

Governor stresses on self-reliance in pharma, chemical fields





Governor Tamilisai Soundararajan has exhorted the scientific community to make a dedicated effort for the country to become self-reliant in Advanced Pharmaceutical Ingredients (APIs) and Key Starting Materials (KSM) to reduce dependence on other countries under the Atmanirbhar initiative propagated by Prime Minister Narendra Modi on Thursday.



The country has to strive to regain the global leadership role in science and technology with all the stakeholders joining to promote research especially in 'applicational oriented research' and increased funding through different sectors. "This would help us stay ahead in the global competitive market through patent applications, trademark filings and Intellectual Property Rights (IPR) to make the country a knowledge superpower," she said.

Participating in the 78th Foundation Day celebrations of CSIR-Indian Institute of Chemical Technology (IICT) virtually, Dr. Soundararajan said there has to be improved linkages for an

expanded research based eco-system among the institutions and the academic bodies. Patting the 'prestigious' research institute for its crucial role in promoting chemicals and pharmaceuticals, and also in making indigenous COVID vaccine as well as drugs, she wanted the scientists not to become 'complacent'.

"Reflect on the past progress and re-strategise for the future by promoting all round research development towards becoming a global institute of excellence," said the Governor. She particularly mentioned about the pioneering waste to wealth project successfully taken up at **Produced by Science Communication and Dissemination Directorate, (SCDD), CSIR, Anusandhan Bhawan, New Delhi**





the Bowenpally vegetable market which found a mention in the Prime Minister's radio address few months ago.

CSIR Director General Shekhar C. Mande pointed out that the IICT had not lost touch with

the society despite being involved in high end research in chemicals and pharmaceuticals. "Generic pharma industry owes a great deal to scientists who made expensive HIV/COVID drugs affordable," he said. The DG has reminded Cipla Foundation Managing Trustee Rumana Hamied that her grandfather and renowned scientist Khwaja Abdul Hamied has been instrumental in convincing the British rulers to set up this lab and has been associated with it for close to two decades.

Ms. Hamied pointed out one lakh face masks being made by the women voluntary agencies in association with IICT have been distributed free in Telangana and has generated ₹65 lakh to

the four groups involved. "We are hoping our masks become fashionable and we are ready to help any SHGs with seed capital and marketing in making them," he said.

CSIR-IICT Director S. Chandrasekhar said the institute in 200 acres has been playing a prominent part in drugs and vaccine research during the pandemic apart from technology transfer of processes to the chemical and pharma industries. Annually 500 research publications are made and 100 enrol for the PhDs. Senior scientist M. Chandrasekharam also spoke. Later prizes were given to various personnel among whom John Mondal bagged the young scientist prize for the work on scientist catalysis and fine chemicals.



Thehindu





CSIR-CMERI Director delivers Expert Talk on Post-Harvest Technologies





Prof. Harish Hirani, Director, CSIR-CMERI, Durgapur, delivered an Expert Talk on Post-Harvest Technologies developed by CSIR-CMERI and its Potential to change the Agro-Economy of Nagaland and the North-Eastern States of India in a Virtual Event organised by MSME-DI, Dimapur on 5th August 2021. The program was attended by representatives of numerous NGOs, the



National Tool Room and Training Centre, Dimapur and Entrepreneurs of the region.

Prof. Harish Hirani, Director, CSIR-CMERI, shared that the North-Eastern states of India have tremendous Geographical Advantages in terms of Farming and Agriculture. There is an abundance of Harvest for Cash Crops in the North-Eastern states. The States also have hidden exotic crop potential such as Tung. Tung Oil is imported from China for Therapeutic Purposes. Besides, the Government of India allocates a substantial chunk of Fund's for the holistic development of the North-Eastern region of India and among these one of the

primary verticals is Agriculture.

Despite, India being the largest producer of Ginger, there is wastage of almost 45% owing to the lack of processing technology. Non-availability of suitable Harvesting technology, export potential crops such as Tung (which is Toxic in Nature) is not properly augmented. Skilling Initiatives in the region to equip the farmers with the latest advancements in Farm Mechanization technologies is very poor.





In recent years, CSIR-CMERI has made the Socio-Economic Development of the North-Eastern Region one of its primary Technology Objectives. In this regard, a three-pronged attitude has been adopted i.e. Increasing the Shelf-Life of the Harvest, Skill Development of the Farming Community and Reduction in Manual Handling of Toxic Crops. CSIR-CMERI is

also encouraging the Transfer of Technology to MSME Clusters, which can license the Technology through a Distributed-Capital Model.

The Ginger Processing Technology comprises of the Rotary Drum Washer with a capacity of 500 kg/hr and automated capability, slicing unit and the cabinet dryer with a capacity of 50 kg/batch and a batch-time of 4-5 hours with 85-90% moisture reduction capability. Another Semi-Automated Ginger Processing Technology facilitates the automation of the process from the Washing Unit to the Slicer Unit. The technology has been implemented in the Centre for Post-Harvest Processing, Tuyrial, Mizoram in association with an NGO named Community Development and Reflection (CDAR). As informed by representatives of CDAR, the implementation of the technology has empowered thousands of women from the region by providing them with round the year income generation avenues. Another such Facility has been established in Naharlagun, Arunachal Pradesh in association with CSIR-NEIST-BLIT. Plans are also in progress for the establishment of one such facility in Ziro, Arunachal Pradesh. A complete and perfectly synchronised Ginger/Turmeric Processing Pilot Facility is available at CSIR-CMERI for first-hand exposure and training of the Farming Community. The technology has received numerous Appreciations from different Ministries of the State and substantial Media Coverage.

