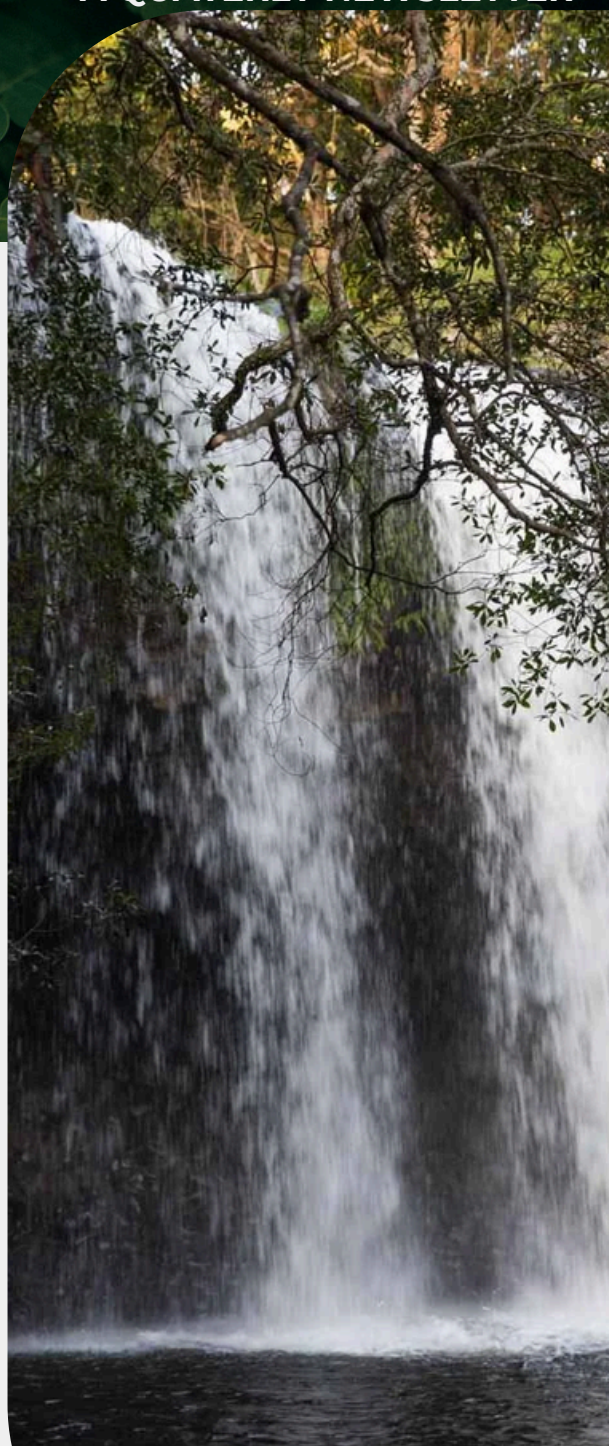
BIO-RESOURCES BULLETIN

JUNE-SEPTEMBER, 2025

A QUATERLY NEWSLETTER

Welcome to the latest edition of the Bio-Resources Bulletin, your quarterly source for news, insights, and developments in the dynamic field of bioresources. At the Bio-Resources Development Centre (BRDC), we are committed to advancing innovation, promoting sustainable practices, and unlocking the potential of biological resources for national development. Through this bulletin, we aim to keep you informed, inspired, and connected to the latest progress shaping the bioresource sector.



Message from the Editorial Board

It is with great pleasure that we present to you Issue 1, Volume 2 of the Bioresources Bulletin, the quarterly newsletter of the Bio-Resources Development Centre (BRDC). Building on the success of our inaugural volume, this new edition continues our commitment to sharing knowledge, highlighting innovations, and fostering dialogue in the field of bioresources.

As custodians of this publication, the Editorial Board is dedicated to curating relevant articles, research updates, and success stories that reflect both the challenges and the opportunities within the sector. Our goal is to provide readers with timely insights that not only inform but also inspire action towards sustainable development and responsible utilization of bioresources.

We extend our sincere appreciation to all contributors, partners, and readers who make this Bulletin possible. Your engagement and support drive our resolve to maintain the Bulletin as a trusted platform for learning, collaboration, and growth.

We invite you to explore the pages of this edition and join us in advancing the mission of BRDC—harnessing the potential of bioresources for innovation, sustainability, and national development.

