRA and Access is available to full text 1174 e-books along with 17 e-book series of Elsevier.

URL: <http://cera.iari.res.in/>

URL: <http://jgateplus.com/search/>

- **DeLCON:** DBT-Electronic Journal Consortium: About 900 full text journals are covered under DeLCON

URL: <http://delcon.gov.in/eresources.htm>

- **Krishprabha:** It is a Full text electronic Database of Agricultural Doctoral dissertations submitted

by research scholars of the 45 State/ Deemed Agricultural Universities during the period from 1.1.2001- 31.12.2006

<http://14.139.232.167:8080/equestthesis/IPLogin.do>

<http://krishikosh.egranth.ac.in/handle/1/466>

- **Krishikosh Repository:** It is a digital repository of accumulated knowledge in agriculture and allied sciences, having collection of old and valuable books, old journals, thesis, research articles, popular articles, monographs, catalogues, conference proceedings, success stories, case studies, annual reports, newsletters, pamphlets, brochures, bulletins and other grey literatures spread all over the country in different ICAR Research Institutions and State Agricultural Universities (SAUs).

<http://krishikosh.egranth.ac.in/>

- CAB Abstract available online at www.cabdirect.org and those from 1972 to 2013 are available on CD ROM at RBMP Library, AAU.
- International E-Book Packages, CRC Press, Taylor & Francis (617)
 1. AGRICULTUREnetBASE (288)
 2. NUTRITIONnetBASE (112)
 3. VetnetBASE(147)
 4. Agri Economics netBase (70)

Online Access Link: www.crcnetbase.com

- Cabi E-Books on Veterinary(166)
- Indian E-Book Packages (456)
 1. E-Books on Horticulture (101)
 2. E-Books on Agriculture (223)
 3. E-Books on Aquaculture and Fisheries (10)
 4. E-Books on Veterinary (122)

Online Access Link: www.asapglobe.com

- India AgriStat Database

<http://www.indiaagristat.com/default.aspx>
- ISO Agriculture in CD ROM (575 E-Resources)

Online Access Link: <http://standards.bsbedge.com>

E-books & E-Journals of Rev B.M Pugh Library are accessible remotely through OCLC Ezproxy software for all registered members including those from outstations of AAU.

Library Membership to Enrolled Users: In Circulation section, readers (Library Users) can get themselves registered as members of the library by abiding library rules. After enrolment as bonafide member, they have the privilege to borrow books (Figure 4.7). Books are issued for a period of one month. Number of books to be issued for different categories of students are (i) Under Graduate students : 5 books (ii) Post Graduate students : 7 books and (iii) Research Scholars : 10 books.

4.10.2.2 User Service Provided

Users Enrolled: A total of 2644 users have been enrolled in the library during the year which include students (1581 MSc / PhD students in Agri / Community Science), Faculty/scientist (523) and Non-teaching/others (540).

- **Consultation Services to Outside Scholars:** The library provides consultation facilities to outside scholars on the basis of letter of introduction. Consultation fee @ Rs 10/- per day and Rs 50/- per month is charged.



Figure 4.7. Users in the periodical section in the RBMP Library, Jorhat

- **Library Services:** The library provides the services such as Lending service, Reference/Information service, Current Awareness Service, Documentation service, Internet/E-mail facility, E-journal/ eBook and CD-ROM database searching facility, Resource-sharing

facility, User education programme, Document delivery service and Reprography facility.

- **Lending Service to Readers through Text Book Bank:** This section of the library provides minimum five to six books to every enrolled student for the semester and the number of borrowed books depends upon availability of books in this section.
- **Library Service to Patron:** The RBMPL provides service to patrons with an average of 10,000 students and 400 faculty & research scholars annually. The number of faculties and students that used library during the year was 600 and 12,936, respectively.

Table 4.7. Some e-resource packages available with AAU

▶ ASAP Indian e-Books	▶ India AgriStat Database
▶ Astral e-Books	▶ Indianjournals.com
▶ Bibliotex e-Books	▶ NIPA e-Books
▶ CAB Direct	▶ Taylor & Francis e-Books
▶ Cambridge Core	▶ Wiley Online
▶ EBSCO e-Books	▶ WT e-Books
▶ Elsevier e-Books	

- **Services to Visitors:** An average of 50 visitors (both national and international) visit the library annually for accessing information in their respective areas of interest and discipline. The number of visitors during 2017-18 was 60 which were around 20 per cent higher than that of 2016-17.
- **Internet Services:** The internet browsing facility is available in the library premises on the basis of a user account created in the AAU Portal which is strictly provided by the System Administration i.e. ARIS cell of the AAU. There is also the provision of access to the internet by the visitors on request of a guest account created by ARIS accordingly. There were altogether 4206 internet users during the year which is about 10 per cent higher than the previous year (Figure 4.8).
- **User Education Programme Provided:** The RBMPL, apart from providing dedicated user service, is also extending quality user education programmes. This include:

- ▶ **Library orientation** which is one of the most common user education programmes is provided to the users of AAU, in particular the under graduate patrons, maintaining a proper discipline-wise streaming in the early part of their formal vocations.

- ▶ **Education on Library and Information Service in the form of a non-credit compulsory course (PGS 501)** is also conducted to impart appropriate knowledge in the field of information retrieval and dissemination, technical writing stressing more on literature review and citation analysis as well as the proper techniques in browsing the different resources present in the library.

- **On-request User Service:** Most users, the faculty and research scholars, in particular enjoy the on request information service from CeRA in print form for those information resources are available only in electronic form and are not downloadable.
- **Automation and Digitization:** Recently, Rev B. M. Pugh Library has implemented library automation and digitization process with KOHA LMS software under ICAR library strengthening project. Presently KOHA LMS database has been migrated to Open LX Platform-Best Book Buddies (on Cloud) as per ICAR instructions. Proposal has been made to include all the libraries of the outstation constituent colleges under library automation in a single platform. Rev B M Pugh Library is already a member of *Krishikosh / E-granth* repository and Ph.D theses uploading on *Krishikosh* is going on.
- **RFID Library Security System:** Library has been implementing the Radio Frequency Identification (RFID) security system for security of rare and reference documents of the library.
- **Book Bank Facility:** There is a Book Bank collection which is provided by the Directorate of Schedule Caste for the benefit of Scheduled Cast students of the College. They can issue two books from the collection for the whole semester.
- **Internet Services:** The internet browsing facility is available in the library premises.



Figure 4.8. The book lending desk in the RBMP Library, Jorhat

4.11. Students' Welfare

4.11.1. College of Agriculture

4.11.1.1. Cleanliness Drive

NSS Unit Assam Agricultural University, Jorhat organized a cleanliness drive at Jorhat campus. All NSS volunteers of Jorhat participated in the "Clean India Campaign" in Hostel No 7, 8, 11 & 12.

4.11.1.2. Waste to Wealth

As a part of the "Clean India" Campaign of Govt of India, a *Swachhta Abhiyaan* and a popular talk on "Waste to Wealth" was organised on October 12, 2021 collaboratively by EEI (NE Region), ICAR-NBSS, Jorhat centre and National Service Scheme of AAU, Jorhat. Dr. U.S. Saikia, Centre Head and Principal scientist, Dr. S. Borua, Faculty, EEI, Dr. A. Das, Program Officer, NSS, Dr. B.K. Borah, department of Agril Biotechnology and Secretary, Assam Science Society-AAU Branch, and several staff and student volunteers participated in the awareness talk and swachhta abhiyaan in and around AAU campus.

4.11.1.3. Rastriya Ekta Divas

Celebrating *Rastriya Ekta Divas* by National Service Scheme, Cell, Assam Agricultural University, Jorhat. To convey the message of national unity and integrity among the fellow countrymen the "RUN FOR UNITY" has been organised by the NSS cell. The NSS volunteers of four colleges units (College of Agriculture, College of Community Science, College of Horticulture and College of Sericulture) of AAU, Jorhat, took the pledge of national unity and integrity.

4.11.1.4. Constitution Day

NSS Unit, Jorhat celebrated the Constitution Day on 26th November, 2021.

4.11.1.5. Rivers of India Week

CA, AAU, observed the closing ceremony of 'Rivers of India Week' as per GOI directives with few selected NSS volunteers, highlighting the importance of Rivers. Especially the Sacred Rivers in India including our Mighty Brahmaputra and their 'Role in Human Civilization'.

4.11.1.6. World AIDS Day

World AIDS Day, 2021 was observed by AAU NSS cell in NSS adopted village (Malati Gaon) where more than 100 volunteers and villagers participated. Two street plays were presented by volunteers to create awareness among the villagers. Red ribbons were distributed to villagers as well as AAU members.

4.11.1.7. 75 yrs of India's Independence in Azadi Ka Amrit Mahotsav

Dr. Sharmishtha Borthakur Principal Scientist, IARI, ICAR gave an interesting talk on "Career Opportunities for Agri Graduates" to our students at AAU Auditorium today as we are celebrating 75 years of India's Independence in *Azadi Ka Amrit Mahotsav*. Students were sensitized and came forward to get further information. It was motivating to listen to the first direct ARS scientist from Assam. DSW and NSS PC Dr. R.P. Bhuyan sir and POs Shri A. Das and Dr. S. Borua were present as we observed International Human Rights Day too.

4.11.1.8. Awareness Programme on the Harmful Effects of Tobacco Use and the Role of Students in Effective Tobacco Control

As a part of the celebration of *Azadi Ka Amrit Mohatsav*, National Service Scheme Cell, Assam Agricultural University organized a one-day seminar on "Awareness Programme on the Harmful Effects of Tobacco Use and the Role of Students in Effective Tobacco Control". The program was organized in convergence with District Tobacco Control Jorhat. Dr. Bhaktimay Bhattacharjee, District Nodal Officer, DTCC, Jorhat and Mr. Rudhir Prakash Sarma, Divisional Coordinator, Upper Assam Division,

National Tobacco Control Programme (NTPC) act as the resource person for the seminar.

4.11.1.9. Republic Day Parade Camp, 2022

One student from AAU participated at Republic Day Parade Camp. The name of the NSS Volunteer is Aarhata Nath who is a 4th year student of the College of Sericulture, AAU, Jorhat and also Jagabrat Hazarika a 3rd Year Student, College of Agriculture, AAU, Jorhat were selected from a large number of other volunteers from the Eastern Zone in the NSS Pre-Republic Day parade Camp held at CIT Kokrajhar to represent Assam in the NSS Republic Day parade camp 2022 held from January 1 to 31 and March in NSS contingent in the Republic Day Parade on January 26, 2022.

The Chief Minister of Assam, Dr. Himanta Biswa Sarmah had an interaction with the selected students in Guwahati.

4.11.1.10. NSS Special Camp

NSS Special Camp 2022 at Malati Path Gaon Borbhetta, Jorhat (Adopted Village) and also various places from 28th February to 6th March, 2022 organized by NSS Cell, Assam Agricultural University, Jorhat-13.

4.11.1.11. National Youth Conference and National Inter-University Debate Competition

Four students have been nominated to participate in the National Inter-University online Debate competition from AAU during 14-15, 2022. They are: Mr Swarup Upadhyaya, College of Agriculture; Ms

Habiba Easmin, College of Fisheries Science; Mr. Rupal Singh, College of Agriculture; an Mr. Kunwar Vishal Singh, College of Agriculture; all under the guidance of Dr. K.N. Das, dept of Soil Science, CA.

On the occasion of *Azadi Ka Amrit Mahotsav* on 8th January on the AAU Auditorium the Students of all Colleges were participated on Quiz Competition.

4.11.1.12. Memorandum of Association of AAU with the Assam Cricket Association

Assam Agricultural University has entered into a Memorandum of Association with the Assam Cricket Association (under BCCI) to allow interested students to participate in cricket matches in a better and suitable environment. Assam Cricket Association conducted the matches from 17th Feb. to 24th February, 2022 at AAU, Jorhat and Tezpur University, Napaam, Sonitpur. The tournament was played in T20 format and minimum players per squad is 14.

4.11.1.13. Others

- Rupak Jena, a Ph.D student bagged “Man of the Series” in the all Assam Inter-University Cricket Tournament.
- Nidhishree, a student of M.Sc. (Agri), participated SCIENTIFIQUE: Oral presentation under School of Humanities and Social Sciences during Research and Industrial Conclave 2022 organised by Students’ Academic Board, IIT, Guwahati.
- A Cultural Night was held on “Skill Development through Impact Analysis of Emerging Data with Agricultural Technology in Population Sciences” on March 17th, 2022.



Figure 4.9. The Chief Minister of Assam along with the selected students from the state for the Republic Day Parade

4.11.2. College of Veterinary Science, Khanapara

4.11.2.1. 6A-side Cricket Tournament

- Late Achyut Kr. Tamuli Memorial 6 A-Side Day and Night Cricket Tournament was held from 12th to 13th March, 2022, in the Assam Type Hostel playground with the following scores:
- Best Team (Boys) : Main Hostel
- Runner-up (Boys) : Fusion 6 (Alumni)
- Best Team (Girls) : Dhumuha (Girls' Hostel No. 1)
- Runner-up (Girls) : Mithun Bomb (Girls' Hostel No. 1)

The Cricket Tournament was inaugurated by Shri Manoj Saikia, Chairman, ALPCO as Chief Guest.

4.11.2.2. Achievement by Students

Students of the CVSc, AAU, Khanapara, participated in various national and state level events and brought laurel to the College and the AAU as well.

4.11.2.2.1. Participation in Inter-University Tournament

The following students of CVSc, AAU, Khanapara participated in the Inter-University Tournament held at Tezpur University and Assam Agricultural University from 13th to 19th February, 2022: Dr. Ekramul Hoque, PhD 3rd year; Dr. Syeed Owais, MVSc 1st year; Mr. Krishna Kundu, BVSc 5th year; Mr. Anup Kumar, BVSc 4th year.

4.11.2.2.2. Raksha Mantri Recommendation

Senior Under officer (SUO) Kh. Monita Singha student of 4th year BVSc & AH class, and a cadet of the College of Veterinary Science have been selected from the NE Directorate for *Jivan Raksha Padak* (Fig.1) held on 22nd January, 2022 at HQ DGNCC Camp Parade Ground, Delhi Cantt.

4.11.2.2.3. Participation in Quiz and Article Writing Competition

Mr. Azizur Rahman, a second year BVSc & AH student of CVSc bagged several awards in debating and article writing completion organized by various institutes (Fig.2).



Figure 4.10. Raksha Mantri recommendation to Kh. Monita Singha



Figure 4.11. Mr. Azizur Rahman receiving the award from the organizer of Assamese Sayeed Kalyan Nyas

Position/ Prize	Organized by
3 rd Position in All Assam Article Writing Competition- 2020	Madhab Cultural Trust
1 st Position in All Assam Article Writing Competition- 2021	Baitamari Student Union
1 st Prize in All Assam Article Writing Competition- 2021	Farkhating College
2 nd Prize in All Assam Article Writing Competition- 2021	All Assam Law Students' Union
2 nd position in All Assam Article Writing Competition- 2021	Indian Students' Federation
3 rd Position in All Assam Article Writing Competition- 2021	Cotton University AASU Unit
2 nd Position in All Assam Article Writing Competition- 2021	Assamese Syed Kalyan Nyas
2 nd Position in All Assam Quiz Competition 2021	Assamese Syed Kalyan Nyas
Special Jury Award of All Assam Essay Competition -2022	Nalbari AASU Unit

4.11.2.2.4. Participation in Dibrugarh Horse Show

Cadets from CVSc, Khanapara, participated in Dibrugarh Horse Show held from 7-9th January, 2022, and brought laurels by winning medals in various events (Fig. 3). Senior Under officer (SUO) Prakash Nehra won silver medal, bronze medal and 4th position in cadet and police jumping competition, open top score and open tent pegging event. Mharoni Jami won bronze medal in ladies hacks competition.

4.11.2.2.5. Day Cadre Training Camp

Cadets of 2nd and 3rd year class of College of Veterinary Science participated in Day Cadre Training Camp held at CVSc playground for 5 and 7 days duration, respectively in order to make them eligible for appearing in B and C certificate examination (Fig. 4).

4.11.2.3. 74th Foundation Day of College of Veterinary Science, AAU, Khanapara

The 74th Foundation Day of the College of Veterinary Science, AAU, Khanapara, was organized on 18th August, 2021 (Wednesday). Dr. Bibekananda Saikia, Dean, Faculty of Veterinary Science hoisted the College Flag amidst presence of all students, teachers and employees at 8:00 am.

Dr. Saikia delivered the welcome address followed by Foundation Day Lecture on the topic "Advances in Vaccine Research" delivered by Dr. Girish Sarma, Vice-President, Research and Development, Hygieia Biological Laboratories, Woodland, California, USA. There was an interactive session between the College fraternity and Dr. Sarma following the lecture. A colourful Cultural programme was also organised in the evening on the occasion, in online mode. An essay competition was held amongst the students of the CVSc and three prizes were awarded.

4.11.2.4. Annual Parting Social-2022

The Annual Parting Social was organized by Students' Union with great zeal and enthusiasm on 29th March, 2022. Shri Atul Bora, Honourable Minister Agriculture, Animal Husbandry & Veterinary, Horticulture & Food Processing, Accord Implementation, Boarder Area Development etc., was the Chief Guest of the occasion. Dr. Balendra Kumar Das, Former Principal, Pachim Guwahati Mahavidyalaya,

President, Assam College Principal's Council, Director, Administration, University of Science & Technology, Meghalaya was the Guest of Honour in the open session. In the evening, a cultural programme was held where Mr. Achurja Borpatra was the star attraction of the function.

4.11.2.5. Saraswati Puja

Saraswati Puja was observed with great devotion, joy and enthusiasm in the College on 5th February, 2022. The Puja was organized by CVScSU, Khanapara where all the students, teachers and employees participated.

4.11.2.6. Adya Shradha of the Victims of Gas Tanker Blast

The *Adya Shradha* was organized on 1st November, 2021 with *Nam Kirtonin* in the premises of New Hostel (PG) and A.T. Hostel during the evening with participation of large number of students, teachers and employees for eternal peace of the departed soul.

4.11.2.7. Others

- **World Environment Day, 2021:** The World Environment Day was observed in the CVSc campus in association with Assam Science Society, Khanapara Branch. There was a tree plantation programme in the campus on this occasion.
- **74th Independence Day, 2021:** The 74th Independence Day was celebrated in the CVSc campus. The tricolor flag of India was hoisted by Dr. B.N. Saikia, Dean, FVSc, Khanapara.
- **73rd Republic Day, 2022:** The 73rd Republic Day was celebrated in the college premise on 26th January, 2022. Dr. B.N. Saikia, Dean, FVSc, Khanapara, hoisted the tricolor National Flag of India amidst the students, teachers and employees. After unfurling the National Flag, Dr. Saikia delivered a speech remembering the rich heritage of Indian democracy and heritage. He also invited all to dedicate for the uplift of the country. All present were offered with tea and snacks thereafter.
- **New Year Celebration, 2022:** The New Year, 2022 was celebrated in the campus on 1st January, 2022. On this occasion, a meeting was held in the CVSc auditorium, which was presided over by the Dean, FVSc, Khanapara.

The Director Research (Vety.), ADEE, Joint Registrar, and ADSW were also present. All the dignitaries spoke on the occasion and welcomed the New Year, 2022, and pledged all to dedicate immensely for the uplift of the University, the veterinary profession and the country as well. The meeting was attended by students, teachers and the staffs. Thereafter, a high tea was served from the authority to all the present in the meeting.

4.11.3. Biswanath College of Agriculture

4.11.3.1. A virtual Cultural Programme, Nite Pulse by the SU, BNCA to fight against COVID 24th. August, 2021:

To get relief from stress and anxiety amidst the long lock down period of COVID, the Students' Union, BNCA with the guidance of BNCA authority was successful in organizing a Cultural Night- *Nite Pulse* on 24th August, 2021 from 6.30 pm to 10.30 pm in online mode, where 22 students from all the classes performed traditional and modern solo and group dance besides presenting some evergreen songs. Associate Dean, BNCA with all teaching and non-teaching staff with their families enjoyed the programme.

4.11.3.2. Freshers' Social on 23rd February, 2022

Freshers' Social was organized at BNCA in a befitting manner on 23rd February, 2022 in the College Auditorium with a daylong attractive events. Sri Deba Kumar Mishra, ACS and Hon'ble Deputy Commissioner of Biswanath district graced the inaugural session as the Chief Guest. Dr. Chintamani Sharma, Principal, Biswanath College attended the programme as the Guest of Honour. The inaugural programme was presided over by Dr. R.N. Barman, Associate Dean, BNCA. Manash Pratim Chetia, General Secretary, SU, BNCA delivered a brief welcome speech and vote of thanks was given by Mr. Tridip Patowari.

4.11.3.3. National Service Scheme

4.11.3.3.1. World Environment Day: The NSS Unit BNCA conducted world environment day programme at BNCA campus. Dr. R.N. Barman, Associate Dean, BN College of Agriculture inaugurate the programme with a short speech.

In his speech he narrated about the effect of air pollution to human life. On this occasion a tree plantation programme was held involving teachers and employees of the college. About 50 numbers tree sapling were planted in the campus. In this occasion on line Essay writing competition was also held among the NSS Volunteer on the topic "The Relevance of world environment day in the present context of COVID-19". Twelve NSS Volunteer participated online essay writing competition.

4.11.3.3.2. International Day of Yoga: On 21st June, 2021 NSS Unit, BNCA observed International Day of Yoga. In this event under the guidance of Sri Nitya Sharma, employee of BNCA, Yoga demonstration followed by Yoga practice was held among the teachers and employees of BNCA. Video of Yoga demonstration was prepared and circulated among the NSS volunteers of BNCA unit through online mode.

4.11.3.3.3. Tree plantation programme: On 10th August, 2021 NSS Unit BNCA conducted a tree plantation programme. About 50 saplings were planted in some sites of the campus in involving teachers and employees of BNCA.

4.11.3.3.4. Swachhta Pakhwada: In relation to *Swachhta Pakhwada* programme, the NSS unit BNCA conducted a cleanliness programme at BNCA campus on 11th August, 2021 involving employees and teachers of BNCA.



Figure 4.12. Campus cleaning in the *Swachhta Pakhwada*, BNCA

4.11.3.3.5. NSS Day: On 24th September, 2021 NSS Unit BNCA celebrated NSS Day at Biswanath Dagaon. Farmers, farm women, youth and school students of the village participated in the programme. On the occasion of NSS Day some events were organized by the unit like distribution of face mask, deliberation of speech about history, growth, motto and activities conducted by NSS unit by PO NSS, BNCA. An awareness programme on "Health and

Nutrition” was also held in this occasion. Associate Dean of BN College of Agriculture, and DDSW Dr. R.K. Goswami delivered speech on various aspects of health and nutrition.

4.11.3.3.6. Rashtriya Ekta Divas : On 31st October, 2021 NSS Unit BNCA celebrated “ *Rashtriya Ekta Divas*”. On the occasion of 146th birth anniversary of Sardar Vallabhbhai Patel, volunteers and Programme Officer organized “Run for Unity” programme from BN College of Agriculture campus to Kadamani village, Biswanath Charaial. All total 40 numbers of NSS from BNCA and SCSCA, Dhubri along with PO NSS, BNCA unit participated in run programme.

4.11.3.3.7. Constitution Day: On 26th November, 2021 NSS Unit BNCA celebrated Constitution Day at Auditorium of BN College of Agriculture. At very beginning of the programme preamble of the constitution was read out by Associate Dean, which was simultaneously followed by the all volunteers and teachers present in the house. All total 45 Numbers of NSS (20 girl and 25 boys) volunteers participated in the programme.

4.11.3.3.8. Agricultural Education Day: On 3rd December, 2021 NSS unit, BNCA celebrated Agricultural Education Day. On the occasion of birth day of 1st Indian union agriculture minister and first president of independent India Bharat Ratna, Dr. Rajendra Prasad; the NSS Unit, organized a tree plantation programme at BNCA campus along with an essay writing competition among the NSS volunteers on offline as well as online mode on the topic “Agricultural Education in present day context”. All total 10 NSS volunteers participated in essay writing competition and submitted the essay in stipulated time. From the above, 5 best essays were selected.

4.11.3.3.9. Celebration of Rivers of India Programme: On 17th December, 2021 NSS Unit of BNCA celebrated Rivers of India Programme at Biswanath Dagaon. Volunteers and PO NSS BNCA Unit participated in the stream and pond cleaning programme organized by a group of youth of the village. In this programme the stream run within the village and few cooperative ponds were cleaned. All total 45 NSS Volunteers participated in the programme.

4.11.3.3.10. Cleanliness programme: On 18th December, 2021 NSS Unit of BNCA organized a cleanliness drive at BNCA campus. A total 60

NSS volunteers, teachers and employees of BNCA participated in the programme.

4.11.3.3.11. National Girl Child Day: On 24th January, 2022 NSS Unit of BNCA observed National Girl Child day at adopted village Biswanath Dagaon with a brief programme. The programme started with a speech by Programme Officer; few girls of the village were felicitated on their performance on poster making programme held on the first week of January, 2022.

4.11.3.3.12. Youth Awareness programme: On 19th February, 2022 NSS Unit of BNCA organized this programme at Biswanath Dagaon. Fifteen youth of the village participated in the programme. The programme started with short speech by Programme Officer about self employment with agricultural activities. NSS volunteer with the help of local youth cleaned out an area located near fisheries of the village for development of production block of Assam lemon. All the volunteers and youth planted seed less Assam lemon seedling developed at BNCA.

4.11.3.3.13. NSS Special camp: NSS Unit of BNCA organized NSS Special camp at Kadamoni village, Biswanath Chariali from 1st to 7th March, 2022. About 120 NSS volunteers participated in different activities. Awareness programme related to health and hygiene, animal health care, agriculture related training, yoga demonstration and practice, different competition among school students of the village; *swachaa abhiyan* and tree plantation programme along with cultural programme was conducted.

4.11.3.3.14. Plantation Programme: NSS Unit BNCA organized a plantation programme at BNCA campus on 31st March, 2022 involving teachers, employees and students. The programme was inaugurated by Associate Dean, BNCA. About 75 NSS volunteers participated in the programme.



Figure 4.13. *Plantation Programme in BNCA being inaugurated by the Associate Dean*

4.11.4. College of Community Science

Being located in the headquarters, the CCSc cooperated and participated in all the activities and programmes of the NSS unit of the CA. Here is a record of the placement of the graduates of the college in 2021-22.

- Through Training & Placement Cell:
 - Public sector: 2
 - Private Sector: 1
 - Others: 2
- Through off-campus approach / personal initiative :
 - Public sector: 10
 - Private Sector: 5

4.11.5. Lakhimpur College of Veterinary Science

4.11.5.1. National Service Scheme

Lakhimpur College of Veterinary Science, AAU, Joyhing, North Lakhimpur with NSS unit, LCVSc observed the National Science Day 2022 on 28th of February with the theme "Integrated Approach in Science & Technology for a Sustainable Future". Dr Prasanta Kumar Pathak, Senior Scientist & Head, KVK, North Lakhimpur graced the occasion as Guest speaker and had a lively interactive session with the students. A competition was organized as a part of the program where students gave presentations on different relevant topics.



Figure 4.14. National Science Day 2022 in LCVSc

4.11.5.2. Students' Health Care

Medical unit is available in the college. Additionally, ambulance is present in the college and students are shifted to Civil Hospital, Lakhimpur in case of medical emergency.

4.11.5.3. Others

- Annual Parting Social, 2022 organised on 28th January, 2022 for the outgoing 2016 batch of students of LCVSc.



Figure 4.15. Annual Parting Social, 2022 in LCVSc

- Annual Freshman Social, 2022 organised on 7th March, 2022 for the 1st year (2021 batch) of students. Dr. R. Bhuyan, DSW, AAU, Jorhat graced the occasion as Chief Guest.



Figure 4.16. Annual Freshman Social, 2022 in LCVSc

- Saraswati Puja organised on 5th February, 2022.
- Students participated in online quiz conducted by VIRBAC.



Figure 4.17. Saraswati Puja being celebrated in LCVSc

4.11.6. SCS College of Agriculture

The followings students' welfare activities were held under the college in 2021-22:

- World Environment Day
- International Day of Yoga
- Online Training Programme on COVID Warriors on 28th June 2021
- *Swachhta Pakawada* (*Swachhta Fortnight*, 1st to 15th Aug 2021)
- *Azadi Ka Amrit Mahotsav* (15th Aug 2021):
 - Inter-college Prize Money Science Web Quiz Competition
 - Patriotic Song & Dance Competition
- NSS Foundation Day
- *Rastriya Ekta Divas*
- Constitution Day
- World AIDS Day
- National Youth Festival (Virtual on 12-1-22)
- Awareness Camp for Adolescent Girls on Sanitation(30-03-2022)

4.11.7. College of Horticulture and Farming System Research

4.11.7.1. NSS activities

- Sapling plantation programme organised by NSS unit, College of Horticulture on 19th March 2022 where more than 50 volunteers participated.
- National Girl Child Day 2022 organised on 24th January, 2022 where selfie/photography competition organised amongst volunteers to spread the message of importance of girl child. One 1st year student Ms. Manashi Roy from the college of Horticulture was selected as one of the awardees.
- The week long NSS special week was organized from Feb 28th, 2022 to 6th March 2022 in NSS adopted village Malati Gaon where volunteers participated street plays on social issues to create community awareness. An awareness programme on blood donation was

also organized in association with Red Cross Society, Jorhat chapter.



Figure 4.18. Sapling plantation programme organised by CH

"THIS NATIONAL GIRL CHILD DAY, LET US BE PROUD OF THE GIRL CHILD, WHO IS GOING TO CREATE A DIFFERENCE IN THE WORLD JUST LIKE HER MOTHER CAUSE SHE HAS THE POWER TO CREATE LIFE. SHE IS MADE UP OF COURAGE, DETERMINATION, SACRIFICE, COMMITMENT, TALENT AND LOVE."



Figure 4.19. The award winning photograph clicked by Ms. Manashi Roy, CH



Figure 4.20. NSS special week in NSS adopted village, Malati Gaon

4.11.8. College of Sericulture

- Celebration of World Environment Day on 5th June, 2021 in the adopted village (Maloti Gaon, Jorhat).
- Celebration of International Yoga Day on 21st June, 2021.
- Celebration of NSS Day on 24th September, 2021.
- Ms. Arhata Nath, a 4th Year student, got selected in the Republic Day Parade Team for the year 2022.

Research

(I) Agriculture

5.1. Crop Improvement

5.1.1. Cereals

5.1.1.1. Rice

- High yielding black rice genotypes developed at RARS, AAU, Titabar start farmers' trial in Merapani and Titabar. This genotype have intermediate amylase content, high HRR percentage, low GI, High in antioxidant and other nutrients.
- TTB 944-31-10-1-2-1(IET No. 28283) was promoted to AVT trials during in the Zone III and ZVII as its outstanding performance (10 % and 8 % increase over best check) in these zones based on AICRIP trial conducted during 2020-21 RARS, AAU, Titabar contributed 6 advance breeding line viz., TTB 1048-60-9, TTB 1040-218-2-2, IR 87144-CR4-2-1-1-TTB-1-2, TTB 1058-408, TTB 1384 and TTB 1209-4-1 into AICRIP trials for the year 2021-22.
- Four genotypes AAU AAU 241, AAU 238, TTB-1041-204-1 and TTB-1048-60-1 were promoted to OFT level during the Technical Committee Meeting, Kharif, 2021 and also genotypes TTB 1058-408 and TTB 1048-60-9 were approved for MLT during the same TCM.
- A mid duration submergence tolerant variety 'Dholi' developed at RARS, AAU, Titabar and submitted the proposal to SVRC to release.
- Developed bacterial blight resistant advance generation rice genotype.
- Ninety six (96) DWR germplasm has been genotyped (sequenced) and data were submitted to National Centre for Biotechnological Information (NCBI), USA and will be conserved and maintained at the station for future biological assets of the state/country.
- Direct seeded rice variety 'Haccha' was approved by SVRC meeting held on 2-3rd July 2021 at Guwahati
- Organic sali rice variety 'Langpi' was approved by SVRC meeting held on 2-3rd July 2021 at Guwahati.

- Organic chakua rice variety 'Diyung' was approved by SVRC held on 2-3rd July 2021 at Guwahati.
- Direct seeded rice variety 'Dehangi' registered in PPVFRA under registration No. REG/2018/319.
- A pre-release medium maturity (FCM) genotype Bio 9544 (C) performed better over DKC 8209 in terms of grain yield, net return and B:C ratio under higher nutrient application (150%) and plant density (25 -30 %) over the normal.
- Two pre-release early maturity (EDV) genotypes, FQH 165, FLPH 19 and VHM53 were significantly superior over VHM 45 in terms of grain yield, net return and B:C ratio under the higher nutrient application (150% RDF) and plant density over the normal.
- A promising rice variety, Surma Dhan with medium slender grain has been recommended by the SVRC, Assam during 2021.

5.1.1.2. Maize

- The QPM line K-20-IQPMH-2011 showed highest yield (3.73 t/ha) followed by K-20-IQPMH-19-2 (3.52t/ha).



Figure 5.1. Performance of the rice variety, rice variety, Surma Dhan

5.1.1.3. Finger millet



Figure 5.2. The Fingermillet variety, Gossaigaon maruadhan

- Finger millet variety Gossaigaon MaruaDhan was released through State Variety Release Committee. Moreover, a Foxtail millet variety Gossaigaon Local (Yellow seeded) was recommended for the state of Assam.



Figure 5.3. AICRP trials on small millets

5.1.1.4. Wheat

- A total of one hundred eighty seven (187) entries of Wheat were screened under Leaf Blight Screening Nursery and MDSN trials against leaf blight disease during *Rabi* 2021-22. Among them, LBSN 1, MDSN 1 showed Resistant (R) reaction.

5.1.2. Legumes

5.1.2.1. Green Gram

- One new green gram entry, viz., Pusa M 2131 gave an exceptionally high grain yield of 14.86 q/ha in comparison to the check variety IPM 02-3 (14.09 q/ha) during summer, 2021. The variety also showed maximum synchronous maturity and resistance to all important disease and pests.

- One newly developed green gram variety 'SBC 50' has completed all the formalities and it will be placed for recommendation in the appropriate forum and for further DNA profiling.
- One new high yielding green gram variety viz., SGC 25, which is found to be having the characteristics of synchronous maturity up to 95.0% will be included in AICRP trials and MLT during kharif,2022. An average yield of 13.78 q/ha was obtained for the variety for consecutive 4 years in station trials.
- One new high yielding black gram variety viz., SBC 51, found to be having erect plant type with shining medium bold grains will be included in AICRP trials and MLT during kharif,2022. An average yield of 14.38 q/ha was obtained for the variety for consecutive 4 years in station trials.
- Multilocal evaluation of mung bean (IVT, AVT 1 and AVT 2 entries) against major diseases: A total of 70 entries were tested against Antracnose, Cercospora leaf spot (CLS) web blight and MYMV in Summer: Ten (10) entries were HR to CLS; 14 MR against anthracnose; 9 MR to web blight of mung bean; 58 showed no infection towards MYMV.
- National nursery for evaluation of AVT and IVT entries against diseases of Mung bean:A total of 75 entries were tested against web blight and MYMV in *Kharif*:29 entries were HR to web blight and 35 entries showed no infection towards MYMV of mungbean.

5.1.2.2. Black gram

- Multilocation evaluation of urd bean entries (IVT, AVT 1 and AVT 2) against major diseases in Summer: A total of 115 entries were tested against web blight. Two entries were MR to web blight of urd bean and 41 entries showed no infection towards MYMV.
- National nursery for evaluation of AVT and IVT entries against diseases of urdbean: A total of 46 entries were tested against web blight and MYMV in *Kharif*: 5 entries were HR to web blight and 26 entries showed no infection towards MYMV of mungbean.

5.1.2.3. Chickpea

- Out of large number of genotypes tested in five coordinated trials, the variety IPCD 2016-44 (985 kg/ha) in AVT 1 (desi), IPC 2015-123 (1098 kg/ha) in AVT 1 (late sown), BG 4023 (1160 kg/ha) and NDG 19-5 (1066 kg/ha) in IVT (late sown), DMHC 18-1664 (824 kg/ha) in AVT 1 (mechanical harvesting) and IPCB 2015-132 (1090 kg/ha) and IPC 2017-253 (1007 kg/ha) in IVT (mechanical harvesting) were found to be promising in comparison to the respective checks of the trials during *rabi*, 2020-21.

5.1.3. Fibre Crops

5.1.3.1. Jute

- Altogether 50 nos. of *Capsularis* jute germplasm were evaluated for basal diameter, plant height and fibre yield against 2 std checks viz. JRC 517 & JRC 698. Two entries CIN 196 and CIN 209 were found to be superior for fibre yield (g/pl) compared to the best check JRC 517.
- A total of 50 nos. of *Olitorius* jute germplasm were evaluated for basal diameter, plant height and fibre yield against 2 standard checks viz. JRO 204 & JRO 524, in 3RBD. None of the entries were found to be superior for fibre yield than the checks.
- Fifty selected F6 progenies National Hybridization Programme (NHP) of *Olitorius* Jute crosses were evaluated and a total of 21 lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- From a total of 32 selected F7 progenies under NHP with *capsularis* jute, 21 progeny lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- From fourteen selected F5 Progenies, 10 lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- A number of successful crosses were made viz. Tarun X OIN 147, Tarun X OIN 149, Tarun X OIN 163, Tarun X JROBA-3 for pest and disease resistance.
- The successful crosses made were Tarun X JROG-1, Tarun X JRO-2407, Tarun X JBO-1 for fibre fineness, while crosses like Khyati X CIN 172, Khyati X CIN 173, JRC 532 X CIN 172 and JRC 532 X CIN 173 for fibre strength.
- Four *olitorius* jute varieties JROAS-1, JROBA-3, JROBA-4 and JROBA-10 were tested for flowering resistance against the check variety NJ 7005 in a 4 RBD. As none of the entries flowered prematurely, the trial failed to meet its objective.
- Fourteen *Olitorius* jute varieties were tested against 2 standard checks viz. JRO 204 and JRO 524. Significant variation among the varieties for fibre yield and related characters was observed. BROJ-5(35.24 q/ha) was the highest yielder followed by BROJ-3(32.00 q/ha), however none of the entries could statistically out yield the best check JRO 524(31.60 q/ha).
- Four *Olitorius* jute varieties were tested against 2 standard checks in 4 RBD. There was no significant variation among the entries for fibre yield. The highest yielder was JROP-6 (28.97 q/ha) followed by entry from RARS, Shillongani NOJ 17-2 (28.05 q/ha).
- Four *Olitorius* jute varieties were tested against 2 standard checks in 4 RBD. The highest yielder was JROBA-5(29.39 q/ha) followed by JROP-4(28.10 q/ha). However, both these entries were statistically at par with the best check JRO 204(27.63 q/ha).
- Five *capsularis* jute varieties were tested against 2 standard checks in 3 RBD. Significant variation was observed among the varieties for fibre yield. The variety UBCJ-3 recorded the highest yield (45.26 q/ha) and it significantly out yielded the rest except the best check ie. JRC 698.
- Four *capsularis* jute varieties were tested against 2 standard checks in 4 RBD. Statistically, no significant variation among the varieties was observed for fibre yield. The highest yielder was JRCP-8(29.04 q/ha) followed by NCJ 16-53-1(28.92 q/ha).
- Four *capsularis* jute varieties were tested against 2 standard checks in 4 RBD. No significant variation was observed among the

varieties for fibre yield. The highest yielder was JRCP-5(30.81 q/ha) followed by the check variety JRC-517(30.78 q/ha).

- The Adaptive trial on *olitorius* jute was conducted in farmer's field at village Mazgaon Jajori in the Nagaon district. The test variety JROBA-3 was evaluated against the checks JRO 524 and JRO 204. JROBA-3 yielded 25.10 q/ha compared to the best check JRO 524 yield of 21.40 q/ha.
- This adaptive trial on *capsularis* jute was also conducted at village Mazgaon Jajori. The test variety was JRCP-5 and the check varieties were JRC 517 and JRC 698. JRCP-5 yielded 22.90 q/ha as against the yield of 19.70 q/ha by the best check JRC 517.

5.1.4. Oilseeds

5.1.4.1. Linseed

- Five numbers of linseed varietal trials (IVT-R, IVT-I, AVT-I, I/AVT-U and ERA-I) have been conducted to evaluate the seed yield and its attributes. The result revealed entries (code) 2001,2004,2007,2010 of IVT-R , 5001,5007,5009,5016,5019 of IVT-I; 13001,13003,13006 of AVT-I and 19003,19006 19012 to be promising.

5.1.5. Sugar Crops

5.1.5.1. Sugarcane

- Three sugarcane lines viz., CoBlN 4174, CoBlN 16502 and COBlN17502 are in the pipeline for recommendation of Assam (Fig 1, 2,&3) due to its quality characters viz., CCS, Cane yield, sucrose(%) NMC at 10 months (Table 1).

Table 5.1. Sugarcane varieties and their performance in SRS, Buralikson

Varieties	CCS (t/ha)	Cane yield	Sucrose (%) (10m)	NMC at 10 months	Single cane wt
CoBlN 4174 (Kako-donga)	11.25	90.52	18.50	70.50	1.28
CoBlN 16502	11.30	91.54	18.75	71.50	1.22
CoBlN 17502	11.65	94.40	18.80	72.10	1.35
Lohit	10.50	81.50	18.30	70.70	1.16
CoP9301(ZC)	10.52	78.50	18.00	70.40	1.15

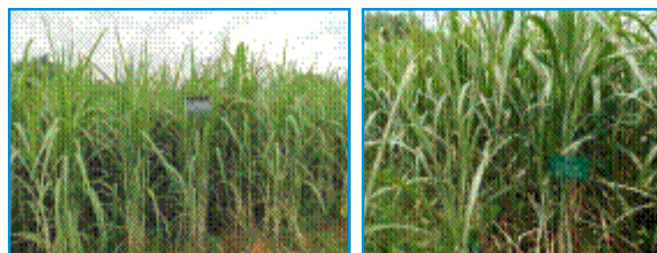


Figure 5.4. Sugarcane varieties at SRS-Buralikson

5.2. Crop Management

5.2.1. Rice

- Application of *Azospirillum* and PSB @ 4 kg/ ha + RP @ 10 kg/ ha + RD of K) along with urea based on Leaf Colour Chart 4 (LCC 4) increased the yield of paddy and reduced 25-50 % requirement of urea.
- Consortia of potash solubilizing bacteria (*Bacillus proteolyticus*+ *Serratia liquifaciens*) @3.5kg as seedling root dip treatment with NPK@60:20:20(kg/ha) for transplanted sali rice is recommended and it can reduce the K fertilizer requirement by 20kg/ha
- *Azospirillum* based microbial consortia was developed consisting of *Azospirillum spp.*; PSB (*Paraburkholderia tropica*, and KSB (*Serratia liquifaciens*). *Azospirillum* population maintained at 8.20 log cfu/ mL while other PGPR (PSB and KSB) maintained > 6.00 log cfu/ mL during the storage period (210DAI).
- *Azotobacter* based microbial consortia was developed consisting of *Azotobacter sp*; PSB (*Paraburkholderia tropica*, and KSB (*Serratia liquifaciens*) .The individual population maintained with values >8.00 log cfu mL⁻¹ after 210 days of storage.
- *Rhizobium* based microbial consortia consisting of *Rhizobium sp*; PSB (*Paraburkholderia tropica*, and KSB (*Serratia liquifaciens*) was developed. In *Rhizobium* based consortia, highest population of *Rhizobium* [>10.00 log cfu mL⁻¹] was achieved. Other PGPR in consortia maintained the population status >8.00 log cfu mL⁻¹.
- Field trial of nutrient management in rice-rajmah cropping sequence revealed highest yield of rajmah at 75% RDF with *Rhizobium* & PSB biofertilizers.