The CSIR-CMERI developed Bio-Mass Fuelled Fish Dryer and the Hybridized Fish Dryer (i.e. Solar Powered/Bio-Mass Fuelled) has opened up avenues for the Fish Farmers of the region in terms of improving the shelf-life of the produce. CSIR-CMERI has also developed Technologies for creating briquettes from Bio-Mass, either with or without binders. The Briquettes may be created from Saw-Dust, Dry Leaves and Bio-Gas Slurry. The Briquettes have high-calorific value and is used as a feed for the Smoke-Free Bio-Mass Chulha. The





Smoke-Free Bio-Mass Chulha is non-polluting. The Community-Scale Solar Assisted Improved Bio-Mass Cooking System installed in the Guest House Kitchen has exhibited an efficiency of 28% in comparison to the 15% efficiency of the conventional cooking systems.

CSIR-CMERI has also developed three variants of Cold Storage Systems. One of the variants is the Solar-Powered variant which also incorporates Bio-Mass as the Insulation Layer. This might help in substantially reducing the Ploymer Costs for the Technology. CSIR-CMERI is also pondering upon the idea of a Vehicle Mounted Cold Storage system, which might help in boosting the Supply Chain of fresh Agricultural produce coupled with improving the shelf-life of the same.

ShriTaliLongchar, Jt. Director, MSME-DI, Dimapur, appreciated the Sustainable Socio-Economic Impact Analysis and the Innovative Mindset of Prof. Harish Hirani. The Post-

Harvest Intervention initiatives of CSIR-CMERI has the potential to hugely improve the Agro-Economic scenario of the region by improving the income of the Farmers.





CSIR-CMERI



05th August, 2021



प्रयास अनुपातहीन है. प्लास्टिक को टन से अधिक ठोस अपशिष्ट को सीवरेज सिस्टम के चोक होने के लिए समाज के लिए बहुत महत्वपुर्ण भूमिका जिम्मेदार ठहराया जाता है, जिससे बाद ऊष्मीय/रसायनिक रूप से अवक्रमित संसाधित किया है. निभायी है. प्लास्टिक 20वीं सदी की

Published in:

Prabhat Khabar

Be Smart to Use Plastic and Smarter to dispose it off appropriately

New Delhi: Prof. Harish Hirani, Director, CSIR-CMERI, Durgapur, delivered the Keynote Speech on 3rd August 2021 in the 'Industrial Motivation Campaign on Awareness to MSMEs for transition from Single Use Plastics (SUP) to alternate materials' organised by MSME-DI, Kolkata in association with the Indian Plastic Federation. Shri Anindya Roy, Regional

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Head, Reliance Industries and Shri Rajesh Gauba, Head, Sustainability & Recycling also delivered their perspectives on management of Plastic Wastes.

Prof. Harish Hirani, Director, CSIR-CMERI, shared that Plastics have increasingly played a very crucial role for the Human Society in diverse domains. Plastic was one of the major Industrial breakthroughs of the 20th Century and has revolutionized multiple domains subsequently. The PPE Kits, Diapers and Sanitary Wares, Healthcare Accessories, Packaging Mediums to name a few, are primarily Plastic Constituents and has had a significant impact upon human behaviour. Plastic is usually blamed for Chokage of Sewerage Systems, causing Floods and Breeding Diseases. Besides, Plastic has also been popularly blamed for harming Marine Ecology.

However, since CSIR-CMERI conducted intensive studies of Sewerage Systems and the reason for its Chokage, it was observed that Construction & Demolition Debris combined with Human Hair are one of the primary causes for chokages in Drainage Systems, eventually leading to Flooding of Urban Habitations. Plastics, though present, was insignificant as a

causal agent for chokages. The dumping or incineration of Plastic Waste leads to releasing Toxic/Heavy Elements onto the Environment.

Plastic is essentially a Manmade Synthetic Material and any attempts at making it Bio-

Degradable is disproportional. Plastics should be Thermally/Chemically degraded and through innovative application of R&D converted into Value-Added products. In line with this perspective, CSIR-CMERI developed the integrated Municipal Solid Waste Management Technology (iMSWMT) and the Pilot Plant of this Technology, established in 2017, is the centre-piece of the CSIR-CMERI 'Zero Waste Colony'. The iMSWMT has been built in a Modular Form and the Mechanized Segregation Module is the most significant of them, because it helps in segregating Plastic Wastes from other Waste Constituents. The three primary technologies to process Plastic Wastes are the Plastic Agglomeration, Pyrolysis Process and Plasma Gasification. The Plastic Agglomeration Technology processed Waste Plastics into LDPE/Pellets which can be further processed to manufacture Doors, Windows, Furniture etc. The Plastic Pyrolysis Technology converts Plastic Waste into Fuel and thus brings in Sustainability factor in Plastic Processing. This process produces minimal amount of toxins. The Plasma Pyrolysis Process is a Technically Perfect Process for any kind of Complex Plastic product besides producing Syngas, which is used as a Fuel.

The 1 Ton Per Day (TPD) CSIR-CMERI iMSWMT since its establishment in 2017 has processed more than 62 tonnes of Solid Waste, of which almost 7% is Plastic Waste. CSIR-CMERI has also successfully processed 1.2 tonnes of Plastic Wastes provided by NSPCL.

