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NEWS BULLETIN

21 TO 25 JANUARY 2024



CSIR-IIIM distributes QPM under Floriculture Mission

CSIR-IIIM

24th January, 2023

CSIR-IIIM Jammu under CSIR Floriculture Mission organised a workshop on production and crop management of floricultural crops and QPM distribution programme at KVK, Samba under the able guidance of Dr Zabeer Ahmed, Director CSIR-IIIM, Jammu.

A statement that around 100 participants were imparted hands-on training of scientific cultivation and crop management of floricultural crops and high-quality seed material of marigold was also distributed among the participating farmers.

At the outset of the programme, Dr Sanjay Khajuria, Chief Scientist and Head KVK Samba welcomed the participants at the event and apprised that KVK Samba is earnestly striving for the betterment of the farmers of the district and further expressed his gratitude to CSIR-IIIM for extending the activities of the Floriculture Mission in the district.

In his address, Dr Shahid Rasool, Nodal Scientist, CSIR Floriculture Mission in his interaction with the farmers said that the Mission is among many of the agri-industry oriented, innovation-driven initiatives launched by the CSIR, Ministry of Science and Technology for the inclusive economic prosperity of small and marginal farmers and sustainable development of floriculture sector.

Published in:

Greaterkashmir

Study reveals serious lapses in odour control systems in industrial units at Edayar

CSIR-NIIST

23rd January, 2023

A detailed study by the CSIR-National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram, has found several deficiencies in the operation of biofilter units installed in nearly 20 bonemeal units, chicken waste rendering plants, and rubber processing units in the Edayar industrial area.

The study, which was commissioned by the Kerala State Pollution Control Board (PCB) in September 2022, revealed that odour and volatile organic compounds (VOCs) were getting released from the erring units during raw material processing and plant operation owing to the poor operational efficiency of the units. The team of scientists shortlisted 10 possible reasons for uncontrolled emission into the atmosphere.

They included inadequate storage facilities for raw materials, lack of proper ventilation and refrigeration system for raw material storage, inadequate closure of reactor vessels, use of crude odour emission control technology for process, improper design and specifications of odour emission control unit, improper operation and maintenance of existing biofilter units, improper ventilation ducting in processing area, and lack of awareness among company workers as well as industry owners on environmental and health impacts of odour and VOC emissions.

The study report that was submitted to the PCB in September 2023 said that foul odour might not cause direct damage to health. But toxic stimulants of odour may cause ill health or respiratory symptoms. Secondary effects, in some, may be nausea, insomnia, and discomfort. Very strong odour could result in nasal irritation and trigger symptoms in individuals with breathing problems or asthma, it said.

The study recommended that all vapour emitting sources need to be channelised through

ducts to a common conduit, after advanced scrubbing with relevant or proper scrubbing unit or biofilter unit. The report pointed out that environment regulatory agencies, including Central and State PCBs, had a great responsibility to ensure that people living close to the odour-causing units were not impacted adversely in view of the unchecked emissions. The scientists said there was a lack of legislative obligation and Indian standards on odour and VOC emission levels in ambient air. Hence, critical scientific review was required on the effectiveness of installed biofilters for odour removal from respective processing facilities, they added.

Workshop On “Powder Metallurgy-Based Research For Advancements In Science And Engineering (PRAISE)”-2024 Kick Starts At CSIR-IMMT

CSIR-IMMT

23rd January, 2023

A SERB Accelerate Vigyan sponsored High-end Workshop on “Powder metallurgy based Research for Advancements In Science and Engineering (PRAISE)”-2024, Kickstarts today at SS Bhatnagar Hall, CSIR-IMMT Bhubaneswar. This workshop will continue till 27th January 2024.

