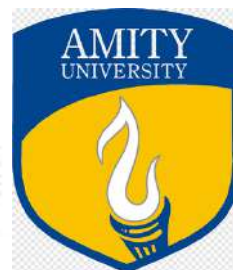


DST-AMITY TEC NEWSLETTER

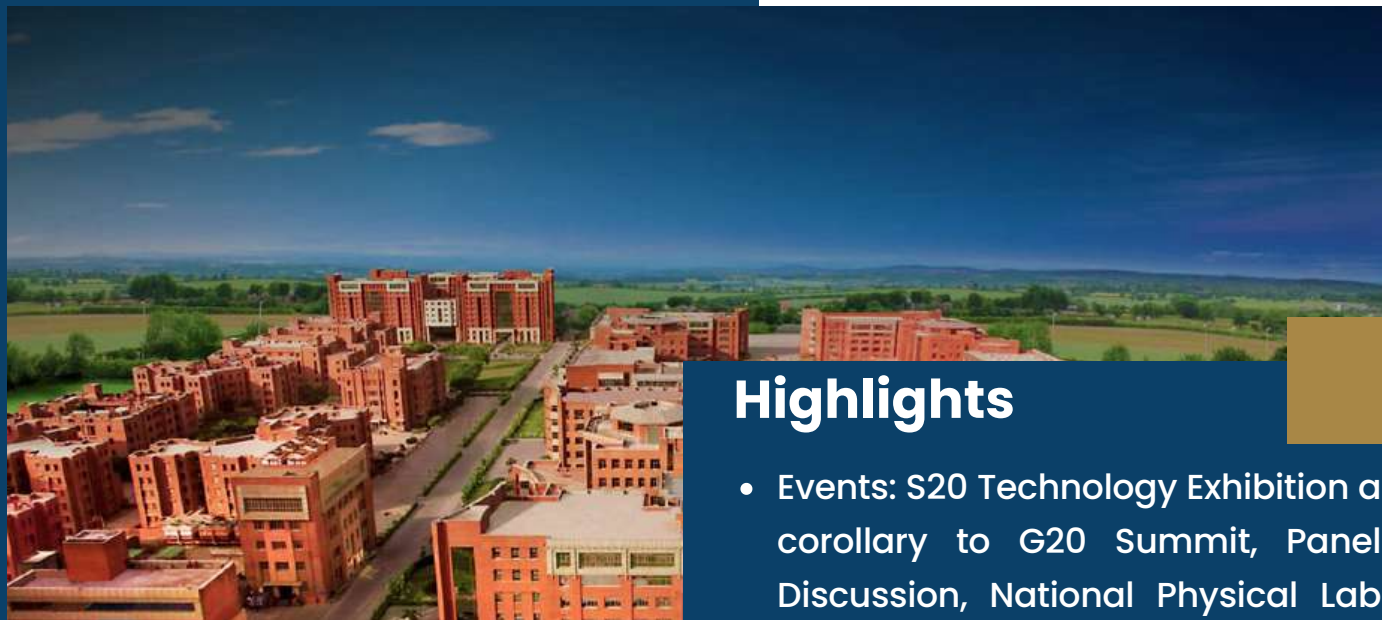
AMITY.EDU/DITT/DSTTEC/



विज्ञान एवं
प्रौद्योगिकी मंत्रालय
MINISTRY OF
SCIENCE AND
TECHNOLOGY



VOLUME 5, ISSUE 1



Highlights

- Events: S20 Technology Exhibition a corollary to G20 Summit, Panel Discussion, National Physical Lab exhibition, UP International Trade Fair 2023, ICEIL 2023, Indian Science Congress, India International Science Festival 2023, SUFex – Smart Urban Farming Expo, Defence Conclave, and many more.
- Technology Transfer: Male Fertility AI Software, Crop Growth Enhancing fungus, Chromium Tester, Novel Protease.
- Few Innovative Technologies and Products Available for Licensing.

Our Growth & Success in 2023

As we are moving towards the end of 2023, we are delighted to share some success stories and great exposures that our DST-Amity TEC has experienced in 2023.