- Field trial on boron fertilization on rice indicated highest yield of rice in the treatment comprising 2 kg B/ha along with recommended dose of fertilizer and 0.25% B as Foliar Spray in PI & milk stage.



Figure 5.5. Nutrient management in Rice-Rajmah

- Significant increase in early seed vigour was observed with 29.73 % yield increase in seed coating on hydro-primed (30h @ 25°C) seeds with *Trichoderma harzianum* in rice variety Luit. However common PoP with soaking 24 hours followed by incubation for sprouting (24hours) exhibited 45.95 % yield increase was also observed over control. B:C signifies better profit in soaking 24 hours followed by treatment with PoP (1.35) and in Seed coating on hydro-primed (30h @ 25°C) seeds with *Trichoderma harzianum* (1.32).



Figure 5.6. Nano-priming in Rice; field view

- Treatments of Dry Bulk ZnO @ 500 ppm and Nano SiO₂ @500ppm exhibited 0.45% yield increase over control in direct seeded rice varieties.(Fig6)
- Seed health status of farmers saved paddy seed has revealed that twenty-four (24) out of the one hundred three (103) samples showed germination below IMSCS which is 23.30% of total number of samples. Germination ranged from 31-88 per cent with 11.2-14.9% seed

moisture. The pathogen associated were *Aspergillus spp.*, *Penicillium spp.*, *Curvularia spp.*, *Fusarium spp.*, *Alternaria spp.*, *Bipolaris oryzae* with 0-22%.

- While developing IFS module/strengthening traditional rainfed IFS for small and marginal farm holdings, it was found that the average yield of 56.95 q/ha in Ranjit and 45.40 q/ha in Numoli with B:C ratio of 2.57 and 2.24, respectively was observed under Crop and INM module. Under Farming System with Horticulture (CHLR) module, Rice-Potato cropping sequence, RIFs farmers (rice - potato - Turmeric) obtain 1168.21qha⁻¹ MCEY. Under Poultry, Total 160 nos. of three week old White leghorn chicks were distributed among 8 farmers under rainfed and partially irrigated farming system in the year 2020. During the year 2021 it was found with an average weight of 1520-2400 gm/Layer and laying 22-25eggs/Month. Net income Rs. 8498 with B:C ratio 1.6 was found.



Figure 5.7. Integrated Farming System Research

- The water soluble complex fertilizer (19:19:19) @ 0.5% + ZnSO₄ @ 0.5% & borax @ 0.5% recorded the highest system yield 29.35 q ha⁻¹ and the control (no spray) gave the lowest system yield 22.15 q ha⁻¹.
- Submergence tolerant Rice varieties viz. Bahadur Sub-1 and Ranjit sub-1 yielded 51.78 tha⁻¹ and 52.55 tha⁻¹ respectively as compared to farmer's practice (31.05 tha⁻¹) with B:C ratio 1.9, 1.8 and 1.1.
- IFS models under rainfed condition with *Crop (Field & Horticultural) + Cattle + Fishery + Apiary* (along with *complementary* and *supplementary* units) have been developed for the marginal farmers of Assam.
- An IFS model for 1.0 ha area under rainfed condition with *Crop (Field + Horticultural) + Cattle + Fishery + Apiary* has been developed which can yield a gross return of Rs. 3,00,595.00, variable cost Rs. 1,55,311.00, return over variable cost Rs. 1,45,284.00 and B:C ratio of 1.94 and generated employment of 434 man days/ha/ year.
- IFS Model with Field crops + Horticultural crops + fishery + Apiary in an area of 0.88 ha produced a net return of Rs. 80,787.00 along with a B:C ratio of 2.13 and an employment generation of 178man days/ha/ year.
- IFS Model with *Field crops + Horticultural crops + Dairy + Apiary* (with Liquid manure production, Vermicomposting, Bio-gas production and additional return from processing) has been developed for an area of 0.86 ha that can produce a net return of Rs. 1,31,815.00 along with a B:C ratio of 2.07 and an employment generation of 398 man days/ year.
- IFS Model with *Field crops + Horticultural crops + Apiary* along with additional return from processing in an area of 0.80 ha produced a net return of Rs. 65,281.00 along with a B:C ratio of 2.55 and an employment generation of 120 man days/ year
- Raised and sunken bed module has been standardized for the wet land areas under rainfed situations of Assam. A raised and sunken bed module of 1.0 ha wet land area could produce a net return of Rs. 46,117.00 along with a B:C ratio of 2.15 and an employment generation of 142 man days/year.
- Permanent plot experiment have revealed the highest average grain (6.8 t/ha) and straw (11.8 t/ha) yield of the sequence (with a B:C ratio of 2.44) in case of the 50% recommended NPK through fertilizers along with 50%N through crop stubbles in *winter rice*(cv. *Ranjit*) and 100% recommended NPK through fertilizers in *autumn rice* (cv. *Disang*).
- Out of eight cropping sequences tested the highest B:C ratio of 3.92 along with a net return of Rs.1,45,643.00 and an employment generation of 322 mandays/ha/ year was obtained with *winter rice-chilli- black gram* sequence followed by *winter rice-cabbage-greengram* sequence with 2.71 B:C ratio, Rs.1,04,588.00 net return and 299 man days/ha/ year.
- Application of *stale seedbed technique + reduced spacing (25%) + mulching with previous crop mulch + 1 hand weeding* in case of *rice-toria-rice* sequence was found to be the best organic weed management practice in terms of weed control with reduced weed density and weed dry weight, REY (7.5 t/ha) and B:C ratio (1.48 with 25% premium price) over the other treatment combinations under our study.
- Application of 5kg Zn + RDF was found to be best in terms of system equivalent yield (8.2 t/ha) and a net return (Rs. 41,147.00 with the B:C ratio of 1.78); and accordingly it has been standardized for pre-flood summer rice (cv. *Jaymati*) - post-flood winter rice (cv. *Luit*) cropping sequence under the flood prone areas of Assam.
- The IFS model under AICRP on IFS at AAU, Jorhat is a carbon-positive model. Out of total GHG emissions from the cropping sequences (302.57 kg CO₂ equivalent), the emission contribution was highest (108.36 kg CO₂ equivalent) from *winter rice – Toria – Cowpea (fodder)* sequence. However, per cent contribution of GHGs were highest from *Winter rice - Potato - Lady's finger* which may be attributed to higher use of nitrogenous fertilizers in the system over all the sequences under study. Overall, the net release of GHGs from the 1 ha IFS model (of crop + livestock + fishery + apiary component) was estimated to be 865.00 Kg CO₂ equivalent GHG emission.

5.2.2. Maize

- An OPV Maize genotypes of under varying planting density and nutrient levels in Kharif, 2021, L316 showed superior performance over the check varieties of Hemant (C), and Vijay (C) under higher nutrient application (150% RDF) over the normal.

5.2.3. Legumes

5.2.3.1. Green gram

- The highest grain yield was recorded under the treatment combination involving seed inoculation with *Rhizobium* and PSB each @ 50 g/kg, weed management using post-emergence herbicide propaquizafop 2.5 % + imazethapyr 3.75 %ME @ 125 g/ha at 15-20 DAS on spring mung bean and foliar nutrition with two sprays of complex NPK (19:19:19) @ 0.5% at flower initiation and pod formation stages.
- The trial on fortification of zinc and iron through foliar spray in mung bean revealed that the treatment, 0.5 % ZnSO₄ spray at flower initiation and pod initiation yielded significantly higher (1,533.33 kg/ha) than all other treatments.

5.2.3.2. Black gram

- The trial conducted to evaluate post-emergent herbicides in urd bean was conducted during Kharif 2020 and 2021. Hand weeding at 20 & 40 DAS resulted in the highest yield. However, Propaquizafop 2.5% + Imazethapyr 3.75 % (ready mix) @ 125 g/ha at 20 DAS yielded significantly higher (1,016.67 & 1,506.95 kg/ha respectively) than all other treatments except hand weeding once & twice.

5.2.3.3. Pigeon pea

- With hydro-priming for 6 hours, significant increase in early seed vigour was observed with 72.97% yield increase in pigeon pea varieties Pusa 191 and 39.53 % yield increase in Pusa 192 over respective control. Higher profitability is indicated with higher BC ratios in hydro primed seeds of Pusa 191 and Pusa 192 with 4.11 and 3.85 respectively for over respective controls.



Figure 5.8. Field view of Nano-priming in pigeon pea

5.2.4. Oilseeds

5.2.4.1. Rapeseed and Mustard

- Higher profit may be obtained with Seed coating on hydro primed (16h @ 20°C) seeds) with Bio-phos as compared to dry seeding with B:C 9.52 in Mustard (variety TS 38).

5.2.5. Fibre Crops

5.2.5.1. Jute

- While evaluating the performance of new jute genotypes under adaptive trials at different fertilizer schedules (*Capsularies*), it was found that treatment combination of 100: 21.8: 41.3NPK kg/ha with JRCP 5(F₃V₁) yielded highest *capsularis* fibre yield of 22.15 q/ha followed by control with JRCP 5 (F₁V₁) yielding fibre of 21.33 q/ha & 80: 17.5: 33.3kg/ha NPK with JRCP5 (F₂V₁) yielding fibre of 21.17 q/ha respectively.
- Soil test-based fertilizer application in Jute based cropping system for improved nutrient management trial revealed that treatment with 150% NPK on ST-TY yielded highest *capsularis* fibre yield of 27.05 q/ha followed by Control of 21.9 q/ha fibre yield & 100% NPK on ST-TY + lime/dolomite application on 25% LR of 20.17 q/ha fibre yield respectively.
- Integrated weed management trial in jute & flax revealed that pre emergence spraying of Ipfencazone (22.8%)@ 90 g a.i./ha (0.66 ml/l) + one hand weeding (HW) at 15 DAS resulted highest fibre yield of 25.44 q/ha followed by Post emergence spray of Quisalofop ethyl 10% EC @ 38 g/ha at 15 DAE + one hand weeding (HW) at 30 DAS yielding fibre yield of 22.73 q/ha & Jute + red amaranthus intercropping

(broadcasting of red amaranthus seed @ 10 kg/ha in inter-row space of jute) yielding fibre yield of 22.49 q/ha, respectively.

- Intercropping of flax with smother crop for enhancing productivity and suppressing the weeds revealed that treatment with Flax : Chenopodium (2:1) yielded highest seed yield of 7.76 q/ha followed by Control of sole flax yielding seed yield 5.89 q/ha & Flax : Spinach (2:1) yielding seed yield 5.10 q/ha.

5.2.6. Sugar Crops

5.2.6.1. Sugarcane

- The crop response was observed with increasing dose of fertilizer application up to 150 % NPK. The crop is yet to be harvested. Juice quality parameters were observed to be unaffected due to variation in fertilizer doses.



Figure 5.9. Crop stand under 150% NPK and control

- Crop growth did not vary significantly due to application of different micronutrient. However, application of different micronutrient is found to influence the juice quality parameters. The crop is yet to be harvested.
- In case of nutrient management under organic cultivation of sugarcane, better crop growth was observed at higher level of compost application. Brix and pol reading under various organic treatments were similar.



Figure 5.10. Better crop stand at higher dose of compost application

5.3. Crop protection

5.3.1. Rice

- Application of *Pseudomonas fluorescens* (2×10^8 cfu/g) @10 kg/ha at sowing was the best in reducing FNP (soil: 21.54%, root: 27.63%) and increasing yield, followed by soil enrichment with *Bacillus subtilis*@ 10kg/ha in rice against *Meloidogyne graminicola*
- Nursery treatment either with *Pseudomonas fluorescens* or *Bacillus subtilis*@ 10 kg/ha significantly increases seedling height of rice (16 & 14%), and reduces galls in seedlings (44 & 38%), nematode population in soil (41 & 37%) and root (28 & 17%) and increase in crop yield (27 & 24%)
- Fifteen endophytic bacteria, isolated from Tomato (*Solanum lycopersicum*, *Solanum pimpinellifolium*) were identified as *Bacillus marisflavi*(2 isolates),*Bacillus altitudinis*, *Microbacterium arborescens*, *Exigobacterium indicum*. Efficacy trial on effectiveness of culture filtrates of isolated endophytes revealed that *Bacillus marisflavi* is the best in increasing the mortality of *Meloidogyne incognita* J₂.
- Application of flubendiamide 39.35% SC was found most effective in controlling rice stem borer and leaf folder followed by Chlorantraniliprole 18.5 %SC and Chlorantraniliprole 0.50% + Thiamethoxam 1.00 % GR, respectively.
- Application of Pongamia oil @ 5ml/l was observed to be effective in controlling rice stem borer followed by Pongamia oil @ 3ml/l and Agnihastra 5.0 % (Neem leaves, Ghomutra, Garlic, Green Chilly, Pepper, Jaggery, onion, tobacco and other natural herbs), respectively.
- Use of bio control technologies revealed that BIPM package and farmer's practice (Chemical control) were at par with each other in respect of the population build-up of rice stem borer and leaf folder. The net returns over control in BIPM package were Rs. 61,291.90 as compared to Rs. 49,967.50 in farmers practice
- Seed treatment with organic *Trichojal* @5ml/kg seed/lit exhibited 93.75% yield increase over control followed by hydration followed by

incubation (PoP) with 59.06% in Keteki Joha. Seed treatment with organic *Trichojal* @5ml/kg seed /lit and seed treatment with organic *Metajal* @5ml/kg seed /lit is found to be cost effective with B: C ratio 1.24 and 1.34 along with protocol as per PoP with B:C 1.09.(Fig2)

- Out of 12 treatments with different fungicides molecules, Amistar top and Beam showed better result amongst the chemicals to suppress seed and seedling associated pathogens viz, *Bipolaris*, *Pyricularia*, *Fusarium* and *Curvularia*
- Poly lined gunny bag was found to be suitable for safe seed storage for six months over jute and cloth bag. Almost 2% higher germination was observed in Captan @ 0.25% treated seed in poly lined gunny bag with no designated mycoflora. Untreated seed stored in cloth bag was found to be germination 76.83% that is near IMSCS after six months of storage.

5.3.2. Maize

- Demonstration of BIPM module against fall army worm, *Spodoptera frugiperda* on rabi maize revealed that the BIPM module was significantly superior (15.30%) over farmers practice plot (22.83%).

5.3.3. Rapeseed and Mustard

- Assessment of yield loss and management of *Alternaria* blight in mustard variety 'Varuna' under zero till condition have revealed the lowest disease severity in Tebuconazole 50%+trifloxistrobin 25% WG-FS @ 0.5g/l followed by garlic bulb extract @ 1% w/v (ST+FS), (15.7 and 11.27 % respectively)
- The lowest disease severity was recorded in Tebuconazole 50% + trifloxostrobin 25% WG @ 0.1% (15.3 and 11.3 % respectively)
- Epidemiology of *Alternaria* blight have showed that the disease symptom starts from lower leaves and progresses upward, and disease severity is directly correlated with temperature. It was found that as the disease symptom starts appearing from second week of December, the management practices should be started from first week of December before the build-up of the inocula. During the period from December to March, the maximum temperature ranges from 22 to 28°C, minimum temperature from 10

to 18°C, relative humidity (morning) from 81 to 93 %, relative humidity (evening) from 54 to 78 % and rainfall ranged from 0 to 60 mm.

5.3.4. Jute

- Atachinid fly was observed to parasitize Bihar hairy caterpillar larva up to 32% during 1st fortnight of July.
- Out of 11 tested entries, OIN 110 recorded minimum mite population (0.69 mite/sq. Cm of leaf & 17.67 % plant infestation) followed by OIN-106 (1.45 mite/cm² of leaf & 24 % plant infestation).
- Out of 10 tested entries, minimum stem rot incidence was recorded in OIN129 (PDI 2.56) followed by OIN123 (PDI 2.79) & OIN 133 (PDI 3.28) just before harvest
- Out of 11 tested entries minimum stem rot incidence recorded on CIN358 (PDI 3.09) followed by CIN-371 (PDI3.20) & CIN-036 (PDI 3.96).
- Seed treatment with carbendazim @ 0.1% + foliar spray of azoxystrobin @ 0.1% at 45 DAS (PDI 1.74)& Seed Treatment with carbendazim @ 0.1% + foliar spray of tebuconazole @ 0.1% at 45 DAS (PDI 1.89)were superior in managing jute diseases
- Seed treatment with carbendazim 50 WP @ 2 g/kg seed and seed treatment with azoxystrobin 25 % SC @ 1.0ml/kg seed were at par in managing flax wilt disease(4.31%& 4.11 %wilt incidence respectively against 11.64% in control)
- Out of seven newer insecticide molecules evaluated for their performance in controlling lepidopteran pests in jute, Chlorantraniliprole 18.5 EC @ 0.3 ml/l water, Lamda Cyhalothrin 5 EC @ 0.6 ml/l water and Spinosand 45 SC @ 0.3 ml/l water controlled lepidopteran pests in jute most efficiently.
- Integrated approach for management of insect pests and diseases in jute managed Bihar hairy caterpillar, jute semilopper, stem rot and root rot diseases more efficiently than cultivation of jute by farmers in their traditional method. Further, integration of different methods of pest control was eco-friendly as no toxic chemical was used.

Average fibre yield under IPM demonstration was 28.87 q/ha and that in farmers' traditional method was 22.56 q/ha. There was 27.97 % higher fibre yield in IPM adoption plots.

5.3.5. Lentil

- Lentil varieties recorded with germination more than IMSCS (>75%) after 6 months of storage in HDPE and Jute bag under ambient storage condition.(Fig 1)

5.3.6. Black gram

- Effect of solarisation on bruchids (pulse beetle) infestation of blackgram seed variety PU-31 packed in clear polythene in clear 700 gauges polythene revealed that the germination was above the IMSCS up to six months of storage. The fresh seed solarised for 2 to 4 days recorded 0.58 and 0.25 percent infestation at 9 months of storage. On the other hand, fresh seed solarised for 6 days recorded bruchid free storage up to 12 months of storage.
- Efficacy of commercially available neem products on storage pest management of black gram seeds under ambient condition was studied with variety IPU-02-43 stored in gunny bag. Neemazol TS and Neemoz Gold @ 50 and 75 ppm recorded germination percentage above IMSCS up to 9 months of storage. The insect infestation was 0.42 and 0.08 percent in Neemazol TS and Neemoz Gold respectively at 9 months of storage.
- Field trial was conducted with four treatments having five replication in *Kharif*. The result showed that the treatment T₁ (Moderately resistant variety with web blight Disease management practice) showed best result with PDI of 9.4 %, B:C of 2.3 & AUDPC of 195.3.

5.3.7. Green gram

- An IPM module with integration of practices like two lines of sesame as barrier crop, installation of yellow sticky trap (1mx1m) coated with white grease @15/ha at 30 DAS, spraying with Azadiractin 1500ppm @3ml/l of water at 30 DAS and need based spray of Spiromesifen 22.9 SC @ 1.25ml/l of water or Chlorantralirole 18.5 SC @ 0.30 ml/l of water in mungbean against major insect pests showed most effective

results in reducing the pest population and their damage which resulted 21.43% increase in yield over farmers' practice and the cost benefit ratio was calculated as 2.06.

- Two sprays of a new insecticide molecule, Diafenthiuron50WP @ 1.25G/l of water at vegetative and reproductive stages of mungbean against sucking pests (white flies, aphids) was found most effective in order to reduce the pest population level and their damage which resulted 19.62% increase in yield (10.24q/ha) over control (8.23q/ha) with C: B = 1: 2.13.

5.3.8. Chickpea

- Pod borer, *Helicoverpa armigera* in chickpea crop and its damage can be suppressed by spraying with new insecticide molecules, Chlorantraniliprole 18.5 SC @ 0.3ml/l of water or Spinosad 45 SC @ 0.3ml/l of water just after appearance of the pest during reproductive stage.

5.3.9. Potato

- Three number of spray of Dimethamorph 50%WP (Acrobat/Lurit) @1.5g/litre OR Mandipropamid 25% SC (Revus) @ 1ml/litre at 10 days interval after the initiation of disease successfully manage the late blight disease in potato.



Figure 5.11. Management of late blight of potato through newgeneration fungicides

5.3.10. Cowpea

- Evaluation of entomopathogenic biopesticide against *Aphis craccivora* in cowpea (*Vigna unguiculata*) revealed that the mean number of *A. craccivora* per terminal shoots of cowpea was significantly lower from the untreated control plot. However, minimum number of *A. craccivora*(10.83/ terminal shoots) was

recorded in the *Verticillium lecanii* (1×10^8 cfu/ml@5gm/lit) treated plot followed by spinosad 45 SC treated plot (11.80/ terminal shoot) with a yield of 38.75 and 36.31 q/ha, respectively.

5.3.11. Okra

- Evaluation of bio-intensive IPM module against keypests of okra revealed that 6 numbers of alternate sprays of insecticides at fortnightly intervals contributed maximum protection from infestation of larvae per five plants and per cent fruit damage of 1.68 and 7.33 %, respectively as against 2.02 and 8.15 % in BIPM plot. However, highest marketable fruit yield of 76.49 q/ha was recorded in BIPM plot, whereas in chemical control plot, the yield was 69.10 q/ha.

5.3.12. Cabbage

- Field evaluation of ICAR-NBAIR entomopathogenic strains against cabbage aphid, *Brevicoryne brassicae* and diamond back moth, *Plutella xylostella* revealed that the *L. lecanii* (V1-8 isolate) @ 5 ml/litre was the best treatment in reducing the mean population of aphid, *B. brassicae* (3.38/plant) and *P. xylostella* (4.20/plant), with 65.51 and 56.92 % reduction over control.

5.3.13. Cucumber

- The BIPM plot against fruit flies *Deccaus bactrocera* against cucumber registered 16.81% fruit damage which was significantly different from chemical control with 28.41% after 65 Days after treatment.

5.3.14. Birds

- Nest boxes increased barn owl density coincided with a reduction in damage caused by field rats. Rat trap success rate dropped from 30% to 8% in lowland rice field of about 500 acres after installing nest boxes at Kadam Gohain Gaon in Lakhimpur district of Assam.

5.3.15. AICRP for Dryland Agriculture, BNCA

- In case of greengram (kharif), the highest yield of 10.94 q/ha was recorded in the treatment $R_1C_1L_1$ (Greengram-Toria-Linseed-Groundnut with life saving irrigation), and in case of blackgram,

highest yield of 12.88 q/ha was recorded in $R_1C_2L_1$ (Blackgram-Toria-Linseed-Groundnut with life saving irrigation).



Figure 5.12. Ridge and furrow preparation

- Highest system yield of 144.21 qha-1 was recorded in I_1C_3 -Flood - *Ahu* rice -green gram-potato followed by 132.26 qha-1 in I_2C_1 -Drip-*Ahu* rice green gram-potato. Highest B: C of 1.7 was observed in I_1C_1 -Flood - *Ahu* rice -green gram-toria and I_1C_2 - Flood - *Ahu* rice -green gram-rajmah followed by I_2C_1 -Drip -*Ahu* rice -green gram-rajmah (1.6). Highest Production Efficiency (50.96 kg/ha/day) and Economic Efficiency (208.62 Rs./ha/day) was recorded in I_1C_3 -Flood - *Ahu* rice -green gram-potato sequence. Land utilization Index of 86.58 % was obtained for *Ahu* rice -green gram-rajmah sequence.



Figure 5.13. AICRP-Dryland Agriculture trial on Toria, Rajmah, Potato

- **Cropping system:** Highest System yield (47.0 q/ha) was observed in BBF 150-30- (Ground Nut in Kharif- Rajmah in Rabi) with highest B:C ratio of 6.0 followed by BBF 90-30- (Ground Nut- Rajmah) with B:C ratio 5.42. Lowest was observed Flat Bed- Groundnut followed by Pea with B:C ratio 1.71.

- **Cropping system:** After completion of Rabi experiments Rajmah grown under Surface irrigation gives highest B:C ratio (2.67) while Rajmah under no irrigation gives lowest B:C (1.52).



Figure 5.14. AICRP-Dryland Agriculture trial on Rajmah

- **Cropping system:** Highest system yield of 76.68 qha⁻¹ was recorded in T₆: Conventional tillage (CT): maize-greengramtoria with no residue retention of maize followed by 71.9 qha⁻¹ T₄: Minimum tillage maize -ZT greengram-ZT toria with full residue retention of maize. B: C 2.0 and 2.05, respectively.



Figure 5.15. Cropping system trials under AICRP-Dryland Agriculture

- **Nutrient Management:** Maximum yield was recorded in the treatment with T₃: 75% RDF + 3 t/ha vermi-compost followed by the treatment with T₄: 75% RDF + 1 t/ha vermi-compost and minimum was recorded in T₁: Control.



Figure 5.16. Nutrient management trials under AICRP-Dryland Agriculture

- **Alternate Land Use:** Gomari shows higher growth parameters in terms of height, collar diameter and canopy spread than titachappa. Higher yield was observed in intercrops grown openly and under titachappa than grown under Gomari. This may be due to higher shading effect of Gomari than Titachappa.



Intercrops under Titasapa Intercrops under Gamari

Figure 5.17. Alternate land use trials under AICRP-Dryland Agriculture

5.3.16. On Farm - Rainfed Integrated Farming System, BNCA

- Average yield of 5695 kg/ha in Ranjit and 4540 kg/ha in Numoli with B: C ratio 2.57 and 2.24 respectively was observed under Crop and INM module covering an area of 18.039 ha of 4 RIFs villages.
- Under Farming System with Horticulture (CHLR) module, Rice- Potato cropping sequence, RIFs farmers (rice followed by potato followed by Turmeric) obtain 116821.39 kg ha⁻¹ MCEY.
- Under Poultry, Total 160 nos. of three week old White leghorn chicks were distributed among 8 farmers under rainfed and partially irrigated farming system in the year 2020. During the year 2021 it was found with an average weight of 1520-2400 gm./Layer and laying 22-25eggs/Month. Net income Rs. 8498.4 with BC ratio 1.6 was found.
- Under livestock, vaccination and Animal health awareness programme was done.



Figure 5.18. On Farm - Rainfed Integrated Farming System, BNCA

5.3.17. NICRA-AICRPDA, BNCA

- Water soluble complex fertilizer (19:19:19) @ 0.5% + ZnSO₄ @ 0.5% & borax @ 0.5% gave the highest system yield 2935 kg ha⁻¹ and the control (no spray) gave the lowest system yield 2215.5 kg ha⁻¹.
- Submergence tolerant Rice varieties viz. Bahadur Sub-1 and Ranjit sub-1 yielded 51.78 tha⁻¹ and 52.55 tha⁻¹ respectively as compared to farmer's practice (31.05 tha⁻¹) with B:C ratio 1.9, 1.8 and 1.1.
- NICRA participated farmer's adopted double cropping (rice followed by potato/ rapeseed) in upland and medium land situation. 16,900.0 kg ha⁻¹ and 2,313.3 kg ha⁻¹ MCEY was obtain in Rice- Potato and Rice-Toria cropping sequence, respectively.
- Four farmers from NICRA village cultivated High value crop (Bhut jolokia) and raising early rabi vegetable seedling under low cost poly house resulted in net return Rs 30,510.00 in Bhut jolokia and 3500.00 in vegetable seedling totaling an amount of Rs 34,010.00 per annum from 100 m² area.
- Fodder bank have been established with participation of 25 farmers belonging to five villages with introduction of Congo signal for small ruminants and hybrid Napier (CO₄) for large ruminants as part of NICRA fodder Bank. With a yield of 29754 kg for CO₂, 16250 kg for congo signal.

(II) Horticulture

5.4.1. Vegetables

- Intercropping of black gram with okra (Black gram cultivated as intercropping in the mid rows of Okra as 1:1 in additive series) is found to be the best with economic yield of 259.88 q ha⁻¹, B:C ratio of 4.65 with LER 1.59 and 36.91 % of land is saved.
- Ridge Gourd (*Luffa acutangula* L.) could be cultivated by using Enriched compost 2.5 t ha⁻¹ which is the best treatment considering ability for adopting at field level with highest economic yield and B:C ratio of 3.07.
- Intercropping of radish with lentil is found to

be the best treatment with economic yield of 210.75 q ha⁻¹, BC ratio of 5.65 with LER 1.65 and 32.16 % of land is saved.



Cultivation of Submergence tolerant variety, Ranjit sub-1

- Application of Rock Phosphate + Enriched Compost (2.5 tha⁻¹) + Azotobacter + PSB (as root dip treatment) is found to be the best organic treatment in Broccoli with economic yield of 185.2 q ha⁻¹ and BC ratio of 6.70 with better quality, shelf life and sustained soil health.



Potato



Mushroom

5.4.2. Coconut

- Studies on collection, conservation and evaluation of local germplasm of coconut in Assam which comprised of 10 local accessions with two check varieties viz., Kamrupa and West Coast Tall started during 2005 revealed that among the accessions, significantly the highest nut yield of 85.7 nuts/palm/year was observed in IC 610357 while the lowest (64.8 nuts/palm/year) was found in IC 610355..

- With regard to evaluation of five new coconut hybrids of location specific cross combinations, significantly the highest nut yield (81.5 nuts/palm/year) was recorded in AGT x PHOT closely followed by AGT x MYD (70.1 nuts/palm/year). The cross combination AGT x PHOT also recorded highest number of inflorescences (11.6) per palm per year as well highest number of female flowers (26.5) per inflorescence compared to other crosses.
- Local Double registered minimum days to spike emergence (68.25 days) and days required for first flowering (84.12 days). However, Bidhan Rajani -19 recorded maximum days of flowering duration (32.50 days) and was closely followed by Bidhan Rajani-24 (31.22 days), Vaibhav (31.12 days) and Suhasini (30.22 days).
- The varieties Bidhan Rajani H-19 recorded maximum duration of flowering (34.99 days) and number of florets in an individual spike (46.49 nos/spike), number of flower spikes per clump (2.38), spike yield (2.47 Lakh/ha), loose flower yield (19.01 t/ha/year), bulb yield (138.61 nos/clump) and B:C ratio (4.42) and was closely followed by Suvasini (2.31 nos spike/clump, 2.41 Lakh spikes /ha and 16.84t loose flower/ha/year, bulb yield 130.57 nos/clump and B:C ratio 3.99 respectively).
- Highest freshness index and shelf life extension were recorded in flowers treated with Boric acid 2 % (61.03% and 59.67 hrs respectively) and which was closely followed by Sodium benzoate 10ppm (54.72% & 59.25hrs respectively). Maximum flower opening index (56.00%) was observed in flowers treated with sodium benzoate 10 ppm and closely followed by flower buds treated with distilled water (50.87%).
- When the tuberose spikes were treated with 2% Orange dye combined with Sucrose 2% and HQS (200ppm) showed maximum colour retention (5.50 days) and vase life (7.20 days). On the contrary, minimum colour retention (4.10 days) was recorded in 2% orange red dye and the least vase life of 6.10 days was observed in control (T_{13}).
- The incidences of sclerotial wilt (*Sclerotium rolfsii*) in tuberose in the range of 10.50-31.00 % have been recorded. The incidence of leaf blight caused by *Alternaria polyanthis* in var. Prajwal was observed but in case of local single types both *Alternaria polyanthis* and *Phoma polyanthis* were recorded (12.50-31.50%).
- Spraying of Azoxystrobin (0.03%) or Difenoconazole (0.1%) or Tebuconazole (1g/l) at 7-10 days interval may be recommended for effective management of leaf spot/blight of tuberose.

5.4.3. Cocoa

- Multilocation trial (MLT) of 16 cocoa clones under palms revealed that the highest plant height, stem girth, jorquette height, plant spread (E-W and N-S) and canopy area (8.95 m²) were recorded in VTLC-20 followed by VTLC -18 and the lowest values for the above characters were observed in EYT. Cocoa clone VTLC-20 also registered maximum no. of pod/tree (39.0), no. of bean/pod (41.8) and dry bean yield/tree/year (2.28 kg) as against the lowest under YET.

5.4.4. Tropical orchids

- During the year two species namely *Dendrobium lituiflorum*, *Dendrobium thyriflorum* were collected and maintained in the centre. Amongst the evaluated genera under terrestrial group, *Cymbidium aloifolium* registered maximum number of vegetative shoots (19.54), number of flowers (42.78) and inflorescence length (62.45cm). However, *Spathoglottis plicata* registered maximum flower duration (65.80 days). Amongst the epiphytes, *Rhynchostylis retusa* registered maximum number of flowers in an individual spike (89.50 nos) longest spike length (28.25 cm), maximum flower duration (29.50 days) and maximum number of spikes per flowering shoots (5.80 days).

5.4.5. Tuberose

- Collected two genotypes of Single type viz., MPAUT-7-1 and Pratap Rajani-7 and two genotypes of double type viz., Bidhan Rajani -16 and Bidhan Rajani -17. The varieties Arka Prajwal registered maximum plant height (87.64 cm), flowering duration (19.63 days), rachis length (29.31cm), florets number (46.43), diameter of florets (4.23 cm), weight of individual florets (1.06 g), weight of florets per spike (49.16 g) and florets yield (28.29 q/ha).

5.4.6. Gerbera

- Seven gerbera genotypes were evaluated, out of which RHSG-WOC and Pink Melody recorded highest number of suckers (13.98 and 12.87nos), duration of flowering (84.57 and 83.17 days) with maximum flower yield (22.75 and 21.89 nos./clump/yr) and vase life of 7.83 and 7.47 days, respectively. In contrast, Orange Sun Blast recorded lowest number of suckers (6.87 /plant) with minimum flower yield (13.43nos/clump/yr) and vase life of 5.27 days.
- Amongst the genotypes tested, the check variety RHSG-WOC and Red Monarch recorded highest number of suckers (12.57 and 11.45 nos.), duration of flowering (89.67 and 83.89 days) with maximum flower yield (20.67 and 18.48 nos./plant/yr), respectively, which were also at par with Arka Krishika.
- Under Poly house the check variety Tecta recorded significantly least (92.17 days) days to flower bud burst with maximum flower yield (15.27nos/plant/year), stalk diameter (3.23 cm), suckers (2.58nos/plant/yr) with self life and vase life of 10.79 days and 4.51days. Whereas Arka Ashwa took maximum days to flower bud burst (107.37 days), produced least number of flowers per plant per year (11.68) with minimum stalk diameter (2.07 cm).
- Spraying of Pyraclostrobin 20% (1 g/l) or Tebuconazole 2% DS WP (1 g/l) or difenconazole (0.05%) may be recommended for effective management of gerbera leaf spot.
- Application of split doses of N:P:K @ 30:25:10 g/m² in gladiolus grown from cormel (>1.9 & <2.5 cm dia) at 45 days and 60 days after sprouting significantly increase the corm weight and corm diameter, resulting in production of flowering grade stock in the same season which otherwise needs two seasons.

5.4.7. Heliconia

- Four local genotype of Heliconias viz., HRS-H-1, HRS-H-2, HRS-H-3 and HRS-H were collected from different parts of Assam, planted in the field and evaluated for the year 2020-21. Amongst the genotypes evaluated HRS-H-4 and HRS-H-1 recorded highest number of suckers (7.35

and 6.75 nos.), maximum duration of shelf life (28.27 and 26.64 days) with maximum flower spike yield (14.45 and 12.84 nos./clump/yr) and vase life of 12.89 and 12.35 days, respectively.

5.4.8. Lotus

- The natural medium collected from natural ponds (Clay) took minimum time (50.61 and 55.65 days) showed earliness of for the initiation of functional leaf (Fourth week of February and first week of March) and also minimum period (46.00 and 49.00 days) for emergence of first flower stalk in Lotus (White type) and Lotus (Red type), respectively for the for the first ratoon crop. Similarly, the clay media was found superior in respect of flowering behavior of both White and Red type of lotus for the second ratoon crop which showed highest flower size (19.86 and 18.24cm), numbers of petal per flower (89.58 and 112.35nos) with maximum shelf life of 5.28 and 5.60 days, respectively. Incidence of similar minor insect-pests occurred in the previous season viz., Flee beetle (*Altica* spp.), Tobacco caterpillar (*Spodoptera litura*), Tiger Hairy caterpillar (*Artica* spp) and one foliar disease caused by *Alternari alternata* inciting severe leaf blight symptoms was also recorded.

5.4.9. Native ornamentals

- Amongst the new collection *Senna alata* (Candle plant), *Mandevilla sanderi* (Brazilian jasmine), *Rosa multiflora* (Wild rose), *Xanthosoma sagittifolium* (Arrow leaf elephant ear), *Hypoestes phyllostachya* (Polka dot plant), *Melestoma malabathricum Alba* (Indian rhododendron/Phutukola) besides some new aquatic plants and many new unknown entries to the earlier stock have been added ranging from annual herb to creepers, bushes and trees of vivid qualities belongs to different annual, perennial of bulbous, rhizomatous, shrubs, of different crop families.

5.4.10. Marigold

- Four sprays with tebuconazole (0.5 ml/l), difenconazole (0.5 ml/l) and trifloxystrobin (1 g/l) at ten days interval may be recommended for the management of *Alternaria* leaf blight of marigold.

5.4.11. Agroforestry

- A total of 15 districts have been surveyed and 150 different agroforestry systems of Agri-Horticulture, Agri-Silviculture, Agri-HortiSilviculture, Aqua Agri-Horti-Silviculture Aqua-Horticulture, Aqua-Silviculture, Aqua-Horti-Silviculture, Horti-Horticulture, Silvi-Pastoral, Silvi-Silviculture and Homestead have been identified.
- Total ninety five saplings of *Gmelina arborea* collected from 19 seed sources. Byrnihat (AAU 15 & AAU 16) and Silchar (AAU 17 & AAU 18) recorded 28.80 & 28.21 and 27.70 & 30.11 m tree height respectively, in 20 years old plantation; AAU 15, AAU 16, AAU 17 & AAU 18 recorded dbh of 45.00, 44.78, 49.92 and 51.58 cm respectively, in 20 years; AAU 18 (Silchar), recorded the highest timber volume of 2.76 m³/tree, biomass of 1588.04 Mg/ha and C sequestration of 794.02 Mg/ha.
- The 17 years old system of *Acacia mangium* based AF system has been intercropped with fodder and the intercrop plot where tree spaced at 5 m x 4 m recorded maximum plant height (16.67 m), dbh (35.97 cm), timber volume (412.35 m³/ha), tree biomass (518.26 Mg/ha) and above ground carbon stock (254.13 Mg/ha) compared to 5m x 5m and 5m x 6m spacing. The maximum fodder yield of Hybrid Napier (50.56 t/ha) was obtained in sole fodder followed by tree spaced at 5 m x 6 m (43.24 t/ha), 5 m x 5 m (39.20 t/ha) and 5 m x 4 m (37.45 t/ha), respectively.
- In nearly 5th year plantation with an objective to evaluate relative performances of timber trees and intercrops with arhar, green gram, cowpea and toria, maximum tree height (6.20 m) and collar girth (30.45 cm) were observed in sole tree plot and Cowpea-Toria sequence as intercrop respectively.
- The 21 years old plantation, average of 73 superior trees attained 26.12 m plant height and 41.86 cm dbh. Timber volume and tree biomass of the standing tree was 399.45 m³/ha and 325.12 Mg/ha respectively.
- The 17 years old system resulted tree height of 8.86 m in intercrop plot comparing 8.89 m in sole tree. The dbh (30.45 cm) of jackfruit was

superior in intercrop plot in comparison to sole tree plot (29.97 cm). Canopy diameter, timber volume, tree biomass and above ground C stock for jackfruit was higher in intercrop plots, being 7.98 m, 54.65 m³/ha, 105.00 Mg/ha, and 52.50 Mg/ha, respectively.

- The first year old *Santalum album* registered tree height of 1.5 m in intercrop plot comparing to sole tree.
- The 13 years old *B. balcoa* and *B. tulda* systems exhibited annual increment of biomass yield i.e. 5.02 % MG/ha and 4.87 % Mg/ha, respectively, over previous year.

5.4.12. Turmeric

- Six Turmeric varieties namely Megha Turmeric, Lakadong, Rajendra Sonia, Moti Haldi, IISR Pratibha, IISR Pragati were evaluated under GAP and Organic mode, the highest yield of 242.80 q/ha was recorded in IISR-Pragati followed by 223.80 q/ha in IISR- Pratibha under GAP mode of cultivation. Similar trend was also observed under Organic mode of cultivation. The highest yield of 212.10 q/ha was recorded in IISR-Pragati followed by 189.60 q/ha in Rajendra Sonia under Organic mode of cultivation

5.4.13. PFDC

- Cover the bunch with 17 GSM-Non woven polypropylene bags at the time of emergence of inflorescence to protect the bunch from fruit scarring beetle. Remove the bag just before harvesting.
- Apply 30 micron black polyethylene mulch as total ground cover for effective control of weeds, better yield and quality of cucumber with a benefit cost ratio of 2.44.

5.5. Others

5.5.1. Honeybees

- Effect of honey bee, *Apis cerana* pollination on fruit set and yield of *ber* (*Ziziphus mauritiana*) revealed that the fruit set varies from 70-75%. The yield recorded was 185.00, 212.50, 245.00, 250.00 and 78.00 q/ha in the plots of open pollination, bee pollination @ 3 colonies/ha (BP1), bee pollination @ 5 colonies/ha (BP2),

bee pollination @ 7 colonies/ha (BP3) and pollinator exclusion, resp. The highest yield increase (35.13%) was found in case of bee pollination @ 7 colonies /ha.



Figure 5.20. Various horticulture-based cropping systems

- Indian honey bee, rock bee, yellow jacket, sweat bee, dammer bee, syrphid fly, cabbage butterfly, common grass yellow, common sailor,

lemon pansy, grey pansy, common palm fly and castor butterfly were the most promising insect foragers of cucumber. Among all Indian honey bee was dominant forager (29.87%) followed by rock bee (21.07%). The stingless bee (9.12%) also visited cucumber flowers.

- Evaluation of foraging behaviour of stingless bee, *Tetragonul airidipennis* and their effect on pollination and yield of cucumber (*Cucumis sativus*) under protected condition revealed that the highest number of bees (1.21 ± 0.17), maximum time spent per flower (12.07 ± 0.99 seconds) and maximum pollen load per 10 bees per trip (7.15 ± 0.40 mg) were observed during 0800-0900 hours and the lowest number of bees (0.49 ± 0.08), minimum time spent per flower (8.32 ± 0.70 seconds) and minimum pollen load per 10 bees per trip (2.98 ± 0.46 mg) were observed during 1700-1800 hours of the day during 2020-21.
- The experiment on effect of stingless bee, *Tetragonul airidipennis* on fruit set and yield of cucumber (*Cucumis sativus*) under protected condition revealed that the highest yield/plant was observed under stingless bee pollination (SBP) followed by open pollination (OP) and pollinator exclusion with the yield record of 13.15t/ha in stingless bee pollination as against 8.29 t/ha in open pollination and 2.13 t/ha in without pollinators.
- The nesting and migration behaviour of rock bee, *Apis dorsata* has revealed that the there may be more than 100 colonies and the length of the nest was found to be more in roof followed by trees and water tank.
- The biochemical analysis of rock bee, *Apis dorsata* honey samples collected from nine different states of the NER revealed the highest moisture content (25.13%) in Nagaland honey, followed by Tripura (24.30%). Likewise, the highest fructose: glucose ratio was present at 1.27% in honey collected from Meghalaya which was followed by Sikkim (1.23%).
- The trap with meat was able to attract more predatory wasps (5.25) after 24 hours followed by traps with molasses.
- Fourteen numbers of microorganisms were isolated from the gut of wax moth, out of which

thirteen of them were bacterial species. The predominant bacteria observed in the gut of the greater wax moth larvae were *Acinetobacter* (14%), *Bacillus* (14%), *Enterococcus* (14%) and *Microbacterium* (14%).



