सीएसआईआर-उत्तर पूर्व विज्ञान तथा प्रौद्योगिकी संस्थान, जोरहाट
CSIR-North East Institute of Science and Technology

INFOWATCH

An In-house Monthly Communication (July, 2024)

CSIR-NEIST organized a successful 'One Week One Theme' programme

Dr V M Tiwari, Director, CSIR-NEIST

Dr V M Tiwari delivering speech at the event

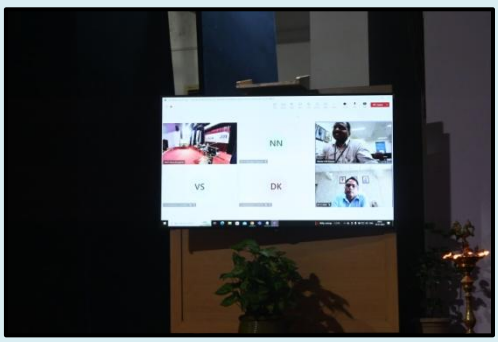
On July 15, 2024, a team of CSIR-NEIST, led by Director Dr. V. M. Tiwari, participated in the inaugural ceremony of the 'One Week One Theme' program, focusing on the Chemical Theme, hosted by CSIR-IICT, Hyderabad. The event showcased the institute's significant contributions to both industry as well as to the society.

Lighting of Lamp by Shri Vishal Shastri, Executive Director, ONGC A&AA Basin along with Dr V M Tiwari, Director, CSIR-NEIST and Professor Ramesh Chandra Deka, Vice Chancellor, Cotton University, Assam.

In connection with "One Week One Theme (OWOT)" programme of CSIR, CSIR-North East Institute of Science & Technology, Jorhat has organised a workshop on Chemical and Petrochemicals under the theme "Chemical Leather and Petrochemical (CLP)" on 19 July, 2024 with a comprehensive day-long programme at its premises. The event commenced with an inaugural session wherein Shri Vishal Shastri, Executive Director, ONGC's A&AA Basin graced the occasion as Chief Guest while Professor Ramesh Chandra Deka, Vice Chancellor, Cotton University, Assam was present as Guest of Honour. Dr K J Sreeram, Director, CSIR-CLRI, and Dr Harinder Singh Bisht, Director, CSIR-IIP, joined the program virtually.

Dr V M Tiwari, Director, CSIR-NEIST delivering his welcome speech

Dr Virendra M Tiwari, Director, CSIR-NEIST welcomed the august gathering and highlighted the critical role of chemistry in various fields and the significant contributions of CSIR-NEIST over the past more than 60 years. He reiterated the importance of fostering strong interactions between industry, academia, and stakeholders to drive forward scientific and technological advancements.



Guests delivering speech via online mode

Dr K J Sreeram emphasized the role of chemical industry as the backbone of many sectors and highlighted CSIR's mission to achieve sustainable development in the chemical sector by 2030 while Dr Harinder Singh Bisht echoed the importance of

collaboration with the industry and anticipated that the event would foster more collaborative projects, especially in areas like bio-refineries and energy security through online mode.

Prof Ramesh Ch. Deka, Vice Chancellor, Cotton University delivering his speech

Addressing the audience, Professor Ramesh Chandra Deka, emphasized the need for preventive measures in healthcare and the use of innovative technologies to manage resources effectively.

Shri Vishal Shastri, Executive Director, ONGC A&AA Basin delivering his speech

Addressing the occasion, Shri Vishal Shastri, provided valuable insights on the significance of the chemicals and petrochemicals sector for India's economic growth. Sri Shastri mentioned that his organization's plans to invest significantly in petrochemicals and green energy sectors, with an investment of approximately ₹1 lakh crore (about $13 billion) by 2028-2030. He expressed confidence that the "One Week, One Theme" initiative would lead to valuable advancements and collaborations.

