

# BIO-RESOURCES BULLETIN 2026

JANUARY–MARCH, 2026

A QUATERLY NEWSLETTER

A snapshot of innovation, impact, and sustainability, Bio-Resources Bulletin 2026 (Issue 2, Vol. 1) captures BRDC's continued journey of transforming science into solutions.

From lab breakthroughs to field-level action, this issue highlights key initiatives in bio-resource management, organic practices, and community engagement. It reflects a powerful blend of traditional knowledge and modern science, driving meaningful change across ecosystems and livelihoods.

More than just updates, it tells stories of collaboration, resilience, and progress reinforcing BRDC's vision of a sustainable and self-reliant future.



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## MESSAGE FROM THE MEMBER SECRETARY



**Mitali Chandra, IAS**

It is with great pride and satisfaction that I present the Bio-Resources Bulletin, Issue 2, Volume 1, the official quarterly newsletter of the Bio-Resources Development Centre. This edition encapsulates the Centre's sustained commitment to advancing scientific excellence, fostering innovation, and translating knowledge into impactful, community-centric outcomes in the domain of bioresource management.

This issue offers a curated overview of our recent initiatives, including pioneering research efforts, field-level interventions, capacity-building programmes, and strategic collaborations. It reflects a cohesive approach that integrates science, sustainability, and socio-economic development, reinforcing our mandate to promote resilient and resource-efficient systems.

The Bulletin stands as a testament to the dedication, expertise, and collaborative spirit of our scientists, technical staffs, and community stakeholders. Their collective contributions continue to strengthen the Centre's role as a catalyst for sustainable development and a repository of region-specific bioresource knowledge.

As we navigate emerging challenges and opportunities, the Centre remains steadfast in its vision to drive innovation-led growth while ensuring ecological balance and inclusive development. It is my sincere hope that this publication will serve not only as an informative resource but also as a source of inspiration for researchers, practitioners, and policymakers alike.

I extend my heartfelt appreciation to the editorial team and all contributors for their exemplary efforts in bringing out this edition.





## TISSUE CULTURE LABORATORY

### From Culture to Canopy: Advancing Plant Propagation Frontiers

**Shillong, March, 2026:** Fueling the pipeline of plant innovation, daily subculturing and rapid multiplication of diverse orchid species alongside key crops such as potato, pineapple, and banana were carried out to ensure a consistent supply of high-quality, disease-free planting material.

Targeted efforts included in-vitro rooting and acclimatization of the local banana variety Rekachi (May-June), followed by systematic primary hardening of Kaitmon to enhance field adaptability.

### RECENT UPDATES:

- Subculturing & Multiplication: Orchids and Key Crop Varieties
- In Vitro Rooting & Acclimatization: Banana (Rekachi)
- Primary Hardening: Banana (Kaitmon)
- Micropropagation Initiated: Local Banana Varieties



Simultaneously, the initiation of micropropagation for local banana varieties marked a key step toward scalable production, supporting conservation, crop improvement, and sustainable agricultural expansion from lab to land.





# MICROBIAL BIO-INOCULANT

**Bio-Inoculants: Tiny Microbes, Transforming Agriculture**

**RECENT UPDATES:**

**Shillong, March, 2026:** In an effort to unlock the potential of microbial support in turmeric cultivation, 200 tissue-cultured *Curcuma longa* saplings were evaluated under five microbial inoculant treatments. The combined treatment (T4) showed the most promising results, improving rhizome girth, length, and overall productivity—highlighting the role of beneficial microbes in sustainable farming.

- Field Trials on *Curcuma longa* (January)
- Field Visits to Jaintia Hills for Turmeric Field Evaluation (February)
- Exposure Visit on Bio-Inoculants (February)
- Isolation and Identification of Pathogenic Fungi (March)

Bringing research closer to farmers, field visits were conducted in three villages of Jaintia Hills, Meghalaya, to assess turmeric diseases and observe biocontrol performance under natural conditions. Soil and infected plant samples were also collected to identify pathogenic and beneficial fungi, revealing rich microbial diversity in local soils.

Turning curiosity into action, community partners from Manas and Raimona, along with Aaranyak team members from the Kaziranga-Karbi Anglong landscape, participated in an exposure visit to the bio-inoculant unit on 17th and 20th February 2026. Participants gained hands-on experience in the production and application of biofertilizers, strengthening their understanding of chemical-free farming practices.