Figure 5.21 (A). Pollination experiment on ber



Figure 5.21 (B). Predatory wasp trap

5.5.2. Rodent control

- Removal of weeds + cleaning of bunds/ roads + spraying of ecodon (1:20) on bunds at tillering stage + zinc phosphide baiting at PI stage+ trapping(bamboo traps) at maturity stage +smoking with egg tray plate at harvest + bromadiolone baiting at the vegetative stage of vegetables have recorded 61.77% & 51.03% control success in respect of LBC/ha in rice and vegetables, respectively in rice-vegetables cropping system in Assam
- Treatment combination of cultural practices (removal of weeds, bushes, dry leaves) + crown cleaning at monthly intervals + erecting squirrel guard at the height of 8 feet from the ground was found effective in reducing *Dremomys lokriah macmillani* incidence in coconut, i.e., 56.11% control success in case of infestation & 46.67% control success of damage.
- To ward off the monkeys from the crop field, anti-birds net was used as a physical barrier around the vegetables field. The nets were raised up to the height of 2.5 meter and the covered area with the help of bamboo post.
- The species composition of rodent pest in different habitats at Upper Brahmaputra Valley Zone revealed that *Rattus rattus* was predominated species in household and rural stores; *Bandicota bengalensis* in urban godowns, kitchen garden, paddy fields and orchards, *Dremomys lokriah macmillani* was the predominated rodent species in forest areas as well as plantation crops. *Bandicota indica*

have been recorded from forest, orchards and crop fields near to human habitats with a species composition of 33.33%, 18.81% and 16.66%, respectively. In house and rural store, *Mus musculus* was recorded predominately with a species composition of 31.66% and 28.61 % in houses and rural store, respectively. *Mus booduga* is the only field mouse have been recorded from crop fields mainly paddy (21.11%, kitchen garden (18.87%) and orchards (6.61%). The rodent species composition in food grain stage in Jorhat were *Rattus rattus*, *B. bengalensis*, *Mus musculus castaneus*.

5.5.3. Soil Arthropod Pest

- Light trap was installed at AAU farm, Jorhat for the collection of scarab beetles from March to September, 2021. Altogether 3,315 numbers of beetles were collected and profiled, out of which, *Apogonia ferruginea* was recorded to be the most dominant species (61.21%) followed by *Heteronychus* sp.(16.78%) and *Anomala chlorosoma* (6.74%).
- The impact of certain newer insecticides on the soil faunal diversity mainly represented by soil micro and macroarthropods, total bacterial and fungal population as well as the key soil enzyme activities were studied at 15 days interval. Prior to the application of insecticides, Hymenoptera was recorded to be the most dominant order (54.74%) among the soil macro-arthropods followed by Coleoptera (13.68%) and Araneae (11.57%) whereas Collembola and Oribatida were recorded as soil microarthropods registering 64.72 and 35.28 per cent, respectively. All the insecticidal treatments recorded a significant reduction ($p=0.05$) in the soil macro arthropod, bacterial and fungal population as well as soil enzymatic activities up to 75 days of application indicating the detrimental effects of insecticides as compared to the untreated plots showing more stable habitats for the soil fauna. On the contrary, the insecticidal treatments did not exhibit any significant impact ($p=0.05$) on the population of soil microarthropods during the study period.
- Five pheromonal compounds (Cis-9 Hexadecenoic acid, Octadec-9 enoic acid, 1-Tetradecene, 1-Hexadecene and 1-Octadecanol) in pure form and their five different blends were tested along with male and female body wash at Majuli during April, 2021. Among the 13 different pheromonal

and kairomonal blends tested, the maximum numbers of beetles (6.64) were recorded in the traps having Octadec-9-enoic acid @ 100%. Relatively lower attraction of beetles was observed during the experimental period and there was no statistical difference observed among the treatments. This experiment will be continued during April, 2022.



Figure 5.22. Collection of beetles from the pheromonal traps

- The nutritional analysis of desert locust, *Schistocerca gregaria* collected from RARI, Durgapura, Jaipur was analysed and the results of the proximate analysis showed moisture, crude protein, carbohydrate, crude fat, crude fibre and ash content of 12.33%, 48.17%, 17.05%, 44.08%, 12.01% and 3.36%, respectively. Elemental analysis was done for 7 minerals, out of which K (49.93 mg/100g) was found to be the highest followed by Na (34.77 mg/100g) and Ca (26.15mg/100g). The Mg, Fe, Zn and Cu contents were recorded to be 20.15, 12.76, 12.18 and 4.85 mg/100g, respectively.



Figure 5.23. *L. mansueta* powder-based biscuits, bhujia and cakes

- Nutritional evaluation of 3 value added products prepared from *Lepidiotia mansueta* powders viz., biscuits, bhujia and cakes was studied. All the value-added products recorded considerable amounts of both proximate and elemental composition as compared to the products without any fortification of *L. mansueta* powders. It was evident from the results that the per cent of moisture, crude protein, crude fat, crude fibre as well as the ash content of the products increased significantly with the increase in the level of *L. mansueta* powder, however, on the contrary the carbohydrate content was recorded in a gradual decreasing pattern with the increase in the insect powder content.

5.5.4. Acarology

- Among various organic treatments against litchi mite, *Aceria litchii* the Biopesticide *Metarhizium anisopliae* @ 2×10^8 cfu and Azadirachtin 0.15% @ 3 ml/l (Commercial botanical) resulted at par satisfactory control of 81.48 and 82.56 per cent of mites, respectively, after 35 days of application and could be adopted as biocontrol means against pest.
- Out of 12 germplasms studied against yellow mite, *Polyphagot arsonemus latus*, four germplasms, viz., Moni, Yellow mem, Green mem and Krishna were found to be resistant against yellow mite; hence these germplasms may be utilized for variety development programme. Resistant chilli germplasms had greater trichome density and higher phenolic compounds in their leaves which confer resistance against yellow mite.
- Among the locally extracted botanicals, polygonum leaf extracts was found to be superior giving 88.48 and 85.33 % mite mortality after 7 days in tomato and chilli, respectively.
- Mass production technique of the predatory mite, *Neoseiulus longispinosus* has been developed in *Amaranthu shybridus* as host crop on *Tetranychus urticae* as prey mites.
- In marigold, after 7 days of releasing predators, 89.25 % mite reduction was achieved with 10 numbers of predators/plant. 100 per cent mite reduction was achieved with 20 and 25 predators/plant which were at par with 98.21 per cent reduction by 15 predators/ plant. But

in gerbera after 7 days of releasing predators, prey mite reduction was found to be 100 per cent with 25 and 20 predators/plant which were at par with 98.72 per cent reduction by 15 predators/plant. Therefore, applying 15 predators /plant were found to be optimum to control the phytophagous mites in gerbera.

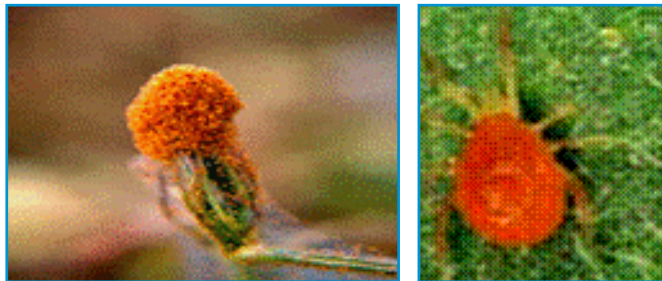


Figure 5.24. Ballooning of mites to disperse *Neoseiulus longispinosus* adult

(III) Community Science

- Results of study on Reproductive health care for psychological wellbeing of married women have revealed that most of the mothers have elevated their level of knowledge in the area of reproductive health and also in maternal and child health.
- Developed lemon harvester and popularized through KVK, Nagaon.
- Developed paddy picker and popularized through KVK, Nagaon and KVK, Dima Hasao.

(IV) Veterinary Science

During the report period i.e. April 2021- 31stMarch, 2022, fifty one numbers of externally funded projects were in operation. Out of which nine nos. of new project were implemented in 2021-22. Fourteen projects were completed during the period. The Assam Science and Technology Council, Govt of Assam has sanctioned three nos. of projects during the report period. Under AAU R & D programme total 9 nos. of projects were sanctioned. The Directorate is also acting as a nodal centre for TSP, SC/SP, RKVY & NEH Component of various ICAR Institutes. There are two outstations under the Directorate of Research (Vety), namely Livestock Research Station, AAU, Mandira and Goat Research Station, AAU, Burnihat, the activities of both the stations are looked after by this Directorate. The

research activities of College of Fisheries, AAU, Raha and Lakhimpur College of Veterinary Science, Joyhing, North Lakimpur is also looked after by this Directorate. The lists of ongoing and completed projects are furnished as per format in appropriate annexure.

Some of the significant research activities during the report period (2021-2022) are furnished below.

5.6.1. ICAR-AICRP on FMD

- During the period of April 2021- March 2022, the centre has collected/received 227 numbers of FMD suspected clinical samples from Assam as well as from other network centre of North East India (Assam: 61, Arunachal Pradesh: 41, Meghalaya: 40, Mizoram: 20, Nagaland: 12 and Tripura: 53) from 20 FMD incidences (Assam: 9, Arunachal Pradesh: 1, Meghalaya: 2, Mizoram: 4, Nagaland: 2 and Tripura: 2). All the samples were subjected to sandwich ELISA and multiplex RT-PCR for typing of the virus.
- During the period of April 2021- March 2022, FMD virus serotype "O" was recorded to be predominant and could be detected in all FMD incidences reported from Assam, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland and Tripura.
- During the period of April 2021 to March 2022, a total of 8151 sera samples were subjected to 3AB3 ELISA and overall 21.22 % samples were found to be DIVA positive.
- During the period of April 2021- March 2022, a total no of 23 extension programmes were conducted through which 1986 participants comprising Vety. Officers, students, progressive farmers and rural farm women/youth were benefited.
- During the period, 1300 sera samples from bovine, 169 samples from ovine and 74 samples from porcine were collected to study sero-surveillance of FMDV at domestic-wild life interface from Fringe areas under Kaziranga National Park, Manas National Park, Orang National Park and Pobitora National Park by Regional Research Centre, ICAR-AICRP on FMD, Guwahati, Assam in collaboration with Wildlife Trust of India, Assam.



Figure 5.25. Research programmes on ICAR-AICRP on FMD

5.6.2. ICAR-AICRP on Pig

- The herd strength at the beginning and at the end of the year under report was 81 and 101 respectively, irrespective of sex and age of HD-K75 (75% H) genetic group.
- A total of 283 (143+140) piglets were obtained during year 2021-2022.
- The average litter size at birth, litter weight at birth, litter size at weaning and litter weight at weaning were found as 7.26 ± 0.65 , 7.52 ± 0.60 kg, 6.77 ± 0.65 and 59.34 ± 0.92 kg respectively. The average individual body weight at birth, at weaning, at 4 month of age and at 5 month of age were found 1.04 ± 0.55 , 9.81 ± 0.65 , 29.63 ± 0.52 and 41.75 ± 0.85 kg respectively.
- A total of 217 (104+113) piglets were sold to 32 farm families of the state including KVKs of AAU, Biswanath Agriculture College, AAU and 30-Sow unit of C.V. Sc, AAU, Khanapara. 22 (5+17) piglets were sold to the ICAR-MSP on Pig, AAU for strengthening the breeding stock (HD-K75) of MSP on pig, AAU Khanapara.

- The overall Pre weaning and Post weaning mortality percentages were calculated as 7.20 (19) and 3.41(09) respectively during the year under report
- Organized Private Pig Breeding Farms (Symbiotic Food Pvt. Ltd, Ghoramari Tezpur), M/S Mothonga Agro-Producers Co. Ltd, Khandikar, Baksa (Funded by NEC) and leading medium /small farms of the state are regularly technically benefitted from this project.
- Owner of the Symbiotic Food Pvt. Ltd, Ghoramari Tezpur Sri Monoj Basumatary was awarded "Assam Gaurav" by Govt of Assam, 2021 for his outstanding contribution in piggery sector.
- Farmers interaction via virtual (online mode)/ telephonic conversation in different aspects of pig production and Bio Security measures of the pig farm are regularly carried out.
- Acted as Resource Person for trainings on different aspects on Piggery Sector: Institute level -5 nos, field levels -6 nos.
- Facilities are provided to the M.V.Sc. and Ph. D. students for conducting PG research in the disciplines of Animal Genetics & Breeding, Animal Nutrition, Livestock Production & Management and Animal Reproduction Gynecology & Obstetrics
- Inclusion as Expert Member for formulation of State Pig Breeding Policy – Assam and Nagaland.
- Inclusion as Expert member of Core committee, Govt. of Assam for the issues of African swine fever.
- Inclusion of Academic committee member of SAMETI.



Figure 5.26 (A). Pregnant Gilt HD-K75, ICAR-AICRP on Pig, CVSc, Khanapara



Figure 5.26 (B). Private Pig Farm of Sri Dalim Boro; supported by ICAR-AICRP on Pig

5.6.3. ICAR-Mega Seed Production (MSP)

- The herd strength under ICAR-Mega Seed Project on Pig was 177 and 102 at the beginning and at the end of the year respectively, irrespective of sex and age.
- The project is maintaining only HD-K75 for piglet production.
- A total of 159 piglets from 19 farrowings were sold to the farmers.
- The average litter size at birth and litter size at weaning were found as 7.11 ± 1.15 and 6.37 ± 1.10 respectively in HD-K75
- A total of 241 animals of different categories of pigs were sold. A total of 159 weaned piglets were sold to 17 farm families of Kamrup, Sonitpur, Nalbari, Barpeta and Directorate of Research (vety) of the University.
- The overall pre weaning and post weaning mortality per cent ages were recorded as 10.37 (14) and 6.62 (08) respectively.
- Organized Private Pig Breeding Farms (Symbiotic Food Pvt. Ltd, Ghoramari Tezpur), M/S Mothonga Agro-Producers Co. Ltd, Khandikar, Baksha (Funded by NEC) and other leading medium / small farms of the state are regularly getting technical guidance from the project.
- Owner of the Symbiotic Food Pvt. Ltd, Ghoramari Tezpur Sri Monoj Basumatary was awarded Assam Gaurav by Govt of Assam, 2021 for his outstanding contribution in piggery sector.
- Acted as Resource Person for trainings on

different aspects on Pig production at Institute level -6 nos, field levels -7 nos.

- Organized day long Farmer's meet on Care & Management of pregnant sow/newborn piglet/weaning at Baksa and Morigaon (2).
- Farmers interaction with the farmers of the state via virtual(online mode), telephonic conversation in different aspects of pig production and Bio Security measures of the pig farm are regularly carried out.



Figure 5.27 (C). Breeding piglets for farmers HD-K75

5.6.4. AICRP on Post Harvest Engineering Technology

- **Electrically operated revolving barbecue**

The electrically operated revolving barbecue has been constructed locally with non-toxic stainless steel, toughened glass and other materials. The apparatus consist of 1000 W heating element and five synchronized motors for rotatory movement along with thermostat for temperature control. It has five stainless steel barbeque stick fitted with it. The product is found to be handy, economical, environment friendly and suitable for small families, hotels and restaurants and small vendors.

Dimension:

- Length: 17.1", Breadth: 11"
- Circumference: 33"
- Weight of the machine: 6 kg
- Capacity: 1.5 kg



Figure 5.28. Electrically operated revolving barbecue

• **Extraction of bioactive peptides with antioxidant potential from feather protein using pepsin hydrolysis**

The bioactive peptides released by pepsin enzymatic hydrolysis from hydrolysed feather protein is demonstrated to possess antioxidant potential through 2, 2, diphenyl 1 picryl hydrazyl (DPPH) radical scavenging method.

Bioactive peptides of 1, 3 and 10 KDa has been isolated from pepsin hydrolysate of keratin protein by hydrolysis at 37°C and 2.0 pH for 4 hours. The obtained hydrolysate was then filtered using 1, 3 10 KDa MW ultrafiltration membrane. The filtrate containing bioactive peptides of different size were then lyophilized to obtain a powder form. It was then resuspended in water to get a desired concentration.

Antioxidant activity of the bioactive peptides isolated using enzyme pepsin has been evaluated.



Figure 5.29. bioactive peptides with antioxidant potential from feather protein

Table 5.2. DPPH radical scavenging activity of the pepsin hydrolysate derived bioactive peptide from feather

Sl. No.	Size of peptide	DPPH radical scavenging activity (%)
1.	<1 KDa	64 µg: 69.36%
		128 µg: 74.29%
		192 µg: 80.63%
		256 µg: 81.69%
2.	<3 KDa	50 µg: 68.30%
		100 µg: 79.57%
		150 µg: 81.69%
		200 µg: 85.50%
3.	<10 KDa	50 µg: 68.30%
		100 µg: 79.57%
		150 µg: 81.69%
		200µg: 85.50%

• **Feather meal and Hatchery byproduct meal as protein source in livestock ration:**

Hatchery by-products meal is prepared by combining the by-products from hatcheries. The by-products include infertile eggs, dead embryos, dead or culled chicks and shells of hatched eggs. The by-products are sterilized by autoclaving at 121 °C for 15 minutes. The sterilized contents are then minced and dried to attain a moisture content of less than 10% followed by pulverization. The final product was found to contain crude protein content of about 62%, ether extract of 21%, moisture content of 4% and ash content of 12.5%. In a trial on broiler chicken, it was observed that the FCR of the trial group fed with 8% hatchery byproduct meal was found to be 1.48 which was far better than FCR of control group (commercial feed) i. e. 2.02.

Hydrolysed keratin protein results from the processing of feathers obtained after poultry slaughter. The feathers are cleaned using mild detergent, and degreased by soaking in ether, partially hydrolyzed using alkali, neutralized by mild acid treatment (lactic acid) and dried to make a powder. The final product was found to contain crude protein content of about 90% and moisture content of 5%. Hydrolysed protein can be added in livestock ration in combination with hatchery byproduct meal at concentration of 3%.

Compared to the above by-products meal, mixed poultry by-product meal did not yield better performance in poultry trial.



Figure 5.30. Hydrolized keratin from feather

5.6.5. AICRP on Nutritional and Physiological Approaches for Enhancing Reproductive Performance in Animal

- Treatment protocol developed:
 - a. **LPS+ Bypass Fat:** Single intrauterine infusion of LPS @ 100 µg (Lipopolysaccharide) along with bypass fat supplementation for 21 days is an effective treatment for crossbred cow with uterine infection
 - b. **Bypass fat:** Supplementation of bypass fat @ 100 g daily for 21 days along with basal diet results in early resumption of post partum estrus in cross bred cow
 - c. **Nano Zinc (Zn) Supplementation:** Supplementation of 50 mg nano-Zn to the basal diet reduces post partum estrus interval and increases conception rate in Assam Hill Goat.
- Infertility Investigation and Treatment camp organized
- Feed distribution camp organised.

5.6.6. AICRP on Poultry Breeding

Objectives	To develop a dual type of chicken as per the choice of rural farmers of Assam
	Work done during the year
	i. A total of 785 numbers of indigenous adult male and female of 12 months of age are kept in the farm and their performances are under evaluation.

	ii. The performance of a flock of 150 nos. of PB-2 male procured from the DPR, Hyderabad is also studied. iii. A flock of 525 nos. of crossbred (PB-2 x Indigenous) have been maintained in the centre and their performance is studied.
	iv. The performance of 1200 nos. of Dahlem Red birds procured from DPR, Hyderabad is evaluated. v. A flock of 923 nos. of Kamrupa have been kept in the centre of 12 months age and their performance is valuated. vi. Performance of a flock of 325 nos. of Daothigir birds procured from Kokrajhar district is under evaluation.
Germplasm supply	19375 numbers of hatching eggs and 21205 nos. of Day-old-chicks and Growers of Kamrupa have been supplied to the rural farmers of Assam and North-Eastern region. Total Germplasm 40580.
Farmers benefited	215 Numbers of Farmers.



Figure 5.32. Kamrupa bird in farm condition

5.6.7. AICRP on Goat Improvement:

- Body weight at birth, 3, 6, 9 and 12 months have been found to be 1.20±0.01 (1546); 5.42±0.05 (631); 8.23±0.09 (593); 10.88 ±0.11 (520) and 13.63 ±0.16 (386) respectively for this period (within parenthesis is the number of observations)

- During the period the percentage of single and multiple births was found to be 43.21 and 56.79, respectively.
- The average income per family per annum from goat for the period under study was recorded as Rs. 9352.54.
- Mortality percentage was found to be 5.17 % for the reported period.



Figure 5.33. Vaccination and Treatment at different clusters



Figure 5.34. Distribution of Superior quality Bucks

5.6.8. AICRP on Disease Monitoring and Surveillance (PD-ADMAS)

- The AICRP on ADMAS, Guwahati Unit” is located in the College of Veterinary Science, Khanapara, Assam. The unit has started functioning since 27th January, 2010 as a collaborating unit.
- The unit is associated with collection of animal disease data in the state of Assam and transmitting the same to ICAR-NIVEDI.
- Different outbreaks are attended and samples are also collected for surveillance and monitoring.
- During 2021-22, a total of 26 different diseases were recorded in livestock and poultry of Assam state. Among the different bacterial diseases, Black Quarter (BQ) was found to be the major killer disease in cattle. While Enterotoxaemia appears to be the most important bacterial disease of small ruminants. During the reporting period, Anatipestifer disease (New duck syndrome) has been reported from few districts of Assam affecting the duck population with heavy morbidity and mortality. Amongst the viral diseases, CSF, Goatpox, PPR, Orf, Canine parvo viral infection and canine distemper has been reported from the state of Assam. Classical Swine fever continues to be the major viral disease of Pigs which caused heavy mortality among the pig population. Among the viral diseases of poultry, Ranikhet disease is the endemic disease with heavy mortality followed by duck plague. Like previous year, LSD like diseases affecting cattle population are still present and have been reported from few locations.

5.6.9. DBT Project “Analysis of Gut Metagenome of Duck (*Anas platyrhynchos*) with special reference to Identification of Bacteria having Probiotic Potential”

- A DNA vaccine (pCI-Cap) was generated against Porcine Circovirus 2 which exhibited promising immune response and showed significant protection in challenge study conducted in mice model.
- A Polymerase Spiral Assay was optimized to detect African Swine Fever Virus in field samples.
- Gut metagenomic analysis of indigenous (Pati) ducks *Anas platyrhynchos domesticus* of different location in Assam was done.
- A total of 18 bacterial strains isolated from *Anas platyrhynchos domesticus* have passed *in vitro* assessment of probiotic efficacy which were identified to be *L. fermentum* and *L. reuteri* after Sanger sequencing of 16s rRNA gene. A probiotic consortium has been developed which is currently under control experimental trial in chicken.

- Four immunogenic peptides from the extracellular loops of the most immunogenic outer membrane protein (PagN) of *Salmonella* Typhi were selected by immunoinformatics tools, synthesized and evaluated for their immunoprotective efficacy in mice model and found that the synthesized peptides alone and in combination with Vi-capsular antigen could induce humoral immune response as well as could confer protection to challenge infection with virulent *Salmonella* Typhi in the immunized mice.

5.6.10. DBT Twinning project on “An integrated omics approach to characterize circulating Newcastle disease virus and intervention strategies to control Newcastle disease in North East India”

- Developed of a thermostable lentogenic genotype II Newcastle disease virus (NDV) vaccine against Ranikhet disease of poultry (under *field trial*)
- Developed a novel sugar film to preserve NDV for extended period of time without continuous refrigeration/maintenance of cold chain
- Evaluated immune response of a novel attenuated genotype XIII NDV from Assam (*in house trial*)
- Adaptation of 22 NDV isolates comprising genotype II, VII and XIII (both virulent and avirulent) in Vero cell
- Developed a Newcastle disease virus repository consisting 43 NDV isolates out of which 19 isolates had received accession number from ICAR-National Centre on Veterinary Type Culture Collection, ICAR-NRCE, Hisar, Haryana

5.6.11. Outreach programme on Livestock Related Environmental Pollutants, Contaminants & Toxicants (Monitoring of Drug Residues and Environmental Pollutants)

- A total of 220 broiler meat samples comprising

of muscles were collected from the local markets of Assam

- 1.25% and 1.02 were found to be positive for oxytetracycline and ciprofloxacin residues respectively.
- The maximum level of residue was found in the breast muscle followed by thigh Muscle.
- However, the level of residue detected were below the permissible limit (MRL) so pose no threat to the consumers.

5.6.12. ICAR-Veterinary Type Culture Collection

- Deposited 25 virus isolates consisting Newcastle disease virus (19), Fowl adenovirus (1), Infectious bursal disease virus (1), Avian bornavirus (2), Avipox virus (2)
- Deposited 5 bacterial isolate consisting *Staphylococcus aureus* (MRSA) (1), *Pasteurella multocida* (1), *Riemerella anatipestifer* (2), *Salmonella Braenderup* (1)
- Obtained VTCC accession numbers of 14 NDV isolates (Accession Numbers: VTCCAVA322, VTCCAVA323, VTCCAVA324, VTCCAVA328, VTCCAVA329, VTCCAVA330, VTCCAVA331, VTCCAVA332, VTCCAVA333, VTCCAVA334, VTCCAVA335, VTCCAVA338, VTCCAVA339, VTCCAVA340)

5.6.13. Validation and translation of the vaccines as well as diagnostic technologies developed in Phase I of ADMaC

Sub Project 1: Validation, Regulatory compliance and translation of Vaccine and Molecular Diagnostics for Duck Plague

- Whole genome sequencing of wild strain of Duck Plague virus is done and published.
- Adaptation of DPV local strain in the Vero cell line is in progress, so far 20 passages in CEF has been given, after few more passages it will be transferred into Vero cell line.
- Cloning and transformation of gD, gG, gC genes are done.

- Roller flask culture facility has been started and is in process.
- Lyophilisation of DPV vaccine has been successful.
- Immunization trial in duckling is over.

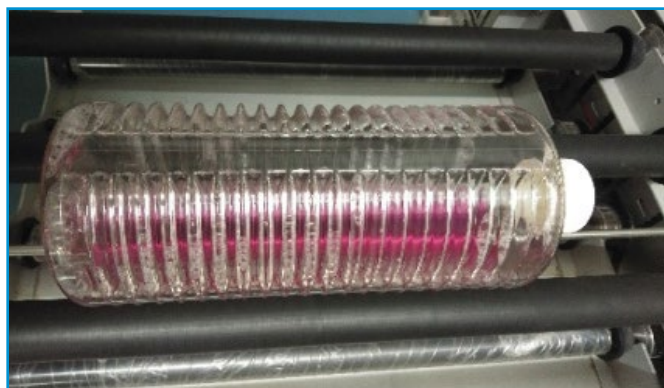


Figure 5.35 (A). Roller Flask culture



Figure 5.35 (B). Lyophilised Vaccine

Sub Project 2: SWINOSTICS - A platform for development and validation of diagnostics of important pig pathogens in NE Region of India for commercial exploration

- Production of recombinant E2 protein of CSFV is confirmed by Western Blot. Purification is in progress
- Simplex qPCR assay for PCV and ASFV is standardized.
- Standardization and optimization of PSR assay for detection of PCV is carried out and is in verge of completion.
- Standardized JEV indirect ELISA is in Progress.
- True positive and true negative serum sample panels have been identified and repository has been prepared for standardization of CSFV and JEV indirect ELISA.

Sub Project 3: Validation and field testing of DIVA tests developed in ADMaC Phase-I project for surveillance of brucellosis in North Eastern region of India

A total of 684 of serum samples were collected from 12 different districts viz. Kamrup, Lakhimpur, Bongaigaon, Golaghat, Goalpara, Karbi-Anglong, Dhemaji, Chirang, Darang, Baksa, Nagaon and Jorhat. Out of 684 serum samples 304 numbers were cattle, 230 samples were goat and 150 pig samples. RBPT was done for 304 cattle and 230 goat & 59 pig samples out of which 33 cattle samples came positive and no goat and pig sample was positive for RBPT. cELISA was also done for 56 cattle and 90 goat samples. Out of 56 cattle samples 7 came positive in cELISA but all goat samples were negative.

Sub Project 4: Upgradation and Implementation of Knowledge Based system (KBS) in NER of India (An extended activity of Advanced Animal Disease Diagnosis and Management Consortium (ADMaC))

- Collection of field contact details completed.
- Standardization of questionnaire on 8 pig diseases and KAP.
- Preparation of pig disease clinical score in Likert scale.
- Validation of standardized questionnaire for field clinical signs of 8 pig diseases
- And collection pig disease clinical score through veterinarians.

Table 5.3. District wise prevalence of brucellosis by RBPT

District	No. of samples	Species	
		Cattle	Prevalence (%)
Kamrup	48	48	11 (22.91)
Lakhimpur	138	65	3 (4.61)
Goalpara	47	28	0 (0.00)
Golaghat	41	14	3 (21.42)
Karbi Anglong	62	12	2 (16.6)
Dhemaji	91	20	3 (15.00)
Chirang	54	22	4 (18.18)
Baksa	25	25	0 (0.00)
Darang	10	10	4 (40.00)
Jorhat	26	19	3 (15.78)
Nagaon	22	-	-
Bongaigaon	120	41	0 (0.00)
Total = 684		304	33 (10.85)

Table 5.4. Screening of different samples for brucellosis by cELISA

District	Numbers of samples	Species	
		Cattle	Prevalence (%)
Kamrup	30	30	7 (23.33)
Lakhimpur	59	26	0 (0.00)
Dhemaji	31	-	-
Karbi-Anglong	29	-	-

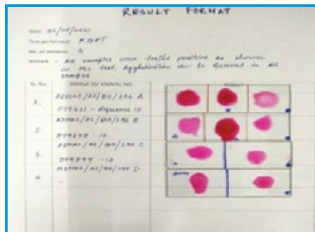


Figure 5.36 (A). RBPT result

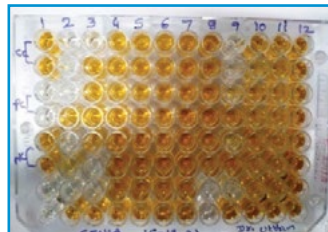


Figure 5.36 (B). cELISA result

5.6.14. Modelling of indigenous diagnostics and immuno-potent vaccine candidates to combat African swine fever in India

- Field Sample collected/received from different parts of Assam, Arunachal Pradesh, Tripura, Nagaland and Meghalaya including samples from wild pigs.
- Selected representative samples were outsourced for sequencing of phylogenetic marker (*B646L* gene).
- Phylogenetic analysis of a few sequences revealed that genotype-II of ASFV is in circulation.
- Eight numbers of representative samples (Assam, Meghalaya, Tripura, Nagaland and Arunachal Pradesh) were outsourced for Whole Genome Sequencing including a wild boar sample.
- Primer for PSR was designed based on conserved region of p72 gene and it has been synthesized by outsourcing.
- The process for PSR optimization is in progress
- Codon optimized p30 and p54 genes were synthesized by outsourcing.
- The p30 gene was cloned, expressed and

purified. Raising of hyper-immune serum is in progress.

- Expression of p54 gene is in progress.

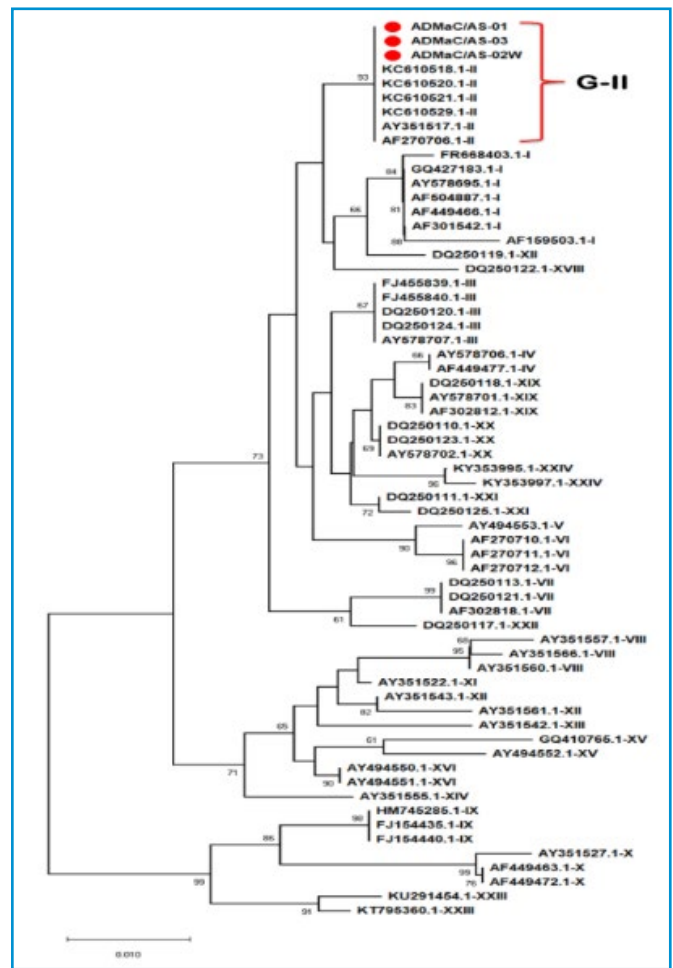


Figure 5.37 (A). Phylogenetic Tree of ASFV

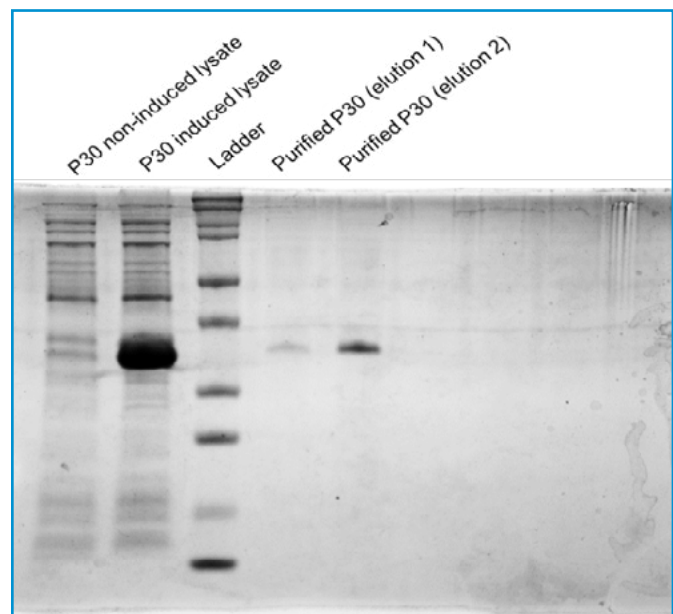


Figure 5.37 (B). Expression of p30 in *E. coli*

5.6.15. DBT “Establishment of a Consortium for One Health to address Zoonotic and Trans-boundary Diseases in India, including the Northeast Region”

- Field Sample collected/received from different parts of Assam, Arunachal Pradesh, Tripura, Nagaland and Meghalaya including samples from cattle, pig and goats.
- Online meetings AAU & all centres of NE: 1no, Veterinary group: 2nos, NER group: 2nos.
- SOPs prepared for: ASF, LSD, Swine influenza, PRRS.
- Manpower hiring: A total of seven numbers of manpower recruited under the project which includes 2no of RA-III, 2no of RA-I, 2 no of Field workers and 1 no Scientific Administrative Assistant
- Selection of various diagnostic kit completed.

5.6.16. DBT “Generation and evaluation of a live vectored vaccine against porcine circovirus infection of swine”

- Suspected field samples collected/received from different parts of Assam and North-east including samples from wild pigs.
- Screening of the samples for PCV2 by PCR and qPCR is in progress.
- Six PCV2-PCR positive samples present in the repository of ADMaC laboratory were isolated in PK-15 cells. Full length *Cap* gene of the isolates were amplified and phylogenetic analysis was done. Phylogenetic analysis revealed the circulation of PCV2d genotype as all the six isolates belongs to genotype PCV2d.
- PCV2 strain Assam-01 was isolated and complete genome was sequenced (Genbank accession no. MN266483).

- Two samples collected in 2020-21 from wild pigs of Assam and Arunachal Pradesh were found to be positive for PCV2.
- Thus, PCV2 is endemic and genotype PCV2d is one of the dominant genotypes in Northeast India.
- The site has been selected for construction of pig experimental house and the construction plan has been approved by Directorate of Physical Plant, AAU, Khanapara. The construction work will start shortly.

5.6.17. Attempt to Develop Diagnostic and Preventive measure for Suspected Fish Viral Diseases encountered in Assam

- Four various fish virus cell lines are maintained in laboratory of Dept. of Veterinary Microbiology, Assam.

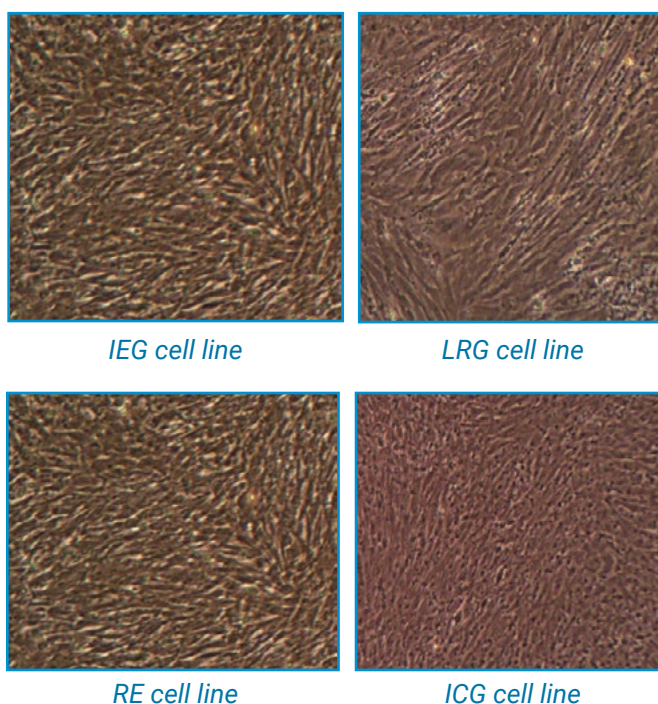


Figure 5.38. Various cell lines used for vaccine generation

- Standardization of various Fish RNA and DNA viruses.

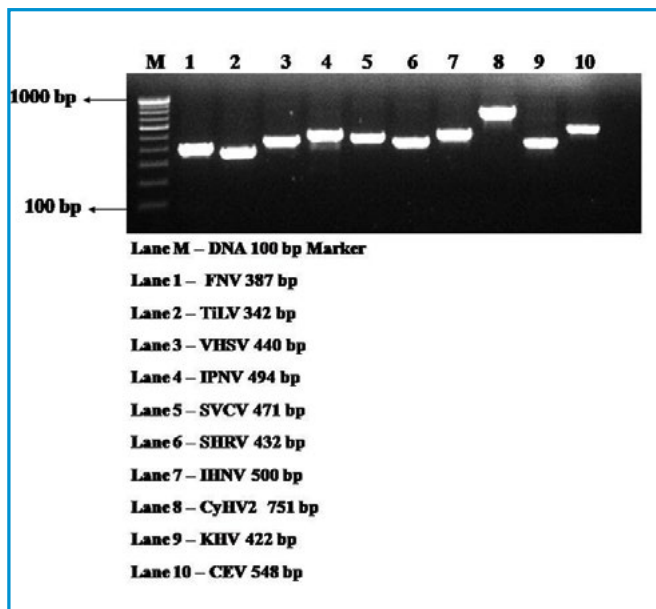


Figure 5.39. Virus detection by PCR

- Positive cases of KHV (koi herpesvirus) from Barpeta district of Assam were detected.
- Positive cases of Cy-HV2 (Cyprinid herpesvirus-2) were detected from Dhemaji district of Assam.

5.6.18. Modelling of indigenous diagnostics and immuno-potent vaccine candidates to combat African swine fever in India

- Five numbers of whole genome sequencing of ASFV samples collected from north-eastern region of India is being completed.
- Development of apolymerase spiral reaction assay to detect ASFV is in progress

5.6.19. DBT Consortium “Genetic Up Breeding of duck production to strengthen livelihood security in NER of India by converging conventional and molecular techniques.”

Identification of Allelic Variants in Crossbred Duck: Using Microsatellite Markers

The genomic DNA was isolated and characterized microsatellite loci in crossbred duck (*Pati x White Pekin*). Ten microsatellites markers were used to

detect polymorphisms in 50 cross bred ducks. A total of 28 nos of alleles were observed and all loci were polymorphic. The number of alleles ranged from 2 to 5 with an average of 2.6 ± 0.08 per microsatellite locus. The observed and expected heterozygosity of these polymorphic makers ranged from 0.00 to 0.42 with an average number of 0.047 and 0.41 to 0.82 with an average number of 0.57, respectively. Among the polymorphic markers, the observed heterozygosities of loci were less than 0.50. The polymorphism information content (PIC) of 10 loci ranged from 0.32 to 0.78 with an average of 0.477. These microsatellite markers will be useful for constructing the genetic linkage map of the duck and a comparative mapping with the chicken, also can provide a valuable tool for studies related to biodiversity and parentage determination of the duck.

5.6.20. DBT-IIT “Farmers friendly innovative mechanical devices for boosting profitable pig production and improving animal welfare in rural North Eastern States of India”

- The Piggy flask is designed and validated in the first stage in NRC Pig Rani. The final product is in process and will be given for final validation soon.
- The Multipurpose restraining crate is designed. It will be further improved and will be given to a firm for assembling it.
- The Multipurpose restraining crate is designed. It will be further improved and will be given to a firm for assembling it.

Table 5.5. Number of alleles, their molecular sizes and frequencies at various microsatellites loci in crossbred (Crosses between Pati and White Pekin)

Micro-satellite Loci	Allele Number	Size	Alleles	Allele frequency
CAUD001	3	158	A	0.2684
		197	B	0.1650
		220	C	0.5666
CAUD002	2	255	A	0.2307
		278	B	0.7693
		190	A	0.3076
CAUD003	3	210	B	0.1923
		225	C	0.5001

Micro-satellite Loci	Allele Number	Size	Alleles	Allele frequency
CAUD004	4	185	A	0.0852
		210	B	0.2508
		213	C	0.4314
		228	D	0.2326
CAUD005	5	195	A	0.3461
		215	B	0.2172
		230	C	0.1011
		245	D	0.2116
		263	E	0.124
CAUD006	2	155	A	0.8125
		180	B	0.1875
CAUD007	2	135	A	0.5652
		95	B	0.4348
CAUD009	2	128	A	0.7251
		110	B	0.2749
CAUD010	2	105	A	0.4215
		119	B	0.5785
CAUD013	3	85	A	0.1566
		98	B	0.2175
		101	C	0.6259
Mean ± SE	22.6 ± 0.08			



Figure 5.40. The Piggy Carrier is designed and given to a firm for assembling it

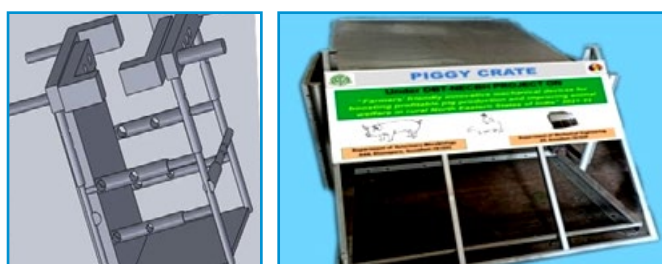


Figure 5.41. Multipurpose restraining crate

5.6.21. Goat Research Station

Table 5.6. Herd Strength

Breed	0-6 months		> 6 month		> 12 month		Cas-trated	Total		G. total
	M	F	M	F	M	F		M	F	
Beetal	4	8	2	8	14	16		20	32	52
Non-descript	1	6	1	5	4	7	3	9	18	27
AHG	16	18	7	16	9	34	6	38	68	106
Crossbred	9	13	2	5	3	15		14	33	47
							Total	81	151	232

5.6.22. Livestock Research Station, Assam Agricultural University, Mandira

Farm Strenngth of LRS, Mandira 2021-22

5.6.22.1. Animal Herd Strength:

1. IFS Cattle unit -Total 8 nos (in milk-4 nos, heifer 2 no, calf- 2 no)
2. IFS Layer - BV 380 - 95 nos (Egg production 84 no/ day)
3. Sheep unit - 15 no (Ram -1no, Ewe – 7 no, Lamb – 7 nos)
4. Goat unit - 49 nos (Buck -4 no, Doe- 27 nos, Kids- 18 nos)
IFS pig unit - 4 nos
5. Pig unit - Hampshire cross – 15 nos (3 sow no, 12 piglets)
Ghungroo – 21 nos (Sows- 9 nos, Boar-1, piglets-11)
Yorkshire – Adult 9 nos
HDK 75 – Adult 7 nos
Hampshire Ghungroo – 11 nos (1 Boar, 1 Sow, 9 piglet)
6. Murrah buffalo unit – Total 39 (lactating – 5 nos, dry- 7 nos, heifer – 21 nos, 6 male calf)

5.6.22.2. Agri-Horti component

1. Areca nut orchard: 4 nos (size: 1000 fruit bearing plants)
2. Assam lemon orchard: 1 no (500 nos fruit bearing plants)
3. Mango orchard: 2 nos (90 nos)
4. Litchi orchard: 2 nos (50 nos)
5. Coconut orchard: 2 nos (50 nos)
6. Bamboo orchard: 1 no (12 bushes)
7. Jackfruit orchard: 1 no (50 no fruit bearing plants)
8. Simalu tree : 150 nos
9. Ahu rice:- Dishang 40 quintals produced

5.6.22.3. Fodder block

1. Napier 3 blocks
2. Seteria 1 block

3. Maize 2 blocks

5.6.22.4. Total revenue generation by LRS during 2021-22 - Rs. 3393733.20

(V) Fisheries

5.7. Fisheries Research Centre

A model for fish seed grader cum counter with provision for grading and counting fish fry/fingerling up to 4 size groups have been designed in Fisheries Research Centre, AAU, Jorhat, in collaboration with DIC-IIT Guwahati. Fabrication of physical workable model is completed on the basis of CAD Model design developed.



