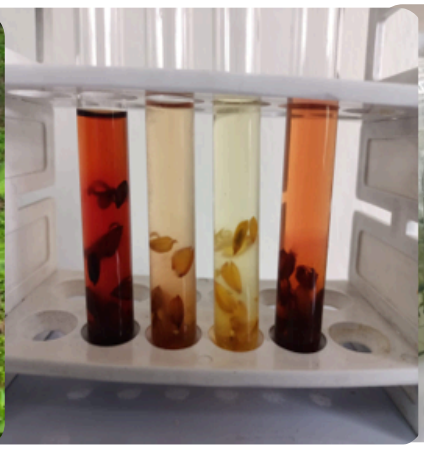
BIO-RESOURCES BULLETIN 2026

VOL 3, ISSUE 2, A QUATERLY NEWSLETTER

WHAT'S INSIDE...

DISCOVER. INNOVATE. SUSTAIN.
Celebrating Bio-Resources, scientific innovations, and the people shaping a sustainable future.


Welcome to the Bio-Resources Bulletin

A glimpse into the ideas, innovations, achievements, and stories shaping our journey in bio-resources and sustainable development.
Explore the highlights. Celebrate the progress. Discover what's next.

MESSAGE FROM THE DIRECTOR



Mitali Chandra, IAS

It gives me great pleasure to present Vol. 3, Issue 2 of the Bio-Resources Bulletin, Government of Meghalaya. This edition brings together highlights from our ongoing work in bio-resource conservation, scientific research, innovation, sustainable agriculture, and community engagement.

The past quarter has been marked by meaningful progress across our programmes, with continued efforts in research, field interventions, capacity building, collaborations, and knowledge sharing. These activities reflect our commitment to generating practical solutions and making scientific knowledge more accessible and useful to the communities we serve.

I sincerely appreciate the dedication of our scientists, researchers, technical teams, field staff, partners, and communities, whose contributions continue to strengthen our initiatives and broaden their reach.

As we look ahead, we remain focused on encouraging innovation, strengthening partnerships, conserving valuable bio-resources, and creating opportunities that connect science with practice.

I invite our readers to explore this issue, celebrate the accomplishments of the quarter, and stay connected with the work and initiatives featured in these pages.

With warm regards,

Director,

Bio-Resources Development Centre, Shillong

ACTIVITIES HIGHLIGHTS

RESEARCH • CONSERVATION • CERTIFICATION • INNOVATION



Exploring Beneficial microorganisms

Student-led research internship





CERTIFICATION

3 Audits

6.6 ha Certified

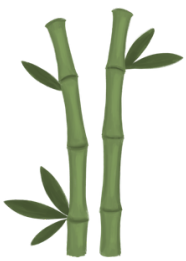
32 Certificates

MARKET LINKAGE

88 LGs

1,378 farmers





NATIVE BAMBOO

Carbon storage

Tissue culture 5–10 day bud break

BIO-INOCULANT LABORATORY

EXPLORING BENEFICIAL MICROORGANISMS FOR SUSTAINABLE AGRICULTURE

Shillong, September, 2026: As part of ongoing research, studies were undertaken to explore beneficial microorganisms associated with cultivated crops. Soil mycoflora from turmeric plots was investigated to assess the fungal diversity associated with turmeric-growing soils.

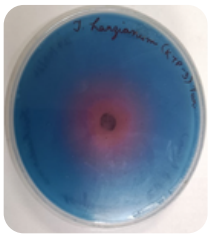


In addition, Rhizobium was isolated from root nodules of leguminous plants to explore naturally occurring nitrogen-fixing bacteria. These activities contribute to a better understanding of soil microbial diversity and plant–microbe interactions, with potential applications in sustainable crop production and soil health management.



In addition, the upcoming period will focus on the characterization and evaluation of the isolated rhizobial strains to assess their beneficial traits and potential applications in sustainable agriculture.