To better understand the unseen organisms shaping crop health, soil and infected plant samples were also collected to isolate and identify both pathogenic and beneficial fungi, revealing rich microbiadiversity in local agricultural soils





# QUALITY CONTROL AND ANALYTICAL LABORATORY

## QCAL Spotlight: Empowering Science through Skill and Innovation

**Shillong, March, 2026:** Blending learning with laboratory excellence, internship students were actively engaged in comprehensive qualitative and quantitative analyses, including phytochemical and biochemical screening of *Tricyrtis pilosa* (Sohkhia Blei) and *Mahonia napaulensis* (Dieng Niangmat). Concurrently, 18 turmeric samples from MBMA clusters, entrepreneurs, and East Khasi Hills were analyzed for curcumin content using UV-Vis spectrophotometry (FSSAI 10.031:2021), alongside 69 soil samples tested for pH (IS 2720 Part 26) and 3 samples from IBSD evaluated for crude fibre and total fat, with all reports successfully dispatched.

From Fresh Produce to Functional Power. The initiative under Technology Incubation introduces a forward-looking product concept fruit juice powder enriched with microencapsulated polyherbal extracts. By combining advanced food processing with traditional botanical wisdom, the approach not only tackles post-harvest losses but also delivers a convenient, shelf-stable, and functionally enriched nutritional solution for modern consumers.



## RECENT UPDATES:

- Internship Programme
- Sample Analysis and Testing
- Biological Laboratory Progress
- Technology Incubation Initiatives



## Progress of the Project

Formulation of the Product (Completed)

### Quality Check Analysis (In Progress)

- Proximate analysis
- Phytochemical screening
- Thermal Properties
- Antioxidant Profile
- Cytotoxicity (Normal cell, Cancer cell)
- Nutritional Profiling
- Sensory Analysis

Packaging in oxygen & moisture barrier – Stand up pouch

FSSAI Licencing, Market Launch



Fig.: Fruit juice powder (Yellow) and Microencapsulated polyherbal extracts (White)



## SEED BANK

### Seeds of Diversity: Field Monitoring and Bean Characterization

**Shillong, March, 2026:** Keeping a close watch on crop diversity, regular field monitoring was conducted at the BRDC Experimental Farm at Laitmysaw under the Seed Bank initiatives. Weekly visits helped track crop growth, assess field conditions, and monitor the development of conserved plant materials.

As part of continuous field monitoring efforts, several visits were carried out during the early months of the year. During the months of January to March, a total of eight field tours were undertaken, including four tours in January and four tours in March, allowing the team to track field performance and maintain the crops under the seed conservation program. In addition, bean characterization activities were undertaken through the collection of local bean varieties from Ri Bhoi District. These collections contribute to the documentation and conservation of indigenous bean diversity, supporting future research and strengthening the region's valuable genetic resources.

Alongside these efforts, the team documented traditional bee-keeping practices in Tyrsha Village, safeguarding indigenous knowledge that contributes

to pollination, biodiversity conservation, and the resilience of rural livelihoods.

### RECENT UPDATES:

- Field Monitoring
- Tours
- Bean Characterization
- Traditional Apiculture Documentation





# PGS-INDIA ORGANIC CERTIFICATION

## From Soil to Seal: Advancing Organic Certification at the Grassroots

**Shillong, March, 2026:** From awareness to action, grassroots organic transformation is gaining momentum. As of 24th March 2026, 368 Local Groups (361 active) engaged 5,660 farmers across 944.5 hectares, resulting in 353 PGS Green 1, 49 Green 2, and 7 full organic certifications. Under Natural Farming, 32 Local Groups (13 active) covered 442 farmers across 155.85 hectares, with 15 Green 1 certifications.

Progress was driven by field activities from January-March 2026, including awareness programmes, farmer trainings, GPS-based land mapping, inspections, certification drives, and ginger residue testing. Conducted across multiple villages, these efforts strengthened farmer capacity, improved documentation, and accelerated grassroots organic certification.