Sincerely,
The Editorial Board
Bio-Resources Bulletin

BIO-RESOURCES BULLETIN

MESSAGE FROM THE MEMBER SECRETARY

Mitali Chandra, IAS

It is with great pleasure and a deep sense of pride that I announce the release of the Second Volume, First Issue of the Bioresources Bulletin, the official newsletter of the Bio-Resources Development Centre (BRDC). This publication represents not only a record of our Centre's activities but also a platform through which we aim to communicate our vision, progress, and aspirations in the field of bio-resource development and conservation.

Over the years, BRDC has strived to position itself as a hub of innovation, research, and knowledge dissemination in Meghalaya. Our work is guided by the belief that sustainable management of the region's vast and unique bio-resources is fundamental not only to ecological balance but also to the livelihoods and cultural identity of our communities. The Bioresources Bulletin is an extension of this mission, providing readers with insights into our initiatives, scientific advancements, and collaborative engagements that seek to transform challenges into opportunities.

This issue highlights a diverse range of themes—from laboratory-based innovations in biotechnology and plant propagation to field-level interventions that empower farmers and local communities. It showcases the important role of our scientists and technical staff, the partnerships we have forged with academic institutions, government bodies, and NGOs, and the invaluable contributions of our communities, without whom conservation and sustainable utilization of bio-resources would not be possible.

In releasing this issue, we wish to create not just a record of our achievements but also a space for dialogue, reflection, and shared learning. We believe that the Bulletin will encourage stakeholders—researchers, practitioners, policymakers, and community members alike—to engage with one another and contribute towards shaping strategies that ensure both conservation of biodiversity and sustainable livelihoods.

I wish to take this opportunity to express my sincere gratitude to all who have contributed to this edition—our dedicated team at BRDC, the scientists and researchers whose work is featured, and our collaborators and well-wishers who continue to support our journey. Their combined efforts have made this publication possible.

As we move forward, BRDC reaffirms its commitment to building on the foundation of knowledge, collaboration, and innovation. We invite our readers to share their thoughts, ideas, and experiences, so that future editions of the Bioresources Bulletin may continue to grow as a shared resource and a collective voice for sustainable bio-resource management in the region.

With best wishes and warm regards,

BIO-RESOURCES BULLETIN

PROGRAMMES AND CELEBRATION

BRDC CELEBRATES WORLD ENVIRONMENT DAY 2025

Shillong, June, 2025: On June 5th, 2025, BRDC joined millions worldwide to celebrate World Environment Day, embracing this year's theme of action. The organization led tree planting drives, held educational sessions on climate change and sustainability, and organized community clean-up activities. These efforts highlighted BRDC's commitment to environmental stewardship and the belief that every small action contributes to a sustainable future. BRDC reaffirmed its message: there is no Plan B-only one planet and one future.

BIO-RESOURCES BULLETIN

PROGRAMMES AND CELEBRATION

FORMAL RECOGNITION OF TRADITIONAL HEALERS

Shillong, July , 2025: Traditional healing in Meghalaya entered a new era as nine traditional healers were formally certified as Traditional Community Healthcare Providers (TCHPs) by the Quality Council of India (QCI). Organised by the Bio-Resources Development Centre (BRDC), Planning Department, with support from the Ministry of AYUSH, the certification event on 2nd July 2025 at the Additional Secretariat Building, Shillong, marked a historic step in professionalising traditional medicine. Renowned for treating ailments such as jaundice, arthritis, and bone-related issues, the healers are now recognised under ISO/IEC 17024:2012 standards, gaining national legitimacy, visibility, and institutional support. This milestone bridges ancestral healing wisdom with modern quality assurance, ensuring that Meghalaya's indigenous knowledge thrives in today's healthcare landscape

BRDC OFFERS STUDENT INTERNSHIP PROGRAMME TO SUPPORT THEIR ACADEMIC REQUIREMENTS

Shillong, July, 2025: BRDC has initiated a Student Internship Programme to support students in meeting their academic requirements. The programme provides structured opportunities for interns to engage with BRDC's ongoing projects, utilize its facilities, and gain practical exposure that complements their academic learning. As part of the internship, students actively participate in laboratory-based research, fieldwork, documentation, and project-related activities, while also gaining perceptions into traditional knowledge systems, bio-resource management, and sustainable practices. This hands-on experience is designed to enhance their academic learning, build practical skills, and prepare them for future professional and research opportunities.

