

CONTENTS

**FROM THE DIRECTOR'S
DESK**

**NODAL OFFICER'S
CORNER**

**SIGNIFICANT
INFRASTRUCTURAL
DEVELOPMENT**

**RESEARCH
ACHIEVEMENTS**

**FIELD DAYS AND
EXTENSION ACTIVITIES**

**PANORAMA OF
ACTIVITIES**

LINKAGES DEVELOPED

**PARTICIPATION IN
TRAINING/WORKSHOP/
CONFERENCE**

PUBLICATIONS

**PRESENTATIONS/
AWARD/HONOUR/PEER
RECOGNITION**

**TRANSFER/NEW
JOINING/APPOINTMENT**

**DISTINGUISHED
VISITORS**

FROM THE EDITORS

From The Director's Desk

Greetings!!

At the very outset I extend my sincere greetings to you. ICAR-IARI Assam is developing at a quick pace and I am happy to share that the main Administrative-cum-Academic building and Guest house of the institute are near completion and will be inaugurated soon. There has also been a change of guard with Dr. Robin Gogoi, Principal Scientist, IARI, taking over as Nodal Officer and Dr. Deepjyoti Baruah, Principal Scientist, as Scientist In-Charge. Two more scientists have joined the institute during this period and I am confident that the team under the new leadership will steer the institute to greater heights.



The institute has initiated research programmes in field and horticultural crops, fishery science, social science and remote sensing-based crop prediction. We have been able to document 26 fish species and two wild underutilized fruits in the region. 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.

In a significant milestone, Undergraduate students have been admitted at IARI Assam from the 2022-23 academic session and they are expected to join the institute once the infrastructural facilities are in place.

The institute now stands at an important juncture where research, teaching and extension activities can accelerate and bring about desirable results for society. With this background, I present to you this issue of our newsletter which carries a gist of all the activities that have taken place during this period. I am confident that you will find the contents of this newsletter informative.

I wish to congratulate the editorial team for bringing out the newsletter with their meticulous effort.

Dr. A. K. Singh, Director, IARI



NODAL OFFICER'S CORNER



ICAR-IARI, Assam is a unique institution that distinguishes itself in various aspects, including its structure, operations, mandate, and objectives. The institute is a trailblazer, with a mission to promote agricultural education and research and to foster holistic agrarian development. It is one of the important research institutes in the North East region of India that focuses on agricultural development, with the goal of improving the quality of life for the people of the region. This being said, I am grateful to the Director for the trust he shown me by nominating me as the Nodal officer of the institute. This is the second newsletter of the institute and compiles the scientists' activities and accomplishments from July-December 2022. I would like to express my deep appreciation to the team of scientists who dedicated their time and effort to bring out this newsletter. Their hard work, dedication, and commitment to the institute's goals

are truly admirable. I would also like to extend my heartfelt thanks to Dr. A.K. Singh, Director of ICAR-IARI, New Delhi, for his constant support, encouragement, and guidance during the establishment stage of the institute. His unwavering commitment to the institute's success has been invaluable. I firmly believe that this newsletter will provide readers with a comprehensive overview of ICAR-IARI, Assam's activities and highlight the institute's crucial role in the future development of the entire North East region of the country. The contributions made by the scientists and the Director have laid a strong foundation for the institute's future success, and their efforts are highly appreciated. The institute also strongly emphasizes entrepreneurship training, aimed at promoting the commercialization of agriculture. Its distinctive characteristics make it a vital institution in the country's agricultural sector and an important contributor to the overall economic development of the North East region. With its unique structure, operation, mandate, and objectives, ICAR-IARI, Assam is poised to make a significant impact on the agricultural landscape of the region and beyond.

Dr. Robin Gogoi, Nodal Officer, IARI Assam

SIGNIFICANT INFRASTRUCTURAL DEVELOPMENT

The institute has carried forward the rapid pace of infrastructural development on the academic campus. The construction of the Academic-cum-Administrative building and Guest house has been completed, and furniture and fixtures are being installed. Both the

buildings will be inaugurated very soon. 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 first batch of B.Sc. Agriculture students at the earliest.



Left to right : Academic cum administrative building; Night view of the building; Bird's eye view of the under-construction hostels for students, Guest House, Laboratory unit and Office at Shaikshanik Bhawan

RESEARCH ACHIEVEMENTS

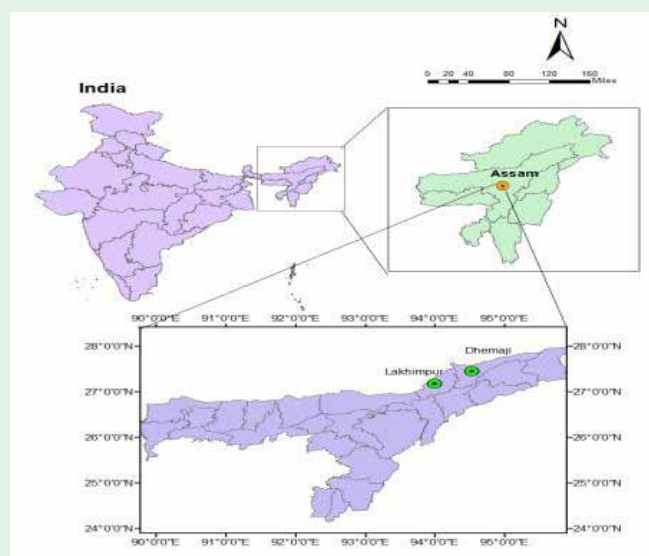
INSTITUTE PROJECTS

Remote sensing-based prediction of crop performance in agri-horti crops of North-eastern region

