विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

GITAM
DEEMED TO BE UNIVERSITY
BENGALURU • HYDERABAD • VISAKHAPATNAM

G-TEC
DST - GITAM TECHNOLOGY ENABLING CENTRE

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NEWS LETTER

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GITAM (Deemed to be University)















Dear Readers,

It is with great pleasure that I present the fifth edition of the G-TEC Newsletter, highlighting our continued efforts in fostering innovation, collaboration, and technological advancement. Over the past year, G-TEC has solidified its role as a vital bridge between academia and industry, driving impactful research, sustainable solutions, and expanded outreach.

This edition features key milestones, including the Agri-leaders Capacity Summit, Natural Farming Buyers and Sellers Meet. We have further strengthened our network through additional strategic MoUs with academic institutions, hosted insightful workshops and masterclasses, while actively promoting BARC technologies across various events, and advanced technology mining and transfer initiatives.

A significant focus remains on intellectual property awareness and technology transfer, with expert sessions conducted across various institutions. Through our collaborations with industry leaders, researchers, and entrepreneurs, we continue to build a thriving ecosystem that nurtures innovation and supports technology commercialization. Our ongoing engagement in knowledge-sharing platforms ensures that students and faculty gain exposure to cutting-edge advancements, preparing them for future challenges in the dynamic technology landscape.

I extend my sincere gratitude to Dr. Krishna Kanth Pulicherla (DST, GoI), and all stakeholders for their unwavering support. Together, we are building a future where innovation drives sustainable development.

Best Regards,
Prof. Raja P Pappu
Coordinator
DST GITAM Technology Enabling Center

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TECHNOLOGIES MINED

1 Micropropagation of Banana

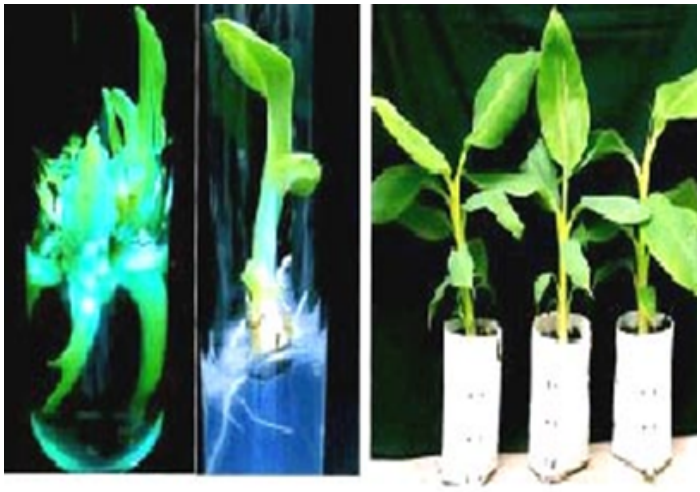


TRL Level: 09

Banana is a globally important fruit crop with 97.5 million tones of annual production. In India, banana contributes 37% of the total fruit production and ranks second in importance next to mango. The state of Maharashtra ranks second with respect to the land under the cultivation but first in its production of banana with 60 T/ha per anum.

Edible bananas do not produce seeds and are traditionally grown vegetatively through suckers (5 to 10 in number depending on the variety). Thus low rate of multiplication limits this method severely. In the recent years, tissue culture propagation of banana through shoot tip as well as floral aspices has been utilized to increase banana production.