PROGRAMMES AND CELEBRATION

BRDC CONDUCTS EXPERT CONSULTATIVE WORKSHOP ON "MEGHALAYA BIOTECHNOLOGY POLICY 2025-2028"

Shillong, August, 2025: A decisive step toward strengthening Meghalaya's biotechnology sector was taken with BRDC's Expert Consultative Workshop on the state's Biotechnology Policy 2025-2028. Held on 21st August 2025, the workshop brought together experts, policymakers, researchers, industry representatives, and key stakeholders to exchange ideas and chart a roadmap for the state's biotechnology landscape,

deliberate on the draft policy aimed at positioning biotechnology as a driver of sustainable development, innovation, and economic growth in the state. Discussions highlighted applications in agriculture, healthcare, biodiversity conservation, industrial use, and traditional knowledge systems. Valuable insights and recommendations from participants will be incorporated to refine and finalize the policy, reaffirming the Government of Meghalaya's commitment to building a future-ready biotechnology ecosystem.

BIO-RESOURCES BULLETIN

PROGRAMMES AND CELEBRATION

BRDC CELEBRATES BIONEST FOUNDATION DAY

Shillong, August, 2025: Marking half a decade of nurturing ideas into enterprises, BRDC's BioNest celebrated its 5th Foundation Day at the State Central Library, Shillong, on 21st August,2025

The occasion convened staff, collaborators, and well-wishers to reflect on the Centre's achievements and its role in promoting sustainable development, entrepreneurship, and innovation. The programme was graced by Dr. Sujit Das, Officer (Technical), BIRAC, Department of Biotechnology, Government of. India, who emphasized the importance of entrepreneurship in driving innovation and growth. The milestone celebration reaffirmed BRDC's commitment to advancing bio-resource conservation and supporting local communities through science, technology, and enterprise.

BIO-RESOURCES BULLETIN

PROJECT

Documentation of traditional medicine and health care

BRDC Documentation Team Join Training-cum-Felicitation of Traditional Healers this September

Shillong, September, 2025: Training the guardians of traditional healthcare, North East Christian University (NECU) hosted its Evaluators Training Programme on 13th September 2025 at its Dimapur campus. The one-day workshop equipped evaluators to assess Traditional Community Healthcare Providers (TCHPs) under NECU's Voluntary Certification Scheme.

Led by experts Dr. Imlikumba and Dr. H. Salome Kinny, the training focused on certification procedures, ethical practices, and field-based evaluation methods. Participants gained hands-on experience in interviews, demonstrations, case studies, and field visits. The programme enhanced evaluator readiness, built stronger awareness of NECU's certification framework, and reinforced NECU's role in bridging ancestral healing traditions with modern quality standards

BRDC at the State Level Arogya Fair 2025

Shillong, September, 2025: The BRDC team proudly participated in the State Level Arogya Fair 2025, organized by the Health & Family Welfare Department in collaboration with the National Ayush Mission at the State Convention Centre, Shillong. The fair highlighted holistic healthcare, traditional healing systems, and sustainable wellness solutions. BRDC showcased its contributions in promoting bio-resources for healthier communities and a greener future.

BIO-RESOURCES BULLETIN

BIOTECHNOLOGY IGNITION GRANT SCHEME (BIG)

Apical root cutting technology (ARCs)

ARC Trials Expand to Another Indigenous Potato Variety

Shillong, September, 2025: Boosting Potato Cultivation through Innovation and Farmer Outreach. BRDC continued its efforts to strengthen potato production by advancing both research and farmer outreach initiatives. Multiplication of tissue-cultured potato plantlets was carried out in the Tissue Culture Laboratory, followed by mass multiplication of Advanced Rooted Cuttings (ARCs) in the poly house. At the BRDC experimental farm,harvest of mini tubers or "G_0 tubers" from late plantings (April) added to the momentum of sustainable potato seed production. Alongside research, the team also conducted farmer engagement through awareness and distribution programs. ARC plugs were distributed to farmers in East Khasi Hills and Ri-Bhoi districts, with commercialization reaching villages such as Puriang, Pomlahier, Maw u Sam, Mawmuthoh, Umphrup, Umsning, and Mawlein Mawkhan. The potato varieties primarily sold were Phan Imdieng, along with smaller quantities of Phan Shidieng and Phan Syntiew. In total, around 8,856 ARC plugs were sold during August-September, marking a significant step toward empowering farmers with improved planting materials and ensuring higher productivity in the region.