Dr V M Tiwari, Director, CSIR-NEIST & Dr Rakesh Mishra, Director, TIGS, Bangalore exchanging the signed Memorandum of Understanding (MoU) on the occasion.

During the session, CSIR-NEIST and Tata Institute for Genetics and Society (TIGS), Bangalore, exchanged Memorandum of Understanding (MoU) for collaborative research on infectious diseases, vector control, rare genetic disorders, crop improvement and pest management.

A gllimpse from the technical session

The day-long programme comprised of technical sessions, panel discussions & interactive sessions and an exhibition cum poster session which showcased various research projects and activities of CSIR-NEIST, Jorhat.

Prof Ramesh Ch Deka at the exhibition cum poster session

The theme of the technical session I was "Chemicals" wherein Professor Ramesh Chandra Deka's delivered an invited lecture on "Transforming Drug Discovery with Molecular Modelling". Technical session II was themed around on "Petrochemicals", which featured invited lectures by Dr Sanjay Kamble Senior Principal Scientist, CSIR-NCL, on "Diversification in the Petrochemical Industry" and Shri Bimlesh Gupta, CGM (TS), NRL on "The Future of Petrochemicals in India." Both the sessions were followed by a panel discussion and interactive session. The programme was largely attended by invited guests, eminent scientists from various institutes/organizations, students & research scholars, besides CSIR-NEIST fraternity.

Summer Camp under Jigyasa Programme

CSIR-NEIST organised an enthusiastic summer camp from 8-12 July 2024 under the Jigyasa programme at its campus. 24 schools students (equal girls and boys) and 6 teachers from 6 different schools participated in the programme.

The camp featured a variety of engaging activities designed to ignite curiosity and foster a love for science among the participants. Students had the opportunity to work on different science projects, which encouraged hands-on learning and innovation.

Students with Dr V M Tiwari and the coordinator of Jigyasa programme

A popular science talk event was held, where experts shared exciting developments and insights in various scientific fields.

Glimpses from the interaction session

Additionally, the students had the experience of face-to-face interactions with the scientists of CSIR-NEIST, providing them with valuable mentorship and inspiration. An elocution competition allowed the participants to develop their communication skills and express their scientific knowledge confidently.

Dr V M Tiwari and the coordinators of Jigyasa programme awarding students

Through these activities, students gained practical experience, enhanced their understanding of scientific concepts, and were motivated to pursue further studies and careers in science.

The event coordinated by Dr Jatin Kalita , Senior Principal Scientist of CSIR-NEIST.

CSIR-NEIST Shines at Government Achievements and Expo 2024

(From left) Mr Madhujya Saikia, Dr Pravin G Ingole & Dr Ajit Singh

The CSIR-North East Institute of Science & Technology (CSIR-NEIST) participated at the 'Government Achievements and Expo' held from 20th July to 22th July, 2024, at Pragati Maidan, New Delhi. At the exhibition, Dr Pravin G Ingole, Sr Scientist, Dr Ajit Singh, Sr Scientist and Mr Madhujya Saikia, Sr Technical Officer represented CSIR-NEIST. This event attracted more than 2000 visitors, including farmers, entrepreneurs, government officials, Members of Parliament, school students, and the general public.

The CSIR-NEIST team displayed a variety of innovative products designed to improve everyday life. These included herbal mosquito repellents, anti-fungal ointments, carbon quantum dots, bio-fertilizers, specialized membranes and many more products. They also showcased their work on the Millet and Aroma Missions, which aim to promote sustainable farming and the cultivation of aromatic plants.

Dr Ajit Singh, Dr Praveen Ingole and Mr Madhujya Saikia elaborating about the innovations

The team engaged with visitors, explaining their products and their impact, underscoring CSIR-NEIST's crucial role in advancing science and technology in India. CSIR has been awarded the First Prize for outstanding performance at the exhibition.

