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News in Brief

From the DG's Desk

Dear Readers,

Every year 5th June is celebrated as World Environment Day to make the people aware of the Environment and its effects on their daily life. Since the Global Environment Summit 1992, all the countries have had some commitment to save the environment. India too being a signatory has developed a whole variety of policies and programs to protect the environment and conserve the biological diversity for sustainable development. We interact closely with the environment for our day-to-day sustenance. All the five great elements (*Pancha Maha-Bhoota* in Sanskrit) according to Hinduism, are the basis of all cosmic creation and form the hub and spokes of life on this planet earth. These five elements are *Prithvi*/Earth, *Jal*/Water, *Agni*/Fire, *Vayu*/Air and *Akash*/Space.

There are many activities, which are done by the people across time and space in this environmental complex for the welfare of the people. In the process, we degrade the environment. These days there is a growing awareness amongst human beings and they look forward to keeping our environment green and clean. The government schemes such as *Swacch Bharat* and *Namami Gange* are some of the examples in this direction. We are committed to hand over quality life to our younger generations. So, it is important to change our developmental models from business as usual to eco-developmental models. We all must work with the basic principles of Reduce, Reuse and Recycle so that we use our resources judiciously. This applies to every sector, be it farming or solid waste management or automobiles.

Friends, we are all blessed to be in the fillip of the rich biological diversity that our country has including agrobiodiversity that warrants a global positioning for cultural tourism depicting the linkages between ecology and ethics. In this regard, we have the Indian Himalayan region in the country that is both geologically and climatically more vulnerable. The

Himalayas have spiritual bearing, for the very reason that this region is believed to house the Gods who have relevance to production, protection and conservation, namely *Brahma*, *Vishnu* and *Mahesh*. Evidently, the '*Char Dham*' in the state of Uttarakhand in the Central Himalayan region is one of the popular examples that attracts over a crore of spiritual tourists every year. Owing to fragile geology, the region experiences frequent natural calamities such as landslides, earthquakes, cloudburst and flash floods. Nevertheless, the Himalaya is known for the ecosystem services to the entire Asian region as well as to the world at large for maintaining slope stability, regulated hydrological integrity, sustaining high levels of biodiversity and human wellbeing.

Culturally, the region harbours livelihood of over 250 tribes and indigenous communities who have associated the lifestyle suiting to the resource availability in the region such as medicinal plants, wild edible and other non-timber forest products. For instance, the region supports over 20% medicinal plant species in India and has over 675 of wild edible species. While the forest-based biodiversity has drawn adequate attention, the richness of agrobiodiversity warrants focus, as this is one of the visible outcomes of the century-old mutual interaction between land, technology, living beings, and traditional social system of several indigenous communities. This is also one of the reasons for the rich cultural diversity and agri-food systems in the region where one could see advanced pastoralism in the high hills to well integrated farming systems as also in remote areas, such as in Pithorogarh, a district of Uttarakhand. Despite these sustainable bioresource based livelihoods, the mountains have generally witnessed large-scale outmigration due to low productive agriculture *in situ*, lack of market access and lucrative alternative income generation sources elsewhere. But the recent reversal of low-income level migrants back to the state due to covid-19 pandemic will also provide ample opportunities for development the mountain agriculture *per se*. Across time and space, the mountains like the Himalayas could however claim their position as the Water Tower in the region for hydro-electric power generation in the background of historic, women-driven *Chipko* movement towards ecological conservation.

Over all, the Indian mountains, due to their exclusive and inimitable biodiversity, geological sensitivity and geographic vulnerability, deserves utmost priority for ecological and environmental conservation in the national agenda. We need to indoctrinate the philosophy of linking cultural ecology with spirituality and sustainability for biodiversity conservation in the country as it is these very ecological resources that provide several of the goods and services for human sustenance and livelihood. So, 'nurture nature for future'. Stay safe, Save lives.

Friends, the theme for World Environment Day 2020 is -Biodiversity. It is an urgent concern for mankind as our existence depends on biodiversity. According to the United Nation Organization, the theme was selected due to the "Recent events, from bushfires in Brazil, the United States, and Australia to locust infestations across East Africa - and now, a global disease pandemic - demonstrate the interdependence of humans and the webs of life, in which they exist."