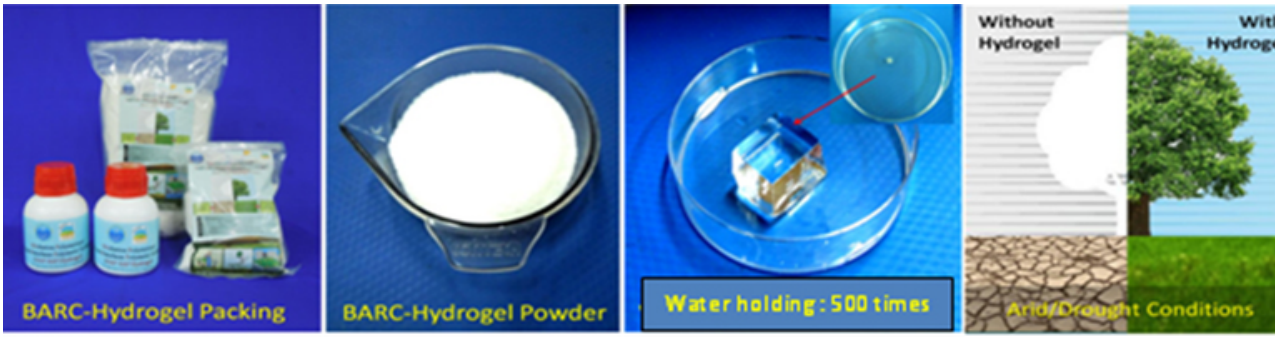
The process involves initiation of cultures from sterilized shoot tips obtained from the parent banana plant, shooting and rooting in the test tube, primary hardening in the laboratory, secondary hardening in the nursery and plating in the field.



Advantages :

- Disease free elite varieties.
- Rapid multiplication & Early harvesting.
- Uniform size and age of plants.
- High quality fruit bunches.
- Available throughout the year.

2 Superabsorbent BARC-Hydrogel (MRIDAMṚT) (मृदाअमृत)



TRL Level: 09

BARC has developed superabsorbent polymer hydrogel (BARC-Hydrogel) using cold ionizing energy, such as gamma-rays and electron-beam. Process preparation thereof makes it more eco-friendly and biodegradable compared to chemically synthesized process. BARC-Hydrogel can absorb and retain pure water up to several hundred times (~550 times) of its own weight and supply upon plant-root demand. BARC-Hydrogel granules can act as a mini water reservoir near the plant root region (Rhizosphere) and enhances soil properties by retention of more water and soil aeration. It helps to maintain the good health of plants in semi-arid and arid regions and conserve water by reducing the frequency of irrigation.

Applications:

- Afforestation
- Landscaping
- Verticle Gardening
- Terrace Gardening
- Farming

3 Environmental Gamma Spectroscopy System (EGSS)



TRL Level: 09

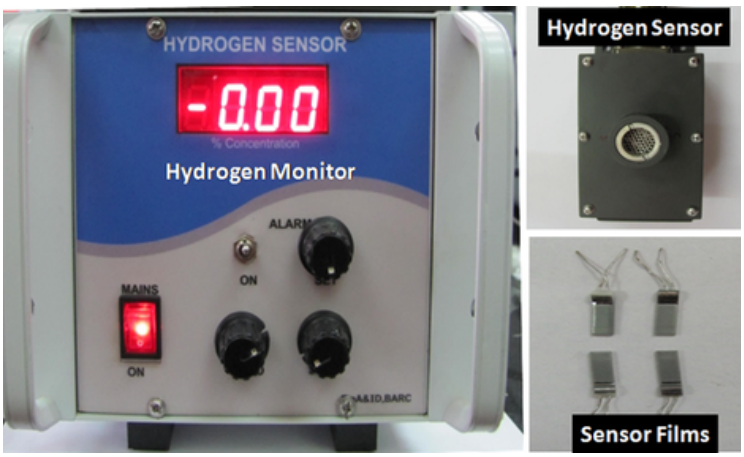
EGSS is a standalone, solar powered, battery operated unit with GSM based online wireless data communication for installation in open field. It has a 2"×2" NaI(Tl) based gamma spectrometer, together with GM tube based gross gamma detectors, the former being automatically switched on when the dose rate detected by the latter increases beyond a pre-set threshold value.

The establishment of a network of such field-installed systems with online communication would facilitate the real-time identification of radionuclide releases in case of radiological/nuclear emergencies. This would help in turn to facilitate prompt radionuclide-specific countermeasures in case of such incidents.