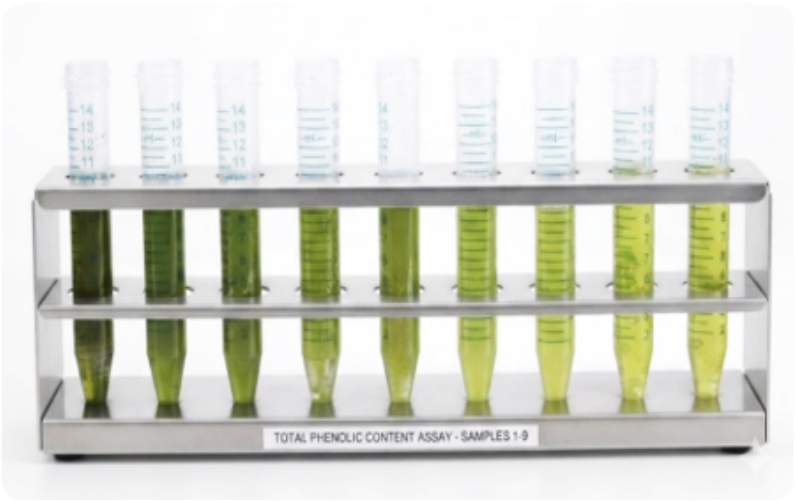


SEED CONSERVATION

SEED BANK-SUPPORTED STUDENT RESEARCH AND SCIENTIFIC EXPLORATION

Shillong, September, 2026: During the period the Seed Bank initiative supported student-led research, with three projects exploring; *In Vitro* Antifungal & Phytochemical Profiling of Lakadong Turmeric, Proximate Nutritional Profiling of Wild Edible Flora, and Phytochemical Screening & Antioxidant Evaluation of *Agapetes variegata*. The projects involved students from Galgotias University, Kristu Jayanti University, and Assam Down Town University respectively.







MEGHALAYA STATE ORGANIC CERTIFICATION BODY (MSOCB)

CERTIFICATION, CAPACITY ENHANCEMENT AND RISK-BASED COMPLIANCE ACTIVITIES UNDER NPOP

Shillong, September, 2026: MSOCB conducted external audits of Parijat Tea Estate (26 July 2026), Bunshnong OPCS Ltd. (ICS-I) (24–28 August 2026), and Iatreilang OPCS Ltd. (ICS-I) (1–4 September 2026), with designated audit and accompanying personnel supporting the assessments.





During the period, MSOCB enhanced staff capacity through APEDA trainings on Tracenet 2.0 and Mobile App, a training on Annex-3(3) under NPOP 8th Edition by Indocert, and participation in key programmes including the NPOP Sensitization Programme at Agartala and National Conference on Natural Farming (NCNF) 2026 at Umiam. Staff also engaged in discussions with APEDA Chairman Shri Abhishek Dev on the derogation of the conversion period.

As part of its certification activities, MSOCB successfully certified Parijat Tea Estate, an individual operator covering 6.6 hectares under tea cultivation. The certification reflects MSOCB's continued expansion of its certified operator base and its commitment to maintaining compliance with NPOP 8th Edition and ISO/IEC 17065 requirements.

In the upcoming period, MSOCB will conduct risk-based audits of registered operators, including the required 10% unannounced inspections as per NPOP. Renewal audits will also be undertaken upon receipt of applications to facilitate timely risk assessment and certification.

PGS-INDIA ORGANIC AND NATURAL FARMING CERTIFICATION

PGS-INDIA CERTIFICATION AND MARKET LINKAGE INITIATIVES

Shillong, September, 2026: During the quarter, PGS-India Organic and Natural Farming strengthened its initiatives by supporting 88 Local Groups, 1,378 farmers, and 411.45 ha of certified area, with 32 certificates issued.



As part of its market linkage efforts, a buyer–farmer interaction was facilitated with Vista Naturals at Pahambirthem, Ri Bhoi, on 16 June 2026, enabling certified farmers to explore direct procurement opportunities for pineapple.



Notable outcome was the successful linkage of Ri Lajong Mawphrow Unit I, which transitioned to PGS-India Organic certification and secured village-level procurement, with the reported farm-gate price increasing from ₹15 to ₹25 per pineapple.



These activities were complemented by regular awareness programmes, field inspections, document-signing programmes, and certificate distributions, with continued monitoring and follow-up.

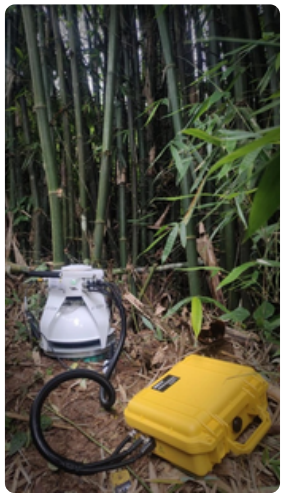
The initiative contributed to improved market access, reduced transportation burden, and greater farmer confidence.

CARBON SEQUESTRATION

BAMBOO: A PROMISING RESOURCE FOR CARBON SEQUESTRATION

Shillong, September, 2026: The quarter witnessed continued progress in the project "Carbon Sequestration through Afforestation & Bioengineered Plant Systems," exploring the potential of Meghalaya's native bamboo for carbon storage, afforestation and ecological restoration.



