

वार्षिक रिपोर्ट: भ.कृ.अनु.सं असम

Annual Report: IARI Assam

January- December, 2023



भा.कृ.अ.सं.- भारतीय कृषि अनुसंधान संस्थान
दिरपाई-चापोरी, गोगामुख, धेमाजी, असम-787035

ICAR-Indian Agricultural Research Institute,
Dirpai Chapori, Gogamukh, Dhemaji, Assam-787035





ICAR-IARI ASSAM ANNUAL REPORT



JANUARY- DECEMBER, 2023

FROM DIRECTOR'S DESK



Greetings!!

As the Director of the Indian Agricultural Research Institute (IARI), Assam, it is with immense pride that I present the annual report for the year 2023. This document displays our achievements in our journey for the year 2023. This year is very productive for us in terms of man power as four principal scientists including two heads of divisions and nineteen fresh young scientists have joined this institute. Besides with the joining of one chief administrative officer, one assistant administrative officer and one comptroller the staffs' position of IARI Assam is strengthened. In these formative years, IARI Assam has made significant strides towards establishing itself as a beacon of agricultural research and education in the North Eastern region. The joining of staff from across the nation, has been pivotal in our quest to contribute to the agricultural development of this vibrant region.

The institute is carrying out its research programme in field and horticultural crops, fishery science, social science and remote sensing aspects. In total seven institute funded and three external funded research projects are going on in the institute. The main focus of these researches lies on agro-techniques for quality minor millets, underutilized horticultural crops, fish diversity, fishery resources, fish disease profiling, pesticide residue usage profiling, remote sensing based prediction of crop performance, assessment of livelihood diversification of farmers, native fish germ plasm, plant biomass and carbon mapping etc. All the research work concentrates on the development of agrarian scenario in the north eastern region of India. Our scientific team also made extensive field visits to record and document farming practices in the region and also to develop rapport and congenial relationships with our primary stakeholders – the farmers. Our scientists in collaboration with other institutes have published many research papers and other publications. Besides, our scientists are also involved in developing ICAR recognized technologies and different

IT based products in collaboration with other institutes. As extension is also an important mandate of the institute, our dedicated scientists have organized a number of skill oriented trainings, awareness programme, field days etc. for the benefit of the farming community in these regions.

In remarkable developments, year 2023 also witnessed the first IRC of the institute, the first QRT visit, Assam Agricultural Commission visit and many other important events. I extend my heartfelt appreciation to each scientist for their unwavering commitment and tireless efforts. From inauguration of single prefabricated building to erecting the pillars of research and innovation, their contributions have been the cornerstone of our institute's growth.

The establishment of facilities for undergraduate and postgraduate teaching is on the horizon, and we eagerly anticipate the commencement of these programs. Our students, the future nation builders, who are currently studying at IARI Jharkhand, will soon have the opportunity to continue their education in the state-of-the-art facilities at IARI Assam. We look forward to welcoming the batches of 2022-23 and 2023-24 BSc Agriculture to their home institute. The imminent arrival of postgraduate students on campus to complete their research work is a testament to our growth and development. Their research will undoubtedly enrich our institute's endeavours to address the unique agricultural challenges of the North Eastern region. As we look forward to the integration of our undergraduate and postgraduate programs within the IARI Assam campus, we are filled with hope. The synergy between teaching and research will create an environment where innovation thrives, and solutions to regional agricultural problems are discovered.

To our scientists and other staff, your dedication has been the driving force behind our institute's success. Your efforts have not gone unnoticed, and I commend you for the resilience and determination you have shown in building IARI Assam from the ground up. As we move forward, let us carry the torch of knowledge and innovation, illuminating the path for the holistic development of agriculture in the North Eastern region and India. May our collective efforts continue to bear fruit and bring out transformative change in the agricultural landscape. Together, let us continue to nurture this institute of national importance and achieve remarkable milestones in the years to come.

Wishing us all a fruitful journey ahead.

-Dr. A. K. Singh, Director, IARI



“Do not wait until the conditions are perfect to begin. Beginning makes the conditions perfect.”

- Alan Cohen

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CHAPTER 1: OVERVIEW OF IARI ASSAM

INTRODUCTION

The Northeast region of the country is blessed with wide range of agricultural resources having immense potential in generating revenue at the rural front and in providing food and nutritional security to the underprivileged population. However, issues like climate change, dwindling biodiversity and over-exploitation of natural resources are challenges before the agriculture and allied sector. The ICAR-IARI Assam, henceforth is established at Gogamukh of Dhemaji district, Assam to pursue various research and extension programmes aiming to address these challenges through innovative cutting edge crop production technologies, land & water budgeting, thrust on climate resilient strategies, agro-ecotourism, creation of infrastructure, adoption of farmer centric approaches and services etc. Besides, efforts to develop human resource through trainings, on-farm demonstrations, education, consultancies, partnership through outreach activities, expansion of agriculture, fisheries and animal husbandry through technological interventions and knowledge transfer are the prioritized responsibility of this institute to uplift the socio-economic status of the farming communities in the region. In order to develop skill human resources who will contribute in future nation building in agricultural and allied sector, the top most priority of IARI Assam is also to undertake graduation and post-graduation courses in Agriculture. IARI Assam therefore aims at conducting high end research to resolve the challenges of NER, besides, imparting high quality post graduate education.

OBJECTIVES

Objectives of IARI Assam are specific to the North Eastern states. The main purpose is to serve as an institution of learning in higher **agricultural education in South East Asia**. The basic objectives are

Promote high standards of

- i. Under Graduate & Post Graduate Education & Research
- ii. Need based agricultural research through in-house and externally funded research projects
- iii. Outreach program in agriculture and allied fields

There will be three major schools:

1. School of Crop Improvement
2. School of Natural Resource Management
3. School of Animal Sciences and Fisheries

MANDATE

Education: Graduate/Post Graduate

- Promote excellence, foster high standard research for holistic agrarian development and **orient the educational programme towards future needs and opportunities in South East Asia.**
- **Strengthen formal/non-formal training** to promote entrepreneurial skills for commercialization of agriculture in the region through different diploma courses in the line of polytechniques.

Research

- **Conservation and utilization of biotic resources** of North East India for higher farm productivity and industrial uses.
- **Acid soil management vis-à-vis development of crop varieties and technologies** suitable for acidic soil of North East India.
- **Productive utilization of water resources through multi-disciplinary research** on excess water management through drainage and other means, water harvesting, micro-irrigation etc. for enhancing WUE to achieve higher factor productivity in agriculture of North-East India.
- Develop **appropriate cropping systems to attain multiple cropping** for increasing productivity with long term sustainability in the NorthEastern states.
- Develop **integrated farming system models** through appropriate recycling of the bio-resources to promote organic agriculture keeping in view of the specific requirements of the region.
- Develop **horticulture and animal husbandry-based diversified farming system** modules to promote rural entrepreneurship.

- Effective **postharvest management and value addition** using appropriate food engineering protocols to enhance farm income and promote agribusiness.
- **Market and policy research** to augment income of different stakeholders in agriculture

Outreach

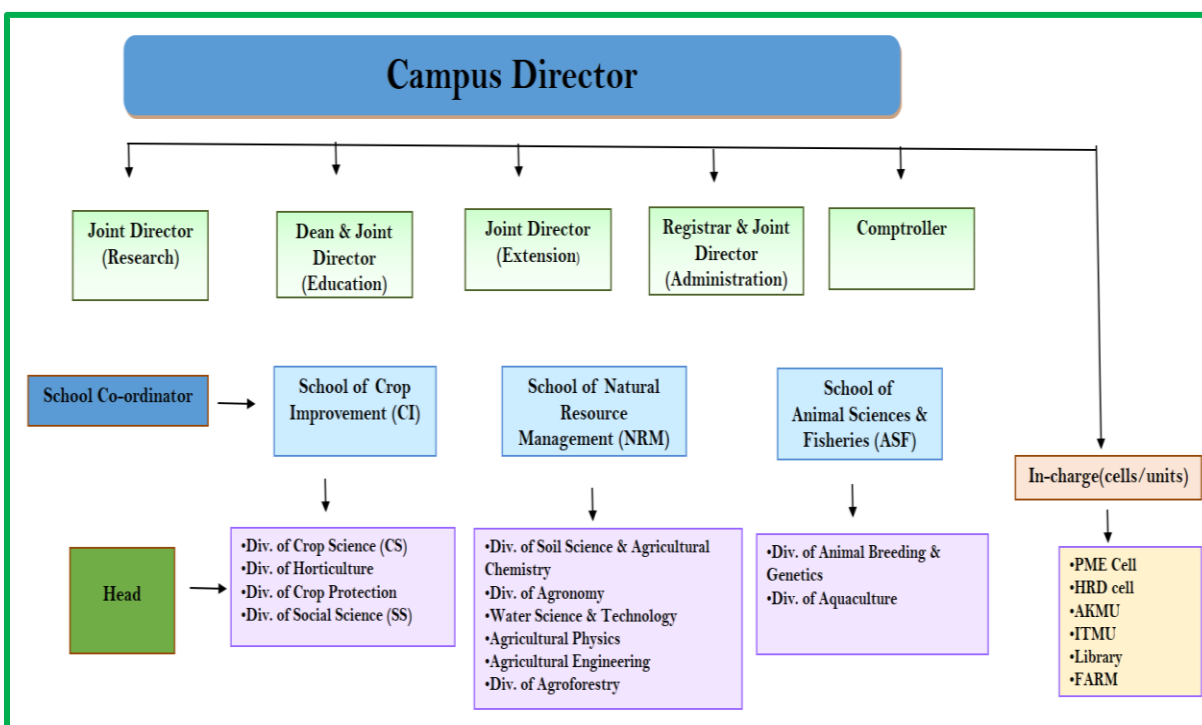
- Generate **innovative extension models, dovetail them to developmental models, and disseminate** them through KVKs, state agricultural universities and state agricultural extension and other development departments of different states of the North-East India.
- Promote **client oriented on-farm/farm innovation research and technology assessment, refinement and transfer** through participatory approaches on convergence mode.
- Foster development in **communication research and linkages** with rural development programmes and strengthen micro-planning through **inter-departmental and participatory approaches**.

IMPORTANT MILESTONES

Sl. No.	Date	Event
1	July 10, 2014	Establishment of Indian Agricultural Research Institute (IARI)-like institutes in Jharkhand and Assam was announced by the Honourable Finance Minister in his maiden budget speech
2	February 07, 2017	Possession of land (587 acres) was taken over for establishment of IARI-Assam [Site: Dirpai Chapori, Gogamukh, District- Dhemaji (Assam)]
3	May16, 2017	The proposal for establishment of IARI-Assam was approved by the Cabinet Committee on Economic Affairs
4	May 26, 2017	Foundation stone laid by the Honourable Prime Minister - Shri Narendra Modi ji
5	June 01, 2017	ICAR issued sanction for the establishment of IARI-Assam with an outlay of Rs.155.29 crore

6	September 23, 2017	Demarcation of allotted land was initiated by CPWD
7	November 1, 2018	Construction work at the site of IARI-Assam was started by the executing agency National Project Construction Corporation Ltd.
8	September 25, 2020	The Campus of IARI, Gogamukh (Assam) was inaugurated by Hon'ble Minister of Agriculture & Farmers Welfare, GOI, Shri Narendra Singh Tomar ji 25 th September, 2020

ORGANOGRAM FOR IARI-ASSAM

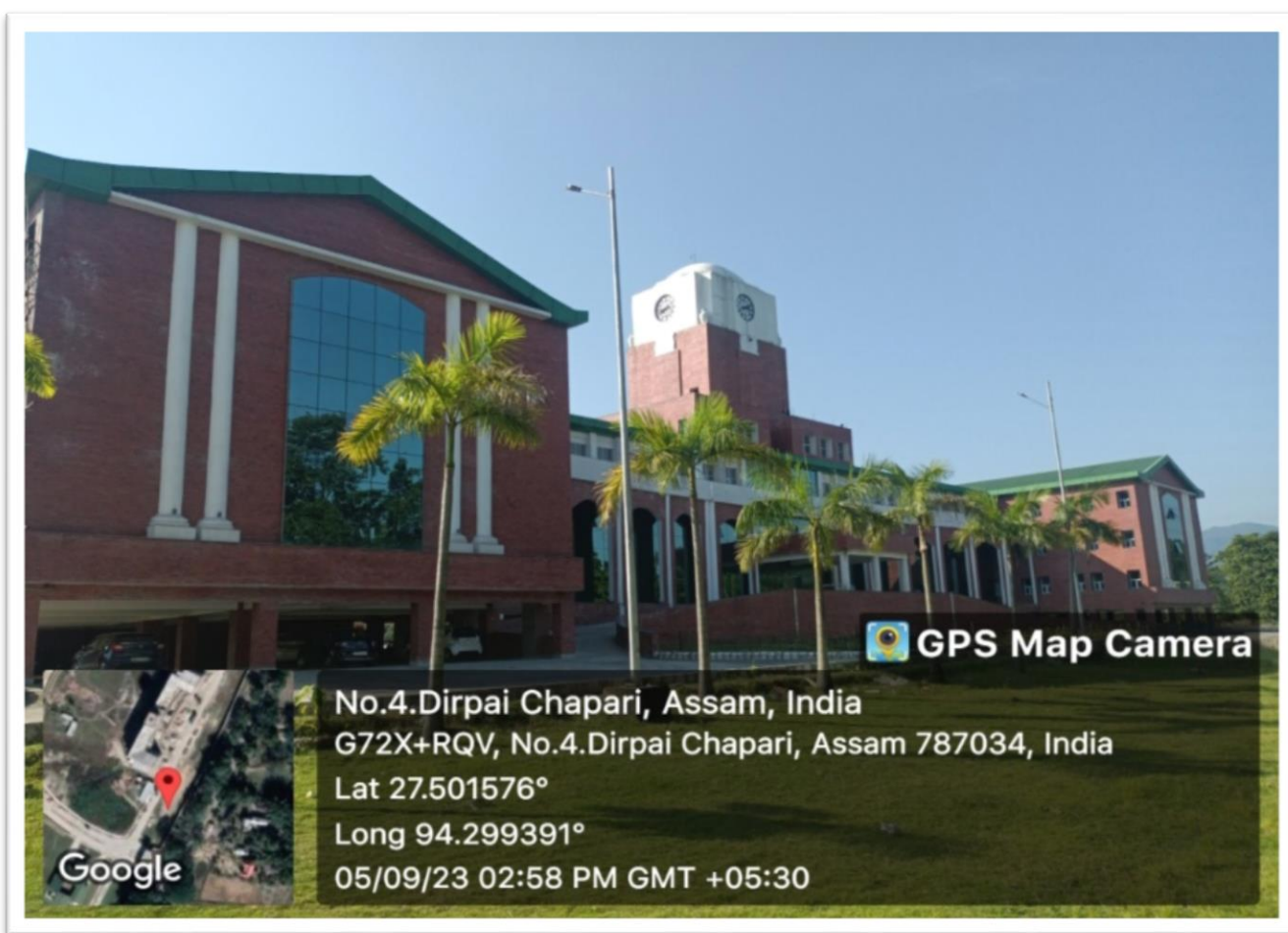


CHAPTER 2: GLIMPSES OF DEVELOPMENTS AT IARI ASSAM

INFRASTRUCTURE DEVELOPMENT

The institute has carried forward the rapid pace of infrastructural development on the academic campus during the year 2023. The construction of the Academic-cum-Administrative building and Guest house has been completed, and furniture and fixtures are being installed. Work is also in quick progress for constructing Boys` and Girls` hostels on the campus. The civil work is almost completed and should be ready to welcome the newly-admitted B.Sc. Agriculture students at the earliest.

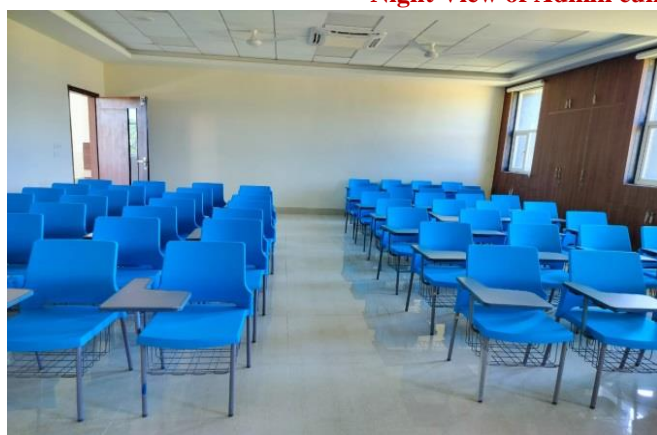
Academic cum Administrative Building of IARI Assam



Academic cum Administrative Building of IARI Assam



Night View of Admin cum Academic Building



Furnitures in Class Rooms



Newly Established Laboratory



Newly Established Library

Guest House



Barren land before construction of Guest House

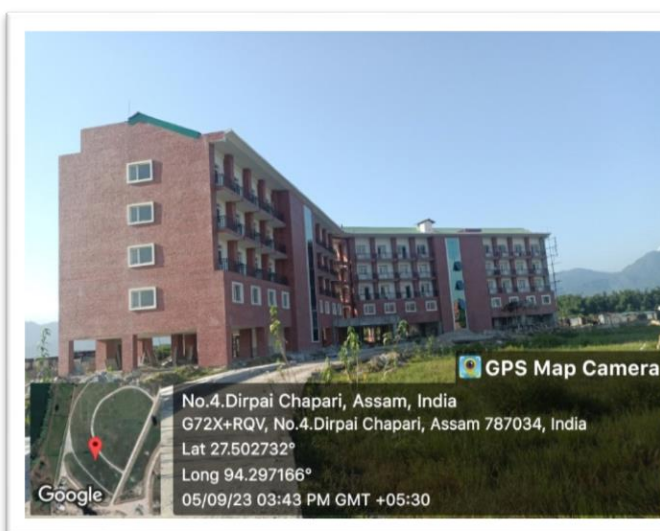


Guest house back side view

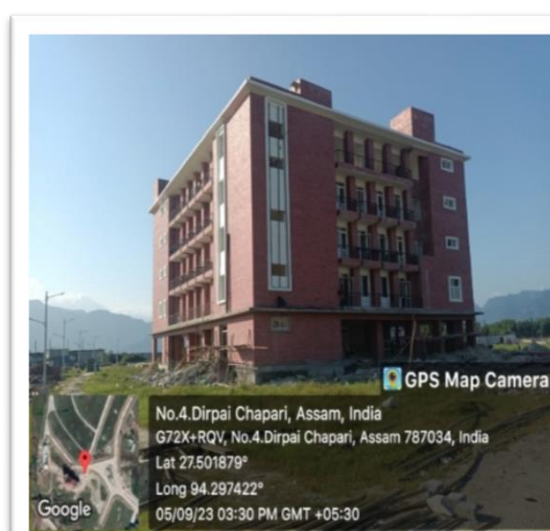


Guest house front side view

Boys' Hostel and Girls' Hostel



Boys' Hostel



Girls Hostel

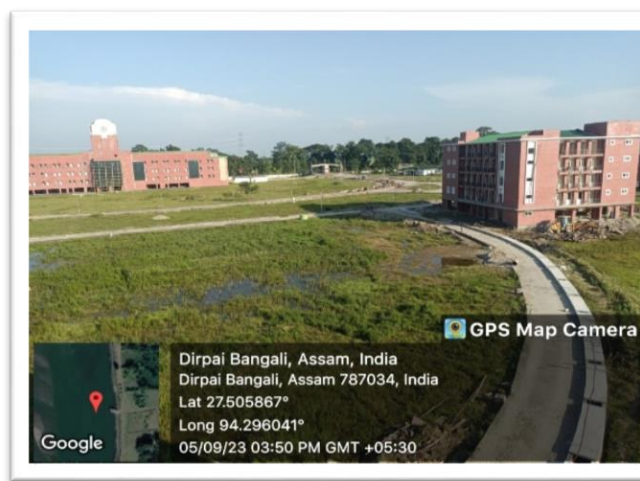


Boys and Girls Hostel View from Academic cum Administration Building

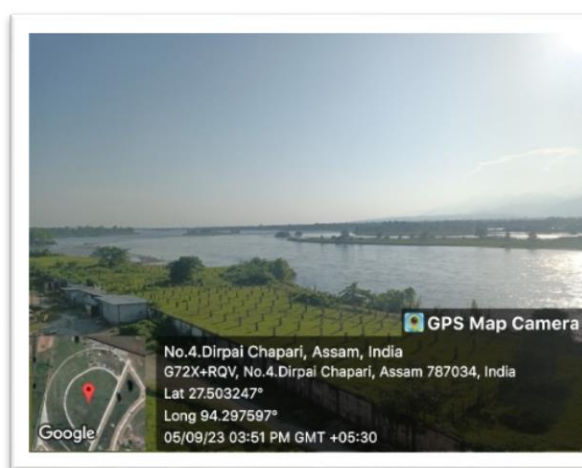
Shaikshanik Bhawan



Other View of the Campus



Playground



River side view

Farm Developments and Research Initiative at the Developed Farm

In a landmark development, the jungle area of IARI Assam of **size around 5 ha** outside the main campus has been converted in to farm land in order to initiate field based research for undergoing research project as well as for carrying out student research. Out of the 5 ha developed farm land, finger millet and maize based research have been initiated in approximately 1.5 ha of land.

In order to promote finger millet which is having very much potential in upper Assam, **AAU-GSG-Marudhan-1 variety** has been planted in the research field whereas local maize variety was used for research.





Glimpse of Research Initiative at IARI Assam Farm

REFINEMENT OF EXISTING INFRASTRUCTURE

Refinement of Pig Breeding Station

Almost 2 ha land of Pig breeding stations has been refined by clearing the jungles. The refined area is being used for nursery developments and other farming activities.



Before refinement and cleaning



After refinement and cleaning

CHAPTER 3: RESEARCH

RESEARCH

With the developments of infrastructure and posting of scientific staffs, IARI Assam has started its research activities.