Project Team: Dibyendu Deb, Alemwati Pongener, Arpan Bhowmik, Deepjyoti Baruah, Arunjyoti Baruah, Palmei Gaibimei, and Shovik Deb (UBKV, Cooch Behar, West Bengal)

Highlights:

- Sampling sites from the study area (Dhemaji and North Lakhimpur from the upper part of the state of Assam and other neighbouring districts of North Eastern region) were visited by the project team to study the conventional horticultural activity and production of fruit crops in the region.



Study area (A), Satellite image of some sample locations from the study area (B)

- A mixed farming system is very much prevalent in the study area. The unique diversity in the weather condition and the fertile and well-drained soil of the area is very suitable to grow large numbers of horticultural crops including fruits, vegetables, plantation crops etc.
- Pineapple was the most dominant fruit crop from the data collected during the first year in the study area. The total area under pineapple cultivation is 16905 ha in Assam with productivity of 18.27 t/ha
- Secondary data has been collected on the district-wise area, production and average yield of some major Horticultural crops of Assam from the Director of Horticulture & FP of Assam.

Collection, evaluation, documentation, and utilization of cultivated and wild underutilized horticultural crops of north-eastern region of India

Project Team Alemwati Pongener, Dibyendu Deb, Deepjyoti Baruah, Palmei Gaibimei, Arpan Bhowmik and Arunjyoti Baruah

Highlights:

- A successful multi-storey cropping system involving Arecanut + Black pepper + Pineapple has been documented along the bank of the Subansiri and Ranganadi rivers.
- 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. Several fruits are used as acidulants in Assamese cuisine of which Assam lemon is most prominent. Apart from this, the phenology of two minor fruits was documented during the period – elephant apple and false mangosteen.
- Elephant apple (*Dillenia indica*):** Known as *OuTenga* in Assam, this fruit is commonly available and used as an acidulant in preparation of curries and chutneys. Flowers are large and showy containing five petals and numerous stamens. Fruit is roundish and measures up to 12 cm in diameter.
- False mangosteen (*Garcinia xanthochymus*):** Locally called *Tepor Tenga*, the fruit measures about 5-9 cm in diameter, turns yellow at maturity around October-November and contains about five seeds fused into the pulp.

Assessment of livelihood diversification of farmers under rainfed ecosystem in North East India.

Project Team: Arpan Bhowmik, Dibyendu Deb, Deepjyoti Baruah, Alemwati Pongener, Arunjyoti Baruah and Palmei Gaibimei



Highlights:

- The project has been initiated to document agricultural practices and address threats to livelihood security through diversification.
- A list of potential factors including different socio-economic variables have been identified which are affecting the livelihood diversification practices under rainfed ecology in north east region.
- Extensive surveys are being conducted and Data is being collected from different farmers in and around Dhemaji and North Lakhimpur area.



Survey in Farmers' field

Assessment of fish diversity, fisheries resources and aquaculture avenues for improving self-sustenance of fisher-folk in upper reaches of the Brahmaputra valley.

Project Team: Deepiyoti Baruah, Arunjyoti Baruah, Alemwati Pongener, Dibyendu Deb, Arpan Bhowmik and Palmei Gaibimei

Highlights:

- 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, 26 types of fish species were recorded. The catch comprised 65% carps, 15% catfishes, 10% air-breathing fishes and eels, 5% mahseer and 5% miscellaneous groups of fishes. An indigenous species of snow trout (*Schizothorax* spp.) was witnessed in the upper reaches of the Kameng drainage. Similarly, an exotic trout (*Oncorhynchus mykiss*) was observed under culture in Dzuleke village at Nagaland.
- Aquaculture systems in the form of earthen fish ponds were visited at Lakhimpur and Dhemaji districts of Assam; trout raceways and hatcheries at Dzuleke village, Nagaland; 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 the remaining (15%) for *Chitala chitala*, *Ompok* spp., *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.