Applications:

- Online environmental gamma Spectroscopy around
  - Research reactors
  - Nuclear power plants
  - Fuel fabrication/reprocessing facilities
  - Thermal power plants
  - Oil rigs
  - Shipping industries, etc.
- Network of field-installed systems with online communication to facilitate real-time identification of radionuclide releases in case of radiological/nuclear emergencies, thereby facilitating prompt radionuclide-specific countermeasures in case of such incidents.

4 Hydrogen gas Sensor



TRL Level: 09

The Hydrogen Gas Sensor (Model: TPD-BARC H_2-054P) is catalytic type and suitable for detection in the 0.5- 4 % range. The sensor has many advantages such as continuous operation, long lifespan, robustness, simple to operate, easy to install and calibrate. It can be used for H_2 detection at industries like heavy water plants, oil refineries, nuclear reactors, research laboratories etc. The sensor comprises of two main parts namely a "Transmitter" and a "Digital Monitor".

The transmitter consists of a sensing element comprising of Pt-100 coated with Pd, whose temperature is controlled using a circuit. The temperature at the surface of sensor film changes as a function of H_2 concentration, which is calibrated and displayed directly in volts on a digital monitor. For this, the output of the sensor is signal conditioned and transmitted through 4-20 mA converter link. The receiver unit receives the current signal, converts into voltage. This voltage is properly amplified, calibrated and displayed as the percentage concentration of hydrogen, using 3 1/2-digit DPM. The receiver unit also powers the transmitter units. The 4-20 mA current loop helps to keep the sensor more than 300m away from the control room.

Applications:

- Heavy Water Plants (DAE)
- Hydro-desulfurization and hydrocracking operation in refineries
- Ammonia production
- Metallic ore reduction
- Rotor coolant in large electrical generator
- Battery storage
- H_2 fuel cells