FIRST INSTITUTE RESEARCH COUNCIL MEETING (IRC)

On a historic development, the **first IRC meeting of IARI Assam** was held under the chairmanship of the Nodal Officer Dr. Robin Gogoi on **March 9, 2023** where the progress of different research projects were reviewed. Besides new projects proposals were also discussed.



Glimpses of first IRC at IARI Assam under the chairmanship of Dr Robin Gogoi , Nodal Officer , ICAR-IARI, Assam

RESEARCH PROJECTS

Currently, this Institute is running its research activities **through seven institute funded** and **three externally funded** research projects. Besides, some research through some varietal evaluation trials and students research are also being initiated.

Project No	Project Title
Institute Funded Research Projects	
1.	<p>REMOTE SENSING-BASED PREDICTION OF CROP PERFORMANCE IN AGRI-HORTI CROPS OF NORTH-EASTERN REGION (01-01-2022 to 31-12-2024)</p> <p>Project Code: <u>CRSC/IARI-Assam/CIL2022/003/00003</u></p> <p>Project Team: Dibyendu Deb, Alemwati Pongener, Arpan Bhowmik , Deepjyoti Baruah, Arunjyoti Baruah (till 21.02.2023) and Palmei Gaibimei</p>

2.	<p>COLLECTION, EVALUATION, DOCUMENTATION, AND UTILIZATION OF CULTIVATED AND WILD UNDERUTILIZED HORTICULTURAL CROPS OF NORTH-EASTERN REGION OF INDIA (01-04-2022 to 31-03-2025)</p> <p>Project Code: <u>CRSC/IARI-Assam/SIL2022/004/00004</u></p> <p>Project Team: Alemwati Pongener, Dibyendu Deb, Deepjyoti Baruah, Palmei Gaibimei, Arpan Bhowmik and Arunjyoti Baruah (till 21.02.2023)</p>
3.	<p>ASSESSMENT OF LIVELIHOOD DIVERSIFICATION OF FARMERS UNDER RAINFED ECOSYSTEM IN NORTH EAST INDIA(01-08-2022 to 31-07-2025)</p> <p>Project Code: <u>CRSC/IARI-Assam/SIL2022/005/00005</u></p> <p>Project Team: Arpan Bhowmik, Dibyendu Deb, Deepjyoti Baruah, Alemwati Pongener, Arunjyoti Baruah (till 21.02.2023) and Palmei Gaibimei</p>
4.	<p>ASSESSMENT OF FISH DIVERSITY, FISHERIES RESOURCES AND AQUACULTURE AVENUES FOR IMPROVING SELF SUSTENANCE OF FISHER-FOLK IN UPPER REACHES OF THE BRAHMAPUTRA VALLEY (01-08-2023 to 31-07-2025)</p> <p>Project Code: <u>CRSC/IARI-Assam/SIL2022/006/00006</u></p> <p>Project Team: Deepjyoti Baruah, Arunjyoti Baruah (till 21.02.2023), Alemwati Pongener, Dibyendu Deb, Arpan Bhowmik and Palmei Gaibimei</p>
5.	<p>IDENTIFICATION AND DOCUMENTATION OF COMMONLY OCCURRING FISH DISEASES IN DHEMAJI AND LAKHIMPUR DISTRICTS OF ASSAM (01-01-2022 to 31-12-2024)</p> <p>Project Code: <u>CRSC/IARI-Assam/CIL2022/007/00007</u></p> <p>Project Team: Arunjyoti Baruah (till 21.02.2023), Deepjyoti Baruah (PI from 22.02.2023), Dibyendu Deb, Alemwati Pongener, Arpan Bhowmik and Palmei Gaibimei</p>
6.	<p>IDENTIFICATION AND ASSESSMENT OF PESTICIDE USAGES, PATTERNS AND FARMERS' PERCEPTIONS IN AGRI-HORTI CROPS: A CASE STUDY FROM NORTH-EAST REGION (01-04-2023 to 31-03-2026)</p> <p>Project Code: <u>CRSC/IARI-Assam/SIL2023/001/00009</u></p> <p>Project Team: Ch. Jamkhokai Mate, Sunil Mandi, Arpan Bhowmik, Alemwati Pongener and A. K. Srivastava</p>
7.	<p>DEVELOPMENT OF AGRO-TECHNIQUES FOR QUALITY PRODUCTION OF MINOR MILLETS IN THE EASTERN HIMALAYAN ZONE</p> <p>Project Code: <u>CRSC/IARI-Assam/SIL2023/002/00010</u> (01-04-2023 to 31-03-2026)</p> <p>Project Team: Sunil Mandi, A. K. Srivastava and Ch. Jamkhokai Mate</p>

Externally Funded Research Projects	
6.	<p>TRANSLATING THE NATIVE FISH GERM PLASM FOR SOCIO-ECONOMIC BENEFITS THROUGH AQUACULTURE AND FISHERIES IN HIMALAYAN REGION (DBT Funded) (24-03-2022 to 25-03-2025)</p> <p>Project Code: <u>CRSC/IARI-Assam/COP2022/001/00001</u></p> <p>Project Team: ICAR-DCFR: N. N. Pandey, R. S. Patiyal and S. Ali</p> <p>GBPUA&T: CCPI: Ashutosh Mishra, Vipul Gupta and Akansha Khati</p> <p>ICAR-IARI Assam: CCPI: Deepjyoti Baruah</p>
7.	<p>BIOMASS AND CARBON MAPPING ACROSS ALTITUDINAL GRADIENT OF MAJOR DARJEELING AND SIKKIM HIMALAYA LAND USE: IMPLICATION FOR CARBON SINK MANAGEMENT AND MITIGATION (SERB, DST Funded) (01-01-2022 to 09-05-2024)</p> <p>Project Code: <u>CRSC/IARI-Assam/COP2022/002/00002</u></p> <p>Project Team: UBKV: Sumit Chakravarty, Gopal Shukla, Ganesh Banik and Vineeta</p> <p>ICAR-IASRI: Arpan Bhowmik (CCPI till 08.04.2022), Ankur Biswas (CCPI w.e.f. 8.4.2022),</p> <p>ICAR-IARI Assam: Arpan Bhowmik (CCPI w.e.f. 11.4.2022)</p>
8.	<p>AGRI-DRONE PROJECTS (RKVY funded) (Date of Start: 02-08-2022)</p> <p>Project Code: <u>CRSC/IARI-Assam/SOL2022/008/00008</u></p> <p>Project Team: Arpan Bhowmik, Dibyendu Deb, Sunil Mandi and Alemwati Pongener</p>

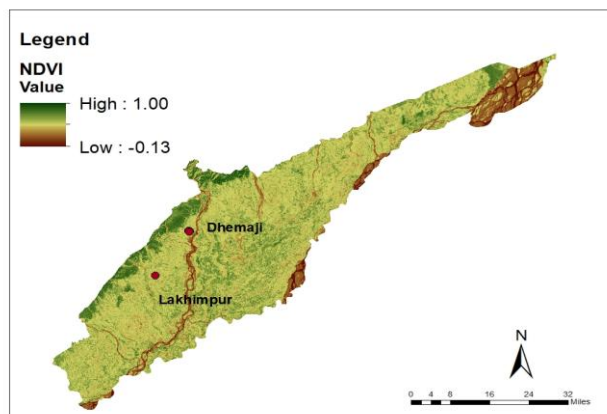
SALIENT ACHIEVEMENTS BASED ON RESEARCH PROJECTS

Remote sensing-based prediction of crop performance around north bank of the Brahmaputra river

The study was conducted over north bank of the Brahmaputra River covering Dhemaji and Lakhimpur districts of Assam. 4 Landsat-8 images were used for parameterising the models for visualizing the vegetation present on the ground. GPS-linked ground truthing was performed at 15 points so far in the field easily identifiable in the image.

During November 2023 sample collection was conducted for 5 locations out of 21 selected vegetation patches. Sites were defined as areas of 30 x 30 m² (equivalent to the Landsat 8 image pixel), around the point located with the GPS. All the sites exhibit a complex type of vegetation cover, where trees of various ages, species, sizes, vigour and crown classes, and shade tolerance levels co-exist.

The vegetation was mainly tropical moist evergreen type. Moist deciduous, semi-evergreen, tropical/subtropical vegetation were also found in patches which are being validated through field performance-based appraisal.



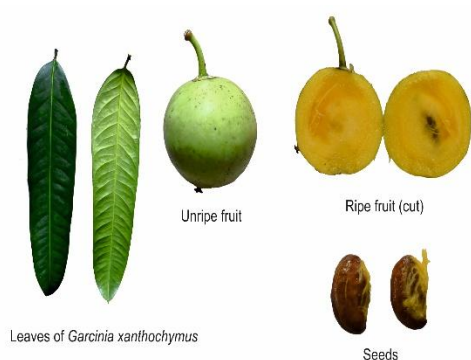
Assessment of livelihood diversification of farmers in north east regions

The drivers (e.g. Age of household, Sex of household, Education level, Household size, Dependency ratio, Enterprenurial tendency-approach towards starting own business, Risk on existing income stream etc.) determining the source of livelihood of farmers were identified and implemented them on possibilities of diversifying the current land use pattern to ensure higher sustainability coupled with profitability. This study enabled us identifying the alternatives towards more sustainable options of diversification. Accordingly, livelihood diversification strategies are being developed. Skill gap on diversification of livelihoods among the community has been identified and accordingly for improving the livelihood of the farmers a number of awareness programmes/trainings/field days have been organized. Keeping the international year of millet a special field day was also organized for the farming community at the IARI Assam research farm on Millet cultivation for sustainable livelihood.

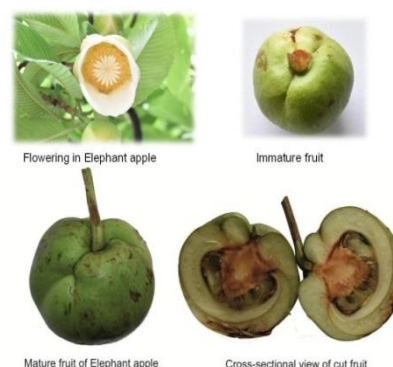


Exploring Underutilized horticultural crops (cultivated and wild) of north-east India

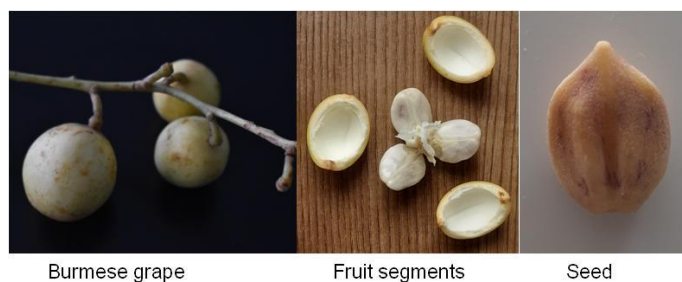
North-East India constitutes a mega biological diversity hotspot as it is endowed with diverse edapho-climatic diversity. It is part of the Himalayan and Indio-Burma biodiversity hot spots supporting more than 50% of total plant diversity in India. Economically important species such as rice, banana, citrus, mango and pulses have primary and secondary centre of origin in these regions. The regions are also home to several ethnic people, and about 225 out of 450 tribes in India belong to the North East. These tribal communities are the reservoir of ethnic knowledge and possess information on properties, uses, and utilization of plant biodiversity for food and traditional medicine. It has been estimated that out of 800 species of wild edible crops about 300 are used by the people of the North-Eastern region. It represents the potential availability of biodiversity that can be beneficially exploited to ensure food and nutritional security to the ever-increasing human population. This research work envisages efforts to identify, collect, evaluate and document the cultivated and wild underutilized horticultural crops and wild edible plants. Until now, much of the efforts are there to document such crops have been carried out in Dhemaji and Lakhimpur districts of Assam, while a few attempts have been made to document commercial and wild fruits in Mokokchung (Nagaland) and Dirang (Arunachal Pradesh). Commercial fruits documented in **Assam include Assam Lemon and Pineapple**. Lesser-known fruits documented include **Burmese grape, elephant apple, and Teportenga**. Minor fruits documented in Nagaland include *Prunus nepalensis*, **passion fruit (*Passiflora edulis Sims*)**, and some unidentified nut crop. Commercial fruits documented from Arunachal Pradesh include **Mandarin, Kiwifruit, Persimon and apple**. Physico-chemical qualities of some documented fruits are calculated. Efforts are being made to undertake complete nutrient profiling of these fruits while also expanding the survey and exploratory visits, as well as evaluation in the experimental farm of the institute.



Depiction of leaves and fruits of Tepor Tenga (*Garcinia xanthochymus*)



Flowering and fruiting in Elephant apple (*Dillenia indica*)



Fruits of Burmese grape (*Baccaurea ramiflora*)

Physico-chemical qualities of some cultivated and wild fruits are as follows:

Fruit	Scientific name	Fruit weight (g)	Fruit length (mm)	Fruit diameter (mm)	TSS (°B)	Acidity (%)
Assam lemon (Kaji Nemu)	<i>Citrus limon</i>	78.88	76.62	45.68	5.87	4.84
Burmese Grape	<i>Baccaurea ramiflora</i>	15.26	28.78	29.26	11.62	1.49
Elephant apple	<i>Dillenia indica</i>	545.40	92.34	112.3	5.35	1.41
Persimon	<i>Dispyros kaki</i>	112	45.60	64.23	14.4	0.23
Teportenga	<i>Garcinia xanthochymus</i>	71.22	49.97	51.69	11.24	3.26
Pineapple	<i>Ananas comosus</i>	1095	141.57	113.74	8.23	0.35
Sohiong	<i>Prunus nepalensis</i>	6.43	20.26	20.32	17.7	3.15

Assessment of fish diversity, fisheries resources and aquaculture avenues in upper reaches of the Brahmaputra valley

Extensive survey was conducted at fishing sites, fish landing sites, fish markets, fishing villages etc in Assam to witness the fish catch composition in natural aquatic resources adjoining the Brahmaputra valley. Altogether, 115 types of fish species were recorded comprised of carps, catfishes, air-breathing fishes and eels, mahseer and miscellaneous groups of fishes. Indigenous species of snow trout (*Schizothorax* spp.) was witnessed in the upper reaches of the Kameng, Subansiri & Siang drainages. Similarly, exotic trout (*Oncorhynchus mykiss*) was observed under culture in Mechukha of Arunachal Pradesh. Brown trout (*Salmo trutta fario*) was found in river Yargyap chu. The fish collected from various aquatic resources were preserved in formalin at Fish Repository Unit of ICAR-IARI Assam. Aquaculture systems in the form of earthen fish ponds were visited at Lakhimpur, Dhemaji, Biswanath and Sonitpur districts of Assam; trout raceways and hatcheries at Dzuluke village, Nagaland and Mechukha, Arunachal Pradesh; bio-floc units; fish seed production units in Biswanath, Lakhimpur and Dhemaji districts of Assam. The fish production from the earthen ponds ranged between 2.0-4.5 tonnes/ha and the fish seeds are mostly (85%) produced for carps and remaining (15%) for *Chitala chitala*, *Anabas* spp., and *Puntius* spp. and small sized fishes. Exotic trout culture and seed production, bio-floc are in their infant stage and requires technical and financial support for further technology up-gradation and aquaculture expansion. Field and exploratory surveys were carried out to interact with the farming communities in disseminating the knowledge on scientific techniques of fish farming and fish conservation measures in nature by preventing illegal methods of fishing and adapting to recreational based fisheries. Extension based programmes were organized in the form of skill oriented 3-5 days training programme, celebration of important days etc. more than 30,000 quality fish seeds, 500 kg lime, 500 lemon plants were distributed to the fish farmers of the region.



Field survey at farmers' aquaculture resources



Visit to fish hatcheries at Lakhimpur & Dhemaji district



Fish sampling at fish landing centres & Transit nurseries



Quality fish seed distribution on Fish Farmers Day and World Fisheries Day 2023



Aquaculture as an alternate avenue in tea gardens of Assam



Skill oriented training programme on development of value added fish products



Sampling, collection and preservation of fishes at IARI Assam fish repository

Identification and documentation of commonly occurring fish diseases

With a focus on two districts situated along the northern bank of the Brahmaputra River viz. North Lakhimpur and Dhemaji, the present work aimed to identify and document the prevalent fish diseases. Various daily and weekly markets within these districts were surveyed to gather samples of diseased fish, including Dhemaji-Gogamukh town fish market, Mohori Camp daily market, Rajali wholesale fish market, Milan Nagar daily market, and Khelmati daily market.

The study revealed that prevalent fish diseases include Abdominal dropsy (10%), Ulcer or Aeromoniasis (15%), Columnaris disease (10%), Fin and tail rots primarily affecting bottom-dwelling fish species (15%), Argulosis or Fish lice infection among carps (20%), Cotton wool disease (10%), and Pin Head Disease (20%).

The majority of these diseases were observed during the winter season, a period when the fish's immunity was compromised due to low temperatures. In addition to low water temperature, factors such as intensive rearing conditions, unregulated use of feed and medication, and degraded culture environments due to insufficient scientific knowledge create a favourable environment for opportunistic pathogens to attack fish.





Sample of fish collected from local market for evaluation of disease in fish

Agro-techniques for quality production of minor millets in the eastern himalayan zone

A field experiment was carried on at research farm of IARI Assam during kharif season of 2023 based on finger millet. Treatment comprising of different nutrients doses (N, P, K, S, Zn and B) and its combination with a control in randomized complete block design. The observation involved plant height, tillering, leaf area index at 60 days after sowing. Moreover, yield attributes, grain yield, straw yield, biomass yield were recorded. The results showed that the significant response on different nutrients was recorded over control. The treatment, NPKS had higher plant growth matrix, yield attributes and grain yield for finger millet. Besides the response of N was higher at 120 kg N/ha for plant growth and yield. Similarly, the response of P, S, Zn and B at 40, 30, 1.5, 3.0 kg/ha was higher for plant growth and yield of finger millet.





Pesticide usages, patterns and farmers' perceptions in agri-horti crops

The main focus of this work is to identify and assess pesticide usages, patterns and farmer's perception in agri-horti crops in these regions. Different surveys were carried out in and around Lakhimpur and Dhemaji districts to collect data on status of pesticides usage and pattern's. From the data collected through survey from Mekhatoni, Buroday and Anandera Tea Estate it has been observed that the most common insect of tea plantation is red spider across different tea states in these regions. Farmers are using Foster (Cyflumetofen 20% SC) for this purpose. Beside, for thrips farmers are using Dhanulux (Quinalphos 25% EC) a broad spectrum organo-phosphatic insecticide containing 25% w/w quinalphose. For Tea Looper EM-1 (Emamectin Benzoate 5% SG) which is a modern insecticide of Avermectin group is being used. Regarding herbicide, the common herbicide applied is paraquat (Ozone) as pre-emergent.

Based on the survey in around Gogamukh, it has been observed that the agricultural practices around these areas are purely organic particularly for mustard where common external input given is mainly FYM. For further understanding of the agricultural practices, use of Pesticides on crops and IFS model surveys were conducted in Mingmang village, Augori Village, Krishnapur Village and Nagoan Santal Village. It has been observed that the most problem farmers face was Early and late blight of potato. Plant protection materials mainly used in these regions are Indofil, Mancozeb and Thiophenate for potato crop.



Translating the native fish germ plasm through aquaculture and fisheries in Himalayan region

The work concentrates on establishment of demonstration unit on indigenous fish based culture both at research farm and on farmers' field as well as establishment of live gene banking having important germplasm of indigenous food fish of N-E region. Keeping this in mind, field study was conducted at the rivers Dirang chu, Sangti, Chug of Kameng drainage in West Kameng district; river Shei of Siang drainage in West Siang district and river Yargyap chu in Shi Yomi district of Arunachal Pradesh for snow trouts and other coldwater species. Three dominating species of *Schizothoracids* viz, *Schizothorax richardsonii* (Gray 1832), *Schizothorax plagiostomus* (Heckel 1838) and *Schizothorax progastus* (McClelland 1839) were identified and documented based on morphological characteristics and meristic counts. **Cypriniformes represents 44% of the catch in the rivers of Arunachal Pradesh dominated by the snow trout group, followed with Siluriformes (22%) and Perciformes (21%).** It has been found that the average weight of *Schizothorax plagiostomus* is more than *S. richardsonii* followed with *S. progastus*. *S. richardsonii* is more abundant than other species. Fish such as *Garra* spp, *Glypthothorax* spp, *Psilorhynchus* spp. and loaches etc were other captured fish species during the sampling from different sampling stations but in limited numbers. Fishing gears applied for catching snow trout are mostly indigenous and specific to a particular area depending on the nature of the river and skills of the tribesmen operating the gears. It has also been observed that Minor carps viz., *Labeo bata*, *L. gonius*, *L. fimbriatus*, *L. calbasu*, *Cirrhinus reba* etc are have high demand for consumption and henceforth may be cultivated. Further, hill fishes like mahseer group, *Labeo pangusia*, *L. dyocheilus*, *Barilius* spp. are preferred food species. Besides, Loaches and barbs have high ornamental value in the region.



Fish sampling

On a significant intervention, live gene banks were established in recognized fish hatcheries and fish farms of Assam and Arunachal Pradesh for selected fish species. Besides, live gene banks for snow trouts were also established in selected study sites of Arunachal Pradesh.



Aquaculture ponds for fish live gene banks

Plant biomass and carbon mapping in Himalayan land uses

The Himalayan region is globally a most fragile ecosystem. Trees make up around 90 % of the global biomass carbon pool. Trees as a backbone of forest ecosystem, efforts were made to assess the heterogeneity in tree carbon density using field-inventoried data and NDVI-based modelling with Sentinel 2A imagery 2A (10 x10 m² resolution) on Google Earth Enginen in the Darjeeling Himalayas.

For accuracy of the land use classification data based on satellite image of sensor Sentinel-2A, two artificial intelligence (AI) alogorithms viz. Random Forest (RF) and Support Vector Machine (SVM) were applied. The accuracy assessment was confined with the Kappa coefficient. Administrative boundaries of Darjeeling and Sikkim Himalayas marked through shape (.shp) file acquired from www.diva-gis.org.