Figure 5.42. Workable model for fish seed grader

Extension Education

Assam Agricultural University, since its inception in 1969, has been extending outstanding contributions to the farming community of Assam and its adjoining North-Eastern states. The University caters to the needs of the farming community and the stakeholders in the agricultural and allied sectors of the North-Eastern region and has been playing a vital role in the socio-economic development of the region since its establishment. The Directorate of Extension Education (DoEE), AAU has been maintaining liaisons with the Assam State Department of Agriculture (ASDA) since its inception. The DoEE has also been maintaining linkages with other line departments of the NE states like Fishery, Veterinary & Animal Husbandry and Sericulture. The DoEE provides all necessary scopes for the adoption and dissemination of technologies developed/modified by AAU. The Directorate is also shouldering the responsibilities of giving training and technical guidance to the educated unemployed youth and farmers (including farm women) of the state in the field of improved livestock farming as a means of generating income for their livelihood. Efforts are also being made to sustain these activities through farm advisory services, on farm demonstrations, farmers' fairs etc. organized periodically by this Directorate. Apart from this, the Publication and Information wing of the Directorate regularly publishes Annual Reports, Newsletters, Farm Newspaper, and Extension Bulletins etc. Besides, the technologies generated in the University are disseminated through electronic and print media.

6.1. Mandates

The mandates of the directorate are:

- Developing linkages between various govt. and non govt. organizations concerned with agricultural and allied extension programmes.
- Organizing need based training for extension functionaries, farmers, farm women, rural youth and SHG members.
- Advisory services to farmers.
- Functioning as a centre for collecting, storing

and disseminating information to farmers and extension functionaries.

- Conducting demonstration for transfer of technology.
- Entrepreneurship development in agriculture and allied areas.
- Publication.

6.2. Organizational network

The organogram of the Directorate is presented in Figure 6.1.

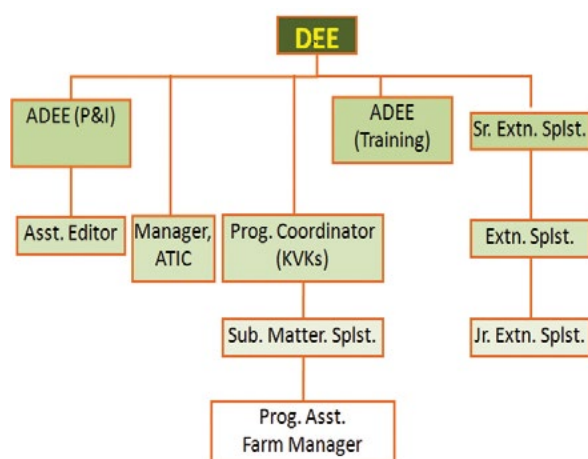


Figure 6.1. The Organizational network of the Directorate of Extension Education

The network of different units/programmes under the Directorate comprises of-

- *Krishi Vigyan Kendras (KVKs)*: There are 23 KVKs, one each in the districts of Baksa, Barpeta, Bongaigaon, Cachar, Chirang, Darrang, Dhemaji, Dhubri, Dibrugarh, Golaghat, Jorhat, Kamrup, Karbi Anglong, Karimganj, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar, Sonitpur, Tinsukia and Udalguri.
- Agricultural Technology Information Centre (ATIC).
- Agri-clinics and Agri-business Training Cell.
- Facilitation Centre for Medicinal Plants.
- Publication and Information.

6.3. Agricultural Technology

Information Centre

6.3.1. Introduction

The role of appropriate information technology in disseminating information and technology to the farmers or other end users is extremely vital. The important point is not only to generate the technology but also to ensure that the required information is delivered promptly to the farmers with negligible dissemination loss.

In the course of rapid agricultural development, the availability of improved varieties of cereals, oilseeds, pulses and other crops, breeds of livestock including poultry and fisheries, horticultural plant materials and improved management practices have made it possible to attain food self-sufficiency despite the population explosion. The farmers are always in search of quality seeds, planting materials and other inputs, diagnostic services, and information through printed, audio, video and electronic media and consultancy services.

The establishment of ATIC is intended to provide such facilities of information technology for dissemination to the farmers as a single-window delivery system. This service provides solutions to location-specific problems and makes available all the technological information along with technology inputs and products.

6.3.2. Need

The needs for establishment of such ATIC are:

- Providing diagnostic services for soil testing, plant and livestock health.
- Supplying research products such as seeds and other planting materials, poultry strains, etc. emerging from the institution for testing and adopting by various clientele.
- Disseminating information through published literature and communication materials as well as audio-visuals aids.
- Providing an opportunity to the institution to have resource generation through the sale of their technologies.

6.3.3. Objectives

The objectives for establishment of such a centre as single window system are:

- To provide a single window delivery system for the products and species available from the university to the farmers and other interested groups as a process of innovativeness in technology dissemination.
- To facilitate direct access to the farmers to the resources available at the university in terms of technology, advice, technology products etc. for reducing technology dissemination losses.
- To provide mechanism for feedback from the users to the university.

6.3.4. Facilities

6.3.4.1. Technological products

- Seeds of field crops, vegetable and other horticultural crops.
- Nursery plants of vegetables, fruits and ornamental plants.
- Bio-fertilizers.
- IPM-organic and bio-pesticides including NPV.
- Small Farm Implements.
- Tissue cultured plant materials.
- Processed products and by-products of cereals, oilseeds, pulses, vegetables, fruits, mushrooms including spawn, honey, milk, meat & fish etc.
- Poultry strains, livestock breeds, semen, fish seed etc.
- Agricultural equipments and drawing of designs.
- Vermi-culture and vermicompost.
- Vaccine/diagnostic kit.
- Microbial culture for milk and milk products.

6.3.4.2. Services

- Soil testing
- Seed quality testing

- Plants health clinic
- Veterinary/animal clinics for small and large animals
- Testing and calibration of agricultural equipments and implements
- Project profile and consultancy
- On-farm consultancy for farmers/orchardists

6.3.4.3. Information

- Farm literature-leaflets, pamphlets, journals/magazines, booklets, manuals.
- Audio and Video cassettes of crops and other agri-related enterprises.
- Exhibits including dioramas, transparencies
- Specimen etc.

6.3.5. Functional Components of ATIC

The functional components of ATIC have been indicated in the Figure 6.2.

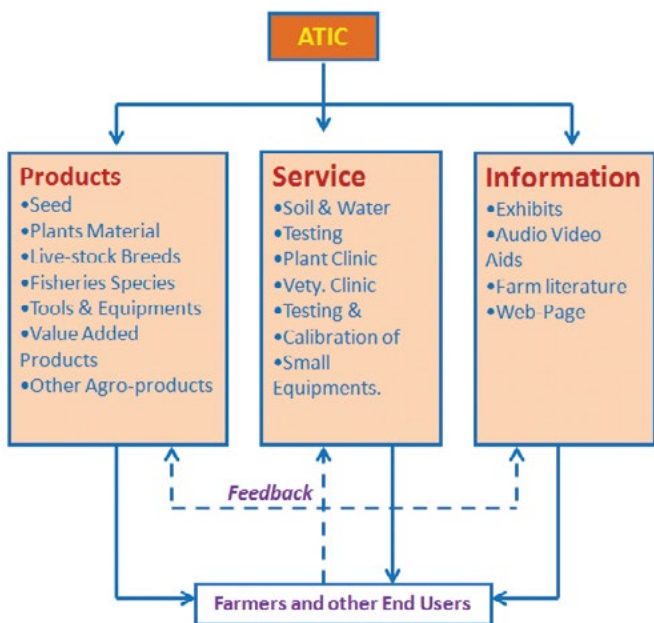


Figure 6.2. The Functional Components of ATIC

6.3.6. Farmers visits to the ATIC

Numbers of farmers		Total
Male	Female	
1472	1352	2824

6.3.7. Technological inputs sold

ATIC has sold processed products like tea, green tea, black pepper etc. The products sold through ATIC in different periods are as given below.

Item Value (Rs.)	Item Value (Rs.)
Tea (CTC)	160600
Green Tea	8940
Total Sale Proceed	169540

6.3.8. Farm Advisory Services

Scientists involved in ATIC activities and other staff members of the university provide technical guidance to the farmers through individual, farm and home visits, personal contacts and correspondences. Similarly, farmers including farm women regularly visit for seeking guidance in agricultural technology, animal production, livestock management, sericulture, community science and other farm problems and they are attended by scientists/staff of the university. Scientists also respond to urgent calls on various farm problems encountered by the Departments of Agriculture, Veterinary, Fishery and Sericulture etc. A well-knit liaison also exists with different funding agencies such as NABARD, Nationalized Banks, DRDA etc.

6.3.9. Publication and Information

The Directorate of Extension has published several bulletins, newsletters, farm newspaper, booklets, folders, magazines, laboratory/training manuals etc. during 2021-22 as detailed below. All these publications have been printed at AAU Printing Press, Jorhat.

Publications	Nos.
AAU Newsletter	2
Ghare Pathare	24
Bulletins	20
Practical Manuals	10

6.3.10. Radio talk

During 2021-2022, altogether, 62 programmes were broadcasted through AIR.

6.3.11. Phone in Programme

Altogether 1047 nos. of Phone-In/Kisan Mobile Advisories were conducted relating to Agriculture, Veterinary, Horticulture, Animal Husbandry, Fishery Science and Community Science.

6.3.12. Exhibitions

The Directorate participated in the Exhibition during Regional Agriculture Fair – 2022 held at AAU, Jorhat on March 12-14, 2022.

6.3.13. Training of Trainers (TOT) Workshop held

- Training of Trainers on “Certificate Course on Integrated Nutrient Management for Fertilizer Dealers” organized by DoEE, AAU, Jorhat & MANAGE, Hyderabad on 1-3 Sept, 2021
- Trainers’ training programme on Improved

Production Techniques in Horticultural Crops for the SMSs (Horticulture) of KVKs under AAU held at IIHR, Bengaluru organized by IIHR, Bengaluru & AAU, Jorhat on 5-7 Jan., 2022

6.3.14. Workshops/Group Meetings/Trainings under Directorate of Extension

6.3.14.1. Educations

The Directorate of Extension Education also organized the following programmes at its Conference room.

6.3.14.2. Training Programmes

Sl. No.	Date	Title of the training programme	Organised by	Training For	No. of Participants	No. of KVKs involved
1	1-3 Sept, 2021	Training of Trainers on “Certificate Course on Integrated Nutrient Management for Fertilizer Dealers”	DoEE, AAU, Jorhat & M A N A G E, Hyderabad	Scientists	49	23
2	12-13 Nov, 2021	HRD training programme on Recent Advances in Horticulture	DoEE, AAU, Jorhat	SMS (Horticulture)	27	20
3	5-7 Jan, 2022	Trainers’ training programme on Improved Production Techniques in Horticultural Crops for the SMSs (Horticulture) of KVKs under AAU held at IIHR, Bengaluru	I I H R, Bengaluru & AAU, Jorhat	SMS (Horticulture)	17	17
4	22-23 Febr, 2022	Training on “Cultivation of Medicinal & Aromatic plants in Assam: Prospects & Practices”	DoEE, AAU, Jorhat	SMS	46	23
5	1-3 Mar, 2022	Interface on data interpretation and analysis	DoEE, AAU, Jorhat	PA (Computer)/ Stenographers	10	10
6	9 th Mar, 2022	HRD Training on Accounts Management	DoEE, AAU, Jorhat	OSA/JSCO/ SMS/FM	28	18
7	10 th Mar, 2022	Orientation programme of newly recruited SMSs of KVKs under AAU, Jorhat	DoEE, AAU, Jorhat	SMS	17	11

6.3.14.3. Review Meeting of KVKs

Sl. No.	Date	Title of the programme	Organised by	Participants	No. of Participants
1	24.05.2021	Interactive Meet of Hon’ble Vice Chancellor with KVK Heads (online)	DoEE, AAU, Jorhat	Hon’ble Vice Chancellor, Officials from DoEE & KVK Heads	30
2	08.06.2021	Interactive meet with Hon’ble Vice Chancellor, AAU regarding seed availability of Seed Hub (online)	DoEE, AAU, Jorhat	Hon’ble VC, Officials from DoEE, ADR (Agri), RARS Shillongoni & KVKs, Kamrup, Karimganj, Lakhimpur, Nagaon	17
3	11.06.2021	Interactive meet regarding seed availability of Seed Hub (online)	DoEE, AAU, Jorhat	Hon’ble VC, Officials DoEE officials, ADR (Agri), RARS Shillongoni & Heads KVKs, Kamrup, Karimganj, Lakhimpur, Nagaon	17

Sl. No.	Date	Title of the programme	Organised by	Participants	No. of Participants
4	21.06.2021	Review Meeting of Bamboo Nurseries (online)	DoEE, AAU, Jorhat	Officials from DoEE & Heads KVKs, Golaghat, Sivasagar, Udalguri, Chirang, Cachar, Jorhat, Nagaon, Sonitpur, Tinsukia	14
5	22.06.2021	Review Meeting of Action Plan of Agril. Extension/ Agril. Economics (online)	DoEE, AAU, Jorhat	PME Cell, AAU, Officials from DoEE, SMS (Agril. Extension/ Agril. Economics)	40
6	29.06.2021	Interactive Meeting on Projects related to Production Plan (online)	DoEE, AAU, Jorhat	Officials from DoEE, Heads KVKs, Barpeta, Jorhat, Kamrup, Lakhimpur, Nalbari, Dhubri, Nagaon	16
7	30.07.2021	Interactive Meet on Doubling Farmers' Income (online)	DoEE, AAU, Jorhat	Officials from DoEE, KVK, Bongaigaon, Tinsukia	8
8	04.09.2021	Review Meeting of SMS (Horticulture) (online)	DoEE, AAU, Jorhat	SMS (Horticulture)	43
9	19.10.2021	Interactive Meet on Promotion of Maize and Soyabean in Assam	DoEE, AAU, Jorhat	Hon'ble Vice Chancellor, Officials from AAU, KVK Heads of 12 KVKs & DAOs	38
10	4-5 May, 2022	Review Meeting of KVKs	DoEE, AAU, Jorhat	KVK Heads/SMSs	44

6.3.14.4. Workshops/Seminars

Sl. No.	Date	Title of the programme	Organised by	Participants	No. of Participants
1	21.09.2021	Interface on District-wise Comprehensive Action Plan for promotion of Horticulture	DoEE, AAU, Jorhat	Scientists/Officers of AAU, Govt. Officers and KVKs	49
2	13.03.2022	Farmers' Forum during Regional Agriculture Fair, 2022	AAU, Jorhat	Scientists form AAU and Farmers from various districts	107
3	14.03.2022	Farmer-Scientist Interface during Regional Agriculture Fair, 2022	AAU, Jorhat	Scientists form AAU and Farmers from various districts	110
4	12.03.2022	Farmers Training in Agriculture & Allied Sectors/Horticulture/Livestock & Fishery during Regional Agriculture Fair, 2022	AAU, Jorhat	Scientists form AAU and Farmers from various districts	210
5	13.03.2022	Entrepreneurs Meet during Regional Agriculture Fair, 2022	AAU, Jorhat	Scientists form AAU and Agri Entrepreneurs	200

6.3.14.5. AAU Certificate Courses

- (Tea Production Technology & Management)

6.4. Krishi Vigyan Kendras

Assam Agricultural University presently has 23 Krishi Vigyan Kendras functioning directly under the Directorate of Extension Education. To achieve the set mandate the KVKs are imparting trainings to the farmers, farm women, rural youths, extension functionaries, conducting Front Line

Demonstration (FLD) and On Farm Trials (OFT). The KVKs also organize Field Day, *Kishan Mela*, Agri Expo, Exposure Visit, Farmers-Scientists Interaction, Awareness camp, PRA exercise. During 2021-22, 1149 numbers of scheduled training programme (on/off campus) were conducted by all these KVKs where more than 28488 trainees participated. Technology dissemination is a major aspect of KVK and it was carried out through a number of FLDs and OFTs during 2021-22.

Table 6.4.1. Training Particulars during 2021-22

Name of KVK	No. of Training	Participants		Total
		Male	Female	
Baksa	42	722	281	1003
Barpeta	43	839	237	1076
Bongaigaon	58	1189	261	1450
Cachar	17	329	87	416
Chirang	59	994	489	1483
Darrang	9	204	42	246
Dhemaji	50	918	357	1275
Dhubri	76	1476	574	2050
Dibrugarh	68	1022	575	1597
Golaghat	51	834	449	1283
Jorhat	41	782	304	1086
Kamrup	69	1389	438	1827
Karbi Anglong	44	862	229	1091
Karimganj	33	701	114	815
Kokrajhar	73	1648	246	1894
Lakhimpur	55	952	408	1360
Morigaon	93	1754	438	2192
Nagaon	51	1003	205	1208
Nalbari	18	318	123	441
Sivasagar	74	1332	518	1850
Sonitpur	20	363	50	413
Tinsukia	30	543	162	705
Udalguri	75	1364	363	1727
Total	1149	21538	6950	28488

Extension activities conducted by KVKs under AAU during 2021-22 includes advisory services, diagnostic visit, Field day under crop sector/ interaction meeting under demonstrated enterprise, Group discussion with SHG members, Exhibition, Scientist visit to farmers' field, Animal Health

camp, Farmers Seminar/Workshop, Celebration of important days, Awareness programme, Lecture delivered as Resource person, Farmers-Scientist interaction, Method demonstration and telephonic conversation with farmers.

Table 6.4.2. On-Farm Testing's and Front Line Demonstrations during 2021-22

Name of KVK	OFT		FLD	
	Target achieved	No. of farmers covered	Target achieved	No. of farmers covered
Baksa	13	50	10	67
Barpeta	17	53	16	139
Bongaigaon	9	46	41	625
Cachar	12	40	17	103
Chirang	13	38	21	122
Darrang	8	48	10	104
Dhemaji	13	25	18	138
Dhubri	10	26	14	72
Dibrugarh	11	37	10	69
Golaghat	11	25	36	506
Jorhat	15	51	18	89
Kamrup	19	54	27	650
Karbi Anglong	21	44	12	52
Karimganj	7	19	10	43
Kokrajhar	11	38	20	162

Name of KVK	OFT		FLD	
	Target achieved	No. of farmers covered	Target achieved	No. of farmers covered
Lakhimpur	17	48	11	94
Morigaon	15	28	50	1726
Nagaon	27	71	15	127
Nalbari	12	41	21	217
Sivasagar	10	38	14	133
Sonitpur	12	39	16	526
Tinsukia	10	32	14	87
Udalguri	15	298	41	577
Total	308	1189	462	6428

Most of the KVKs under AAU during 2021-22 performed the following flagship programmes of Govt. of India:

- Programme on Soil Health Card (*Swasth Dharaa Khet Haraa*)
- Programme on *Pradhan Mantri Fasal Bima Yojana*
- Programme on Skill India (Let’s make India the Skill Capital of the World)
- Programme on Digital India (Connecting the unconnected with technology)
- Programme on *Pradhan Mantri Lab to Land Programme*
- Programme on Doubling Farmers Income
- Programme on Programme of TSP
- Programme on *Sansad Adarsha Gram Yojana*
- Programme on *Swatchh Bharat Abhiyan*
- Programme on *Unnat Bharat Abhiyan*

6.5. Photographic evidence

Photographs of some of the extension activities of the 23 *Krishi Vigyan Kendras* documented are shown in the next few pages.



Figure 6.3. FLD on Organic cultivation of cabbage, KVK Barpeta



Figure 6.4. OFT on Value added product from tribal and non-tribal woven motifs of Assam, KVK Barpeta



Figure 6.5. OFT on Varietal performance of cowpea , KVK, Baska



Figure 6.6. CFLD on Rabipulse-Rajma Variety Arun, KVK Cachar



Figure 6.7. FLD on Application of ZnSo4 and Borax in Sali paddy along with recommended dose of NPK fertilizer to sustain productivity KVK Cachar



Figure 6.8. FLD on Up gradation of indigenous does through crossing with beetal buck, KVK Chirang



Figure 6.21. Farm production Goatery Unit KVK Karimganj



Figure 6.22. Demonstration on MTPR, KVK Kokrajhar



Figure 6.23. OFT on Performance of BV-380 chicken under semi intensive rearing, KVK Kokrajhar



Figure 6.9. CFLD on Kharif pulse blackgram, KVK Darrang



Figure 6.10. Field day on Integrated pest & disease management in jute, KVK Darrang



Figure 6.11. OFT on Need based Nitrogen management using leaf colour chart in winter rice to improve N use efficiency, KVK Dhemaji



Figure 6.12. FLD on Participatory seed production through KVKs, KVK Dhemaji



Figure 6.13. OFT on Climate smart rice varieties, KVK Dhubri



Figure 6.14. FLD on Management of late blight of potato, KVK Dhubri



Figure 6.15. Demonstration cum participatory seed production of Ranjit Sub- 1, KVK Dibrugarh



Figure 6.16. OFT on Introduction of Kadaknath chicken under backyard system, KVK Kamrup



Figure 6.17. FLD on Pineapple Variety Kew KVK Kamrup



Figure 6.18. On farm production of vegetables, KVK Karbi Anlong



Figure 6.19. FLD on dual purpose Kamrupa poultry under backyard system of rearing, KVK Karbi Anlong



Figure 6.20. Foundation Seed Production Programme 1 KVK Karimganj



Figure 6.24. CFLD on Kharif pulses, KVK Lakhimpur



Figure 6.25. OFT on Performance of rice-toria-greengram cropping system KVK Lakhimpur



Figure 6.26. Training on Fish processing through preparation of value added fish products, KVK Morigaon



Figure 6.27. Animal Health cum Treatment Camp, KVK Morigaon



Figure 6.28. CFLD on Seed Production of Mustard, KVK Nagaon



Figure 6.29. Transplanting of Sali Paddy (Participatory Seed Production, KVK, Nagaon)



Figure 6.30. FLD on Cultivation of Cabbage Using Organic Sources of Nutrients, KVK Nalbari



Figure 6.31. OFT on Performance of climate-smart low-land rice variety, KVK Nalbari



Figure 6.32. FLD on Turmeric variety Megha Turmeric 1, KVK Sivsagar

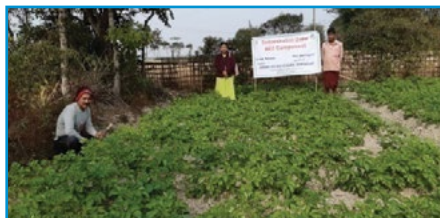


Figure 6.33. Demonstration under NEH Component Potato variety Kufrijyoti, KVK Sivsagar



Figure 6.34. Participatory Seed Production on Sali Paddy, KVK Sonitpur



Figure 6.35. FLD on Improved Pulse Variety SBC 40 under NARI Programme, KVK Sonitpur



Figure 6.36. OFT on Management of the Performance of Red Cabbage, KVK Tinsukia



Figure 6.37. Assessment of Performance of Disease Resistant Tomato, Arka Abhed; KVK Tinsukia



Figure 6.38. Skill Training on Poultry Rearing & Management KVK Udalguri



Figure 6.39. OFT on Effect furrow application of lime on potato in acid soil, KVK Baska



Figure 6.40. FLD on Maize, KVK Bongaigaon



Figure 6.41. Demonstration of broiler duck 'Vigova Super-M' for meat production, KVK Bongaigaon

6.6. Extension Activities by the Constituent Colleges

Apart from the Directorate Extension Education the teachers and scientists of the Constituent Colleges of the university were also involved in extension activities.

6.6.1. College of Agriculture

6.6.1.1. Department Agril. Economics and Farm Management

- Mr. Dipanjan Kashyap: Delivered radio talk on "Asomor Krishi arthanitir ruprekha (Part I and II)" at AIR, Dibrugarh on August 1st and 4th 2021.
- Dr. Nivedita Deka, Professor and Head delivered a radio talk on Entrepreneurship development of women through SHGs on 7.10.2021 at 6.15 PM under AIR, Dibrugarh
- Awareness Programme on Agri-business potential of Indigenous Fruits of Assam, under the project "Exploring Agribusiness opportunities in indigenous fruits of Assam". On 10th November 2021 at Morongi, Golaghat.
- Awareness Programme on Marketing of Agricultural produce under APART funded project on Agricultural Market Intelligence Unit on 22nd November 2021 at Department of Agricultural Economics and Farm Management, AAU, Jorhat-13
- Awareness Programme on Marketing of Agricultural produce under APART funded project on Agricultural Market Intelligence Unit 28th December 2021 at Sokaikhongia Gaon, Jorhat.
- Awareness Programme on Marketing of Agricultural produce under APART funded project on Agricultural Market Intelligence Unit

28th February 2022 in Darrang District.

- Dr. Nivedita Deka, Professor and Head of the Department delivered a Radio Talk on 10th March on "Ways and Means for women empowerment at AIR, Jorhat.

6.6.1.2. Department of Agrometerology

Extension activities under GKMS

- District Agromet Advisory Bulletins (Assamese & English) prepared and disseminated (for 7 districts of UBVZ): 78 Nos. for each district
- District Agromet Advisory Bulletins prepared using Agromet DSS and disseminated through MEGHDOOT App (for 7 districts of UBVZ): 78 Nos. for each district
- Block Agromet Advisory Bulletins prepared using Agromet DSS and disseminated through MEGHDOOT App (for 5 blocks of Jorhat): 78 Nos. for each block
- Agromet Advisory Bulletins in English as well as in Assamese were bi-weekly uploaded in the IMD website (imd.agrimet.gov.in) on real time basis.
- Agromet Advisory Bulletins prepared were disseminated to the farmers via AIR (Dibrugarh & Jorhat), KVKs, Research Stations, ADOs, Whatsapp group and over phone.
- Agromet Advisory SMSs were sent to about 13,000 farmers each Tuesday and Friday during the reporting period. A total of 35 SMSs were sent during the reporting period.
- Impact based forecast (IBF) & Agromet Advisories prepared and disseminated: 1 No.
- One Field Visit was conducted under GKMS at Dhekiajuli Village, Jorhat block on 10th July, 2021.

- Issued Extended Range forecast with a lead time of two weeks to the farmers on every Tuesday and Friday.
- Four Field Visits was conducted by Technical Officer on 26th October and 6th December, 2021, at Na-Bora Village, Upper Deori Village and Jalukoni Village
- Participated in an exhibition on the occasion of Farmers' Day at RARS Titabor on 9th November, 2021 to publicize the various services provided under GKMS
- Daily meteorological data were recorded and uploaded in the IMD website on real time basis.

6.6.1.3. Department of Agronomy

- Dr. K. Pathak, Professor & Head attended the World Water celebrated at KVK, Dibrugarh on 22nd March, 2022 organized by AICRP on Irrigation Water Management, AAU, Jorhat and delivered a talk on Efficient use of water for enhancing crop production
- Dr. K. Pathak, Professor & Head delivered a lecture on Agro-techniques for oilseed production in the Training program organized under ICAR seed project, DOR, AAU, Jorhat on 29th March, 2022
- Dr. I.C. Barua, Professor attended Farmers training on medicinal plant Component of Nation AYUSH Mission, Assam on 29th March, 2022 on topic "Market orientation medicinal plants and their cultivation in Assam", organized by KVK, Sivasager
- Dr. K. Kurmi, Professor imparted training and method demonstration on *Preparation of compost, vermicompost and vermiwash* by utilizing weed biomass to 20 (11 ST Hills + 9 OBC & MOBC) numbers of small tea growers from Jorhat and Tinisukia districts of Assam under "Processing of Speciality Tea and Tea Production Technology" on 22nd March, 2022
- Dr. K. Kurmi, Professor imparted training on *Weed Management in soybean and Vermicompost Production Technology* at Potiya Gaon and Neulgaon Village under Awareness training on Popularization of soybean for food, nutritional and livelihood security of farmers" on 29th and 30th March, 2022.

6.6.1.4. Department Animal Husbandry and Dairying

- Participated in the exhibition and got 2nd best participator in 33rd Krishak Divas organized by Regional Agricultural Research Station, Titabor, AAU on 09.11.2021.
- Farmers' Training on utilization of Soybean as Animal feed, Sali Khuwa, Jorhat on 08/11/2021.
- Farmers' Training on Importance of Integrated Farming, AAU, Jorhat on 17/11/2021.
- Farmers' Training on utilization of Soybean as Animal feed, Charingiya, Jorhat on 21/11/2021.
- Farmers' Training on utilization of Soybean as Animal feed, mNeul Gaon, Jorhat 25/11/2021.
- Farmers' Training on utilization of Soybean as Animal feed, Sahpuriya, Jorhat 30/11/2021.
- Students from Charaideo School on 29.12.2021 in context of Educational tour.
- Students from Teok LP School on 6.1.2022 in context of Educational tour.
- Students from Kamalpur Titabor on 6.1.2022 in context of Training in THT.
- Supply of quality piglet (*Hampshire cross*), rabbit (*Choviet chinchilla* and *New Zealand white*) and goat (*Beetal cross* and *Jamunapari cross*) to farmers of Assam and NE Region including different KVKs, Farmers first project, TSP etc.
- Maintaining caged Layer Unit with hybrid commercial layer BV-300 (1200 nos.)
- Supply of quality vanaraja chicks, quail bird, turkey chicks to farmers of Assam and NE Region including different KVKs, Farmers first project etc.

6.6.1.5. Department Entomology

6.6.1.5.1. AINP on Vertebrate Pest Management

- Method demonstration on vertebrate pest and their management in rabi crops at Sankor Chuk, Kanphala, Jorhat.
- Interactive programme on monkey damage in Agricultural Ecosystem & Demonstration of AGRICANNON at Natun Melang, Jorhat.

- Interactive programme on monkey damage in Agricultural Ecosystem & Demonstration of AGRICANNON at Nakochari, Jorhat.
 - Method demonstrations of AGRICANNON at BN College of Agriculture, Biswanath Chariali.
 - Method demonstration on vertebrate pest and their management in *rabi* crops at No 1 Upor Temara.
 - Field training and method demonstrations of different rodent management practices in *rabi* vegetables at Kaitoni, Upor Temara.
 - Interactive programme on monkey damage in Agricultural Ecosystem & their management at Neul Gaon.
 - Method demonstrations of AGRICANNON at Farmers fair at Sugarcane Research Station, Buralikson.
 - Method demonstrations on integrated management practices against vertebrate pest in *rabi* crops at Molohoni Tup, Jamuguri, Golaghat.
 - Field training and method demonstrations of different rodent management practices in *rabi* vegetables at Chenijan, Borhulla.
 - Interactive programme & Demonstrations of AGRICANNON against monkey in Agricultural Ecosystem at Latakuchapori, Khumtai, Golaghat.
 - Method demonstrations on integrated management practices against vertebrate pest at Badulipar and adjoining areas on 04-02-2022.
 - Interactive programme & Demonstrations of AGRICANNON against monkey in Agricultural Ecosystem at Neul Gaon on 15-02-2022.
 - Field training and method demonstrations of different integrated rodent management practices in *rabi* vegetables at Borhulla, Bekajan on 21-02-2022.
 - Method demonstrations on integrated management practices against vertebrate pest at Potiapara on 08-03-22.
 - Interactive programme & Demonstrations of AGRICANNON against monkey in Agricultural Ecosystem at Neul Gaon on 17-03-22.
 - Field training and method demonstrations of different integrated rodent management practices in *rabi* vegetables at Jamuguri, Golaghat on 22-03-22.
- #### 6.6.1.5.2. AICRP on Honey bees and Pollinators
- Training programme by AICRP on Honey bee and Pollinator, AAU, Jorhat under TSP have been conducted at Kuruwabahi, Bokakhat, Golaghat on 2nd December, 2021. Total 40 numbers of tribal farmers from Bokakhat were benefitted by the programme.
 - Training programme by AICRP on Honey bee and Pollinator, AAU, Jorhat under TSP have been conducted at Jamuguri village, Golaghat on 13.12.21. Total 35 numbers of tribal farmers from Bokakhat were benefitted by the programme.
 - Input distribution cum training programme organized by AICRP on Honey bee and Pollinator, AAU, Jorhat under TSP have been conducted at Kuruwabahi, Bokakhat, Golaghat on 14.12.21. Total 40 numbers of tribal farmers from Bokakhat were benefitted by the programme.
 - Input distribution cum training programme organized by AICRP on Honey bee and Pollinator, AAU, Jorhat under TSP have been conducted at Jamuguri, Golaghat on 15.12.21. Total 20 numbers of tribal farmers from Bokakhat were benefitted by the programme.
 - Input distribution cum training programme organized by AICRP on Honey bee and Pollinator, AAU, Jorhat under TSP have been conducted at Titabor, Jorhat on 21.12.21. Total 20 numbers of tribal farmers from Bokakhat were benefitted by the programme.
 - Training, demonstration and input distribution at Majuli on 23.03.2022 & 24.03.2022.
 - Acted as course coordinator and resource person in the skill development programme for beekeepers from 04-03-2022 to 30-03-2022.
 - Acted as resource person in the training conducted by the Tea Husbandry and Technology department on 23-03-2022.
- #### 6.6.1.5.3. AICRP on Biological Control
- Input distribution cum training programme

organized by AICRP on Biocontrol, AAU, Jorhat in collaboration with SDAO, Bokakhat held at office conference room on 23.11.21. Total 25 nos. of tribal farmers were benefitted by the TSP programme. The programme was inaugurated by Dr. Ranjit Sarma, SDAO. Moreover, Mr. Mriyunjoy, ADO and Ms. Baishali, ADO along with other office staff present during interaction programme.

- Training cum material distribution programme by AICRP on Biological Control, AAU, Jorhat under TSP have been conducted in collaboration with KVK, Nagaon at Barkachari village (DFI Village) on 25th and 26th November, 2021. Total 50 numbers of tribal farmers from Barkachari and Nibukali villages were benefitted by the programme.
- A team of 23 nos. of farmers from Lakhimpur district had visited the Biocontrol Laboratory, Dept of Entomology, on 10.12.21.
- Training cum input distribution programme by AICRP on Biological Control, AAU, Jorhat under TSP have been conducted at Kamalabari, Majuli District on 21.12.21. Total 25 numbers of tribal farmers were benefitted by the programme.
- Two numbers of training were conducted on 14.02. 2022 and 15.02. 2022 at Bankuwal, Mahuramukh (Goaghat district) and SDAO, Bokakhat (Golaghat district). A total of 50 numbers of farmers participated in this training programme. The main subjects covered in the training were BIPM package of Field &Vegetable crops and eco-friendly pest management strategy etc. The farmers were asked about different agricultural problems regarding rice and vegetable pests and their biological control approach. They were satisfied with the practical of training.
- A training programme was conducted on 07.03. 2022 at Senchowa village of Nagaon. 33 farmers participated in this training. The main subjects covered in the training were BIPM package of Field &Vegetable crops and eco-friendly pest management strategy etc. The farmers were asked about different agricultural problems regarding rice and vegetable pests and their biological control approach. They were satisfied with the practical of training.

6.6.1.6. Department Extension Education

- Dr. Utpal Barman Professor uploaded 5 video lectures on Opinion leader and Selection of opinion leader on YouTube
 - Market information: Need of the hour for farmers (https://www.youtube.com/watch?v=TcSSNvU_C9U)
 - Use of photograph in agricultural journalism (<https://www.youtube.com/watch?v=9nH1Qjj2JDE>)
 - Culture- an introduction (<https://www.youtube.com/watch?v=t6QKfgQ6qoE>)
 - OPINION LEADER-an introduction (<https://www.youtube.com/watch?v=mA6flTvnFxQ>)
- YouTube Academic video created and uploaded to AAU streaming by Dr. Utpal Barman
 - Some Concepts of Culture, http://www.youtube.com/watch?v=z7c_4-oGExw
 - Dynamic nature of adoption stages, <http://www.youtube.com/watch?v=TQ85NzGtErg>
 - Decision Making – definition and element, http://www.youtube.com/watch?v=UN_4Ag4D5zk
 - Rural Physical Structure _an overview, <http://www.youtube.com/watch?v=52OMKOzAXNw>
 - Adoption and Diffusion Process, <http://www.youtube.com/watch?v=5hRLWdVqCNIY>
 - PRI, Cooperatives NGOs and VOs for Rural Development, <http://www.youtube.com/watch?v=g59IYShghvl>
 - Characteristics of Adopters' categories, <http://www.youtube.com/watch?v=q2lubjOpM5l>
 - The Generation of Innovations: Innovation-Development Process, <https://youtu.be/sH-hXr7Rj2A>
 - Concepts of Homophily and Heterophily and its influences on flow of innovation, https://youtu.be/ClkseWYO_xU
 - CONCEPT OF DIFFUSION EFFECT, <https://youtu.be/qO-i6PbB3-o>

- Concept of over adoption, <https://youtu.be/rjwwcjWjvfA>
- Consequences of innovation- decision, https://youtu.be/mtw96_ZGSA8
- Social Institutions, <https://youtu.be/iXIJ6i76Bxs>
- Social Change and Development, <https://youtu.be/Ke7uW-XdA6U>
- For farmers in Assam, a Market Intelligence Awareness Programme, <https://youtu.be/ae2QEYSnQXI>
- Identification of entrepreneurial characters-a practical method, <https://youtu.be/kl6iY6HJXXQ>
- Awareness cum Training Programme on World Soil Day in Jorhat district.
- Imparted online training on “Balanced use of fertilizers” as resource person on 18th June, 2021 organised by Krishi Vigyan Kendra, Dibrugarh.
- Imparted online training on “Scope and potential of vermicomposting and Horticultural activities for rural employment generation” as resource person on 12nd July, 2021 organised by Snehpad, an NGO.
- Imparted training on “Preparation and use of vermicompost” as resource person on 26th August, 2021 at Panichokua, Jorhat organised by Snehpad, an NGO.

6.6.1.7. Department of Nematology

- A Nematode Awareness Programme was organized at Nakuri Gaon, Balama(Jorhat district) on 05.04.2021.
- Training imparted to farmers on “Nematode problems of vegetable crops and their management” under AICRP on Nematodes at
 - Chenga village of Barpeta district on 28.10.2021
 - Roumari Pathar, Barpeta district on 29.10.2021

6.6.1.8. Department Plant Breeding and Genetics

- Dr Akashi Sarma & Dr Rumjhum Phukan are associated as Co-PIs in Farmer FIRST Programme.

6.6.1.9. Department Soil Science

- Following extension activities were performed during the year under the project AICRP on STCR:
 - OFTs on Scented Rice
 - Verification trials on Scented Rice in Golaghat District of Assam
 - Verification trials on Hybrid Maize in Golaghat District of Assam

6.6.1.10. Department Tea Husbandry and Technology

- Visited Ahsinsha Chemicals, Nalbari on 28.10.2021 to discuss about the possibilities of tea cultivation in Nalbari.
- Visited Cocoa plantation of Sri Senaisri Basumatary of Rangjuli, Goalpara on 29.10.2021 and conducted field study on that.

6.6.1.10.1. Salient activities under FASAL

- Templates were prepared for *Kharif* Rice yield forecast at mid-season stage (F2) using historical yield and weather data collected from respective meteorological stations and thereafter, crop yield estimates were generated using statistical regression technique for 27 districts of Assam. The templates along with the forecast models were sent to IMD, RMC. and MNCFC during end of September for further dissemination.
- The 12th Annual Review Meeting of FASAL was attended on 23rd September, 2021 on virtual mode whereby, progress made on crop yield forecasts of the mandate crops during the previous year were presented for the North-eastern region.
- A field visit was conducted under FASAL to Dihigia Gaon, Titabar on 10th September, 2021 in relation to collection of crop data from farmer’s field, as required under the project.

- A virtual interaction meet among the SRFs working under FASAL Scheme at different AMFUs and IMD officials was attended by the SRF on 25-01-2021 whereby the present status of the project with respect to crop yield forecasting of Kharif rice and jute using statistical and machine learning techniques were presented.
- A virtual training on “Artificial Neural Network” organized by the AASD Division of IMD was delivered by the SRF to all the newly recruited SRFs under FASAL Scheme on 31-01-2022.

6.6.1.10.2. Extension activities under NICRA and AGAG

Organized skill training programme on “Scientific Cultivation of Potato” on 25th October, 2021 in Thengalgaon NICRA village of Golaghat district with resource person from Horticulture and Plant Pathology Department of AAU, Jorhat.

- Distributed high yielding recommended cultivars of rapeseed to the progressive farmers of NICRA village.
- Carried out baseline survey selected villages under AGAG project on 8th Nov., 2021. The meeting was arranged in the community hall of NICRA village, where the Group leader Dr. D. Das and the Head Dr. B. deka, KVK Golaghat highlighted the importance of the project AGAG and role of KVK towards the farming sectors.
- Participated in the exhibition organized in RARS Titabar on the eve of “Farmers Day” celebration on 9th November, 2021.
- Organized training on “Scientific Management of Bio-indicators: Honey bees and other pollinators” on 1st December, 2021 in Thengalgaon NICRA village of Golaghat district with resource person from Entomology department of AAU, Jorhat.
- Conducted demonstration on installation of

Honey bee boxes and distributed three numbers of Bee boxes to the progressive farmers of NICRA village for technology demonstration.

- Participated in distribution of Kamrupa poultry chicks to the woman farmers of Thengalgaon NICRA village by KVK Golaghat in liaison with NICRA and AGAG project on 23rd December, 2021.
- Participated in one day training programme on “Scientific rearing of Backyard poultry bird” by Scientist from KVK Golaghat followed by distribution of poultry feed in liaison with and AGAG project on 31st December, 2021.
- Prepared advisories for weekly NAAS bulletin (4 nos. during January, 2022); centrally prepared and compiled by CRIDA-ICAR, Hyderabad on weekly basis.
- Updated weather and crop information on weekly basis in Crop-Weather Outlook web portal monitored by CRIDA-ICAR, Hyderabad.
- Performed a plantation drive in Namdeuri village in a collaborative approach with GKMS scheme in pursuit of “Azadi Ka Amrit Mahotsav” (12th January, 2022).