5 Nitrogen Oxides Releasing Wound Dressing





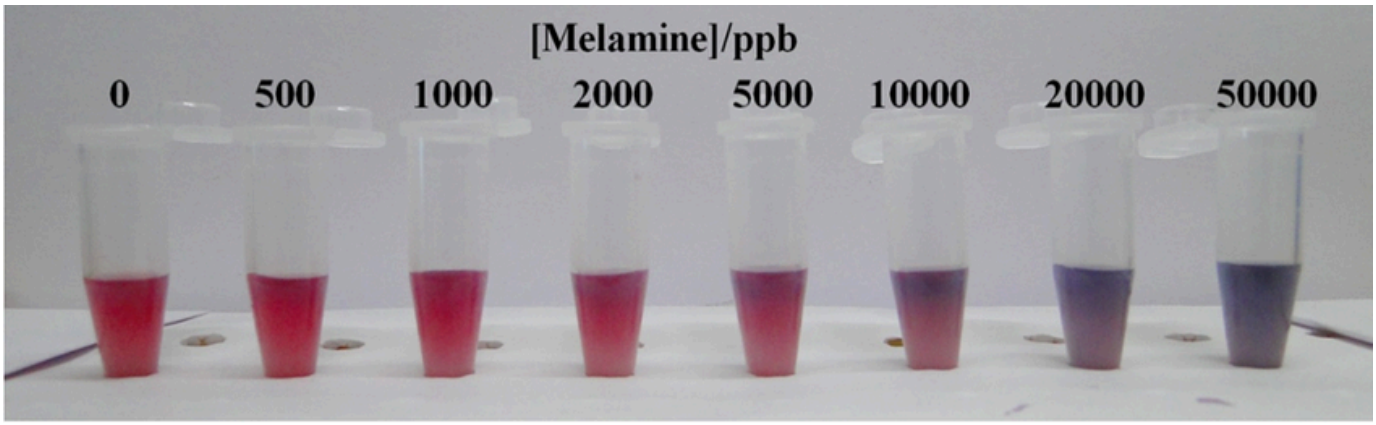
TRL Level: ·09

The nitrogen oxides releasing wound dressing is useful for the treatment of chronic infected wounds and non- healing wounds (diabetic foot, pressure ulcer, venous stasis wound etc). The dressing works by decreasing the infection, increasing the microvascularization and granulation thereby aiding wound healing. The dressing is also suitable for application which requires preparation of wound bed for acceptance of split skin graft based surgery. The dressing is poly-antimicrobial (antibacterial and antifungal) activity including antibiofilm and is capable of sustained release of the active ingredient over a long period of time. The dressing is simple in preparation, low in cost and it can be stored at ambient temperature and humidity for two years, without loss of activity.

Applications:

- The dressing is useful for treatment of chronic infected wounds and non- healing wounds (diabetic foot, pressure ulcer, venous stasis wound etc)
- The application of this dressing on wounds especially in diabetic patients can lead to decrease in the infection, increase in micro vascularization and granulation thereby, leading to faster wound healing
- The dressing is also suitable for applications which require preparation of wound bed for acceptance of split skin graft based surgery

6 Visual Detection kit for melamine content in adulterated milk



TRL Level: 09

Melamine adulteration of milk is a worldwide problem that goes undetected by commonly used Kjeldahl method, adapted by the dairy industries. The exposure to melamine adulteration exceeding the daily tolerable limit has detrimental effects on human health, since excessive melamine causes kidney stones leading to renal failure. Thus, regular monitoring of the milk supplies from dairy industry is necessary. BARC has developed a simple one-step nano-formulation for the detection of milk adulterant melamine in raw milk samples by colorimetry. The method is effortless, rapid and cost-effective.

Applications:

- Quality check of milk by general public, dairy industry and food chains..

1 DST G-TEC at the 6th Visakha Organic Mela 2025



GITAM Technology Enabling Centre (G-TEC) participated in the 6th Visakha Organic Mela 2025, held at Andhra University, Visakhapatnam, from December 4 to 7, 2025. The event served as a vibrant platform to promote organic farming, sustainable agriculture, and eco-friendly innovations. It brought together farmers, entrepreneurs, researchers, and organizations committed to advancing environmental sustainability and technology-driven organic practices.

G-TEC showcased its initiatives through an interactive stall, where the team highlighted various activities and technology-driven solutions aimed at supporting rural development and sustainable practices. The participation provided an opportunity to directly engage with farmers, students, and industry stakeholders, fostering knowledge exchange and awareness.





A key attraction at the G-TEC stall was the exposure of technologies developed by Bhabha Atomic Research Centre (BARC), demonstrating their applications in agriculture, food preservation, and environmental sustainability.

The event facilitated meaningful interactions and networking with diverse stakeholders, reinforcing G-TEC's commitment to promoting innovation, sustainability, and technology adoption in agriculture. Participation in the mela further strengthened G-TEC's mission of enabling impactful solutions and contributing to a greener and more sustainable future.

2 Agri – Leaders Capacity Summit



GITAM Technology Enabling Centre (G-TEC) successfully organized the Agri Leaders Capacity Summit 2025 on December 23, 2025, at the KRC Auditorium, GITAM University, Visakhapatnam. The summit, themed “Empowering Farmers with Modern Agriculture Technologies,” served as a focused initiative to strengthen the capabilities of agri leaders and promote technology-driven agricultural practices.





The summit brought together farmers, agri leaders, industry experts, and technology providers to explore innovative solutions aimed at enhancing agricultural productivity and sustainability. The sessions emphasized the adoption of modern farming techniques, digital tools, and advanced technologies to address current challenges in agriculture and improve overall efficiency.

Through expert talks, interactive sessions, and knowledge-sharing discussions, participants gained valuable insights into emerging trends and best practices in the agricultural sector. The platform enabled direct engagement between stakeholders, fostering collaboration and encouraging the exchange of ideas to support farmer empowerment and rural development.