Farmers welcomed the initiative and embrace ARC Technology put forward by the team with encouraging feedback

"The ARC plugs gave us good-sized potatoes despite being small. This method has great potential and I encourage more farmers to adopt it." - Farmer from Laitsohphlang Village

"ARC plugs not only provided promising yields but also helped improve soil quality. I thank BRDC for introducing this sustainable technology." - Farmer from Lumshyiap Langkyrding, Shillong

BIO-RESOURCES BULLETIN

LABORATORY

Quality Control and Analytical laboratory

Laboratory Status Reviewed through On-Site Visit and Internal Audit

Shillong, September, 2025: On site visit and internal auditing on the status of the laboratory was conducted from 1st-5th September 2025, by Shri. Manosh Kumar Singh, consultant AKD Consultancy Pvt. Ltd. New Delhi. During the auditing process, the progress of all components of the laboratory- Proximate & basic instrumentation unit and high-end instrumentation unit were evaluated. The evaluation includes review of documents- quality manual, quality system procedure, templates. During the process, the testing scope including matrix and parameters was finalized. Based on the parameters of testing, the SOPs are being prepared.

Subsequent to the evaluation of the laboratory status, a way forward document was prepared for future referral.

Installation of High-End Analytical Instruments Underway

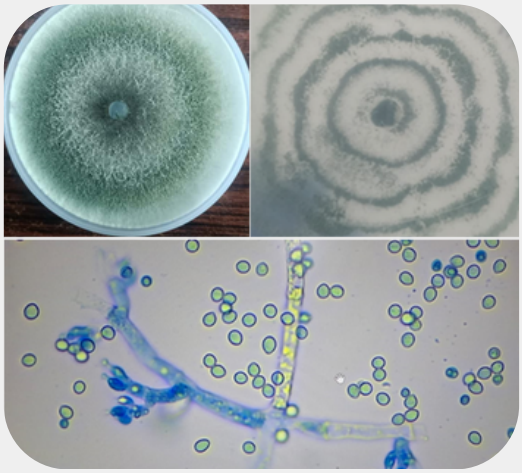
Shillong September, 2025: Installation in the high end instrumentation unit in progress-UPLC-MS/MS, LC-MS/MS, HPLC and GC-MS were installed

BIO-RESOURCES BULLETIN

LABORATORY AND FIELD TRIALS

Bio-Inoculant technology

Bio-inputs applied to local indigenous food crops



Shillong, September, 2025: Promoting sustainable farming through science and community engagement, a series of activities were recently carried out under the Bio-inoculant programme and allied initiatives. Highlights included the screening of plant growth-promoting properties of rhizobial isolates to enhance soil fertility, the isolation and identification of beneficial fungi for developing eco-friendly bio-pesticides, and bacteriological analysis of fruits and vegetables from different locations in Meghalaya to assess microbial quality and safety.

Learning with Nature's Pest Fighters, an enriching experience to be part of the five-day Capacity Building Program on Entomopathogenic Nematodes (EPNs) held at the Department of Zoology, Pachhunga University College, Aizawl. The programme offered an enriching platform to deepen understanding of these beneficial organisms that play a crucial role in biological pest control. Through interactive sessions and practical demonstrations, participants gained valuable knowledge, sharpened their skills, and strengthened research capabilities to further promote sustainable agriculture using EPNs as eco-friendly alternatives to chemical pesticides.

Farmers' capacity was further enhanced through a comprehensive training on the ginger value chain for producer groups under MLAMP, organized by DPMU, East Khasi Hills at Nongjrong, Mawkynrew C&RD Block. The programme equipped farmers with practical knowledge on improved cultivation techniques, post-harvest handling, value addition, and market linkages, enabling them to maximize returns from ginger cultivation while ensuring quality produce. By integrating scientific research with hands-on farmer training, these initiatives reaffirm the commitment to empowering farmers and communities with the tools, skills, and innovations needed to build a more resilient, profitable, and sustainable agricultural future.