Breaking New Ground in Sensor Technology: Dr. Jyotirmoy Deb's Revolutionary MoS_2-Based Sensor

Dr Jyotirmoy Deb, a Senior Project Associate in the ACDS division (currently with MSTD as NPDF), in collaboration with IIT Delhi and IIT Jodhpur, has achieved a significant milestone with his research published in ‘Advanced Functional Materials’ journal. His study, titled "Site-Selective MoS_2-Based Sensor for Detection and Discrimination of Triethylamine from Volatile Amines Using Kinetic Analysis and Machine Learning" presents advanced sensors using MoS_2 nanoflakes.

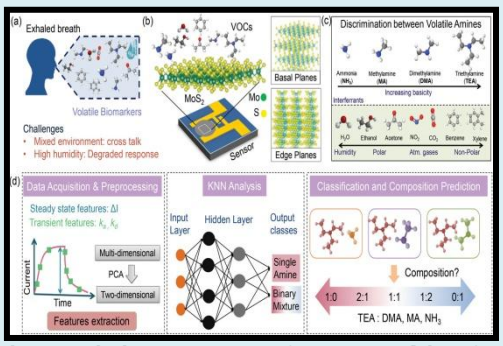


Fig: Synthesis and characterization of MoS_2 nanoflakes for volatile biomarker detection in exhaled breath, highlighting sensor fabrication, amine discrimination, and data analysis for composition prediction.

The said sensors excel in detecting triethylamine (TEA) among various VOCs and gases, with notable features like high sensitivity, rapid response/recovery,

low detection limit, and long-term stability. The sensor's efficacy is supported by kinetic analysis, DFT studies, and Machine Learning, achieving 95% accuracy in complex mixtures. This technology holds immense potential for medical diagnostics and environmental monitoring.

Revolutionary Breakthrough: The First Bimetallic Homogeneous Photocatalyst

In a major breakthrough, researchers from Dr Biswajit Saha's lab at MSTD and Dr. Ram Awatar Maurya's lab at CSTD, CSIR-NEIST, Jorhat, have unveiled the first bimetallic homogeneous photocatalyst. This pioneering work introduces a novel ferrocene-functionalized iridium complex that significantly enhances the efficiency of C-C and C-N bond formation.

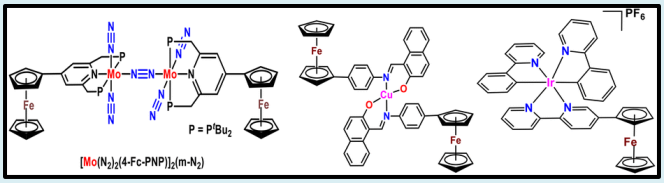
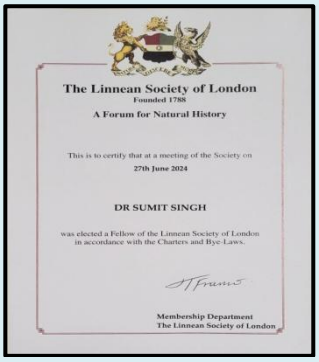


Fig: Ferrocene-functionalized metal complexes

What's truly remarkable about this development is the unique role of the ferrocene moiety. Without the addition of this second metal, the iron-based reactions faltered, even with high catalyst loading. The integration of ferrocene has proven essential, boosting the catalytic activity and demonstrating the potential of bimetallic systems in photocatalysis. This advancement is detailed in their article titled, "Boosting Photocatalytic Efficiency of Iridium Polypyridyl Complex in Coupling Reactions through the Induction of Ferrocene: Insights into Bimetallic Catalysis" from the Journal: Catalysis Science & Technology.

Achievements:



Dr. Sumit Singh, Scientist

Dr. Sumit Singh, Scientist of CSIR-NEIST, has been elected as a Fellow of the Linnean Society of London (FLS). This is the oldest biological sciences society, founded in 1788 in the name of Sir Carl Linnaeus, the father of Botany, to promote natural sciences.