3 Natural farming Buyer – Seller Networking Event

Rythu Sadhikara Samstha (RYSS), in collaboration with GITAM Technology Enabling Centre (G-TEC), successfully organized a Natural Farming Buyer–Seller Networking Event on February 26, 2026, in Visakhapatnam. The event aimed to create a strong platform for connecting natural farming producers with potential buyers, thereby promoting sustainable agriculture and market linkages.





The networking event brought together farmers, buyers, agri-entrepreneurs, and stakeholders to facilitate direct interactions and business opportunities. It served as an effective platform for showcasing natural farming produce and strengthening the value chain through meaningful collaborations and partnerships.

A key highlight of the event was an insightful presentation by Prof. Ravi Guruzada, who elaborated on advanced technologies developed by Bhabha Atomic Research Centre (BARC). The session provided valuable insights into the application of scientific innovations in agriculture, particularly in enhancing productivity, sustainability, and post-harvest management.



The event successfully enabled knowledge exchange, market connectivity, and awareness of innovative agricultural technologies. It reinforced the shared commitment of RYSS and G-TEC toward promoting natural farming, empowering farmers, and building a sustainable and technology-driven agricultural ecosystem.

4 DST G-TEC at TiECON Vizag 2026



GITAM Technology Enabling Centre (G-TEC) participated in TiECoN Vizag 2026, held on March 6–7, 2026, in Visakhapatnam. The event brought together entrepreneurs, innovators, industry leaders, and startups, serving as a dynamic platform to explore emerging technologies, foster innovation, and promote entrepreneurship.

G-TEC set up an interactive stall to showcase its key activities, initiatives, and contributions toward technology enablement and ecosystem development. At the stall, G-TEC highlighted various technology-driven solutions and created awareness about advanced innovations developed by Bhabha Atomic Research Centre (BARC).





The participation enabled meaningful engagement with startups, industry professionals, and aspiring entrepreneurs, facilitating knowledge exchange and collaboration opportunities. The event further strengthened G-TEC's visibility and reaffirmed its commitment to promoting innovation, technology adoption, and sustainable development.

5 DST G-TEC Participation at Visakhapatnam City Innovation Cluster (VCIC)



GITAM Technology Enabling Centre (G-TEC) participated in the Visakhapatnam City Innovation Cluster (VCIC) Institute–Industry–Investors Conclave on March 18, 2026, at the AU Convention Hall, Visakhapatnam.

G-TEC set up a dedicated stall to showcase its key activities, ongoing initiatives, and technology-driven solutions to industry experts, investors, and academic stakeholders.

TThe stall also featured advanced technologies developed by Bhabha Atomic Research Centre (BARC), highlighting their applications in agriculture and industry.

The engagement helped raise awareness, explore collaborative opportunities, and strengthen the innovation ecosystem across institute–industry–investor linkages.



6 DST G-TEC at Vendor Development Programme under the RAMP Scheme – Andhra Pradesh



DST G-TEC actively participated in the two-day Vendor Development Programme held on 24–25 March 2026 at the Ratan Tata Innovation Hub, Visakhapatnam, under the RAMP (Raising and Accelerating MSME Performance) Scheme of Andhra Pradesh.
Organized by MSME-TE-CITD in association with AP MSME Development Corporation, the programme aimed to strengthen vendor capabilities, enhance competitiveness, and foster collaboration among MSMEs and startups.



The event was graced by the Chief Guest, Shri M.N. Harendhira P, District Collector of Visakhapatnam, who emphasized the importance of innovation, skill development, and government support in enhancing the competitiveness of MSMEs.



The programme served as an excellent platform for industry stakeholders to explore business opportunities, understand government initiatives, and foster partnerships for sustainable growth.

WORKSHOPS

Capacity Building Workshop on Organic Fertilizers



GITAM Technology Enabling Centre (G-TEC) successfully organized a Capacity Building Workshop on Organic Fertilizers in collaboration with Rythu Sadhikara Samstha (RYSS) on February 12, 2026, at APCNF, Visakhapatnam. The workshop was aimed at strengthening the knowledge and practical skills of participants in sustainable and organic farming practices.