Issue I Vol. 2
Pg.12

LABORATORY AND FIELD TRIALS

Seed Bank

Advancing Community Seed Banks in Meghalaya






Shillong, September, 2025: BRDC continues its mission to safeguard agrobiodiversity through active monitoring and expansion of community-based seed systems. Monitoring of Community Seed Saving Units was conducted at Mawlum (EWKH), Khweng (Ri-Bhoi), Jaidoh (WKH), and Thadnongiaw (Ri-Bhoi) to assess their functioning and strengthen farmer-led conservation practices. Alongside, land inspections were carried out to identify suitable locations for establishing new Community seed banks in these villages, ensuring both accessibility and sustainability. A major scientific highlight was the eco-chemical signature study on rice landraces of Khweng Village, Ri-Bhoi. This research aims to characterize the unique traits of indigenous rice varieties, offering valuable insights for biodiversity conservation, crop improvement, and resilience against climate change. Further, in collaboration with NESFAS and MSRLS, BRDC has initiated groundwork for setting up community seed banks at Jaidoh, Mawlum, Khweng, and Thadnongiaw. These seed banks will serve as living repositories of traditional varieties, fostering seed sovereignty, reducing dependency on external seed systems, and ensuring that indigenous knowledge and practices are passed on to future generations.

Adding to the momentum, an exposure visit was conducted for students of the Agriculture Department, William Carey University, offering hands-on learning in bio-resource management, microbial research techniques, and seed initiatives. The visit offered students practical insights into ongoing seed preservation, documentation of traditional varieties, and the importance of safeguarding genetic diversity for future farming. Alongside this, they also gained practical exposure to the application of bioinoculants in sustainable agriculture and scientific activities such as microbial isolation, analysis, and bio-fertilizer development. The visit successfully bridged classroom learning with real-world practices, sparking curiosity and inspiring the next generation of agri-innovators

Issue I Vol. 2
Pg.13

LABORATORY

Tissue culture

BRDC Continues to Strengthen Its Tissue Culture Program

Shillong, September, 2025: BRDC is advancing plant tissue culture with a diverse collection of plantlets in its laboratory. The lab currently propagates several orchid species, including Cymbidium mastersii, Cymbidium tracyanum, Cymbidium elegans, Cymbidium aloifolium, Anoectochilus roxburghii, and Cymbidium var. Lunavian atlas, focusing on conservation and commercial value. It also cultivates pineapple varieties (queen spine and spineless) and banana cultivars (Kaitmon and Grand Nain), along with 10 varieties of potatoes, producing disease-free, high-quality planting material to support sustainable agriculture and improve crop productivity. This work highlights BRDC's role in promoting modern biotechnology for agricultural development and plant conservation.

Issue I Vol. 2
Pg.14

BRDC BioNest Incubation Centre

Potential collaboration with State Level Entrepreneurs

Shillong, August, 2025: The BRDC BioNest Incubation Centre proudly announced its BioNest Ideation winner on the 21st August 2025, at the State Central Library, Shillong during its BioNest 5th Foundation Day, chosen from outstanding entries on the themes of Indigenous Medicine & Traditional Knowledge and Floriculture. The winning idea stood out for its innovation, feasibility, and transformative impact. As part of this recognition, the winner received seed funding, exclusive access to BRDC's state-of-the-art laboratories and incubation facilities, dedicated mentorship and market support, along with exposure visits and networking opportunities to scale their idea into a successful venture. This initiative not only celebrates innovation but also paves the way for state-level entrepreneurs in collaboration with BRDC, fostering entrepreneurship and growth in the bio-resource sector.

BIO-RESOURCES BULLETIN

CERTIFICATION

Meghalaya State Organic Certification Body (MSOCB)

Elevating NPOP Organic Standards Across Grower Groups

Shillong, September, 2025: BRDC is at the forefront of promoting certified organic farming, ensuring that growers adhere to the highest standards of quality and sustainability. MSOCB recently strengthened its commitment to organic standards by conducting thorough external inspections, reviewing operator documents in detail, and issuing Scope Certificates under the APEDA-accredited NPOP organic crop production program Currently, 25 grower groups are registered under MSOCB, reflecting a growing commitment to organized and transparent organic farming practices.

In addition, a Gap Analysis meeting was conducted to evaluate MSOCB's alignment with the NPOP certification system. The exercise not only identified areas for improvement but also provided actionable recommendations to strengthen compliance, enhance operational efficiency, and boost market credibility. These efforts underline BRDC's ongoing dedication to empowering growers, promoting sustainable agriculture, and fostering consumer trust in certified organic produce.