Usually, this day is celebrated by planting saplings, and discussing how to save Nature. But due to Covid-19 corona virus pandemic, this year we have been confined to homes. Corona virus has made us realize that if biodiversity is destroyed, the whole system supporting life gets destroyed. Human beings must realize that each species on this planet is an important part of our environment. Due to over-harvesting and climate change, many high-value genetic resources are in a fragmented state. It's getting very difficult to retain them in the long-term. Sustainable strategies need to be developed with short-term goals and long-term planning to multiply the natural resources and conserve the source gene bank in the wilderness.

The immediate need is to increase strengthen scientific/technological methods for the multiplication and conservation of bio resources. The role of common public should be essentially included in conservation management. Different cultures must interact and work with each other, different communities should be given scientific training and agricultural education to tackle local problems and undertake resource management on their own. Forest management, eco-development, and forest conservation should come up in Himalayas through public participation. Scientific institutions can help in the capacity building of different stakeholders, thus allowing them to take up bioresouce-based entrepreneurships and conserve biodiversity.

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UNEP

Plant trees,
Conserve water,
Protect environment.

WORKSHOPS, MEETINGS, CONFERENCES, SYMPOSIA, SEMINARS

ICAR-CIFRI tags Indian Major Carps

Barrackpore, Kolkata, 16 June, 2020. ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata tagged 100 Indian Major Carps and released in river Ganga for studying the migration behavior and movements of the fish under the "*Namami Gange*" Project. Dr Basanta Kumar Das, Director, ICAR-CIFRI and Principal Investigator, ICAR-CIFRI-NMCG Project highlighted the importance of tagging process and sensitized the local fisherman about the purpose in tagging. The native carp fishery has continuously declined for the past few decades. The ICAR-CIFRI, Barrackpore, Kolkata conducted a series of ranching programmes during post Lockdown period. As a part of the ranching programme, the Institute initiated tagging for monitoring and developing proper sustainable management of exploited IMC fish stock in the Ganga River system. During the process of tagging, more than 500 g of Indian Major Carp (*Labeo rohita, Labeo catla* and *Cirrhnus mrigala*) popularly known as Rohu, Catla and Mrigal were tagged and released in the river Ganga. The Floy T-bar anchor tags of standard size with printed serial numbers were inserted in muscle just below the dossal fin. The tagged fishes were further treated with antiseptic and potassium permanganate solution before releasing into the river for identifying the fundamentals of migration range.

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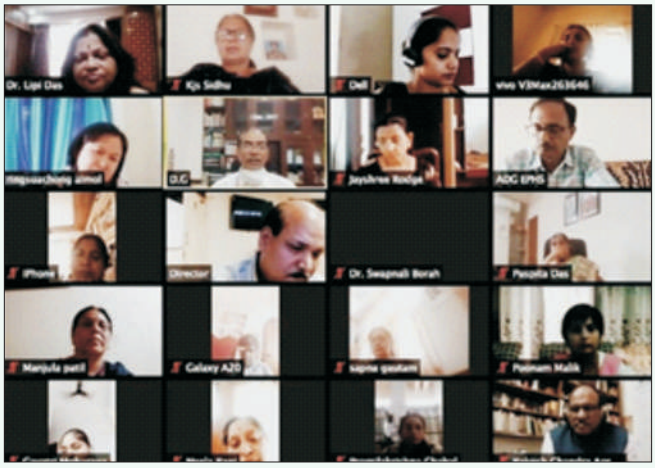
Online workshop of ICAR-AICRP

Bhubaneswar, 24 April, 2020. ICAR-Central Institute for Women in Agriculture (CIWA) organized "Online Workshop of ICAR-All India Coordinated Research Project on Women in Agriculture". The online workshop was organized to contain the spread of COVID-19. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) emphasized on the importance of proper documentation, capitalization on the strength of the schemes and popularization through social media like DD Kisan. He stressed on the need for defining the stakeholders— "Women in Agriculture" including farm laborer, cultivator, entrepreneurs etc. He urged all AICRP scientists to work in coordination with all sectors for maximizing benefits of farm women. Dr RC Agrawal, DDG (Agricultural Education), ICAR stressed on quantifying activities carried out by ICAR-AICRP on Women in Agriculture during the lock down period with proper documentation. He



accentuated on the need for working in collaboration with International Organization like IFPRI and other ICAR Institutes both in Community Science and Agriculture for effective coordinated approach to reach out to the farm women. Dr PS Pandey, ADG (EP&HS), ICAR emphasized on the need for central repository of the data generated from all the Centres. He stressed that the repository may further be used for formulated projects and policy recommendations.