Legacy Plastic Wastes i.e. existing Plastic Waste already dumped onto Landfill sites are one of the biggest challenges becausemost of the technologies available in the market focus upon Existing Wastes It has been observed that the Legacy Wastes consists almost 12% Bio-Degradable Wastes, which is a surprising statistics. Owing to significant reduction in Bio-Degradable Wastes over time, the constituent Plastic Waste in Legacy Wastes was found to be almost 25%. These Legacy Plastic Wastes can also be properly processed through any of the

three CSIR-CMERI technologies. CSIR-CMERI has also processed 2.5 tonnes of Legacy Wastes from the Durgapur Municipal Corporation.

Prof. Hirani concluded by stating that our Society should be Smart to continue using Plastics

and Smarter to properly Dispose-off Plastics instead of imposing a Blanket-ban on usage of Plastics.

Shri RitwikBiswas, Asstt. Director, MSME Development Institute, Kolkata, shared that management of Plastic Waste is a Global Challenge, the novel perspective into Plastic Waste Management presented by Prof. Hirani has the potential to revolutionize the way to address the problem. Paper and Wood-based products are not suitable alternatives and thus there is need for proper Recycling of Plastic Wastes. Government of India has schemes and funds for development of Clusters for processing of Plastic Wastes and MSME-DI will provide

assistance of all sorts as required.

Shri Rajesh Gauba, Group General Manager, Business Analysis, Reliance Industries, shared that the approach adopted by Prof. Harish Hiranifor Plastic Waste Management has been enlightening. Since, Plastics are omni-present in almost every sphere of human lives, owing to its unique and advantageous properties, it may not be rational to completely ban usage of Plastics. Alternative Materials to Plastics have manifold Carbon Footprint, when compared to Plastic. Shri Gauba urged all to "Don't say No to Plastics, Know Plastics'.

Shri Anindya Roy, Regional Head, Reliance Industries, shared that Prof. Hirani's presentation has helped in eradication of all myths associated with Plastic Usage. Plastics will continue to play a very critical role in Development and deployment of Technologies as developed by CSIR-CMERI will help in Scientifically Tackling the core problems i.e. appropriate management of Plastic Wastes.

Published in:

Indiaeducationdiary

CFTRI's session for start-ups on food processing units

CSIR-Central Food Technological Research Institute (CFTRI), Mysuru, has organised a twoday online training programme on the topic "An overview of food processing machineries and unit operations" from August 17 to 18 under CSIR Integrated Skill Initiative for the benefit of MSMEs and startups working in the area of food processing, with the involvement of experts involved in various engineering operations and machinery development.

The training broadly covers topics such as challenges and unit operations in food processing, primary and secondary grain processing, machineries for processing of fruits and vegetables, roasting, drying and frying machines, packaging and labelling, machinery layouts for MSMEs,

standards, regulatory requirements and energy auditing.

The target audience for the training are ITI/diploma/graduates who are aspiring to be entrepreneurs, new entrepreneurs and startups, a release said here.

The application fee for the training has been fixed at ₹500 which can be paid online or through SBI branches via SBI-Collect. The details may be found at

https://www.cftri.res.in/PDF/SDP-29072021.pdf

e- Certificates will be issued to those who successfully complete the programme. Those who are interested may pay the application fee through SBI Collect and then apply online for the program. The last date to apply is August 11 (till 11.59 p.m.), the release said.

Published in:

Thehindu

How one of India's premier research institutes is tracking new SARS-COV2 variants

Tracking the rapidly emerging variants of SARS-CoV2 is one of the most important strategies to contain the spread of the pandemic. This is done through proactive genome sequencing of the virus samples obtained from infected people. Vinod Scaria, principal scientist at Delhi-based CSIR-IGIB, and Bani Jolly, a graduate student at the same institution, are among a score of scientists from various laboratories who have been involved in the genome sequencing effort in India. So far, over 50,000 sequences have been done from India, providing vital information about the mutations, and how they were spreading in the population. Scaria and Jolly spoke to ANURADHA MASCARENHAS

How has genome sequencing helped?

Genome sequencing helps us understand the evolution and spread of the virus and its variants. It has enabled us to look closely at the mutations that arise in the virus during replication inside the human body after infection. Looking at such mutations helps determine if a different lineage or 'variant' of SARS-CoV-2 has emerged in a region. Identification of virus lineages is important from a public health point of view since particular mutations may lend additional advantages to the virus in terms of its ability to transmit better from person-to-person, or in terms of its ability to decrease the efficacy of vaccines, as we have seen for the Alpha, Beta and now Delta variants.

Additionally, tracking such mutations can also allow the tracing of the origin and spread of a specific variant of the virus especially as variants spread across geographical areas. For example, we have seen that the Delta variant predominated during the second wave in India and its prevalence corresponded to the increase in cases seen in the country. Multiple studies subsequently suggested that Delta is more transmissible as compared to other previous lineages of SARS-CoV-2.

What exactly is a gene sequence?

The SARS-CoV-2 virus has certain genetic instructions that it uses to generate copies of itself. These instructions are coded in a sequence of 29,903 letters of RNA (ribonucleic acid bases – A, U, G, C) which make up what is known as the 'genome' of the virus. Sequencing the

genome of the virus essentially means that we determine the sequence of the 29,903 letters of the virus. Approximately 50,000 genome sequences of SARS-CoV-2 have been assembled in India and more than 2.5 million genome sequences are available publicly from world over.