A key highlight of the workshop was the practical demonstration on the preparation of bio-control agents, enabling participants to understand their role in pest management without the use of harmful chemicals. The training also covered the preparation of bio-inputs, equipping attendees with essential skills to adopt natural farming methods effectively.

The session focused on promoting eco-friendly agricultural inputs by providing hands-on training and demonstrations. Participants were introduced to the preparation of various bio-inputs and organic formulations that support soil health, crop productivity, and environmentally sustainable farming practices.



The workshop effectively enabled knowledge sharing and capacity building, reaffirming G-TEC's commitment to sustainable agriculture through innovation and technology.

PROBLEM STATEMENTS

1. Problem: Reducing Post-Harvest Losses

Statement: During peak harvest seasons, oversupply leads to price drops and significant wastage of high-quality produce. Affordable solutions such as decentralized processing units and low-cost cooling technologies are essential to extend shelf life and convert surplus into value-added products.

2. Problem: Strengthening Last-Mile Market Linkages

Statement: Smallholder farmers often lack the scale to independently access urban markets, resulting in reliance on intermediaries and distress sales at the farm gate. There is a need to develop shared logistics models and direct-to-consumer channels that enable farmers to realize fair market value for their produce.

3. Problem: Modernizing Jaggery Processing Technologies

Statement: Traditional jaggery production methods often compromise quality, hygiene, and shelf life. Adoption of advanced technologies, such as improved processing and fogging techniques, can enhance product quality, ensure safety, and help farmers achieve better market prices.

4. Problem: Bridging Knowledge Gaps in Farm Advisory and Soil Health

Statement: Limited access to real-time, localized advisory services often leads to excessive use of chemicals and inefficient farming practices. There is a need for simple, accessible digital or community-based tools that provide timely guidance on soil health, crop nutrition, pest control, and weed management.

PROBLEM STATEMENTS

5. Problem: Facilitating Access to High-Value Export Markets

Statement: Although organic and specialty crops offer strong export potential, smallholder farmers face challenges in meeting global standards, certifications, and traceability requirements. Simplified support systems are needed to help farmers comply with export regulations and connect with premium international markets.

6. Problem: Addressing Pest Infestation and Shelf-Life Challenges in Horticulture

Statement: Flower and vegetable farmers face significant losses due to pest attacks and limited shelf life of perishable produce. Effective pest management solutions and post-harvest technologies are required to preserve quality and reduce spoilage.

7. Problem: Expanding Value Addition Opportunities

Statement: A majority of farmers sell produce in raw form due to limited access to processing technologies and infrastructure. Enabling value addition through appropriate technologies can enhance product quality, increase market opportunities, and improve farmer incomes.

8. Problem: Enabling Viable Multi-Cropping Systems

Statement: While multi-cropping reduces risk, managing the aggregation, storage, and marketing of diverse crops presents operational challenges. Practical models are required to streamline collection, packaging, and sale of mixed produce to ensure economic sustainability for farmers practicing natural farming.

SECTORS OF FOCUS AT GITAM – TEC

- Smart Manufacturing
- Agri Tech
- Health Tech
- Food Technology
- Material Science
- Waste Management
- Toys

MoUs with Academia	23
MoUs with Industries	9
Technologies identified	257
Technologies mined	1503
Technologies transferred	3
Capacity Building for Industry & Academia	29

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STAY CONNECTED WITH G-TEC

Thank you for reading the latest edition of the GITAM Technology Enabling Centre (G-TEC) Newsletter! We hope you found the updates and insights informative and inspiring.

As we continue to advance our mission of fostering innovation, research, and collaboration, we encourage you to stay connected with us and participate in our various initiatives.

- Join our Events and Workshops to Enhance your Knowledge
- Collaborate with Us for Technology Transfer and Development

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Best regards,
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Together, let's drive innovation and make a difference!