Akhil Ranjan Borah, receiving the award

Akhil Ranjan Borah, AcSIR Research Fellow, pursuing a PhD under the supervision of Dr. Swapnali Hazarika, has won the Best Poster Award at the International Conference on Materials and Membranes for Water and Energy (ICMMWE-2024) organized by CSIR-CSMCRI.

Dr Debashree Bor, Sr Research Associate, holding the winning certificate

Dr. Debashree Bora, Senior Research Associate, working under Dr. B. Saha, Senior Scientist, MSTD, has got the Best Poster Award on Emerging Trends in Organometallic Chemistry (ETOMC 24) at IISER Kolkata, held on 12th and 13th July of 2024.

Papers Published:

In International Peer Reviewed Journals

1. **Title**: **Estimation of environment stability for fruit yield and capsaicin content by using two models in Capsicum chinense Jacq. (Ghost Pepper) with multi-year evaluation**
   Authors: Joyashree Baruah, Twahira Begum, Mohan Lal
   Journal: *PeerJ 2024*
   file:///C:/Users/HP%20User/Downloads/peerj-17511.pdf
   IF: 2.7
2. **Title**: **K Heterogeneous Iron-Based Catalysts for Organic Transformation Reactions**
   Authors: Baruah, Manash J ; Dutta, Rupjyoti; Zaki, Magdi E A ; Bania, Kusum
   Journal: A Brief Overview Molecules 2024
   https://www.mdpi.com/1420-3049/29/13/3177
   IF: 4.6