The workshop was inaugurated by Hon’ble Chief Guest Prof. PV Satyam, School of Basic Sciences, IIT Bhubaneswar, in the presence of Shri H.K. Tripathy Chief Scientist, MPD, CSIR-IMMT, Dr. R. Sakthivel Chief Scientist & Head, AMT, CSIR-IMMT, Dr. Ajit Panigrahi Convenor, PRAISE-2024

The workshop will focus on:

To educate the science and engineering PhD and PG students about the fundamentals of powder synthesis, characterization of powder, and various sintering techniques for consolidation powder.

Lectures from experienced faculty, and scientists will focus on the basics of the evolution of phases, microstructure, and mechanical properties during powder metallurgy processing of various alloys.

To improve the understanding of PhD and PG students about the practical aspects of synthesis of materials and provide them hands-on experience on the processing equipment such as ball milling, different types of furnaces, compaction techniques, conventional sintering, microwave sintering, hot pressing, etc. and on characterization techniques such as Transmission Electron Microscope, X-ray Diffraction, Raman Spectroscopy, Field Emission Scanning Electron Microscopy, Differential Scanning Calorimetric, Thermo gravimetric Analysis, RF sputtering unit, etc.

Copyright and plagiarism issues related to scientific publishing. Further, the discussion sessions will offer a fertile atmosphere for brainstorming and creative thinking among students and scientists to utilize the knowledge in their scientific domain.

Since the core concept of this program is centred on powder metallurgy processing and their characterization for various technological applications, it fits perfectly within the aims and objectives as well as the core research capabilities of CSIR-IMMT, Bhubaneswar.

Faculty members, students from various institutes are participating in this workshop. This workshop will continue till 27th January 2024.

CSIR launches tech-driven initiative to improve productivity, farmers' income

CSIR-4PI, CMERI, IIIM

21st January, 2023

The Council of Scientific and Industrial Research (CSIR) has launched a unique mission to develop region-specific smart agro-technologies for paddy in south India, besides for other crops, aiming to improve soil health and productivity and thereby enhance the farmers' income, a senior scientist said.

This endeavour will help the Central government to introduce the use of automation, sensors, drones, and Artificial Intelligence gadgets for agriculture in the future. "This is one of the first of the mission mode projects that have been conceived and implemented on the ground," he said.

The project envisages the use of Internet of Things (IoT) based sensors and drone-based hyper and multi-spectral imaging to generate a real-time precision database to develop knowledge on phenological and physiological indicators as influenced by micro-environment of various target crops being grown across different agro-climatic conditions of the country.

A team of scientists and technologists from CSIR Fourth Paradigm Institute, Bengaluru, CSIR-National Aerospace Laboratories, CSIR-Indian Institute of Integrative Medicine Jammu, and CSIR-Central Mechanical Engineering Research Institute, Ludhiana, identified the paddy fields of farmers at Chengalam, Thiruvareppu panchayat and Muleppadam Panchayat in Kottayam, Kerala, Senbagaraman Pudur and Navalkadu in Nagercoil, Tamil Nadu, and Hosapete in Karnataka for the mission.

Under this, they would measure and document real-time data on soil and crop health indicators using advanced technologies like soil optix for soil health mapping and multispectral imaging of crop canopy through UAVs for crop health monitoring. The outcome would help to develop improved crop-specific agrotechnologies for enhancing soil and plant health through optimisation of mineral nutrition, irrigation, real-time crop management, and agronomic practices for good crop husbandry, pest-disease management, and achieving quality and sustainable crop yields.

The investigation would serve as the baseline data for mapping soil health and preparation of high-definition nutrient and texture maps of the soil. These soil health maps will be used for variable rate precise fertilizer application using UAVs and granular fertilizer applicator.

The multi-spectral imaging would help to identify areas of stress, disease, and pest infestation allowing for targeted and timely interventions. This data would keep the paddy growers abreast with the different crop phenological and physiological events and overall production ecosystem which would help them to make timely and precise decisions about their crops, leading to the optimisation and precise management of crop inputs, and increasing the quality productivity and profitability while reducing the adverse environmental impact.