Figure 6.42. Dr. A. Borgohain, ADEE (Vety) addressing the trainees of Scientific Management of Pig. Sharing the dais are Dr. B. Sarmah, Jt. Registrar, AAU, Khanapara & Dr. B. N. Saikia Dean/FVSc, AAU Khanapara



Figure 6.43. Hon'ble Minister of Agriculture, Veterinary and AH/GoA Sri. Atul Bora interacting with beneficiaries while Dean/FVSc Dr, B.N. Saikia & ADEE (Vety) Dr. A. Borgohain look on

6.6.2. Veterinary Science Extension (Directorate of Extension Education, Khanapara)

6.6.2.1. Directorate of Extension Education, Assam Agricultural University, Khanapara in collaboration with ICAR-National Academy of Agricultural Research Management (NAARM) Rajendranagar, Hyderabad organized off-campus Programme on "FDP on Competency Enhancement in Agricultural research and Education for SC/ST Faculty of AAU"

Directorate of Extension Education, Assam Agricultural University, Khanapara in collaboration with ICAR-National Academy of Agricultural Research Management (NAARM) Rajendranagar, Hyderabad – 500030 organized an off-campus Training Programme on "FDP on Competency Enhancement in Agricultural Research and Education for SC/ST Faculty of AAU", at the smart class room of College of Veterinary Science, Assam Agricultural University, Khanapara from 27th September to 1st October, 2021. The Programme was formally inaugurated by Dr. Alak Kr. Buragohain, Former Vice-Chancellor, Dibrugarh University cum Chairperson Academics, Royal Global University, Guwahati, Assam. He explained the significance of the teaching competency enhancement of faculties in the Agricultural Higher Education System with Valuable suggestions. In the inaugural session, Dr. Bibeka Nanda Saikia, Dean, College of Veterinary Science, Assam Agricultural University, Khanapara also spoke about the benefit of the teaching community on such type of training programme and offer thanks to the ICAR - NAARM faculty for giving this opportunity to hold off-campus training programme at Khanapara Campus, Guwahati.

The Programme Director Dr. M. Balakrishnan, Principal Scientist came a long way from ICAR – NAARM, Hyderabad for holding the five days training programme and expressed his views on different course curricula to the participants as well as on the importance of different courses. The Co - Programme Director, Dr. Atul Borgohain, Associate Director of Extension Education, Assam Agricultural University, Khanapara Campus, Guwahati expressed satisfaction and thanked the ICAR - NAARM for first offline training programme of ICAR – NAARM organised at AAU, Khanapara campus after the slowdown of covid pandemic and requested for more such programme to make AAU, Khanapara as a hub for training in North Eastern India. A total of 36 participants from different colleges under the Assam Agricultural University, viz., College of Agriculture, Jorhat, College of Fishery Science, Raha, Nagaon, Lakhimpur College of Veterinary Science, Joyhing and College of Veterinary Science, Khanapara, SCSCA, Dhubri, BNCA, Biswanath Chariali, LRS, Mandira, College of Community Science, Jorhat, College of Horticulture, Nalbari, College of Sericulture, Jorhat participated in the programme where twenty six numbers (26 nos.) of lectures were given covering different teaching competency enhancement among the teachers. The lectures were communicated through online and offline by the different resource persons of different institutions. The online classes for bringing improvement in the communication skill in teaching were carried out by Principal Scientists Dr. S. Senthil Vinayagram, Dr. D. Thammi Raju, Dr. G. R. K. Murthy, Dr. P. Ramesh, and Dr. S.K. Soam from ICAR – NAARM, Hyderabad. In addition to that, offline classes were also taken by the Principal Scientists of ICAR – NAARM Khanapara campus namely Dr. M. Balakrishnan, Dr. Bharat S. Sontakki, Dr. P. Krishnan and Dr. K. H. Rao who helped in conducting the classes and gave suggestions to the trainees with lectures. The offline classes were also carried out by professors of local institution namely Prof. Indrani Phukon Baruah, Prof & Head, Department of Psychology, Gauhati University, Dr. Amit Choudhury, Dean School of Business Sciences & Director centre for innovation, incubation and Entrepreneurship. USTM, Meghalaya and Dr. Pranamee Bhattacharjee, Asstt. Prof, Royal Global University Guwahati and also teachers from Assam Agricultural University, Jorhat and Khanapara, Guwahati Dr. Jayanta Deka, Dean, Faculty of Agriculture, Jorhat, Dr. B. N. Saikia, Dean, Faculty of Veterinary Science, Khanapara, Dr.

Niranjan Kalita, Director of Research, Veterinary, Dr. Atul Borgohain, ADEE, AAU and Dr. Prabodh Borah, Prof. and Head, Department of Animal Biotechnology on enhancement on teaching competency among the teaching fraternity. In the valedictory Function on 1st October, 2021, Dr. Ch. Srinivasa Rao, Director cum Vice-Chancellor, ICAR – NAARM, Rajendranagar, Hyderabad and Chief Guest for the occasion (online) had shared his experience of his service life on teaching, research and extension of Agriculture and allied sciences and suggested all the teaching community for upgrading skills in teaching, research and extension for the benefit of the students and farmers of the country, more particularly of Assam. On this event, all the dignitaries present in valedictory programme expressed their satisfaction and enthusiasms for the off-campus programme on teaching competency enhancement for teachers. At the end certificates were distributed among successful faculty members of AAU.

6.6.2.2 Directorate of Extension Education, AAU, Khanapara organized three (3) days “Training on Scientific management of Goat” to commemorate “Azadi Ka Amrit Mahotsav”

“Azadi Ka Amrit Mahotsav” is an initiative of the Government of India to celebrate and commemorate 75 years of progressive India and the glorious history of its people, culture and achievements. This *Mahotsav* is dedicated to the people of India who have not only been instrumental in bringing India thus far in its evolutionary journey but also hold within them the power and potential to enable Prime Minister Sjt Narendra Modi’s vision of activating India, fuelled by the spirit of *Atmanirbhar Bharat*.

To commemorate “Azadi Ka Amrit Mahotsav” and to fulfill the dream of honorable prime minister of India of “*Atmanirbhar Bharat*”, an attempt was initiated by Directorate of Extension Education, Assam Agricultural University, Khanapara under the leadership of Dr. Atul Borgohain, Associate Director of Extension Education, Assam Agricultural University, Khanapara, through capacity development of livestock entrepreneurs of Northeastern India under convergence mode. Keeping this in view a 3 (three) days “Training on Scientific management of Goat” in collaboration with Rupjyoti sangha, Bongaigaon, Assam w.e.f. 11th to 13th November, 2021 was organized by

Directorate of Extension Education, Assam Agricultural University, Khanapara at the training hall of the directorate of Extension Education, Assam Agricultural University, Khanapara. Total 25 numbers of educated youth from Bongaigaon District of Assam successfully participated in this well designed training programme prepared by Dr. Atul Borgohain, Associate Director of Extension Education, Assam Agricultural University, Khanapara, in the valedictory function certificates were distributed among trainees who successfully completed the programme.

6.6.2.3 Farmers sensitization and feed distribution programme

College of Veterinary Science, AAU, Khanapara organized ‘Farmers sensitization and feed distribution programme’ funded by National Institute of Animal Nutrition and Physiology, Bengaluru on 2nd December, 2021 to commemorate “Azadi Ka Amrit Mahotsav” at Bokakhat, district Golaghat. Hon’ble Minister of Agriculture, Animal Husbandry & Veterinary etc. Govt of Assam, Sri Atul Bora graced the occasion and participated in the distribution programme. Dean, Faculty of Veterinary Science, Dr. B. N. Saikia, ADEE (Veterinary) Dr. A. Borgohain and Dr. K. Ahmed, Prof & Head Department of Animal Reproduction, Gynaecology & Obstetrics, CVSc/AAU interacted with the beneficiary and distributed the feed.

6.6.2.4 Directorate of Extension Education, AAU, Khanapara, Guwahati organized a training programme on “Scientific Management of Pig”

A self sponsored training programme on “Scientific Management of Pig” was organized at Directorate of Extension Education, AAU, Khanapara, Guwahati from 9th to 11th December, 2021. Altogether thirty farmers from different districts of Assam had been participated in the training programme. Dr. Atul Borgohain, ADEE, AAU, Khanapara welcome the participants and Dr. Niranjan Kalita, Director of Research, Dr. B. N. Bhattacharyya, DDR and Dr. P. Mohan, Member of Board, AAU Khanapara delivered lectures covering the importance of scientific feeding, housing and welfare of swine and also health care. The teaching faculties of different disciplines of the veterinary college act as a resource person who elaborately explains on scientifically management of pig. The trainees were given hand on training on the preparation of

different pork products like sauces, ham, bacon and prickle in the AICRP on Post Harvest Technology and Engineering laboratory under Livestock Product Technology, College of Veterinary Science, Khanapara by Dr. Ankur Das, Assistant Professor. An extension bulletin on Scientific Management of Pig (in Assamese) was also released for the benefits of the farming community.

6.6.2.5 Directorate of Extension Education, Assam Agricultural University, Khanapara in collaboration with Department of Animal Husbandry, Government of Arunachal Pradesh organized “Exposure cum Training Programme on Animal Husbandry”

A team of 24 (twenty four) farmers from Anjaw District of Arunachal Pradesh visited AAU, Khanapara led by Dr. Ph. G. Singh from 9th to 12th of January, 2022. On 10th of January all the farmers were welcomed by Dean/FVSc, Dr. B. N. Saikia, ADEE Dr. A. Borgohain, Jt. Registrar, Dr. B. Sarma and other members of the Directorate. Subsequently, they were taken to Goat Research Station, Burnihat, followed by visit to cattle farm where they were briefed about the management aspects of the farms. On the 3rd day they were taught about the Breeding of pigs and commercial Farm Management by Dr. R. J. Deka and regarding pig farm Management and Disease control by Dr. J. R. Bora. On the penultimate day, they were taken to ALPCO slaughter house, Panjabari. Finally after completion of the Exposure visit cum training programme they were addressed by the course Director cum ADEE, Dr. A. Borgohain, Course Co-ordinator Dr. N. Baruah and were offered certificates to all the farmers. The farmers were very much satisfied for the training programme and offered thanks to our Directorate for organizing the training at a very short notice.

6.6.2.6 Directorate of Extension Education, Assam Agricultural University, Khanapara in collaboration with Department of Industries and Commerce, Govt of Assam organized hand holding training programme on “Fish Farming with Biofloc Technology”

A 3 (three) days hand holding training programme on “Fish Farming with Biofloc Technology” was organized by the Directorate of Extension Education, Assam Agricultural University, Khanapara in association with the Department of Industries and Commerce, Govt of Assam, Bamunimaidam,

Guwahati – 21 from 16th to 18th September, 2021. A total of 25 (twenty five) aquapreneurs of Jorhat, Golaghat, Kamrup (M), Kamrup (Rural), Sonitpur and Nalbari district of Assam under Kshyamata Scheme under APART Project participated in the training programme. The inaugural function was attended by Dr. Atul Borgohain, Associate Director of Extension Education, Assam Agricultural University, Khanapara (Course Coordinator), Mr. Himanga Dip Das, Addl. Director of Industry and Commerce (UAZ), Bamunimaidam, Guwahati, Mr. Imran Hazarika, Account Manager, Kshyamata Scheme under APART Department of Industries and Commerce, Govt of Assam, Bamunimaidam, Guwahati, Dr. Dhruva Jyoti Sharma, Managing Director FISHFED, Dr. Sanjay Sarma, State Fishery Co-ordinator APART, Guwahati, Mr. Ashim Kr. Borah, officer Incharge, NFDB-NERC and Prof (Dr.) Jogi Raj Bora, Course Coordinator attended the meeting. A galaxy of fishery experts namely Dr. Dhruva Jyoti Sharma, Dr. Sanjay Sarma, Mr. Ashim Kr. Borah, Mrs. Niti Sharma, Scientist, ICAR-CIFRI, Guwahati, Mr. Himata Pokhrel, College of Fishery Science, Raha, Mr. Rishi Raj Choudhury, Fishery Entrepreneur, Mr. Bhupen Borah Deputy Manager (Farm Sector), State Bank of India, Regional H.Q. and Mrs. Tarali B. Chakrabarty, Consultant, GT, Office of the Commissioner Industry and acted as resource person of the training programme. In the valedictory function, the Course Director remarked on the popularity of Biofloc Technology among the fishery entrepreneurs of Assam and said that this technique may help in future for attaining self sufficiency of fish production in Assam and increase the income of the entrepreneurs in this trade.

6.6.2.7 Directorate of Extension Education, Assam Agricultural University, Khanapara organized Field Study at Garukhuti -Dhalpur area of Sipajhar Revenue Circle, Darrang District

As per the instruction of the Hon'ble of Vice-Chancellor of Assam Agricultural University, Jorhat Directorate of Extension Education, Assam Agricultural University, Khanapara organized Field Study at Garukhuti -Dhalpur area of Sipajhar Revenue Circle, Darrang District on Friday, the 11th June, 2021. An AAU team led by the ADEE, Khanapara and comprising teachers/scientists from agriculture, veterinary and fishery visited the site. The team was accompanied by the Circle

Officer, Sipajhar Revenue Circle with a group of four Mandals, OC, Sipajhar Police Station along with few armed police personals, local social workers as per the guidance of Dr. Paramananda Rajbongshi, MLA, Sipajhar Constituency, the Deputy Commissioner, Darrang and the Superintendent of Police, Darrang District. The team visited the PGR-VGR and Char land area under Sipajhar Revenue Circle by the riverine route.

6.6.2.7.1. Area description

6.6.2.7.1.1. Geographical location

The concerned area is located along the north bank of the mighty Brahmaputra river, under Sipajhar Revenue Circle, Darrang district. Latitude: N 26°15' N, Longitude: 91°50' E

As per the revenue record the total area comprises of 77420 bighas of which 3000 bighas are under PGR and approximately 51488 bighas are inundated with river Brahmaputra water. Of No. 3 Dhalpur areas, 180 bighas of land has been allotted to the Siva Mondir, Dhalpur. Practically about 25752 bighas are available land on the date of survey. However, as per the information of revenue department and the local inhabitants, the entire area get submerged under river Brahmaputra water from end of June to end September. The functional land mass may be available for agriculture and other activities from the Months of October to the Month of April. The soil type is sandy loam to silty loam.

6.6.2.7.1.2. Observation

While surveying the area it was observed, that the most of the cultivable land of the northern side of the river Brahmaputra are filled with maize cultivation, jute cultivation and sporadically very little seasonal vegetables. It has been also observed the mechanical threshing of *Boro Rice* in few places indicating cultivation of *Boro Rice* in some areas.

As the whole area is flood affected, no crop can be cultivated during *kharif* season. During *rabi* season, the crops like Maize (predominant), Toria (Rapeseed & Mustard), Millets, Lentil, Linseed, Blackgram, Groundnut, Jute and winter & summer vegetables etc. are grown.

Few *khutis* of healthy buffalo along with herds of indigenous cattle, few goats & sheep were also recorded during the field visit programme. The southern side is mostly covered with *jhao ban* and

sang kher. However, the flood free highlands have been utilized for cattle, buffalo and goat & sheep rearing by the people of the area.

6.6.2.7.1.3. Scope and potential for agriculture and allied sectors

(A) Agriculture Sector

Proposed crops and cropping sequence

Based on land situation, soil type, existing crops grown and market demand in the area, the following crops and cropping pattern have been suggested:

Sl. No.	Oct/Nov-Jan/Feb	Feb/Mar-May
1.	Rabi Maize/Toria	Summer Blackgram/ Greengram
2.	Rabi Maize/Toria	Summer Vegetables
3.	Lentil/Pea/Grasspea/ Chickpea/Groundnut	Summer Maize (Short duration) / Jute/Sesamum
4.	Spring Onion/Garlic	Summer Pulses/ Maize (Short duration)
5.	Potato	Summer Vegetables/ Pulses
6.	Winter Spice crops (Fenugreek, Black Cumin/ Cumin/Coriander etc.)	Summer Maize/ Blackgram/ Greengram
7.	Winter vegetables	Summer Vegetables
8.	Groundnut/Pumpkin	Water Melon/ Summer Vegetables
9.	Toria/Maize	Early Ahu Rice
10.	Maize/Toria	Minor millets
11.	Fodder crops (Oats/Berseem/Lucerne)	Summer Maize/ Blackgram/ Greengram
12.	Winter vegetables/Toria	Specialty Corn (Sweet & Baby)

Future Prospects: As maize is abundantly grown in the area, both in *rabi* and summer seasons, processing and value addition of maize may increase the profitability and revenue generation from the crop. This may serve as a boon for animal, poultry and fishery enterprises by organizing the farmers through formation of FPOs/FPCs. As the concerned area is near Guwahati City by road/river routes, there is a great prospect of marketing of the suggested crops.

(B) Fishery Sector

Since the entire areas are inundated by flood so

there lies a less prospect of fisheries activities. However, after interaction with the local inhabitants it has come to notice that around 1500-3000 bighas of land area can become potential site for practicing scientific fish culture techniques such as polyculture and adoption of various integrated fish farming models. In certain areas of Dhalpur (No.1 & No.2), Niz Salmara and Barbari, fish breeding ECO hatchery can be constructed on elevated land mass where wild fish brooders can be collected directly from river Brahmaputra as well as from the adjoining *beels* which can be artificially bred during the breeding season. Since there is always a scarcity of quality fish seed supplying Assam, river bred quality fish seed from these areas can be transported to entire Assam which will definitely meet the demand of quality seed in near future. During the survey, it was known that in nearby areas of Gorukhuti under Sipajhar Revenue Circle, there are four large riverine *beels*/wetlands namely Roumari, Botha, Godhia and Mailata *beel*. These *beels* can become more productive in near future and their fish production can be enhanced to 1500 kg/ha by adopting enhancement measures such as cage culture and pen culture practice. Besides, these *beels* can also be developed by adopting various ecotourism models such as angling, boating, bird watching and aquatic home stays etc.

(C) Livestock Sector

Healthy herds of buffalo and cattle and sheep & goat indicate there is a prospects of rearing these animals for development of the area financial sustainability and livelihood of the people of that area as these livestock can be reared with low inputs and semi intensive management system by adopting the seasonal migration and rotational grazing from the low lying areas to the high lands by creating the following facilities/ provisions:

- Development of high lands in different suitable locations as animal shelter.
- Extensive cultivation of seasonal fodders and its conservation as silage or hay to be used during the flood seasons/ lean period.
- Collection and preservation of paddy straw for the flood period.
- Provision has to be made for supplementation of concentrate feed throughout the year to the animals to increase the productivity.

- Development of organized market channels for selling livestock produce.
- All the livestock rearing activities can be adopted through developing FPOs and FPCs.

Conclusion

- Construction of few high lands for flood shelters for human and animal is of great importance for social and economic security of the area.
- In addition to the agriculture and allied sector development, there is a huge potentiality of development of endogenous and rural tourism prospects based on agriculture in that area.
- Organised marketing channels are to be established for agriculture and its allied produce including cold ware housing and processing for fetching good price to the producers of the area.
- All these agricultural activities may be organised through establishment through multi disciplinary FPCs/FPOs.

6.6.3. College of Community Science Extension

6.6.3.1. Department of Extension Education and Communication Management (ECM)

- The department organized a poster competition in connection with World Environment Day on 5th June, 2021 and poster presentation in connection with World Diabetic Day on 14th November, 2021.
- A training programme on “Entrepreneurship Development through Food Preservation” was organized on 14th March, 2022 at Bahona Village, Jorhat.



Figure 6.44. Training programme on Entrepreneurship development through food preservation

6.6.3.2 Department of Family Resource Management and Consumer Science (FRMCS)

- The department organized state level training on 'Organic soap making' sponsored by Numaligarh Refinery Ltd. on 11th to 17th November, 2021.
- A mass plantation programme was organized on the occasion of World Environment Day on 5th June, 2021.
- A state level symposium was organized on the occasion of 'Ozone Day' on 16th September, 2021.
- AICRP department of FRMCS organized various programmes in Koronga Halowa adopted Village, Jorhat.
 - Training on 'Drudgery Reducing Technology' on 11th February, 2022.
 - Observed 'World Consumer Rights Day' on 15th March 2022.
 - Capacity building programme on 'Hygiene and Sanitation' on 29th March 2022.



Figure 6.45. Skill development training Organic Soap Making



Figure 6.46. Symposium on Ozone day 2021

6.6.3.3 Department of Food Science and Nutrition (FSN)

- The department organized series of National webinar on 'World Breastfeeding Week' from 1st to 7th August, 2021 on the Theme: 'Protect Breastfeeding: A Shared Responsibility'. It was sponsored by Nutrition Society of India (NSI).
- National Webinar on Maternal and Child Nutrition was organized on the occasion of National Nutrition Month on 21st September, 2021. The programme was sponsored by National Commission for Women, Govt. of India, New Delhi.
- AICRP on Home Science, AAU, Jorhat centre organized several programmes on the occasion of *Ajadi ka Amrit Mahotsav*.
 - Emerging Nutraceutical as Therapeutical Agent: validation or value addition on 22th July, 2021.
 - Mindful eating-benefits, challenges & strategies for healthy living on 24th July, 2021.
 - World food day on 16th October, 2021.
 - Food Safety on 22nd October, 2021.
 - Food Hygiene and Sanitation on 29th October, 2021.
 - Launching of Nutri- Smart Village programme under an Innovative Model of Strengthening Poshan Abhiyan on 10th November, 2021.

6.6.3.4 Department of Human Development and Family Studies (HDFS)

- The department organized online training programme on 'Mainstreaming Farm Women for Agricultural Development' in collaboration with Extension Education Institute (NE region), AAU, Govt of India, Ministry of Agriculture & Farmers welfare from 3rd to 6th August, 2021.
- The department organized National Webinar, sponsored by NAHEP, AAU on 'Healthy ageing: role of youth and community' on 1st October, 2021.

- Training on 'Life skill education' was conducted from 1st to 8th March, 2022. The training was sponsored by IDP-NAHEP, AAU.
- AICRP, department of HDFS conducted series of panel discussions –
 - Disabilities in children & its management on 20th August, 2021.
 - National Education Policy- an analysis on 24th August, 2021.
- AICRP, department of HDFS organized awareness programme on 'Early Identification and Intervention of Disability in Children' on 29th October, 2021 and another awareness programme on 'Government services for Healthy Aging' on 3rd November, 2021.



Figure 6.47. Training on Life Skill Education

6.6.3.5 Department of Textiles and Apparel Design

- The department organized series of national lectures sponsored by IDP-NAHEP, AAU.
 - Lecture on 'Scope and emerging opportunities in the field of Apparel Designing for Entrepreneurship development and coping strategies for the challenges ahead', on 22nd July, 2021.
 - Lecture on 'Wealth from vegetable fibres grown in north eastern part of India for entrepreneurship' on 24th July, 2021.
 - Lecture on 'Reduce, reuse and recycle – A segment of sustainable fashion entrepreneurship development' on 23rd July, 2021.



Figure 6.48. Training programme on Utilization of fabric waste

- AICRP, department of Textiles and Apparel design organized various activities
 - Lecture on 'Importance of Handloom products, its value addition and diversification for sustainable livelihood of farm women' on 7th August, 2021.
 - Training on 'Utilization of fabric waste for production of utility items' on 29th October, 2021.
 - Training on 'Care of clothing' on 3rd November 2021.
 - Capacity building training on 'Diversified products development through weaving' from 23rd to 25th February, 2022.
- Follow up training programme was organized by the NGO SNESHPOD at Ajay Nagar, Bekajan on Diversification of handloom products on 13th February, 2021.



Figure 6.49. Training programme on Care of clothing



Figure 6.50. Capacity building training on diversified products development through weaving

6.6.4. College of Fishery Science

6.6.4.1. Salient Extension activities

- Eight (8) nos. of awareness and training programs are imparted at cluster level in Nagaon and Morigaon district, Assam under DBT funded project "Sustainable Livelihood promotion through Integrated Farming System (IFS) in Schedule Tribal (ST) dominated areas of Central Brahmaputra Valley, Assam" in the year 2020-21.
- Four (4) clusters comprising of 10 nos. of villages were imparted training on the topics "Integrated Fish cum Pig farming and Integrated Fish cum Poultry farming.
- Input like piglets, fish fingerlings and poultry were distributed among 100 households under DBT funded project "Sustainable Livelihood promotion through Integrated Farming System (IFS) in Schedule Tribal (ST) dominated areas of Central Brahmaputra Valley, Assam".
- A total of 880 no. of beneficiary were trained under Capacity Building Programme of APART, World Bank Funded Project on the topic "Polyculture in Pond fisheries" in the year 2020-21.
- A total of 770 numbers of male and 110 numbers of females were trained under APART, World Bank Funded Project by College of Fisheries, AAU.
- Two (2) nos. of Technology Demonstration Programme were carried out under APART, World Bank Funded Project on the topics "Cage Aquaculture in Beels" and Multiple stocking and Multiple Harvesting in 15 districts of Assam in the year 2020-21.
- Mass Awareness Programme on "Fish Germplasm Conservation of Indigenous Fishes of Assam" was organized by College of Fisheries, AAU in collaboration with Fishery Department, Govt. of Assam.
- Hon'ble Prime Minister of India, Sri Narendra Modi addressed the farmers and releases PM Kisan money to the farmers with one click on 25th December, 2020. The whole programme

was webcasted in College of Fisheries, Assam Agricultural University. Many participants including farmers joined the programme at the Smart Classroom of Dept. Extension, Economics & Statistics.

- A total of 160 fishermen of Thekaraguri Village, Nagaon and Morigaon district have been successfully trained on scientific fish farming and inputs for fish farming were distributed among the farmers.
- A total of three exhibitions have been organized in Arunachal Pradesh on fisheries activities.

6.6.5. Biswanath College of Agriculture Extension

- A training programme on 'Integrated Nutrient Management in Sali rice' was conducted at Disiri, Maralgaon, Biswanath District on 04.08.2021 with 17 participants.
- Method Demonstration on Propagation Techniques in Assam Lemon was conducted at Chamua, North Lakhimpur on 05.10.2021 with 26 participants.
- A training programme on 'Integrated Rice based Farming System For North Bank of Assam' was conducted Biswanath College of Agriculture on 01.11.2021 with 21 participants.
- A training programme on 'Irrigation Water Management in Crops' sponsored by AICRP on Irrigation Water management, AAU, Jorhat was conducted at Maralgaon on 29.03.2022 with 34 participants.

6.6.6. Lakhimpur College of Veterinary Science

- Faculty members of LCVSc involved in Radio Talk organised by AIR, Dibrugarh.
- on the topic topic on "*Natun sintare sagoli palon*" on 5th April, 2021.
- Faculty members of LCVSc acted as resource person for Practical demonstration of Farm Complex as a part of farmers exposure visit under UBI RSETI at LFC, LCVSc, AAU, Joyhing, North Lakhimpur on 9th April, 2021.



Figure 6.51 (A & B). Method demonstration on vegetative propagation technique in Assam lemon at NICRA village

- World Veterinary Day, 2021 was organised by State Veterinary Dispensary, Gugamukh, Dhemaji in collaboration with LCVSc, AAU, Joyhing, NL on 24th April, 2021. A treatment and vaccination camp for livestock was organised.
- Faculty members of LCVSc involved in Online discussion on scientific goat farming and one health concept organised by IGDA on 6th June, 2021.



Figure 6.52. Training on Irrigation Water Management in Crops at Maralgaon

- World Zoonoses Day 2021 was celebrated on 6th July, 2021 by Department of Veterinary Public Health and Epidemiology, Lakhimpur College of Veterinary Science, AAU, Joyhing, NL. In this occasion a virtual webinar was organised where Principal Scientist & Head, ICAR Research Complex for NEH, Umroi Road, Umiam, Barapani, Meghalaya gave a presentation on the topic “Emerging Zoonoses”.
- Faculty members of LCVSc acted as resource person for training on “Scientific Methods of Goat and Pig Farming Practices” on 10th August,

2021 at Barkep Handloom Centre, Lakhimpur District organized by Indo Global Social Service Society, Lakhimpur Unit.

- Faculty members of LCVSc acted as resource person for Practical demonstration of Farm Complex as a part of farmers exposure visit under UBI RSETI at LFC, LCVSc, AAU, Joyhing, North Lakhimpur on 11th September, 2021.
- Faculty members of LCVSc acted as resource person for training on “Scientific rearing of Pig and Goat” on 19th September, 2021 at Rupnath Brahma High School, Dhemaji District organized by All Sonowal Kachari Yuva Mancha, Dhemaji Unit.
- A week long anti Rabies vaccination program, for domestic and stray dogs & cats on the occasion of “World Rabies Day” on 28th September, 2021 organized by LCVSc, AAU, Joyhing, NL.
- 10 days out campus training program on topic “Scientific Rearing of Backyard Poultry and Duckery” organized by LCVSc, AAU, Joyhing, NL and under Livelihood and Enterprise development programme sponsored by NABRD in collaboration with Assam State Rural Livelihood Mission at Karunabari Development block of Lakhimpur district on 25th October-3rd November, 2021.
- Faculty members of LCVSc acted as resource person for training on “Capacity building among the women farmers on sustainable agricultural practices” at Khonoma village, Nagaland organized by Pabhoi Green/UNDP on 30th October, 2021.
- 10 days out campus training program on topic “Scientific Rearing of Backyard Poultry and Duckery” organized by LCVSc, AAU, Joyhing, NL and under Livelihood and Enterprise development programme sponsored by NABRD in collaboration with Assam State Rural Livelihood Mission at Karunabari Development block of Lakhimpur district on 1st November-20th November, 2021.
- Faculty members of LCVSc acted as resource person for training on “Entrepreneurship development through Scientific pig farming” at Dolohat, Lakhimpur District, organized by KVK, Lakhimpur on 17th November, 2021.

- 10 days out campus training program on topic “Scientific Rearing of Backyard Poultry and Duckery” organized by LCVSc, AAU, Joyhing, NL and under Livelihood and Enterprise development programme sponsored by NABRD in collaboration with Assam State Rural Livelihood Mission at Karunabari Development block of Lakhimpur district on 21st November-30th November, 2021.
- Faculty members of LCVSc acted as resource person for Practical demonstration of Farm Complex as a part of farmers exposure visit under UBI RSETI at LFC, LCVSc, AAU, Joyhing, North Lakhimpur on 23rd November, 2021.
- 10 days out campus training program on topic “Scientific Rearing of Backyard Poultry and Duckery” organized by LCVSc, AAU, Joyhing, NL and under Livelihood and Enterprise development programme sponsored by NABRD in collaboration with Assam State Rural Livelihood Mission at Karunabari Development block of Lakhimpur district on 24th November-3rd December, 2021.
- Faculty members of LCVSc acted as resource person for training on “Financial, literacy and livestock management programme” on 26th November, 2021 at Pomua Machgaon and Badhakora, Lakhimpur District organized by Indo Global Social Service Society, Lakhimpur Unit.
- 10 days out campus training program on topic “Scientific Rearing of Backyard Poultry and Duckery” organized by LCVSc, AAU, Joyhing, NL and under Livelihood and Enterprise development programme sponsored by NABRD in collaboration with Assam State Rural Livelihood Mission at Karunabari Development block of Lakhimpur district on 1st December-10th December, 2021.
- Vaccination cum treatment & health check camp for livestock on 11th December, 2021 at Bajbari Gyanodoy High School Playground, Near Panchayat Office & Ram Mandir, Joyhing, NL organized by LCVSc, AAU, Joyhing, NL.
- The 4th year students with faculty members of Lakhimpur College of Veterinary Science visited Kanyaka Bohumukhi Farm, Jamugurihut for exposure visit. The farm has Assam’s largest cow shed with Gir cattle and Murrah buffalo. Additionally, a vaccination cum treatment camp was organised by LCVSc, AAU, Joyhing, NL in collaboration with State Vety. Deptt. Biswanath Chariali. The programme was conducted on 18th December, 2021.
- Faculty members of LCVSc participated in Farmers Scientist Interaction organised by Ranjan Duck Farm held at Dhemaji on 19th December, 2021.
- Students of Lakhimpur Academy High School, Lakhimpur visited LCVSc as part of Exposure visit under ‘Gyan Yatra’ on 24th December, 2022.
- Students of Dakhin Telahi High School, Lakhimpur visited LCVSc as part of Exposure visit under ‘Gyan Yatra’ on 8th January, 2022.
- Animal treatment and health check up camp for livestock on 11th January, 2022 at Khabolu Village and Bhadhakara Village, North Lakhimpur organized by LCVSc, AAU, Joyhing, NL in collaboration with IGSSS, Lakhimpur.
- Faculty members of LCVSc acted as resource person for Practical demonstration of Farm Complex as a part of farmers exposure visit under UBI RSETI at LFC, LCVSc, AAU, Joyhing, North Lakhimpur on 8th February, 2022.
- Faculty members of LCVSc acted as resource person for training under capacity building of farmers through training programmes on profitable dairy farming and livestock management on the topic “Breeding management including Artificial insemination, Selection of piglets, Selection of boar, gilt and culling for better productivity and profitability” organized by KVK, Lakhimpur on 17th February, 2022.
- Faculty members of LCVSc acted as resource person for training under capacity building of farmers through training programmes on profitable dairy farming and livestock management on the topic “Feed formulation for better growth and productivity with low cost locally available feed stuffs” organized by KVK, Lakhimpur on 18th February, 2022.
- Faculty members of LCVSc acted as resource person for training under capacity building of farmers through training programmes

on profitable dairy farming and livestock management on the topic “Health management including vaccination and deworming ” organized by KVK, Lakhimpur on 19th February, 2022.

- Faculty members of LCVSc acted as resource person for training under capacity building of farmers through training programmes on profitable dairy farming and livestock management organized by KVK, Lakhimpur from 23rd to 25th February, 2022.
- Faculty members of LCVSc acted as resource person for Practical demonstration of Farm Complex as a part of farmers exposure visit under UBI RSETI at LFC, LCVSc, AAU, Joyhing, North Lakhimpur on 24th February, 2022.
- Lakhimpur College of Veterinary Science, AAU, Joyhing, North Lakhimpur observed the National Science Day 2022 on 28th of February, 2022 with the theme “Integrated Approach in Science & Technology for a Sustainable Future”. Dr Prasanta Kumar Pathak, Senior Scientist & Head, KVK, North Lakhimpur graced the occasion as Guest speaker and had a lively interactive session with the students. A competition was organized as a part of the program where students gave presentations on different relevant topics.
- The student and teachers from Nawboicha Higher Secondary School, Lakhimpur visited LCVSc for tour of the college and an interactive session on Rabies awareness was conducted on 12th March, 2022.
- Women cell of LCVSc, AAU, Joyhing organised a week long programme from 1st to 8th March, 2022 as a part of International Women’s Day celebration on the theme “Gender equality today for a sustainable tomorrow”. The programme began with door to door awareness campaign - “Back to School” for girls in and around Joyhing locality. A free animal health check up cum treatment camp was organised in Joyhing-Koilamari area. A day long visit to an old age home “Maitrayee Ashram” was also arranged.



Figure 6.53. Treatment and vaccination camp for livestock on the occasion of World Veterinary Day



Figure 6.54. Anti Rabies vaccination program

6.6.7 College of Horticulture

6.6.7.1 Involvement as Resource Persons in different training programme as follows:

- Imparted online training on “Balanced use of fertilizers” on 18th June, 2021 organised by Krishi Vigyan Kendra, Dibrugarh.
- Imparted online training on “Scope and potential of vermicomposting and Horticultural activities for rural employment generation” on 22nd July, 2021 organised by Snehpad, an NGO.
- Imparted training on “Preparation and use of vermicompost” on 26th August, 2021 at Panichokua, Jorhat organised by Snehpad, an NGO.
- Training programme organised by EEI, AAU, Jorhat on 15th September, 2021.
- Imparted Training on “Propagation techniques in fruit crops’ on 16th September 2021 organized by Extension Education Institute (NE Region), Govt. Of India, Ministry of Agriculture and Social welfare, AAU, Jorhat.

- Training for input dealers on “Natural resource management for rainfed agriculture”, organized by KVK, Jorhat on 30th September, 2021.
- Training for input dealers on “Organic farming: principles and practices” organized by KVK, Golaghat on 04th October, 2021.
- Imparted training to farmers on field management practices of Potato under NICRA Project on 8th October, 2021 at Thengal gaon, Golaghat, district.
- Awareness programme under “Formation and Promotion of 10000 FPOs for NABARD and NCDC Implemented Project”.
- DBT sponsored training programme on “Skill training on advanced agricultural technologies for sustainable productivity and income”, Krishi Vigyan Cendra, Karbi Anglong from 22nd November to 27th November, 2021.
- Training on “Vermicompost production technology for entrepreneurs and farmers of NBPZ of Assam”, organized by BNCA, Biswanath Chariali on 09th December 2021.
- Training of farm women on “Preparation of vermin beds and maintenance of vermicompost”, organized by Department of Agronomy, AAU, Jorhat 21th December, 2021.
- Online training on “Bio-input Technologies based Entrepreneurship for Sustainable Livelihood in Agriculture”, organized by College of Horticulture and Forestry, Passighat on 12th January, 2022.
- Online training on “Terrace Gardening and its Prospects in NE States” as resource person organized by Extension Education Institute (NE Region) 8-11th March 2022.
- Online training on “Selection of Crops, Fruits Vegetable etc. as per Season and Containers for Seasonal Gardening” organized by Extension Education Institute (NE Region) on 9th March 2022.
- Associated with *Amar Gaon Amar Gaurav*.
- Preparation of training module with budget for jugaad innovators. 12th April 2021.
- Radio talk on “*Matir pustimoular obhabot sasyat dekha diya bisongoti aru pratikar*” broadcasted by All India radio, Dibrugarh on 23rd Aug, 2021 (A.Barooah).
- TV talk on Agripreneurship development in Nalbari district of Assam broadcasted by Durdarshan Kendra, Guwahati on 25th August, 2021 (M. Deka).

Developmental Activities

7.1. College of Agriculture, Jorhat

- One Smart Class room under ICAR Development Grant was developed in the deptt. of Agricultural Statistics.
- One class room was renovated with an amount of Rs.79000.00 from ICAR Development Grant in the department of Nematology.
- Arrangement culminating in signing of Power Purchase Agreement (PPA) of 1MW Roof Top Grid connected Solar power plant sanctioned by Solar Energy Corporation of India (SECI) between AAU and HFM Solar, New Delhi. (PPA was signed on 6th July'21) in the Dept. of Agril. Engineering
- Renovation of smart class room in the Department of Tea Husbandry & Technology has been completed.
- Renovation of Processing Unit up-gradation of Department of Tea Husbandry and Technology under IDP, NAHEP has been done.

7.2. College of Veterinary Science, Khanapara

- Out of a total Rs. 1,94,77,741.00 expended under the ICAR development grant during the period 2021-2022, following developmental activities were carried out for the CVSc, AAU, Khanapara and Goat Research Station(GRS), Burnihat, Assam.
 - Renovation of two rooms of the Department of Animal Biotechnology at CVSc, AAU, Khanapara with an amount of Rs. 2,37,766.00.
 - Urgent repairing of Girls' Hostel No.1 at CVSc, AAU, Khanapara with an amount of Rs. 1,76,702.00.
 - Urgent repairing of Assam Type (AT) Hostel at CVSc, AAU, Khanapara with an amount of Rs. 12,59,445.00.
 - Earth filling near the proposed goat shed at GRS, Burnihat at a cost of Rs. 1,30,569.00.

7.3. Biswanath College of Agriculture, Biswanath

- Repairing and Renovation of the damage floors in kitchen, dining hall with tiles and ceilings in the corridor of Girls' Hostel No.2 at BNCA with an amount of Rs. 1,99,000.00 under ICAR Dev. Grant (Deposit Work)S/H 1.3
- Repairing, Rehabilitation and Retrofitting of R.C.C. Boys' Hostel at BNCA with an amount of Rs. 2,00,000.00 under P.L.A.
- Supply and installation of Solar Powered Fence in the P.G. Research Plot at BNCA with an amount of Rs. 3,00,000.00 under P.L.A.(BNCA) and Rs 2,50,000.00 from P.L.A. (D.P.G.S.), Jorhat.

7.4. College of Horticulture and FSR, Nalbari

- One administrative building has been constructed.
- One academic complex completed and another one is likely to be completed.
- 2 hostels (One for Girls and One for Boys) each having capacities of 90 have been constructed.
- Construction of two quarters (teacher) has been completed and remaining two are likely to be completed
- Installed 6(six) solar street lights.
- Main approach road is developed and construction of other essential internal roads is in progress.
- Works on examination hall (one) and 6 nos. of staff quarters including grade IV is on progress and likely to be completed.

7.5. College of Fisheries, Raha

- Constructed one new PG Boy's Hostel and New Ring bundh of college land.

7.6. Fishery Research Centre, Jorhat

- An innovative model for Anabas Hatchery has been constructed under the Tribel Sub Plan (TSP).

7.8. Outstations

7.8.1. RARS Gosain Gaon

- Establishment of erection of pillars for boundary of second field under state plan grant (1.8 Lakh).
- Repairing and Renovation of scientist Quarter and Construction of office road of about 700m under state plan grant.



Figure 7.3. Employee's Quaters under construction, CH



Figure 7.4. Newly constructed Hostels, CH



Figure 7.5 (A). Administartive Building, CH (B) Street light, CH

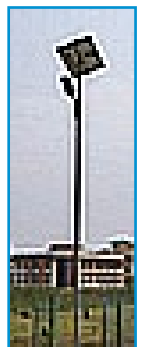


Figure 7.1 (A & B). Academic Complex and Examination Hall, CH



Figure 7.2. Constructed Laboratory, CH



Figure 7.6. View of the innovative design of hatchery for Anabas developed at FRC, Jorhat, under TSP

Dignitaries Visit

- Hon'ble Chief Minister of Assam Dr. Himanta Biswa Sarmah, accompanied by Hon'ble agriculture minister of Assam Mr. Atul Borah and Mr. Tapan Gogoi, Mr. K.P. Tasha, and MLA of Jorhat Mr. Hitenda Nath Goswami visited AAU on 19th August, 2021 for inaugurated Agro. Ecotourism Project.
- His Excellency, Professor Dr. Jagdish Mukhi visited AAU for convocation held on 3rd March, 2022 accompanied by Mr. Atul Borah, Agril. Minister SP, DC of Jorhat.



Figure 8.1. Hon'ble Chief Minister of Assam, Dr. Himanta Biswa Sarmah inaugurated Agro. Ecotourism Project of AAU, Jorhat on 19th August, 2021



Figure 8.2. Professor Dr. Jagdish Mukhi, Governor of Assam along with Mr. Atul Bora, Minister of Agriculture, Horticulture & Food Processing, AH & Vety. etc. Govt. of Assam attended the 22nd convocation of AAU on 3rd March, 2022

8.1. College of Agriculture, Jorhat

8.1.1. Department of Tea Husbandry and Technology

- Dr.P.L.N Raje, Director, NE Space Application Centre, Meghalaya visited to Experimental Garden for Plantation Crops, AAU, Jorhat on 20th April, 2021.
- Dr. Ranaj Pegu, Hon'ble Education Minister, Assam, visited to Experimental Garden for Plantation Crops, AAU, Jorhat on 19th June, 2021.
- Mrs. Arunita Phukan Yadav, IRS, Executive Director of Tea Board, Guwahati Zone, Visited Department of Tea Husbandry and Technology on 7th October, 2021.
- Mr. Kamal Baishya, Deputy Director, Tea Board, Guwahati Visited Department of Tea Husbandry and Technology on 7th October, 2021.
- Hon'ble V.C., AAU accompanied the team of NABARD officials, visited Department of Tea Husbandry and Technology, AAU, Jorhat on 21st October 2021.
- Dr. Jai Dev, Professor & Head, Department of Tea Husbandry & Technology, HPAU, Palampur, HP, visited Department of Tea Husbandry and Technology, AAU, Jorhat on 21st October 2021.
- Dr. Sanjib Bhuyan, Associate Professor, Department of Agric., Food and Resource Econ, Rutgers University, New Jersey, USA visited Department of Tea Husbandry and Technology, AAU, Jorhat on 25th October, 2021.
- B.P.M. Swamy, IRRI, Phillippines visited Experimental Garden for Plantation Crops on 30th November, 2021.
- Mr. B, Kaylan C., Principal Secretary, Higher Education, Govt of Assam visited EGPC, AAU on 1st December, 2021. An interaction session was held in the presence of all faculty members and ELP students.
- Mr. A. K. Barman, IAS, Deputy Commissioner, Jorhat, visited EGPC, AAU on 1st December, 2021 along with Hon'ble Principal Secretary, Higher Education, Govt of Assam.
- Dr. R.S. Kisliteraris, HIMUDA, Palampur

visited EGPC, AAU on 26th February, 2022. An interaction session was held in the presence of all faculty members.