Fish sampling from fish farms, auction markets, landing centres and weekly fish market

Identification and documentation of commonly occurring fish diseases in Dhemaji and Lakhimpur districts of Assam

Project Team: Arunjoyoti Baruah, Deepjyoti Baruah, Dibyendu Deb, Alemwati Pongener, Arpan Bhowmik and Palmei Gaibimei, Uday Udit, Jackson Debbarma (ICAR-CIFA, Bhubaneswar)

Highlights:

- The initial study was carried out in two districts of the northern bank of the Brahmaputra river namely Lakhimpur and Dhemaji districts to identify and document the most commonly occurring fish diseases.
- Nearby farmers' fields, villages, and hatcheries at Majgaon village, Taring Baniagaon village, Lathial Latak village, Biofloc culture system of Jatin Das and state-owned organization like KVK and State Fisheries Department, Lakhimpur, Assam were visited to collect information regarding different fish diseases.
- Based on the field visits and data collected from different organizations, it has been found that the commonly occurring fish diseases include Abdominal dropsy (15%), Ulcer or Aeromoniasis (20%), Columnaris disease (10%), Fin and tail rots mainly from bottom-dwelling fish species (10%), White spot disease or Ichthyophthiriasis (5%), Argulosis or Fish lice infection from carps (10%), Cotton wool disease (10%), and Pin Head Disease (20%).



Glimpse of interaction with the farmer during survey

EXTERNALLY FUNDED PROJECTS

Translating the native fish germplasm for socio-economic benefits through aquaculture and fisheries in Himalayan region[DBT Funded]

Project Team: ICAR-DCFR: N. N. Pandey, R. S. Patiyl, S. Ali, GBPUA&T: Ashutosh Mishra, Vipul Gupta, Akansha Khati, ICAR-IARI Assam: Deepjyoti Baruah

Highlights:

Field study was conducted during 2021-2022 at river Dirang chu, river Sangti in West Kameng district of Arunachal Pradesh to identify the snow trout zones and to further collect species for identification. Two dominating species of Schizothoracids viz, *Schizothorax richardsonii* (Gray 1832), *Schizothorax plagiostomus* Heckel 1838 were identified and documented based on morphological characteristics and meristic counts. The average length of *S. richardsonii* was recorded as 15.52 ± 2.43 cm with an average catch size of 50.24 ± 23.42 g in weight. In case of *S. plagiostomus*, the recorded average length was 18.43 ± 5.12 cm with an average catch size of 56.45 ± 34.87 g in weight. *Garra* spp. *Glyptothorax* spp, *Psilorhynchus* spp. loaches etc were also captured in the sampling stations but in limited numbers. Fishing of snow trout is restricted on traditional lines. Noose and line method of fishing was found selective for catching snow trout inhabiting the deeper pools and turbulent lotic water of river Dirang chu and river Sangti. Average catch per unit effort (CPUE) of the gear was recorded to be 1.6-2.4 kg/hr and average catch size in weight was 128.7 ± 114.46 g. Cast nets, made of PA multifilament are another category of fishing gears operated in the rivers of Arunachal Pradesh with CPUE of 1.3-4.8 kg/hour/gear.



Haul of snow trout in Kameng drainage



A Schizothoracid sample for analysis



Noose and line fishing at river Dirang chu



Harvesting snow trout with cast nets

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 project under Core Research Grant (CRG) Scheme]

Project Team: UBKV: Sumit Chakravarty, Gopal Shukla and Ganesh Banik, **ICAR-IASRI:** Ankur Biswas, **ICAR-IARI Assam:** Arpan Bhowmik

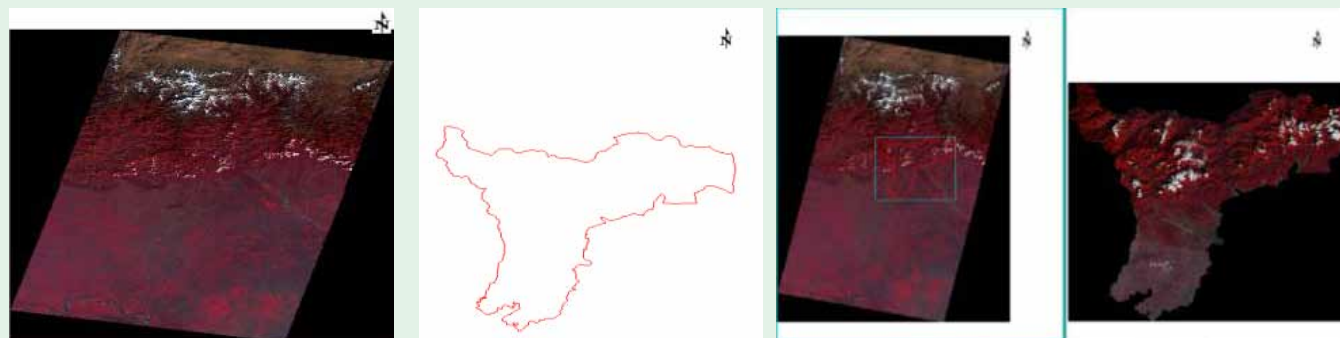
Highlights:

- Quantification of carbon store in different land uses has great importance to formulate future strategies not only to conserve the carbon sink but also to manage the sink sustainably to restrict the carbon emission. Studies on the land use system are thus essential for determining storage of the carbon and computing the carbon cycling at a regional as well as global level.
- Landsat 08 Image (30x30 m² resolution) was acquired from earthexplorer.usgs.gov with minimum cloud cover.
- Mosaicking of both layers stacked tiles has been done through Seamless mosaicking tool of ENVI 5.1.
- Region of Interest (ROI) for Darjeeling district of West Bengal and Sikkim state was marked through shape (.shp) file acquired from www.diva-gis.org. Both the study areas were extracted from mosaic file done through Seamless mosaicking tool of ENVI 5.1.
- Tree based classification technique has been