How are the variants named?

Since the beginning of the pandemic, researchers have emphasized the need to have a uniform naming system for different variants. PANGO is a system of assigning names to different lineages of SARS-CoV-2 genomes, which was developed by virologists in the UK and Australia early in 2020. It is a hierarchical system of naming lineages. For example, the B.1.1.7 lineage, more commonly known as the Alpha variant, emerged from the lineage B.1.1 which had emerged from the lineage B.1, which is a direct descendant of the lineage B.

The system is designed to assign lineages in a dynamic manner. A group of genomes will be given a new lineage name according to the system if they have a defined set of characteristics, such as having a common ancestor, having a group of common mutations, or being linked to an important epidemiological event such as a large outbreak of the disease. The Pango nomenclature and the tool that can be used to assign lineages to genomes was initially developed by virologists at the University of Edinburgh, the University of Sydney and the University of Oxford.

Since the emergence of Delta, it was expected that sub-lineages of Delta with additional mutations will also emerge. Not all mutations are of significance as they arise as a natural process of evolution. Currently, AY.3 is being reported in significant numbers from the US. However, the Pango system of assignment of lineages works better and more accurately if it processes more sequences that represent a particular lineage. Since currently, AY.3 numbers

are small, the lineage assignment for AY.3 may not be accurate. For instance, the small number of genomes from India currently assigned as AY.3 lack the mutations that have been reported in the cluster of genomes from the USA. Although the number of such lineages is small, we will be continuously tracking the genome sequences of the virus to see if AY.3 or any other

Delta sub-lineage emerged in India or elsewhere.

Experts issue third Covid wave alert for Kerala

KOCHI: The number of new Covid-19 cases in Kerala is surging once again, with the epidemiologists and public health experts stating that this may be the beginning of the third Covid wave.

03rd August, 2021

Though the state government has not officially called it the third wave, experts said that Kerala, after being in a plateau phase in the second wave average 12,000-14,000 cases per day from June 4 to last week of July is now seeing a surge with 20,000 to 22,000 cases reported per day in the last six days, with TPR above 12%.

"The surge indicates that it may be the beginning of the third wave and we need to be careful now. We have a large susceptible population and the government needs to come up with a long-term strategy to deal with new Covid waves," said public health expert and epidemiologist Dr Raman Kutty. Kerala now has 51% of the total Covid cases in the country and its seven-day average daily growth rate is 0.60%, while that of the country is 0.13%. Mar 12, 2020 - Aug 5, 2021 30d Zoom 7d AII 40k

"It is the general principle of any viral infection that there may be multiple waves when we have a susceptible population. Kerala will also see many Covid waves before the cases actually start subsiding," said Dr A Sukumaran, former state epidemiologist, who has come out of retirement to work at Covid control room at Wayanad.

During the first wave, Kerala was in a plateau phase for a long period, and then there was a surge in Covid cases in April, indicating the beginning of the second wave. In the second wave too, the state was in plateau phase for more than seven weeks and now there is a surge.

"Right from the beginning, Kerala's curve has been different from the nation's average. Unlike small nations, waves do not occur uniformly in a large country due to variation in factors such as travel, population density, socio-economic conditions, geography, weather, vaccination, literacy, sero-prevalence, regional penetration of misinformation, quality of science

communication, healthcare infrastructure and compliance with safe pandemic behaviour," said Dr Rajeev Jayadevan, vice-chairman, research cell, IMA (Kerala state).

He added that with improved vaccination coverage, "although we might not be able to eliminate the virus, we can minimize the damage that occurs in the future".

More than 50% of the Kerala population is still susceptible and so far, only about 17% are fully vaccinated. In July, as per CSIR Institute of Genomics & Integrative Biology's (CSIR-IGIB) Covid-19 genome surveillance, the most dominant virus in Kerala is the dangerous Delta variant (B.1.617.2), with 95% samples tested from the state showing presence of this variant. Added to this, any gene mutations in the virus needs to be identified immediately at the state level.

Health minister Veena George has acknowledged that the state has not come out of the second wave yet but will have to be prepared to meet the third wave now. "There will be more admissions in the hospitals during the third wave. Anticipating this, the government is

gearing up to increase the facilities in the hospitals. More oxygen generation units are being set up in the hospitals," she said. Local bodies have reopened Covid first and second line treatment centres and many private hospitals have reopened Covid wards.

"We expect the numbers to increase further during the Onam season. However, Covid inpatient admissions are so far low. As of now, the situation is comfortable despite the beginning of the third wave," added Dr Arun N M, internal medicine expert who has been analyzing the Covid trends in Kerala.

Crops bloom as CSIR-NGRI percolation tank makes water rise up to surface

"This is fantastic! This is what scientists look forward to where their work helps the community at large," gushed CSIR Director-General Shekhar C. Mande.

A group of villagers from neighbouring areas gathered as he surveyed the five acre percolation tank inside the sprawling 100 acre campus of the National Geophysical

Research Institute (NGRI) housing the geomagnetic observatory at Choutuppal, about 65 km from here, on the weekend.