The DST-Amity TEC team has successfully implemented the strategies that resulted in an enhanced number of Technology Enabling and their transfer to industry.



01/22



DST-Amity TEC Organized S20 Technology Exhibition cum Conference Under the Aegis of The G20 International Summit 2023

- **Inaugurated** by Chief Guest Shri Dr. Jitendra Singh, Hon'ble Minister of State (Independent Charge) for the Ministry of Science and Technology and Minister of State for Prime Minister's Office; Personnel, Public Grievances and Pensions; Department of Atomic Energy and Department of Space.

- The Honorable Minister appreciated DST-Amity TEC enabled agricultural based technologies, and took the samples of our commercialized technologies namely, the Biofertilizer based on the fungus 'Rootonic' and the Growth-promoting consortia 'HNB9' which were successfully transferred to the industries.
- The exhibition generated significant outcome including enhanced technology exposure to the industry, educational opportunities for the students, and valuable feedback from the experts & industry people for the future technological improvements.
- Future plans involve expanding industrial collaborations, research based institutional collaboration and promoting technology bases initiatives.



Talk cum Panel Discussion

- DST-Amity TEC organized a talk cum Panel Discussion on the topic “Technology Readiness Levels (TRL) and Strategies to Increase it in the University Ecosystem.”
- The panel included experts like Former Distinguished Scientist and Chief Coordinator R&D (LS), DRDO Dr. W.Selvamurthy, President, Amity Science Technology and Innovation Foundation, Chairman DST-Amity TEC; Prof. (Dr.) B.C. Das, Chairman & Hargobind Khorana Chair Professor, AIMM&SCR, Chairman university research council, Chief coordinator DST-Amity TEC; Former Director General, R&D (LS), DRDO Dr. A. K. Singh, Sr. V. P., AFSTIA; Dr. Paritosh Shekhar, Founder and Chairman, APS Life Tech, Pune and Dr. Meenakshi Kanojia, Sr. Dy. Director DITT, Amity University.

- The primary goal was to create awareness and facilitate knowledge exchange, on technology readiness levels (TRL). This event served as a platform that unites experts, researchers, and professionals, fostering discussions and strategies to propel TRL advancements within the university ecosystem.
- DST-Amity TEC gave an opportunity to the participants to develop an understanding of TRL systems and let them learn an effective assessment method. The event not only imparted knowledge but also offers valuable insights into the latest trends and developments shaping the landscape of TRLs. Attendees also got a good exposure to the strategies for increasing readiness level of their technologies.



Talk cum Panel Discussion

- DST-Amity TEC organized a thought-provoking event featuring a talk and panel discussions on **"Translational Research and Commercialization in the Indian University Ecosystem: A Solution Approach via Policy and Strategy Recommendation."**
- The event comprised two insightful panels: Panel 1: Prof. Nalinaksh S. Vyas, Dept. of Mechanical Engineering, IIT Kanpur, Dr. H. Purushotham, DPIIT IPR Chair, Andhra University Former Chairman & Managing Director, NRDC, Prof. Rupinder Tewari, Mentor, DST-TEC at Panjab University, Chandigarh, Dr. Anil Wali, Managing Director, Foundation for Innovation and Technology Transfer, IIT-Delhi
- Panel 2: Dr. Sudha Mysore, CEO, Agriinnovate India Limited, Mr. Arun Chaudhary, Director, DIITM, DRDO, Mr. Nirankar Saxena, Dy. Secretary General, FICC.

- The panels delved into key aspects of translational research, policy recommendations, and commercialization strategies, offering valuable insights for enhancing collaboration between academia and industry. The event saw active participation and stimulating discussions, enriching the ongoing discourse on innovation and technology transfer.