BIO-RESOURCES BULLETIN

CERTIFICATION

PGS-India Organic Certification

Shillong, September, 2025: From June to September 2025, the BRDC Regional Council intensified its efforts to strengthen the Organic Certification System in line with PGS-India standards. Key activities during the quarter included awareness programs, field surveys, farmer registrations, document signings, inspections, and training sessions. These initiatives led to the registration of 804.03 hectares under organic certification. In total, 7 Local Groups (LGs) received PGS-India Organic Certification, while 30 LGs attained PGS Green 2 and 238 LGs PGS Green 1 status.

A key highlight was the Awareness Program on the Natural Farming Certification System, held on 11-12 July 2025 at Khweng and Thadnongiaw Village, Ri-Bhoi, led by Dr. V.Y. Deoghare, Deputy Director of RCONF Imphal, in collaboration with BRDC-RC. The program, which included a field visit, aimed to build local certification capacity under the PGS-India framework. Subsequently, BRDC was officially authorized to undertake Natural Farming Certification as per Notification No. 10(4)2022/PGS-NFC/1875 dated 29 August 2025. As of now, 121 farmers across 8 villages in the Bhoirymbong C&RD Block have been registered under the system, covering 40.51 hectares and organized into 12 Local Groups.

To further strengthen the certification process, Mrs. Swati Sharma, Subject Matter Expert from Clover Organics, conducted a comprehensive gap analysis of the PGS operations from 1st to 5th September 2025. Her assessment aimed to ensure stronger alignment with PGS-India standards and enhance the quality of certification services provided by BRDC.

Issue I Vol. 2
Pg.17

BIO-RESOURCES BULLETIN

"SCIENCE UNPLUGGED: BREAKTHROUGHS ACROSS THE GLOBE"

"UNVEILING MYOSIN XI: A KEY PLAYER IN PLANT DROUGHT RESILIENCE"

Date:July 16, 2025

Source: Waseda University

Recent research has revealed an unexpected role for the motor protein myosin XI, previously regarded primarily as an intracellular transport "courier." The study shows that myosin XI is integral to drought tolerance in plants by facilitating the closure of stomata, the microscopic pores on leaf surfaces that regulate water loss and gas exchange. Plants lacking this protein exhibited accelerated water loss, impaired stomatal responses under drought conditions, and reduced activation of protective stress pathways. These findings highlight myosin XI as a key regulator of plant water-use efficiency and suggest new avenues for developing climate-resilient crops capable of withstanding increasing heat and water scarcity.

A BRIGHT STEP TOWARD ARTIFICIAL PHOTOSYNTHESIS

Date: August 26, 2025

Source: University of Basel

Imagine a molecule that can sip sunlight the way plants do—and hold onto that energy for later use. That's exactly what a team of researchers has created: a plant-inspired molecule that can store four charges from sunlight at once. What makes this especially exciting is that, unlike past attempts, the new design works even under softer, dimmer light, much like what we experience on cloudy days. This breakthrough brings science closer to building artificial photosynthesis systems that could one day generate clean, renewable solar fuels—turning sunlight into storable, usable energy much like nature has done for millions of years.