From about 400 acres, more than 1,000 acres is being used to raise crops. Another farmer B. Narasi Reddy said: "Despite proximity to the city, our land prices used to barely fetch up to $\gtrless 1$ lakh an acre and it has gone up by 10 times." Groundwater has reached the surface this year so much so that the scientists had to raise foundations of the structures housing the geomagnetic instruments, said Mr. Srinagesh.

Nearby villages of Chinnakoduru, Kuntlagudem and Nelapetla too received fluoride-free water as minor tanks of Yerragunta, Beerappakunta and others in the vicinity got filled to the brim through gravity flow.

"We need to study the sub-surface area and the rocky formation below for better water management during dredging of tanks and other projects, as we can identify precise percolation points," said Mr. Tiwari.

While being grateful to NGRI, farmers appeal is to desilt the tank for enhancing its capacity and permit transporting mud to their farms.

Mr. Mande, having worked in DBT-Centre for DNA Fingerprinting & Diagnostics (CDFD)

for about a decade, told them he could follow them and offered scientific inputs if they adopt the novel CSIR missions of growing fragrant flowers for obtaining oils and even honey, as is being done in States of Himachal Pradesh and Uttarakhand, as a second crop instead of cotton or red gram.

"If your scientists guide us, we are ready to go for these new cultivations," the farmers chorused.

CSIR-CSIO develops new temperature and flow control ultrasonic spray system

02nd August, 2021

A temperature and flow control ultrasonic spray (tFOCUS) System for Nano-Drug Formulation could improve the efficacy of herbal medicines by enhancing the bioavailability of the herbal ingredients of the medicines. This device could improve the cost-effectiveness and therapeutic efficacy of medicines involving expensive phytomolecules.

The delivery of herbal therapeutic ingredients as drugs in conventional forms shows variable and non-uniform absorption. Lower duration of residence in the stomach and varying gastric emptying time may limit the bioavailability of these drugs. They are also highly sensitive to temperature, atmospheric moisture. Their hygroscopic nature affects the particle-particle

interactions, leads to poor water solubility and contributes to their poor flow in systematic body fluid circulation.

To overcome such limitations, herbal drugs can be encapsulated with suitable biopolymers as nanocarriers. The nanocarrier can significantly enhance gastric emptying time and deliver a higher amount of drug for a sustained period in the stomach. In addition, the amount of drug required to be incorporated into nanocarriers is much less than required when encapsulated in a tablet. This is very useful when using expensive phytomolecules. Optimal use of phytomolecules improves the cost-effectiveness and therapeutic efficacy of the product.

Keeping this in mind, Dr S. Prabhakaran, Sr. Scientist at CSIR-Central Scientific Instruments Organisation (CSIO) Chennai Centre, has developed a new prototype of temperature and flow control ultrasonic spray (tFOCUS) system with support from the Advanced Manufacturing Technologies programme of the Department of Science & Technology (DST), Government of India, and aligned with the 'Make in India' initiative to enhance colloidal stability of poorly

water-soluble herbal extracts.

The prototype has been validated using a commercial AYURSULIN capsule used to treat type-II diabetic as a model drug. To enhance the bioavailability tFOCUS system, prepare nano-encapsulation of all five herbal extracts using polymer (ZEIN/PVA). The samples were spherical in morphology, nanoscale range and good colloidal suspension in water as compared

to bare herbal extracts. A feasibility study was made to develop a colloidal stable nanocarrier system containing a mixture of herbal extract like Curcuma Longa, Andrographis, Paniculata, Tinospora, Cordifolia, AegeleMarmelos, Emblica Officinalis in equal ratios nano encapsulating using different types of wall polymers. The prototype of tFOCUS system enhanced the solubility of poorly water-soluble multi-herbal extracts using nanoencapsulation biocompatible polymer in a rapid reaction process at room temperature, which is compactable with temperature-sensitive therapeutic active ingredients.

This unique nano-drug particle synthesis system based on acoustic cavitation can provide

continuous large scale compared to present microencapsulation technologies such as mechanical stirrer assisted antisolvent addition method, spray dry methods, and high-pressure homogenization method production with less power consumption, rapid reaction time leading to faster sample preparation. It enables nanosize-encapsulation of multi-herbal components at variable operating temperatures (10° C to 80° C). With ease to control size & shape of particulate by control flow rate, temperature and ultrasonic energy, this easy to handle & portable system is in the 4th stage of Technology Readiness Level TRL-4.

"Pharmaceutical and Food industries and Scientific Instruments manufacturing industries have shown interest to take up this technology for commercialization. We will provide incubation centre from CSIO Chennai Centre and manpower training for system operation and optimization of new drug formulation," says Dr S. Prabhakaran. He has allied with BAL Research Foundation (BRF) Bangalore for further upscale of the technology.

Published in:

Devdiscourse

Hyderabad's water table sees up to eight metre rise; experts call for judicious use

HYDERABAD: The incessant rains might have led to an impressive rise in the city's groundwater levels. But environmentalists fear that despite the surplus supply, Hyderabad could well slip into a dry spell post the monsoon season — if this water isn't used judiciously. Their solution: Recharge, reuse and be responsible.

"Since Hyderabad's water table is shallow and this region is rocky, when it rains it quickly recharges the groundwater table. That's also why in the summer, borewells in so many places dry up. So, to ensure that every drop of this water is conserved we should not allow rainwater to stagnate on the surface and instead make provision for it run off quickly," Anant Maringanti, geographer and director of Hyderabad Urban Lab. He added: "Over 30% to 40% of water is consumed from groundwater. So, ground water is an asset for us and we need to invest in it."