Panel Discussion

- DST-Amity TEC organized a stimulating Panel Discussion centered around the theme "Scope & Opportunities and Technology Transfer & Commercialization in the Healthcare Industry." The event featured two panels, each delving into crucial aspects of the healthcare sector.
- Panel 1 Discussed on :Scope & Opportunities in Healthcare Industry, had experts like, Mr. Ram Sharma Director, InnoDx Solutions Pvt. Ltd, Dr. C.K. Katiyar CEO, Healthcare (Technical) and Dr. Punit Srivastava Director & CSO, Mediception Science Pvt. Ltd.
- Panel 2 discussed on: Technology Transfer & Commercialization of Novel Healthcare Technologies, had experts like Dr. Sadhana Srivastava, Scientist F, Innovation & Translational Research, ICMR Dr. Dilip Kumar, CEO Incubator Facility, AMTZ.
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- In addition to the panel discussions, the event featured a Special Lecture by Dr. Suchita Markan, Scientist E, Medical Device and Diagnostics Mission Secretariat, Indian Council of Medical Research.
- This event of DST-Amity TEC proved to be an enlightening exploration of the healthcare landscape and its potential for technological advancements and commercialization.



Male Fertility AI: Technology Transfer

- The AI-based machine learning software, designed for predicting male fertility outcomes by analyzing Y chromosome microdeletions, offers improved accuracy and efficiency.
- The licensing of this software to industry is a significant milestone, showcasing the commercial potential of this technology.

- DST-Amity TEC played a pivotal role in fostering collaboration between ICMR and the research team and facilitated transfer of this “AI based Software” to a Pune based Biotech company. Presently, DST-Amity Tec is extending its support in further scale-up/validation/regulatory approvals.



Rootonic: Technology Transfer

- Amity University and a leading agri-biotechnology organization signed a technology transfer agreement.
- The agreement marked a significant step towards fostering collaboration and knowledge transfer between the university and the industry.



- DST-Amity TEC organized hands-on training for industry delegates to gain expertise in 'Rootonic' production and maintenance. The training included activities such as microscopy visualization, spore counting, spore separation, media formulation, and stock preparation.
- DST-Amity TEC also reviewed the protocols with the experts and provided an up-to-date, refined production manual to the industry to ensure its effectiveness and efficiency.



Novel and Thermostable Protease: Technology Transfer

- Proteases find applications in various industries such as food and beverages, nutraceuticals, leather, detergents, pharmaceuticals, and cosmetics.
- The "Novel Protease Enzyme" is exceptionally active, exhibiting up to eight times more efficiency.
- This enzyme contributes to the reduction of manufacturing costs, ultimately benefiting the common man.



- The Amity Institute of Biotechnology has developed this novel protease enzyme, which finds applications in food processing and other biotechnological processes and industries.
- The DST-Amity TEC team facilitated the transfer of technology for novel protease enzyme to a food and beverage company.

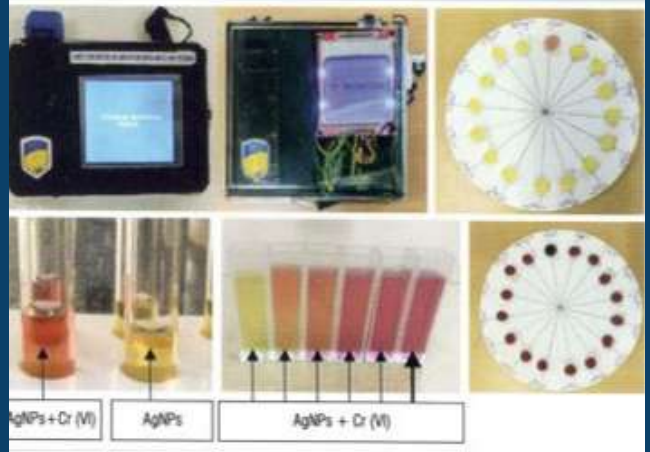




Ami Aqua : Technology Transfer

- The widespread use of Chromium in tanning, corrosion control, plating, and pigment manufacturing, as well as by nuclear weapon producers, results in the release of highly toxic environmental pollutants.
- The DST-Amity TEC team facilitated development of a commercial- level prototype of Ami Aqua tester for detection of heavy metals in water. This is a platform technology which is presently programmed to detect Chromium only.

- 'Ami Aqua' is a portable, low-cost device with a detection limit of 0.02 mg/L that provides both qualitative and quantitative results.
- DST-Amity TEC facilitated transfer of this Meter to a Ghaziabad based startup company for its ensuring seamless progression and commercialization. Further, DST-Amity TEC is extending its support to increase its spectrum to detect other heavy metals also.