3. **Title**: **Hierarchical porous carbon derived from petroleum coke via one-step chemical activation for the fabrication of a supercapacitor and real time clock application**
   Authors: Santhi Maria Benoy, Abhishek Hazarika, Akhil Rajbongshi, Mousumi Boraab, Binoy K. Saikia
   Journal: RSC ADVANCES 2024
   https://pubs.rsc.org/en/content/articlelanding/2024/ra/d4ra03817g
   IF: 3.9
4. **Title**: **Magnetic engineering nanoparticles: Versatile tools revolutionizing biomedical applications**
   Authors: Randeep Singh,Diksha Yadav,Pravin G. Ingole,Young-Ho Ahn
   Journal: Biomaterials Advances 2024
   https://www.sciencedirect.com/science/article/abs/pii/S2772950824001912?via%3Dihub
5. **Title**: **Multilocus sequence analysis of '*Candidatus* Phytoplasma asteris' associated with phyllody of cucumber in India and development of loop-mediated isothermal amplification (LAMP) assay for its detection**
   Authors: Mantesh Muttappagol, Shridhar Hiremath, H.D. Vinay Kumar, Nandan M, C.R. Jahir Basha, K.S. Shankarappa, V. Venkataravanappa
   Journal: "PHYSIOLOGICAL AND MOLECULAR PLANT PATHOLOGY"
   https://www.sciencedirect.com/science/article/abs/pii/S0885576524001346?via%3Dihub
   IF: 2.7
6. **Title**: **Ultrasensitive and selective colorimetric and smartphone-based detection of arsenic ions in aqueous solution using alliin–chitosan–AgNPs**
   Authors: Rintumoni Paw,Ankur K. Guha, Chandan Tamuly
   Journal: RSC Advances 2024
   https://pubs.rsc.org/en/content/articlelanding/2024/ra/d4ra03665d
   IF: 3.9
7. **Title**: **Site-Selective MoS2-Based Sensor for Detection and Discrimination of Triethylamine from Volatile Amines Using Kinetic Analysis and Machine Learning**
   Authors: Snehraj Gaur, Sukhwinder Singh, Jyotirmoy Deb, Vansh Bhutani, Rajkumar Mondal, Vishakha Pareek, Ritu Gupta
   Journal: ADVANCED FUNCTIONAL MATERIALS 2024
   https://onlinelibrary.wiley.com/doi/10.1002/adfm.202405232
   IF: 1.9
8. **Title**: **Coal-Derived Porous Carbon as Versatile Electrode Materials for Aqueous, Water-in-Salt, and Organic Electrolytes, and Fabrication of Pouch Cell Supercapacitor toward Power Application**
   Authors: Santhi Maria Benoy, Abhishek Hazarika, Mousumi Bora, Akhil Rajbongshi, Debashis Sarmah, Manoj Kumar Phukan, Binoy K Saikia
   Journal: ACS Applied Energy Materials 2024
   https://pubs.acs.org/doi/full/10.1021/acsaem.4c01018#:~:text=Maximum%20specific%20capacitance%20values%20obtained,excellent%20versatility%20of%20the%20material
   IF: 6.4
9. **Title**: **Synthesis of fluorinated spiro-1,3-oxazines and thiazines via Selectfluor-mediated intramolecular cyclization**
   Authors: Chinu Gogoi, Ujwal Pratim Saikia, Priyam Borah, Trishna Saikia, Anamika Bora, Gaurav K Rastogi, Pallab Pahari
   Journal: Organic & biomolecular chemistry 2024
   https://pubs.rsc.org/en/content/articlelanding/2024/ob/d4ob00895b
   IF: 3.2
10. **Title**: **InVO4 Decorated Ti3C2 MXene for Efficient Photocatalytic Hydrogen Evolution**
    Authors: Sanmilan Jyoti Kalita, Sagar Varangane, Purashri Basyach, Karanika Sonowal, B. Moses Abraham, Ankur Kanti Guha, Ujjwal Pal, Lakshi Saikia,
    Journal: ACS Applied Materials & Interfaces, Journal 2024
    https://pubs.acs.org/doi/10.1021/acsami.4c03855
    IF: 9.5
11. **Title**: **Externally supplied ascorbic acid moderates detrimental effects of UV-C exposure in cyanobacteria**
    Authors: Tridip Phukan, Sukjailin Ryntathiang, Mayashree B Syiem
    Journal: *Photochemical & photobiological sciences 2024*
    https://link.springer.com/article/10.1007/s43630-024-00612-8
    IF: 3.1
12. **Title**: **A novel approach for modification of montmorillonite using banana peel ash extract for enhanced adsorption efficiency of methylene blue dye**
    Authors: Angita Sarkar, Nituraj Mushahary, Bipul Das, Sanjay Basumatary
    Journal: DESALINATION AND WATER TREATMENT 2024

https://www.sciencedirect.com/science/article/pii/S1944398624006350?via%3Dihub
IF: 1.1

13. **Title**: **Exploring the bioactive potential of Mentha longifolia from Northeast India: an inclusive study on phytochemical composition and biological activities**
Authors: Mohan Lal,Anindita Gogoi,Raghu Tamang,Priyanka Dutta,Kahkashan Perveen,Najla A Alshaikh, Twahira Begum
Journal: JOURNAL OF ESSENTIAL OIL BEARING PLANTS 2024
https://www.tandfonline.com/doi/abs/10.1080/0972060X.2024.2355266
IF: 2.4

14. **Title**: **Externally supplied ascorbic acid moderates detrimental effects of UV-C exposure in cyanobacteria**
Authors: Tridip Phukan, Sukjailin Ryntathiang & Mayashree B. Syiem
Journal: Photochemical & Photobiological Sciences 2024
https://link.springer.com/article/10.1007/s43630-024-00612-8
IF: 3.1

Farewell:

(From left) Chief Scientist of Eng Dept J J Bora felicitating Dr S B Wann

On July 31, 2024, Dr Sawlang Borsingh Wann, Chief Scientist and the Head of RPBDD retired after more than three decades of dedicated service.