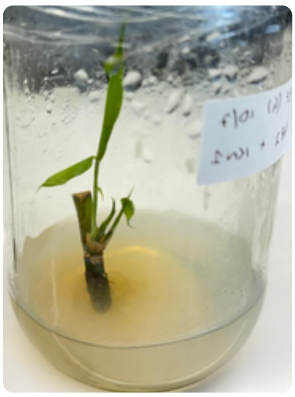




Field assessments at Mawkarah, Eastern West Khasi Hills, showed encouraging results, with *Bambusa tulda* recording higher estimated carbon stocks (4,600–6,440 t C ha^{-1}) compared to *B. pallida* (2,870–3,170 t C ha^{-1}).

Promising progress was also achieved in tissue culture, with bud break observed within 5–10 days and successful multiple-shoot induction. 4 µM Metatopolin performed well for *B. tulda*, while 8 µM was effective for *B. pallida*.





These encouraging findings mark an important step towards producing quality planting material for large-scale bamboo plantations, ecological restoration and future carbon-sequestration initiatives, with the upcoming quarter expected to bring further progress towards a greener and more climate-resilient Meghalaya.

GLOBAL SCIENCE WATCH

From surprising discoveries to breakthrough innovations, science is constantly changing the way we understand our world. Take a quick journey through the latest developments making headlines and shaping the future.

How Some Frogs Outsmart a Deadly Fungus



Date: July 14, 2026

Source: University College London

A deadly fungus, *Batrachochytrium dendrobatidis* (Bd), has devastated frog and toad populations worldwide, yet some amphibians manage to survive. Researchers found that their secret may lie in early immune development survivors build strong immune defenses while still tadpoles, giving them an advantage when they become vulnerable to infection after metamorphosis. The study also uncovered previously unknown antimicrobial peptides that could inspire new treatments for infectious diseases.

From Deadly Flowers to Potential Medicines

Date: August 3, 2026

Source: Michigan State University

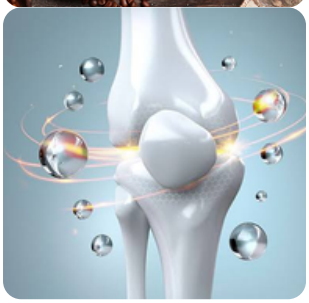


Although two of nature's most poisonous flowers: wolfsbane and larkspur are highly toxic, capable of causing nerve damage and paralysis at extremely low doses, they also produce compounds with potential applications against pain, malaria, cancer, and agricultural pests and could hold clues to powerful new medicines. Scientists have uncovered how these plants produce atisinium, a rare compound with promising medical potential. The research brought together scientists from Michigan State University and the Czech Academy of Sciences and the findings were published in the journal Molecular Plant.

GLOBAL SCIENCE WATCH

Coffee and Bone Health: How Much Is Too Much?





Date: September 2, 2026

Source: Flinders University

Researchers at Flinders University have found that coffee and tea may have different associations with bone health in older women. Following nearly 10,000 women aged 65 and older for 10 years, the study, published in Nutrients, found that tea consumption was associated with slightly higher hip bone mineral density (BMD), while moderate coffee consumption did not appear to have harmful effects. However, consuming more than five cups of coffee a day was linked to lower bone density. The findings suggest that tea may provide a small benefit for bone health, while excessive coffee consumption could have potential drawbacks.

Meet the "Devil Flower"



Date: September 3, 2026

Source: Pensoft Publishers

Botanists from Chulalongkorn University and Prince of Songkla University have discovered a striking new leafless flowering plant, *Thismia daemona*, in Thailand's Thong Pha Phum National Park. Nicknamed the "devil flower" for its unusual appearance, the plant lacks chlorophyll and relies on underground fungi for nutrients instead of photosynthesis. Hidden beneath leaf litter for most of its life, it belongs to the mysterious *Thismia* genus, also known as "fairy lanterns."

From Plastic Waste to Space Food



Date: September 13, 2026

Source: American Chemical Society

Scientists have engineered yeast to transform PET plastic and agricultural waste into protein-rich ingredients for 3D-printed cookies called µBites. Developed partly through NASA's Deep Space Food Challenge, the system can produce proteins, fats, vitamins, and even vanilla flavouring from waste materials. The innovative approach could help tackle plastic pollution and food insecurity while providing sustainable food options for disaster zones and future missions to the Moon and Mars







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