Dr SK Srivastava, Director, ICAR-CIWA highlighted about mass production and distribution of hand sanitizers, masks, PPEs among staff of universities, farm women and rural families by the Institute's staff members through various Women Self Help Groups.

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Annual group meeting on Groundnut

Junagadh, Gujarat, 15 April, 2020. ICAR-Directorate of Groundnut Research, Junagadh, Gujarat organized its "Annual Group Meeting of Groundnut" through video-conferencing. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) emphasized on the aggressive popularization of new varieties and human resource development of the cooperating Centres. Dr Tilak Raj Sharma, DDG (Crop Science), ICAR accentuated on utilizing the molecular tools in breeding. Dr Sharma emphasized on the need to develop high yielding groundnut varieties resistant / tolerant to biotic and abiotic stress besides, priorities on marker-aided selection, NILs, high throughout phenotyping of drought and other traits. Dr DK Yadav, ADG (Seeds), ICAR highlighted the improvements needed in seed production system. Dr SK Jha, ADG

(O&P) emphasized on the need to expand area and improve productivity. Dr VP Chovatia, Vice-Chancellor, Junagadh Agricultural University, Gujarat accentuated on the success story of popularizing new varieties in Gujarat.

Results of the FLDs conducted during Rabi-Summer 2018-19 and *Kharif*-2019 were presented during the meeting. The 3 high-yielding entries, viz. K1812 (for Karnataka, Andhra Pradesh, Telangana and Tamil Nadu) for Kharif and DH 257 (for Karnataka and Maharashtra) and J87 (for Uttar Pradesh and Punjab) for Rabi-Summer were proposed for release.

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Emerging trends in Extension and Social Sciences Research

Imphal, Tripura, 10 June, 2020. The Multi-Technology Testing Centre and Vocational Training Centre, College of Fisheries, Central Agricultural University, Imphal, Tripura in collaboration with ICAR-NAARM, Hyderabad and Agri-Business Incubator, ICAR-Central Tuber Crops Research Institute (CTCRI), Kerala organized an International Webinar Series on "Emerging Trends in Extension and Social Sciences Research" from 10th to 16th June, 2020. Dr Pramod Kumar Pandey, Dean, College of Fisheries, CAU, Imphal, Tripura emphasized on challenges the agriculture and allied sector will face post COVID-19 Pandemics and the role of Extension and Social Sciences Research in addressing them. The main objective was to orient students, research scholars, academicians and scientists towards emerging research areas and introduce new research methodologies.

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Online workshop for farmers on Pre-*kharif* planning

Solapur-1, Maharashtra, 12 May, 2020. The KVK, Solapur-1 organized the "Online Workshop for Farmers on Pre-Kharif Planning". Dr Lakhan Singh, Director, ICAR-ATARI, Pune, Maharashtra stressed on advance planning, arranging quality seeds and necessary inputs. He emphasized on carrying out the identification of farmers, villages, demonstration sites, technology gap assessment and improved cultivars, etc., at the KVK level. Dr Jyotsna Sharma, Director, National Research Centre on Pomegranate, Solapur, Maharashtra accentuated on situation-based bahar management in pomegranate and presented the recent advisories.Dr JD Jadhav, Head, Department of Meteorology, Mahatma Phule Krishi Vidyapeeth, Rahuri oriented farmers about up-coming monsoon and contingent crop planning in Solapur District. Shri Jayant Kamble, Sub-Divisional Agricultural Officer, Solapur outlined about the efforts being made for the supply of critical inputs on the doorsteps of the farmers. Dr LR Tambade, Head, KVK, Solapur emphasized on popularizing improved varieties and technologies of kharif crops.

The availability of quality seed for Pigeon Pea (BDN-711, BDN-716); Soybean (MAUS-71, DS-228) and Sunflower (Phule Raviraj, MSFH-17) has been assured at KVK, Farmers' Producers' Companies and Mahabeej at the District Headquarters.

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Launching of Arya programme

Gudamalani, Barmer - II, Rajasthan, 10 June, 2020. ICAR-ATARI, Jodhpur, Rajasthan organized the Virtual Launching Meeting of Attracting and Retaining Youth in Agriculture (ARYA) Programme at KVK, Gudamalani, Barmer-II, Rajasthan. Shri Kailash Choudhary, Union Minister of State for Agricultural and Farmers' Welfare emphasized on empowering farmers to make farming as competitive, profitable and remunerative. The Minister also highlighted the involvement of reputed multinational companies in farming in the coming 4 to 5 years. Shri Choudhary urged trainees of ARYA Programme to actively involve and establish the enterprises as profitable ventures.