LANDSAT 8 BANDS				
Sensor	Band number	Band name	Wavelength (μm)	Resolution (m)
OLI	1	Coastal	0.43 – 0.45	30
OLI	2	Blue	0.45 – 0.51	30
OLI	3	Green	0.53 – 0.59	30
OLI	4	Red	0.63 – 0.67	30
OLI	5	NIR	0.85 – 0.88	30
OLI	6	SWIR 1	1.57 – 1.65	30
OLI	7	SWIR 2	2.11 – 2.29	30
OLI	8	Pan	0.50 – 0.68	15
OLI	9	Cirrus	1.36 – 1.38	30
TIRS	10	TIRS 1	10.60 – 11.19	30 (100)
TIRS	11	TIRS 2	11.50 – 12.51	30 (100)

implemented on satellite image for identification of land use and land cover.

- Validation by ground truthing is being conducted.
- Exploration is being done to acquire Digital Elevation Model (DEM) data for the study areas.



FIELD DAYS AND EXTENSION ACTIVITIES

FIELD DAY ORGANIZED AT GOGAMUKH, DHEMAJI DISTRICT, ASSAM

[Organizers: Deepjyoti Baruah, Dibyendu Deb, Arpan Bhowmik, Alemwati Pongener and Arunjyoti Baruah]

A field day was organized at Gogamukh, Dhemaji district, Assam on August 4, 2022. Fish farm and fish seed production unit of Mr. Til Bahadur Chetry located 1 km from Gogamukh centre were visited and information on the farming systems practiced by

the farmer and the local communities as a whole was collected. Technical advisories and detailed information on scientific farming methods in aquaculture and crop science were discussed.



Observing the different units of the farm of Mr. Til Bahadur Chetry



Collection of data by interacting with the farmer Mr. Til Bahadur Chetry

FIELD DAY ORGANIZED AT TARIANI VILLAGE NEAR PODUMONI THAN AND NONADI, NORTH LAKHIMPUR, ASSAM

[Organizers: Deepjyoti Baruah, Dibyendu Deb and Alemwati Pongener]

A field day was conducted at Tariani village near Podumoni Than and Nonadi, Lakhimpur district, Assam on August 22, 2022. The team met Mr. Surjya Chetry, a progressive pineapple grower of the region

and discussed his farming practices and pineapple farming in particular. Scientific techniques of pineapple raising and product development were discussed with the farmer.



Scientist interacting with Mr. Surjya Chetry on his farming system and marketing strategies

SCIENTIST-FARMER INTERACTION MEETING ORGANIZED AT SK ADARSHA GAON (VILLAGE), NORTH LAKHIMPUR, ASSAM

[Coordinators: Deepjyoti Baruah, Dibyendu Deb, Arpan Bhowmik, Alemwati Pongener and Arunjyoti Baruah]

Field day was conducted at SK Adarsha Gaon (village), near river Subansiri bridge on August 26, 2022. The objective of the field day was to demonstrate the scientific functioning of a Biofloc unit of Mr. Jatin Das, a farmer in the village. The farmer was interacted alongwith his elder brother Mr. Jitu Das and their

family. Many of their queries relevant to maintaining the water quality and to mitigate the fish mortality were answered by the fisheries scientists of IARI Assam. The farmer was further asked to test the quality of water from time to time.



Scientists of ICAR-IARI Assam interacting with Mr. Jatin Das on his bio-floc unit

INTERACTIONS IN FARMERS' FIELD AT KATORI CHAPORI, NORTH LAKHIMPUR, ASSAM

[Organizers: Dibyendu Deb, Arpan Bhowmik and Alemwati Pongener]

Scientists of IARI Assam organized interaction meeting with some farmers of Katori Chapori village, North Lakhimpur, Assam on September 12, 2022. The team visited the fields of Mr. Manik Das, Sansuma Gayari and Bordeshwar Gayari. By interacting with the farmers scientist came to know about the major cultivation practices of the village. The team visited the newly established orchards of Dragon fruit and apple ber and the commercial fishery ponds in the village. Scientists also visited the intercropping fields of Arecanut-

banana and provided detailed farm advisories to the farmers for enhancing the production and productivity through planting of intercrops during the initial years of establishment of the main crops. Discussion was also held on managing ratoon crop in banana for better production. Farmers also informed scientists that they have created a Farmer producer company (FPC) named as Ma Podumoni FPC which consists of more than 200 farmers.



