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CSIR

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CSIR Technologies for Rural Livelihood Technology Demonstration and Networking Meet

CSIR-NIScPR, IHBT

30th June, 2022

CSIR-National Institute of Science Communication & Policy Research (CSIR-NIScPR), Unnat Bharat Abhiyan (UBA) and Vijnana Bharati (VIBHA) have jointly undertaken a major initiative for the dissemination of CSIR technologies to create livelihood opportunities in rural areas. In this context, CSIR-NIScPR, CSIR-IHBT, UBA and VIBHA jointly organized a two-days



‘Technology Demonstration and Networking Meet’ on 29-30 June 2022 at CSIR-IHBT, Palampur. The key objective of this Meet was to showcase and demonstrate rural technologies developed by CSIR-IHBT that can help in farmers’ livelihood creation and enhance their income through the development of business opportunities. The meet brought scientists, researchers, investigators, Regional Coordinating Institutes (RCIs) and Participating Institutions (PIs) of UBA, SHGs, FPOs, and village communities together on a single platform to discuss opportunities as well as challenges in the successful translation of the identified technologies.

Prof. Ranjana Aggarwal, Director, CSIR-NIScPR set the agenda of the meet by highlighting the CSIR-NIScPR’s efforts in facilitating the demonstration and deployment of CSIR Technologies in association with Unnat Bharat Abhiyan and VIBHA for the overall development of the rural societies in the country. She emphasized the significance of resolving issues of technology adoption by organizing such demonstration meet. She highlighted the vast reach of CSIR which has 37 laboratories and is engaged in developing technologies in almost all the sectors to help support society in every walk of life. She informed that CSIR-NIScPR has established a bridge between institutes and society through

its communication and policy research. She said that the technologies developed by CSIR-IHBT will help to achieve the objectives of creating livelihood and income generation in rural areas, and restrict further people migration.

Dr. Sanjay Kumar, Director, CSIR-IHBT appreciated the efforts of CSIR-NIScPR, UBA and the VIBHA in the dissemination of the CSIR Technologies and bridging the gaps between R&D Laboratories and society. He suggested to develop technologies that must be able to fulfill the needs of society and strengthen Atmanirbhar Bharat Abhiyan. He also hailed the researchers to solve the problems of society through science and technology intervention. He highlighted technologies developed in CSIR-IHBT like aromatic marigold suitable for rural areas affected by wild animals. The success of the Aroma and Floriculture Mission as well as the introduction of crops like Heeng and Cinnamon was also underlined in creating livelihood opportunities and reducing imports.

Prof. Vivek Kumar, National Co-coordinator, Unnat Bharat Abhiyan, IIT Delhi highlighted the Unnat Bharat Abhiyan efforts for transforming rural livelihood through science and technology. He emphasized the importance of deploying technologies for the development of society, amending academic curriculum and research programs considering societal needs and problems and sustainability of regional resources. He also quoted the efforts made by UBA in formulating 15 different subject-expert groups and undertaking 292 projects to solve societal problems.

Dr. Yogesh Suman, Senior Principal Scientist, CSIR-NIScPR discussed about the joint efforts of CSIR-NIScPR, UBA and VIBHA which are aimed at creating livelihood opportunities in rural areas. Dr. Suman highlighted the linkages that have been established with various stakeholders like the North Eastern Center for Technology Development and Outreach (NECTAR), Foundation for Integrated Support and Solution (FISS), North Eastern Development Finance Corporation Ltd (NEDFi), Ministry of Development of North Eastern Region, and National Bank for Agriculture & Rural Development (NABARD) and other Government of India Ministries. He gave a brief description of the events jointly organized

by CSIR-NIScPR, UBA, VIBHA and NECTAR to showcase CSIR Technologies for the benefits of stakeholders. He pointed out the challenges faced by farmers and entrepreneurs in arranging resources for adopting CSIR technologies like generating finance and locating market etc.