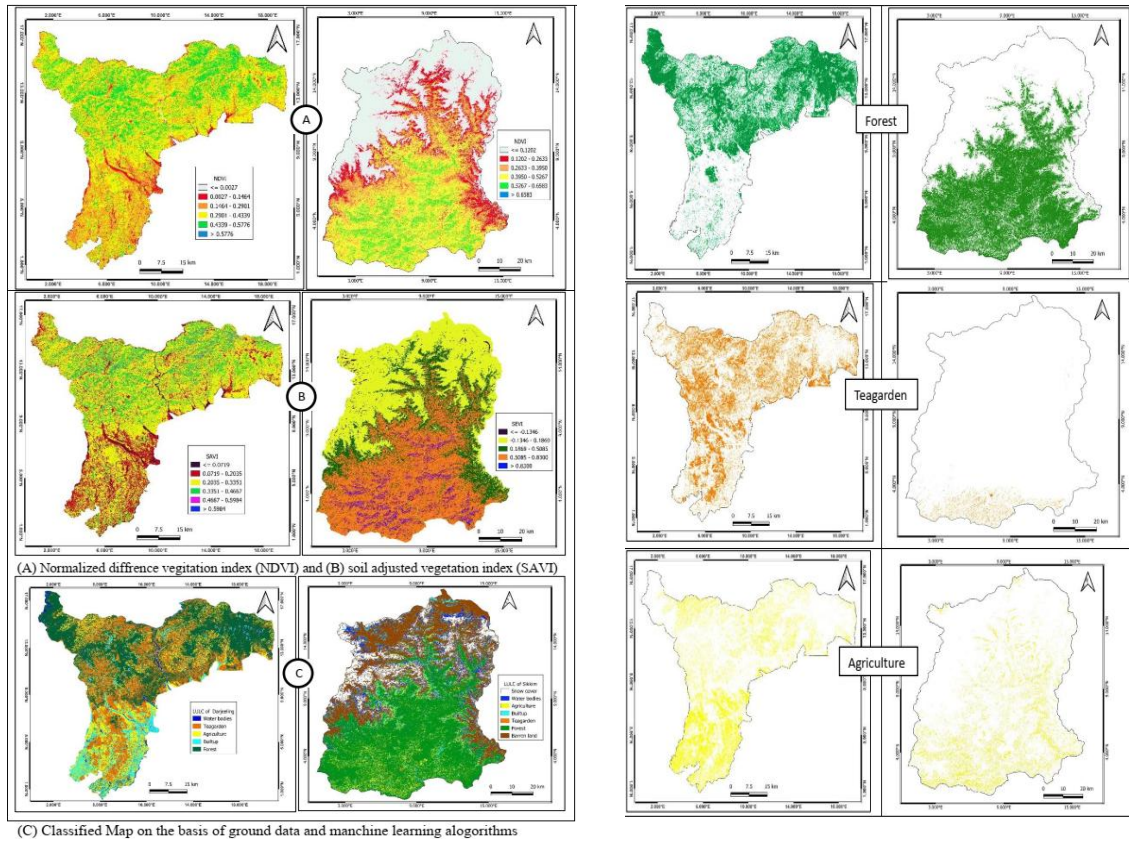
Both AI based algorithms have approximately similar accuracy in the classification of teagarden and forest area of Sikkim. However, SVM showed higher accuracy in classification of water bodies presents in both the reasons i.e. Sikkim and Darjeeling. The representation of forest, teagarden and agriculture are more or less similar with both algorithms. Forest, teagardens and agriculture land use/land cover are separately classified for biomass and carbon study. The forest area covers the mixed forests, teak, sal, cinchona and other forest plantations. Agriculture area represents the agriculture land, home gardens, etc.

On the basis of classification, the study was conducted in specific tree based land use system. A total of eight tree-based land use systems were identified. These are (i) Natural Forest based land use, (ii) Traditional Homegardens based land use, (iii) Teak plantation, (iv) Sal plantation, (v) Cinchiona planation, (vi) Tea garden, (vii) Road side plantation (Protection forest), (viii) Any other.

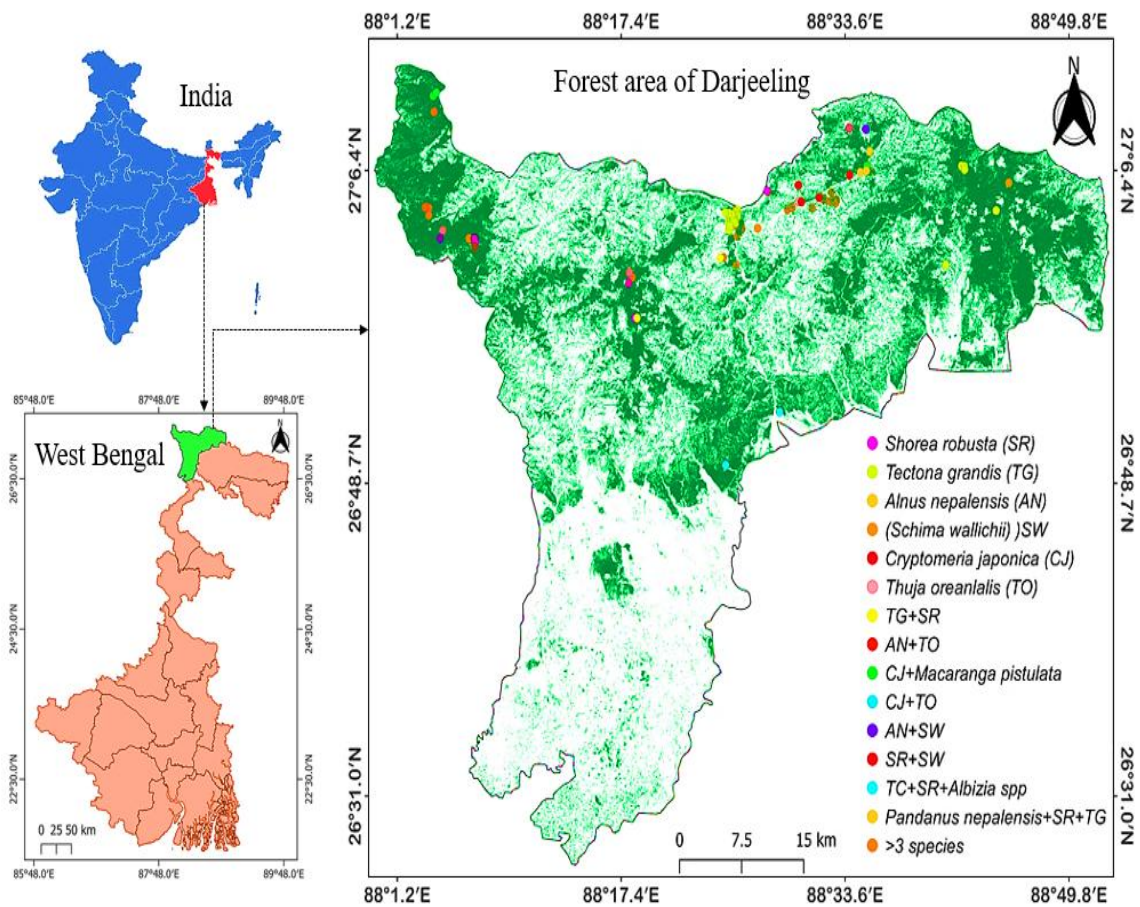
Basic data and soil sample were collected for each land use or land cover across the altitudinal gradients with respect to aspect and slope. The data collection and ground truthing of identified major land uses has been done for biomass and carbon mapping. Soil and litter sample collection is also started for the assessment of soil physico-chemical parameters.

Random quadrat sampling method was adopted in the present study. Quadrats size of 20 × 20m (0.04 ha) which is equals to resolution (10 × 10m) of four pixels of Sentinel 2A image. A total of 102 quadrats were studied for recording data for estimating tree carbon. All the standing trees in the randomly selected quadrats were counted and diameter at breast height (DBH) was measured by using tree calliper.

Allometric above ground biomass (AGB), below ground biomass (BGB) and Carbon was estimated. Total biomass carbon of trees is calculated by adding above ground biomass carbon (AGC) and below ground biomass carbon (BGC).



(A) NDVI (B) SAVI (C) Classified map on the basis of ground data and machine learning algorithms



Map of the study area showing sampling points with species indication, the green colour representing the forest cover

OTHER RESEARCH INITIATIVES

Evaluation trial to identify suitable varieties for rice fallows

The cultivation of lentil and mustard in rice fallows in Assam holds significant importance for several reasons, particularly in the context of agricultural sustainability, economic benefits, and nutritional security. During the Rabi season of 2023-24, a total of 31 lentil varieties and four mustard varieties were evaluated for their agronomic performance at ICAR-IARI Assam. This marks the first year of a two-year evaluation of lentil and mustard varieties at IARI Assam with the aim of selecting superior and stable genotypes suitable for the cultivation in the rice fallows in Assam. The research work at IARI Assam was initiated

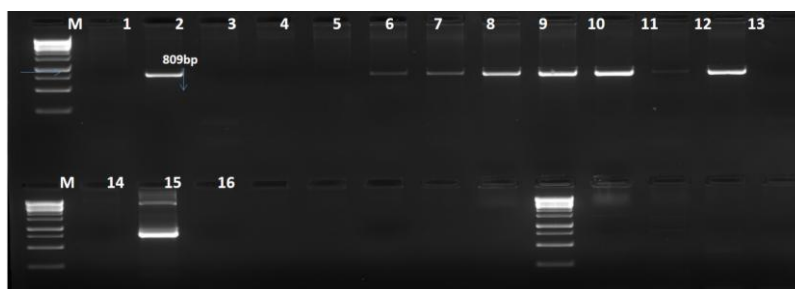


by a team of scientists including Dr. Lohit Kumar Baishya, Dr. Abhijit K.P. and Dr. sunil Mandi.



Microbial Indicator of Fruit Crop Rhizosphere

Efforts were made to develop rhizosphere microbial indicators of different fruit crops using culture dependent microbes and metagenomic studies. Presence of citrus greening disease altered the structural and functional composition of rhizosphere microbes, regardless of rhizosphere types. Presence of citrus greening disease in 60% Khasi mandarin orchards further indicated a strong necessity of launching budwood certification program backed up by establishment of elite mother stocks. The research work at IARI Assam was initiated by a team of scientists including Dr. A. K. Srivastava and Dr. Alemwati Pongener.



PCR- products for screening against citrus greening pathogen

Demonstration of nursery raising techniques in Finger millet for research and training

In order to promote nutrition rich foods like millet in Assam and other north eastern states, efforts were made to develop nursery beds in IARI Assam research farm. The main aim of these nursery beds was to demonstrate the nursery raising techniques in finger millet for research and training purpose. Total 12 number of nursery beds of size 10m×1m were prepared. Finger millet seeds of **AAU-GSG-Maruadhan-1 variety** @7 kg/ha were shown in the beds in the middle of June, 2023. The seedlings were ready for transplanting in 25-27 days after sowing at 4-5 leaf stage. The work at IARI Assam was initiated by a team of scientists including Dr. Lohit Kumar Baishya, Dr. Sunil Mandi and Dr. Arpan Bhowmik.



Glimpses of preparation of nursery bed for finger millet at IARI Assam research farm

Extensive surveys for promotion of Integrated Farming System

Scientific approach in integrated farming system (IFS) now a days are gaining rapid momentum for promotion of sustainable livelihood as IFS are having many advantages in enhancing productivity, profitability, sustainability, providing balanced food, generating income, providing opportunities for women, adapting new technologies, maintaining environmental safety and most importantly recycling of resources. Research data shows that IFS model can also be very handy in fulfilling 13 SDG's out of 17 SDG of united nation. Therefore for wide scale adaption of scientific IFS model in these regions extensive surveys were carried out to understand the existing IFS structures in these regions. Based on the preliminary data research based on scientific IFS will be initiated for enhancing and promoting sustainable livelihood of farmers in these regions. The work at IARI Assam was led by a team of scientists including Dr. Lohit Kumar Baishya, Dr. Sunil Mandi and Dr. Arpan Bhowmik.



CHAPTER 4: TEACHING, TRAINING & OUTREACH

TEACHING

Some of the Scientists from IARI Assam are involved in teaching activities at Graduate school, IARI. Besides, some of the scientists are also involved in teaching in some other institutes.

COURSES TAUGHT AT GRADUATE SCHOOL, IARI

Sl No	Course Details	UG/PG/PHD	Academic Year	Name of the Scientists involved in teaching from IARI Assam
1.	SOIL 505: SOIL EROSION AND CONSERVATION (2+1) (IARI, New Delhi)	PG	2022-23	A. K. Srivastava
2.	SOIL 602: MODERN CONCEPTS OF SOIL FERTILITY (2+1) (IARI, New Delhi)	PHD	2022-23	A. K. Srivastava
3.	UPATH101: FUNDAMENTALS OF PLANT PATHOLOGY (3+1) (IARI, Jharkhand)	UG	2022-23	Akshay Kumar H. M.
4.	UENTO101: FUNDAMENTALS OF ENTOMOLOGY (3+1) (IARI, Jharkhand)	UG	2022-23	Kishore Chandra Sahoo
5.	EXT602-2021: METHODOLOGIES FOR SOCIAL AND BEHAVIOURAL SCIENCES (2+1) (IARI, New Delhi)	PG	2023-24	Arpan Bhowmik
6.	SOIL 612- SOIL TESTING AND FERTILIZER RECOMMENDATIONS (2+1) (IARI, New Delhi)	PHD	2023-24	A. K. Srivastava

COURSES TAUGHT AT COLLEGE OF AGRICULTURE, CAU, PASIGHAT AS GUEST FACULTY

Sl No	Course Details	UG/PG/PHD	Academic Year	Name of the Scientists involved in teaching from IARI Assam
1.	DBS(STAT)-232: STATISTICAL METHODS (2+1)	UG	2023-24	Arpan Bhowmik
2.	STAT-502: STATISTICAL METHODS FOR APPLIED/SOCIAL SCIENCES (3+1)	PG	2022-23	Arpan Bhowmik

STUDENT GUIDANCE

As Major Guide/Co-guide

Arpan Bhowmik

Guiding one Ph.D. (Agricultural Statistics), Graduate School, IARI student: **Mr. Bijoy Chanda, Roll Number: 11712** as Chairperson, Advisory Committee. **Thesis Title:** A Study on Efficient Equivalent-Estimation Split- Plot Designs Through Algorithmic Intervention. (IARI New Delhi Student)

A. K. Srivastava

Guiding two M.Sc students (Soil Science and Agril. Chemistry), Graduate School, IARI as chairperson with following details

- **Ms Tripti Paul, Roll Number: 50091. Thesis Title:** Identification of response-based nutrient deficiencies in Assam lemon grown on acid soil. (IARI Assam Student)
- **Ms R. Sneha, Roll Number: 50093. Thesis Title:** Development of soil fertility and leaf nutrient standards in relation to optimum fruit yield of Assam lemon. (IARI Assam Student)

Amjad K Balange

Successfully guided two M.FSc. students from ICAR-CIFE, Mumbai as chairperson with following details

Sl No	Name of student	Title of thesis	Date awarded
1	Ms Varsha D	Functional properties of protein extracted from mantis shrimp and development of restructured products	31/08/2023

2	Ms Crosslin Vinoliya R.	Effect of seaweed (Kappaphycusalvarezzi) puree on the quality of pangasius mince emulsion sausage	31/08/2023
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As Member Advisory Committee

Lohit Kumar Baishya

Serving as Member, Advisory committee for **two M.Sc. students in the discipline of Agronomy at Graduate School, IARI. (IARI Assam Students)**

Sunil Mandi

Serving as Member, Advisory committee for **three M.Sc. students in the discipline of Agronomy at Graduate School, IARI. (IARI Assam Students)**

Arpan Bhowmik

- Serving as Member, Advisory committee for **more than 20 students (M.Sc. and Ph.D.)** students from different disciplines of PG School, IARI like Agricultural Extension, Bioinformatics, Agricultural Statistics, Genetics and Plant Breeding, Vegetable Science, Microbiology, Agricultural Engineering, Agricultural Entomology, Agricultural Economics, Environmental Science at **Graduate School, IARI (IARI new Delhi Students)**
- Serving as Member, Advisory committee for **two students (M.Sc.) students in the discipline of Agronomy at Graduate School, IARI. (IARI Assam Students)**

Alemwati Pongener

Serving as Member, Advisory committee for **two students (M.Sc.) students in the discipline of Soil Science and Agril. Chemistry at Graduate School, IARI. (IARI Assam Students)**

Amjad K Balange

Serving as Member, Advisory committee for **two M.FSc. students at ICAR-CIFE, Mumbai**

SUMMARY OF TRAINING/WORKSHOP/AWARENESS PROGRAMME ORGANIZED

Training Organized: For Farmers

Sl No	Title and Coordinators	Mode (Online/Offline)	Date, Duration and Venue
1.	Title: One day Awareness cum Training Programme for Animal Based Livelihood Diversification (District Animal Husbandry and Veterinary Office, North Lakhimpur, Assam in collaboration with IARI Assam	Offline	Date: 30 th May, 2023 Duration: 1 day Venue: Gojai Monai Khetra, Boginadi, North Lakhimpur, Assam

	Gogamukh) Coordinator from IARI Assam: Arpan Bhowmik		
2.	Title: Processing and Preservation of Fruits Coordinator: Alemwati Pongener	Offline	Date: 17 th June, 2023 Duration: 1 day Venue: Bogi Farm House Multipurpose Cooperative Society, North Lakhimpur, Assam
3.	Title: One day Training Programme cum linkage meeting between CBO's, Research Institution and Meteorological Departments to access information on Weather and Climate Forecast (organized by the NGO Indo- Global Social Service Society (IGSSS) in collaboration with ZRS-AAU, North Lakhimpur and IARI Assam, Gogamukh) Coordinator from IARI Assam: Arpan Bhowmik	Offline	Date: 26 th June, 2023 Duration: 1 day Venue: ZRS-AAU, North Lakhimpur, Assam
4.	Title: Awareness program on maintaining the quality of fish products Coordinators: Amjad Balange and Deepjyoti Baruah	Offline	Date: 11 th August, 2023 Duration: 1 day Venue: Guijan village, Tinsukia, Assam
5.	Title: one day Interface Meeting cum Training Programme for Farmers (organized by the NGO Indo- Global Social Service Society (IGSSS) in collaboration with IARI Assam, Gogamukh) Coordinators from IARI Assam: Arpan Bhowmik and Lohit Kumar Baishya	Offline	Date: 29 th August, 2023 Duration: 1 day Venue: Bordoloni Block Development Office, Bordoloni, Dhemaji, Assam
6.	Title: One day Awareness cum Training Program on Farmers' Livelihood Diversification Coordinators: Arpan Bhowmik,	Offline	Date: 13 th October, 2023 Duration: 1 day Venue: Tadang L P

	Alemwati Pongener and Sunil Mandi		School, Boginadi, North, Lakhimpur, Assam
7.	Title: One-Day Workshop on Sustainable Aquaculture Development for Food Security in North East Region of India Coordinators: Amjad K. Balange and Deepjyoti Baruah	Offline	Date: 21 st November, 2023 Duration: 1 day Venue: IARI Assam
8.	Title: Skill Development and Entrepreneurship in Micro-Processing of Fish, Fruits, and Millets at IARI Campus, Assam Course Director: Lohit K. Baishya Training Coordinator: Amjad K. Balange Training Co-Coordinators: Deepjyoti Baruah, AlemwatiPongener and Sunil Mandi	Offline	Date: 28 th November-02 nd December, 2023 Duration: 5 days Venue: IARI Assam

Training Organized: For Scientists/Officials

Sl No	Title and Coordinators	Mode (Online/Offline)	Date, Duration and Venue
1.	Title: Orientation training for Newly appointed ARS Scientists of 113 FOCARS (Batch-I) at IARI Assam Coordinator: S Manivannan	Offline	Date: 01-30 June, 2023 Duration: 1 month Venue: IARI Assam
2.	Title: Orientation training for Newly appointed ARS Scientists of 112 FOCARS at IARI Assam Coordinators: A. K. Srivastava, Deepjyoti Baruah and S. Manivannan		Date: 24 th July-23 th August, 2023 Duration: 1 month Venue: IARI Assam
3.	Title: Orientation training for Newly appointed ARS Scientists of 113 FOCARS (Batch-II) at IARI Assam Coordinator: Lohit Kumar Baishya and Dibyendu Deb	Offline	Date: 30 th October-28 th November, 2023 Duration: 1 month Venue: IARI Assam

PARTICIPATION IN TRAINING/MEETING

- **Title:** Zonal Research and Extension Advisory Committee, Ravi 2024 meeting for the North Bank Plain Zone of Assam organized at AAU Zonal Research Station, Assam Agricultural University, North Lakhimpur, Assam on 26th September, 2023.