Scientists interacting with farming community of Katori Chapori Village on Areca nut-Banana Intercrop Plantation and Fisheries



ORCHARD VISIT AT NALKATA VILLAGE, NORTH LAKHIMPUR, ASSAM

[Participants: Dibyendu Deb, Arpan Bhowmik, Alemwati Pongener and Arunjyoti Baruah]

A team of Scientists from IARI Assam made a fruitful visit to the orchard of a farmer, Mr. Brojen Gogoi at Nalkata Village, North Lakhimpur, Assam. The orchard consisted of approximately 2000 orange and sweet orange plants, around 4 bighas of pineapple plantation, 600-650 arecanut plants, 250-300 Banana plants, and 50-60 mango trees. The orchard was a

successful example of multi-storey cropping involving Arecanut + Betelvine/Black Pepper + Pineapple. The farm area also consists of approximately 3 bighas of chili plantation and some black pepper and jackfruit plantation. The team recorded valuable information about the cultural operations, and other production and postharvest operations in the farm.



Multi-storey cropping of Mr. Brojen Gogoi



Observing the orchard management by the Scientists



Scientist with the farmer in different units of the orchard



FIELD VISIT AT TARIANI VILLAGE AND NONADI, NORTH LAKHIMPUR, ASSAM

[Participants: Deepjyoti Baruah, Dibyendu Deb and Alemwati Pongener]

Scientists of IARI Assam visited Tariani village near Podumoni Than and Nonadi and met Mr. Dhan Bahadur Chetry and his younger brother Gyan Bahadur Chetry, progressive pineapple growers of the region, along with their farm families on December 6, 2022. Detailed

information on his farming practices, pineapple farming practices in 7.5 bighas of land was collected. Farm advisories were given to the farmers by the visiting team for enhancing the production and productivity from the unit area.



Scientists of ICAR-IARI Assam in the orchard of Mr. Dhan Bahadur Chetry

FIELD DAY CUM INTERACTION WITH AGRIPRENEUR AT RANGAJAN VILLAGE, NORTH LAKHIMPUR, ASSAM

[Coordinators: Deepjyoti Baruah, Dibyendu Deb, Arpan Bhowmik, Alemwati Pongener and Arunjyoti Baruah]

Scientist of IARI Assam visited the farm of a young female Agripreneur, Miss Banashree Hazarika on December 8, 2022 at Rangajan village, Lakhimpur district, Assam. Detailed information from the entrepreneur on her integrated farming practices in a land holding of 19 bighas was collected. During the interaction session, scientists came to know that the

entrepreneur is carrying out fishery, cattle-rearing, goatery, and poultry. The entrepreneur also markets quality milk from her dairy sector at Rs. 70/- per litre at North Lakhimpur town under the name Bogi Farm House. Queries raised by the entrepreneur on various issues and constraints in farming systems were answered by the team of scientists.



Interaction with Agripreneur Miss Banashree Hazarika



A glimpse on the different units of the farm of Miss Banashree Hazarika

FIELD VISIT AT ADJOINING VILLAGES OF GOGAMUKH, DHEMAJI, ASSAM

Dr. Ch. Jamkhokai Mate and Dr. Sunil Mandi visited a nearby village of Marabil in Gogamukh to collect information on pesticide usage patterns among the farmers. The farming communities were advised on the adoption of remedial measures to be undertaken for healthy soil conditions for raising various crops.

Dr. Sunil Mandi visited Garaimari Bangali, Gogamukh, Dhemaji, Assam and interacted with Mr. Girija Doley, a progressive farmer in the region. Information

was collected on the types of fruits, vegetables and agricultural crops being cultivated by the farmer. The rice-cum-fish and fruit plantation with seasonal vegetables on dykes of fish ponds were observed. The annual income by adapting to the integrated approach of farming was investigated to guide him further for inclusion of commercially important crops for enhancing farm productivity and income.



Some glimpse of field visits at nearby villages of Gogamukh

Some glimpse of field visits at Garaimari Bangali, Gogamukh, Dhemaji, Assam

ON-FARM DEMONSTRATION OF MUSTARD AND LENTIL VARIETIES

[Coordinators: Sunil Mandi, K. B. Pun (Consultant), Deepjyoti Baruah, Dibyendu Deb, Arpan Bhowmik, Alemwati Pongener, Arunjyoti Baruah, and Ch. Jamkhokai Mate]

ICAR-IARI Assam conducted on-farm demonstration of improved varieties of mustard and lentil in two villages of North Lakhimpur. The demonstration of Pusa Mustard varieties namely PM-25, PM-26, PM-27, PM-28 and Pm-33 was carried out in the field of Mr. Dharmender Sonowal, a farmer of Badhakara Kousiamari village, Badhagara, while lentil varieties viz., 4717, 4727, 4729, PDL1, PSL9 were sown in the farm of Mr. Mohan Roy Gogoi, farmer of Haribor

Naharani village, Badhagara, North Lakhimpur. Local checks were sown for comparison of performance and yield. In addition to providing technical guidance on agronomic and cultural practices, the farmers were provided fertilizers as per recommended dose. Dr. Sunil Mandi, Scientist (Agronomy) is leading the team in guiding the farmers on all aspects of crop production and protection measures.