Prof. A.M. Rawani, Director, NIT Raipur presented the perspective of UBA- RCIs for fast tracking rural livelihood through Unnat Bharat Abhiyan. He stressed upon the importance of educational institutions in identifying regional problems and finding solutions for them. He also highlighted the success of programs such as Orientation, Sahyog Club and Rural Development to support infrastructure undertaken by NIT Raipur.

Shri Praveen Ramdas, National Secretary, Vijnana Bharati discussed the peoples' migration from urban areas to rural areas and then the livelihood challenges faced by them during the COVID pandemic; and the need for generating livelihood for villagers and income generation, in which CSIR can play an important role through the large number of technologies developed by it. He emphasized that our country has about 6 lakh villages that need to be brought into the mainstream through scientific and technological interventions. He also highlighted the progress made so far in creating livelihood generation based on CSIR Technologies through joint efforts of CSIR-NIScPR, UBA and VIBHA.

On this occasion, the Chief Guest Dr. Shashi K. Dhiman, Vice-Chancellor, Himachal Pradesh Technical University said that the Unnat Bharat Abhiyan was conceptualized in the 'Hind Swaraj' 100 years ago for the prosperity of the population residing in the villages. He emphasized that technology should be society centric and used for the welfare of the society. Dr. Dhiman highlighted the importance and need of organic farming as synthetic fertilizers-based farming is polluting the soil, water, air, and human health. He underlined the need for technological interventions for the efficient management of water and soil. He expected that all R&D institutions, academic institutions, and industries should come together to solve the problems of society. Dr. Dhiman admired the CSIR-IHBT efforts for technology development and their transfer for the upliftment of society.

In the second session of the meet CSIR-IHBT showcased and demonstrated about 43 Technologies like Vitamin D2 enriched shiitake mushrooms, Ready to Eat crispy fruits and vegetables, Ready to Drink Teas, Tea based Wine, Tea Catechins, Tea Vinegar, Tea mouthwash, agro and processing technologies related to aromatic, floriculture as well as industrially important crops like Heeng, Cinnamon, and Saffron.

During the third session of the Meet, interaction took place among scientists, technology developers and the stakeholders from different places across the country like Andaman and Nicobar Islands, Punjab, Uttar Pradesh, Tamil Nadu, Laddakh, Gujarat, Chandigarh, Assam, Jammu and Kashmir, Uttarakhand, Himachal Pradesh, Chhattisgarh, Manipur. The stakeholders showed their keen interest in the technologies developed by CSIR-IHBT like food processing and packaging technologies, Aroma Mission and floriculture mission technologies, Bamboo Technologies, Shiitake mushroom, Tea based wine, Heeng, etc.

Animation Video Making training at NML

CSIR-NML

30th June, 2022

A four-day long training programme on 'Animation Video Making' is being organised at the CSIR-National Metallurgical Laboratory. This national training programme has been launched under the banner of the Council of Scientific and Industrial Research Integrated Skill Initiative Programme.

The objective of the training programme is to provide training and exposure to Animaker software to school students and other interested individuals. The basic purpose of this training is to impart basic knowledge of animation and multimedia presentation to the participants, who will use this knowledge to create high-quality animation on the desired topic.

The highlights of this special four-day training are: Introduction to Animaker, Character Making, Scene Making, and White Board Animation.

Mita Tarafder, Head, KRIT Division of CSIR-NML, discussed the importance of understanding the subject of animated video making and having knowledge of this for school students to include creative content while presenting a new idea or concept. She briefly introduced the guest speaker and wished all participants would have an engaging training experience.

The guest speaker for the evening programme was Rahul Raman. He has done his graduation in Journalism and Mass Communication from Amity University, Jharkhand. He has worked as a reporter and graphic designer for several media houses in Jharkhand. He is currently working as a digital business promoter for a furniture business outlet.

As expressed by Raman, video making with animation is a subject by itself that is in high

demand in entertainment and other industries. He gave an overview of Animaker software and showed several demonstrations using templates available with the paid and free versions of the software.

His session was very interesting as the participants took a lot of interest and interacted with the speaker.

The programme came to an end with a vote of thanks extended by Pragati Jha, a team member of the KRIT Division. The virtual programme was attended by around 40 students and individuals with various professional backgrounds.