Participants: Lohit Kumar Baishya

- **Title:** Zonal Farmers Meet-2023 at AAU Zonal Research Station, North Lakhimpur & KVK, Lakhimpur campus on 30 December 2023 Duration

Participants: Lohit Kumar Baishya

- **Title:** Orientation training for Newly appointed ARS Scientists of 113 FOCARS (Batch-I) at IARI Assam during 01-30 June, 2023:

Participants: Bhagirath Das, Azhaguraja M, Da u ruhi Pde, Umakanta Dash, Sumalatha A., M.B.Chaudhary and Bornalee Handique

- **Title:** Orientation training for Newly appointed ARS Scientists of 112 FOCARS at IARI Assam during 24 July-23 August, 2023:

Participants: Machanuru Raviteja, Ravi Bhushan Prasad, Raghavendra H.R., Sunny Arya, Abhijith K.P, Manish Pandey, Ansheef Ali T P and Ramavath Ramesh Babu

- **Title:** Orientation training for Newly appointed ARS Scientists of 112 FOCARS at IARI Jharkhand during 28 August-27 September, 2023:

Participants: Akshay Kumar H.M and Kishore Chandra Sahoo

- **Title:** Orientation training for Newly appointed ARS Scientists of 113 FOCARS (Batch-II) at IARI Assam during 30 October-28 November, 2023:

Participants: Omprakash and Mythra

- **Title:** One-Day Workshop on Sustainable Aquaculture Development for Food Security in North East Region of India organized at IARI Assam on 21 November, 2023

Participants: All the scientists of IARI Assam except the scientists who were in professional attachment training during that period

Some Glimpses of Orientation Trainings for Newly Recruited Scientists





PARTICIPATION IN PROFESSIONAL ATTACHMENT TRAINING (PAT)

Sl No	Name of the Scientist	Name of the Institute	Date
1.	Azhaguraja M	ICAR-DPR, Hyderabad	Date: 18 October, 2023 to 17 January, 2024
2.	Bhagirath Das	ICAR-IARI, New Delhi	Date: 19 October, 2023 to 18 January, 2024
3.	Sumalatha A.	ICAR-IIHR, Bengaluru	Date: 18 October, 2023 to 17 January, 2024
4.	Umakanta Dash	ICAR-CAFRI, Jhansi	Date: 19 October, 2023 to 18 January, 2024
5.	Da u ruhi Pde	ICAR-DCFR, Bhimtal	Date: 19 October, 2023 to 18 January, 2024
6.	Bornalee Handique	ICAR-IVRI, Bareilly	Date: 19 October, 2023 to 18 January, 2024
7.	M. B. Chaudhary	ICAR-NDRI, Karnal	Date: 19 October, 2023 to 18 January, 2024
8.	Abhijith K P	International Rice Research Institute, South Asia Hub, Hyderabad	Date: 25 August, 2023 to 30 November, 2023
9.	Ansheef Ali T P	ICAR-IISR, Kozhikode	Date: 28 August, 2023 to 29 November, 2023
10.	Machanuru Raviteja	ICAR-IARI, New Delhi	Date: 28 August, 2023 to 29 November, 2023
11.	Manish Pandey	ICAR-IVRI, Izatnagar	Date: 25 August, 2023 to 24 November, 2023
12.	Ramavath Ramesh Babu	ICAR-CRIDA, Hyderabad	Date: 25 August, 2023 to 01 December, 2023
13.	Ravi Bhushan Prasad	ICAR-NIBSM, Raipur	Date: 25 August, 2023 to 01 December, 2023
14.	Raghavendra H R	ICAR-IIHR, Bengaluru	Date: 25, August, 2023 to 28, November 2023

15	Sunny Arya	ICAR-IASRI, New Delhi	Date: 28, August, 2023 to 27, November 2023
16	Akshay Kumar H.M	ICAR-IIHR, Bengaluru	Date: 30 October, 2023 to 29 January, 2024
17	Kishore Chandra Sahoo	ICAR-NBAIR, Bengaluru	Date: 30 October, 2023 to 29 January, 2024
18	Omprakash	Institute for Social and Economic Change, Bengaluru	Date: 04 December, 2023 to 04 March, 2024
19	Mythra	ICAR-IIHR, Bengaluru	Date: 07 December, 2023 to 06 March, 2024

RESOURCE PERSON IN TRAINING/WORKSHOP/FDP/FARMERS-SCIENTISTS INTERACTION MEETING ETC.

Resource Person	Details of Training/FDP/Farmers-Scientists Interaction Meeting
Dr. Lohit Kumar Baishya	<ul style="list-style-type: none"> Participated as a resource person in capacity-building workshops on “Climate-Resilient Technologies for Agriculture, Animal Husbandry, and Fisheries”. The workshops were organized by the Assam Climate Management Society (ACCMS), Government of Assam, and took place offline at Ecocamp, Dirpai, Gogamukh, Dhemaji, Assam-787034 on August 29, 2023. Delivered a lecture as resource person on Integrated Farming System based Livelihood Diversification during one day Awareness cum training programme on Farmers livelihood diversification organized by IARI Assam on 13 October, 2023 at Tadang L P School, Boginadi, North Lakhimpur, Assam.
Dr. Amjad K Balange	<ul style="list-style-type: none"> Participated as a resource person in capacity-building workshops on “Climate-Resilient Technologies for Agriculture, Animal Husbandry, and Fisheries”. The workshops were organized by the Assam Climate Management Society (ACCMS), Government of Assam, and took place offline at Ecocamp, Dirpai, Gogamukh, Dhemaji, Assam-787034 on August 29, 2023. Functioned as a resource person in capacity-building workshops focused on “Climate-Resilient Technologies for Agriculture, Animal Husbandry, and Fisheries”. These workshops were conducted by the Assam Climate Management Society (ACCMS), under the Government of Assam, and were held offline at SIRD, Chauldhuwa, Lakhimpur, Assam on September 01, 2023.

	<ul style="list-style-type: none"> • Participated as a resource person in capacity-building workshops focusing on “Climate-Resilient Technologies for Agriculture, Animal Husbandry, and Fisheries”. These workshops were organized by the Assam Climate Management Society (ACCMS), under the Government of Assam, and were conducted offline at the Conference Hall, Office of the Deputy Commissioner, Dhemaji, Assam, on August 30, 2023. • As a resource person, he took part in capacity-building workshops focused on “Climate-Resilient Technologies for Agriculture, Animal Husbandry, and Fisheries”. These workshops were organized by the Assam Climate Management Society (ACCMS), under the Government of Assam, and were held offline at the Conference Hall, Office of the Deputy Commissioner, North Lakhimpur, Assam, on August 31, 2023. • Participated as a resource person in the Zonal Research and Extension Activity Meet organized by KVK, Lakhimpur. The event took place offline at KVK, Lakhimpur, on September 26, 2023. • Served as a resource person in a district-level meeting to determine strategies for the enhancement of Agriculture, Livestock, Poultry, Fishery, and Horticulture crop production. The meeting was conducted offline in Dhemaji district, Assam, on October 2, 2023. • Participated as a resource person in a training program on Livelihood Diversification organized by IARI-Assam. The program was conducted offline at Boginadi, North Lakhimpur, on October 13, 2023. • Acted as a resource person in the Zonal Research and Extension Activity Meet arranged by KVK, Lakhimpur. The event was held offline at KVK, Lakhimpur, on December 30, 2023.
Dr. A. K. Srivastava	<ul style="list-style-type: none"> • Delivered a lecture on “Microbes, an important biological player in sustainable fruit production” as a part of Intellectual Lecture Series at Assam Downtown University, Gauhati, Assam on September 23, 2023. • Served as resource person and delivered a lecture on “Connecting agroecology with natural farming in fruit production system” in a ICAR sponsored 10-dyas training on Problems and Prospects of Natural Farming in Sustainable Ecological Balance organized by Centre for Advanced Training in organic Farming at Assam agricultural University, Jorhat, Assam during December 13-22, 2023. • Delivered a lecture on “Soil health care under integrated framing system” in a farmers meet and crop seminar organized

	jointly by KVK, Lakhimpur and Zonal Research Station, north Lakhimpur, Assam Agricultural University, Jorhat, Assam on 13 th February, 2023.
Dr. S Manivannan	<ul style="list-style-type: none"> Presented a lecture as a resource person during a training program for technical officers of the Water Resource Department at the Goa Institute of Public Administration, organized by the Government of Goa on September 5, 2023.
Dr. Deepjyoti Baruah	<ul style="list-style-type: none"> Took part and presented as a Resource Person on the topic "Envisioning the Potential of Fish Production in Dhemaji District" during a technical session titled "The Path Forward for Sustainable Agricultural Growth." This session was part of the Atmanirbhar Dhemaji program, organized by the Office of Deputy Commissioner in Dhemaji district, Assam. The event aimed to contribute to the vision of a Self-Reliant Dhemaji and provide benefits to the local farming communities. The session took place from January 11 to January 14, 2023, at the Office of Deputy Commissioner in Dhemaji district, Assam, in an offline setting. Delivered a talk on "Agricultural Science for Global Well-being" during National Science Day 2023 celebration at Lakhimpur Girls College on 28 February 2023 Presented a lecture at an invited meeting focusing on Climate Risk Assessment and Climate Vulnerability held on November 7, 2023, in Guwahati, Assam. The event took place offline and was organized by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH as part of the NERAQ programme. Engaged as a resource person in a 10-day training program held from April 21, 2023, to August 9, 2023, in an offline setting at PNB RSETI, North Lakhimpur, Assam.
Dr. Arpan Bhowmik	<ul style="list-style-type: none"> Served as a resource person, delivering two lectures on "Qualitative Regression Models and Correspondence Analysis" during a 21-day ICAR-sponsored Winter School on Advanced Analytical Tools for Social Science Research. The event was organized by ICAR-Central Marine Fisheries Research Institute in Kochi and took place online from January 11 to January 31, 2023. Served as a resource person, delivering a lecture on "Planning Execution and Analysis of Agricultural Experiments" during a 21-day National Orientation Course on "Teaching Learning Evaluation Technology Programme." This program, conducted online, was organized collaboratively by ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-1,

	<p>Ludhiana, Punjab; Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya (RVSKVV), Gwalior, Madhya Pradesh; and National Agriculture Development Cooperative Ltd. (NADCL), Baramulla, Jammu & Kashmir. The course took place from April 5 to April 25, 2023.</p> <ul style="list-style-type: none"> Presented a lecture as a resource person on "Livelihood Diversification and Entrepreneurship Development" during a training program and linkage meeting that facilitated collaboration between Community-Based Organizations (CBOs), Research Institutions, and Meteorological Departments to access information on Weather and Climate Forecast. The event was organized by the NGO Indo-Global Social Service Society (IGSSS) in collaboration with ZRS-AAU, KVK, North Lakhimpur, and IARI Assam, Gogamukh. This meeting took place at ZRS-AAU, North Lakhimpur on June 26, 2023, and the program was implemented by Indo-Global Social Service Society (IGSSS). Presented two lectures as the Lead Speaker on "Descriptive Statistics and Correlation Analysis" during a Faculty Development Program (FDP) on 'Research Methodologies and Statistical Tools.' The program was organized by Sanskriti University in Mathura, Uttar Pradesh, and took place online from June 1-14, 2023. Delivered a special invited lecture on Product-Process Optimization in Agricultural Experimentation for the knowledge upliftment of the M.Sc. and Ph.D. students at Uttar Banga Krishi Viswavidyalaya (UBKV) on 05 July, 2023. The special lecture was organized by Department of Pomology and Post-harvest Technology, Faculty of Horticulture, UBKV, Pundibari, Cooch Behar, West Bengal. Delivered a special lecture on History and Recent Developments of Indian Science as a distinguished guest during a programme organized by Dinhat Vigyan Kendra of Paschim Banga Vigyan Mancha on 20 August, 2023 at Dinhat, Cooch Behar, West Bengal Delivered a lecture as a resource person on Sustainable Livelihood Diversification Strategies in Agriculture for Income Generation in the Interface Meeting cum Training Programme for Farmers at Bordoloni Block Development Office Conference Hall. The programme was organized by the NGO Indo- Global Social Service Society (IGSSS) in collaboration with IARI Assam, Gogamukh at ZRS-AAU, North Lakhimpur on 29 August, 2023. The programme was implemented by Indo-
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	<p>Global Social Service Society (IGSSS).</p> <ul style="list-style-type: none"> Delivered a lecture as resource person on Livelihood Diversification Strategies and Entrepreneurship during one day Awareness cum training programme on Farmers livelihood diversification organized by IARI Assam on 13 October, 2023 at Tadang L P School, Boginadi, North Lakhimpur, Assam. Delivered a lecture as resource person on Animal Based Livelihood Diversification Strategies for Income Generation during an Awareness Programme organized by District Animal Husbandary and Veterinary Office, Lakhimpur, Assam on 3 November, 2023. Delivered a lecture as resource person on Environmental Awareness during a popular talk organized by Ecoclub of Kakoi High School, Kakoi, North Lakhimpur, Assam on 4 November, 2023.
Dr. Alemwati Pongener	<ul style="list-style-type: none"> Delivered a talk on “Agricultural Science as a Career” during National Science Day 2023 celebration at Lakhimpur Girls College on 28 February 2023 Acted as resource person during “Postharvest Instrumentation and Protocols for Value Added Products in Litchi” organized for Technical Personnel at ICAR-NRC on Litchi, Muzaffarpur from 13-17 March 2023 Delivered two invited lectures on ‘Nursery Seed Raising’ and ‘Fertilizer Control order’ during the Training programme for Input Dealers at KVK Lakhimpur on 8th August 2023 Delivered a lecture as resource person on Value Addition through Processing in Horticultural Crops during one day Awareness cum training programme on Farmers livelihood diversification organized by IARI Assam on 13 October, 2023 at Tadang L P School, Boginadi, North Lakhimpur, Assam. Delivered invited lecture on “Nursery Seed Raising” and “Fertilizer Control order” during ‘Training programme for Agricultural Input Dealers and Primary Agricultural Credit Societies of Assam’ from 7-22 December 2023 Delivered an invited lecture on “Entrepreneurship in microprocessing of horticultural crops” during NAHEP sponsored training programme on “Cutting-Edge developments and contemporary practices in horticulture for sustainable livelihood” from 18-23 and 26 December 2023
Dr. Sunil Mandi	<ul style="list-style-type: none"> Delivered a lecture on “Best Management practices of turmeric cultivation” on 24th January, 2023 at ICAR-CTRI RS Dinhat. Lectures delivered on “Good agricultural practice, harmful effect of indiscriminate use of agricultural inputs and banned

	<p>pesticides” and “Nursery seed raising” in a training programme for agricultural input dealer of Assam on 19th May, 2023 at KVK Lakhimpur.</p> <ul style="list-style-type: none"> Served as resource person and delivered three lectures on “Types of herbicides and their use”, Good agricultural practice, harmful effect of indiscriminate use of agricultural inputs and banned pesticides” and “Herbicide calculation” in a training programme for agricultural input dealer of Assam on 7th August, 2023 at KVK Lakhimpur. Delivered a lecture as resource person on “Nutrient Management in Rice and Scope of Millet in Assam” during one day Awareness cum training programme on Farmers livelihood diversification organized by IARI Assam on 13 October, 2023 at Tadang L P School, Boginadi, North lakhimpur, Assam.
Dr. Azhaguraja M	<ul style="list-style-type: none"> Acted as a resource person at the Veterinary College and Research Institute, TANUVAS, Salem in the One-day National Workshop named "Mitigating Climate Change Impact on Livestock Production through Strategic Transformation Approaches," conducted on November 21, 2023. The lecture focused on "Strategies for Developing Climate-Resilient Poultry: Towards Sustainable Farming in a Changing Climate." [Offline]
Dr Abhijith K P	<ul style="list-style-type: none"> Presented a lecture on Genome-Wide Association Studies (GWAS) and Marker-Assisted Selection (MAS) in Plant Breeding during the Advanced Genetics and Plant Breeding Data Analysis Workshop held on November 1, 2023. The workshop was organized by the Agricultural Research Substation in Sumerpur (Pali), affiliated with the Agriculture University in Jodhpur. The presentation took place online as part of the event hosted by the Agricultural Research Substation, Sumerpur (Pali), Agriculture. Presented a lecture on the concept and application of Genome-Wide Association Study (GWAS) during the Training Program on Innovative Breeding for Crop Improvement held on November 25, 2023. The program was conducted online and hosted by the IRRI South Asia Regional Centre in Varanasi. Presented a virtual lecture on "Utilization of Molecular Markers in Tree Breeding Programs" during the Monthly Research Seminar organized by ICFRE-Institute of Forest Productivity in Ranchi on December 7, 2023. The seminar was conducted online by the ICFRE-Institute of Forest Productivity, Ranchi.
Mr. Da u ruhi Pde	<ul style="list-style-type: none"> Conducted a training session as a resource person on "Nutrition and Feed Management in Coldwater Aquaculture" with a specific focus on the "Application of Nanotechnology in

	Aquaculture Nutrition" on November 17, 2023, at ICAR-DCFR in an offline setting.
Dr. Manish Pandey	<ul style="list-style-type: none"> Served as resource person in a high-end workshop sponsored by DST-SERB on "Climate-smart livestock farming for sustainable production" from September 18 to September 27, 2023. The specific lecture delivered was titled "Understanding Animal Behavior for Climate-Smart Livestock Farming" in an offline setting at the Livestock Production & Management Section, ICAR-Indian Veterinary Research Institute, Izatnagar-243122 (UP), India. Served as a resource person in a five-day training on "Livestock Management Techniques for Sustainable Development" under the SCSP scheme from November 16 to November 20, 2023. The lecture delivered was titled "Innovative Approaches to Livestock Husbandry" in an offline setting at the Livestock Production & Management Section, ICAR-Indian Veterinary Research Institute, Izatnagar-243122 (UP), India. Served as a member of the animal auction committee with the responsibility of assessing the valuation of animals chosen for auction on November 20, 2023. The activity took place in an offline setting at the Livestock Production & Management Section, ICAR-Indian Veterinary Research Institute, Izatnagar-243122 (UP), India.
Mr. Sunny Arya	<ul style="list-style-type: none"> Served as a resource person on "Phenomics: High Throughput Phenotyping for the Development of Climate-Resilient Crops" at ICAR-IARI, New Delhi, in an offline setting. Delivered a session as a resource person on "Phenomics, the Next Generation Phenotyping (NGP) for Trait Dissection and Crop Improvement" at ICAR-IARI, New Delhi, in an offline setting.
<ul style="list-style-type: none"> Dr. Lohit Kumar Baishya, Dr. Amjad K. Balange, Dr. A. K. Srivastava, Dr. Manivannan, Dr. Deepjyoti Baruah, Dr. Dibyendu Deb, Dr. Arpan Bhowmik, Dr. Alemwati Pongener, Dr. Sunil Mandi, Dr. Ch. Jamkhokai Mate and Dr. Palmei Gaibimei delivered a number of lectures during orientation trainings for the newly recruited scientists at IARI Assam. 	

PANORAMA OF ACTIVITIES: OUTREACH PROGRAMMES

Participation in Agri-Expo

[Participants: Deepjyoti Baruah, Arpan Bhowmik and Ch. Jamkhokai Mate]

Attended **Atmanirbhar Dhemaji Agro Expo 2023** held at Dhemaji during **11-14 January, 2023** organized by district administration of Dhemaji in collaboration with KVK, Dhemaji.



Field Survey around Gogamukh

[Participants: Ch Jamkhokai Mate and Sunil Mandi]

Scientists of IARI Assam undertook field survey around Gogamukh area for collection of data related to pesticides practices and pattern on 4th Feb 2023. Similarly, field survey on mustard cultivation was done.



Visit to Mekhatoni, Buroday and Anandera Tea Estate in Dhemaji district

[Participants: Ch. Jamkhokai Mate and Sunil Mandi]

Scientists from IARI Assam visited Mekhatoni, Buroday and Anandera Tea Estate in northern Dhemaji district for data collection on status of pesticides on 8th February, 2023. Various issues related to pesticides and their residual effects were discussed with the farmers. Children from the tea state also participated in the discussion.



Participation in Scientist-Farmers Interaction Meeting at UBKV, Cooch Behar, West Bengal

[Participant: Arpan Bhowmik]

Attended Scientists-farmers interaction meeting as a special invitee during the Agriculture Study Tour of farmers under ATMA project at UBKB, Cooch Behar, West Bengal on 15 March, 2023. The event was organized by Office of ADA, Sitai, Government of West Bengal.



Visit to Forest Department Nursery at Podumoni

[Participants: Arpan Bhowmik, Dibyendu Deb, Sunil Mandi and Azhaguraja M.]

Team of Scientists from IARI Assam visited Forest Department Nursery on 27th May, 2023 at Podumoni, North Lakhimpur, Assam. The scientists interacted with the forest officials and gathered the idea about different forest tree species which are being reared in the nursery. Scientists also ordered different forest saplings for celebration of world environment day at IARI Assam.



One day Awareness cum Training Programme for Animal Based Livelihood Diversification

[Coordinator from IARI Assam: Arpan Bhowmik]

One day awareness cum training programme on Animal Based Livelihood Diversification was organized on 30 May, 2023 at District Animal Husbandry and Veterinary Office, North Lakhimpur, Assam. The programme was organized by District

Animal Husbandry and Veterinary Office, North Lakhimpur, Assam in collaboration with IARI Assam. Dr. Arpan Bhowmik was the coordinator from IARI Assam.



Visit to Pineapple Orchard near Podumoni

[Coordinators: Alemwati Pongener and Ch Jamkhokai Mate]

Newly joined scientist of 113 FOCARS (batch-I) led by Dr Alemwati Pongener and Dr. Ch. Jamkhokai Mate visited pineapple orchard around Podumoni on 7th June 2023. Scope, opportunities and constraints in pineapple cultivation in these regions have been discussed. Pineapple growers have been motivated in value addition of pineapple after harvesting.



Field Visit at ZRS-AAU, North Lakhimpur, Assam

Dr. Arpan Bhowmik the research field of ZRS-AAU, North lakhimpur to witness the research activities related to submerged rice on 11 June, 2023. The research activities are being coordinated by Dr. Dhiren Chaudhary.



Visit to Mising Autonomous Council (MAC)

[**Coordinators:** Ch Jamkhokai Mate]

Newly joined scientist of 113 FOCARS (batch-I at IARI Assam) and 112 FOCARS led by Dr. Ch. Jamkhokai Mate visited the head office of Mising Autonomous Council (MAC), Gogamukh on 15th June, 2023 and 28th July, 2023 respectively. A detailed discussion on the functionaries of MAC specially w.r.t. agriculture have been carried out by the OSD, MAC Dr. Anil Kumar Pegu. Scientists have also been informed about opportunities in collaborative work between IARI Assam and MAC in the field of Agriculture.