U.P. International Trade Fair 2023

- Greater Noida hosted the inaugural edition of the Uttar Pradesh International Trade Show (UPITS), with President Droupadi Murmu inaugurating the event, in the presence of Uttar Pradesh Chief Minister Yogi Adityanath.
- More than 2,000 exhibitors from multi-sector from UP and a global platform for large industries, entrepreneurs, manufacturers, and exporters from sectors like IT/ITEs/MSMEs /ODOP /startups/education/agriculture /health/tourism culture/energy

- It was a valuable opportunity to showcase our research and development initiatives to a diverse audience.
- A good turnout of visitors and industries reflects the growing interest in R&D being conducted at higher education institutions.
- The DST-Amity TEC team engaged in meaningful interactions with other institutions, delving into discussions about their respective technology enabling ecosystem. Furthermore, the team provided valuable assistance in elucidating the concept of Technology Readiness Levels (TRLs), illustrating how these levels can serve as effective tools for facilitating technology enablement.
- Industries also visited DST-Amity stall and took keen interest in our technologies, especially the agriculture based technologies.





Exhibition at National Physical Laboratory

- An event on “India’s Startup Revolution – An Exciting Journey from an Idea to Market” was organised on 12th September 2023, Under the One Week One Lab (OWOL) programme of CSIR-NIScPR, at CSIR-National Physical Laboratory, New Delhi.
- The event aimed to expose students to exciting possibilities and pathways that can help them translate their ideas into a commercial product/process and provide a platform for emerging startups to enhance visibility and promote networking.

- The event showcased cutting-edge innovations of various startups, providing a glimpse into the vibrant and diverse Indian startup ecosystem.
- Startups nurtured by DST-Amity TEC, such as “X-Pect Innovations Pvt. Ltd.” and “Ingenious Research Solutions Pvt. Ltd.,” demonstrated their considerable potential.
- Notable personalities, including Dr. Omkar Rai, Executive Chairman of Startup Odisha, Mr. Punnet Kaura, Chairman of CII Delhi State Council and Managing Director & CEO of Samtel Avionics Ltd, and Prof. (Dr.) Venu Gopal Achanta, Director of CSIR-NPL, visited the stalls set up by DST-Amity TEC and provided their valuable feedback.





5th International Conference on Entrepreneurship, Innovation and Leadership (ICEIL 2023)

- Innovation and technologies of Amity ecosystems were showcased to a diverse audience students, researchers, entrepreneurs, and investors. This was a valuable opportunity to promote Amity's innovation ecosystem and future entrepreneurs.

- Along with other technologies, a new innovative technology titled "The Regenerative Clutch System" which can improve fuel efficiency and reduce emissions, developed by X-Pect innovation Pvt. Ltd, a startup enabled by DST-Amity TEC was displayed.
- One of the attraction was a DST-Amity TEC enabled novel ERGO (electrochemically reduced graphene oxide) based smart biosensor for triglycerides detection in blood with extended stability.
- Some of the visitors from NGOs took keen interest in waste water treatment cum Electricity Generation system and Ami-Aqua Tester enabled by DST-Amity TEC.





INDIA INTERNATIONAL SCIENCE FESTIVAL 2023

India International Science Festival (IISF) 2023

- The India International Science Festival (IISF) is a collaborative endeavour between Ministry of Science and Technology, Ministry of Earth Sciences, Department of Space and Department of Atomic Energy in partnership with Vijnana Bharati - a science movement spearheaded by scientists of the nation with swadeshi spirit.

- DST-Amity TEC showcased several technologies developed at Amity university's various campuses.
- The objective was to involve the community in scientific endeavors, celebrate the wonders of science, and demonstrate how science, technology, engineering, and mathematics (STEM) offer solutions to enhance our quality of life.



Defence Conclave 2023

- Dr. Ashok K. Chauhan, Founder President, Amity Educational and Research Establishments, was awarded the “Prestigious Academia Award” for promoting and skilling youth in Defence Technologies. at Defence Conclave 2023.