Road to sustainability

CSIR-IIP

29th June, 2022

If you take a flight in 2025, there are fair chances that the airplane you fly will have some sustainable aviation fuel (SAF) blended with the normal aviation turbine fuel in its tank. However, there is still quite a long way to go for SAF which has the potential to substantially cut carbon emissions by 70 to 100 per cent. It is being produced in different countries using different natural items, waste



products or their combinations, and is estimated to have powered some 4,50,000 flights worldwide so far, many of them for experimental purposes. While airports and aviation operations are being digitised at a rapid pace across the world to slash the aviation sector's carbon footprint, several countries have already started operating flights with SAF blended with jet fuel or are in the advanced stages of doing so. But the task is enormous. It ranges from creating an infrastructure and ramping up production of SAF to its supply from the source to the plane, its pricing and the taxation regime.

While the global airline industry has targeted 2050 to achieve net zero carbon emissions, India is banking on sustainable fuel-powered airlines and increased use of advanced aviation technology and digitisation to prepare for a net zero carbon-future by 2070. Civil Aviation Minister Jyotiraditya Scindia recently said the country will have 96 carbon-neutral airports running on renewable energy by 2024. Asking Indian airlines to quickly adopt sustainable fuel for reducing emissions, he said all future airports will be developed on the foundations of carbon zero and environmental sustainability. Some Indian airlines like IndiGo and SpiceJet have already flown experimental flights using SAF.

India's National Policy on Biofuels has underlined the need to support the use of feedstocks that do not conflict with food supply and ensuring that the land use concerns are accounted for to produce SAF. Promoting the sustainable fuel industry would not only reduce airline emissions, but also combat air pollution. It would check crop burning, create numerous green jobs, improve farmers' incomes and help solve waste management issues. Turning waste into fuel is critical to combating climate change. But this process should also avoid unsustainable over-production of palm oil for biofuels or widespread *Jatropha* plantation even in agro-climatic zones not appropriate for such species of trees. Instead, planting of native oil-bearing trees and locally adapted short-gestation crops can be encouraged to strengthen and diversify supply chains in a sustainable manner. The transition from reliance on fossil fuels will also not be easy, even though the commitment to net-zero transition has grown globally. Airline companies are also making bold commitments to climate action. IndiGo had last December entered into an agreement with CSIR-Indian Institute of Petroleum (CSIR-IIP) to become partners in leading the deployment of sustainable aviation fuel in India and globally. SpiceJet, in a partnership with Boeing, has also signed an agreement with the CSIR-IIP to source sustainable fuel from them and its production partners in order to decarbonise its respective fleets. In a statement, CSIR-IIP Director Anjan Ray has said: "CSIR-IIP is committed to achieving India's goal of net-zero greenhouse gas emissions and indigenous, globally competitive, sustainable fuel production for a wide range of transportation and industrial uses. We believe that the synergies ... can enhance national self-reliance as well as strengthen India's position in the global aviation sector."

Hence, it is essential for governments and policymakers to harness this momentum and create a roadmap for achieving emission reductions across the supply chain – bringing fuel suppliers, airlines, airports and distributors along. First, an infrastructure must be created to produce fuel from raw materials, garbage, used cooking oil or agriculture residues. Secondly, a supply chain must be put in place to purchase residue from farmlands and household waste to provide fodder to various facilities to produce alternate fuel. This will benefit the management of household waste and promote recycling, as well as generate thousands of jobs and enhance grassroots-level prosperity. Research estimates that a ten per cent blend of SAF on all domestic flights would require almost 3,60,000 tonnes of SAF. That will accelerate significant

macro-economic opportunities throughout the value chain and unlock market forces, not to speak of the financial benefits. It will also achieve cleaner skies and lessen open-air crop burning that leads to heavy pollution every winter in north India. India is well-positioned to have a significant impact in the area of SAF production as it generates abundant amounts of agricultural residues (farming byproducts like husks and chaff), used cooking oil and other solid waste and feedstocks which can be used to produce SAFs. The existing delivery systems can be used to close operational gaps. Since SAFs are almost identical to jet fuels, their deployment will require minimal additional delivery infrastructure. Oil producers can work with oil marketing companies to blend SAFs with jet fuels properly. Blending facilities and storage tanks would have to be constructed along the delivery routes, as the current regulations prohibit blending on airport grounds.