One day Training programme on 'Processing & Preservation of Fruits' conducted

[**Coordinator:** Alemwati Pongener]

Recognizing the importance of fruit preservation in micro-entrepreneurship and increasing farm income, IARI Assam conducted a **one-day training on 'Processing and Preservation of Fruits'** was held on **17th June 2023** at Bogi Farm House Multipurpose Cooperative Society, Lakhimpur. Altogether 11 women members of the society participated in the programme. Basic theoretical concepts and practice of fruit preservation were taught and demonstrated to the participants. This was followed by hand-on exercise of extracting and preserving mango and bael pulp. The women group also prepared 20 litres of mango crush for sale in their sale counter at Lakhimpur.



Scientists of IARI Assam Visited Zonal Agricultural Research Station, AAU and Lakhimpur College of Veterinary Science

[**Coordinator:** Arpan Bhowmik]

The scientists of IARI Assam visited the campus of ZRS-AAU, Lakhimpur and Lakhimpur College of Veterinary Science on 22 June, 2023 as a part of orientation training of the newly joined scientists of IARI Assam. They have interacted with the scientists and got some

overview of different researches which are being carried out by the respective institute. Beside, scientists also got some idea about future researchable issues pertaining to Assam. The newly joined scientists Dr. Azhaguraja M, Mr. DauruhiPde, Mr. Bhagirath Das, Ms. A. Sumalatha, Mr. Umakanta Dash, Dr. M.B. Chaudhary and Dr. BornaleeHandique from IARI Assam actively participated in the visit.



Farmers' Training programme cum linkage meeting Coordinated [Coordinator from IARI Assam: Arpan Bhowmik]

Coordinated **one day training programme cum linkage meeting between CBO's, Research Institution and Meteorological Departments to access information on Weather and Climate Forecast**. The programme was organized by the NGO Indo- Global Social Service Society (IGSSS) in collaboration with ZRS-AAU, KVK, North Lakhimpur, ZRS-AAU, North Lakhimpur and IARI Assam, Gogamukh at ZRS-AAU, North Lakhimpur on **26 June, 2023**. The programme was implemented by Indo- Global Social Service Society (IGSSS). Total 32 farmers attended the training programme of which 14 are female farmers and 18 are male farmers.



Scientists of ICAR-IARI, Assam participated in a Grand Boro Rice harvesting programme using mini combine harvester at Bongalmora [Participants: Dibyendu Deb, Arpan Bhowmik and Sunil Mandi]

Scientists of IARI Assam **actively participated in a Grand Boro Rice harvesting programme using mini combine harvester on 27 June, 2023** at Bongalmora village of North Lakhimpur, Assam. The mega programme was organized by Krishi Vigyan Kendra, North Lakhimpur in collaboration with IRRI (Assam), ARIAS Society and Government of

Assam under Assam Agribusiness & Rural Transformation Project (APART). A large number of farmers were present during the programme for witnessing the grand boro paddy harvesting demonstration. From IARI Assam Dr. Dibyendu Deb, Dr. Arpan Bhowmik and Dr. Sunil Mandi actively participated in the programme.



Visit to Horticultural Fields in Dhemaji

[Coordinator: A. K. Srivastava]

Newly Joined Scientists of 113 FOCARS Batch-I at IARI Assam along with Dr. A. K. Srivastava visited Ghost chilly field also known as bhut jolokia in local language of Assam on 28th June, 2023. They have been made aware about the scope, opportunities and constraints in cultivation of bhut jolokia.



Scientists of IARI Assam Visited Zonal Agricultural Research Station, AAU and Participated in the Drone Demonstration

[Coordinator: Arpan Bhowmik and Dibyendu Deb]

In another visit, the scientists of IARI Assam from 112 FOCARS visited the campus of ZRS-AAU, Lakhimpur on 03 August, 2023 as a part of orientation their training at IARI Assam. They have interacted with the scientists and got some overview of different researches which are being carried out by the respective institute. They got an idea about different aspects of eco-friendly birds specially w.r.t. Agriculture. **Scientists also participated in the fertilizer spraying demonstration through Drone.** Besides, scientists also got some idea about future researchable issues pertaining to Assam. All the newly joined scientists of 112 FOCARS at IARI Assam actively participated in the visit. Dr. Arpan Bhowmik and Dr. Dibyendu Deb coordinated the visit. Scientists from 112 FOCARS participated in the programme.



Visit to Farmers' Field in Dirpai for Understanding IFS Model

[Coordinator: Sunil Mandi, Arpan Bhowmik and Dibyendu Deb]

On August 14th, 2023 recently recruited scientists of 112 FOCARS underwent orientation training by visiting an **Integrated Farming System (IFS) model** maintained by a local farmer at Dirpai. This model encompasses small-scale poultry, piggery, and crops such as tea, chili, and guava. Additionally, the farmer maintains an ornamental nursery for sales.



Workshops on Climate change and its impact on Agriculture and allied activities

[**Coordinator:** Amjad K. Balange and Deepjyoti Baruah]

Assam Climate Management Society (ACCMS), Govt of Assam has organized four **workshops on Climate change and its impact on Agriculture and allied activities in Assam during 29 August to 01 September, 2023** in collaboration with IARI-Assam as one of the technical partners. Dr. L.K. Baishya (HoD, NRM & Scientist-In-charge IARI-Assam), Dr. A.K. Balange (HoD, APF), Dr. Deepjyoti Baruah (Principal Scientist, APF), Dr. A.K. Srivastava (Principal Scientist, NRM) were participated as a resource persons during the program. The lectures on climate resilient Agriculture technologies & Fisheries technologies were delivered by the resource persons. The participants were the Govt officials from Agriculture, Fisheries & Forestry Department. About 150 participants were benefitted through this Capacity building program. The various issues relating to climate change and different location specific adoptive and mitigation measures were highlighted during the workshops for sustainable development of agricultural sector in the state.



Interaction in Farmers' Field at Ming-Mang Bodoti, Dhemaji

[**Coordinator:** Lohit Kumar Baishya, Sunil Mandi and Arpan Bhowmik]

An **interaction in Farmer's field** was organized by a team of scientists from IARI Assam at Ming-Mang Bodoti, Dhemaji, Assam on **03 September, 2023**. During interaction with farmers, main focus was on Integrated Farming System Modeling for sustainable income generation. Dr. Lohit Kumar Baishya, Dr. Sunil Mandi and Dr. Arpan Bhowmik were the organizers of the programme.



Quality Fish Seed Distribution Program for promotion of Aquaculture

On 20th September, 2023 Scientists of IARI Assam participated in the **Quality Fish Seed Distribution Program for promotion of Aquaculture in this region**. Quality fish seeds of amur common carp, jayanti rohu and indian major carps were distributed to fish farmers of Gogamukh and Gerukamukh region by IARI Assam for adoption of aquaculture as a true vocation for livelihood. The program was organized by IARI Assam in collaboration with KVK, North Lakhimpur, Assam.



One day Awareness cum training Programme Organized

[**Coordinator:** Arpan Bhowmik, Alemwati Pongener and Sunil Mandi]

On 13th October, 2023, we under the umbrella of IARI Assam at Tadang L P School, Boginadi, North, Lakhimpur, Assam a **One day Awareness cum Training Program on Farmers' Livelihood Diversification** under the research project **Assessment of Livelihood Diversification under Rainfed Ecosystem in North East India** was organized. Approximately 70 farmers attended the program including a handsome number of female farmers. Integrated farming system practices, value addition of fish based product, Aquaculture based livelihood diversification strategies, nutrient management in Rice, scope of millets in North East India, value addition through food processing and different livelihood diversification strategies have been discussed



Scientists of IARI Assam Visited KVK Dhemaji

- Newly Joined Scientists of 113 FOCARS Batch-I at IARI Assam visited KVK Dhemaji along with Dr. A. K. Srivastava on 28th June, 2023. They have been made aware about the KVK functionalities and different trails KVK is conducting under different research projects.
- Newly Joined Scientists Dr. Mitra and Dr. Om Prakash (113 FOCARS Batch-II at IARI Assam) visited KVK Dhemaji along with Dr. Ch Jamkhokai Mate on 10th November, 2023. They have been made aware about the KVK functionalities.



Visit to Veterinary College, North Lakhimpur

[Coordinator: Dibyendu Deb]

Team of newly recruited scientist Dr. Omprakash and Dr. Mythra along with Dr. Dibyendu Deb visited Veterinary College, North Lakhimpur on 07 November, 2023 for orientation training. They have interacted with the faculty. Overview of teaching, research and extension activities of the college have been discussed by the faculty during this visit.



Field Visit at Bongalmora, North Lakhimpur, Assam

[Coordinator: Alemwati Pongener and Dibyendu Deb]

Team of newly recruited scientist Dr. Omprakash and Dr. Mythra along with Dr. Alemwati Pongener and Dr. Dibyendu Deb visited the Rodali Krishi Farm, Bongalmora, North Lakhimpur, Assam on 23rd November, 2023. They have got the idea about different farming practices in this region, marketing opportunities of the farm produce, government facilities farmers are getting etc.



Five days skill oriented training programme organized

[Course Director: Lohit K. Baishya, Training Coordinator: Amjad K. Balange

Training Co-Coordinators: Deepjyoti Baruah, Alemwati Pongener and Sunil Mandi]

ICAR- IARI, Assam successfully conducted and completed its **5 days skill oriented training programme** on "**Skill development and entrepreneurship in micro processing of fish, fruits and millets**" commencing from **28th November-2nd December, 2023**. Dr. Lohit Kr Baishya, Head (NRM) & Scientist In-charge was the Course Director, Dr. Amjad K Balange, Head (APF) as Training Coordinator and Dr. Deepjyoti Baruah, Dr. Alemwati Pongener and Dr. Sunil Mandi as Training Co-Coordinators. **50 farmers participated and many products of fish like pickles, cutlets, bhujia, snacks, fruit products like squash, jam, jelly, juice and millet based cookies, cake, bhujia, laddu were demonstrated and prepared. Information regarding packing, sealing, labelling, marketing strategies, etc were also demonstrated.** One resource person, Mrs. Mitali Doley, a self-taught entrepreneur demonstrated fish and millet value added products. Three women progressive farmers were felicitated for their active involvement in post-harvest practices and other allied sectors. All the farmers were distributed with certificate of participation on the valedictory session.





Galaxy S23 Ultra

Field Day Organized at IARI Assam Research Farm on Scientific Millet Cultivation for Food and Nutrition Security

[Coordinators: Lohit Kumar Baishya, Sunil Mandi, Dibyendu Deb and Arpan Bhowmik]

A field day on “**Scientific Millet Cultivation for Food and Nutrition Security**” at the research farm of IARI Assam was organized on **30 November, 2023** by a team of scientists. A detailed discussion on how to cultivate Finger Millet including its nursery bed preparation was discussed. Total 60 farmers participate in the programme from different parts of Dhemaji and North Lakhimpur districts of Assam. Out of the 60 farmers, 50 were female farmers. Majority of the farmers belongs to ST category.



Field Day Organized at IARI Assam Research Farm on Millet cultivation for sustainable livelihood

[Coordinators: Arpan Bhowmik, Lohit Kumar Baishya, Sunil Mandi, and Dibyendu Deb]

A field day on “**Millet cultivation for sustainable livelihood**” was organized on 30 November at the research farm of IARI Assam by a team of scientists under the institute research project Assessment of Livelihood Diversification under Rainfed Ecosystem of North East India. A detailed discussion on how Millet can be used for livelihood diversification have been carried out. Total 40 farmers participate in the programme from different parts of Dhemaji and North Lakhimpur districts of Assam. Out of the 40 farmers, 32 were female farmers. Majority of the farmers belongs to ST category.



Farmers'-scientists interaction at IARI Assam

[**Coordinators:** Lohit Kumar Baishya, Arpan Bhowmik and Palmei Gaibimei]

On 7 December, 2023 a farmers'-scientists interaction were coordinated at IARI Assam. Total 30 farmers including 10 female farmers from different parts of Dhemaji districts including Silapathar and Sisi Bargaon have participated in the interaction meeting during their education visit at IARI Assam campus under the farmer training programme organized by Luit Educational Services Pvt. Ltd. During the interaction scope and opportunities of agri diversification through integrated farming systems, opportunities in fishery sectors have been discussed.



Participation in Millet Based Recipe Competition

Act as judge in millet based recipe completion on 13th June, 2023 at Borobadha, Hatidhura block in the eve of International year of millet. (Sunil Mandi).



Interaction with School Students

- Scientist from IARI Assam interacted with class 11 and 12 students of Dinhata High School, Dinhata, West Bengal on a special invitation from the school authority. Highlighted different aspects including career opportunities in Agriculture (Arpan Bhowmik).



- Scientist from IARI Assam participated in the Gyan Vigyan Mela-2023-24 at Sankardev Sishu Niketan, Angerhowa at Angerhowa, North Lakhimpur, Assam on 07 September, 2023 as a special guest and interacted with the students who have participated in the programme w.r.t. different scientific models they have prepared (**Arpan Bhowmik**).



- Scientist from IARI Assam participated in the Environmental awareness program at Kakoi High School organized by youth and Eco club of the school. Scientist interacted with the students and discuss the importance of environment (**Arpan Bhowmik**)



- Organized an interaction programme with students from Kaluram Tachi Medak School, Gogamukh on 24th November, 2023. Students have been made aware about the career prospects w.r.t. agriculture (**Ch Jamkhokai Mate**).



Interaction with Agri-Input Dealers

Scientists from IARI Assam participated in the interaction programme with Agri-input dealers as a special invitee at Krishi Vigyan Kendra, North Lakhimpur on 03 August, 2023 (**Arpan Bhowmik and Dibyendu Deb**).



Other Field Visits/Interaction with Farmers

- Visited Ziro valley of Arunachal Pradesh during 31st January, 2023 to 4th February, 2023 and met Mrs. GyatiRinyo, Er. GyatiTakoof GUAMCO Society, Mrs. KagoKampu, Mr. LikhaKamin (Lower Subansiri Fishermen Cooperative Society) and observed the rice-fish farming systems, integrated fish culture, fruit cultivation and other agriculture practices. Discussed on the seed production and nursery management possibilities in the region. Also, visited the aquatic resources Seeh lake and Siikhe lake (**Deepjyoti Baruah**).
- Visited Bogibeel Anchalik Prabhati Matsya Utpadak Samiti, Kawoimari gaon, Bogibeel, Dibrugarh district, Assam (Below Bogibeel bridge) on 19th February, 2023 and met the society members and advised the scientific practices in fish farming for commercial fish production (**Deepjyoti Baruah**).
- Organized interaction meeting with some farmers of Katori Chapori village, North Lakhimpur, Assam on 12th September, 2022 (**Dibyendu Deb and Arpan Bhowmik**).

CHAPTER 5: IMPORTANT EVENTS

IARI ASSAM CELEBRATES REPUBLIC DAY

The Tricolour was unfurled for the at ICAR-IARI, Gogamukh, Assam, by Dr. Deepjyoti Baruah, Scientist-in-charge, on the occasion of the nation's **74th Republic day on 26 January, 2023**. The republic day function was attended by the scientists of the institute, officials of NPCC, and construction/temporary workers at the institute. Dr. Deepjyoti Baruah highlighted the symbolic impact of unfurling the National Flag for nation building.

H'ABLE MP, LAKHIMPUR AND H'ABLE EDUCATION MINISTER, GOVERNMENT OF ASSAM VISITED IARI ASSAM

On 5th February, 2023 H'able MP North Lakhimpur, Assam Mr. Pradan Baruah and H'able MLA Gogamukh Assam and Education Minister, Government of Assam Mr. Ranoj Pegu visited IARI campus. They have seen each and every constructions took place in the campus. They have interacted with the scientists and suggested some need based problems to be addressed for the betterment of these regions. They have also interacted with the NPCC officials and gathered the information regarding the construction work which are going on in the campus. Besides they have also compensated 28 Families who are residing and farming in IARI Assam land from Chief Minister Relief Fund.



CELEBRATION OF NATIONAL SCIENCE DAY

Scientists of IARI Assam in collaboration with Department of Mathematics, Lakhimpur Girls' College celebrated **National Science Day on 28 February, 2023**. During the programme Dr. Deepjyoti Baruah delivered a talk on 'Agricultural Science for Global Well-being' while Dr. Alemwati Pongener delivered a lecture on 'Career opportunities and Entrepreneurship in Agriculture'. Dr. Dibyendu Deb and Dr. Arpan Bhowmik also participated in the event. From IARI Assam, the programme was coordinated by Dr. Deepjyoti Baruah, Dr. Alemwati Pongener, Dr. Dibyendu Deb and Dr. Arpan Bhowmik.



AGRICULTURE COMMISSION, ASSAM VISITS ICAR-IARI, ASSAM

Assam Agriculture Commission (AAC) headed by Dr. H. S. Gupta, Chairman, AAC and former Director, ICAR - Indian Agricultural Research Institute, New Delhi visited ICAR-IARI Assam, Dirpai Chapori, Gogamukh on **26th April, 2023**. He was accompanied by other AAC members. Dr. Gupta emphasized the dissemination of the advanced and proven technologies developed by the ICAR among the farming communities to witness the enhanced production and productivity in various crops, animal husbandry, poultry, and fisheries in the days to come. All the members of the Agriculture Commission provided their valuable inputs in developing vital repositories in agriculture and allied fields, resource development, crop improvement, natural farming systems, IFS, quality seed, planting materials and low-cost feed production for the overall growth of the agriculture sector in a holistic manner. **Two saplings of *Mesua ferrea* (locally Nahar) were planted** at the ATIC Building campus by Dr. Gupta and the AAC members. Earlier, Deepjyoti Baruah, Scientist In-Charge, ICAR-IARI, Assam delivered the welcome address. Dr. K.B. Pun Ex-Nodal Officer IARI Assam presented the conceptualization of IARI Assam, the mandates, and the perspectives of the institution for research and development in the region. An interactive meet was held between the scientists and the members of the Commission. The Joint Director, Department of Agriculture Dr. Atul Sarma, and District Agriculture Officer, Dhemaji District Shri. N. Pegu along with the Protocol officers from the Department of Agriculture, Assam were present on the occasion.



CELEBRATION OF INTERNATIONAL LABOUR'S DAY

Every developing sector of a country is indebted to the many contributions of the workers all over the nation, so they must be respected! They deserve to be treated well not only today but every day of the year! With this beautiful thought, the ICAR-IARI established at Dirpai Chapori, Gogamukh, Assam observed the **International Labour's Day on 1st May 2023** at its campus. The scientists, construction site engineers, security guards and office attendants of ICAR-IARI, Assam gathered at the Shaikshanik Bhawan. Dr. Deepjyoti Baruah, Scientist In-Charge welcomed the gathering with an introductory speech on the importance of the day and thanked all the staffs for their meticulous effort in building up of the institute on forefront. All the scientists of the institute conveyed their best regards to the workers of the institute on the day. In order to motivate the workers, the team of scientists presented the staffs with a few essential materials viz. umbrella, torch light, chairs & table.



INTERFACE MEET ON “DEVELOPMENTAL PERSPECTIVES IN AGRICULTURE AND ALLIED SECTORS

One day **interface Meet on “Developmental Perspectives in Agriculture and Allied Sectors”** was held at ICAR-IARI, Assam on **8th May, 2023**. , Shri Paramananda Chayengia, Chief Executive Member of Mising Autonomous Council (MAC) highlighted the basic needs of the rural mass in the agricultural sectors and the strategies for the promotion of quality fish seeds and planting materials for assured return from the agricultural products.

Dr. Deepjyoti Baruah, Scientist-in-charge briefed the field based research, trials and outreach programmes being undertaken by IARI Assam. Dr. Anil Kumar Pegu, OSD, MAC further deliberated various activities undertaken in the MAC areas benefiting the community as a whole. Dr. A. K. Srivastava, Principal Scientist, IARI Assam proposed pros and cons to introduce a cropping system to utilize Rice fallow. Dr. K. B. Pun, Former nodal officer, IARI Assam underlined the need to develop good number of stocks to achieve high yields of fruits in the region.

The executive members of MAC suggested developing skill oriented capacity building programme in collaboration with IARI Assam. **The interphase meeting was attended by 30 number of participants including the scientists of IARI Assam and Executive members of MAC.**



FOUNDATION DAY CELEBRATION

The **Foundation Day** of ICAR- Indian Agricultural Research Institute, Assam was celebrated on **26th May, 2023**. The Chief Guest, Shri Paramananda Chayengia, Chief Executive Member of Mising Autonomous Council briefed on the necessity to inculcate the work culture among the farming community for better sustainability. Shri Ankur Bharali (ACS), Dhemaji district, Govt. of Assam; Shri BN Hazarika, Dean, College of Horticulture & Forestry, CAU, Pasighat and Shri Sunil Kumar Pegu, Chairman, MAC were the Guest of Honours. They deliberated on the adaptability to climate-resilient agricultural practices for higher farm productivity and economic returns. The Foundation Day Lectures were delivered by Dr. AK Singh, Director, ICAR-IARI, New Delhi on “**Transforming agriculture for planet survival**” by virtual mode and Dr. Prabal Saikia, Chief Scientist, Zonal Research Station, AAU, Lakhimpur on “**Ecosystem services of birds in agricultural landscape**”. **Five progressive farmers** namely Shri Girija Pd Doley, Ms. Banashree Hazarika, Shri Jay Pegu, Shri Anuj Doley and Shri Rajat Pawe of Dhemaji and Lakhimpur districts **were felicitated on the occasion**. **Ten saplings of mahogany (Swietenia macrophylla)** were planted at the campus to mark the auspicious occasion of ICAR-IARI foundation day. The foundation day celebration was coordinated by Dr. Deepjyoti Baruah, Dr. A. K. Srivastava and Dr. Alemwati Pongener. All the scientists of IARI Assam actively participated in making the event successful.



VISIT OF MAC FOR DISCUSSION ON CONTROL MEASURE OF SUBANSHIRI RIVER EROSION

On 1st June, 2023 Yesterday the Chief Executive Member of Mising Autonomous Council H'able Mr. Parmananda Chayengiya along with OSD Dr Anil Kumar Pegu and other officials of MAC visited the institute for inspection of river erosion in subanshiri Bank of IARI Assam. Very fruitful discussion took place between the MAC and IARI Assam staffs on how to control the river erosion. MAC informed that they will do the best possible thing to control the river erosion.