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26th meeting of ICAR Zonal Committee-1

New Delhi, 30 June, 2020. The Virtual 26th Meeting of the ICAR Zonal Committee-1 (Himachal Pradesh, Uttarakhand, Union Territory of Jammu and Kashmir and Ladakh) was organized at Krishi Bhawan, New Delhi. According to Rule-65 and Regulations of the ICAR Society, the ICAR formed 8 Zonal Committees based on agro-climatic zones in 1975. Since their inception, the Committees organize meetings after every two years to discuss latest trends in agricultural education and farming. Shri Narendra Singh Tomar, Union Minister for Agriculture and Farmers' Welfare emphasized that the regional committees formed by ICAR provides a better platform for establishing meaningful dialogue between research and development agencies in the fields of agriculture, horticulture, animal husbandry,

fisheries and agroforestry. Shri Tomar urged State Governments to contribute wisely in promptly implementing the new advisories being provided by the Central Government, providing new opportunities to the farmers and narrowing gaps between the farmers and traders. Applauding various technologies developed by ICAR and its Institutes, he stressed that the decisions and recommendations taken by previous committees for Regional Committee-1 have been successful in the various fields of agriculture in these regions. The Union Minister urged farmers to form Farmers' Producers' Organization (FPOs) and stressed on establishing facilities for agriculture and food-processing units.

Shri Parshottam Rupala, Union Minister of State for Agriculture and Farmers' Welfare stated that the meeting serves as a bridge to establish coordination between the states and the Centre and disseminate various researches being carried out by ICAR to the farmers' field.

Shri Kailash Choudhary, Union Minister of State for Agriculture and Farmers' Welfare emphasized that the farmers' prosperity will pave the way to make the country to be self-reliant. Urging the scientists to work for solving the problems of climatic changes, the Minister regarded the role of State Governments as vital to achieve the target of doubling farmers' income. Shri Choudhary also stressed on providing the employment opportunities in agriculture to the youths, providing the fair prices to the farmers, carrying out quality seeds productions and strengthening the farmers-traders relationships.

Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) highlighted the various researches aimed at providing prompt solutions for the various problems being faced by the farming communities in different typographical areas. The DG also underlined about problems of wild animals and fodder along with climate changes that are being faced by agricultural and farming communities. Dr Anand Kumar Singh, DDG (Horticultural Science), ICAR highlighted about various farming related problems.

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Shri Parshottam Rupala inaugurates dial-out conference on *Kharif* crop

Navsari, Gujarat, 16 May, 2020. Shri Parshottam Rupala, Union Minister of State for Agriculture and Farmers' Welfare inaugurated the Dial-Out Conference on "Planning for Kharif Crops of South Gujarat" organized by KVK, Navsari, Gujarat in collaboration with the Reliance Foundation. The Minister urged farmers to design market model at district level and form the Farmers' Producers' Organizations (FPOs) that can revolutionize the agriculture sector of the country. Shri Rupala applauded farm women's participation in agricultural practices to make themselves self-reliant. He emphasized more on the herbal plants, bee keeping, packaging, branding, value-addition, organic products marketing and farmers' welfare schemes.

Dr Amitaben Patel, President, District Panchayat,

Navsari, Gujarat stressed on the need for technological empowerment of farm women as they are actively involved in farming, livestock management, household based enterprises. Smt. Prafulaben Desai, Board Member, Management, Navsari Agricultural University, Navsari accentuated to focus on the inclusion of the herbal crops in inter cropping system. Dr Lakhan Singh, Director, ATARI, Pune, Maharashtra urged farmers to be vigilant in crop husbandry. He urged the KVK for linking the rural youth with banks or relevant institutions for their business planning and financial support.

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Online workshop on mushroom

Banaskantha-1, Gujarat, 13 May, 2020. ICAR-ATARI, Pune, Maharashtra organized a three-day "State Level Online Workshop for Rural Youths on Mushroom Production Technology" at KVK, Banaskantha-1, Gujarat. Dr RK Patel, Vice-Chancellor, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat highlighted the mushroom's nutritional importance, its health benefits, current status of its cultivation in Gujarat and the future opportunities in the Banaskantha district. Dr Lakhan Singh, Director, ICAR-ATARI, Pune, Maharashtra urged the rural youths for adopting the mushroom cultivation as an enterprise. He stressed on the business planning, developing entrepreneurial motivation, bearing calculated risk, linking with market, etc., that are among the important factors for getting the success. Padma Shri Genabhai Patel, a differently-abled farmer from Gujarat emphasized on Banaskantha District's huge potential for

mushroom cultivation. He stressed that it is the best approach to enhance farmers' income in the area.