- DST-Amity TEC displayed some select Technology prototypes having applications in defence sector.
- Delegates from the government and industry took keen interest in Nano-Breath-N95 PM 2.5 Antimicrobial face Mask; Project Divya Drishti, an AI Based Detection of a Person on Physiological Parameters; Reusable water-purifier using Silver Nano Particles, amongst others.



Visit of Dr. Satish Reddy, Scientific Advisor to Hon'ble Raksha Mantri on April 18, 2023

- During the visit of Dr. G. Satish Reddy, the first Indian in over 100 years to be conferred with the Honorary Fellowship and Silver Medal by the Royal Aeronautical Society, to Amity University, DST-Amity TEC displayed several technologies developed at the university.
- The showcased technologies received high praise from Dr. Reddy. Further, he interacted with Team DST-Amity TEC and the concerned inventors.



SUFex – Smart Urban Farming Expo 2023

- DST-Amity TEC participated in the Expo 2023 on 24th & 25th March 2023 at Thyagaraj Stadium, INA, New Delhi.
- DST-Amity TEC Showcased innovations having applications in urban farming.
- Several Startups and industries attracted to our innovative urban farming solutions.
- DST-Amity TEC inspired several visitors with their technologies and gained valuable feedback from the industry experts to further improve the showcased products for making them market ready.





108th Indian Science Congress-2023 at Nagpur

- The Indian Science Congress is focused on **‘Science and Technology for Sustainable Development with Women Empowerment’** and will showcase achievements made by women scientists as well as young innovators across the country.
- DST-Amity TEC exhibited the latest advancements in research, patents, and technology transfers by Amity University scientists.
- DST-Amity TEC's stall drew significant interest from visitors across India, with many expressing interest in the showcased technologies. Some even conveyed their eagerness to learn more about potential opportunities in the fields of science, technology, and innovation. at Amity University.

India Water Week

- DST-Amity TEC actively participated and displayed technologies corresponding to the theme, ‘Water security for sustainable development with equity,’ including a simple, cost-effective, reusable lysimeter for leaching studies; electricity generation from wastewater while simultaneously cleaning the same water; and a photocatalytic wastewater treatment system, among many others.
- The showcased innovations garnered commendable feedback and interest.



Some Advanced Technologies Available for Transfer:

Mosquito Repellent Paint Additive

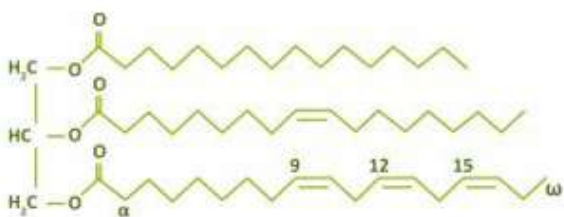
- Mosquitoes are pervasive, highlighting the critical need for enhanced protection.
- AINT has pioneered an innovative, highly efficient mosquito repellent solution.
- This groundbreaking product is derived from plants and meticulously engineered at the nano level to serve as a paint additive.
- Extensive testing, both in controlled laboratory environments and real-world scenarios, has demonstrated its remarkable effectiveness.
- DST-Amity TEC team is working on its validation study.



Bio-Pesticide Against Rice Blast

- Rice Blast disease, which destroys 10 to 35% of the global rice crop, demands our attention.
- Rice is extensively cultivated in India, and the rice blast disease tends to appear in areas with high humidity and low temperatures during nights.
- A potential bio-pesticide for managing Rice Blast Fungus, *Magnaporthe oryzae*, was identified by AIB.
- The DST-Amity TEC team reached out to Non-Governmental Organizations working in the agricultural sector to explore how the Amity scientists can assist agriculturists and farmers.