Crop modelling coupled with predictive analytics is aimed at developing multilevel phenological-cum-disease surveillance and mitigation interventions would serve as a powerful tool for enhancing the paddy yield both quantitatively and qualitatively.

The drone-based imaging and soil optix for measuring soil health in real-time will be a continuous process throughout the life cycle of the plant for the next two or three years.

After successful implementation in paddy, the technologies will be deployed for other crops like saffron, apple, gerbera (decorative garden plant), mints, and lemongrass etc.

Senior scientists of the CSIR including Dr Ramesh K V, Dr Rakesh V, and Dr Shahid Rasool have been making concerted efforts to ensure this mission a success.

"The first and foremost crop for our intervention was paddy considering that it is number one crop in the country in terms of consumption, production, and scale of cultivation," the scientist explained on how the crops and area were chosen.

Another indicator for identifying crops in the country was economic value such as the Jammu & Kashmir apple.

"The apple industry, for instance, is worth more than Rs 12,000 crore. This and saffron from Jammu & Kashmir were identified based on economic value, geographical expanse where they are grown, their potential on how they can transform the income situation of the farmers besides challenges in production," he added.

U'khand's 'valley of flowers' comes alive at NBRI show

CSIR-NBRI, CIMAP

21st January , 2023

A chilly afternoon with blooming flowers all around gave visitors a feel of Uttarakhand's 'valley of flowers' during the CSIR-National Botanical Research Institute's (NBRI) Rose and Gladiolus Show on Saturday. Apart from this, sight of a gladiolus field filled with white, pink, red and orange flowers, a white rose plant loaded with hundreds of roses, a floral replica of the Ram Mandir, state flowers of India and floral I love CSIR-NBRI selfie-points were another show stealer on the first day of the two-day show.



“The show reminded me of Bhimtal visit. As one drives toward Naukuchiatal, one can see beautiful big roses, especially climbing roses, which is similar to what is being showcased during the NBRI flower show. People should come out to enjoy nature,” said ex-Armyman AK Sinha. Another visitor, Prof Deepali said: “I loved the flower craft and Ram Mandir replica made of marigolds and chrysanthemums. It's a perfect picture spot for those who can't visit Ayodhya on January 22 for the consecration ceremony.” Along with flowers from NBRI and CIMAP, collections from 47 exhibitors are displayed at the show. “NBRI has been organising the show for over 60 years to popularize rose and gladiolus in the northern plains to educate plant lovers,” said NBRI chief scientist S K Tiwari.

Published in:

[Times of India](https://timesofindia.com)

Two Dornier IAF aircraft to fly on alternative fuel at RD Parade flypast

CSIR-IIP

21st January, 2023

At the Republic Day flypast, two Dornier aircraft will take to the skies in historic 'Tangail formation' to showcase not only the Indian Air Force's (IAF's) attempt to cherish the successful military strategy that outfoxed Pakistan during the 1971 war by paradropping a battalion into the hostile territory but also its willingness to embrace an eco-friendly practice.

Both the Dornier 228s will be flying on a type of sustainable aviation fuel (SAF) produced by the Council of Scientific and Industrial Research's (CSIR's) Indian Institute of Petroleum (IIP), indicating that the IAF is willing to join the government's efforts to align with the global agenda of having net zero aviation by 2050, IAF sources told businessline.

A Dakota vintage aircraft will also join the Dornier, a twin-engine general-purpose aircraft, in Tangail formation, IAF Wing Commander Manish Sharma said on Friday ahead of the IAF contingent's participation in the Republic Day parade on Kartavya Path. The move is to relive the airdrop of December 11, 1971, by the 2nd battalion of the Army's Parachute Regiment in the Tangail area of erstwhile East Pakistan, now Bangladesh, said IAF officials. The secret operation, according to military historians, was then considered the first of its kind on the subcontinent.