Field preparation for sowing Pusa mustard varieties in the field of Mr. Dharmender Sonowal

Field preparation for sowing lentil varieties in the field of Mr. Mohan Roy Gogoi

PANORAMA OF ACTIVITIES

Tricolour hoisted at ICAR-IARI to commemorate 75 years of India's Independence

The Indian National Flag was hoisted on August 15, 2022 at ICAR-IARI, Gogamukh, Assam by Dr. Deepjyoti Baruah, Principal Scientist (Aquaculture) in celebrating the spirits of *Azadi ka Amrit Mahotsav*

and to commemorate 75 years of independence and the glorious history of its people, culture and achievements. The essence of the 'Har Ghar Tiranga' campaign was also expressed on the occasion. The solemn ceremony was attended by the scientists of the IARI Assam, officials of NPCC and construction workers at the institute.



Hoisting of the Indian National Flag at ICAR-IARI Assam in presence of the scientists, NPCC officials and construction site workers

PM KISAN SAMMAN SAMMELAN

Scientists of ICAR-IARI, Assam coordinated with Krishi Vigyan Kendra and participated in the **PM Kisan Samman Sammelan** programme at KVK Lakhimpur on October 17, 2022. Altogether, 300 farmers from the nearby villages and adjoining regions participated in the programme to witness the webcast speech of

Hon'ble Prime Minister of India during the inaugural function of Agri Start up Conclave Kisan Samman Sammelan from PUSA, New Delhi. Exhibition on various agricultural technologies and products from different stakeholders was displayed, followed with Farmers-Scientists interaction meet.



Glimpse of PM Kisan Samman Sammelan at KVK Lakhimpur and RARS, AAU premises

VIGILANCE AWARENESS WEEK- 2022

ICAR-IARI Assam joined the rest of the nation in commemorating the "Vigilance Awareness Week 2022". On the occasion the 'Integrity Pledge' was administered to all the staff on October 31, 2022. An awareness programme was held where participants discussed and shared views to underscore the importance of vigilance and integrity in every walk of life.



Glimpse of staff of IARI Assam taking Integrity Pledge during Vigilance Awareness Week-2022

SWACHHTA PAKHWADA

ICAR-IARI Assam organized Swachhta Pakhwada during December 16-31, 2022 at the Dirpai Chapori, Gogamukh campus by undertaking cleaning drives in the institute premises. Later, a talk followed by group discussion was organized to discourage the use of

single-use plastic and mitigation of plastic pollution. To this effect the institute also took a remarkable step towards reducing paper use and waste as e-office has been made functional to help in digitization and traceability of office records.



Glimpse of Swachhta Activities at IARI Assam

LINKAGES DEVELOPED

1. Lakhimpur Girls' College
2. Krishi Vigyan Kendra, Lakhimpur
3. Directorate of Fisheries, Govt. of Nagaland,
4. Directorate of Fisheries, Govt. of Arunachal Pradesh,
5. Regional Agricultural Research Station, North Lakhimpur
6. Krishi Vigyan Kendra, West Kameng district, Arunachal Pradesh

PARTICIPATION IN TRAINING/WORKSHOP/CONFERENCE

S No	Title	Mode (Online/ Offline)	Organizer	Date and Duration
1	International Symposium on Probability and Statistics: New Frontiers " (ISPS 2022) Participant: Dibyendu Deb and Arpan Bhowmik	Online	Organized jointly by the Department of Statistics, University of Calcutta and Calcutta Statistical Association (CSA) to celebrate 75 years of CSA.	Date: August 12 – 14, 2022 Duration: 3 days
2	International webinar on "Current State of Econometrics and Career Prospects of Young Minds" Participant: Dibyendu Deb and Arpan Bhowmik	Online	Organized by Department of Statistics, Central University of Rajasthan	Date: September 12, 2022 Duration: 1 day
3	International Conference on "Responsible Aquaculture and Sustainable Fisheries Interact (RASHI)" Participants: Deepjyoti Baruah, Dibyendu Deb and Arunijyoti Baruah	Online	Organized jointly by the College of Fisheries, CAU (Imphal), Tripura; College of Fisheries Lembucherra Alumni Association (COFLAA), and North East Society for Fisheries and Aquaculture (NESFA), India.	Date: December 13-16, 2022 Duration: 4 days
4	Eighth International Conference on Statistics for Twenty-first Century-2022 (ICSTC - 2022) Participant: Arpan Bhowmik	Online	Organized jointly by the International Statistics Fraternity(ISF), School of Physical and Mathematical Sciences and Department of Statistics, University of Kerala	Date: December 16-19, 2022 Duration: 4 days

PUBLICATIONS

RESEARCH PAPER

1. Anjum, A., Jaggi, S., Lall, S., Varghese, E., Rai, A., **Bhowmik, A.** and Mishra, D. C. (2022). Segmentation of Genomic Data: Comparative Analysis among Different Multivariate Statistical Approaches. *Indian Journal of Agricultural Sciences*, **92**(7): 92-96.
2. Choudhary, P., **Bhowmik, A.**, Chakdar, H., Khan, M. A., Selvaraj, C., Singh, S. K., Murugan, K., Kumar, S. and Saxena, A. K. (2022). Understanding the biological role of PqqB in *Pseudomonas stutzeri* using molecular dynamics simulation approach. *Journal of Biomolecular Structure & Dynamics*, **40**(9): 4237-4249.
3. De, P., Deb, S., **Deb, D.**, Chakraborty, S., Santra, P., Dutta, P., Hoque, A. and Choudhury, A. (2022). Soil quality under different land uses in eastern India: Evaluation by using soil indicators and quality index. *Plos one*, **17**(9): p.e0275062.
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POPULAR ARTICLES