- Dr. Uttam Saha, Deputy Director of Agriculture, Govt. of Tripura visited EGPC on 14th March, 2022.

8.1.2. Department of Agricultural Biotechnology

- Mr. Jean Baptist Kasongo Musenga, Diplomat, D.R Congo,
- H.E. Mr. Alatise Ismail Ayobami, High Commissioner of Nigeria, Nigeria,
- Mr. Gregoire Beya Nkashama, Diplomat, D.R Congo,
- H.E.Mr. Gonchig Ganbold, Ambassador of Mongolia, Mongolia,
- Mrs. Baasanjav Mashbadrakh, Diplomat, Mongolia,
- Hon'ble Phub Tshering, Consulate General, Bhutan,
- Ms Zam Phub, Diplomat, Bhutan,
- H.E. Mr. Nilesh Roneel, Charge d Affairs of Fiji, Fiji,
- Ms. Charlene Sascha Anastasia, Diplomat, Trinidad & Tobago,
- Ms. Neha Raghubar, Diplomat, Trinidad & Tobago,
- H.E. Mr. Beliwine Sebastian, Charge d Affairs of Ghana, Ghana,
- Ms. Nguyen Thi Ngoc Dung, Head of Political & Economic Session, VIETNAM,
- Muhammad Akmal Edison, Diplomat, Indonesia.

8.2. College of Veterinary Sciences, Khanapara

- Dr. R.V. Suresh Kumar, Professor and Head, Department of Veterinary Surgery, Veterinary College, SWU, Karnataka visited the Department of Vet. Surgery and Radiology, CVSc, AAU, Khanapara.

- Mr. Surendra Yadav, GM (F), Indian Oil, Assam Oil Division visited the Department of Vet. Surgery and Radiology, CVSc, AAU, Khanapara.
- Mr. G. Ramesh, ED & SH , IOAoD SU visited the Department of Vet. Surgery and Radiology, CVSc, AAU, Khanapara.
- Dr. S.B. Barbuddhe, Director, ICAR- NRC-Meat, Chengicharla, Hyderabad visited the Department of Veterinary Clinical medicine, Ethics and Jurisprudence on 25th December, 2021.
- Dr. S.M.Deb, Station Head, Eastern Regional Station, ICAR-NDRI, A-12, Kalyani, West Bengal visited the Department of Animal Genetics and Breeding on 10th March, 2022.
- Dr. Champak Bhakat, Principal Scientist (LPM) Eastern Regional Station, ICAR-NDRI, A-12, Kalyani, West Bengal visited the Department of Animal Genetics and Breeding.
- Dr. Mohan Mondal, Senior Scientist (Animal Production) Eastern Regional Station, ICAR-NDRI, A-12, Kalyani, West Bengal visited the Department of Animal Genetics and Breeding.
- Dr. P.J.Das, Principal Scientist, ICAR NRC on Pig, Guwahati visited Lakhimpur College of Veterinary Science, Joyhing.



Figure 8.3 (A & B). Hon'ble Chief Minister of Assam Dr. Himanta Biswa Sarma along with Mr. Atul Bora, Minister of Agriculture, Horticulture & Food Processing, AH & Vety., Urban Development, Town and Country planning, Govt. of Assam inaugurating the Lakhimpur College of Veterinary Science on 15th February, 2022

8.3. Lakhimpur College of Vety. Science, Lakhimpur

- Hon'ble Chief Minister of Assam Dr. Himanta Biswa Sarma along with Mr. Atul Bora, Minister of Agriculture, Horticulture & Food Processing, AH & Vety., Urban Development, Town and Country planning, Govt. of Assam inaugurated the Lakhimpur College of Veterinary Science on 15th February, 2022.
- Hon'ble Chief Minister of Health & Family welfare, Science & technology and Information Technology, Govt of Assam attended the inaugural ceremony of the Lakhimpur College of Veterinary Science on 15th February, 2022.
- Honourable Vice Chancellor of Assam Agricultural University, Jorhat Dr. Bidyut C. Deka visited Lakhimpur College of Veterinary Science on 15th February, 2022.

8.4. College of Fishery Sciences, Raha

- Mr. Tapan Kr. Gohain, Registrar, Assam Agricultural University, Jorhat visited College of Fishery Sciences on 14.07.2021
- Prof. B. A. Shyamsundar, 23.09.2021
- Dr. B. C. Deka, Hon'ble Vice-Chancellor, Agricultural University, Jorhat visited College of Fishery Sciences.
- Dr. Kuladhar Saikia, President, Asom Sahitya Sabha, visited College of Fishery Sciences.

8.5. College of Horticulture, Nalbari

- Ms. Gitimoni Phukan, Deputy Commissioner of Nalbari district, Assam visited on 28th July, 2021.
- Dr. B.P. Nandwana, Former Director of PG Studies, MPUAT, Udaipur visited on 25th February, 2022 as a member of PRT team.
- Dr. Bidyut Chandan Deka, Hon'ble Vice Chancellor of Assam Agricultural University, Jorhat visited on 19th March 2022.
- Dr. Ajit Baishya, Director of Post Graduate Studies, Assam Agricultural University, visited on 22nd March 2022.



Figure 8.4. Dr. B.P. Nandwana, Former Director of PG Studies, MPUAT, Udaipur visited on 25th February, 2022 as a member of PRT team



Figure 8.5. Dr. Ajit Baishya, Director of PG Studies, Assam Agricultural University, Jorhat visited on 22nd March 2022

8.6. Fishery Research Centre, Jorhat

- Dr. R.S. Kishtwaria Wild life Expert and veterinary specialist from Palampur visited the Fisheries

Research Centre, along with Dean, College of Fisheries Raha on February 27, 2022.

8.7. AICRPDA

- Mr. B. N. Kurup, Chief General Manager, NABARD, Assam RO, G S Road, Opp. Assam Secretariat, Guwahati, Assam on 21st January, 2022.
- Mr. K.P.R. Udupa, General Manager, NABARD, Assam RO, G S Road, Opp. Assam Secretariat, Guwahati, Assam on 21st January, 2022.
- Mr. Bhaskar Manta, Deputy General manager, NABARD, Assam RO, G S Road, Opp. Assam Secretariat, Guwahati, Assam on 21st January, 2022.
- Dr. M. Balakrishnan, Principal Scientist, NAARM, Hyderabad on 10th December, 2021.



Figure 8.6 (A & B). Dr. R S Kishtwaria, Wild life Expert and Veterinary Specialist from Palampur, visited the Fisheries Research Centre, along with Dean, College of Fisheries, Raha, on February 27, 2022

8.8. Out stations

8.8.1. RARS, N. Lakhimpur

- Mr. Binod Seshan, Secretary Agriculture, Director Agriculture & SPD ARIAPS, APART visited on 23/06/2021
- Sri Sumit Sattawan, Deputy Commissioner, Lakhimpur District visited on 23/06/2021
- Mr. Philipson Sona, Project Coordinator cum Deputy Director, Peoples' Action for Development (PAD) visited on 09/11/2021
- Dr. Vikas Kumar Singh, IRRI Scientist visited on 12/11/2021
- Dr. Mahender A., PDF, IRRI HQ visited on 12/11/2021
- Dr. Challa V. Scientist, DRR, Hyderabad on 12/11/2021
- Dr. R. Priyadarshi, IRRI Specialist visited on 13/11/2021
- Sri Tapan Kr. Gohain, Registrar, AAU visited on 24/11/2021
- Dr. B.C. Deka, Hon'ble Vice Chancellor, AAU visited on 24/11/2021

8.8.2. RARS, Gossaigaon

- Dr. Sujay Rakshit, Director, Indian Institute of Maize Research, PAU campus, Ludhiana-141004, visited RARS, Gossaigaon on 09/03/2022
- Mr. Bhaskar Manta, Deputy General Manager, NABARD, Assam Regional Office, G.S. Road, Dispur, Guwahati-781006.

8.8.3. SRS, Buralikson

- Dr. Ashok Kumar, Asst. Professor, Agril. Chemistry, National Sugar Institute, Kanpur on 24th March, 2022
- Dr. Lokesh Babar, JSO, Agril. Chemistry, National Sugar Institute, Kanpur on 24th March, 2022

8.8.4. RARS, Shillongani

- Dr. Anita Babbar, Principal Scientist (PBG) & PI, AICRP on Chickpea on 17th March, 2022 for monitoring of Chickpea experiments
- Dr. Ashok Sharma, Principal Scientist (Agril. Extension), ICAR-DRMR, Bharatpur, Rajasthan

on 22-23 Feb, 2022 for organizing Farmers' training and Exposure Visit under ICAR-DRMR & APART Project

- Dr. Vinod Kumar, ICAR-DRMR, Bharatpur, Rajasthan on 22-23 Feb, 2022 for organizing Farmers' training and Exposure Visit under ICAR-DRMR & APART Project
- Dr. Girindra Nath Hazarika, Resident Consultant, APART-AAU-DRMR Project on 22-23 Feb, 2022 for organizing Farmers' training and Exposure Visit under ICAR-DRMR & APART Project
- Dr. Chandra Nath Mishra, Principal Scientist (Breeding), ICAR-IIWBR, Karnal, Haryana on 23-24 Mar, 2022 for monitored the AICRP Wheat experiments at RARS, Shillongani as the ICAR Monitoring Team constituted for the NEPZ
- Dr. Sandeep Sharma, Principal Scientist (Breeding), BHU, Varanasi, UP on 23-24 Mar, 2022 for monitored the AICRP Wheat experiments at RARS, Shillongani as the ICAR Monitoring Team constituted for the NEPZ
- Dr. Naresh Kumar, Principal Scientist (Breeding), IARI, New Delhi on 23-24 Mar, 2022 for monitored the AICRP Wheat experiments at RARS, Shillongani as the ICAR Monitoring Team constituted for the NEPZ
- Dr. Dhiman Mukharjee, Senior Scientist (Agronomy), BCKV, Kalyani, WB on 23-24 Mar, 2022 for monitored the AICRP Wheat experiments at RARS, Shillongani as the ICAR Monitoring Team constituted for the NEPZ
- Dr. Chandra Shekhar Azad, Senior Scientist (Plant Pathology), BAU, Sabour, Bihar on 23-24 Mar, 2022 for monitored the AICRP Wheat experiments at RARS, Shillongani as the ICAR Monitoring Team constituted for the NEPZ
- Dr. Sanjay Jambhulkar, Scientist (Breeding), BARC, Trombay, MS on 28-29 Mar, 2022 for monitored the experiments on the
- Trombay Mutants of wheat, Groundnut and Mustard at RARS, Shillongani
- Dr. Suman Bakshi, Scientist (Breeding), BARC, Trombay, MS on 28-29 Mar, 2022 for monitored the experiments on the Trombay Mutants of wheat, Groundnut and Mustard at RARS, Shillongani.

Finance

The University received its financial resources from various sources like State Government, ICAR, GOI and internal source of the University. During 2021-22 financial year, the University received an amount of Rs. 57704.22 lacs from these sources of which around 86 per cent was received under Revenue head and the rest under Capital head and Internal head. State Government contributed the maximum (around 70 per cent) to this fund followed by ICAR and others (Table 9.1).

Table 9.1. Receipt of fund (in Lacs) by Assam Agricultural University during 2021-22

Receipt	State	ICAR	GOI	Internal Receipt	Total (Rupees in Lacs)
Revenue	36590.32	8421.16	4591.02	-	49602.50
Capital	4022.82	1479.02	463.74	-	5965.58
Internal Receipt	-	-	-	2136.14	2136.14
Total	40613.14	9900.18	5054.76	2136.14	57704.22

Appendix I

Salient Research Achievements, 2021-22

I. Crop Improvement

A. Rice

- High yielding black rice genotypes developed at RARS, AAU, Titabar start farmers' trial in Merapani and Titabar. This genotype have intermediate amylase content, high HRR percentage, low GI, High in antioxidant and other nutrients.
- TTB 944-31-10-1-2-1(IET No. 28283) was promoted to AVT trials during in the Zone III and ZVII as its outstanding performance (10 % and 8 % increase over best check) in these zones based on AICRIP trial conducted during 2020-21 RARS, AAU, Titabar contributed 6 advance breeding line viz., TTB 1048-60-9, TTB 1040-218-2-2, IR 87144-CR4-2-1-1-TTB-1-2, TTB 1058-408, TTB 1384 and TTB 1209-4-1 into AICRIP trials for the year 2021-22.
- Four genotypes AAU AAU 241, AAU 238, TTB-1041-204-1 and TTB-1048-60-1 were promoted to OFT level during the Technical Committee Meeting, Kharif, 2021 and also genotypes TTB 1058-408 and TTB 1048-60-9 were approved for MLT during the same TCM.
- A mid duration submergence tolerant variety 'Dholi' developed at RARS, AAU, Titabar and submitted the proposal to SVRC to release.
- Developed bacterial blight resistant advance generation rice genotype.
- Ninety six (96) DWR germplasm has been genotyped (sequenced) and data were submitted to National Centre for Biotechnological Information (NCBI), USA and will be conserved and maintained at the station for future biological assets of the state/country.
- Direct seeded rice variety 'Haccha' was approved by SVRC meeting held on 2-3rd July 2021 at Guwahati
- Organic sali rice variety 'Langpi' was approved by SVRC meeting held on 2-3rd July 2021 at Guwahati
- Organic chakua rice variety 'Diyung' was

approved by SVRC held on 2-3rd July 2021 at Guwahati

- Direct seeded rice variety 'Dehangi' registered in PPVFRA under registration No. REG/2018/319
- A pre-release medium maturity (FCM) genotype Bio 9544 (C) performed better over DKC 8209 in terms of grain yield, net return and B:C ratio under higher nutrient application (150%) and plant density (25 -30 %) over the normal
- Two pre-release early maturity (EDV) genotypes, FQH 165, FLPH 19 and VHM53 were significantly superior over VHM 45 in terms of grain yield, net return and B:C ratio under the higher nutrient application (150% RDF) and plant density over the normal.
- A promising rice variety, Surma Dhan with medium slender grain has been recommended by the SVRC, Assam during 2021.

B. Maize

- The QPM line K-20-IQPMH-2011 showed highest yield (3.73 t/ha) followed by K-20-IQPMH-19-2 (3.52t/ha).

C. Finger millet

- Finger millet variety Gossaigaon MaruaDhan was released through State Variety Release Committee. Moreover, a Foxtail millet variety Gossaigaon Local (Yellow seeded) was recommended for the state of Assam.

D. Wheat

- A total of one hundred eighty seven (187) entries of Wheat were screened under Leaf Blight Screening Nursery and MDSN trials against leaf blight disease during Rabi 2021-22. Among them, LBSN 1, MDSN 1 showed Resistant (R) reaction

E. Linseed

- Five numbers of linseed varietal trials (IVT-R, IVT-I, AVT-I, I/AVT-U and ERA-I) have been conducted to evaluate the seed yield

and its attributes. The result revealed entries (code) 2001,2004,2007,2010 of IVT-R , 5001,5007,5009,5016,5019 of IVT-I; 13001,13003,13006 of AVT-I and 19003,19006 19012 to be promising.

F. Jute

- Altogether 50 nos. of Capsularis jute germplasm were evaluated for basal diameter, plant height and fibre yield against 2 std checks viz. JRC 517 & JRC 698. Two entries CIN 196 and CIN 209 were found to be superior for fibre yield (g/pl) compared to the best check JRC 517.
- A total of 50 nos. of Olitorius jute germplasm were evaluated for basal diameter, plant height and fibre yield against 2 standard checks viz. JRO 204 & JRO 524, in 3RBD. None of the entries were found to be superior for fibre yield than the checks.
- Fifty selected F6 progenies National Hybridization Programme (NHP) of Olitorius Jute crosses were evaluated and a total of 21 lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- From a total of 32 selected F7 progenies under NHP with capsularis jute, 21 progeny lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- From fourteen selected F5 Progenies, 10 lines were selected for advancement on the basis of basal diameter, plant height and resistance to pest and diseases.
- A number of successful crosses were made viz. Tarun X OIN 147, Tarun X OIN 149, Tarun X OIN 163, Tarun X JROBA-3 for pest and disease resistance.
- The successful crosses made were Tarun X JROG-1, Tarun X JRO-2407, Tarun X JBO-1 for fibre fineness, while crosses like Khyati X CIN 172, Khyati X CIN 173, JRC 532 X CIN 172 and JRC 532 X CIN 173 for fibre strength.
- Four olitorius jute varieties JROAS-1, JROBA-3, JROBA-4 and JROBA-10 were tested for flowering resistance against the check variety NJ 7005 in a 4 RBD. As none of the entries flowered prematurely, the trial failed to meet its objective.
- Fourteen Olitorius jute varieties were tested against 2 standard checks viz. JRO 204 and JRO 524. Significant variation among the varieties for fibre yield and related characters was observed. BROJ-5(35.24 q/ha) was the highest yielder followed by BROJ-3(32.00 q/ha), however none of the entries could statistically out yield the best check JRO 524(31.60 q/ha).
- Four Olitorius jute varieties were tested against 2 standard checks in 4 RBD. There was no significant variation among the entries for fibre yield. The highest yielder was JROP-6 (28.97 q/ha) followed by entry from RARS, Shillongani NOJ 17-2 (28.05 q/ha).
- Four Olitorius jute varieties were tested against 2 standard checks in 4 RBD. The highest yielder was JROBA-5(29.39 q/ha) followed by JROP-4(28.10 q/ha). However, both these entries were statistically at par with the best check JRO 204(27.63 q/ha).
- Five capsularis jute varieties were tested against 2 standard checks in 3 RBD. Significant variation was observed among the varieties for fibre yield. The variety UBCJ-3 recorded the highest yield (45.26 q/ha) and it significantly out yielded the rest except the best check ie. JRC 698.
- Four capsularis jute varieties were tested against 2 standard checks in 4 RBD. Statistically, no significant variation among the varieties was observed for fibre yield. The highest yielder was JRCP-8(29.04 q/ha) followed by NCJ 16-53-1(28.92 q/ha).
- Four capsularis jute varieties were tested against 2 standard checks in 4 RBD. No significant variation was observed among the varieties for fibre yield. The highest yielder was JRCP-5(30.81 q/ha) followed by the check variety JRC-517(30.78 q/ha).
- The Adaptive trial on olitorius jute was conducted in farmer's field at village Mazgaon Jajori in the Nagaon district. The test variety JROBA-3 was evaluated against the checks JRO 524 and JRO 204. JROBA-3 yielded 25.10

q/ha compared to the best check JRO 524 yield of 21.40 q/ha.

- This adaptive trial on capsularis jute was also conducted at village Mazgaon Jajori. The test variety was JRCP-5 and the check varieties were JRC 517 and JRC 698. JRCP-5 yielded 22.90 q/ha as against the yield of 19.70 q/ha by the best check JRC 517.

G. Green Gram

- One new green gram entry, viz., Pusa M 2131 gave an exceptionally high grain yield of 14.86 q/ha in comparison to the check variety IPM 02-3 (14.09 q/ha) during summer, 2021. The variety also showed maximum synchronous maturity and resistance to all important disease and pests.
- One newly developed green gram variety 'SBC 50' has completed all the formalities and it will be placed for recommendation in the appropriate forum and for further DNA profiling.
- One new high yielding green gram variety viz., SGC 25, which is found to be having the characteristics of synchronous maturity up to 95.0% will be included in AICRP trials and MLT during kharif,2022. An average yield of 13.78 q/ha was obtained for the variety for consecutive 4 years in station trials.
- One new high yielding black gram variety viz., SBC 51, found to be having erect plant type with shining medium bold grains will be included in AICRP trials and MLT during kharif,2022. An average yield of 14.38 q/ha was obtained for the variety for consecutive 4 years in station trials.
- Multilocal evaluation of mung bean (IVT, AVT 1 and AVT 2 entries) against major diseases: A total of 70 entries were tested against Antracnose, Cercospora leaf spot (CLS) web blight and MYMV in Summer: Ten (10) entries were HR to CLS; 14 MR against anthracnose; 9 MR to web blight of mung bean; 58 showed no infection towards MYMV.
- National nursery for evaluation of AVT and IVT entries against diseases of Mung bean: A total of 75 entries were tested against web blight and MYMV in Kharif: 29 entries were HR to

web blight and 35 entries showed no infection towards MYMV of mungbean.

H. Black gram

- Multilocation evaluation of urd bean entries (IVT, AVT 1 and AVT 2) against major diseases in Summer: A total of 115 entries were tested against web blight. Two entries were MR to web blight of urd bean and 41 entries showed no infection towards MYMV.
- National nursery for evaluation of AVT and IVT entries against diseases of urdbean: A total of 46 entries were tested against web blight and MYMV in Kharif: 5 entries were HR to web blight and 26 entries showed no infection towards MYMV of mungbean.

I. Chickpea

- Out of large number of genotypes tested in five coordinated trials, the variety IPCD 2016-44 (985 kg/ha) in AVT 1 (desi), IPC 2015-123 (1098 kg/ha) in AVT 1 (late sown), BG 4023 (1160 kg/ha) and NDG 19-5 (1066 kg/ha) in IVT (late sown), DMHC 18-1664 (824 kg/ha) in AVT 1 (mechanical harvesting) and IPCB 2015-132 (1090 kg/ha) and IPC 2017-253 (1007 kg/ha) in IVT (mechanical harvesting) were found to be promising in comparison to the respective checks of the trials during rabi, 2020-21.

II. Crop management

A. Rice

- Application of Azospirillum and PSB @ 4 kg/ha + RP @ 10 kg/ha + RD of K) along with urea based on Leaf Colour Chart 4 (LCC 4) increased the yield of paddy and reduced 25-50 % requirement of urea.
- Consortia of potash solubilizing bacteria (Bacillus proteolyticus+ Serratia liquifaciens) @3.5kg as seedling root dip treatment with NPK@60:20:20(kg/ha) for transplanted sali rice is recommended and it can reduce the K fertilizer requirement by 20kg/ha
- Azospirillum based microbial consortia was developed consisting of Azospirillum spp.; PSB (Paraburkholderia tropica, and KSB (Serratia liquifaciens). Azospirillum population

maintained at 8.20 log cfu/ mL while other PGPR (PSB and KSB) maintained > 6.00 log cfu/ mL during the storage period (210DAI).

- Azotobacter based microbial consortia was developed consisting of Azotobacter sp; PSB (Paraburkholderia tropica, and KSB (Serratia liquifaciens) .The individual population maintained with values >8.00 log cfu mL⁻¹ after 210 days of storage.
- Rhizobium based microbial consortia consisting of Rhizobium sp; PSB (Paraburkholderia tropica, and KSB (Serratia liquifaciens) was developed. In Rhizobium based consortia, highest population of Rhizobium [>10.00 log cfu mL⁻¹] was achieved. Other PGPR in consortia maintained the population status >8.00 log cfu mL⁻¹.
- Field trial of nutrient management in rice-rajmah cropping sequence revealed highest yield of rajmah at 75% RDF with Rhizobium & PSB biofertilizers.
- Field trial on boron fertilization on rice indicated highest yield of rice in the treatment comprising 2 kg B/ha along with recommended dose of fertilizer and 0.25% B as Foliar Spray in PI & milk stage.
- Significant increase in early seed vigour was observed with 29.73 % yield increase in seed coating on hydro-primed (30h @ 25OC) seeds with Trichoderma harzianum in rice variety Luit. However common PoP with soaking 24 hours followed by incubation for sprouting (24hours) exhibited 45.95 % yield increase was also observed over control. B:C signifies better profit in soaking 24 hours followed by treatment with PoP (1.35) and in Seed coating on hydro-primed (30h @ 25OC) seeds with Trichoderma harzianum (1.32).
- Treatments of Dry Bulk ZnO @ 500 ppm and Nano SiO₂ @500ppm exhibited 0.45% yield increase over control in direct seeded rice varieties.(Fig6)
- Seed health status of farmers saved paddy seed has revealed that twenty-four (24) out of the one hundred three (103) samples showed germination below IMSCS which is 23.30% of total number of samples. Germination ranged from 31-88 per cent with 11.2-14.9% seed moisture. The pathogen associated were Aspergillus spp., Penicillium spp, Curvularia spp., Fusarium spp., Alternaria spp., Bipolaris oryzae with 0-22%.
- While developing IFS module/strengthening traditional rainfed IFS for small and marginal farm holdings, it was found that the average yield of 56.95 q/ha in Ranjit and 45.40 q/ha in Numoli with B:C ratio of 2.57 and 2.24, respectively was observed under Crop and INM module. Under Farming System with Horticulture(CHLR) module, Rice-Potato cropping sequence, RIFs farmers (rice - potato - Turmeric) obtain 1168.21qha⁻¹ MCEY. Under Poultry, Total 160 nos. of three week old White leghorn chicks were distributed among 8 farmers under rainfed and partially irrigated farming system in the year 2020. During the year 2021 it was found with an average weight of 1520-2400 gm/Layer and laying 22-25eggs/Month. Net income Rs. 8498 with B:C ratio 1.6 was found.
- The water soluble complex fertilizer (19:19:19) @ 0.5% + ZnSO₄ @ 0.5% & borax @ 0.5% recorded the highest system yield 29.35 q ha⁻¹ and the control (no spray) gave the lowest system yield 22.15 q ha⁻¹.
- Submergence tolerant Rice varieties viz. Bahadur Sub-1 and Ranjit sub-1 yielded 51.78 tha⁻¹ and 52.55 tha⁻¹ respectively as compared to farmer's practice (31.05 tha⁻¹) with B:C ratio 1.9, 1.8 and 1.1.
- IFS models under rainfed condition with Crop (Field & Horticultural) + Cattle + Fishery + Apiary (along with complementary and supplementary units) have been developed for the marginal farmers of Assam.
- An IFS model for 1.0 ha area under rainfed condition with Crop (Field + Horticultural) + Cattle+ Fishery + Apiary has been developed which can yield a gross return of Rs. 3,00,595.00, variable cost Rs. 1,55,311.00, return over variable cost Rs. 1,45,284.00 and B:C ratio of 1.94 and generated employment of 434 man days/ha/ year.
- IFS Model with Field crops + Horticultural crops + fishery + Apiary in an area of 0.88 ha produced

a net return of Rs. 80,787.00 along with a B:C ratio of 2.13 and an employment generation of 178man days/ha/ year.

- IFS Model with Field crops + Horticultural crops + Dairy + Apiary (with Liquid manure production, Vermicomposting, Bio-gas production and additional return from processing) has been developed for an area of 0.86 ha that can produce a net return of Rs. 1,31,815.00 along with a B:C ratio of 2.07 and an employment generation of 398 man days/ year.
- IFS Model with Field crops + Horticultural crops + Apiary along with additional return from processing in an area of 0.80 ha produced a net return of Rs. 65,281.00 along with a B:C ratio of 2.55 and an employment generation of 120 man days/ year
- Raised and sunken bed module has been standardized for the wet land areas under rainfed situations of Assam. A raised and sunken bed module of 1.0 ha wet land area could produce a net return of Rs. 46,117.00 along with a B:C ratio of 2.15 and an employment generation of 142 man days/year.
- Permanent plot experiment have revealed the highest average grain (6.8 t/ha) and straw (11.8 t/ha) yield of the sequence (with a B:C ratio of 2.44) in case of the 50% recommended NPK through fertilizers along with 50%N through crop stubbles in winter rice(cv. Ranjit) and 100% recommended NPK through fertilizers in autumn rice (cv. Disang).
- Out of eight cropping sequences tested the highest B:C ratio of 3.92 along with a net return of Rs.1,45,643.00 and an employment generation of 322 mandays/ha/ year was obtained with winter rice-chilli- black gram sequence followed by winter rice-cabbage-greengram sequence with 2.71 B:C ratio, Rs.1,04,588.00 net return and 299 man days/ha/ year.
- Application of stale seedbed technique + reduced spacing (25%) + mulching with previous crop mulch + 1 hand weeding in case of rice-toria-rice sequence was found to be the best organic weed management practice in terms of weed control with reduced weed density and weed dry weight, REY (7.5 t/ha) and B:C ratio

(1.48 with 25% premium price) over the other treatment combinations under our study.

- Application of 5kg Zn + RDF was found to be best in terms of system equivalent yield (8.2 t/ha) and a net return (Rs. 41,147.00 with the B:C ratio of 1.78); and accordingly it has been standardized for pre-flood summer rice (cv. Jaymati) - post-flood winter rice (cv. Luit) cropping sequence under the flood prone areas of Assam.
- The IFS model under AICRP on IFS at AAU, Jorhat is a carbon-positive model. Out of total GHG emissions from the cropping sequences (302.57 kg CO₂ equivalent), the emission contribution was highest (108.36 kg CO₂ equivalent) from winter rice – Toria – Cowpea (fodder) sequence. However, per cent contribution of GHGs were highest from Winter rice - Potato - Lady's finger which may be attributed to higher use of nitrogenous fertilizers in the system over all the sequences under study. Overall, the net release of GHGs from the 1 ha IFS model (of crop + livestock + fishery + apiary component) was estimated to be 865.00 Kg CO₂ equivalent GHG emission.

B. Jute

- While evaluating the performance of new jute genotypes under adaptive trials at different fertilizer schedules (Capsularies), it was found that treatment combination of 100: 21.8: 41.3NPK kg/ha with JRCP 5(F3V1) yielded highest capsularis fibre yield of 22.15 q/ha followed by control with JRCP 5 (F1V1) yielding fibre of 21.33 q/ha & 80: 17.5: 33.3kg/ha NPKwithJRCP5 (F2V1) yielding fibre of 21.17 q/ha respectively.
- Soil test-based fertilizer application in Jute based cropping system for improved nutrient management trial revealed that treatment with 150% NPK on ST-TY yielded highest capsularis fibre yield of 27.05 q/ha followed by Control of 21.9 q/ha fibre yield & 100% NPK on ST-TY + lime/dolomite application on 25% LR of 20.17 q/ha fibre yield respectively.
- Integrated weed management trial in jute & flax revealed that pre emergence spraying of Ipencarbazone (22.8%)@90 g a.i./ha (0.66 ml/l)

+ one hand weeding (HW) at 15 DAS resulted highest fibre yield of 25.44 q/ha followed by Post emergence spray of Quisalofop ethyl 10% EC @ 38 g/ha at 15 DAE + one hand weeding (HW) at 30 DAS yielding fibre yield of 22.73 q/ha & Jute + red amaranthus intercropping (broadcasting of red amaranthus seed @ 10 kg/ha in inter-row space of jute) yielding fibre yield of 22.49 q/ha respectively.

- Intercropping of flax with smother crop for enhancing productivity and suppressing the weeds revealed that treatment with Flax : Chenopodium (2:1) yielded highest seed yield of 7.76 q/ha followed by Control of sole flax yielding seed yield 5.89 q/ha & Flax : Spinach (2:1) yielding seed yield 5.10 q/ha.

C. Green gram

- The highest grain yield was recorded under the treatment combination involving seed inoculation with Rhizobium and PSB each @ 50 g/kg, weed management using post-emergence herbicide propaquizafop 2.5 % + imazethapyr 3.75 %ME @ 125 g/ha at 15-20 DAS on spring mung bean and foliar nutrition with two sprays of complex NPK (19:19:19) @ 0.5% at flower initiation and pod formation stages.
- The trial on fortification of zinc and iron through foliar spray in mung bean revealed that the treatment, 0.5 % ZnSO₄ spray at flower initiation and pod initiation yielded significantly higher (1,533.33 kg/ha) than all other treatments.

D. Black gram

- The trial conducted to evaluate post-emergent herbicides in urd bean was conducted during Kharif 2020 and 2021. Hand weeding at 20 & 40 DAS resulted in the highest yield. However, Propaquizafop 2.5% + Imazethapyr 3.75 % (ready mix) @ 125 g/ha at 20 DAS yielded significantly higher (1,016.67 & 1,506.95 kg/ha respectively) than all other treatments except hand weeding once & twice.

E. Pigeon pea

- With hydro-priming for 6 hours, significant increase in early seed vigour was observed with 72.97% yield increase in pigeon pea varieties Pusa 191 and 39.53 % yield increase in Pusa

192 over respective control. Higher profitability is indicated with higher BC ratios in hydro primed seeds of Pusa 191 and Pusa 192 with 4.11 and 3.85 respectively for over respective controls.

F. Rapeseed and mustard

- Higher profit may be obtained with Seed coating on hydro primed (16h @ 200C) seeds) with Bio-phos as compared to dry seeding with B:C 9.52 in Mustard (variety TS 38).

G. Maize

- An OPV Maize genotypes of under varying planting density and nutrient levels in Kharif, 2021, L316 showed superior performance over the check varieties of Hemant (C), and Vijay (C) under higher nutrient application (150% RDF) over the normal.

III. Crop protection

A. Rice

- Application of *Pseudomonas fluorescens* (2x10⁸cfu/g) @10kg/ha at sowing was the best in reducing FNP (soil:21.54%, root:27.63%) and increasing yield , followed by soil enrichment with *Bacillus subtilis*@ 10kg/ha in rice against *Meloidogyne graminicola*
- Nursery treatment either with *Pseudomonas fluorescens* or *Bacillus subtilis*@ 10 kg/ha significantly increases seedling height of rice (16 & 14%), and reduces galls in seedlings (44 & 38%), nematode population in soil (41 & 37%) and root (28 & 17%) and increase in crop yield (27 & 24%)
- Fifteen endophytic bacteria, isolated from Tomato (*Solanum lycopersicum*, *Solanum pimpinellifolium*) were identified as *Bacillus marisflavi*(2 isolates),*Bacillus altitudinis*, *Microbacterium arborescens*, *Exigobacterium indicum*. Efficacy trial on effectiveness of culture filtrates of isolated endophytes revealed that *Bacillus marisflavi*is the best in increasing the mortality of *Meloidogyne incognita* J2.
- Application of flubendiamide 39.35% SC was found most effective in controlling rice stem borer and leaf folder followed by Chlorantraniliprole

18.5 %SC and Chlorantraniliprole 0.50% + Thiamethoxam 1.00 % GR, respectively.

- Application of Pongamia oil @ 5ml/l was observed to be effective in controlling rice stem borer followed by Pongamia oil @ 3ml/l and Agnihastra 5.0 % (Neem leaves, Ghomutra, Garlic, Green Chilly, Pepper, Jaggery, onion, tobacco and other natural herbs), respectively.
- Use of bio control technologies revealed that BIPM package and farmer's practice (Chemical control) were at par with each other in respect of the population build-up of rice stem borer and leaf folder. The net returns over control in BIPM package were Rs. 61,291.90 as compared to Rs. 49,967.50 in farmers practice
- Seed treatment with organic Trichojal@5ml/kg seed/lit exhibited 93.75% yield increase over control followed by hydration followed by incubation (PoP) with 59.06% in Keteki Joha. Seed treatment with organic Trichojal@5ml/kg seed /lit and seed treatment with organic Metajal @5ml/kg seed /lit is found to be cost effective with B: C ratio 1.24 and 1.34 along with protocol as per PoP with B:C 1.09. (Fig2)
- Out of 12 treatments with different fungicides molecules, Amistar top and Beam showed better result amongst the chemicals to suppress seed and seedling associated pathogens viz, Bipolaris, Pyricularia, Fusarium and Curvularia
- Poly lined gunny bag was found to be suitable for safe seed storage for six months over jute and cloth bag. Almost 2% higher germination was observed in Captan @ 0.25% treated seed in poly lined gunny bag with no designated mycoflora. Untreated seed stored in cloth bag was found to be germination 76.83% that is near IMSCS after six months of storage.

B. Maize

- Demonstration of BIPM module against fall army worm, Spodoptera frugiperda on rabi maize revealed that the BIPM module was significantly superior (15.30%) over farmers practice plot (22.83%).

C. Rapeseed and Mustard

- Assessment of yield loss and management of Alternaria blight in mustard variety

'Varuna' under zero till condition have revealed the lowest disease severity in Tebuconazole 50% + trifloxistrobin 25% WG-FS @ 0.5g/l followed by garlic bulb extract @ 1% w/v (ST+FS), (15.7 and 11.27 % respectively)

- The lowest disease severity was recorded in Tebuconazole 50% + trifloxistrobin 25% WG @ 0.1% (15.3 and 11.3 % respectively)
- Epidemiology of Alternaria blight have showed that the disease symptom starts from lower leaves and progresses upward, and disease severity is directly correlated with temperature. It was found that as the disease symptom starts appearing from second week of December, the management practices should be started from first week of December before the build-up of the inocula. During the period from December to March, the maximum temperature ranges from 22 to 28°C, minimum temperature from 10 to 18°C, relative humidity (morning) from 81 to 93 %, relative humidity (evening) from 54 to 78 % and rainfall ranged from 0 to 60 mm.

D. Jute

- Atachinid fly was observed to parasitize Bihar hairy caterpillar larva up to 32% during 1st fortnight of July.
- Out of 11 tested entries, OIN 110 recorded minimum mite population (0.69 mite/sq. Cm of leaf & 17.67 % plant infestation) followed by OIN-106 (1.45 mite/cm² of leaf & 24 % plant infestation)
- Out of 10 tested entries, minimum stem rot incidence was recorded in OIN129 (PDI 2.56) followed by OIN123 (PDI 2.79) & OIN 133 (PDI 3.28) just before harvest
- Out of 11 tested entries minimum stem rot incidence recorded on CIN358 (PDI 3.09) followed by CIN-371 (PDI 3.20) & CIN-036 (PDI 3.96).
- Seed treatment with carbendazim @ 0.1% + foliar spray of azoxystrobin @ 0.1% at 45 DAS (PDI 1.74) & Seed Treatment with carbendazim @ 0.1% + foliar spray of tebuconazole @ 0.1% at 45 DAS (PDI 1.89) were superior in managing jute diseases
- Seed treatment with carbendazim 50 WP @ 2 g/kg seed and seed treatment with

azoxystrobin 25 % SC @ 1.0ml/kg seed were at par in managing flax wilt disease(4.31%& 4.11 %wilt incidence respectively against 11.64% in control)

- Out of seven newer insecticide molecules evaluated for their performance in controlling lepidopteran pests in jute, Chlorantraniliprole 18.5 EC @ 0.3 ml/l water, Lamda Cyhalothrin 5 EC @ 0.6 ml/l water and Spinosand 45 SC @ 0.3 ml/l water controlled lepidopteran pests in jute most efficiently.
- Integrated approach for management of insect pests and diseases in jute managed Bihar hairy caterpillar, jute semilopper, stem rot and root rot diseases more efficiently than cultivation of jute by farmers in their traditional method. Further, integration of different methods of pest control was eco-friendly as no toxic chemical was used. Average fibre yield under IPM demonstration was 28.87 q/ha and that in farmers' traditional method was 22.56 q/ha. There was 27.97 % higher fibre yield in IPM adoption plots.

E. Lentil

- Lentil varieties recorded with germination more than IMSCS (>75%) after 6 months of storage in HDPE and Jute bag under ambient storage condition.(Fig 1)

F. Black gram

- Effect of solarisation on bruchids (pulse beetle) infestation of blackgram seed variety PU-31 packed in clear polythene in clear 700 gauges polythene revealed that the germination was above the IMSCS up to six months of storage. The fresh seed solarised for 2 to 4 days recorded 0.58 and 0.25 percent infestation at 9 months of storage. On the other hand, fresh seed solarised for 6 days recorded bruchid free storage up to 12 months of storage.
- Efficacy of commercially available neem products on storage pest management of black gram seeds under ambient condition was studied with variety IPU-02-43 stored in gunny bag. Neemazol TS and Neemoz Gold @ 50 and 75 ppm recorded germination percentage above IMSCS up to 9 months of storage. The insect infestation was 0.42 and 0.08 percent in

Neemazol TS and Neemoz Gold respectively at 9 months of storage.

- Field trial was conducted with four treatments having five replication in Kharif . The result showed that the treatment T1 (Moderately resistant variety with web blight Disease management practice) showed best result with PDI of 9.4 %, B:C of 2.3 & AUDPC of 195.3.

G. Green gram

- An IPM module with integration of practices like two lines of sesame as barrier crop, installation of yellow sticky trap (1mx1m) coated with white grease @15/ha at 30 DAS, spraying with *Azadiractin* 1500ppm @3ml/l of water at 30 DAS and need based spray of *Spiromesifen* 22.9 SC @ 1.25ml/l of water or *Chlorantraliprole* 18.5 SC @ 0.30 ml/l of water in mungbean against major insect pests showed most effective results in reducing the pest population and their damage which resulted 21.43% increase in yield over farmers' practice and the cost benefit ratio was calculated as 2.06.
- Two sprays of a new insecticide molecule, *Diafenthiuron*50WP @ 1.25G/l of water at vegetative and reproductive stages of mungbean against sucking pests (white flies, aphids) was found most effective in order to reduce the pest population level and their damage which resulted 19.62% increase in yield (10.24q/ha) over control (8.23q/ha) with C: B = 1: 2.13.

H. Chickpea

- Pod borer, *Helicoverpa armigera* in chickpea crop and its damage can be suppressed by spraying with new insecticide molecules, Chlorantraniliprole 18.5 SC @ 0.3ml/l of water or Spinosad 45 SC @ 0.3ml/l of water just after appearance of the pest during reproductive stage.

I. Potato

- Three number of spray of *Dimethamorph* 50%WP (Acrobat/Lurit) @1.5g/litre OR *Mandipropamid* 25% SC (Revus) @ 1ml/litre at 10 days interval after the initiation of disease successfully manage the late blight disease in potato.

J. Cowpea

- Evaluation of entomopathogenic biopesticide against *Aphis craccivora* cowpea (*Vigna unguiculata*) revealed that the mean number of *A. craccivora* per terminal shoots of cowpea was significantly lower from the untreated control plot. However, minimum number of *A. craccivora* (10.83/ terminal shoots) was recorded in the *Verticilium lecanii* (1×10^8 cfu/ml @ 5gm/lit) treated plot followed by spinosad 45 SC treated plot (11.80/ terminal shoot) with a yield of 38.75 and 36.31 q/ha, respectively.

K. Okra

- Evaluation of biointensive IPM module against keypests of okra revealed that 6 numbers of alternate sprays of insecticides at fortnightly intervals contributed maximum protection from infestation of larvae per five plants and per cent fruit damage of 1.68 and 7.33 %, respectively as against 2.02 and 8.15 % in BIPM plot. However, highest marketable fruit yield of 76.49 q/ha was recorded in BIPM plot, whereas in chemical control plot, the yield was 69.10 q/ha.

L. Cabbage

- Field evaluation of ICAR-NBAIR entomopathogenic strains against cabbage aphid, *Brevicoryne brassicae* and diamond back moth, *Plutella xylostella* revealed that the *V. lecanii* (V1-8 isolate) @ 5 ml/litre was the best treatment in reducing the mean population of aphid, *B. brassicae* (3.38/plant) and *P. xylostella* (4.20/plant), with 65.51 and 56.92 % reduction over control.