As per the report of the Hyderabad Ground Water Department (GWD), July saw an incredible rise in the water table across several parts of the twin cities. "Except Bandlaguda, Ameerpet, Marredpally and Trimulgherry mandals, rest of the Hyderabad district saw between one and eight metres rise in the ground water table," said a senior GWD official.

When compared to the ground water table in July 2020, this year has seen significant improvement owing to surplus rainfall, officials said adding that it might increase further if the city receives more heavy showers in the coming weeks.

And while that might be good news, "controlling the over exploitation of groundwater must be our prime duty and we should utilise it based on need," said Srinagesh D, a senior scientist at Council of Scientific And Industrial Research–National Geophysical Research Institute (CSIR-NGRI). "The digging of borewells should not go deeper and deeper. People have to

realise that every drop of rainwater has to be caught and preserved through scientific ways," he added. He also suggested that every house build a rainwater harvesting structure. "Unless, we build the RWH structures water will not percolate and water table will not get recharged," he stressed.

Kalpana Ramesh, core member (Water Subject) of SEHA (an NGO) too put the onus on people. "They themselves have come forward to preserve rainwater, which is a natural source to recharge the groundwater. For this, every person has to feel that it is his/her responsibility," she said.

Solar power EV charging stations needed to reduce carbon footprint: Green experts

Though the decision to encourage Electric Vehicles (EV) in Maharashtra is a revolutionary move, the State Government will face challenges of new technology to reduce the carbon emission, feel green experts. The Government has planned an outlay of Rs 9,453 crore for setting up mega electric vehicle charging centres on key expressways connecting the State capital

Mumbai. For charging electric vehicles, these charging stations will require electricity and it will be acquired through thermal energy. To encourage electric transportation in the State, the Government had recently green signalled Electric Vehicles Policy 2021. But if thermal power is used to generate electricity for charging stations then the carbon emission will increase further, add green experts. The environment experts are emphasising on renewal of energy instead of thermal power for such charging stations and solar energy is the best option. "Decision of implementing EV Policy is a historic one and it is in line with commitment made by India in Paris Agreement. At least 40% of power to come from non-fossil fuel source by 2030. The best part is, Government has not only framed stage wise introduction of electric vehicles but also have announced various incentives for promotion," said Kaustav Chatterjee, Founder, Green Vigil Foundation.

He said, "Implementation need to overcome some basic challenges like need of widespread charging infrastructure as well as servicing stations, competitive price as compared to petrol, diesel and CNG-operated cars, battery life, driving range, charging time, change in consumer perception, availability of raw materials for EV's batteries like lithium, nickel, phosphate and

manganese, graphite, and cobalt, which are rare earth material." "Most importantly, the EVs will be effective in reducing pollution, only if, the charging is done by solar energy or any other renewable source of energy, otherwise, we will be shifting the tailpipe pollution to thermal power plants, wherein we need to generate more power to cater EVs plus

transmission loss," Chatterjee added. Government is going to take many bold initiatives under EV Policy-21 like 25% electric buses in city bus service, 15% electric buses in MSRTC, 150 electric vehicle charging stations in cities like Mumbai, Pune, Nagpur, Amravati, Aurangabad and Nashik till 2025, and public EV charging stations at every 25 kilometres on both sides of Balasaheb Thackeray Samruddhi Expressway that will connect Nagpur with Mumbai. Dr J S Pandey, former Chief Scientist of CSIR-NEERI said, "Solar energy is one of the best options to reduce carbon footprint through EV charging station. However, before adopting and implementing any technology, we must do its thorough 'life cycle assessment' so as to optimally utilize its benefits at all the stages of its 'life cycle' and to minimize its likely adverse

effects (if any).

This can be done through quantification of 'Ecological and Carbon Footprints' at various appropriate stages of the life-cycle." Dr Pandey who has served CSIR-NEERI for many years as Head of Centre for Climate Sustainability and Skill Development said that the process of technology adoption and implementation shoud be done very carefully and in a gradual and cautious manner so that any likely adverse impact could immediately be tackled by an effective and appropriate "Region-specific and Process-specific Environmental Management Plans. This can be done by creating suitable District-wise Environment Health Cards (DEHC) based on the Ecosystem-Resilience, Elasticity and Carrying Capacity of the region. While preserving the environment and minimising the pollution, it will also help in the proper regulation of the Micro-Climate of the region, because of the interdependencies of various inter-linked BIO-GEO-CHEMICAL Processes, Dr Pandey added.

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NGRI studying earth's magnetic fields

Do you know that the earth's magnetic compass keeps changing? Or, that it takes up to 48 hours for the solar storms to hit the earth despite travelling thousands of kilometre a second and potentially disturb the telecommunication systems? Changes in the geomagnetic fields could affect the GPS systems too based on which the modern travel is dependent on.

These fascinating observations as also the underground plate movements along with quakes are taken note of on a continuous basis in the 100 acres verdant off-site campus of CSIR-National Geophysical Research Institute (NGRI) where Director General Dr. Shekhar C. Mande inaugurated several new facilities at the Intermagnet Geomagnetic Observatory at Choutuppal, 65 km away from the twin cities.

A 'Component Fluxgate Magnetometer' and 'Overhauser total field magnetometer' to continuously measures the earth's magnetic field at an interval of one second and send the

data to 'Intermagnet' - the global data repository of geomagnetic observatories, were among those unveiled.