However, pricing of SAFs and their large-scale deployment will pose a major challenge for the airlines. As SAFs are still an emerging fuel source, they are between 200 and 500 per cent more expensive than the traditional jet fuels. While costs would fall as the production technologies evolve, bridging the cost differential right now would require government support and substantial investment from the private sector. For this purpose, the government should provide funds to close the cost gap with measures such as tax breaks on aviation fuel, lower taxes on SAFs and subsidies on SAF-production investments.

Global aviation body International Air Transport Association (IATA) has urged governments across the world to urgently put in place large-scale incentives to rapidly expand the use of SAF, as the aviation sector pursues its commitment to achieving net-zero carbon emissions by 2050. "Governments don't need to invent a playbook. Incentives to transition electricity production to renewable sources like solar or wind worked. As a result, clean energy solutions are now cheap and widely available. With similar incentives for SAF, we could see 30 billion litres available by 2030. Though still far from where we need to be, it would be a clear tipping point towards our net-zero ambition of ample SAF quantities at affordable prices," IATA's Director General Willie Walsh said recently.

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CSIR-CSMCRI

29th June, 2022

International Conference on Water Treatment Technologies

સેન્ટ્રલ સોલ્ટ દ્વારા જળ શુદ્ધિકરણ-વ્યવસ્થાપન અંગે આંતરરાષ્ટ્રીય વૈજ્ઞાનિકોની કાર્યશાળાનો શુભારંભ?



ભાવનગર, તા.૨૮
સીએસઆઈઆર-સેન્ટ્રલ સોલ્ટ એન્ડ મરીન
કેમિકલ્સ રિસર્ચ ઈન્સ્ટિટ્યૂટ, ભાવનગર દ્વારા ૨૮
જૂન ૨૦૨૨ ના ગુટ-નિરપેક્ષ વિકાસશીલ દેશોના
વિજ્ઞાન અને ટેકનોલોજી કેન્દ્ર, નવી દિલ્હીના
સહયોગ અને ભારત સરકાર દ્વારા આઝાદીની
૭૫મી વર્ષગાંઠ "અમૃત મહોત્સવ" અંતર્ગત જળ
શુદ્ધિકરણ ટેકનોલોજી, આર્સેનિક નિકાલ અને
સંકલિત જળ વ્યવસ્થાપન પર આંતરરાષ્ટ્રીય
કાર્યશાળા નો શુભારંભ કરવામાં આવ્યો. આ
વર્કશોપના ઉદ્ઘાટન વ્યાખ્યાનમા પદ્મશ્રી પ્રો. ટી.

પ્રદીપ (ઈન્ડિયન ઈન્સ્ટિટ્યૂટ ઓફ ટેકનોલોજી,
મદ્રાસ) એ જણાવ્યું હતું કે આગામી વર્ષોમાં
ભારતમાં ઊર્જા અને પાણીની સમસ્યાને હાઈડ્રોજન
અને ઓક્સિજન પ્રક્રિયા દ્વારા દૂર કરી શકાય છે, જે
હરિત પર્યાવરણ માટે ખૂબ જ ઉપયોગી થશે.
સીએસએમસીઆરઆઈ સંસ્થાના નિદેશક ડૉ.
કમ્લેશ શ્રીનિવાસને જણાવ્યું હતું કે, સ્વતંત્રતાના અમૃત
મહોત્સવ?માં જળ શુદ્ધિકરણ અને વ્યવસ્થાપનનો
આ વર્કશોપ ખૂબ જ મહત્વપૂર્ણ છે અને વરિષ્ઠ
વૈજ્ઞાનિકોના અનુભવ અને નવા સંશોધકોની ઊર્જા
ઉમેરીને આપણે નવી જળ-પ્રૌદ્યોગિક તકનીકો
વિકસાવવી જોઈએ. જેથી દેશના સામાન્ય લોકો માટે
પીવાના શુદ્ધ પાણીની ઉપલબ્ધતામાં વધારો કરી
શકાય?. ઈન્ડિયન ઈન્સ્ટિટ્યૂટ ઓફ ટેકનોલોજી,
જોધપુરના પ્રો. પી.કે. તિવારીએ તેમના લેક્ચરમાં
રાજસ્થાનમાં પીવાના પાણીને લગતી મુશ્કેલીઓ અને
તેના ઉકેલ વિશે જણાવ્યું હતું. આ વર્કશોપના
સંયોજક ડૉ. વિનોદ કુમાર શાહીએ તમામ
સહભાગીઓને કલા અને સંસ્કૃતિની નગરી
ભાવનગરમાં ભાવભર્યું સ્વાગત કર્યું અને દરેકને
શુભેચ્છા પાઠવી.