Group photo of Dr S B Wann and the stuff

To bid a warm farewell on his retirement day a meeting was organised. The meeting was attended by NEIST fraternity to show their appreciation for Dr Wann's significant contributions, dedication and achievements, marking the end of an era and the beginning of his well-earned retirement.

Testing:

Sample received: 90 nos
Test report dispatched: 20 nos

External Cash Flow:

127.250 (Rs in lakh)

PROGRESS REPORT FROM DIV/SEC.: NEIST Br. Itanagar:

1. ANY SIGNIFICANT EVENTS:

DEMONSTRATION AND TRAINING PROGRAM ON MULTIPURPOSE FOOD AND MILLET PROCESSING UNIT HELD:

CSIR-North East Institute of Science and Technology, Branch Laboratory Itanagar in collaboration with District Agriculture Officer, Tawang organised a demonstration and training program aimed at "Utilization of Multipurpose Food and Millet Processing Unit" at the community hall of Namet Village today. The event marked a significant milestone in promoting sustainable food processing technologies which was attended by sixty-five farmers, scientists from KVK Tawang and Field Functionaries of agricultural department. Participating in the program as Chief guest, EAC, Kitpi, Tawang T. Kakki emphasized on maintaining hygiene while processing value added food products. He further asked farmers to adopt scientific cultivation practices with special emphasis on organic farming. Agronomist, Tawang L. Zimba advised the farmers to utilize the processing machineries to the fullest extent while maintaining the same.

In the technical session, Dr. Chandan Tamuly, Sr Principal Scientist, CSIR-NEIST, Branch-Itanagar highlighted the importance and potential impact of food processing technologies into value addition. Entomologist, Tawang. K.B. Kayastha spoke on different aspects of packaging and marketing of processed food items for profitability. Further practical demonstration on millet and multipurpose food processing units was conducted. Later on, the

processing machineries were handed over to the villagers. Similar programs will also be held at Teli and Pamaghar villages of the district. The photograph has shown in last part.

Papers Book chapter:

Summary of High Impact Making Papers

- Rintumoni Paw, Ankur K Guha, **Chandan Tamuly** * Ultrasensitive and selective colorimetric and smartphone-based detection of arsenic ions in aqueous solution using alliin–chitosan–AgNPs RSC Advances. (2024), 14, 22701 (**IF=3.9**)

In this study, we developed a highly selective and sensitive colorimetric sensor for arsenic [As(III)] detection using alliin–chitosan-stabilized silver nanoparticles (AC–AgNPs). The AC–AgNPs were synthesized using a complex prepared by mixing aqueous garlic extract containing alliin and chitosan extracted from shrimp. The synthesis of AC–AgNPs was confirmed by UV-vis spectroscopy, which showed a surface plasmon resonance (SPR) band at 403 nm, and TEM analysis revealing spherical nanoparticles with a mean diameter of 7.57 ± 3.52 nm. Upon the addition of As3+ ions, the brownish-coloured solution of AC–AgNPs became colourless. Moreover, the computational study revealed that among all the metal ions, only As3+ was able to form a stable complex with AC–AgNPs, with a binding energy of 8.7 kcal mol−1. The sensor exhibited a linear response to As(III) concentrations ranging from 0.02 to 1.4 fM, with a detection limit of 0.023 fM. The highest activity was observed at pH 7 and temperature 25 °C. Interference studies demonstrated high selectivity against common metal ions. The study also demonstrated that the concentration of As3+ ions can be estimated by the decrease in red intensity and increase in green intensity in smartphone optical transduction signals. These results indicate the potential of the AC–AgNP-based sensor for reliable and efficient arsenic detection in environmental monitoring.