CSIR-NGRI director V.M. Tiwari and his senior colleagues Dr. D. Srinagesh, Dr. Kusumita Arora and others explained that this is the only facility of its kind in the country delivering one sec data.

The 'Declination inclination magnetometer' meant for manual absolute measurements of geomagnetic field, twice a week, was also showcased during the visit.

The scientists informed that geomagnetic poles change has been up to 10 degree in Hyderabad

alone in the last 50 years so much so that the very directions on which several plans are made will change over a period of time.

This facility away from 'anthropogenic' influences like any environmental pollution and pollutants originating due to human activity and other disturbances is able to measure the minutest of changes down from places as far as the Pulichitala project.

Apparently, a major tectonic activity will bring about a change, however, slight in the earth's rotational movement.

Sudden water surge in filling of heavy dams could also result in this and the observatory data is an effort to understand if the quakes can be co-related with magnetic fields.

NGRI to detect solar storms

01st August, 2021

Hyderabad: Dr Shekar C Mande, Director-General of Council for Scientific and Industrial Research (CSIR) inaugurated the National Geophysical Research Institute's (NGRI) electromagnetic observatory at Choutuppal in Nalgonda on Saturday.

The observatory identifies the shifts in the Earth's electromagnetic fields and solar storms from the Sun. The readings are connected to a global repository online. Dr Shekar inaugurated the Variometer Facility constituting '3 Component Fluxgate Magnetometer' and 'Overhauser total field magnetometer' at the Choutuppal campus NGRI

Shekar Mande said, "The system continuously measures the Earth's magnetic field at an interval of 1 sec and sends it to the Intermagnet, the global data repository of geomagnetic observatories. This is the only facility of its kind in the country delivering one sec data." He visited a declination inclination magnetometer meant for manual absolute measurements of the geomagnetic field twice a week.

NGRI Director Dr V M Tiwari said, "We are recording geomagnetic storms and geothermal storms in real-time. The observatory can detect them in the entire peninsular region. In Choutuppal there is anthropogenic pressure due to which the readings are accurate."NGRI's

chief Seismologist Dr D Sri Nagesh said: "Solar storms and magnetic field changes can affect GPS used by us in all devices, including flights."

Published in: Timesofindia

CSIR-NGRI

01st August, 2021

NGRI studying earth's magnetic fields

'ఫర్ర్ వేవ్స్ ను దేశంల్ 10 బ్ ట్ర్ ప్ర పెంట్లు కింటాంట్లాల్ సి. మండి శీఎస్బజర్ డైరెక్టర్ జనరల్ శేఖర్ సి. మండే ఇప్పటికే 60-65% మందిలో యాంటీబాడీల వృద్ధి వ్యాక్సినేషన్లో సీఎస్బజర్ ది కీలకపాత్ర... కోవాగ్జిన్ తయారీకి తోడ్పాటు అందిందాం

• యాదాది జిల్లా మందోళ్లగూడెంలో జియో మ్యాగ్నటిక్ అబ్జర్వేటరీ ప్రారంభం

చౌటుప్పల్: కరోనా థర్డ్ వేవ్ను సమర్థంగా తట్ట కొనే శక్తి దేశానికి ఉందని కౌన్సిల్ ఆఫ్ సైంటిఫిక్ ఇండస్ట్రియల్ రీసెర్చ్ (సీఎస్ఐఆర్) డైరెక్టర్ జనరల్ డాక్టర్ శేఖర్ సి.మండే తెలిపారు. సెకండ్ వేవ్ సమ యంలో సరైన జాగ్రత్తలు లేకపోవడంతో తీవ్ర నష్టం వాటిల్లిందని, పెద్ద ఎత్తున ప్రాణనష్టం సంభ వించిందని చెప్పారు. యాదాద్రి భువనగిరి జిల్లా చౌటుప్పల్ మండలం మందోళ్లగూడెం గ్రామంలోని భూ అయస్కాంత పరిశోధన క్షేతం (ఎన్జీఆర్ఐ)లో కొత్తగా ఏర్పాటు చేసిన జియో మ్యాగ్నటిక్ అబ్జర్వేటరీని శనివారం ఆయన ప్రారం

రీని తిలకించారు. అనంతరం విలేకరుల సమా వేశంలో శేఖర్ మాట్లాడుతూ థర్డ్ వేవ్ సంభవించినా అంతగా నష్టం ఉండదని అంచనా వేశారు. వ్యాక్సినేషన్ వేగంగా కొనసాగుతుండడం, 60–65 శాతం మందిలో ఇప్పటికే యాంటీబాడీలు వృద్ధి చెందడంతో థర్డ్ వేవ్ పెద్దగా ప్రభావం చూప దన్నారు. కరోనా వ్యాక్సినేషన్లో సీఎస్ఐఆర్ కీలక పాత్ర పోషించిందన్నారు. సీసీఎంబీతో కలసి సమ న్వయంతో పనిచేసిందని, కోవాగ్జిన్ తయారీకి అవ సరమైన తోడ్పాటును అందించామన్నారు. మొదటి, రెండోడోస్ బీకా వేసుకున్న వ్యక్తులకు

జియోమ్యాగ్మటిక్ అబ్జర్పేటరీ యంత్రంలోని రీడింగ్ మ పలశీవిస్తున్న శేఖర్ సి.మందే

న్నారు. కరోనా వైరస్ మానవ సృష్టా లేదా ప్రకృతి పరంగా వచ్చిందా అన్న అంశంపై ఇప్పటికీ స్పష్టత లేదన్నారు.