1. **Baruah, D.**, Sarma, D., Patiyal, R.S., Shahi, N., Akhtar, M.S., Haldar, R.S., Pandey, P.K., Posti, R., Singh, B. and Mishra, A. (2022). Recreational fisheries in Uttarakhand, *Aquaculture Asia*, 26(4): 13-20.
2. Chowdhury, A.R. and **Mate, C.J.** (2022). Cassia tora Gums: A New Possibility for Food Additive. *Agriculture and Food: E-Newsletter*, 4(7): 437-438.
3. Debnath, S., Purakayastha, T. J., Kishor, A., Kumar, A. and **Bhowmik, A.** (2022). Orchards in Uttarakhand: Soil nutrient status. *Current Science Reports*, 123(5): 629-630.
4. **Mate, C.J.**, Chowdhury, A.R. and Thombare, N. (2022). Importance of minor gums for diverse applications. *Agriculture and Food: E-Newsletter*, 4(7): 107-108.
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6. **Mate, C.J.**, Chowdhury, A.R., Thombare, N. (2022). Importance of Gum Arabic. *Agriculture and Food: E-Newsletter*, 4(9): 185-186.
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9. चंद, बिजौय, भौमिक, अर्पण, जग्गी, सीमा, वर्गीस, एल्दो, वर्गीस, सिनी, दत्ता, अनिदिता, एवंकुमार, देवेंद्र (2022)। कृषि परीक्षा हेतु प्रचलन प्रतिरोधी लागत द्विस्तर घाट कि योरन क्रम। संखिकी विमर्श, 17: 52-55.

REFERENCE MANUAL

- Varghese, C., Jaggi, S., Varghese, E., Dalal, A. and **Bhowmik, A.** (2022). Package 'PolycrossDesigns'. Reference Manual. Available at <https://cran.r-project.org/web/packages/PolycrossDesigns/PolycrossDesigns.pdf>.

BOOK CHAPTER

- **Baruah, D.** (2022). Hydroelectric projects: an inevitable challenge in fisheries of the temperate Himalayas. In: Fisheries and Aquaculture of the Temperate Himalayas (Eds. PK Pandey, MS Akhtar & NN Pandey). Springer Nature Publisher. [ISBN-13: 9789811983023].

ORAL PRESENTATIONS IN NATIONAL/ INTERNATIONAL CONFERENCE

Following papers were presented during **Virtual International conference on “Responsible Aquaculture and Sustainable Fisheries Interact (RASHI)”** held

during **December 13-16, 2022** at College of Fisheries, Lembucherra, Tripura

- **Dibyendu Deb***, Deepjyoti Baruah, Arpan Bhowmik, Arunjyoti Baruah, Alemwati Pongener, Palmei Gaibimei, Sunil Mandi and. Use of artificial intelligence in aqua sciences.
- **Deepjyoti Baruah***, Arunjyoti Baruah, Alemwati Pongener, Dibyendu Deb, Arpan Bhowmik, Palmei Gaibimei and Sunil Mandi. Fishing Method for Assam womenfolk for sustainable livelihood.
- **Arunjyoti Baruah***, Deepjyoti Baruah, Dibyendu Deb, Alemwati Pongener, Arpan Bhowmik, Palmei Gaibimei, Ch. Jamkhokai Mate and Sunil Mandi. Overview of aquatic animal diseases in Lakhimpur and Dhemaji districts of Assam.
- **Deepjyoti Baruah***, Kishor Kunal, Parvaiz A. Ganie, Garima, Ravindra Posti, D. Sarma and P.K. Pandey. Snow trout (*Schizothorax* spp.) fisheries in high altitudinal regimes of Arunachal Pradesh
- Bijoy Chanda, **Arpan Bhowmik***, Eldho Varghese, Seema Jaggi and Anindita Datta. Two level minimally changed fractional factorial run order in the presence of trend effects through algorithmic intervention during **Eighth International Conference on Statistics for Twenty-first Century-2022 (ICSTC - 2022)** held at University of Kerala from December 16-19, 2022

*Presenter

RESOURCE PERSON IN TRAINING PROGRAMME/WORKSHOPS

DEEPIYOTI BARUAH

Served as **resource person** and delivered a talk on “Brief discussion of different value added fish product” during **3-days training programme on Fish processing through preparation of value added fish products** under ICAR-CIFT sponsored project on entrepreneurship development among the fishing communities through postharvest management and value addition of fish catch at KVK Lakhimpur during August 19-22, 2022

Served as **resource person in 2-days International workshop on “Current and Traditional Practices for Sustainable Management of Aquatic Ecosystems”** during November 24-25, 2022 at Kohima Science College under NERAQ (Protection and Sustainable Management of Aquatic Resources in the North-Eastern Himalayan Region of India), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) project.