WORLD ENVIRONMENTAL DAY

ICAR-Indian Agricultural Research Institute, Gogamukh, Assam celebrated **World Environment Day on 5th June, 2023 with the theme Solutions for Plastic Pollution through three series of events.**

In a program organized at the Institute, Shri Lohit Gogoi, District Project Officer, District Disaster Management Authority, Dhemaji delivered a lecture on “Flood management in agricultural and allied sectors” as the Chief Guest. Dr. A.K. Srivastava, Principal Scientist, spoke on the detrimental effects of plastic pollution in our food chain. Dr. S. Manivannan, Principal Scientist and Coordinator of the program remarked on the ways and means to reduce plastic pollution and bring sustainable solutions to the use of plastics. **A plantation drive** was undertaken by the entire staff of the Institute by planting various **ornamental and fruit trees within the campus.**

In another program, at Gogamukh College, Gogamukh, Dr. A. K. Srivastava, Principal Scientist, and Dr. Arpan Bhowmik, Senior Scientist participated, as Chief Guest and Guest of Honour respectively. Dr. Srivastava highlighted the microbial degradation of plastics. Dr. Bhowmik discussed the solution to plastics. Dr. D. K. Jha, Principal, Gogamukh College highlighted the concerns associated. **Tree plantation** have been done in front of the gate of Gogamukh College.

In another event, **a massive plantation drive** was also carried out on the **bank of the river Subansiri in collaboration with Mising Autonomous Council, Dhemaji, Assam.** Shri

Paramananda Chayengia, Chief Executive Member and Dr Anil Kumar Pegu, OSD from Missing Autonomous Council participated in the event.



INTERNATIONAL DAY OF YOGA 2023 AT ICAR-IARI ASSAM

The maiden International Day of Yoga was observed at ICAR-IARI Assam on 21st June, 2023. Dr. Deepjyoti Baruah, Scientist-in-charge spoke on the importance of yoga on human health, a way to interconnect the mind, body, and soul to step closer to enlightenment. 15 numbers of ashanas were performed on the day with great contentment by the staffs of the institute.



NATIONAL FISH FARMERS DAY CELEBRATED AT ICAR-IARI ASSAM.

National Fish Farmers Day was celebrated on **10th July, 2023** at ICAR-IARI Campus by organizing a **one-day Interface Meet and Input Distribution** programme. The programme was attended by 25 fish farmers of the region. Dr. Lohit Kr Baishya, HOD, NRM welcomed the gathering followed with a brief note on the institute and importance of fish farming for livelihood development and economic returns. Dr. Deepjyoti Baruah, Principal Scientist (Aquaculture) explained on the national importance of the fish farmers day and urged the farmers to adopt scientific farming practices and incorporate quality fish seeds in their ponds for higher productivity. Dr. AK Srivastava, Principal Scientist (Soil Science) spoke on the importance of healthy soil qualities in raising fish and adjoining horticultural crops on the pond dykes. Dr. Alemwati Pongener, Scientist (Fruit Science) delivered on the best management practices in raising Assam lemon on the pond dykes, which serves as a bio-fencing as well as an additional source of income. 25000 numbers of quality fish seeds such as Jayanti rohu, amur common carp together with other IMCs were distributed to the fish farmers. 500 numbers of Assam lemon were also distributed to the farmers. 3 progressive fish farmers were awarded with an appreciation certificate alongwith a traditional Gamosa. Queries raised by the farmers were solved by the team of scientists of IARI Assam. Positive remarks were received from the farmers as feedback of the programme. The programme was coordinated by Dr. Deepjyoti Barua and Mr. Da u ruhi Pde. All the scientist participated in the programme.



INDEPENDENCE DAY CELEBRATION

IARI Assam celebrated of **77th Independence Day at ICAR-IARI, Assam on 15th August, 2023**. The Indian flag was hoisted by Dr. Lohit Kumar Baishya, Scientist-in-charge, IARI Assam. All Scientists, staffs, students and scouts attended the celebration. Students from nearby schools performed cultural activities.



DELEGATION OF SCIENTISTS MEET WITH HONORABLE DG, ICAR AND SECRETARY, DARE, DIRECTOR, IARI AND OTHER ADMINISTRATIVE AND FINANCIAL STAFFS OF IARI NEW DELHI

A delegation of three scientists viz. Dr. Lohit Kumar Baishya, Head (NRM) and In-charge, IARI Assam, Dr. Arpan Bhowmik, Senior Scientist and Dr. Sunil Mandi, Senior Scientist along with Dr. Robin Gogoi, Nodal Officer, IARI Assam have participated in a meeting with Director and other higher officials of IARI, New Delhi on 14 September, 2023. A brief presentation of IARI Assam activities were made by Dr. Lohit Kumar Baishya. Beside a detail discussion took places between the officials and delegates w.r.t. smooth functioning of IARI Assam. H'able Director of IARI, New Delhi Dr. A. K. Singh has assured that the works related to smooth function of IARI Assam will be given top priority. Later on the delegation also meet with Secretary, DARE and DG, ICAR Dr. Himanshu Pathak. The delegates highlights the constraints for smooth functioning of IARI Assam. H'able DG has assured all kinds of support for smooth functioning of IARI Assam



PARTICIPATION IN THE ONE DAY WORKSHOP ON STRATEGIC APPROACH FOR THE DEVELOPMENT OF AGRICULTURE AND ALLIED SECTOR IN DHEMAJI DISTRICT

Scientists of IARI Assams actively participated in the **one day workshop on Strategic Approach for the Development of Agriculture and Allied Sector in Dhemaji district** organized by Krishi Vigyan Kendra, Dhemaji, Assam Agricultural University on **2nd October, 2023**. Education Minister, Government of Assam Dr. Ranoj Pegu, Member of Parliament, Lakhimpur Mr. Pradan Baruah, Dr. B. C. Deka, Vice Chancellor, Assam Agricultural University and many other dignitaries were present in the workshop and highlighted different aspects for the development of Agriculture and allied sectors in Dhemaji district. From IARI Assam, Dr. Lohit Kumar Baishya, Dr. Amjad K Balange, Dr. A. K. Srivastava and Dr. Alemwati Pongener participated in the workshop.



VISIT OF QUINQUENNIAL REVIEW TEAM (QRT)

Quinquennial Review Team (QRT) visited ICAR-IARI Assam on **27-28th October, 2023**. The team had interaction with all the Scientists, visited the experimental farm and explore the overall development of the campus. Dr. Lohit Kumar Baishya, Scientist-in-charge, IARI Assam made a detailed presentation on different activities of IARI Assam along with the road ahead for shaping the agricultural scenario in these regions. The QRT team consist of honorable members:

1. Dr. Suraj Singh Baghel, Former VC, CAU, Imphal & AAU, Jorhat
2. Dr. S. N. Puri, Former VC, MPKV Rahuri & CAU, Imphal
3. Dr. A. K. Singh, Director, IARI, New Delhi
4. Dr. K. K. Narayanan, Founder & Director, Sthayika Seeds Private Limited, Bengaluru
5. Dr. Manoj Prasad, Staff Scientist VII & JC Bose National Fellow, NIPGR, New Delhi
6. Dr. C. Viswanathan, Joint Director (Research), IARI, New Delhi





VIGILANCE AWARENESS WEEK

Vigilance awareness week observed at IARI Assam during **30th October -5th November, 2023**. A pledge has been taken under the chairmanship of In-charge, IARI Assam Dr. Lohit Kumar Baishya with a theme **“Say no to corruption, Commit to the Nations”**



IARI ASSAM CELEBRATES WORLD FISHERIES DAY

ICAR-IARI ASSAM celebrated **World Fisheries Day on 21st November, 2023** by conducting One-Day Workshop on **"Sustainable Aquaculture Development for Food Security in North East Region of India"**. Dr. Lohit Kr Baishya, Head (NRM) & Scientist In-charge welcomed the gathering. The programme was graced by Shri Paramananda Chayengia, Chief Executive Member of Mising Autonomous Council (MAC) as chief guest and Shri Kuljit Padun, ALRS, circle officer, Gogamukh and Dr. Dilip Kr. Jha, Principal of Gogamukh College as guest of honour. The programme was attended by 50 fish farmers of the region, fishery development officers, faculty members of adjoining colleges, KVK personnel along with the scientists and staffs of IARI, Assam participated and attended.

Three progressive fish farmers were awarded with an appreciation certificate along with traditional Gamosa, 5000 nos. of quality fish seeds of Jayanti Rohu and amur common carp and 500kg kg agricultural lime was also distributed to fish farmers. The programme was coordinated by Dr. Amjad K. Balange and Dr. Deepjyoti Baruah. All the scientist participated in the workshop.



FIRST INSTITUTIONAL SPORTS MEET

First Institutional Sports meet for the staffs of IARI Assam was organized by ICAR- IARI, Assam on **8th December, 2023** at Rahul Gandhi Rural Sports Complex, Mohari Camp Stadium. Some glimpse of Scientists and staff in actions in the field are as follows:



FIRST SPORTS CONTINGENT IN ICAR ZONAL SPORTS

ICAR-IARI Assam first time participated in the ICAR Zonal Sports Tournament 2023, hosted at ICAR-NRRI, Cuttack from **December 13-16**. The pioneering sports contingent from ICAR-IARI Assam made a resounding impact at the ICAR Zonal Sports Tournament 2023. Our dedicated team actively participated and excelled in a range of team and solo events, showcasing the spirit of sportsmanship and excellence. Kudos to our athletes for their commendable performance



SWACHHATA PAKHWADA 2023

A team of members, spanning roles from scientific to administrative, technical, and supporting staff, actively participated in **swachhata Pakhwada-2023 during 16-31 December, 2023** at IARI Assam, Dirpai Chapori, Gogamukh, Assam. The staffs performed different swachhata activities in and around the campus. They have highlighted the importance of cleanliness to the contractual staffs of IARI Assam and construction labours of NPCC who are involved in construction work in the campus guided by Dr. Dibyendu Deb, Senior Scientist and coordinator of the Swachhata Committee, and led by Dr. A. K. Balange,

Principal Scientist and Head (APF). Together, we contribute to a cleaner and greener environment!



CHAPTER 6: PUBLICATIONS

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HINDI BOOK CHAPTERS

1. **Book Name:** बकरी पालन द्वारा उधमिता विकास
Editors: हरिओम पांडेय ,अयोन तरफदार, मुकेश सिंह, रूपसी तिवारी और त्रिवेणी दत्
Chapter Name: नवजात मेमनो का वैज्ञानिक प्रबंधन
Authors: हरिओम पांडेय, नरेंद्र कुमार और मनीष पांडे
ISBN Number: 978-93-6013-205-7
2. **Book Name:** बकरी पालन द्वारा उधमिता विकास
Editors: हरिओम पांडेय ,अयोन तरफदार, मुकेश सिंह, रूपसी तिवारी और त्रिवेणी दत्
Chapter Name: बकरी फार्म की नियमति गतिविधियां
Authors: हरिओम पांडे और मनीष पांडे
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Editors: हरिओम पांडेय ,अयोन तरफदार, मुकेश सिंह, रूपसी तिवारी और त्रिवेणी दत्
Chapter Name: लघु एवं मध्यम बकरी पालन का अर्थशास्त्र
Authors: हरिओम पांडेय, मनीष पांडे और अखिल कुमार झा
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TECHNICAL LEAFLETS

1. Amjad K. Balange and Deepjyoti Baruah (2023) Value Added Fish Products: “Health requires healthy food”. PME/IARI-Assam/B/2023-24/01.
2. Deepjyoti Baruah and Amjad K. Balange (2023) Management of Nursery & Rearing Ponds for Carp Seed Production. PME/IARI-Assam/B/2023-24/02.
3. Deepjyoti Baruah and Amjad K. Balange (2023) Integrated Fish Farming for Sustainable Livelihood. PME/IARI-Assam/B/2023-24/03.
4. Deepjyoti Baruah and Amjad K. Balange (2023) Composite Carp Farming as an Aquaculture Avenue for Livelihood Support. PME/IARI-Assam/B/2023-24/04.

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1. Bioprospecting soil-plant health management in horticultural crops (Editors: Srivastava, A.K. and Bora, P.), *Horticultrae*, MDPI, Basel-Switzerland.
2. Reframing futuristic crop production system (Editors: Srivastava, A.K., Wu, Q-S, Etesami, H., Quinones, A. and T. Vashishth), *Agronomy*, MDPI, Basel-Switzerland.
3. Citriculture-sustainable quality production (Editors: Ziogas, V., Srivastava, A.K., Chater, J. and Bora, P.), *Frontiers in Horticulture*, Frontiers Publishing, Switzerland.

4. Role of microbiome in plant and soil health in a changing climate (Editors: Kundla, A., Yadav , D. and Srivastava, A.K.), *Frontiers in Plant Science*, Frontiers Publishing , Switzerland.
5. Microbial inoculants and Its implications on carbon soil dynamics in agriculture soils (Editors: José David Flores Félix, Adrián González Guzmán and A. K. Srivastava), *Discover Agriculture*, Nature Springer , United Kingdom.

CHAPTER 7: PRODUCTS, TECHNOLOGIES & IPR

ICAR RECOGNIZED TECHNOLOGIES DEVELOPED

Scientists from ICAR-IARI Assam was involved in development of technologies in collaboration with other institutes. Following are the technologies recognized by ICAR through technology recognition certificate where scientists of IARI Assam are involved (* against name indicate the concerned scientist from IARI Assam):

1. **ICAR Recognized Technology: *Methodology for Sustainable Livelihood Security Analysis in Integrated Farming Systems* [ICAR Technology Number: ICAR-NRM-IIFSR-Methodology-2023-042]**

Lead Developer: N. Ravisankar

Associate Developers: M.A. Ansari, M. Shamim,, A. K. Prusty, Raghuveer Singh, A. S. Panwar, D. Dutta, C. Varghese, S. Dash and Arpan Bhowmik*

Technology Description: Improving the farming system to attain the household level self-sufficiency, land utilization efficiency and sustainable livelihood security depends on better socio-economic and ecological aspects of the systems practiced by the small farmers in the semiarid regions of India. The higher sustainable livelihood security index (SLSI) in the integrated crops-livestock system helps to restore economic and ecological sustainability. The aim of this study was to analyze how various modules of farming in different combinations have interacted with the diversification of existing systems. Here ecological security index (ESI), economic efficiency index (EEI), and social equity index (SEI) have been used to produce a SLSI of improved integrated farming system (IFS) compared with benchmark farming in semiarid regions. In this study, different existing IFS comprising of seven modules (field crops, dairy, goats, poultry, horticulture, fishery, and apiary) in different combinations were examined. Results revealed that 72.5% farmers preferred to integrate two modules, where as 95% of farmers adopted field crops + dairy (FC + D) in preference to other modules.

The sustainability indicators: ESI (+43.3%), EEI (+16.0%), SEI (+11.6%), and SLSI (+6.0%) were improved in the FC+D farming system to a greater degree than other IFS module combinations. Similarly, improved IFS interventions also increased sustainability indicators over benchmark farming. Based on large scale household studies over 5 years, our findings suggest that the improved IFS succeeded in providing a wider array of livelihood security than existing practices.

Hence, the paradigm shift from component approach to an IFS-based resilient system, which is economically viable, environmentally sustainable, and socially acceptable, is needed for development of semiarid regions.

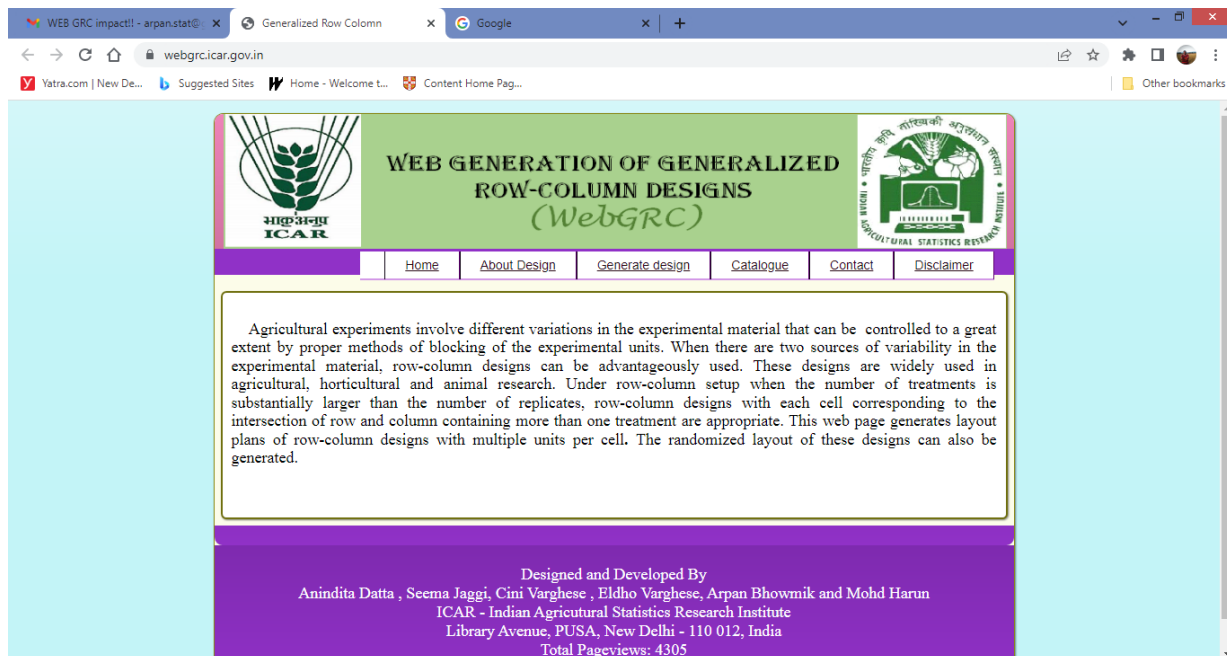


Technology Certificate from ICAR

2. **ICAR Recognized Technology:** : *Web Generation of Generalized Row-column Designs* [ICAR Technology Number: ICAR-AED-IASRI-Technology-2023-028]
Lead Developer: Anindita Datta
Associate Developers: Seema Jaggi, Cini Varghese, Eldho Varghese Arpan Bhowmik* and Mohd. Harun

Technology Description: A large number of GRC designs are developed in the literature, construction of which involves a fair amount of theoretical understanding. For easy accessibility and quick reference of generalized row column designs, a software *webGRC*: Web Generation of Generalized Row Column Designs was developed and deployed at <http://webgrc.icar.gov.in/>. This software provides freely available solution for the researchers and students working in this area. The software generates different classes of GRC designs. It displays the layout plans along with different parameters of the

designs. Online catalogue for different series of GRC designs for a specific set of parametric combinations have also been developed and integrated with *webGRC* (<http://webgrc.icar.gov.in/>). User can also generate designs from these catalogues. Total number of views of the software is 4305.



webGRC Homepage



Technology Certificate from ICAR

- 3. ICAR Recognized Technology: *Nanochitin synthesis from shrimp shell waste chitin: Methodology* [ICAR Technology Number: ICAR-FS-CIFE-Methodology-2023-044]**
Lead Developer: K. A. Martin Xavier
Associate Developers: Soibam N, Layana P, Amjad K Balange* and B. B. Nayak

Technology Description: Shrimp shell waste can be effectively utilized to produce nanochitin with superior physicochemical and biological properties, making it applicable in food, medicine, and other industrial fields. In this context, we prepared chitin nanocrystals using autoclave-assisted acid hydrolysis method with high yield and shorter reaction time. The hydrolysis conditions were optimized through an experimental Box-Behnken design using Response surface methodology (RSM). Optimum hydrolysis conditions to acquire maximum yield were acid concentration (2.63 N), time (23.70 min), and chitin to acid ratio (1:22). Further, the chitin nanocrystals were characterized using advanced instrumental techniques. The method used in this study is simple, easy, and rapid compared to earlier studies, making it more practical and scalable for producing chitin nanocrystals.



Technology Certificate from ICAR

4. ICAR Recognized Technology: *Application of chitosan gel for enhancing the quality and shelf life of emulsion sausage: Process* [ICAR Technology Number: ICAR-FS-CIFE-Methodology-2023-046]

Lead Developer: K. A. Martin Xavier

Associate Developers: Kasturi Chattopadhyay, Layana P, Amjad K Balange* and B. B. Nayak

Technology Description: To develop a sausage from Pangas meat with desirable attributes and long storage life, the research was conducted to incorporate chitosan gel in varying concentration (0.15-0.3%) by dissolving chitosan in acidulants (acetic acid, lactic acid, citric acid) into the emulsion batter of Pangas meat sausages. Results uphold the best functional and physiochemical attributes of a sausage product under refrigerated storage condition and presumed to be highly popular in consumer domain. Several studies have been conducted to make functional meat sausages with plant extracts, polymers etc. that has been successful. Chitosan hydrogel inclusion has truly benefitted the quality of low cost fish mince sausage and has helped in developing a superior, functional and healthy ready-to-eat fish-based product that can fulfill consumer's desirability as well as improve its shelf life.



Technology Certificate from ICAR

5. ICAR Recognized Technology: *Bioactive protein hydrolysate from paste shrimp: Product* [ICAR Technology Number: ICAR-FS-CIFE-Methodology-2023-046]

Lead Developer: K. A. Martin Xavier

Associate Developers: D. Vignayesh, Amjad K Balange* and B. B.Nayak

Technology Description: *Acetes spp.* is an unexploited tiny shrimp landed as by-catch along the Maharashtra and Gujarat coast comprises 13% protein. Jawala prawn (*Acetes spp.*) is mainly used as fish meal for the feed industry. Although several reports shown bioactive and functional properties of protein hydrolysates from various fish and shellfish species, the influence of extent of hydrolysis and hydrolytic mechanism of action on bioactivity is not studied extensively. The commercial protein hydrolysate powder obtained from fish and shellfish species are also not abundant. Conversion of this effective and cheap source of raw material into protein hydrolysate generates better utility to the product. This enables the circular economic approach of utilizing an under-utilized raw material in to valuable product. On the other hand, comprehension of the hydrolysis mechanism via varying DH will produce hydrolysate with varied properties.