M. Cucumber

- The BIPM plot against fruit flies *Deccaus bactrocera* against cucumber registered 16.81% fruit damage which was significantly different from chemical control with 28.41% after 65 Days after treatment.

N. Birds

- Nest boxes increased barn owl density coincided with a reduction in damage caused by field rats. Rat trap success rate dropped from 30% to 8% in lowland rice field of about

500 acres after installing nest boxes at Kadam Gohain Gaon in Lakhimpur district of Assam.

IV. Horticulture

A. Vegetable

- Intercropping of black gram with okra (Black gram cultivated as intercropping in the mid rows of Okra as 1:1 in additive series) is found to be the best with economic yield of 259.88 q ha⁻¹, B:C ratio of 4.65 with LER 1.59 and 36.91 % of land is saved.
- Ridge Gourd (*Luffa acutangula L.*) could be cultivated by using Enriched compost 2.5 t ha⁻¹ which is the best treatment considering ability for adopting at field level with highest economic yield and B:C ratio of 3.07.
- Intercropping of radish with lentil is found to be the best treatment with economic yield of 210.75 q ha⁻¹, BC ratio of 5.65 with LER 1.65 and 32.16 % of land is saved.
- Application of Rock Phosphate + Enriched Compost (2.5 tha⁻¹) + *Azotobacter* + PSB (as root dip treatment) is found to be the best organic treatment in Broccoli with economic yield of 185.2 q ha⁻¹ and BC ratio of 6.70 with better quality, shelf life and sustained soil health.

B. Coconut

- Studies on collection, conservation and evaluation of local germplasm of coconut in Assam which comprised of 10 local accessions with two check varieties viz., Kamrupa and West Coast Tall started during 2005 revealed that among the accessions, significantly the highest nut yield of 85.7 nuts/palm/year was observed in IC 610357 while the lowest (64.8 nuts/palm/year) was found in IC 610355..
- With regard to evaluation of five new coconut hybrids of location specific cross combinations, significantly the highest nut yield (81.5 nuts/palm/year) was recorded in AGT x PHOT closely followed by AGT x MYD (70.1 nuts/palm/year). The cross combination AGT x PHOT also recorded highest number of inflorescences (11.6) per palm per year as well highest number

of female flowers (26.5) per inflorescence compared to other crosses.

C. Cocoa

- Multilocation trial (MLT) of 16 cocoa clones under palms revealed that the highest plant height, stem girth, jorquette height, plant spread (E-W and N-S) and canopy area (8.95 m²) were recorded in VTLC-20 followed by VTLC -18 and the lowest values for the above characters were observed in EYT. Cocoa clone VTLC-20 also registered maximum no. of pod/tree (39.0), no. of bean/pod (41.8) and dry bean yield/tree/year (2.28 kg) as against the lowest under YET.

D. Tropical orchids

- During the year two species namely *Dendrobium lituiflorum*, *Dendrobium thyrsoiflorum* were collected and maintained in the centre. Amongst the evaluated genera under terrestrial group, *Cymbidium aloifolium* registered maximum number of vegetative shoots (19.54), number of flowers (42.78) and inflorescence length (62.45cm). However, *Spathoglottis plicata* registered maximum flower duration (65.80 days). Amongst the epiphytes, *Rhynchostylis retusa* registered maximum number of flowers in an individual spike (89.50 nos) longest spike length (28.25 cm), maximum flower duration (29.50 days) and maximum number of spikes per flowering shoots (5.80 days).

E. Tuberose

- Collected two genotypes of Single type viz., MPAUT-7-1 and Pratap Rajani-7 and two genotypes of double type viz., Bidhan Rajani -16 and Bidhan Rajani -17. The varieties Arka Prajwal registered maximum plant height (87.64 cm), flowering duration (19.63 days), rachis length (29.31cm), florets number (46.43), diameter of florets (4.23 cm), weight of individual florets (1.06 g), weight of florets per spike (49.16 g) and florets yield (28.29 q/ha).
- Local Double registered minimum days to spike emergence (68.25 days) and days required for first flowering (84.12 days). However, Bidhan Rajani -19 recorded maximum days of flowering duration (32.50 days) and was closely followed by Bidhan Rajani-24 (31.22 days), Vaibhav (31.12 days) and Suhasini (30.22 days).

- The varieties Bidhan Rajani H-19 recorded maximum duration of flowering (34.99 days) and number of florets in an individual spike (46.49 nos/spike), number of flower spikes per clump (2.38), spike yield (2.47 Lakh/ha), loose flower yield (19.01 t/ha/year), bulb yield (138.61 nos/clump) and B:C ratio (4.42) and was closely followed by Suvasini (2.31 nos spike/clump, 2.41 Lakh spikes /ha and 16.84t loose flower/ha/year, bulb yield 130.57 nos/clump and B:C ratio 3.99 respectively).
- Highest freshness index and shelf life extension were recorded in flowers treated with Boric acid 2 % (61.03% and 59.67 hrs respectively) and which was closely followed by Sodium benzoate 10ppm (54.72% & 59.25hrs respectively). Maximum flower opening index (56.00%) was observed in flowers treated with sodium benzoate 10 ppm and closely followed by flower buds treated with distilled water (50.87%).
- When the tuberose spikes were treated with 2% Orange dye combined with Sucrose 2% and HQS (200ppm) showed maximum colour retention (5.50 days) and vase life (7.20 days). On the contrary, minimum colour retention (4.10 days) was recorded in 2% orange red dye and the least vase life of 6.10 days was observed in control (T13).
- The incidences of sclerotial wilt (*Sclerotium rolfsii*) in tuberose in the range of 10.50-31.00 % have been recorded. The incidence of leaf blight caused by *Alternaria polyanthis* in var. Prajwal was observed but in case of local single types both *Alternaria polyanthis* and *Phoma polyanthis* were recorded (12.50-31.50%).
- Spraying of Azoxystrobin (0.03%) or Difenoconazole (0.1%) or Tebuconazole (1g/l) at 7-10 days interval may be recommended for effective management of leaf spot/blight of tuberose.

F. Gerbera

- Seven gerbera genotypes were evaluated, out of which RHSG-WOC and Pink Melody recorded highest number of suckers (13.98 and 12.87nos), duration of flowering (84.57 and 83.17 days) with maximum flower yield (22.75 and 21.89 nos./clump/yr) and vase life

of 7.83 and 7.47 days, respectively. In contrast, Orange Sun Blast recorded lowest number of suckers (6.87 /plant) with minimum flower yield (13.43nos/clump/yr) and vase life of 5.27 days.

- Amongst the genotypes tested, the check variety RHSG-WOC and Red Monarch recorded highest number of suckers (12.57 and 11.45 nos.), duration of flowering (89.67 and 83.89 days) with maximum flower yield (20.67 and 18.48 nos./plant/yr), respectively, which were also at par with Arka Krishika.
- Under Poly house the check variety Tecta recorded significantly least (92.17 days) days to flower bud burst with maximum flower yield (15.27nos/plant/year), stalk diameter (3.23 cm), suckers (2.58nos/plant/yr) with self life and vase life of 10.79 days and 4.51days. Whereas Arka Ashwa took maximum days to flower bud burst (107.37 days), produced least number of flowers per plant per year (11.68) with minimum stalk diameter (2.07 cm).
- Spraying of Pyraclostrobin 20% (1 g/l) or Tebuconazole 2% DS WP (1 g/l) or difenconazole (0.05%) may be recommended for effective management of gerbera leaf spot.
- Application of split doses of N:P:K @ 30:25:10 g/m² in gladiolus grown from cormel (>1.9 & <2.5 cm dia) at 45 days and 60 days after sprouting significantly increase the corm weight and corm diameter, resulting in production of flowering grade stock in the same season which otherwise needs two seasons.

G. Heliconia

- Four local genotype of Heliconias viz., HRS-H-1, HRS-H-2, HRS-H-3 and HRS-H were collected from different parts of Assam, planted in the field and evaluated for the year 2020-21. Amongst the genotypes evaluated HRS-H-4 and HRS-H-1 recorded highest number of suckers (7.35 and 6.75 nos.), maximum duration of shelf life (28.27 and 26.64 days) with maximum flower spike yield (14.45 and 12.84 nos./clump/yr) and vase life of 12.89 and 12.35 days, respectively.

H. Lotus

- The natural medium collected from natural ponds (Clay) took minimum time (50.61 and

55.65 days) showed earliness of for the initiation of functional leaf (Fourth week of February and first week of March) and also minimum period (46.00 and 49.00 days) for emergence of first flower stalk in Lotus (White type) and Lotus (Red type), respectively for the for the first ratoon crop. Similarly, the clay media was found superior in respect of flowering behavior of both White and Red type of lotus for the second ratoon crop which showed highest flower size (19.86 and 18.24cm), numbers of petal per flower (89.58 and 112.35nos) with maximum shelf life of 5.28 and 5.60 days, respectively. Incidence of similar minor insect-pests occurred in the previous season viz., Flee beetle (*Altica spp.*), Tobacco caterpillar (*Spodoptera litura*), Tiger Hairy caterpillar (*Artica spp*) and one foliar disease caused by *Alternari alternata* inciting severe leaf blight symptoms was also recorded.

I. Native ornamentals

- Amongst the new collection *Senna alata* (Candle plant), *Mandevilla sanderi* (Brazilian jasmine), *Rosa multiflora* (Wild rose), *Xanthosoma sagittifolium* (Arrow leaf elephant ear), *Hypoestes phyllostachya* (Polka dot plant), *Melestoma malabathricum Alba* (Indian rhododendron/Phutukola) besides some new aquatic plants and many new unknown entries to the earlier stock have been added ranging from annual herb to creepers, bushes and trees of vivid qualities belongs to different annual, perennial of bulbous, rhizomatous, shrubs, of different crop families.

J. Marigold

- Four sprays with tebuconazole (0.5 ml/l), difenconazole (0.5 ml/l) and trifloxystrobin (1 g/l) at ten days interval may be recommended for the management of *Alternaria* leaf blight of marigold.

K. Agroforestry

- A total of 15 districts have been surveyed and 150 different agroforestry systems of Agri-Horticulture, Agri-Silviculture, Agri-HortiSilviculture, Aqua Agri-Horti-Silviculture, Aqua-Horticulture, Aqua-Silviculture, Aqua-Horti-Silviculture, Horti-Horticulture, Silvi-

Pastoral, Silvi-Silviculture and Homestead have been identified.

- Total ninety five saplings of *Gmelina arborea* collected from 19 seed sources. Byrnihat (AAU 15 & AAU 16) and Silchar (AAU 17 & AAU 18) recorded 28.80 & 28.21 and 27.70 & 30.11 m tree height respectively, in 20 years old plantation; AAU 15, AAU 16, AAU 17 & AAU 18 recorded dbh of 45.00, 44.78, 49.92 and 51.58 cm respectively, in 20 years; AAU 18 (Silchar), recorded the highest timber volume of 2.76 m³/tree, biomass of 1588.04 Mg/ha and C sequestration of 794.02 Mg/ha.
- The 17 years old system of *Acacia mangium* based AF system has been intercropped with fodder and the intercrop plot where tree spaced at 5 m x 4 m recorded maximum plant height (16.67 m), dbh (35.97 cm), timber volume (412.35 m³/ha), tree biomass (518.26 Mg/ha) and above ground carbon stock (254.13 Mg/ha) compared to 5m x 5m and 5m x 6m spacing. The maximum fodder yield of Hybrid Napier (50.56 t/ha) was obtained in sole fodder followed by tree spaced at 5 m x 6 m (43.24 t/ha), 5 m x 5 m (39.20 t/ha) and 5 m x 4 m (37.45 t/ha), respectively.
- In nearly 5th year plantation with an objective to evaluate relative performances of timber trees and intercrops with arhar, green gram, cowpea and toria, maximum tree height (6.20 m) and collar girth (30.45 cm) were observed in sole tree plot and Cowpea-Toria sequence as intercrop respectively.
- The 21 years old plantation, average of 73 superior trees attained 26.12 m plant height and 41.86 cm dbh. Timber volume and tree biomass of the standing tree was 399.45 m³/ha and 325.12 Mg/ha respectively.
- The 17 years old system resulted tree height of 8.86 m in intercrop plot comparing 8.89 m in sole tree. The dbh (30.45 cm) of jackfruit was superior in intercrop plot in comparison to sole tree plot (29.97 cm). Canopy diameter, timber volume, tree biomass and above ground C stock for jackfruit was higher in intercrop plots, being 7.98 m, 54.65 m³/ha, 105.00 Mg/ha, and 52.50 Mg/ha, respectively.

- The first year old *Santalum album* registered tree height of 1.5 m in intercrop plot comparing to sole tree.
- The 13 years old *B. balcoa* and *B. tulda* systems exhibited annual increment of biomass yield i.e. 5.02 % MG/ha and 4.87 % Mg/ha respectively over previous year.

L. Turmeric

- Six Turmeric varieties namely Megha Turmeric, Lakadong, Rajendra Sonia, Moti Haldi, IISR Pratibha, IISR Pragati were evaluated under GAP and Organic mode, the highest yield of 242.80 q/ha was recorded in IISR-Pragati followed by 223.80 q/ha in IISR- Pratibha under GAP mode of cultivation. Similar trend was also observed under Organic mode of cultivation. The highest yield of 212.10 q/ha was recorded in IISR-Pragati followed by 189.60 q/ha in Rajendra Sonia under Organic mode of cultivation

M. PFDC

- Cover the bunch with 17 GSM-Non woven polypropylene bags at the time of emergence of inflorescence to protect the bunch from fruit scarring beetle. Remove the bag just before harvesting.
- Apply 30 micron black polyethylene mulch as total ground cover for effective control of weeds, better yield and quality of cucumber with a benefit cost ratio of 2.44.

V. Others

A. Community science

- Results of study on Reproductive health care for psychological wellbeing of married women have revealed that most of the mothers have elevated their level of knowledge in the area of reproductive health and also in maternal and child health
- Developed lemon harvester and popularized through KVK, Nagaon.
- Developed paddy picker and popularized through KVK, Nagaon and KVK, DimaHasao

B. Veterinary Science

- **Immunologically-active thermostable live lentogenic Newcastle disease virus formulatin – a technology developed by Dept of Vety. Microbiology, CVSc:** this immunologically active thermostable formulatin could retain its half life for 6 months at room temperature, 30 days at 37 deg C and 15 hours at 56 deg C. tested in 2021-22.
- **Piggy Flask - a technology developed by Dept of Vety. Microbiology, CVSc:** it is a Pig semen carrier for long distance and maintains at 15 deg C.
- **Electrically Operated Revolving Barbeque for Meat and Fish - a technology developed by Dept of Livestock Product Technology, CVSc:** it is a handy, economical, environment-friendly and suitable technology for small families, hotels and restaurants and vendors.

C. Honeybees

- Effect of honey bee, *Apis cerana* pollination on fruit set and yield of ber (*Ziziphus mauritiana*) revealed that the fruit set varies from 70-75%. The yield recorded was 185.00, 212.50, 245.00, 250.00 and 78.00 q/ha in the plots of open pollination, bee pollination @ 3 colonies/ha (BP1), bee pollination @ 5 colonies/ha (BP2), bee pollination @ 7 colonies/ha (BP3) and pollinator exclusion, resp. The highest yield increase (35.13%) was found in case of bee pollination@ 7 colonies /ha.
- Indian honey bee, rock bee, yellow jacket, sweat bee, dammer bee, syrphid fly, cabbage butterfly, common grass yellow, common sailor, lemon pansy, grey pansy, common palm fly and castor butterfly were the most promising insect foragers of cucumber. Among all Indian honey bee was dominant forager (29.87%) followed by rock bee (21.07%). The stingless bee (9.12%) also visited cucumber flowers.
- Evaluation of foraging behaviour of stingless bee, *Tetragonul airidipennis* and their effect on pollination and yield of cucumber (*Cucumis sativus*) under protected condition revealed that the highest number of bees (1.21 ± 0.17), maximum time spent per flower (12.07 ± 0.99 seconds) and maximum pollen load per 10

bees per trip (7.15 ± 0.40 mg) were observed during 0800-0900 hours and the lowest number of bees (0.49 ± 0.08), minimum time spent per flower (8.32 ± 0.70 seconds) and minimum pollen load per 10 bees per trip (2.98 ± 0.46 mg) were observed during 1700-1800 hours of the day during 2020-21.

- The experiment on effect of stingless bee, *Tetragonul airidipennis* on fruit set and yield of cucumber (*Cucumis sativus*) under protected condition revealed that the highest yield/plant was observed under stingless bee pollination (SBP) followed by open pollination (OP) and pollinator exclusion with the yield record of 13.15t/ha in stingless bee pollination as against 8.29 t/ha in open pollination and 2.13 t/ha in without pollinators.
- The nesting and migration behaviour of rock bee, *Apis dorsata* has revealed that there may be more than 100 colonies and the length of the nest was found to be more in roof followed by trees and water tank.
- The biochemical analysis of rock bee, *Apis dorsata* honey samples collected from nine different states of the NE revealed the highest moisture content (25.13%) in Nagaland honey, followed by Tripura (24.30%). Likewise, the highest fructose: glucose ratio was present at 1.27% in honey collected from Meghalaya which was followed by Sikkim (1.23%).
- The trap with meat was able to attract more *predatory wasps* (5.25) after 24 hours followed by traps with molasses.
- Fourteen numbers of microorganisms were isolated from the gut of wax moth, out of which thirteen of them were bacterial species. The predominant bacteria observed in the gut of the greater wax moth larvae were *Acinetobacter*(14%), *Bacillus* (14%), *Enterococcus* (14%) and *Microbacterium* (14%).

D. Rodent control

- Removal of weeds + cleaning of bunds/ roads + spraying of ecodon(1:20) on bunds at tillering stage+ zinc phosphide baiting at PI stage+ trapping(bamboo traps) at maturity stage +smoking with egg tray plate at harvest + bromadiolone baiting at the vegetative stage

of vegetables have recorded 61.77% & 51.03% control success in respect of LBC/ha in rice and vegetables, respectively in rice-vegetables cropping system in Assam

- Treatment combination of cultural practices (removal of weeds, bushes, dry leaves) + crown cleaning at monthly intervals + erecting squirrel guard at the height of 8 feet from the ground was found effective in reducing *Dremomys lokriah macmillani* incidence in coconut i.e. 56.11% control success in case of infestation & 46.67% control success of damage.
- To ward off the monkeys from the crop field, anti-birds net was used as a physical barrier around the vegetables field. The nets were raised up to the height of 2.5 meter and the covered area with the help of bamboo post.
- The species composition of rodent pest in different habitats at Upper Brahmaputra Valley Zone revealed that *Rattus rattus* was predominated species in household and rural stores; *Bandicota bengalensis* in urban godowns, kitchen garden, paddy fields and orchards, *Dremomys lokriah macmillani* was the predominated rodent species in forest areas as well as plantation crops. *Bandicota indica* have been recorded from forest, orchards and crop fields near to human habitats with a species composition of 33.33%, 18.81% and 16.66%, respectively. In house and rural store, *Mus musculus* was recorded predominately with a species composition of 31.66% and 28.61% in houses and rural store, respectively. *Mus booduga* is the only field mouse have been recorded from crop fields mainly paddy (21.11%), kitchen garden (18.87%) and orchards (6.61%). The rodent species composition in food grain stage in Jorhat were *Rattus rattus*, *B. bengalensis*, *Mus musculus castaneus*.

E. Soil Arthropod Pest

- Light trap was installed at AAU farm, Jorhat for the collection of scarab beetles from March to September, 2021. Altogether 3,315 numbers of beetles were collected and profiled, out of which, *Apogonia ferruginea* was recorded to be the most dominant species (61.21%) followed by *Heteronychus sp.* (16.78%) and *Anomala chlorosoma* (6.74%).
- The impact of certain newer insecticides on the soil faunal diversity mainly represented by soil micro and *macroarthropods*, total bacterial and fungal population as well as the key soil enzyme activities were studied at 15 days interval. Prior to the application of insecticides, *Hymenoptera* was recorded to be the most dominant order (54.74%) among the soil macro-arthropods followed by Coleoptera (13.68%) and Araneae (11.57%) whereas Collembola and Oribatida were recorded as soil microarthropods registering 64.72 and 35.28 per cent, respectively. All the insecticidal treatments recorded a significant reduction ($p=0.05$) in the soil macro arthropod, bacterial and fungal population as well as soil enzymatic activities up to 75 days of application indicating the detrimental effects of insecticides as compared to the untreated plots showing more stable habitats for the soil fauna. On the contrary, the insecticidal treatments did not exhibit any significant impact ($p=0.05$) on the population of soil microarthropods during the study period.
- Five pheromonal compounds (Cis-9 Hexadecenoic acid, Octadec-9 enoic acid, 1-Tetradecene, 1-Hexadecene and 1-Octadecanol) in pure form and their five different blends were tested along with male and female body wash at Majuli during April, 2021. Among the 13 different pheromonal and kairomonal blends tested, the maximum numbers of beetles (6.64) were recorded in the traps having Octadec-9-enoic acid @ 100%. Relatively lower attraction of beetles was observed during the experimental period and there was no statistical difference observed among the treatments. This experiment will be continued during April, 2022
- The nutritional analysis of desert locust, *Schistocerca gregaria* collected from RARI, Durgapura, Jaipur was analysed and the results of the proximate analysis showed moisture, crude protein, carbohydrate, crude fat, crude fibre and ash content of 12.33%, 48.17%, 17.05%, 44.08%, 12.01% and 3.36%, respectively. Elemental analysis was done for 7

minerals, out of which K (49.93 mg/100g) was found to be the highest followed by Na (34.77 mg/100g) and Ca (26.15mg/100g). The Mg, Fe, Zn and Cu contents were recorded to be 20.15, 12.76, 12.18 and 4.85 mg/100g, respectively.

- Nutritional evaluation of 3 value added products prepared from *Lepidiota mansueta* powders viz., biscuits, bhujia and cakes was studied. All the value-added products recorded considerable amounts of both proximate and elemental composition as compared to the products without any fortification of *L. mansueta* powders. It was evident from the results that the per cent of moisture, crude protein, crude fat, crude fibre as well as the ash content of the products increased significantly with the increase in the level of *L. mansueta* powder, however, on the contrary the carbohydrate content was recorded in a gradual decreasing pattern with the increase in the insect powder content.

F. Acarology

- Among various organic treatments against litchi mite, *Aceria litchii* the *Biopesticide Metarhizium anisopliae* @ 2×10^8 cfu and Azadirachtin 0.15% @ 3 ml/l (Commercial botanical) resulted at par satisfactory control of 81.48 and 82.56 per cent of mites, respectively, after 35 days of application and could be adopted as biocontrol means against pest.
- Out of 12 germplasms studied against yellow mite, *Polyphagotarsonemus latus*, four germplasms viz., Moni, Yellow mem, Green mem and Krishna were found to be resistant against yellow mite, hence these germplasms may be utilized for variety development

programme. Resistant chilli germplasms had greater trichome density and higher phenolic compounds in their leaves which confer resistance against yellow mite.

- Among the locally extracted botanicals, polygonum leaf extracts was found to be superior giving 88.48 and 85.33 % mite mortality after 7 days in tomato and chilli, respectively.
- Mass production technique of the predatory mite, *Neoseiulus longispinosus* has been developed in *Amaranthu shybridus* as host crop on *Tetranychus urticae* as prey mites.
- In marigold, after 7 days of releasing predators, 89.25 % mite reduction was achieved with 10 numbers of predators/plant. 100 per cent mite reduction was achieved with 20 and 25 predators/plant which were at par with 98.21 per cent reduction by 15 predators/ plant. But in gerbera after 7 days of releasing predators, prey mite reduction was found to be 100 per cent with 25 and 20 predators/plant which were at par with 98.72 per cent reduction by 15 predators/plant. Therefore, applying 15 predators /plant were found to be optimum to control the phytophagous mites in gerbera.

G. Fishery

- A model for fish seed grader cum counter with provision for grading and counting fish fry/fingerling up to 4 size groups have been designed in Fisheries Research Centre, AAU, Jorhat, in collaboration with DIC- IIT Guwahati. Fabrication of physical workable model is completed on the basis of CAD Model design developed.

Appendix II

Important Policy Decisions

Some important policy decisions had been taken during 2021-2022 in the meetings of Academic Council and Board of Management of the University, envisioning to bring about positive impact on the education, research, extension activities and administration of the University. Some such decisions are enlisted here in this chapter.

Academic Council; Online Mode; 10-06-2021

- In the Academic Council meeting (online mode) held on 10th June 2021, The Council made provisions for engaging Teaching Assistants, whenever needed, on Semester to Semester basis, on the recommendation of a Screening/Selection Committee constituted by the Hon'ble Vice-Chancellor. To apply for Teaching Assistant, the PhD Scholar on roll must have the consent of his/her Supervisor/Major Adviser. And on successful completion of the tenure, a Certificate will be issued by the Head of the Department, to be countersigned by the Dean/Associate Dean concerned.

Academic Council; Online Mode; 07-08-2021

- The Council accepted revised rates of State Merit Scholarship and other assistance as follows. The rates were endorsed for consideration by the Board of Management.

Particulars	Existing Rate (Rs) per month	Proposed Rate (Rs) per month
SMS-UG	1000	1500
Internship allowance/ RAWEP/ to-Plant for six months	5000	15000
SMS-PG	1600	2000
SMS-PhD	2000	3000
Thesis Grant (LS)	2000	No Change
	3000	No Change

- The Council decided that the students would be encouraged to submit 2 (For Master's) and 3 (For PhD) copies of the thesis with both side printing and the DPGS shall monitor and ensure the uploading of the thesis on time.
- The Service Regulations for KVK-functionaries (Service Regulations for KVK-functionaries under AAU: A Ready Reckoner for KVK Administration) was accepted by the Council.

Board of Management; 24-09-2021

- The Board approved the project on "Development of Ecotourism in AAU" under the green initiative of ICAR.
- The Board approved the conversion of 3 posts of Deputy Audit Officer and 1 Section Officer to be redesignated as Farm Manager. Likewise, the Board approved the conversion of 1 1 Section Officer and 1 Junior Research Assistant to Programme Assistant (Computer).
- The Board approved the initiation of the AAU flagship programme on Amar Gaon Amar Gaurav.
- The Board approved the empanelment of AAU as CBBO under NABARD for promotion of FPC/ FPO in Assam.
- The Board approved the setting of Agricultural Marketing Intelligence Unit under APART.
- The Board approved the revised DPR and renaming of College of Horticulture, Nalbari as the College of Horticulture and Farming System Research, Nalbari.
- The Board approved the AAU IT Policy.
- The Board approved the new rates of merit scholarships etc.
- The Board approved the proposed AAU (Promotion of Academic Integrity and Prevention of Plagiarism) Policy.
- The Board approved the Service Regulations for

KVK-functionaries (Draft Service Regulations for KVK-functionaries under AAU: A Ready Reckoner for KVK Administration).

- The Board approved the enhancement of sitting allowances for the non-official members, experts etc., from Rs 1000 to Rs 3000.
- The Board approved the proposal for setting up solar power generations in AAU Campuses under RESCO model of SECI as proposed by AEDA, GoA.

Academic Council; 23-10-2021

- Collaborations with several reputed institutes of the country have been initiated. Memorandum of Understanding (MOU) has been signed with the Institute of Pesticides Formulation Technology, Gurgaon. Similar agreements are also in the pipeline with the IIT, New Delhi for undertaking cutting-edge research and Madras Veterinary College, Chennai. Gujarat University has also shown interest to collaborate with AAU.

Academic Council; 06-12-2021

- AAU policies were in a formative stage in the NARES system to give preference to persons with three degrees from three different institutes for recruitment purposes, both for scientific and technical cadres.

- An MoU was signed with the Royal Global University, Guwahati for research and academic collaboration.

Academic Council; 02-03-2022

- The Council proposed that there may be no age bar for direct recruitment of Associate Professor and its equivalent for the in-service candidates, as approved by the Board.
- It was resolved for renaming the Master's and PhD Degrees in Horticulture as MSc (Hort) and PhD (Hort) in five different areas of specialization, namely, Fruit Science; Vegetable Science; Floriculture & Landscaping; Plantation, Spices, Medicinal & Aromatic Crops and Post Harvest Management.

Board of Management; 02-03-2022

- The Board approved the proposal for declaring the second and fourth Saturdays of the month as holidays and full working days on all other Saturdays in Assam Agricultural University with effect from the next financial year.
- The Board decided that there may be no age bar for direct recruitment of Associate Professor and its equivalent for the in-service candidates, as approved by the Board.

Appendix III

North East Agriculture Technology Entrepreneurs Hub (NEATEHUB)

(an Atal Incubation Centre of AAU)

AIC-AAU Incubator, popularly known as North East Agriculture Technology Entrepreneurs Hub (NEATEHUB), is an “Atal Incubation Centre” of NITI Aayog, Government of India. It has been set up as a Section 8 Company under the aegis of Assam Agricultural University, Jorhat, Assam, to build successful startups in agriculture and allied agriculture. NEATEHUB is also a ‘Knowledge Partner under the RKVY-RAFTAAR scheme’ by the Department of Agri Cooperation & Farmers Welfare, Govt. of India. The incubator has elements such as physical space, lab provisions, network activities, partnerships and linkages – both institutional and individual, mentors and advisors – to enable startups to structure their business and make them “investment-ready” for potential investors.

NEATEHUB’s ‘Incubation Program’ aims to identify young entrepreneurs at various stages of their development (ideation/ prototype development/ early stage to growth stage) and provide the much-needed mentoring support and industry exposure to facilitate them to develop a viable business proposition. So far, NEATEHUB has completed 7 Cohorts with a total of around 136 incubatees in the pre-seed and seed stage from the various realm of Agri and allied sectors such as Digital Agriculture, Food Processing, SCM, Biotechnology, Farm Mechanization, Agri to waste management, FAAS, Protected Cultivation, Quality Input, Bamboo Craft, Biofloc, Agro Tourism etc. So far, the incubator has funded 32 startups to the tune of approximately Rs.3 crores.

NEATEHUB Activities 2021- 22

- 1) Lamzing Technologies Private Limited, an incubatee of NEATEHUB, recently participated in an exhibition titled “Maiwon- From our courtyards to the world”. The show was held in HaptaKangjeibung Imphal from 22 March to 28 March 2021 and was inaugurated by the Chief Minister of Manipur Biren Singh. Lamzing Technologies showcased its product “u doctor”, an Artificial Intelligence-based disease detection and management system for Bhut Jolokia/ king chilli. The start-up founded by AilanMaibam deals with an AI (Artificial Intelligence) based disease and deficiency detection app that’s highly accurate and effective for prevention, detection and remedy of plants indigenous to North East India. The app uses visual cues from the physical parts of a plant. And it starts with a limited set of primary targets and then expands to a broader set of plants. There are similar tools in the market, but something fine-tuned for the North East States is missing. The app developed will be used by the general public and seasoned farmers. The app needs wide adoption and rich data points for the target plants.
- 2) A team of delegates from the Centre for Innovation Incubation and Entrepreneurship, Indian Institute of IIM Ahmedabad and ICCO (Innovate, Change, Collaborate) consisting of Shashi Gupta, Pradeep Baitha, David Sinate visited the North East Agriculture Technology Entrepreneurs Hub (NEATEHUB) on 12 April 2021. During the delegates interacted with the Director on Board of NEATEHUB, Dr. Danish Tamuly and other agribusiness incubator team members.
- 3) A startup incubated with NEATEHUB. Symbiotics Food Pvt. Ltd came up with its own retail store in Dekargaon, Tezpur. The startup based out at Tezpur was established by Manoj Kumar Basumatary, the CEO of the company. With the store’s inauguration, it will be selling its pork-based products under the brand name “slice of Gahori.” According to Basumatary, he plans to open many more stores across Assam for pork lovers. With the help of NEATEHUB, the startup has raised a funding of 20 lakhs under the RKVY- RAFTAAR scheme to materialize the vision of providing quality healthy piglets to the farmers of Assam.

- 4) A startup of NEATEHUB Tinash Agro Industries, under Organic Mission, a scheme initiated by Govt. Of Meghalaya has distributed turmeric seeds to 500 farmers of "Chokpot Farmers Producer Company Ltd." The initiative can be termed beneficial for the farmers as they are now guaranteed with a definite market as Tinash Agro has agreed to buy the produce directly from the farmers. Besides, the startup will also be assured of quality raw materials. The founder of the startup is Tinash Momin. It is located at Chunmati. It is the only unit in Tura that processes spices and oils in the Garo Hills region of Meghalaya. It has played a vital role in the agriculture sector by adding value to the local produce spices of Garo hills.



Officials from a startup incubated with NEATEHUB - Symbiotics Food Pvt. Ltd



Govt. Of Meghalaya distributing turmeric seeds to 500 farmers of Chokpot Farmers Producer Company Ltd, a NEATEHUB incubatee

- 5) As many as 18 entrepreneurs of NEATEHUB were shortlisted for funding through the RKVY- RAFTAAR selection and monitoring Committee meeting held on 25-26 May 2021. The entrepreneurs are from ISANYA 3.0, ISANYA 4.0, SARANYA 2.0 & SARANYA 3.0, the flagship incubation programs of

NEATEHUB. The selected entrepreneurs from Isanya are Gautam Hazarika (Born oi Organics Pvt. Ltd), Dr. Syed Alimaz Hussain (Moriesh Duck), Dipjyoti Deka (Milliams Automation), NgamnomJoham (Food Stride), Dhruva Jyoti Deka (Indiluv), Chinmoyee Rajkumari (Hy-food), Hemange Bora (Pure Seed Agro Products) and TongramBijayashanti Devi(Sanajing Sana Thambal). The incubatees selected under Saranya are BahnimanKakati (Teaorb Services LLP), ParikhshitBorkotoky (Kraftinn Home Décor India Pvt. Ltd), Dr. Asim Zubair (Alia Biosys), Pranab Jyoti Barman (Earthly Fresh), NingthemNingombam (NE Dukan), Dr.WahengbamBembee Devi (Bee Manufacturing Enterprises), Tinash Momin, (Tinash Agro Industries), Satyajit Bora (Maitrayee Tea), Manjib Sharma (Manohar Agro Solutions LLP) and Bijoy Kumar Gogoi (Nebdh Plow Pvt. Ltd.) .The startups selected will receive funding under the RKVY- RAFTAAR scheme.

- 6) The Officials of NEATEHUB Angira Sarmah, Admin & Finance Officer and Bedanta Bikash Sharma, Business Development Officer of NEATEHUB, participated and successfully completed BINDER (Building Sustainable Incubator Ecosystem in North-East Region) 2021, a virtual four-day Training Program (from 27 to 30 May 2021) for Incubation Managers of North East, organized by BRTC, KIIT-TBI and supported by BIRAC (Biotechnology Industry Research Assistance Council). The four days training program provided the participants with a platform to learn from experts, the various aspects of the Technology Incubation Ecosystem and tactics to manage a sustainable incubator, thereby nurturing the innovators of NE to grow their startups.

- 7) Mr. Amitava Mukherjee, Marketing Manager of NEATEHUB, took a session on "Atmanirbhar Bharat: Way forward through initiating Agri-Startup by youth" for Extension Education Institute, Assam Agricultural University on 10 June 2021. The session saw more than 100 participants from all over the northeast. The session was akin to the *Atmanirbhar* Bharat mission launched by the Prime Minister of India during the pandemic.

- 8) A session titled "Impact Innovation and Opportunities for AgritechStartups in North East India " was organized by Assam Startup on 14 June 2021. Dr K. Karthikeyen, CEO, NEATEHUB and Dr Danish Tamuly, Director on Board, NEATEHUB, were invited as the speakers for the virtual event. The session aimed to give importance to the continuation of primitive agricultural practices using technological interventions. The session began with a welcome address by HK Borah, the Chief Investment Officer from IIM Calcutta Innovation Park. The event witnessed participation from the Agri startups from the region, who shot numerous doubts and queries for the speakers. During their presentation, Dr Karthikeyen shared insights regarding the unfulfilled demands in the agricultural sector in the northeastern region, whereas Dr Tamuly highlighted the opportunities agri-tech startups can create. Besides, the experts discussed the role of incubation centres like NEATEHUB and Assam startup in supporting the agri-tech startups from the region to build their products and turn those into sustainable and scalable commercial ventures.
- 9) Three entrepreneurs of North East Agriculture technology entrepreneurs hub (NEATEHUB) shined in the Agri Start-up Awards 2021 organized by the National Institute of Agricultural Extension (MANAGE) Hyderabad and Samunnati on 11 June 2021. The event was held virtually due to the ongoing pandemic restrictions. All of these entrepreneurs are incubated at NEATEHUB, the Agri-business incubator of Assam Agricultural University. Among the winners, Manjul Choudhury, founder of Organics Food Market, bagged the first prize from the Eastern region. He received a trophy and a sum of one lakh rupees. Manjul launched Organics Food Market in 2018, and they sell healthy organic food through e-commerce websites. They sell a wide range of products on amazon and e-commerce websites such as brown rice, black rice, red rice, gluten-free rice flour. Besides, they have impacted the livelihood of over a thousand organic farmers of northeast India. Recently the startup also received funding of 25 lakhs from NEATEHUB under the RKVY-RAFTAAR scheme. Among the other winners, Amarjyoti Chamuah's startup Chamuah Engineering and Machineries Pvt. Ltd and Priyangshu Sharma's Innotech Agro Postikam won second prizes in their respective categories. These awards recognize the impact-driven agri-tech startups dedicated to re-imagining, renewing, and rebuilding the ecosystem. It is to be mentioned that NEATEHUB is the agribusiness incubator of Assam Agricultural University and is supported by NITI Aayog and the Department of Agri Cooperation and Farmers Welfare, Govt. of India, to support the Agri startup ecosystem of the northeast.
- 10) Drishtee, in collaboration with NEATEHUB (AIC-AAU Incubator), organised the Grand Finale of the "Making in Rural India - Gram Udyog Ideapod (MIRI-GUIP) " on 19 June 2021. The virtual event had ten finalists presenting their innovative ideas to a Jury Panel panellists comprising of Nathan Wiltshire (Expert In Intercultural Empathy and Innovation), Neelam Maheswari (Director- livelihoods for All, South Asia, Ashoka), Snehanand Sinha (Strategic Advisor and Trustee, Akhand Jyoti Eye Hospital) Sudhir Gupta (Mentor for Social Sector Enterprises and Startups) Vijay Pratap Singh Aditya (President and CEO, Ekgaon Group, Chairman Compliance BCFI, Ashoka Fellow). NEATEHUB curated the finalists' ideas for two months, where they received mentoring and business coaching support from the incubator. Bhavini Parikh of bunkojunko.com Mumbai won the first prize. At the same time, the second and third prizes went to Tilarupa Devi of Anijov Pearl Producers (from Assam) and Raman Kumar of Agrifeeder Agricultural Services (Bihar). The winners were given cash prizes as well and certificates.
- 11) A webinar on "Agribusiness Entrepreneurship" was organized on 23 June 2021 by Netprofan -North East Chapter, NEATEHUB and Department of Applied Biology (Food Science and Technology) University of Science and Technology, Meghalaya. The chief guest for the event was Dr.Bidyut Chandan Deka (Hon'ble Vice-Chancellor), Assam Agricultural University, Jorhat. And Dr.k.Karthikeyan CEO NEATEHUB was invited as the speaker. The webinar saw entrepreneurs from the entire northeastern region besides the students

from different departments of the University of Science and Technology, Meghalaya. Webinars and sessions like these will go a long way in creating a conducive atmosphere for Agri entrepreneurship.

- 12) The team of NEATEHUB participated in “A session on “How Incubators are focusing on Revenue Sustainability: both short-term and long term vision” organized by NITI AAYOG on 2 July 2021. The speakers for the session were: Rama Devi, Chairperson, AIC- ALEAP, Ronald Fernandez, CEO, AIC-RNTU, and Abhishek Kakkar of Arka Ventures lab. They shared their insights on attaining financial sustainability at their respective organizations. Participants from different Atal Incubation centers presented their model of sustainability. There was a presentation given by Dr. K. Karthikeyen, CEO, NEATEHUB, where he highlighted different plans of NEATEHUB for revenue sustenance. The session was a learning experience for team NEATEHUB where they came to know about the best practices prevalent among other Atal Incubation Centres of the country.
- 13) Director of NEATEHUB, Dr. Danish Tamuly, was invited as a speaker on 18 September 2021 for an event titled “Blueprint for International Year of millets: Nutri-cereals Multi- stakeholders Mega Convention 3.0- virtual meeting”. He spoke on the Establishment of Agri Incubators in India - Opportunities ahead. The Chairperson in the session was Dr AbhilakshLikhi, IAS, AS, DAC & FW, GOI. Besides Dr. Tamuly, there were other speakers as well which included Dr. Neeru Bhoosan, Head, KP, ZTM & BPD Unit, IARI & Coordinator, RKVY- RAFTAAR, Dr. Sudha Mysore, CEO, Agrinnovate India Ltd., ICAR, Dr. Saravanan Raj, Director (Agri Extn), MANAGE and Dr. A.S. Vastrad, Head, KP, RABI, UAS Dharwad .
- 14) A two-day virtual workshop for business Incubators was organized by APJ Abdul Kalam Centre for Policy Research and Analysis, Indian Institute of Management (IIM) Shillong, on 16 and 17 July 2021. Representatives of various incubators participated in the workshop, whereas NEATEHUB was represented by Director on the board of NEATEHUB, CEO , and other officials. On a concluding day, Dr Tamuly gave a presentation on the various activities undertaken by NEATEHUB since its inception.
- 15) NEATEHUB welcomed its entrepreneurs of Cohort 8 virtually. Cohort 8 consists of Isanya 5.0 (Pre-seed stage) and Saranya 4.0 (Seed Stage). The startups were briefed about the entire incubation program and the kind of support they would receive from the incubator at every stage. Since the world was struck by pandemic, the incubator has been virtually carrying forward the incubation program by the govt. Guidelines. A total of 26 entrepreneurs were selected for both the incubation programs from close to 200 applications received.
- 16) A webinar on the Importance of Entrepreneurship in Solving Agri and Allied Sector Problems was held on 6 August 2021 in association with Dept. of Applied Biology (Food Science and Technology), University of Science and Technology, Meghalaya. The chief guest for the event was Prof. Dr G.D Sharma, Hon'ble Vice-Chancellor of USTM. Dr K. Karthikeyen, CEO NEATEHUB, gave the opening remarking whereas Dr Danish Tamuly, Director on Board of NEATEHUB, was the designated speaker for the event. The webinar focused on the students of USTM to generate awareness about entrepreneurship in Agri and Allied Services. The webinar saw over 100 participants where a large number were students from both Assam Agricultural University and USTM.
- 17) A sensitization program titled “Opportunities for Agri-Startups and Entrepreneurs in North Eastern Region” was jointly organized by NEATEHUB and Central Institute of Horticulture, Nagaland, on 11 August 2021. The Chief Guest for the event was Dr. B.C Deka, Vice-Chancellor of Assam Agricultural University. While Dr. N. K Patle, Addl. Commissioner (Hort), DAC and DW, Director, CIH, Nagaland, delivered the welcome address to the participants. The keynote speaker was given by Dr. AbhilakshLikhi, IAS, Additional Secretary, Ministry of Agriculture and Farmers Welfare. The presentation on Opportunities for Agri Startups was given by Dr. K. Karthikeyen, who touched down various aspects of Agri entrepreneurship. Over 70 entrepreneurs participated in the virtual event, and among them, many applied for the incubation program at NEATEHUB.