The Dehradun-based IIP had sent a proposal to the IAF to use the SAF in the aircraft during the flypast, which is a blend of 10 per cent hydrotreated esters and fatty acids (HEFA)-based alternative fuel into the regular commercial jet A1 fuel, to push for greater reliability on less carbon-emitting sources of energy.

This would be IAF's second initiative. In 2019, transport carrier AN-32 also participated in the IAF flypast, roaring on the HEFA fuel. Sources aware of the SAF project stated that way back in 2018, the IAF gave a project to the IIP to blend 8,700 litres of aviation fuel into alternative

fuel for the test flight of their aircraft. From 2019 to 2022, the IIP supplied them with the HEFA-blended SAF in different batches. Out of that, AN-32s have done 65 hours and Dornier 25 hours of sortie on climate-friendly energy. The IIP is expecting more projects from the IAF and Indian Army Aviation, which has a fleet of copters, since the HEFA is better and more friendly to all military and civilian air platforms, claim sources in the CSIR.

The IIP is looking at commercial production of the SAF, as the Oil and Natural Gas Corporation Limited (ONGC) has indicated setting up a refinery plant just for this in Mangaluru, which would give a further boost to the government's goals of gradual phasing out of commercial jet A1 to stop air pollution, CSIR sources added. It is also in the process of seeking international certification for its global sales push.

The move comes at a time when the IIP signed an MoU with Airbus on Friday to support SAF production and commercialisation and address the decarbonisation ambitions of the Indian aerospace industry. Both have come together to work jointly on technical assessment, approvals, market access, and sustainability accreditation efforts for the production of SAF, as per a statement issued by Airbus.

The world over, military aviation is experimenting with shifting towards SAF for their aircraft. The United States is said to be engaging companies and other channels to source at least 10 percent of SAF fuel blend for its military aircraft in the next five years. Likewise, the Royal Air Force (RAF) of the United Kingdom reportedly conducted the first military Airbus A330 flight with 100 percent SAF, as it has plans to become a carbon-free air force by 2040.

Shri Ram Mandir construction has been technically assisted by atleast four leading National Institutes of CSIR (Council of Scientific & Industrial Research) and DST (Department of Science & Technology) under Ministry of Science & Technology, in addition to certain inputs from other institutions like IITs as well as ISRO (Indian Space Research Organisation), says Union Minister Dr Jitendra Singh

CSIR-CBRI, NGRI, IHBT, IIIM

21st January , 2023

Shri Ram Mandir construction has been technically assisted by atleast four leading National Institutes of CSIR (Council of Scientific & Industrial Research) and DST (Department of Science & Technology) under Ministry of Science & Technology, in addition to certain inputs from other institutions like IITs as well as ISRO (Indian Space Research Organisation).



Disclosing this here today, Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh said, the four institutes which made a significant contribution include CSIR -Central Building Research Institute (CBRI) Roorkee; CSIR - National Geophysical Research Institute (NGRI) Hyderabad; DST - Indian Institute of Astrophysics (IIA) Bengaluru and CSIR-Institute of Himalayan Bioresource Technology (IHBT) Palampur (HP).

CSIR-CBRI Roorkee has majorly contributed towards Ram Temple construction; CSIR-NGRI Hyderabad gave significant inputs on foundation design and seismic safety; DST-IIA Bengaluru provided technical support on Sun's path for Surya Tilak and CSIR-IHBT Palampur has made tulips bloom for the divine Ram Mandir Pran Pratishtha ceremony in Ayodhya on 22nd January, said the Union Science Minister.

Dr Jitendra Singh said, the main temple building, which is 360 ft long, 235 ft wide and 161 ft high, is made of sandstone quarried from Bansi Pahadpur, Rajasthan. Cement or iron and steel is not used anywhere in its construction. The Structural Design of the 3-storey temple is

designed earthquake resilient and can withstand strong tremors of magnitude 8 on the Richter scale for as long as 2,500 years, he said.