Technology Certificate from ICAR

IT PRODUCT (R PACKAGE/SAS MACROS/WEB MODULE) DEVELOPED

Scientists from ICAR-IARI Assam was involved in development of IT products in collaboration with other institutes. Following are the IT products developed where scientists of IARI Assam are involved (* against name indicate the concerned scientist from IARI Assam):

Sl No	Name of the IT Product	Developers
1.	R package: rsdNE Version 1.0.0 available at https://CRAN.R-project.org/package=rsdNE	Ashutosh Dalal, Seema Jaggi, Eldho Varghese, Subhasish Sarkar, Arpan Bhowmik*, Cini Varghese, Anindita Datta, and Soumen Pal
2.	R Package: NBBDesigns Version 1.0.0 available at https://cran.r-project.org/package=NBBDesigns	Eldho Varghese, Ashutosh Dalal, Seema Jaggi, Arpan Bhowmik*, and Cini Varghese
3.	R Package: MixedLevelRSDs Version 1.0.0 available at https://cran.r-project.org/package=MixedLevelRSDs	Ankita Verma, Seema Jaggi, Eldho Varghese, Ashutosh Dalal, Cini Varghese, Arpan Bhowmik* and Anindita Datta
4.	Software module for Web generation of structurally complete generalized row column designs: websigrd available at https://webgrc.icar.gov.in/strclnc/	Asit Kumar Pradhan, Anshu Bhradwaj, Sudeep Marwaha, Seema Jaggi, Cini Varghese, Anindita Datta and Arpan BHowmik*

rsdNE: Response Surface Designs with Neighbour Effects (rsdNE)

Response surface designs with neighbour effects are suitable for experimental situations where it is expected that the treatment combination administered to one experimental unit may affect the response on neighboring units as well as the response on the unit to which it is applied. Integrating these effects in the response surface model improves the experiment's precision (Jaggi, S., Sarika and Sharma, V.K. (2010) <<http://krishi.icar.gov.in/jspui/handle/123456789/4364>>; Verma A., Jaggi S., Varghese, E., Varghese, C., Bhowmik, A., Datta, A. and Hemavathi M. (2021) <[doi:10.1080/03610918.2021.1890123](https://doi.org/10.1080/03610918.2021.1890123)>). This package includes sym(), asym1(), asym2() functions that generates response surface designs which are rotatable under a polynomial model of a given order without interaction term incorporating neighbour effects.

Version: 1.1.0
Published: 2023-02-22
Author: Ashutosh Dalal [aut, cre], Seema Jaggi [aut, ctb], Eldho Varghese [aut, ctb], Subhasish Sarkar [aut], Arpan Bhowmik [aut], Cini Varghese [aut], Anindita Datta [aut], Soumen Pal [aut]
Maintainer: Ashutosh Dalal <ashutosh.dalal97 at gmail.com>
License: GPL-2 | GPL-3 [expanded from: GPL (≥ 2)]
NeedsCompilation: no
CRAN checks: [rsdNE results](#)

Documentation:
Reference manual: [rsdNE.pdf](#)

Downloads:
Package source: [rsdNE_1.1.0.tar.gz](#)
Windows binaries: r-devel: [rsdNE_1.1.0.zip](#), r-release: [rsdNE_1.1.0.zip](#), r-oldrel: [rsdNE_1.1.0.zip](#)
macOS binaries: r-release (arm64): [rsdNE_1.1.0.tgz](#), r-oldrel (arm64): [rsdNE_1.1.0.tgz](#), r-release (x86_64): [rsdNE_1.1.0.tgz](#), r-oldrel (x86_64): [rsdNE_1.1.0.tgz](#)
Old sources: [rsdNE archive](#)

Linking:
Please use the canonical form <https://CRAN.R-project.org/package=rsdNE> to link to this page.

R Package rsdNE

NBBDesigns: Neighbour Balanced Block Designs (NBBDesigns)

Neighbour-balanced designs ensure that no treatment is disadvantaged unfairly by its surroundings. The treatment allocation in these designs is such that every treatment appears equally often as a neighbour with every other treatment. Neighbour Balanced Designs are employed when there is a possibility of neighbour effects from treatments used in adjacent experimental units. In the literature, a vast number of such designs have been developed. This package generates some efficient neighbour balanced block designs which are balanced and partially variance balanced for estimating the contrast pertaining to direct and neighbour effects, as well as provides a function for analysing the data obtained from such trials (Azais, J.M., Bailey, R.A. and Monod, H. (1993). "A catalogue of efficient neighbour designs with border plots". Biometrics, 49, 1252-1261 ; Tomar, J. S., Jaggi, Seema and Varghese, Cini (2005) <[doi:10.1080/0266476042000305177](https://doi.org/10.1080/0266476042000305177)>. "On totally balanced block designs for competition effects"). This package contains functions named `nbbd1()`, `nbbd2()`, `nbbd3()`, `pnbbd1()` and `pnbbd2()` which generates neighbour balanced block designs within a specified range of number of treatment (v). It contains another function named `anlys()` for performing the analysis of data generated from such trials.

Version: 1.1.0
 Depends: R ($\geq 3.5.0$)
 Published: 2023-12-16
 Author: Eldho Varghese [aut, ctb], Ashutosh Dalal [aut, cre], Seema Jaggi [aut, ctb], Arpan Bhowmik [aut], Cini Varghese [aut]
 Maintainer: Ashutosh Dalal <ashutosh.dalal97@gmail.com>
 License: [GPL-2](#) | [GPL-3](#) [expanded from: GPL (≥ 2)]
 NeedsCompilation: no
 CRAN checks: [NBBDesigns results](#)

Documentation:
 Reference manual: [NBBDesigns.pdf](#)

Downloads:

Package source: [NBBDesigns_1.1.0.tar.gz](#)
 Windows binaries: r-devel: [NBBDesigns_1.1.0.zip](#), r-release: [NBBDesigns_1.1.0.zip](#), r-oldrel: [NBBDesigns_1.1.0.zip](#)
 macOS binaries: r-release (arm64): [NBBDesigns_1.1.0.tgz](#), r-oldrel (arm64): [NBBDesigns_1.1.0.tgz](#), r-release (x86_64): [NBBDesigns_1.1.0.tgz](#), r-oldrel (x86_64): [NBBDesigns_1.1.0.tgz](#)
 Old sources: [NBBDesigns archive](#)

Linking:

R Package NBBDesigns

MixedLevelRSDs: Mixed Level Response Surface Designs

Response Surface Designs (RSDs) involving factors not all at same levels are called Mixed Level RSDs (or Asymmetric RSDs). In many practical situations, RSDs with asymmetric levels will be more suitable as it explores more regions in the design space. (J.S. Mehta and M.N. Das (1968) <[doi:10.2307/1267046](https://doi.org/10.2307/1267046)>. "Asymmetric rotatable designs and orthogonal transformations"). This package contains function named `ATORDs_I()` for generating asymmetric third order rotatable designs (ATORDs) based on third order designs given by Das and Narasimham (1962). Function `ATORDs_II()` generates asymmetric third order rotatable designs developed using t-design of unequal set sizes, which are smaller in size as compared to design generated by function `ATORDs_I()`. In general, third order rotatable designs can be classified into two classes viz., designs that are suitable for sequential experimentation and designs for non-sequential experimentation. The sequential experimentation approach involves conducting the trials step by step whereas, in the non-sequential experimentation approach, the entire runs are executed in one go (M. N. Das and V. Narasimham (1962) <[doi:10.1214/AOMS/1177704374](https://doi.org/10.1214/AOMS/1177704374)>. "Construction of Rotatable Designs through Balanced Incomplete Block Designs"). `ATORDs_I()` and `ATORDs_II()` functions generate non-sequential asymmetric third order designs. Function named `SeqTORD()` generates symmetric sequential third order design in blocks and also gives G-efficiency of the given design. Function named `Asymseq()` generates asymmetric sequential third order designs in blocks (M. Hemavathi, Eldho Varghese, Shashi Shekhar and Seema Jaggi (2020) <[doi:10.1080/02664763.2020.1864817](https://doi.org/10.1080/02664763.2020.1864817)>. "Sequential asymmetric third order rotatable designs (SATORDs)"). In response surface design, situations may arise in which some of the factors are qualitative in nature (Jyoti Divecha and Bharat Tarapara (2017) <[doi:10.1080/08982112.2016.1217338](https://doi.org/10.1080/08982112.2016.1217338)>. "Small, balanced, efficient, optimal, and near rotatable response surface designs for factorial experiments asymmetrical in some quantitative, qualitative factors"). The Function named `QualRSD()` generates second order design with qualitative factors along with their D-efficiency and G-efficiency. The function named `RotatabilityQ()` calculates a measure of rotatability (measure Q , $0 \leq Q \leq 1$) given by Draper and Pukelsheim (1990) for given a design based on a second order model, (Norman R. Draper and Friedrich Pukelsheim (1990) <[doi:10.1080/00401706.1990.10484635](https://doi.org/10.1080/00401706.1990.10484635)>. "Another look at rotatability").

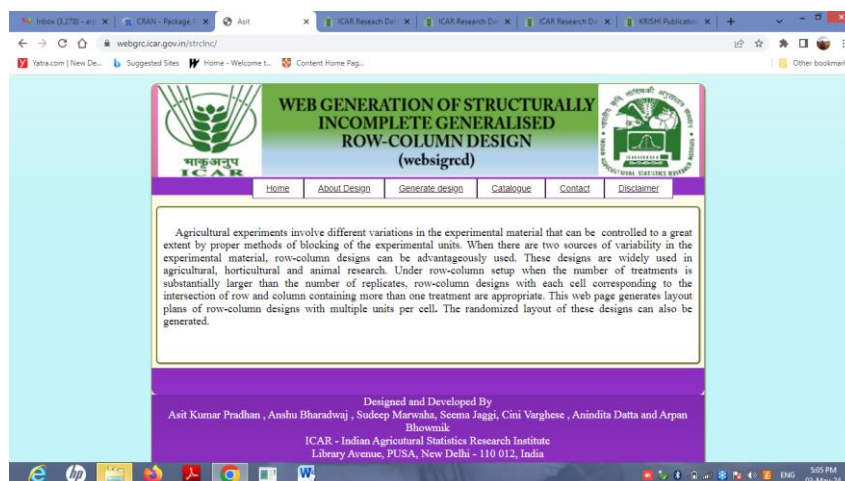
Version: 1.0.0
 Suggests: [TORDs](#), [FrF2](#), [MASS](#)
 Published: 2023-05-05
 Author: Ankita Verma [aut, ctb], Seema Jaggi [aut, ctb], Eldho Varghese [aut, ctb], Ashutosh Dalal [aut, cre], Cini Varghese [aut], Arpan Bhowmik [aut], Anindita Datta [aut]
 Maintainer: Ashutosh Dalal <ashutosh.dalal97@gmail.com>
 License: [GPL-2](#) | [GPL-3](#) [expanded from: GPL (≥ 2)]
 NeedsCompilation: no
 CRAN checks: [MixedLevelRSDs results](#)

Documentation:
 Reference manual: [MixedLevelRSDs.pdf](#)

Downloads:

Package source: [MixedLevelRSDs_1.0.0.tar.gz](#)

R Package MixedLevelRSDs



Home Page: websigred

IPR (PATENT/COPYRIGHT/LICENSE ETC.)

Patent

Sl No	Title	Names of the Authors	Country and Number	Year
1.	Pedal Operated Dehuller for Black Soybean	K. Chand, G. Singh, A. Siddiqui and P. Gaibimeis*	Design No. 6315431 Country: United Kingdom.	2023

General Public License

No.	Title	Names of the Authors	Country and Number	Year
1.	R package: rsdNE Version 1.0.0	Ashutosh Dalal, Seema Jaggi, Eldho Varghese, Subhasish Sarkar, Arpan Bhowmik*, Cini Varghese, Anindita Datta, and Soumen Pal	License: GPL-2 GPL-3 [expanded from: GPL (≥ 2))]	2023
2.	R Package: NBBDesigns Version 1.0.0	Eldho Varghese, Ashutosh Dalal, Seema Jaggi, Arpan Bhowmik*, and Cini Varghese	License: GPL-2 GPL-3 [expanded from: GPL (≥ 2))]	2023
3.	R Package: MixedLevelRS Ds Version 1.0.0	Ankita Verma, Seema Jaggi, Eldho Varghese, Ashutosh Dalal, Cini Varghese, Arpan Bhowmik* and Anindita Datta	License: GPL-2 GPL-3 [expanded from: GPL (≥ 2))]	2023

* Indicates IARI Assam Scientists

CHAPTER 8: CONFERENCES, WORKSHOPS, SEMINARS AND SYMPOSIA

PARTICIPATION IN CONFERENCE /WORKSHOP/SEMINARS/SYMPOSIA

Sl No	Title	Mode (Online/Offline)	Organizer and Venue	Date and Duration
1.	International Conference on “Statistics, Probability, Data Science and Related Areas (ICSPDS2023)” Participant: Arpan Bhowmik	Offline	Organized jointly by the Indian Society for Probability and Statistics (ISPS) and the Cochin University of Science and Technology, Cochin, India	Date: 04-06 January, 2023 Duration: 3 days
2.	Indian Horticulture Conclave Participant: A. K. Srivastava	Offline	Organized at G. B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand	Date: 03-05 February, 2023 Duration: 3 days
3.	National Level Seminar on ‘INDIA AT 75: LOOKING BEHIND AND BEYOND’ Participant: Arpan Bhowmik	Offline	Organized jointly by A.B.N. Seal College Cooch Behar, West Bengal in collaboration with Central Bureau of Communication, Ministry of Information & Broadcasting Government of India, India	Date: 13-14 February, 2023 Duration: 2 days
4.	One Day Seminar on ‘Natural Farming and Vertebrate Pest Management’ organized at KVK Lakhimpur Participant: Dibyendu Deb, Alemwati Pongener and Arpan Bhowmik	Offline	Organized by KVK, North Lakhimpur and ZRS, AAU, North Lakhimpur	Date: 17 February 2023 Duration: 1 Day
5.	“Fisheries and Aquaculture: An Ecological Perspective” Participant: Deepjyoti	Offline	Organized at Guru Angad Dev Veterinary and Animal Sciences	Date: 22-24 February, 2023

	Baruah		University(GADVASU), Ludhiana, Punjab	Duration: 3 days
6.	Alumni Meet and Reunion 2023 Participant: Arpan Bhowmik	Offline	Organized by ICAR- NAHEP-IG In collaboration with Allumni Association, Uttar Banga Krishi ViswaVidyalaya, Pundibari, Coochbehar	Date: 15 March, 2023 Duration: 1 day
7.	National Conference on Technological Advancement, Innovation and Entrepreneurship Development in Agriculture and allied Sectors Participant: Arpan Bhowmik	Offline	Organized by ICAR- NAHEP-IG In collaboration with Directorate of Extension Education, Uttar Banga Krishi ViswaVidyalaya, Pundibari, Coochbehar	Date: 16-18 March, 2023 Duration: 3 days
8.	International Conference on “Natural Farming for Revitalising Environment and Resilient Agriculture” Participant: A. K. Srivastava	Offline	organised by Central Agricultural University , Imphal, Manipur	Date: 17-19 March, 2023 Duration: 3 days
9.	National Conference on “Jute Geo-textiles as Sustainable Solution in Civil Engineering Applications including Rural Infrastructure Development” Participant: S Manivannan	Offline	Organized National Jute Board at IISc Bangalore	Date: 18 May, 2023 Duration: 1 days
10.	5th International Conference on “Climate Change and its Impact (ICC-2023)” Participant: A. K. Srivastava	Offline	Organized by Sher-e- Kashmir University of Agricultural Science and Technology, Srinagar, Jammu and Kashmir (June 9-11,2023)	Date: 9-11 June, 2023 Duration: 3 days
11.	National Conference on “Transforming Rural Poverty to Prosperity through Sustainable Fisheries (TRPSF- 2023)” at from 19-21 st July 2023 Participant: Amjad K	Offline	Organized at College of Fisheries, Kishanganj, Bihar	Date: 19-21 July, 2023 Duration: 3 days

	Balange			
12.	8 th Edition of Global Conference on Plant Science and Molecular Biology” Participant: A. K. Srivastava	Online	Organised by Magnus Group LLC, USA at Valencia, Spain	Date: 11-13 September, 2023 Duration: 3 days
13.	Poshan Mela Participant: Lohit Kumar Baishya	Offline	Krishi Vigyan Kendra, Dhemaji, collaboration with District Administration, Dhemaji and women and Child Development Department, Dhemaji, Assam.	Date: 28 September, 2023 Duration: 1 day
14.	one day Workshop on Strategic Approach for the development of agriculture and allied sector in Dhemaji district, organized by KVK Dhemaji, AAU Jorhat at Simen Chapori on 2nd October 2023 Participant: Lohit Kumar Baishya, Amjad K Balange, A. K. Srivastava and Alemwati Pongener			Date: 2 October, 2023 Duration: 1 day
15.	XVI Agricultural Science Congress during 10-13 October, 2023 at Kochi, India Participant: Amjad K Balange	Offline	Organized by the National Academy of Agricultural Sciences (NAAS), New Delhi and hosted by ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI)	Date: 10-13 October, 2023 Duration: 4 days
16.	10 th Indian Horticulture Congress-2023 Participant: Alemwati Pongener and Arpan Bhowmik	Offline	Indian Academy of Horticultural Sciences in collaboration with College of Veterinary Sciences, AAU, Khanapara, Guwahati	Date: 06-09 November, 2023 Duration: 4 days
17.	International Conference on “Sustainable Natural Resource Management under Global	Offline	Organized by Soil Conservation Society of India, New Delhi	Date: 7-10 November, 2023

	Climate Change Participant: S Manivannan			Duration: 4 days
18.	Sustainable Aquaculture Development for Food Security in North East Region of India Participant: All the scientist of IARI Assam	Offline	Organized by ICAR-IARI, Assam	Date: 21 November, 2023 Duration: 1 day
19.	International conference on "Next Gen preparedness for food security and Environmental sustainability" Participant: Lohit Kumar Baishya, Amjad K Balange, A. K. Srivastava and S Manivannan,	Offline	Organized by Assam Agricultural University, Jorhat, Assam	Date: 22-24 November, 2023 Duration: 3 days
20.	First International Conference on Sustainable Mountain held at University of Mohaghegh Ardabili, Ardabil, Iran during December 11 & 12, 2023 Participant: S Manivannan	Online	Organized by the University of Mohaghegh Ardabili, Ardabil, Iran	Date: 11-12, December 2022 Duration: 2 days
21.	Ninth International Conference on Statistics for Twenty First Century-2023 (ICSTC-2023) Participant: Arpan Bhowmik	Online	Organized by Department of Statistics and School of Physical and Mathematical Sciences, University of Kerala, Trivandam	Date: 15-18 December, 2023 Duration: 4 days
22.	Jute Symposium Participant: S Manivannan	Offline	Organized at New Delhi	Date: 21 December, 2023 Duration: 1 day

PAPER PRESENTED IN THE NATIONAL/INTERNATIONAL CONFERENCE

- Following papers were presented in the International Conference on ‘Statistics, Probability, Data Science and Related Areas (ICSPDS2023)’ organized jointly by the Indian Society for Probability and Statistics (ISPS) and the Cochin University of Science and Technology, Cochin, India during 04-06 January, 2023

- ✓ Arpan Bhowmik*, Seema Jaggi, Eldho Varghese, Cini Varghes and Anindita Datta. On Some Trend Resistant PBIB Designs Useful for Agricultural Experiments. (**invited talk**).
- ✓ Eldho Varghese*, Hemavathi M., Seema Jaggi and Arpan Bhowmik. On Some Aspects of Third Order Rotatable Response Surface Designs (**invited talk**).
- A. K. Srivastava*. Development of microbes mediated fruit production system. Paper presented at Indian Horticulture Conclave at G. B. Pant University of Agriculture and Technology, Pantnagar , Uttarakhand during February 3-5, 2023 (**Lead speaker**).
- Following papers was presented in the National Level Seminar on ‘INDIA AT 75: LOOKING BEHIND AND BEYOND’ organized jointly by A.B.N. Seal College Cooch Behar, West Bengal in collaboration with Central Bureau of Communication, Ministry of Information & Broadcasting during 13-14 February, 2023
 - ✓ Arpan Bhowmik*, Dibyendu Deb, Deepjyoti Baruah, Alemwati Pongener, Arunjyoti Baruah, Sunil Mandi, Ch. Jamkhokai Mate and Palmei Gaibimei. Livelihood Diversification Strategies and Some ICT Applications for Atmanirbhar Agriculture (**invited talk**).
- Following papers have been presented in the Fisheries and Aquaculture: An Ecological Perspective Organized at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, Punjab during 22-24 February, 2023
 - ✓ Deepjyoti Baruah*, D. Sharma, D. Deb, A. Pongener, A. Baruah, Arpan Bhowmik, S. Mandi, Ch. J. Mate, P. Gaibimei and R. Gogoi. Endemic ichthyofauna of North-east India.
 - ✓ Deepjyoti Baruah*, K. Kunal, P. A. Ganie, Garima, R. Posti, D. Sharma and P. K. Pandey. Indigenous snow trout (*Schizothorax spp.*) fisheries in coldwater habitats of Arunachal Pradesh.
 - ✓ Deepjyoti Baruah*, K. Kunal, P. A. Ganie and Garima. Snow trout fishing by Monpa community of Arunachal Pradesh: Insights on traditional ecological knowledge.
- Following papers were presented in the National Conference on Technological Advancement, Innovation and Entrepreneurship Development in Agriculture and allied Sectors organized by ICAR-NAHEP-IG In collaboration with Directorate of Extension Education, Uttar Banga Krishi ViswaVidyalaya, Pundibari, Coochbehar during 16-18 March, 2023
 - ✓ Arpan Bhowmik*, Dibyendu Deb, Deepjyoti Baruah, Alemwati Pongener and Robin Gogoi. Livelihood Diversification and Entrepreneurship Development (**invited talk**)
- A. K. Srivastava*. Integrating natural farming with agroecology for soil health care in fruit crops. Paper presented at International Conference on Natural Farming for Revitalising Environment and Resilient Agriculture organised by Central Agricultural University , Imphal, Manipur during March 17-19,2023 (**keynote lecture**).