- **No. of Papers with Impact Factor: one paper**
- **Recognition to CSIR Scientists**

6.1 CSIR-800 CONTRIBUTIONS:

Work done last month (Main point only)
As submitted in the month of June 2024 on dated 26.06.2024
Works done this month (point wise)

- Prepared 70 pkts of mushroom spawn and supplied 44 pkts to the local beneficiaries during the month and generated about 1110/- rupees by selling the mushroom spawn

(i) Cleaning of land is going on for cultivation of medicinal and aromatic plants. Accordingly, about 1000 nos of lemon grass seedling were planted. About 150 nos medicinal plant were planted in different location of campus. (Photograph is enclosed herewith)

(ii) Sub-culture of existing bacterial and fungal species in Muller Hilton Agar including Candida albicans, Micrococcus luteus, Staphylococcus aureus, Aspergillus flavus, Fusarium keratoplasticum, L innocua for maintenance of culture so that we can use the microbes for antimicrobial study.

(iii) Developing plant extract of medicinal and aromatic plants of Arunachal Pradesh and checking the antimicrobial activity of the extract against pathogenic bacterial and fungal samples.

- Antimicrobial activity of essential oils extracted by steam distillation from medicinal and aromatic plants against various strains of bacteria including *M leteus, P aeruginosae, L innocua, S aureus, E coli* etc.

Work proposed for next month (Main points only)

6.2 Externally Funded projects Project:

SEED Division, DST, New Delhi (GPP-374)

a) Manuscript communication and literature review.
b) Simultaneously, detection of Thiram using nanoparticles is under progress.
c) Cypermethrin is non-soluble in water, this is also one of the highest pesticide used in agriculture. Thus, the challenges to detect cypermethrin is also under process.
d) Prepared extract for bioactivity observations
e) GCMS analysis of Pineapple Wine and optimized the method file
f) Checked the pH of the Pineapple Wine on the regular basis.
g) Checked the anti-urease activity of the few wines including plum wine, millet wine etc.

- **GPP-418: "Livelihood enhancement of Monpa Tribe…….Technological intervention of Ethnic food items"**

1. Extraction of fats from *Amomum dealbatum* Roxb. flower using petroleum ether. The fat percentage was found to be 6.39%.

Fig: Extraction of fats using petroleum ether

2. GC-MS Analysis of methanol extracts of two buckwheat and one finger millet sample collected from Tawang. Presence of volatile compounds like n-Hexadecanoic acid, oleyl alcohol, cis-9-hexadecenel were seen.
3. Attended Installation, demonstration and training program on Multipurpose Food Processing and Millet

Processing Units at three villages of Tawang, Arunachal Pradesh.

CSIR-FTT Project (FTT-020509):

- Collection of fruit peels including orange and pineapple, drying them and powdering them for the composite preparation.
- In Progress: Optimization of growth curve for large scale cultivation.
- Procurement of non-recurring items, including, refrigerator, -20C freezer, solid state bioreactor and fish feed making machine.

Arunachal Pradesh Government (GPP0419):

- In Progress: In planta validation of evaluation of plant growth potential of selected endophytes of *Paris polyphylla* and *Aconitum heterophyllum* in crop tomato and chilli in Basar, Lapa Rada District and Naharlagun, Papum Pare Districts of Arunachal Pradesh.

6.3 Net Working/Mission Mode Project:

EVENTS SIGNIFICANT:

- **Conferences, Workshops:**

Agreements /Memorandum of Understanding signed

- **CSIR in News:**
- **Visits**

Moushumi Hazarika Sr T.O. visited Himalayan University (Itanagar exam centre) as Assistant Inspecting Officer in CSIR-UGC NET Exam duty during the period 24-27th July 2024.