## RECENT UPDATES:

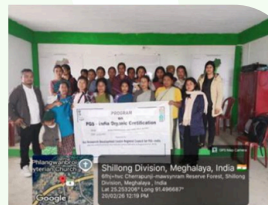
- Conducted awareness programmes & farmer trainings
- Trained farmers in GPS mapping, bookkeeping & inspections
- Collected ginger samples
- Distributed certificates and completed documentation



Collection of Ginger sample



Awareness program



Certificate distribution



Training on Land demarcation with GPS co-ordinates using mobile App & on book keeping



Document Signing



Farmers Training





## MEGHALAYA STATE ORGANIC CERTIFICATION BODY (MSOCB)

### From Field Verification to Policy Review: Key Milestones of MSOCB in Early 2026

**Shillong, March, 2026:** Strengthening trust in organic certification, MSOCB carried out a series of verification and audit activities during the first quarter of 2026

Farmer verification was conducted in two phases from 5-23 January 2026 and 16-28 February 2026, covering several grower groups to confirm that registered farmers are actively practicing organic farming and complying with certification requirements.

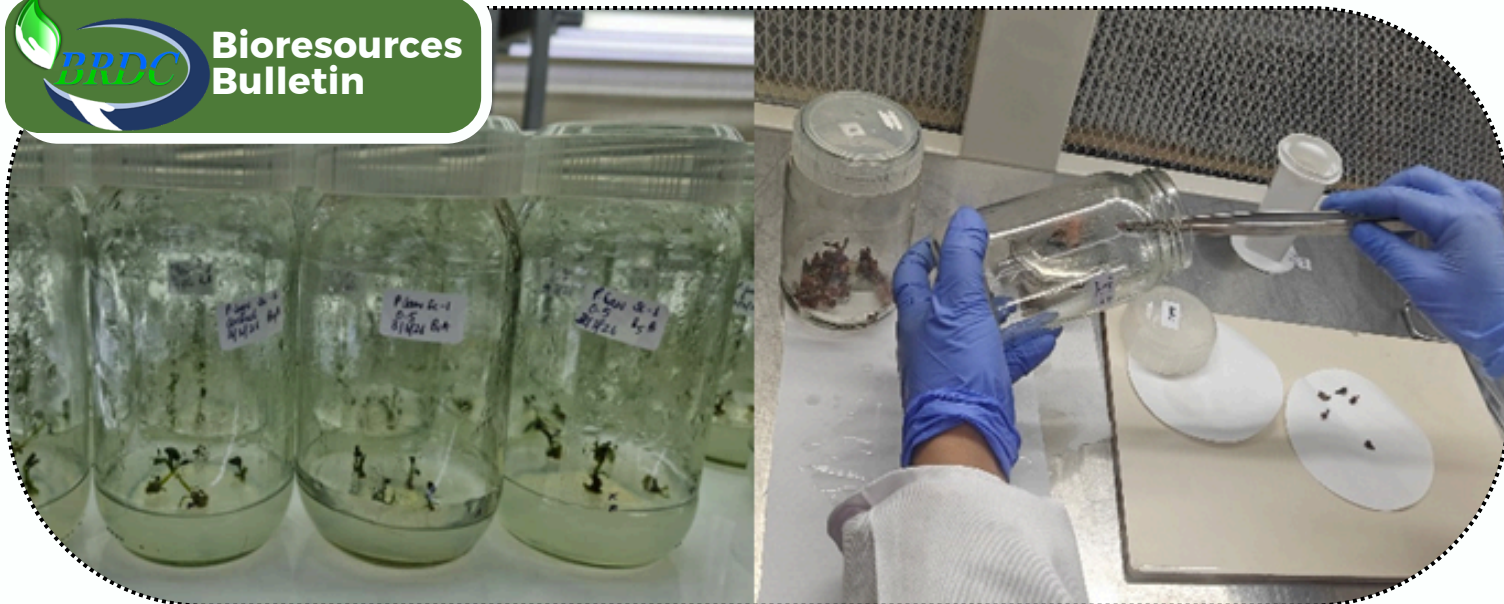
To further reinforce compliance, MSOCB conducted external and verification audits in Arunachal Pradesh (2 February 2026) and Jalpaiguri (10-11 February 2026), along with verification audits linked to the approval of No Objection Certificates (NOCs) and Grower Group requirements, following the guidelines of the Agricultural and Processed Food Products Export Development Authority (APEDA).