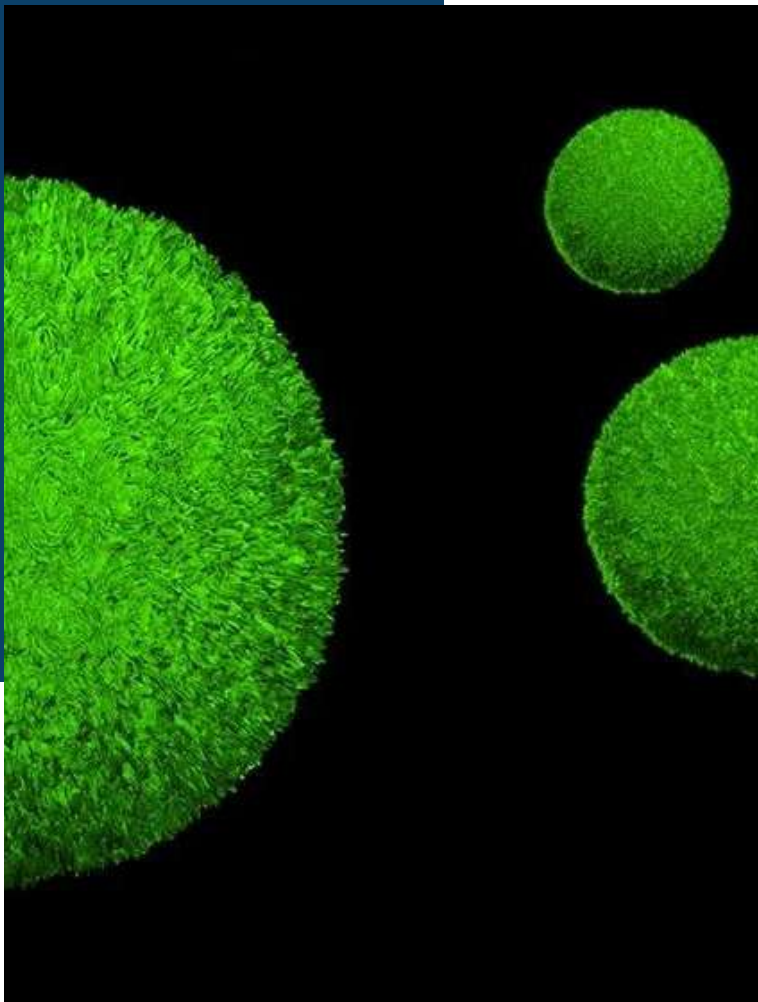
Triglyceride Sensor

- A novel electrochemically reduced grapheneoxide (ERGO) platform was utilized to create a triglyceride (TG) biosensor. The sensor was developed by co-immobilizing lipase (LIP) and glycerol dehydrogenase.
- This innovative sensor has the capability to detect tributyrin within the concentration range of 50-400 mgdL⁻¹, displaying high sensitivity at
- 29 pA mg⁻¹dL when tested with human serum samples.
- DST-Amity TEC is facilitating exposure to the industry, market, and collecting feedback to help its further refinement & commercialization.

Herbal Hair Dye

- The Herbal Hair Dye, developed by the Amity Institute of Phytochemistry and Phytomedicine (AIPP), has received an outstanding response in the Indian market.
- The Herbal Hair Dye, developed by the Amity Institute of Phytochemistry and phytomedicine (AIPP), received interest from multiple companies.
- The DST-Amity TEC team facilitated interactions with numerous beauty product manufacturers. To offer these organizations a comprehensive understanding of the product's capabilities and shades, live demonstration was conducted on human hair as well.
- This helped with the improvement in developed product.





Novel Biogenic Carbon Quantum Dots

- Amity's Biogenic Carbon Quantum Dots (BCQDs) Facilitate Stem cell migration, imaging and simultaneously direct chondrogenesis for cartilage formation.
- These BCQDs are synthesized from the biowaste using simple hydrothermal processes, offering cost-effective and eco-friendly production.

Biodegradable Edible Film

- The Amity Institute of Phytochemistry and Phytomedicine (AIPP) developed a biodegradable edible film.
- The DST-Amity TEC team organized meetings between AIPP and two food packaging film manufacturers, fostering detailed discussions between their technical teams. Significantly, both manufacturers have conveyed strong interest in the innovative edible film technology.