“CSIR-CBRI Roorkee has been involved in the construction of Ram Mandir since early stages. The Institute has contributed towards Structural Design of the main temple, designing Surya Tilak mechanism, design vetting of temple foundation, and Structural Health Monitoring of main temple,” he said.

Dr Jitendra Singh said, besides CBRI, the CSIR-NGRI Hyderabad also gave significant inputs on foundation design and seismic/ earthquake safety. Few IITs were also part of expert advisory committee and even Space technologies from ISRO have been used in the construction of the grandiose structure, he said.

A unique feature of the Ram Temple, said Dr Jitendra Singh, is the Surya Tilak mechanism, designed in such a way that the Sun rays will fall on the forehead of Lord Ram’s Idol at 12 noon on Sriram Navami day every year for about 6 minutes. Ram Navami, celebrated on the ninth day of the first month of the Hindu calendar, which is usually in March-April, marks the birthday of Lord Rama, the seventh incarnation of Lord Vishnu, he said.

The Science & Technology Minister said, Indian Institute of Astrophysics Bengaluru provided technical support on Sun’s path and Optica, Bangalore is involved in manufacturing of the lenses and brass tubes.

“Gear box and reflective mirrors/lenses have been arranged such that sun rays from Third floor near shikara will be brought to Garbha Griha using well known principles of tracking Sun’s path,” he said.

CSIR will also be involved in the consecration ceremony, said Dr Jitendra Singh. In celebration of faith, unity and the spirit of devotion, CSIR-IHBT Palampur (HP) is sending Tulip Blooms to the divine Ram Mandir Pran Pratishtha ceremony in Ayodhya on 22nd

January, he said. “Tulip does not flower in this season. It grows only in Jammu & Kashmir and few other higher Himalayan regions and that too only in the spring season. The Institute of Himalayan Bioresource Technology Palampur has recently developed an indigenous technology through which tulip could be made available throughout the year, without waiting for its season,” he said.

CSIR technologies are also being widely used in everyday life, said Dr Jitendra Singh, as India, under the leadership of Prime Minister Shri Narendra Modi, is on the cusp of rising as an Atmanirbhar and VikasitBharat@2047 during the Amritkaal.

Dr Jitendra Singh said, CSIR labs spread across the country represent the modern day monuments of New India. Indian Institute of Integrative Medicines (IIIM) Jammu is leading the Aroma Mission and Purple Revolution, he said.

Similarly, the Minister informed that the National Botanical Research Institute (NBRI) Lucknow has developed a new lotus variety named ‘NBRI Namoh 108’. The Namoh 108 lotus variety flowers from March to December and is rich in nutrients. This is the first lotus variety whose genome is completely sequenced for its characteristics,” he said.

Dr Jitendra Singh said, PM Modi has in the last ten years stressed on the fusion of traditional and modern knowledge through an extended integration of all schools of thought.

“India has jumped from being the tenth largest economy to being the fifth, soon we shall be the fourth largest economy and then the third largest economy in the world,” he said.

Scientists from CCMB uncover the genetic ancestry of the Ladakh population

CSIR-CCMB

21st January, 2023

The genetic history of the Ladakhi population has been uncovered by the Centre for Cellular and Molecular Biology (CCMB) in Hyderabad and the Birbal Sahni Institute of Palaeo Sciences (BSIP) in Lucknow. The study, led by Dr Kumarasamy Thangaraj from CCMB and Dr Niraj Rai from BSIP, involved analyzing the DNA of 108 individuals from three major communities in Ladakh: Brokpa, Changpa, and Monpa. They compared the Ladakh populations' DNA with DNA from different regions and also used archaeological and historical records to support their findings. The study, published in the journal *Mitochondrion*, provides insights into demographic changes in Ladakh over the past 3,000 years.

Director of CSIR-Centre for Cellular and Molecular Biology, Dr Vinay K Nandicoori, explained that the study confirms the movement of people through the Trans Himalayan corridor and the Silk Route.

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