- **S&T Services**

Summer training program: Six nos of student has participated summer training program

7. ANY OTHER ITEM OF SIGNIFICANCE:

- As a Nodal officer and Observer, Dr. Natarajan Velmurugan is monitoring the CSIR-UGC-NET examinations in Itanagar (Himalaya University) area from 24th-27th July 2024.
- Estimated plant materials for the cultivation of medicinal, aromatic and economically important plants in Branch Laboratory-Itanagar. The details are as follows:

Considering the raining season and approaching winter, we could potentially start the plantation with lemon grass and citronella first. The detailed plantation plan is as follows:

Citronella cultivation:
Target area: 3 acres
Plantation materials required: 30000 slips

Supply of Mushroom Spawn to local Farmers at CSIR-NEIST Branch Itanagar, Arunachal Pradesh

Supply of mushroom spawn to local Farmers at CSIR-NEIST Branch Itanagar, Arunachal Pradesh

Mushroom Cultivation unit at Yupia Naharlagun,Arunachal Pradesh Mushroom Cultivation unit at Ziro

Mis. **Nimmi Muri** B. Sc Agriculture Student of Royal Global University, Guwahati, Assam. She has Participated of 15 days Training Programme on Mushroom Culture Preparation, Spawn production & Mushroom cultivation under technical guidance of CSIR-NEIST Branch Itanagar, Arunachal Pradesh.

Installation and demonstration of following equipment

Drying Oven: The drying oven can be heated up to 250 degrees centigrade contains multiple trays inside used to dry moist raw materials like millets, grains, peeled and chopped fruits, herbs etc. The drying oven operates based on the principle of removing moisture from materials by applying heat in a controlled environment.

Fig. 1: Drying oven

Fig. 2: Drying of millet samples in the drying oven

Fig. 3: Demonstrating the Drying Oven's Use to the Locals

Pulverizer: A pulverizer, also known as a grinder, is a mechanical device used for the grinding of various materials into smaller particles.Commonly grown crops in the Tawang region include millet, buckwheat, ginger, turmeric etc. After drying, these raw materials can be ground to produce products like flour, turmeric powder, ginger powder, and so forth. These goods can be offered for sale in marketplaces, which might help the community's economy.

Fig. 4: The Pulverizer

Fig. 6: Flour Obtained from Grinding Millet in the Pulverizer

Fig. 5: Demonstrating the Pulverizer's Use to the Locals

Multipurpose Food Processing Unit:

This machine is designed to fulfil multiple purposes like to produce juice, jam, ketchup, candy, essential oil etc.

The appliance is constructed from two layers of stainless steel, with an opening for the insertion of oil between the layers to heat the cooking materials within. Additionally, a water supply connection serves as a condenser during the distillation process.

A motor is installed in the core of the appliance in which various shapes of blades and hammers can be attached. These blades have different mechanisms like removing peels from fruit, cutting, grinding, removing seeds without breaking. Using the same equipment, the ground ingredients can be processed further to produce juice, jam, ketchup, and other products by adding sugar, salt, water, and preservatives.

Using the same apparatus steam distillation is also possible. First, the components are cooked and combined with water. The rising vapour passes via a pipe that is connected to an external water flow that serves as a condenser. Next, condensed vapor can be gathered from an appliance-attached outlet. Using this procedure essential oil from aromatic plants can be extracted, soaps can also be produced from the extracted liquids.

Fig. 7: Multipurpose Food Processing Unit

Fig. 8: Fruits (Raw Materials) for the Preparation of Juice and Jam

Fig. 9: Preparation of Value-Added Products (Juice, Jam etc.) from Multipurpose Food Processing Unit

Fig. 10: Preparation of Soap

Demonstration and Training Program at Namet Village, Tawang:


Demonstration and Training Program at Teli Village, Tawang:


Demonstration and Training Program at Pamaghar Village, Tawan:


Additional manpower involved in cleaning of the cultivation field at Sector 1 of BLIT:


Additional manpower involved in cleaning of the cultivation field at Sector 2 of BLIT:


Propagation of the lemon grass slips at Sector 1 of BLIT:


Organized 3 Demonstration and Training Program on Multipurpose Food cum millets processing unit at Namet, Teli and inPamaghar Village, Tawang district of Arunachal Pradesh during the month of July 2024. About 40 farmers and local youth participated in the programmes.