Kolkata: Covid less severe in dengue zones, says study

CSIR-IICB

28th June, 2022

KOLKATA: Ongoing research by an Indian Institute of Chemical Biology (IICB) scientist in Kolkata has indicated that the severity of Covid has been less in dengue-prone areas.

In April 2020, CSIR-Indian Institute of Chemical Biology (IICB) virologist Subhajt Biswas coined the term, "Dengue Covid Conundrum" talking about how Covid-19 severity and mortality were observably less in highly dengue-endemic countries, including India.

Over the last two years, international scholars focused on the questions posed by Biswas: is pre-exposure to dengue protective against Covid and vice-versa; and can dengue vaccines be repurposed to immunize against Covid ?

Study has led to increasingly conclusive evidence that an inverse relationship exists between the two viruses. In July 2020, Biswas conducted the first lab study and the findings confirmed his observation. It showed that pre-pandemic dengue samples produced false positive results in Covid antibody tests.

That year, Biswas's results, which indicate that there was an antigenic correlation between Covid and dengue, were cited in a public policy report by the ministry of health and family welfare.

In 2021 and early 2022, doctors and virologists from China, Sri Lanka and Indonesia reported that the inverse is true as well — that there appears to be low instances of dengue in the postpandemic time. Biswas argues that this further establishes that Covid and dengue have an inverse relation, that is, dengue exposure reduces the risk and severity of Covid, while Covid reduces the risk and severity of dengue.

Following the series of experiments conducted by IICB, scientists across the world conducted similar studies, which led to the same conclusion. These studies include one by Miguel Nicolelis of Duke University demonstrating that Covid severity and mortality were lower in Brazil, in pockets where there were high instances of dengue. This was further backed up by a study by Brazilian professor Silvestre on 2,000 Covid patients in Brazil, which found that those without previous dengue exposure had higher risk of death.

In the same year, an African public policy report also cited Biswas's study. In August 2020, a team of virologists from Israel confirmed Biswas's observation and conducted tests that showed 22% serological cross-reactivity between the two viruses from Israel.

Talking about the implication of this discovery, Biswas concluded, "The fact that there is a mutual antigenic relationship between these two very different viruses, leads us to believe that there is a level of cross protection against the diseases caused by these two different family viruses. I believe what we should focus right now on the need for specific serological tests that look at the future of how to diagnose these two viruses differentially."

चयन की है बड़ी चुनौती

असम के कई क्षेत्रों में बाढ़ का कहर जारी है। वहीं उत्तर भारत के तमाम इलाके भयंकर गर्मी से तप रहे हैं। तपती गर्मी के अलावा इन इलाकों की हवा भी बेहद जहरीली हो गई है, जिसमें सांस लेना भी एक तरह से जहर निगलने जैसा है। इन तमाम समस्याओं का कारण ग्लोबल वार्मिंग और उस कारण से हो रहे जलवायु परिवर्तन को माना जाता है। इस समस्या का समाधान भी बड़ा आसान है कि अधिक से अधिक पौधे लगाए जाएं, जो विशालकाय वृक्ष का रूप लेकर जलवायु परिवर्तन के हमले में ढाल बनकर उसे संतुलित करने में सहायक हों।