Issue I Vol. 2
Pg.18

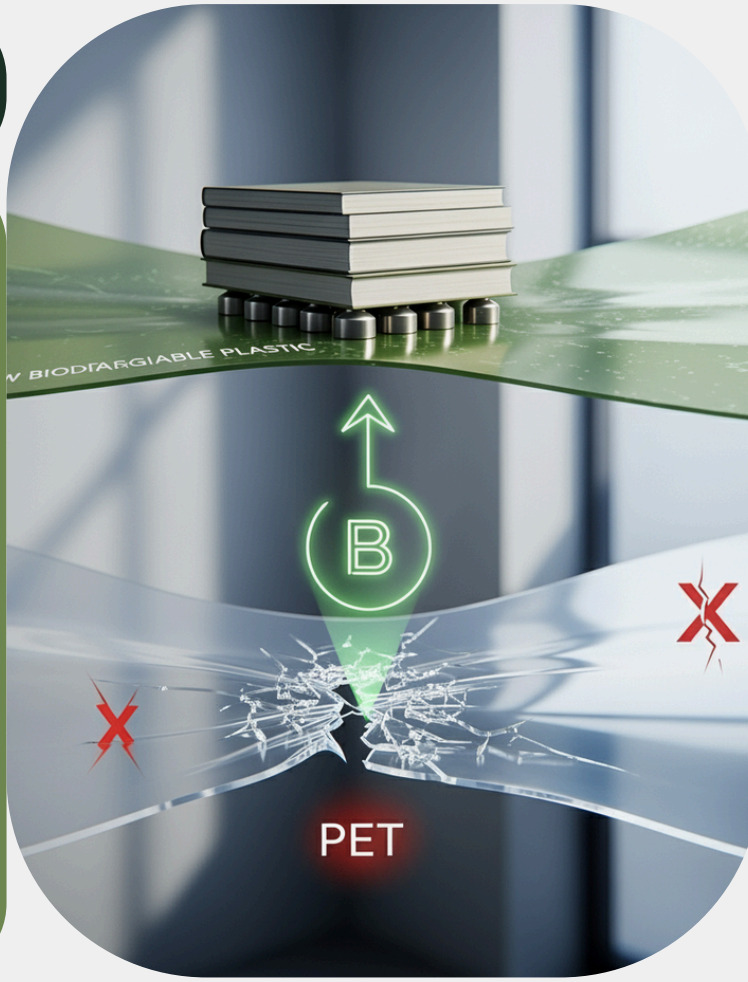
BIO-RESOURCES BULLETIN

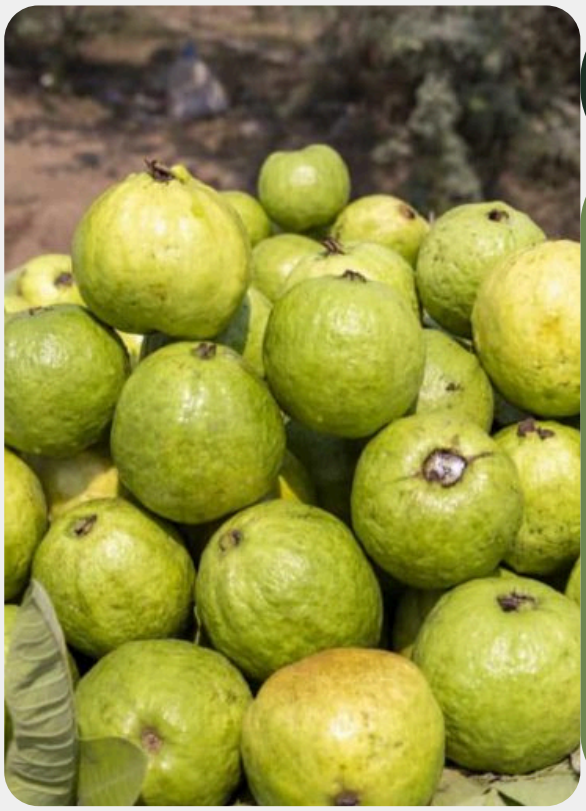
"SCIENCE UNPLUGGED: BREAKTHROUGHS ACROSS THE GLOBE"

"NEW BIODEGRADABLE PLASTIC SURPASSES PET IN STRENGTH"

Date: September 4, 2025
Source: Kobe University

A Japanese research team has achieved a breakthrough in the quest for sustainable materials by engineering E. coli to produce PDCA, a strong, biodegradable alternative to conventional plastics. Unlike previous methods, their approach avoids generating toxic byproducts and reaches record production levels, making it a major leap toward eco-friendly manufacturing. By creatively resolving long-standing challenges in microbial production, the team has shown that nature-inspired solutions can pave the way for greener, safer plastics—offering industries a path to reduce reliance on petroleum-based materials while tackling plastic pollution. This development underscores the growing role of synthetic biology and green biotechnology in addressing global challenges such as plastic pollution, while advancing the transition toward a circular bioeconomy.





THE HEALING SECRET OF GUAVA: A WEAPON AGAINST LIVER CANCER

Date:September 15, 2025
Source: University of Delaware

Nature has always been a pharmacy of wonders—offering remedies from willow bark's aspirin to the hidden compounds of tropical fruits. In a breakthrough, chemists at the University of Delaware have successfully recreated powerful molecules from guava plants that show promising activity against liver cancer.

What makes this discovery remarkable is the low-cost and scalable method developed to reproduce these bioactive compounds, opening doors for researchers across the globe. By bridging natural wisdom with modern chemistry, this innovation has the potential to spark international collaboration and pave the way for affordable, nature-inspired cancer treatments