The quarter also marked an important administrative milestone with the 1st General Council Meeting of MSOCB for 2026, held on 5 March 2026 at the Main Secretariat Building, where key decisions were taken to guide the future of organic certification in the state

### RECENT UPDATES:

- Verification,
- Audits
- Administrative meetings





## BIOTECHNOLOGY IGNITION GRANT SCHEME (BIG)

### Healthy Beginnings: Initiation of GO Tubers of Phan Syntiew, Phan Saw and Phan Imdieng from ARC Plugs

**Shillong, March, 2026:** As part of the ongoing efforts to strengthen the production of high-quality planting materials, initiation was successfully carried out using GO tubers of three locally important varieties: Phan Syntiew, Phan Saw, and Phan Imdieng. These tubers were generated through ARC plug technology, ensuring healthy and uniform starting material for

further multiplication. The use of ARC plugs plays a crucial role in producing disease-free and vigorous planting materials, which is essential for improving crop productivity and maintaining varietal purity. The successful initiation marks an important step toward scaling up the propagation process and supporting sustainable cultivation of these valuable local varieties.

This initiative reflects a continued commitment to advancing scientific techniques for the production of quality seed material, ultimately benefiting farmers and strengthening agricultural productivity in the region.

### RECENT UPDATES:

- Initiation utilized GO tubers of Phan Syntiew, Phan Saw, and Phan Imdieng produced via ARC plugs.



# BRDC BIONEST INCUBATION CENTRE

## Empowering Women, Blooming Futures

**Shillong, March, 2026:** What starts as a flower is now growing into a future. Through the BioNest Incubator project, Bio-Resources Development Centre (BRDC) is empowering women in Meghalaya to turn orchid cultivation into thriving, sustainable businesses.

### What's Blooming?

- **Hands-on Skills:** Training in growing orchids like Cymbidium, Cattleya, Phalaenopsis, Mokara, and Dendrobium using organic methods
- **Smart Farming:** Use of eco-friendly inputs like Jeevamrit, Beejamrit and biofertilizers
- **Seed-Saving Initiatives:** Promoted seed conservation for self-reliance and biodiversity
- **Creative Income:** Crafting unique orchid-based products through epoxy value addition

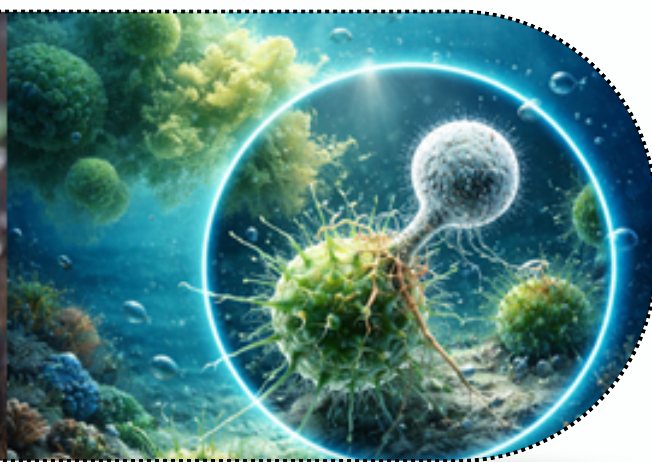
## RECENT UPDATES:

- Trained in orchid cultivation
- Promoted organic inputs
- Introduced epoxy products
- Encouraged seed saving
- Participated IDTE-2026



Participants also explored innovation and entrepreneurship at IDTE-2026 hosted by North-Eastern Hill University, building ideas, confidence, and business vision.





## HIDDEN SCIENCE: FROM OCEAN DEPTHS TO EVERYDAY SENSATIONS

### Cooling Without Cold: The Science Behind Mint's Cool Sensation

**Date: March 8, 2026**

**Source; Biophysical Society:** Ever wondered why mint feels icy cold even when it's not? Scientists have now uncovered the answer at the microscopic level.

For the first time, researchers have captured a close-up view of the body's "cold sensor," known as TRPM8. This tiny molecular gateway is responsible for detecting cold temperatures. Surprisingly, it's also activated by menthol, the compound found in mint "tricking" the brain into sensing cold without any actual drop in temperature.

This breakthrough reveals how our body translates external stimuli into the sensation of "cool." Beyond curiosity, the discovery holds real promise opening new pathways for treating pain, inflammation, and eye disorders by targeting this cold-sensing mechanism.