ARPAN BHOWMIK

Delivered a lecture as **resource person** on **Data Reduction Techniques (PCA & FA)** in aDST-SERB

sponsored high end workshop “KARYASHALA” on “Statistical and Machine Learning Techniques for Agricultural Systems Modeling and Forecasting using R” organized by ICAR- Indian Institute of Rice Research Hyderabad during July 18-30, 2022. [Online mode].

Delivered a lecture as **resource person** on **Basic Experimental Designs using SPSS** in a Faculty Development Programme on “Experimental Designs and Data Analysis” organized by School of Agricultural Sciences, GD Goenka University, Gurugram during August 8-12, 2022 [Online mode].

ALEMWATI PONGENER

Delivered a lecture as **resource person** on “Nursery Seed Raising” on November 17, 2022 during “**Training programme for Agricultural Input dealers of Assam**” from November 9-29, 2022 at KVK Lakhimpur, AAU, Assam

SUNIL MANDI

Delivered two lectures as **resource person** on “Types of herbicide and their uses” and “Herbicide calculation” during “**Training programme for Agricultural Input dealers of Assam**” from November 9-29, 2022 at KVK Lakhimpur, AAU, Assam

ADVISORIES/EXPLORATORY SERVICES

- **Dr. Arpan Bhowmik** advised three scientists [1.Dr. Rohan Sarkar, Scientist, DMAPR, 2.Dr. Pushpendra Kumar, Assistant Professor, CAU, Pasighat Campus, 3.Dr. Sovan Debnath, Scientist, CAFRI] for analyzing data from their experiments on application of ANOVA, Heatmap etc.

AWARDS, HONOURS AND PEER RECOGNITION

- Research paper entitled, “Comparative study of soil aggregation, carbon and microbial dynamics under agroforestry, grasslands, orchard and cultivated land use systems. *Range Management & Agroforestry*, **41(2)**: 258-256” authored by Bappa Pramanik, Shovik Deb, Ashok Choudhury, Somsubhra Chakraborty, Parimal Panda, Anarul Hoque and **Dibyendu Deb** won the **Best paper award** in the National Symposium on “Innovations in forage and livestock sector for enhancing entrepreneurship and farm productivity” held from November 1-3, 2022 at ICAR-IGFRI, Jhansi, UP.
- **Dr. Arpan Bhowmik** acted as Session Organizer for the session Statistical Designs for Experimentation in Eighth International Conference on Statistics for Twenty-first Century-2022 (ICSTC - 2022), December 16 – 19, 2022
- **Dr. Arpan Bhowmik** served as Invited Speaker in Eighth International Conference on Statistics for Twenty-first Century-2022 (ICSTC - 2022), December 16 – 19, 2022.

TRANSFER / NEW JOINING / APPOINTMENT

- Dr. K.B. Pun, Nodal Officer, ICAR-IARI Assam superannuated from service on July 31, 2022
- Dr. Sunil Mandi, Scientist (Agronomy) joined the institute on August 30, 2022 (FN) on transfer from ICAR-CTRI, Research Station Dinhata, Cooch Behar, West Bengal
- Dr. Ch. Jamkhokai Mate, Scientist (Agricultural Chemicals) joined the institute on November 1, 2022 (FN) on transfer from ICAR-NISA, Ranchi, Kharkhand
- Dr. K.B. Pun, joined the institute as Consultant on November 21, 2023
- Dr. Robin Gogoi, Head (Act.) assumed the charge of Nodal Officer, ICAR-IARI Assam on December 16, 2022
- Dr. Deepjyoti Baruah, Principal Scientist (Aquaculture), assumed the charge of Scientist In-Charge. ICAR-IARI Assam on December 16, 2022

DISTINGUISHED VISITORS

- Dr. T. K. Mandal, Principal Scientist, ICAR-NRCPB, New Delhi along with Dr. D. Choudhury, RARS (AAU), Lakhimpur visited the institute on July 31, 2022
- Dr. D. K. Singh, Principal Scientist and Professor (Agricultural Engineering) and Chairman, Works, IARI, New Delhi visited the institute on September 28, 2022



Dr. T.K. Mandal & Dr. D. Choudhury with the scientists of IARI Assam



Dr. D. K. Singh with the scientists of IARI Assam and site engineers

FROM THE EDITORS

What a difference six months can make! With construction activities going round the clock, the academic campus of ICAR-IARI Assam almost looks unrecognizable from what it was. The construction of the main building and Guest house are near completion and awaiting inauguration, while the students' hostels are also coming up at quick pace. Research programmes have been initiated and the scientists of the institute have made headways into knowing the agricultural

scenario and cropping systems in the region. This issue offers some insights into our research programmes and how the institute is building rapport and developing relationship with the farming community through field visits and extension activities. With UG and PG students set to join the institute soon, ICAR-IARI Assam now looks poised to shift gear to an altogether different trajectory. Flip through the pages and read on to uncover what made it to our news.

The Editorial Team

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Arpan Bhowmik, Senior Scientist | Alemwati Pongener, Scientist

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