- A. K. Srivastava*. Soil fertility management amidst climate change in fruit crops. Paper presented during 5th International Conference on “Climate Change and its Impact (ICC-2023)” organized by Sher-e-Kashmir University of Agricultural Science and Technology, Srinagar, Jammu and Kashmir during June 9-11, 2023. (**keynote speaker**)
- Following papers were presented in the National Conference on Jute Geo-textiles as Sustainable Solution in Civil Engineering Applications including Rural Infrastructure Development at IISc Bangalore on 18th May, 2023 organized by National Jute Board.
 - ✓ S. Manivannan*. Application of Jute Geo-textiles in Erosion Control and Slope Stabilization (**invited talk lead paper**)
- Following papers were presented in the National Conference on “Transforming Rural Poverty to Prosperity through Sustainable Fisheries (TRPSF-2023) at College of Fisheries, Kishanganj, Bihar from 19-21st July 2023.
 - ✓ Amjad K Balange *. Present status of fish value addition in India: Constrains and Future Prospectus (**invited talk**)
- A. K. Srivastava*. Paradigms of green biology-based fruit production system. Paper presented at 8th Edition of Global Conference on Plant Science and Molecular Biology organised by Magnus Group LLC, USA at Valencia, Spain during September 11-13, 2023. (**keynote speaker**) (online)
- Following papers were presented in the XXXVIII Annual Conference of the Indian Poultry Science Association (IPSACON 2023) and the National Symposium on Innovative Poultry Production Strategies for Nutritional, Socio-economic, and Environmental Security will be hosted by the Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, in collaboration with IPSACON, Izatnagar (U.P.). The event is scheduled for September 13-15, 2023.
 - ✓ Azhaguraja M *, Simmi Tomar, Jyotika Bhati, G. V. P. P. S. Ravi Kumar, M. Sirajuddin and K. A. Saravanan. Unraveling selection signatures related to immune response in Guinea fowl through whole-genome sequencing.
- Following papers was presented in the XVI Agricultural Science Congress by the National Academy of Agricultural Sciences (NAAS), New Delhi and hosted by ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI) during 10-13 October, 2023 at Kochi, India
 - ✓ Amjad K. Balange*, Martin Xavier, Layana, P., Deepjyoti Baruah, Lohit K. Baishya and Arpan Bhowmik. Value added fish products: A potential alternative for livelihood improvement & entrepreneurship development in Northeastern region of India.
 - ✓ M.D. Sahana* and Amjad K. Balange Domestic market fish waste to green innovation: Recovering high value enzymes as a path to sustainable resource utilization (**Poster**).
 - ✓ Ashmita Pandey*, Shubham Soni, Amjad K. Balange and P. Layana. Fisheries-based Aqua-Tourism-an emerging entrepreneurship opportunity in Odisha, India (**Poster**).

- ✓ Amjad K. Balange*. Fisheries: A sunrise sector in India with potential for providing nutritional security and Livelihood (**invited talk**)
- Following papers was presented in the Exotic and Underutilized Horticultural Crops: Priorities and Emerging Trends on October 17-19, 2023, at ICAR-IIHR in Bengaluru
 - ✓ Raghavendra H. R.*, Alemwati Pongener, Ansheef Ali, Ramavath Ramesh Babu and B. R. Vinod. Promotion of Burmese Grape as a Sustainable Livelihood Option for Tribal Communities of Northeastern India (**poster**).
- Following paper was presented in the 20th International Symposium On Rice Functional Genomics on November 03-05, 2023 at University of Agricultural Sciences, Bangalore, Karnataka, India
 - ✓ Abhijith K. P.*, Gopala Krishnan, G. Dhawan, P. Kumar, R. Seth, R. Sharma, S. K. Badhran, M. Nagarajan, PK Bhowmick, K. K. Vinod, R. K. Ellur, B. Haritha and A. K. Singh. Development and validation of heterotic pools in Basmati rice (**poster**).
- Following papers was presented in the 10th Indian Horticulture Congress-2023 held at College of Veterinary Science, AAU, Khanapara, Guwahati during 6-9 November, 2023
 - ✓ Raghavendra H.R., Shruti Sethi, Arpan Bhowmik*, Eldho Varghese and Alka Joshi. Response surface and artificial intelligence based genetic algorithm based optimization of total phenolic content (TPC) from potato peel with ultrasound assisted extraction (UAE).
 - ✓ Alemwati Pongener*, Dibyendu Deb, Palmei Gaibimei, Deepjyoti Baruah, Arunjyoti Baruah and Arpan Bhowmik. Socio-economic opportunity for horticulture-based tourism in the Northern bank of the Brahmaputra in Upper Assam.
 - ✓ Alemwati Pongener*, S.K. Purbey, Vinod Kumar, E. S. Marboh and Swati Sharma. Pericarp water loss is a vital marker of postharvest browning and fruit quality in litchi.
- Following papers were presented in the International Conference on “Sustainable Natural Resource Management under Global Climate Change”, November 7-10, 2023, Soil Conservation Society of India, New Delhi, India.
 - ✓ S. Manivannan*. Hydrological Impacts of Engineering Interventions in Watersheds. (**invited talk lead paper**)
- Following papers were presented in the International conference on "Next Gen preparedness for food security and Environmental sustainability" to be held during November 22-24, 2023 at AAU, Jorhat.
 - ✓ A. K. Srivastava. Green management of abiotic stress in fruit crops. (**keynote speaker**)
 - ✓ S. Manivannan*. Role of geotextiles in erosion control and slope stabilization. (**invited talk lead paper**)

- Following papers were presented as **oral presentation** in the International Conference on “Ninth International Conference on Statistics for Twenty-first Century - 2023 [ICSTC-2023]’ organized by the Department of Statistics, University of Kerala, India during 13-14 December 2023
 - ✓ Bijoy Chanda*, **Arpan Bhowmik**, Cini Varghese, Seema Jaggi, Anindita Datta, Baidyanath Mandal and Soumen Pal. Incomplete equivalent- estimation two levels split plot designs.
 - ✓ Bijoy Chanda, **Arpan Bhowmik***, Cini Varghese, Seema Jaggi, Eldho Varghese and Anindita Datta. Optimal Equivalent Estimation Split Plot Design in the Presence of Trend Effects through Algorithmic Intervention. (**invited talk**).
- Following papers were presented in the First International Conference on Sustainable Mountain held at University of Mohaghegh Ardabili, Ardabil, Iran during December 11 - 12, 2023.
 - ✓ S. Manivannan*. Geo –textiles application for erosion control and slope stabilization. (**keynote speaker**) (online)
- Following papers were presented in the Jute Symposium at New Delhi on 21 December, 2023.
 - ✓ S. Manivannan*. Efficacy of Jute Geo Textiles in reduction of soil and nutrient in sloppy land. (**eminent speaker**)
- Following papers were presented in the XXXVIII Annual Conference of the Indian Poultry Science Association (IPSACON 2023) and the National Symposium on Innovative Poultry Production Strategies for Nutritional, Socio-economic, and Environmental Security will be hosted by the Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, in collaboration with IPSACON, Izatnagar (U.P.). The event is scheduled for September 13-15, 2023.
 - ✓ Azhaguraja M *, Simmi Tomar, Jyotika Bhati, G. V. P. P. S. Ravi Kumar, M. Sirajuddin and K. A. Saravanan. Unraveling selection signatures related to immune response in Guinea fowl through whole-genome sequencing.

***Presenter**

CONFERENCE/SEMINARS/SYMPOSIA ORGANIZED

S. Manivannan

- Organized International conference on Sustainable Natural Resource Management under Global Climate Change in hybrid mode as **Organizing Secretary** during November 7-10, 2023 at New Delhi.

Arpan Bhowmik

- **Session Organizer for a session of contributory papers on Design of Experiments** in Ninth International Conference on Statistics for Twenty First Century-2023 (ICSTC-2023) organized by Department of Statistics and School of Physical and Mathematical Sciences, University of Kerala, Trivandam during 15-18 December, 2023 (**online mode**)

CHAPTER 9: AWARDS, HONOURS & RECOGNITION

AWARDS RECEIVED

- **Best Research Paper Award** for the paper entitled on “Sustainable livelihood security of small farmers improved through resilient farming systems in the Semi-Arid Region of India” published in *Land Degradation and Development*, **33**, 2830-2842. (Scientist from IARI Assam involved in the award: Arpan Bhowmik)



- **Second Best Oral Presentation Award** for the presentation on “Fish aggregating structures: A strategic approach of aquatic resource utilization in uplands of Arunachal Pradesh” in the International conference on ‘Natural Farming for Revitalizing Environment and Resilient Agriculture (NF-RERA – 2023)’ during 17-19 March 2023 at College of Agriculture, Iroisemba, Central Agricultural University, Imphal, Manipur (Scientist from IARI Assam involved in the award: Deepjyoti Baruah)
- **Best Oral Presentation Award** at the conference on "Fisheries and Aquaculture: An Ecological Perspective," hosted at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) in Ludhiana, Punjab during February 22-24, 2023 for the paper, entitled "Endemic Ichthyofauna of North East India," (Scientist from IARI Assam involved in the award: Deepjyoti Baruah, Dibyendu Deb, Alemwati Pongener, Arunjyoti Baruah, Arpan Bhowmik, Sunil Mandi, Ch. Jamkhokai Mate, Palmei Gaibimei, and Robin Gogoi)



- **Fellowship of Indian Society of Horticultural Research and Development (ISHRD)**, Uttarakhand awarded during inauguration function Indian Horticulture Conclave on February 3, 2023 (**A. K. Srivastava**).



- **Life Time Achievement Award of AEDTS** (Agricultural and Environmental Technology Development Society) conferred during inauguration function of 5th International Conference on “Climate Change and its Impact (ICC-2023)” organized by Sher-e-Kashmir University of Agricultural Science and Technology, Srinagar, Jammu and Kashmir during June 9-11, 2023 (**A. K. Srivastava**).

AWARD INSTITUTED

- An award entitled “**Dr. A. K. Srivastava Best Young Scientist Award in Soil Science**” was **instituted** by Society for Biotic and Environmental Research (SBER), Tripura. The award has been instituted in the honour of Dr. A. K. Srivastava for his outstanding contribution in Soil Science.

HONOURS & PROFESSIONAL RECOGNITION

Lohit Kumar Baishya

- **Special Invitee** in the **Zonal Research and Extension Advisory Committee, Ravi 2024** meeting for the North Bank Plain Zone of Assam organized at AAU Zonal Research Station, Assam Agricultural University, North Lakhimpur, Assam on 26th September, 2023.
- **Special Invitee** in the Zonal Research and Extension Advisory Committee, Ravi 2024 meeting for the North Bank Plain Zone of Assam organized at AAU Zonal Research Station, Assam Agricultural University, North Lakhimpur, Assam on 26th September, 2023.
- **Co-chairman for the young scientist conclave** on 21st July, 2023 in the National Conference on “Transforming Rural Poverty to Prosperity through Sustainable Fisheries (TRPSF-2023) at College of Fisheries, Kishanganj, Bihar from 19-21st July 2023.
- **Invited as Lead speaker** to deliver a lead lecture in the Technical session-V of International Conference on “Next-Gen Preparedness for Food Security and Sustainability at AAU, Jorhat, Assam from 22

Amjad K Balange

- **Invited as speaker to deliver a lead lecture** in the Technical session-V of National Conference on “Transforming Rural Poverty to Prosperity through Sustainable Fisheries (TRPSF-2023) at College of Fisheries, Kishanganj, Bihar from 19-21st July 2023.
- **Co-chairman for the young scientist conclave** on 21st July, 2023 in the National Conference on “Transforming Rural Poverty to Prosperity through Sustainable Fisheries (TRPSF-2023) at College of Fisheries, Kishanganj, Bihar from 19-21st July 2023.
- **Invited as Lead speaker** to deliver a lead lecture in the Technical session-V of International Conference on “Next-Gen Preparedness for Food Security and Sustainability at AAU, Jorhat, Assam from 22-24th Nov 2023.
- **Invited as Co-chairman for the Session of Agribusiness and Value chain management** in International Conference on “Next-Gen Preparedness for Food Security and Sustainability at AAU, Jorhat, Assam from 22-24th Nov 2023.
- **Nominated as External for PG Thesis evaluation** for College of Fisheries, Tripura (Central Agricultural University) and Tamil Nadu Dr. J. Jayalalithaa Fisheries University, Nagapattinam, Tamil Nadu.

A. K. Srivastava

- **Associate Editor**, Soil Science society of American Journal published by American Society of Soil Science, United State Department of Agriculture, Washington DC, USA.
- **Academic Editor**, PlosOne, Nature Springer, USA.
- **Associate Editor**, BMC Plant Biology by Nature Springer, United Kingdom.
- **Editor**, Discover Agriculture by Nature Springer, United kingdom.
- **Academic Editor**, Horticulturae, MDPI, Basel, Switzerland.
- **Associate Editor**, Fruits, American Society of Horticulture, USA.
- **Chief Editor**, International Journal of Innovative horticulture, Confederation of Horticulture Associations of India, New Delhi.
- **Member of Institute Management Committee** of National Bureau of Agriculturally Important Microbes, Mau, Uttar Pradesh (w.e.f May15, 2023).
- **Member of Board of Studies**, Saam downtown University, Gauhati, Assam (w.e.f. September 11, 2023).
- **Member, Organising Committee**, International Meet on Synthetic Biology and Plant Science (SYNBIOMEET2024) held during September 16-18, 2024 in Dubai, UAE (online).
- **Co-chairman of Technical Session** on Soil healthcare management under natural farming system and also acted as **chairman for evaluating the posters** in the same Technical Session in the International Conference on Natural Farming for Revitalising Environment and Resilient Agriculture during March 17-19, 2023.
- **Keynote speaker** in the 5th International Conference on “Climate Change and its Impact (ICC-2023)” during June 9-11, 2023. Also **acted as chairman of three sessions for poster evaluation**.

- **Keynote speaker** at 8th Edition of Global Conference on Plant Science and Molecular Biology” (**online**) during September 11-13, 2023.
- **Keynote speaker** in Technical Session II (Frontiers in Abiotic Stress Management) and in the International conference on Next-Gen Preparedness for Food Security and Environmental Sustainability during November 22-24, 2023. Also acted as **Co-chairman of Technical Session II** (Frontiers in Abiotic Stress Management) and as **Chairman of poster session of Technical Session II** (Frontiers in Abiotic Stress Management) in the same conference.
- **Keynote speaker** in the 5th International Conference on “Climate Change and its Impact (ICC-2023)” during June 9-11, 2023.

S. Manivannan

- **Invited Speaker (lead paper)** in the National Conference on Jute Geo-textiles as Sustainable Solution in Civil Engineering Applications including Rural Infrastructure Development on 18th May, 2023.
- **Invited Speaker (lead paper)** International Conference on “Sustainable Natural Resource Management under Global Climate Change” during November 7-10, 2023.
- **Invited Speaker (lead paper)** International conference on "Next Gen preparedness for food security and Environmental sustainability" during November 22-24, 2023.
- **Keynote speaker** First International Conference on Sustainable Mountain during December 11 - 12, 2023 (**online**).
- **Eminent Speaker** Jute Symposium on 21st December, 2023. (**online**).

Arpan Bhowmik

- **Invited Speaker** in the International Conference on ‘Statistics, Probability, Data Science and Related Areas (ICSPDS2023)’ during 04-06 January, 2023.
- **Chaired a Session on ‘Design of Experiments’** in the International Conference on ‘Statistics, Probability, Data Science and Related Areas (ICSPDS2023)’ during 04-06 January, 2023.
- **Invited Speaker** in National Level Seminar on ‘INDIA AT 75: LOOKING BEHIND AND BEYOND’ during 13-14 February, 2023.
- **Chaired one session on “Science and Society”** in National Level Seminar on ‘INDIA AT 75: LOOKING BEHIND AND BEYOND’ during 13-14 February, 2023.
- **Invited Speaker** in National Conference on Technological Advancement, Innovation and Entrepreneurship Development in Agriculture and allied Sectors during 16-18 March, 2023.
- **Served as Guest of Honor** at Gogamukh College, Gogamukh, Assam in celebrating World Environment day on 5th June, 2023.
- **Invited Speaker** for the knowledge upliftment of the M.Sc. and Ph.D. students at Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar, West Bengal on 05 July, 2023.

- **Distinguished guest** during Prize giving ceremony at Dinhata, Cooch Behar, West Bengal in a programme organized by Dinhata Vigyan Kendra of Paschimbanga Vigyan Mancha on 20 August, 2023
- **Chief guest** during a programme on Environmental Awareness at Kakoi High School, Kakoi, North Lakhimpur, Assam on 4 November, 2023.
- **Special invitee** during Dulung Subanshiri Festival-2023 organized by Dulung Subanshiri cooperative society and Mising Autonomous Council Eco Tourism Society on 22 December, 2023.
- **Invited Speaker** Ninth International Conference on Statistics for Twenty First Century-2023 (ICSTC-2023) organized by Department of Statistics and School of Physical and Mathematical Sciences, University of Kerala, Trivandam during 15-18 December, 2023 January, 2023 (**online mode**).
- **Nominated as External Examiner for PG Thesis evaluation** in the department of Agricultural Statistics at UBKV, Pundivari, Cooch Behar.
- **Guest Faculty for teaching UG and PG Agricultural Statistics courses** at College of Agriculture, CAU, Pasighat, Arunachal Pradesh.
- **Member of Editorial Board**, Acta Scientific Agriculture.
- **Member of Editorial Board** of Journal of Agriculture and Technology, the society Journal of Cooch Behar Association for Cultivation of Agricultural Sciences (COBACAS)
- **Review Editor**, Frontiers in Horticulture

Sunil Mandi

- **Acted as judge in millet based recipe completion** on 13th June, 2023 at Borobadha, Hatidhura block in the eve of International year of millet.

CHAPTER 10: PERSONNEL

STAFFS

Our Director

Sr. No.	Name	Designation
1	Dr. A. K. Singh	Director

Our Nodal Officer

Sr. No.	Name	Designation
1	Dr. Robin Gogoi	Nodal Officer, IARI Assam (from 16.12.2022)

Our Scientist-in-charge

Sr. No.	Name	Designation
1	Dr. Deepjyoti Baruah	Scientist-in-charge, IARI Assam [16.12.2022 to 27.07.2023]
2	Dr. Lohit Kumar Baishya	Scientist-in-charge, IARI Assam [From 28.07.2023]

Scientific

Sr. No.	Name	Designation	Date of Joining to IARI Assam
1	Dr. Lohit Kumar Baishya	Head (NRM)	19.06.2023
2	Dr. Amjad Khansaheb Balange	Head (APF)	30.06.2023
3	Dr. Anoop Kumar Srivastava	Principal Scientist	12.01.2023
4	Dr. S. Manivannan	Principal Scientist	16.01.2023
5	Dr. Deepjyoti Baruah	Principal Scientist	08.02.2021
6	Dr. Dibyendu Deb	Senior Scientist	17.10.2020

7	Dr. Arpan Bhowmik	Senior Scientist	11.04.2022
8	Dr. Alemwati Pongener	Scientist	02.07.2021
9	Dr. Sunil Mandi	Scientist	30.08.2022
10	Dr. Ch. Jamkhokai Mate	Scientist	01.11.2022
11	Dr. Arunjyoti Baruah	Scientist	17.10.2020
12	Dr. Palmei Gaibimei	Scientist	11.10.2021
13	Dr. Azhaguraja M.	Scientist	11.04.2023
14	Mr. Bhagirath Das	Scientist	11.04.2023
15	Dr. Sumalatha A.	Scientist	11.04.2023
16	Mr. Umakanta Dash	Scientist	11.04.2023
17	Mr. Da U Ruhi Pde	Scientist	11.04.2023
18	Dr. M.B.Chaudhary	Scientist	11.04.2023
19	Dr. Bornalee Handique	Scientist	20.07.2023
20	Dr. Machanuru Raviteja	Scientist	20.07.2023
21	Dr. Ravi Bhushan Prasad	Scientist	20.07.2023
22	Mr. Raghavendra H.R.	Scientist	20.07.2023
23	Mr. Sunny Arya	Scientist	20.07.2023
24	Dr. Abhijith K.P	Scientist	20.07.2023
25	Dr. Manish Pandey	Scientist	20.07.2023
26	Dr. Ansheef Ali T P	Scientist	20.07.2023
27	Dr. Ramavath Ramesh Babu	Scientist	20.07.2023

28	Mr. Akshay Kumar H.M	Scientist	21.07.2023 (deputed to IARI Jharkhand)
29	Mr. Kishore Chandra Sahoo	Scientist	21.07.2023 (deputed to IARI Jharkhand)
30	Dr Omprakash	Scientist	29.10.2023
31	Dr Mythra	Scientist	29.10.2023

Administration and Finance

Sr. No.	Name	Designation	Date of Joining to IARI Assam
1	Mr. Saroj Kumar Singh	CAO and Head of Office	01.11.2023
2	Mr Prashant Kumar Sharma	Comptroller	01.12.2023
3	Mr. Jitender Singh Gaite	AAO	08.12.2023



ANNUAL REPORT

भा.कृ.अनु.प.-भारतीय कृषि अनुसंधान संस्थान
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Dirpai Chapori, Gogamukh - 787 035, Dhemaji, Assam