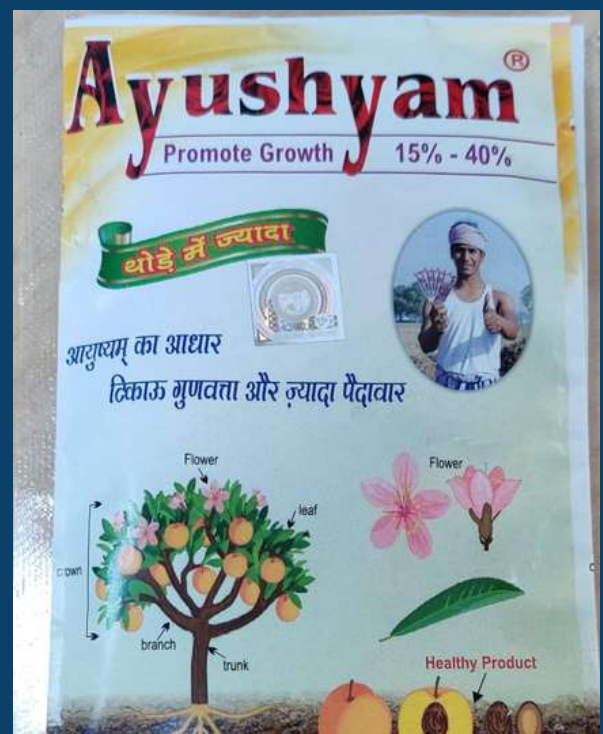


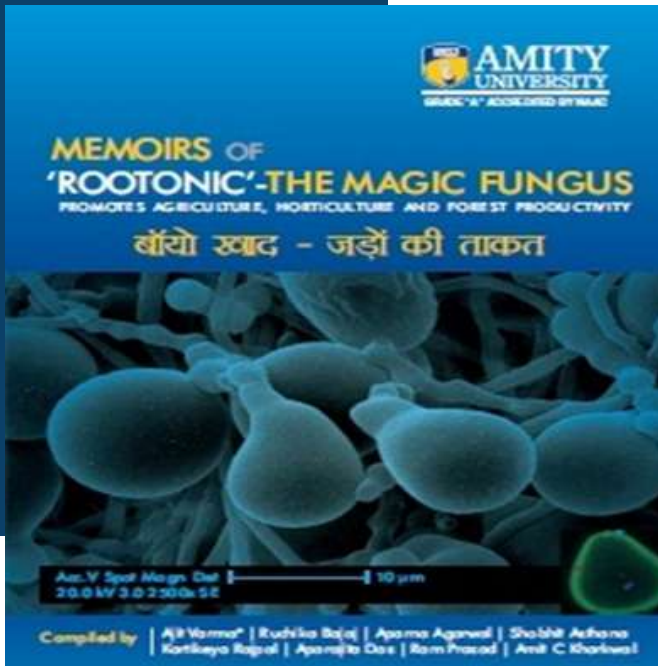
Agrivoltaics

- Many times, Indian farmers encounter challenges arising from heavy rains, lack of rain, floods, hailstorms, and various other factors.
- The Amity Institute of Advanced Research and Studies (Materials and Devices), Amity University, Noida, has introduced an innovative concept called 'AGRIVOLTAICS' as a solution to address these issues.
- This approach combines solar energy harvesting with crop cultivation to boost income without affecting the crops.
- DST-Amity TEC is actively engaging with potential adopters of this technology and recording their valuable feedback.

Plant Growth Promoting Consortia

- Consortia of *Talaromyces purpureogenus* HNB9 and *Bacillus subtilis* promote plant growth and development, provide resistance against biotic stress, and enhance yields in diverse crops.
- DST-Amity TEC has successfully connected with several industries and facilitated its transfer.





Piriformospora indica* and *Azotobacter chroococcum

- Magic fungus (*Piriformospora indica*) Promotes agriculture, horticulture, and productivity .
- This unique symbiotic fungus not only promotes plant growth but also exhibits multifunctional activities.
- DST-Amity TEC has already transferred this technology to various industries.

Plant Based Straws

- Due to environmental concerns, a sustainable alternative to plastic straws is essential.
- AIPP identified a crop in North-West India suitable for making drinking straws from its stems.
- DST-Amity TEC facilitated meetings between AIPP and two Indian drinking straw manufacturers.
- The manufacturers evaluated the product, discussed certifications, human trials, and user feedback. The concerned innovator is now preparing fresh samples incorporating all the received feedback.





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