Sensitization Programme on OPPORTUNITIES FOR AGRI STARTUPS AND ENTREPRENEURS IN NORTH EAST REGION

Key Note Address -
Dr. Abhilaksh Likhi, IAS
Additional Secretary
Ministry Agriculture and Farmers Welfare

Opening Remarks-
Dr. B.C Deka, Vice Chancellor
Assam Agricultural University

Welcome Remarks-
Dr. N.K Patle
Addl. Commissioner (Hort), DAC &DW,
Director, Central Institute of Horticulture, Nagaland

Presentation
"Opportunities for Agri Startups and Entrepreneurs of North Eastern Region"-
Dr. K.Karthikeyen, CEO
NEATEHUB

11.30 AM to 12.30 PM | Wednesday, 11 August 2021
Zoom link
<https://us02web.zoom.us/j/83044553681?pwd=MDc4V3ViMIA0K28yU3VlNS9iZ2NvQT09>
Meeting ID: 830 4455 3681
Passcode: 225526

Sensitization program, "Opportunities for Agri-Startups and Entrepreneurs in North Eastern Region", jointly organized by NEATEHUB and Central Institute of Horticulture, Nagaland



Orientation program, "Linking of NEATEHUB entrepreneurship development as a supplementary program with ELP", held in academic complex of AAU on 5 October 2021

18) As many as three entrepreneurs from NEATEHUB Vedmani Devi, Bornali Boruah and Abhinab Shyam have been selected for Marico Innovation Foundation's "Scale-Up Program", which basically is a no-equity acceleration program. Their startups, namely, Vedam Agro Enterprise (Vedamani Devi), Easy Haat Pvt Ltd (Bornali Boruah) and Agro Origin (Abhinab Shyam), are incubated with NEATEHUB for over

a year. The startups have been selected under the Collaborative Program of Atal Innovation Mission and Marico Innovation Foundation to develop an Ecosystem where innovators can explore opportunities to scale up their business revenues and get deep-rooted hands-on mentorship from a network of 100 CXO Level Mentors and Industry Experts. In lieu of that, a session was organized yesterday, on 13 August 2021, where the entrepreneurs and the officials of NEATEHUB were present.

19) The officials of NEATEHUB, Angira Sarmah (Admin/ Finance Manager) and Amitava Mukherjee (Marketing Officer), visited the incubatees. The visit was primarily for the incubatees who are selected for funding through the RKVY- RAFTAAR selection and monitoring Committee meeting held on 25- 26 May 2021. The officials visited the production and packaging facilities of entrepreneurs from Isanya and Saranya incubation program. The entrepreneurs whom they visited are Gautam Hazarika (Born oi Organics Pvt. Ltd) Dr. Syed Alimaz Hussain (Moriesh Duck) , Dipjyoti Deka (Miliamps Automation), Ngamnom Joham (Food Stride) Dhruva Jyoti Deka (Indiluv), Chinmoyee Rajkumari (Hy-food), Hemange Bora (Pure Seed Agro Products) and Tongram Bijayashanti Devi (Sanajing Sana Thambal) Bahniman Kakati (Teaorb Services LLP), Parikhshit Borkotoky (Kraftinn Home Décor India Pvt. Ltd), Dr. Asim Zubair (Alia Biosys) Pranab Jyoti Barman (Earthly Fresh) , Ningthem Ningombam (NE Dukan), Dr. Wahengbam Bembee Devi (Bee Manufacturing Enterprises), Tinash Momin, (Tinash Agro Industries), Satyajit Bora (Maitrayee Tea), Manjib Sharma (Manohar Agro Solutions LLP) and Bijoy Kumar Gogoi (Nebdh Plow Pvt. Ltd.) The startups selected will receive funding under the RKVY- RAFTAAR scheme.

20) A faculty meeting of Assam Agricultural University was held on 22 September 2021 to discuss an ambitious "Student-Led Innovation Program" under the Experiential Learning Program (ELP) of AAU. The meeting was graced by the Hon'ble VC of AAU, Dr. B.C. Deka. Dr. Jayanta Deka, Dean - Faculty of Agriculture, set the context and a presentation followed by Dr. K. Karthikeyen (CEO, NEATEHUB),

where he showcased the structure and the implementation of the Student-led innovation program. Hon'ble VC emphasized the need for such innovation programs. He believed that the program would set the tone for teaching agri-entrepreneurship and relevant skills to the Agri student community.

- 21) The Director of ICAR, Barapani Dr V.K Mishra, and Dr K.K Baruah, Principal Scientist and Head Division of Animal Husbandry, NEH Region, visited NEATEHUB on 4 September 2021. They were also accompanied by Kanhaiya Choudhury, former director (Spl Projects) DAC&FW, GoI. NEATEHUB officials gave the delegates a warm welcome. They visited the incubator and saw the facilities NEATEHUB provides to its incubators. After taking stock of the facilities, the CEO of NEATEHUB, Dr K. Karthikeyen, gave a presentation to the delegates apprising them of the kind of activities administered by NEATEHUB since its inception.
- 22) The Director on Board of NEATEHUB, Dr Danish Tamuly, was invited as a speaker to the weekly live phone-in talk show of All India Radio, Jorhat "Hello Krishi Bani" on 23 September 2021. The hour-long talk show was aired on All India's Radio's medium wave frequency from 9.30 to 10.30 AM. The talk show hosted by Kirti Bordoloi of All India Radio Jorhat focused on the "Role of incubators in employment avenues through MSME (Micro Small and Medium enterprise). The show garnered a good response as many callers from across Assam dialled the program to know about the avenues in MSME.
- 23) The North-East Agriculture Technology Entrepreneurs Hub (NEATEHUB), the AIC-AAU incubator of the Assam Agricultural University of Jorhat, recently signed a Memorandum of Understanding (MOU) with Guwahati Biotech Park (GBP) of Guwahati on the first week of July. The GBP is based out at the Indian Institute of Technology (IIT). Guwahati is an initiative of the Assam government to promote business in biotechnology and allied areas through entrepreneurship development, especially in the North-Eastern region. At the same time, NEATEHUB is an Agri Technology Business Incubator for start-ups intending to nurture Agri entrepreneurs across the North East Region, who may be at various stages of their entrepreneurial journey. The Incubator focuses explicitly on Agri and allied Agriculture sectors and promotes entrepreneurs working on emerging technologies that impact these sectors. Through MOU, both the parties have aimed to establish a close linkage and functional coordination between the incubators for the cause of supporting entrepreneurship and start-up ventures in the northeast region of the biotech and Agri related domains. Besides, NEATEHUB and GBP shall design joint certification programs and training modules jointly wherein NEATEHUB shall provide sessions on entrepreneurship and customized mentoring and handholding to trainees/interns/incubatees enrolled at GBP and NEATEHUB. The MOU between the premiere incubators of the state comes at a crucial time when the state government, in the recently announced budget, has proposed an ambitious plan of developing 100 industrial across the state. As per another provision made, the State government has planned to establish 'nano incubation centres' at Silchar, Bongaigaon, Tezpur, and Dibrugarh.
- 24) AIC- SMU Technology Business Incubator in partnership with HeadStart Network, TiE, AAU NEATEHUB, and Indian Institute of Entrepreneurship, Guwahati organized a session on Changing Landscape in North East towards entrepreneurship on 28 September 2021.
- 25) CEO of NEATEHUB Dr.K.Karthikeyen was invited as a resource person to speak on "Opportunities for budding entrepreneurs of North East in Agri and Allied Agri sector" organised by kakojan college under Impact lecture series under institutional Innovation Council on 1 October 2021. The virtual event was attended by over 300 students.
- 26) NEATEHUB, welcomed its entrepreneurs of Cohort 8 in a virtual inaugural ceremony. The ceremony was held on 4 October 2021, the cohort 8 consists of startups from Isanya 5.0 (pre-seed stage) and Saranya 4.0 (seed stage). The startup were briefed about the entire incubation program and the kind of support they will receive from the incubator during

their incubation process.

27) A team of Journalists from Sansad TV, the parliamentary channel of India which was created in 2021 by merging Lok Sabha and Rajya Sabha Television, visited NEATEHUB on 5 October 2021. They were on a visit to Assam Agricultural University, where they also came to the incubator. Director on Board of NEATEHUB, gave them a presentation regarding the incubator's activities. They had interactions with the incubated entrepreneurs, besides they documented the technologies and laboratories in the incubator. The journalists who visited NEATEHUB were Ranveer Sharath, Indrajit Bhattacharjee, and Manhar Kumar.

28) An orientation program titled "Linking of NEATEHUB entrepreneurship development as a supplementary program with ELP" for students was held in academic complex of AAU on 5 October 2021. Dr. Jayanta Deka, Dean faculty of Agriculture welcomed all the students. Dr. Danish Tamuly Director on Board NEATEHUB and Mr. Amitava Mukherjee, Marketing officer NEATEHUB apprised the students about the program through a presentation.

29) A delegation of National Bank for Agriculture and Rural Development (NABARD) consisting Dr. P.S Harikrishnaraj Vice President , Nabard Consultancy Services, Baiju N. kurup, Chief General Manager , NABARD, Assam , Mr. CSR Murty Chief General Manager, CGM - Chattisgarh visited NEATEHUB on 21 October 2021. Dr. Karthikeyen , CEO NEATEHUB apprised the delegation about the kind of activities the incubator has been doing to build a startup ecosystem in the north east.



A delegation of NABARD visited NEATEHUB on 21 October 2021



Awareness programme on "Agri-Business potential of Indigenous Fruits of Assam", organised on 10 November 2021 in Marongi, Golaghat by Dept. of Agricultural Economics and FM, in collaboration with NEATEHUB

30) The North-East Agriculture Technology Entrepreneurs Hub (NEATEHUB) the AIC-AAU incubator of the Assam Agricultural University of Jorhat and University of Science and Technology, Meghalaya signed an MOU on 23 October 2021 with the intent to develop cooperation and collaboration in research for development, training within the institutions, and create an ecosystem for promoting innovation and entrepreneurship within the region. The virtual event saw the officials of NEATEHUB and dignitaries from USTM including the Hon'ble Vice-Chancellor Prof G.D Sharma and Registrar Anju Hazarika.

31) Dr. K. Karthikeyen, CEO, NEATEHUB was invited as a speaker in an event titled "Vigyaan Utsav" organised by Assam Science Technology and Environment council on 8 November 2021. The virtual event was organised to mark the "75 Azadi ka Amrit Mahotsav". Dr. Karthikeyen spoke on the theme of "R & D Infrastructure".

32) An awareness programme on "Agri-Business potential of Indigenous Fruits of Assam" under the project "Exploring Agribusiness Opportunities in Indigenous Fruits of Assam" funded by ICSSR - IMPRESS was organised on 10 November 2021 in Marongi, Golaghat by Dept. Of Agricultural Economics and Farm Management, Assam Agricultural University in collaboration with NEATEHUB. The officials of NEATEHUB Dr. K. Karthikeyen CEO, and Dr. Danish Tamuly, Director on Board of the incubator explained the farmers about the vast business possibilities of the indigenous fruits

which would generate employment as well as increase the income.

- 33) A webinar on “The world of Startup : Opportunities in Agriculture and Allied sectors in North Eastern region was jointly organised by NEATEHUB and Royal School of Buisness (Royal Global University) on 20/11/2021. The webinar was moderated by Dristi Deka , faculty, Royal school of Business,CEO, and Director on Board of NEATEHUB gave a presentation to the students of university and spoke at length about various aspects of entrepreneurship.
- 34) Hon’ble Agriculture Minister of Assam Atul Bora on 23.11.2021 visited the production facility of Kanika Talukdar an entrepreneur incubated with NEATEHUB. During the visit Hon’ble minister also inaugurated new products of the startup. Speaking of Kanika Talukdar she is among the earliest incubatees of incubator . She established her startup Jayatu Organics with 500 rupees and presently she is a leader in terms of producing organic pesticides and fertilizers.
- 35) Dr. Danish Tamuly, Director on Board NEATEHUB and Amitava Mukherjee, Marketing Manager, NEATEHUB conducted a training session on Marketing and Business Development on 6 December 2021 in Sivasagar. The training program was organised by District Industries and Commerce Centre, Sivasagar in association with APART and Rangpur Agri and Allied Processor Industry Association. The event saw over 50 entrepreneurs mostly women from Sivasagar and Chareideo district. These entrepreneurs were mainly associated with food processing and during the training program they were taught about various aspects of marketing and business.
- 36) Bornali Sharma Boruah founder of the startup Easy Hut Pvt. Ltd and an incubatee of NEATEHUB participated in SIAL EXPO 2021 in Pragati Maidan, Delhi (from 9 to 11 Dec 2021) . The startup produce manufacture and supply superior quality frozen processed ready to cook items which are healthy and hygienic. They use local ingredients and most of the products are traditional recipes of Assam.
- 37) A sensitization session on “Exports by Agri Startups of NER” was jointly organised by NEATEHUB and APEDA on 21 Jan 2022. The session saw officials of APEDA including Tarun Bajaj, U.K Vats and Sunita Rai. While NEATEHUB was represented by CEO NEATEHUB, and Director on Board of NEATEHUB. The participants of session saw entrepreneurs across North East and had discussions on creating virtual platform for buyers and sellers of North East besides they also discussed on the process of obtaining certificate of origin.
- 38) NEATEHUB in association with BIONEST- IASST celebrated the International Women’s Day in association with via virtual mode on 8 March 2021, Tuesday from 11am onward. This year, the theme for International Women’s Day is “Gender equality today for a sustainable tomorrow”. for recognizing the contribution of women and girls around the world. A total of 98 participants attended the Webinar titled: “Women in Innovation Innovation Addressing real- world problems” .The session was moderated by Mr. Sagar Kumar, Manager (Incubation & Outreach Bionest) who introduced all the eminent speakers of the webinar to the audience. The inaugural speech was rendered by the honourable Director, IASST- Prof. Ashis Mukherjee emphasizing that Women’s Day should be celebrated every day to commemorate the significance of Women’s accomplishment and at IASST every employee caters for the equality in gender. The session continued with the motivating talk by Dr. K. Kathikeyan, CEO, NEATEHUB who focused on active participation of Women in NER with their innate ability to fortify the work force and how men-counterpart should create a conducive ecosystem for facilitating the showcase of feminine creativity, innovation and entrepreneurship spirit. Dr. Tania Paul Das, Manager (S&T, Bionest) have highlighted about the incubation support in the form of physical space, funding, networking and prototyping that it provides for encouraging the women entrepreneurs in and around NER. The session continued with the experience sharing session of real time women innovators like Ms. Bornali Sharma Baruah, Founder of Easyhaat Ms. Watila Longkumer, Founder of Naroki Ms. Sabina F. Saikia, Founder of Ecoweblab ,Dr. Anamika Kalita, DST INSPIRE Faculty, IASST Guwahati, Dr. Ananya Barman , BIRAC BIG

Grantee. The session was concluded with a vote of thanks from Ms. Angira Sarmah, Admin/HR Manager, NEATEHUB.

- 39) Director on Board, NEATEHUB was invited as a speaker in an event titled "Awareness program for young entrepreneurs" organised by CSIR-NEIST Bionest, on 15 March 2022. Where he gave a brief presentation on "Opportunities in Agri Allied Sector for youths in Northeast India". Besides the Director on Board of NEATEHUB, celebrated entrepreneur and recipient of Assam Gaurav award Akash Jyoti Gogoi was also invited as a speaker to the event where he shared his entrepreneurial journey.
- 40) NEATEHUB in association with OLATUS systems invites application for Agri Ideatronix 1.0 a competition only for those who are trying to address the needs/problems faced in North East Region of India, in the field of agriculture by integrating technology. This competition is only for those whose ideas are at the ideation phase and requires a platform for its development. After due screening process, five best ideas will finally be chosen for incubation at NEATEHUB, for a maximum period of three months. During these three months, ideas will have to be developed into proof of concept at NEATEHUB premises. For this incubation period, food and accommodation will be provided along with a nominal stipend of Rs.5,000/- per month per team member. An applicant can participate as an individual or in a team (max 4 members). All consumables during product development will be provided by NEATEHUB, subject to a maximum of Rs.1 lakh rupees per team.
- 41) CEO, NEATEHUB took a session on "Data Driven Innovation in Agriculture" in the "International Workshop on Skill Development Impact Analysis of Emerging Data with Agricultural Technology in Population Sciences" organised by Dept. of Agricultural Statistics and Dept. of Agricultural Engineering, Assam Agricultural University on 11 March 2022. The hour long session saw the CEO discussing the data science transforming the agri Sector, data driven agri practices, precision agriculture and how data can be monetized. The event was a part of a week-long workshop which saw participants from different states of North East as well as national and international experts.
- 42) The officials of NEATEHUB Dr Danish Tamuly and Dr G.N Hazarika participated in a hour long phone in live talk show "Hello Krishi Darshan" in Doordarshan Guwahati on 23 March 2022 from 5 pm to 6 Pm. The show was hosted by Mousam Hazarika, Joint Director, Dept. of Agriculture, Assam. Callers from across Assam dialled the program and asked about various activities of the incubator. The show was part of a PR building exercise of the incubator where more people would know about NEATEHUB and the avail the opportunities which the AIC-AAU incubator provides.
- 43) NEATEHUB organized an online sensitization program for the students of Assam Don Bosco University on 25 March 2022. The session was organized primarily to speak about Agri Ideatronix 1.0 jointly organized by NEATEHUB and Olatus systems.
- 44) Director on Board of NEATEHUB, Dr Danish Tamuly attended a virtual capacity Building Training on Innovation and Entrepreneurship on 26 March 2022 as a speaker. He spoke on "Rural World Agri Problem: Using Innovations to Address them". The event was part of two day capacity building training program organized by Assam University, Silchar.
- 45) In a bid to promote Agri Ideatronix 1.0, NEATEHUB organized a sensitization program with the students of Kakojan college on 30 March 2022. Dr. K. Karthikeyan CEO, NEATEHUB explained about Agri- Ideatronix 1.0 and also why technological intervention in Agriculture is need of the hour. From Kakojan college assistants professors Jayanta Duarah and Dr. Nibedita were present in the session.

Appendix IV

Externally Funded Projects

(in operation with Faculties of Agriculture and Community Science)

Sl. No	Name of the Scheme	Funding Agency	In-Charge
I. Faculty of Agriculture			
A. All India Coordinated Research Project (AICRP)			
1	AICRP on Agro Forestry	ICAR	Dr. Ranjita Bezbaruah (i/c)
2	AICRP on Agro meteorology	ICAR	Mr. Kuldip Medhi
3	AICRP on Biological Control	ICAR	Dr. R. N. Borkakoty. (i/c)
4	AICRP on Chickpea	ICAR	Dr. Idrish Ali Sheikh
5	AICRP on Dry land Agriculture	ICAR	Dr. Pallab Kr. Sharma
6	AICRP on Farm Implement Machinery	ICAR	Er. M. J. Barooah
7	AICRP on Floriculture	ICAR	Dr. Sunil Kr. Borah
8	AICRP on Forage Crops	ICAR	Dr. Seuji Bora Neog
9	AICRP on Fruits	ICAR	Dr. Bhabesh Deka
10	AICRP on Fruits (CRS)	ICAR	Dr. J. P. Dutta
11	AICRP on Honeybees & Other Pollinators	ICAR	Dr. Mukul Kr. Deka
12	AICRP on Integrated Farming System Research	ICAR	Dr. Karuna K. Sharma
13	AICRP on Linseed	ICAR	Dr. Jyotirekha Hazarika (i/c)
14	AICRP on Maize	ICAR	Mr. Nabajyoti Bhuyan
15	AICRP on MAP (Betelvine)	ICAR	Dr. Bikash Hazarika
16	AICRP on Micro & Secondary Nutrients and Pollutant Elements in Soils and Plants	ICAR	Dr. Samiran Dutta
17	AICRP on MULLARP	ICAR	Dr. Hiranya Kr. Bora
18	AICRP on Mushroom	ICAR	Dr. Dilip Kr. Sharma
19	AICRP on Nematodes	ICAR	Dr. Bhupen Choudhury
20	AICRP on NSP & STR		Dr. Prakash Borah
21	AICRP on Palm	ICAR	Dr. Jogesh Ch. Nath

Sl. No	Name of the Scheme	Funding Agency	In-Charge
22	AICRP on PHET	ICAR	Dr. Abhijit Borah
23	AICRP on Potato	ICAR	Dr. Mitul Saikia
24	AICRP on Rapeseed and Mustard	ICAR	Dr. P. K. Devchoudhury
25	AICRP on Rice	ICAR	Dr. Sanjay Kr. Chetia
26	AICRP on Small Millets	ICAR	Dr. Sunil Kr. Paul
27	AICRP on Soybean	ICAR	Dr. Zafarullah
28	AICRP on Spices	ICAR	Dr. Kusum Kr. Deka
29	AICRP on Sugarcane	ICAR	Dr. Tulsi P. Saikia
30	AICRP on Tuber crops	ICAR	Dr. Sheriful Alam
31	AICRP on Vegetables	ICAR	Dr. Sailen Gogoi
32	AICRP on Water Management	ICAR	Dr. Bipul Deka (i/c)
33	AICRP on Weed Management	ICAR	Dr. Khagen Kurmi
34	AICRP on Wheat	ICAR	Dr. Pabitra Bordoloi

II. Faculty of Community Science

35.	AICRP on Home Science	ICAR	Dr. Mamoni Das
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B. Network Projects

1	AINP on Agricultural Acarology	ICAR	Dr. Sahidur Rahman
2	AINP on Economic Ornithology (VPM)	ICAR	Dr. Prabal Saikia
3	AINP on Jute and Allied Fibres	ICAR	Dr. Prasanta Bharali
4	AINP on PFDC	ICAR	Dr. Pradip Mahanta
5	AINP on Rodent Control (VPM)	ICAR	Dr. Ratul Kr. Borah
6	AINP on Soil Biodiversity-Biofertilizers	ICAR	Dr. Dhruba Jyoti Nath
7	AINP on Soil Test Crop Response	ICAR	Dr. Kulendra N. Das
8	AINP on Whitegrubs & Soil Arthropods	ICAR	Dr. Sahidur Rahman (i/c)

C. Ad hoc Research Projects

C1. Ongoing Research Project (Continuing)

1	Improved crop management and strengthened seed supply system for drought prone rainfed lowlands in South Asia	IRRI-IFAD funded project	Dr. Khagen Kurmi,
2	Design and Development of Digital image Database with an Android Apps and Web System for the detection of major pests and diseases of coconut of Assam	C o c o n u t Development Board (CBD) funded project	Dr. Nirmal Mazumdar,

Sl. No	Name of the Scheme	Funding Agency	In-Charge
3	Morphometry Soil erodibility and productivity potential of flood prone Brahmaputra basins of Dhemaji district using Remote Sensing and GIS	Gol-SPACE funded project	Dr. Bipul Deka,
4	Quality improvement of Tilpitha, a traditional rice product of Assam	G o I - D S T - W O S - B Project	Dr. Barnali Baruah,
5	Upliftment of tribal population of Golaghat district of Assam through bio-input based organic ginger production	DST-Gol funded project	Dr. L. C. Bora
6	Exploring Agribusiness Opportunities in Indigenous Fruits of Assam	Indian Council of Social Science Research (ICSSR) project - Impactful Policy Research in Social Science (IMPRESS)	Dr. Manashi Gogoi
7	Detection of a mushroom toxin using nanoparticle-based Sensor	D B T - N E R - B P M C funded project	Dr. Robin Ch. Boro
8	Climate Smart management Practices	IRRI	Dr. Kalyan Pathak
9	Integrated Development of Turmeric Sector in North Eastern and Bundelkhand Region through Sustainable Technological Interventions for Improvement of Productivity, Quality and Post Harvest Processing Technology under Good Agricultural Practices (GAP) and Organic Production System	DBT-funded	Dr. Pradip Mahanta
10	Analysis of Holocene climate and vegetation around Tsomgo Lake, Sikkim: Implications from a high-altitude region in Eastern Himalaya	D S T - W o m e n Scientist Scheme A (WOS-A), Ministry of Science & Technology, Gol	Dr. Ruchika Bajpai Mohanty
11	Development of Superior haplotype based near isogenic lines (Haplo-NILs) for enhanced Genetic gain in rice	IRRI-DBT, MST, Gol funded	Dr. Sanjay Kr. Chetia,
12	Mainstreaming rice landraces diversity in varietal development through genome wide association studies: A model for large – scale utilization of gene bank collection of rice	DBT Funded	Dr. Sanjay Kr. Chetia
13	Sustainability classification for construction of rainwater harvesting system through application of RS & GIS for efficient water management in Karbi-Anglong under the scheme: Innovation, Technology Generation and Awareness for Karbi-Anglong	Assam Science & Technology & Environment Council (ASTEC) funded project	Dr. Kabyasree Choudhury
14	Strengthening the Onion Seed in Assam through Standardization of Seed Production Technology Utilizing the Rain-shadow Belts of Karbi Anglong district of Assam	Assam Science Technology & Environment Council (ASTEC) funded project	Dr. Tulsi P. Saikia,

Sl. No	Name of the Scheme	Funding Agency	In-Charge	
15	Molecular characterization of Citrus germplasm of NER & systematic conservation through Establishment of Gene Repositories	DBT-MST	Dr. Raaj Kr. Kakoti	
16	Expansion of BioTech Kisan Hub Activities in three aspirational districts (Udalguri, dhubri and Goalpara) of assam	DBT funded project	Dr. Sarat Saikia	
17	Geo surveillance of Agromet Field Units for effective delivery of Agromet Advisory Services	NESAC, Gol Funded project	Dr. Prasanta Neog	
18	Phytochemical characterization and nutritional profiling of germplasm diversity of Citrus species existing in North East Region	DBT-Gol	Dr. Ananata M. Baruah	
19	Determinants of Unsustainability of Rural Agro-based-business ventures in the Plain Tribal Pockets of Lower Brahmaputra valley Zone of Assam for Leveraging Tribal Entrepreneurship	Welfare of Plain Tribes & Backward Classes (WPT & BC), GoA	Dr. Jayanta Kr. Sharma	
20	Harnessing Endophytes and Arbuscular Mycorrhizal Fungi from Citrus Microbiome for Plant and Soil Health Management in North East India	DBT-Gol	Dr. Anjuma Gayan	
21	Network project for "Establishment of Disease free Elite Khasi Mandarin and Sweet Orange Genetic Stocks through shoot tip grafting (STG) and Mass production of quality Planting material for North eastern states of India	DBT-Gol, Project	NER	Dr. Sarat Saikia
22	Collection, Conservation and Morpho-Phenological characterization of citrus germplasm of North Eastern Region	DBT-Gol, Project	NER	Dr. Sarat Saikia,
23	Collection, Conservation and Morpho-phenological characterization of citrus germplasm of North Eastern region	DBT-Gol, Project	NER	Dr. Raaj Kr. Kakoti
24	Network Project for establishment of Disease Free Elite Khasui Mandarin and sweet orange genetic stocks through shoot tip grafting (STG) of Quality Planting Material for Northeastern states of India	DBT-Gol, NER Citrus Programme		Dr. Raaj Kr. Kakoti
25	Phytochemical characterization and nutrient profiling of germplasm diversity of citrus species existing in North East Region	DBT-Gol, NER Citrus Programme		Dr. Raaj Kr. Kakoti
26	Utilization of Citrus Microbiome in Rejuvenating Khasi Mandarin in Plants affected by important citrus diseases	DBT, Gol		Dr. Madhumita Baarooah
27	Integrated Approaches towards Addressing Sustainable Agriculture among the ST/SC population with special reference to Jhum Cultivators of Karbi Anglong district of Assam	DST, Gol		Dr. Madhumita Barooah
28	Utilization of Citrus Microbime in Rejuvenating Khasi Mandarin Plants affected by important citrus diseases	DST, MST, Gol		Dr. Popy Bora
29	Genome wide association mapping for identification of novel genes/ QTLs of Bao rice population of Assam for deep water tolerance and nutritional quality trait	DBT, MST		Dr. Dhiren Choudhury

Sl. No	Name of the Scheme	Funding Agency	In-Charge
30	Doubling farmers income through cultivation of a high value fruit crop- dragon fruit in Kokrajhar district	NABARD	Dr. Vinod Upadhyay
31	Exploiting chemical ecology for IPM: Deciphering the phytosemiochemicals involved in insect-plant interactions of major crop pests of North East Region India (As Hub Centre)	DBT, Gol	Dr. Badal Bhattacharyya
32	Exploiting chemical ecology for IPM: Deciphering the phytosemiochemicals involved in Insect-plant interactions of major crop- pests of North East Region India (As Spoke Centre)	DBT, Gol	Dr. Sikha Deka
33	Management of Fusarium wilt in NER Banana using ICAR-FUSICONT Technology	DBT, MST	Dr. Popy Bora
34	Augmentation of Income of Small Tea Growers of Assam through Production & Marketing of Specialty tea	NECTAR, DST, Gol, New Delhi	Dr. Gautam K. Saikia
35	Genome wide association studies for agronomic and nutritional traits in rice using multiparent Advance Generation Intercross(MAGIC) population developed from Assam rice	SERB- Power grant	Dr. Jyoti Lekha Borah
36	Collection Conservation and Maintenance of Locally Available Medicinal and Aromatic Plants	AYUSH Grant Project, Gol	Ms. Sanchita Brahma
37	AGGRI Alliance (One IRRI Breeding Network-TLaSF-R)	IRRI - Funded Collaborative Research project	Dr. Dhiren Choudhury
38	Field trials of Trambay Mutants, Radiation Based Improvement of the crops and post-harvest preservation	BARC funded collaborative research project/ R&D programme	Dr. Debojit Sarma
39	Preparation of Commercial Potting Mixture	AAU Grant	Dr. Sunil Kr. Borah
40	Catalyzing complementary Olericulture in Assam, Arunachal Pradesh and Nagaland for Livelihood– Security by Provisioning Quality Seed & Seedling of indigenous and Commercial vegetables Generated through Hitech Mini Plug Nursery and Conventional Means and Promotion of Bio- Enterprise	DBT, MST, Gol	Dr. Sarat Saikia
41	An Approach for enhancement of Muga Silkworm production in Assam	SITA, GoA	Dr. Palash Deb Nath
42	Morpho-physiological biochemical and genotypic evaluation of farmers; black rice variety: Upendra Rice	DST	Dr. Sanjay K r. Chetia Dr. Mrinal Saikia Dr. Sunayana Rathi Mr. Janardan Das Miss Parinda Barua
43	Assessment of Citrus species of Agro-climatic zones of Assam	ASBB	Dr. Purnima Pathak

Sl. No	Name of the Scheme	Funding Agency	In-Charge
44	Multi-institutional approach on development of technology driven bio-input production clusters for mass production of biofertilizers & biopesticides for promotion of eco-friendly farming with collateral development of bio-entrepreneurship in vegetables, spices and small tea growers of North East Region of India for better livelihood	DBT, MST, Gol	Dr. Bharat Chandra Nath
45	Multi-institutional approach on development of technology driven bio-input production clusters for mass production of biofertilizers & biopesticides for promotion of eco-friendly farming with collateral development of bio-entrepreneurship in vegetables, spices and small tea growers of North East Region of India for better livelihood	DBT, MST, Gol	Dr. Nimral Mazumdar
46	Popularization and Commercialization of the Soybean crop in NEH Region	Gol, IISR-GRANT-NEH	Dr. Munmi Borah
47	Sustainable rural livelihood through introduction and development of Scientific bee keeping in hill distance of Assam	DBT-Gol, MST	Dr. Mahna Bathari
48	Establishment of large scale mushroom spawn unit to empower tribal women through oyster mushroom cultivation	Bodoland Territorial Council (BTC)	Dr. Vinod Upadhyay
49	Generating high-depth genomics information for the Himalaya-rice cultivars for improving nutritional quality and stress tolerance	DBT, MST, Gol	Dr. Sanjay K. Chetia

University Funded projects

Theme: "Generation of Processes & Products for the Benefit of Farming Community and Agripreneurs"

Faculty of Agriculture

1	Development of organellar genome-specific simple sequence repeat (SSR) markers in Rice (<i>Oryza sativa</i>).	AAU R & D	Dr. Aiswarya Baruah
	Development of actinobacterial bioinoculants for organic deepwater rice cultivation in Assam	AAU R & D	Dr. Nripen Kr. Gogoi
2	Comprehensive Characterization of Decaffeinated Tea Waste (DCTW) and Its Enrichment for Utilization in Crop Nourishment and Remediation of Industrial Pollution	AAU R & D	Dr. Seema Bhagowati
3	Development of plant based insecticidal formulation for management of stored grain pests	AAU R & D	Dr. Anjumoni Devee
4	Application of the gut microbes of Greater Wax Moth (<i>Galleria mellonella</i>) as efficient plastic polymer-degraders	AAU R & D	Dr. Basanta Kumar Borah
5	Development of varieties suitable for direct seeded condition of Assam	AAU R & D	Dr. Jyoti Lekha Borah
6	Encapsulation of nanoparticles (copper and zinc) for smart delivery in agriculture	AAU R & D	Dr. Pranjal Kr Kaman

Sl. No	Name of the Scheme	Funding Agency	In-Charge
7	Development of a Mobile Application and Agro-climatic Atlas for Climate Smart Agriculture in Assam	AAU R & D	Dr. Rajib Lochan Deka
8	Development of Prodigiosin Encapsulated particles For Agricultural Disease Management	AAU R & D	Dr. Robin Ch Boro
9	Exploring soil microfauna for bioremediation of pesticide contaminated soils of certain vegetable and tea growing areas of Assam	AAU R & D	Dr. Sudhansu Bhagawati
10	Bioprospecting of wild edible mushroom flora of Assam for nutraceutical properties	AAU R & D	Dr. Supriya Sharma

Faculty of Community Science

1.	Rural Tourism for Sustainable Livelihood Security	AAU R & D	Dr. Mayuri Bora
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Externally Funded Research Projects in operation in the Faculty of Veterinary Science and Fishery Science during 2021-22

Veterinary

1	AICRP on Epidemiological studies on FMD	ICAR & State	Dr. R. K. Sharma
2	AICRP on Pigs	ICAR & State	Dr. Dhireswar Kalita
3	Mega Seed Production of Pig under AICRP on Pig	ICAR	Dr. Dhireswar Kalita
4	AICRP on Nutritional and Physiological Approaches for Enhancing Reproductive Performance in Animal	ICAR & State	Dr. Kutubuddin Ahmed,
5	AICRP on Post Harvest technology(Meat and Meat products)	ICAR	Dr S. K. Laskar
6	AICRP on Poultry Breeding	ICAR	Dr. Niranjan Kalita
7	AICRP on Goat Improvement	ICAR	Dr. Farzin Akhtar
8	National Animal Disease Epidemiology Network (NADEN)	ICAR	Dr. D P Bora.
9	Outreach programme on Ethno Veterinary medicine in XI (Five Year Plan with effect from 2007-08 to 2001-12).	ICAR	Dr. C.C. Baruah
10	Outreach programme on Livestock Related Environmental Pollutants, Contaminants & Toxicants (Monitoring of Drug Residues and Environmental Pollutants)	ICAR	Dr. D.C .Roy
11	Veterinary Type Culture	ICAR National Research Centre on Equines	Dr Pankaj Deka
12	An integrated omics approach characterize circulating Newcastle disease virus and intervention strategies to control Newcastle disease in North East India	DBT's Twinning Programme for NER	Dr. Pankaj Deka
13	Understanding the aetiology of infertility associated with prolonged follicle dominance in bovine and its therapeutic management.	DBT's Twinning Programme for NER	Dr Manjyoti Bhuyan

Sl. No	Name of the Scheme	Funding Agency	In-Charge
14	Genetic Characterization of Antibiotic Resistance Clostridium Perfringens and Clostridium Difficile, and their Public Health Importance	DBT Twinning Project for the NER	Dr. Rajeev Kr. Sarma
15	Regulation of Corpus Lutenum function by locality produced angiogenic growth factors in pigs (Sus scrofa)	DBT Twinning Project for the NER	Dr. Sanjib Borah,
16	Evaluation of neuroprotective potential of selected phytoconstituents on experimental diabetic neuropathy: focus on mitochondrial function and mitochondrial biogenesis	DBT-NER BPMC	Dr Chandana Choudhury Barua
17	DBT Multi Institutional Project "Molecular platform for epidemiology, disease mapping and development of diagnostics for economically important diseases of ducks	DBT	Dr. S.C. Phukan
18	DBT Project "Analysis of Gut Management of Duck (Anas Platyrhynchos) with Special reference to Identification of Bacteria having Probiotic Potential	DBT	Dr. Prabodh Borah,
19	DBT Twinning "Genetic up-Breeding of duck production to strengthen livelihood security in NER of India by converging conventional and molecular techniques	DBT's Twinning Programme for NER	Dr. Purabi Kaushik
20	DBT Twinning Project "Value chain on Processing of Novel Duck Meat and Egg Products under Existing Farming System of NER for Enterpreneurship Development	DBT's Twinning Programme for NER	Dr. S. K. Laskar
21	DBT Twinning Project "Development of DIVA Diagnosis and Marker Vaccine Against Duck Plague Virus"	DBT's Twinning Programme for NER	Dr. Sutopa Das
22	DBT Twinning Project "An Integrated Approach to explore and exploit the Innate and Adaptive Immune response in Indigenous Duck Breeds of North Eastern and South India."	DBT's Twinning Programme for NER	Dr. D. J. Kalita
23	ICMR Project "Prevalence and Drivers of Selected Zoonotic Pathogens and use of Antimicrobials in Livestock Farms of North Eastern Region : A Mixed Method Study.	ICMR	Dr. G K Saikia
24	Indigenous Development of a new Suture Mediated closure Device for Closure of Arterial Access site to achieve instant Haemostasis following catheter Angiography and Interventions	DBT-IIT	Dr. Bhupen Sarma
25	Development of Sustainable Rural Livelihood Options through Hygienic Fish Drying Activities by Establishment of technology Demonstration Centre	DBT, Govt. of India, New Delhi	Dr. Bipul Kumar Kakati
26	Women Empowerment through Scientific Rearing of Superior Goat	DLMC, Govt. of Assam	Dr. Sanjib Khargharia
27	Generation and Evaluation of a live vectored vaccine against porcine circo virus infection of swine.	DBT	Dr. Nagendra Nath Barman
28	"Species and stock validation of Mahseer- Tor & Neolissochilus from central & Eastern Himalayan Region of India for its propagation & conservation"	DCFR	Dr. Rajdeep Dutta

Sl. No	Name of the Scheme	Funding Agency	In-Charge
29	Validation and field testing of DIVA tests developed in ADMaC Phase-1 project for surveillance of Brucellosis in North Eastern region of India.	DBT-NERBPMC	Dr. Durlav Prasad Bora,
30	Validation, regulatory compliance and translation of Vaccine and Molecular Diagnostics for Duck Plague	DBT-NERBPMC	Dr. Durlav Prasad Bora
31	Upgradation and Implementation of knowledge based system (KBS) in NER of India (An extended activity of Advance Animal Disease Diagnosis and Management Consortium (ADMaC)	DBT-NERBPMC	Dr. N. N. Barman
32	SWINOSTICS : A platform for development and validation of diagnostics of important pig pathogens in NE Region of India for commercial exploration.	DBT-NERBPMC	Dr. Pankaj Deka
33	Modelling of indigenous diagnostics and immune potent vaccine candidates to combat African Swine Fever in India	DBT-NERBPMC	Dr. N. N. Barman
34	Modelling of indigenous diagnostics and immune potent vaccine candidates to combat African Swine Fever in India	DBT-NERBPMC	Dr. Lukumoni Buragohain
35	Generation of Multivalent Vector Vaccine against Lumpy Skin Disease in Cattle and Evaluation of its Immunogenic Potency	ASTEC	Dr. Biswajyoti Borah
36	SAMRIDDI POULTRY "An Innovative Approach for Economic Empowerment of Rural Women of Assam through Model Egg Village	SITA	Dr. Mihir Sarma
37	Establishment of a Consortium for one health to Zoonotic and Transboundary Diseases in India, including the Northeast Region	DBT	Dr. N. N. Barman
38	Awareness for techno-economic empowerment of Pig farmers in Dima Hassao District of Assam,	ASTEC	Dr. Monosri Johari
39	Improvement of the performance of Lakhimi Cattle under farm condition as well as at farmers level	ICAR-CIRC	Dr. Dhireswar Kalita
40	Intervention Abnormal Metertrus Bleeding & Silent Estrus Associated Infertility in Cows of North Eastern States of Assam & Meghalaya	ICAR-CIRC	Dr. Dipak Sarma
41	Preparation of Oral photochemical formulation against respiratory and gut disease of poultry	ASTEC	Dr. Sanjib Khargharia
42	Design and development of a low-cost domestic device for rapid detection of bovine subclinical mastitis	ASTEC	Dr. Abhijit Deka
43	Development of a Recombinant subunit vaccine against Swine pasteurellosis and evaluation of its immune protective efficacy	ASTEC	Dr. Deep Prakash Saikia
44	Promoting advance research and capacity building in biotechnology & allied disciplines through manpower training, mentoring and sharing of infrastructure developed under the Advanced-Level State Biotech Hub	DBT	Dr. Prabodh Borah

University Funded projects

Theme "Generation of Processes & Products for the Benefit of Farming Community and Agripreneurs"

Sl. No	Name of the Scheme	Funding Agency	In-Charge
Faculty of Veterinary Science			
1	Climate resilient goat kid production through assisted reproductive technology	AAU R & D	Dr. Champak Barman
2	Antibody engineering to develop rapid and cost-effective diagnostics for detection of canine distemper virus (CDV) and canine parvovirus (CPV) infections	AAU R & D	Dr. Dipak Deka
3	Development of Farmers/ veterinary professional friendly mobile application in regards to Animal Health Sector	AAU R & D	Dr. Ditul Barman
4	Development of a pheromone based spray for enhancing reproductive efficiency of dairy cattle of Assam	AAU R & D	Dr. Manjyoti Bhuyan
5	Biotechnological interventions for improving the nutraceutical value of agro-industrial by-products to enhance its utilization in ruminants.	AAU R & D	Dr. Papor Talukdar
6	Development of designer eggs for boosting layer industry and entrepreneurship development in North-east region	AAU R & D	Dr. Reema Saikia
7	Capacity building and doubling the income of the local pig rearers through assisted reproductive technology in the North Bank of Brahmaputra	AAU R & D	Dr. Arunoday Das
8	Study on chemical biology approach for early detection of pregnancy in pigs	AAU R & D	Dr. Sanjib Borah

II. Faculty of Fishery

1	Sustainable Livelihood promotion through Integrated Farming System (IFS) in Schedule Tribe (ST) Dominated area of Central Brahmaputra Valley, Assam	DBT's Twinning Programme for NER	Mr. Bipul Phukan
2	National Surveillance Programme for Aquatic Animal Diseases	National Bureau of Fish Genetic Resources (NBFGR)	Dr Binod Kalita
3	Refinement of induced breeding ,larval rearing and grow out technology of murrel and dissemination of the technology to the farmers through creation of model village for murrel seed production in central and upper Brahmaputra valley of Assam	National Fisheries Development Board (NFDB)	Dr Bipul Phukan
5	Assessment of Environment, Health and Ichthyofaunal Biodiversity of Tirap and Tissa Rivers of Arunachal Pradesh and Promotion of Fish Centric Supplementary Livelihood Options through a Participatory Approach	National Mission on Himalayan Studies (NMHS), Ministry of Environment, Forest and Climate Change, Govt. of India.,	Dr. Rajdeep Dutta

University Funded projects

Theme: "Generation of Processes & Products for the Benefit of Farming Community and Agripreneurs"

Faculty of Fishery

1.	Aquaculture diversification through murrel farming (<i>Channa striatus</i>) in cages for enhancing productivity floodplain wetlands (beel) of Assam using local feed formulations	AAU R & D	Dr. Pabitra Kr. Saharia
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Assam Agricultural University
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