### RECENT UPDATES:

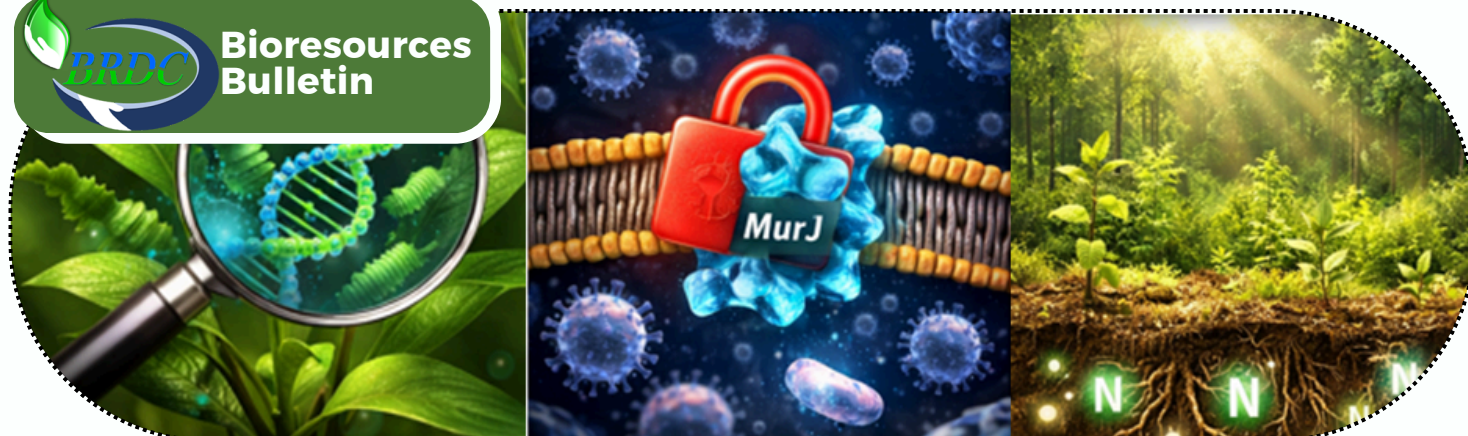
- Mint: Cold sensor discovered
- Fungus: Toxic bloom fighter

### Nature's Hidden Clean-Up Crew: Fungus vs. Toxic Algae

**Date: March 6, 2026**

**Source: Yokohama National University:** In a fascinating ocean discovery, scientists have identified a microscopic marine fungus *Allophora mediterranea* that naturally attacks and kills toxic algae responsible for harmful blooms. These algae, including *Ostreopsis cf. ovata*, release toxins that can irritate the lungs, skin, and eyes during coastal outbreaks. But this newly discovered fungus acts like a silent regulator, infecting and breaking down these harmful species before they spread.

What makes it even more remarkable? This tiny parasite isn't picky it can target multiple algae species and even survive on pollen, showing an impressive level of adaptability. This breakthrough hints at a powerful, natural solution hidden within marine ecosystems one that could help manage toxic algal blooms and protect both ocean life and human health.



## HIDDEN SCIENCE: FROM OCEAN DEPTHS TO EVERYDAY SENSATIONS

### Borrowed Chemistry: Plants May Be Rewriting Drug Discovery

**Date:** February 3, 2026

**Source: University of York:** Scientists have uncovered a surprising twist, plants may be using bacterial-like genes to produce powerful chemicals known as alkaloids, long valued in medicines like painkillers and stimulants. This hidden crossover suggests plants “borrow” microbial tools to create complex compounds, opening the door to faster, cheaper, and more sustainable drug development.

#### RECENT UPDATES:

- Bacterial-like gene found
- New antibiotic path
- More carbon capture

### A Viral Trick to Defeat Superbugs

**Date:** February 28, 2026

**Source: California Institute of Technology:** Scientists have discovered a powerful “kill switch” in bacteria revealed by viruses that can shut down a vital protein called MurJ, essential for building the bacterial cell wall.

By locking this protein in place, the viruses stop bacteria from surviving, offering a blueprint for next-generation antibiotics. This breakthrough could open a new front in the fight against drug-resistant superbugs

### Nature’s Shortcut: The Soil Secret Behind Faster Forest Comeback

**Date:** January 15, 2026

**Source: University of Leed:** Scientists have uncovered a hidden factor behind rapid forest recovery nitrogen-rich soil. Long-term studies in Central America show forests can regrow twice as fast after deforestation when nitrogen levels are sufficient. Faster regrowth also boosts carbon capture, offering a natural climate solution. The findings highlight smarter reforestation working with soil health, not just adding fertilizers