డ్రవ్పతి విపత్తులపై అలర్జ్... జియో మ్యాగ్నబిక్ అబ్దర్పేటరీలు ప్రపంచ అబ్జర్వేటరీల నుంచి వచ్చే సమాచారాన్ని శాస్త్ర పేత్తలు విశ్లేషించడం ద్వారా భూ అయస్కాంత క్షేత్రాల మార్పును గుర్తించవచ్చన్నారు. భూకం పాలు, సౌర తుపానులు, సునామీలను ముందుగా గుర్తించి ప్రాణ, ఆస్తినష్టం జరగకుండా అప్రమత్తం కావొచ్చన్నారు. భూగర్భంలో ఖనిజాలు, జలవన రులు, చమురు నిక్షేపాలు ఎక్కడెక్కడ ఉన్నాయో ఈ అబ్జర్వేటరీ గుర్తిస్తుందని శేఖర్ మండే తెలి పారు. ఈ నూతన అబ్జర్వేటరీలో కెనడా, డెన్మార్క్ తయారు చేసిన అత్యాధునిక మ్యాగ్నో మీటర్లను అమర్చామన్నారు. విలేకరుల సమావేశంలో ఎన్జీ ఆర్ఐ డైరెక్టర్ వి.ఎం. తివారీ, సీనియర్ సైంటిస్తులు డాక్టర్ నందన్, డాక్టర్ దేవేందర్, డాక్టర్ శ్రీనాగేష్,

భించారు. జియోమ్యాగ్నటిక్ అబ్జర్వేటరీ పనితీ మూడో డోస్(బూస్టర్) అవసరం వస్తుందా రాదా వ్యాప్తంగా 450 ఉండగా, వాటిలో 150 డిజిటల్ అజయ్ మాంగీక్, కీర్తిశ్రీవాత్సవ, కుస్మిత అలోక రును పరిశీలించారు. కార్యాలయంలో ఫాటో గ్యాల అన్న విషయంపై పరిశోధనలు జరుగుతున్నాయ అబ్జర్వేటరీలు ఉన్నాయని సీఎస్ఐఆర్ డీజీ శేఖర్ సి. తదితరులు పాల్గొన్నారు.

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CSIR-CMERI

सी.एम.ई.आर.आई. व पंजाब मंडी बोर्ड के बीच हुआ करार

सब्जियों व फलों न की बदबू का 16 जिलों में प्लास्टिक समह मॉड्यूल में भी लागू किए जा रहे हैं। सामना करना पडता है लेकिन अब प्रो. हिरानी ने पंजाब मंडी बोर्ड के आने वाले समय में आपको व लुधियाना समेत पंजाब भर की हस्ताक्षर किए। प्रोफैसर हिरानी ने और शहरीकरण ठोस कचरे का साथ सहयोग करने पर भी प्रसन्नता मंडियों में क गंदगी के ढेर नजर नहीं बताया कि इस करार के तहत प्रबंधन राष्ट्र के लिए एक बड़ी व्यक्त करते हुए कहा कि इससे राज्य आएंगे। इस संबंध में आज यहां बॉयलर में कोयले के बदल के रूप चुनौती बनता जा रहा है। गंदगी को की सभी मंडियों में एक सफल इंजीनियरिंग में इस्तेमाल में आने वाला उत्पाद कब तक जमीन में डंप करते जाएंगे। मॉडल को बड़े पैमाने पर विकसित केंद्रीय यांत्रिक तैयार होगा। पहला प्रोजैक्ट फगवाडा वायु व पानी प्रदूषण ने मानव व पशु करते हुए बढ़ाया जा सकता है। अन्संधान संस्थान (सी.एम.ई.आर.आई.) और पंजाब की सब्जी मंडी में लगाया जाएगा। जाति के लिए कई नई परेशानियां पंजाब मंडी बोर्ड के अतिरिक्त सचिव मंडी बोर्ड (पी.एम.बी.) के बीच जिसकी समर्था प्रतिदिन 5 टन पैदा कर दी है। इस समस्या को दूर एचएस बराड़ ने बताया कि फलों एक करार हुआ। जिस पर खोज वैस्टेज को प्रोसैस करने की होगी। करने के लिए ही संस्था की टीम द्वारा और सब्जियों का कचरा स्वास्थ्य के संस्थान की तरफ से निदेशक उसके बाद इस प्रोजैक्ट को टैक्नोलॉजी को विकसित करने पर लिए खतरनाक हो सकता है। मंडियों

प्रोफैसर हरीश हिरानी व पंजाब मंडी	लुधियाना सहित पंजाब की 115	काम किया जा रहा है ताकि सब्जी	में से इस उत्पन्न कचरे को हटाने के
बोर्ड के अतिरिक्त सचिव, पंजाब	मंडियों तक विस्तार किया जाएगा।प्रो.	मंडियों से निकलने वाली वेस्टज को	लिए बड़े स्तर पर खर्च भी किया
सरकार श्री एच. एस. बराड़ ने	हिरानी ने बताया कि बढ़ती आबादी	इस्तेमाल में लाते हुए नए रोजगार के	जाता है।

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