यह समाधान अपनाया तो जाता है, लेकिन इस प्रकार से कि वह राह आसान बनाने के बजाय चुनौतियों को और बढ़ा देता है। दरअसल किसी भी ठोस योजना और उस पर पर्याप्त होमवर्क किए बिना जिस प्रकार पौधारोपण की कवायद की जाती है, उसका अपेक्षित परिणाम नहीं मिल पाता है। इसका कारण यह है कि हर स्थान की जलवायु, मिट्टी और मौसम की दशा-दिशा अलग होती है। पौधारोपण भी उसी के अनुरूप किया जाना चाहिए। मगर जमीनी स्तर पर ऐसा होता नहीं। पौधारोपण की प्रक्रिया में एक प्रकार का अंधानुकरण ही किया जाता है। इन पहलुओं का ध्यान नहीं रखा जाता कि स्थानीय जलवायु और मृदा के अनुरूप किस प्रकार के पौधों का चयन किया जाए, जो न केवल मिट्टी और पानी का सही संतुलन बनाए रखें, बल्कि अपेक्षित विकास की संभावनाओं पर खरा उतरकर पर्यावरण संरक्षण में उपयोगी सिद्ध हो सकें। इसलिए अपने आसपास के परिवेश के अनुरूप पौधों का चयन बेहद सावधानी और सतर्कता से किए जाने की आवश्यकता है।

भारतीय परिस्थितियों के अनुसार, छायादार और जल्दी बढ़ने वाले पेड़ों को लगाने के लिए तीन भू-भागों में कुछ विशेष पौधे लगाए जा सकते हैं। ये तीन क्षेत्र उत्तर, मध्य और दक्षिण के रूप में चिन्हित किए गए हैं। इन क्षेत्रों में स्थानीय परिस्थितियों के अनुरूप

डा. एसके
तिवारी
मुख्य विज्ञानी,
राष्ट्रीय वनस्पति
अनुसंधान
संस्थान, लखनऊ



पौधारोपण के प्रति लोग जागरूक हुए हैं। इसके बावजूद अपेक्षित परिणाम नहीं मिल रहे हैं, क्योंकि इस बात की जानकारी लोगों तक कम है कि पौधारोपण स्थान विशेष की जलवायु और मृदा के अनुरूप होना चाहिए। सही वृक्ष और सही स्थान का चयन बहुत महत्वपूर्ण है।

पौधे लगाए जा सकते हैं। एक अनुमान के अनुसार यदि पर्यावरण के चक्र को संतुलित करना है तो कम से कम एक तिहाई भू-भाग को वृक्षों से भरना होगा। बहुत सारी सरकारी योजनाओं और प्रयासों के तहत पर्यावरण संरक्षण पर कार्य किया गया है। एग्रोफोरेस्ट्री मिशन के तहत किसानों को भी खेत की मेड़ पर पेड़ लगाने के लिए प्रोत्साहित किया जा रहा है। इसके अलावा आम जनता के रूप में भी हमें सड़क के किनारे, पार्कों में या किसी भी सार्वजनिक स्थान पर, जहां संभव हो, वहां प्रति व्यक्ति दो पेड़ों का योगदान देना चाहिए।

ऐसा देखा गया है कि बड़े वृक्ष पर्यावरण पर अपना दीर्घकालिक प्रभाव छोड़ते हैं। यही पेड़ वर्षा वाले बादलों को लाने, हवा में ठंडक बढ़ाने और तापमान को कम करने समेत कई पहलुओं पर काम करते हैं। ऐसे में उनकी उपस्थिति बहुत जरूरी है। इस रणनीति के लिए तीनों क्षेत्रों में कुछ ऐसे पौधों का चयन करना उपयोगी होगा जो भविष्य में बड़ा आकार लेने में सक्षम हो सके। एक सजग नागरिक होने के नाते ये हमारा दायित्व भी है कि हम पौधारोपण करें।



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