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20th annual group meeting of AICRP on Tuber crops

Thiruvananthapuram, 10 June, 2020. ICAR-Central Tuber Crops Research Institute (CTCRI), Thiruvananthapuram, Kerala organized a three-day "Virtual 20th Annual Group Meeting of All India Coordinated Research Project on Tuber Crops". Dr Anand Kumar Singh, DDG (Horticultural Science), ICAR stressed on giving complete package to farmers while expanding the area under tuber crops. He urged for computing the cost efficiency for technologies developed. Dr T Janakiram, ADG (Horticultural Science) highlighted the importance of the tropical tuber crops for food, nutrition, health and livelihood security of a considerable sector of Indian population. Dr P Rethinam, Chairman, QRT, ICAR-CTCRI stressed on adopting and replicating the strategy followed for planting material production at the ICAR-AICRP on Tuber Crops, Dholi, Bihar and other places. Dr V Ravi, Director, ICAR-CTCRI stressed on giving attention to the sector as out of 138 million Indian land holders, 85% are marginal farmers or 18% are small scale farmers.

The Publication on Standard Operating Procedure (SOP) for ICAR-AICRP on Tuber Crops and Mobile App - Data Collector for real time data collection of ICAR-AICRP on Tuber Crops Projects were released. The two Yam Bean varieties were recommended for release for the state of West Bengal and Bihar, respectively during Plenary Session held on 11th June, 2020. The ICAR-Central Inland Agriculture Research Institute (CIARI), Port Blair was adjudged as Best ICAR-AICRP on Tuber Crops Centre for 2019-20 for its various performances.

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55th annual rice research meeting of ICAR-IIRR, Hyderabad

Hyderabad, 11 May, 2020. ICAR-Indian Institute of Rice Research (IIRR), Hyderabad organized the Virtual 55th Annual Rice Research Group Meeting. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) emphasized on importance of digital platform in facilitating the much needed participation of senior officials of ICAR as well as experts in the All India Coordinated Research Projects Meetings for ensuring an effective outcome. The DG accentuated on enhanced rice production that has also given the confidence to explore diversion of its use for bio-

ethanol production. Emphasizing on Production Oriented Survey of ICAR-IIRR that should help in guiding policy makers in rice sector, Dr Mohapatra suggested for utilizing the hybrid rice production strategy to enhance the rice productivity. He stressed on encouraging the young researchers towards hybrid rice research.

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Annual group meeting of AICRP on different *kharif* pulses

Kanpur, 2 June, 2020. The Virtual Annual Group Meet on *Kharif* Pulses—Pigeon pea, Mungbean, Urdbean and Arid Legumes under aegis of All India Coordinated Research Projects on Pigeon pea, MULLaRP and Arid Legumes was organized. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) applauded the Pulses Fraternity's efforts for marching towards pulses revolution in the country. Dr Mohapatra emphasized on the need for sustaining the gains witnessed recently in the pulse crops via increasing the productivity in most of the pulse crops.

Reviewing the progress of different programmes under the three AICRPs, viz. Pigeon pea, MULLaRP and Arid Legumes, Dr Tilak Raj Sharma, DDG (Crop Sciences), ICAR stressed on intensifying the research efforts on pre-breeding through embracing new tools and technologies to overcome a variety of barriers of wide hybridization. Dr NP Singh, Director, ICAR-IIPR, Kanpur, Uttar Pradesh apprised about self-sufficiency in pulses production achieved through the technological breakthroughs in pulses research and development delivered by three AICRPs on pulses.

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Annual group meeting of Castor, Sunflower and Niger

Hyderabad, 26 May, 2020. ICAR-Indian Institute of

Oilseeds Research (IIOR), Hyderabad organized the "Virtual Annual Group Meeting of Castor, Sunflower, Sesame and Niger". Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) accentuated on the need to harness the benefits of advancement in genomics in genetic improvement of oilseeds. Dr Mohapatra highlighted the importance of developing appropriate SOPs and facilities for phenotyping for the various biotic and abiotic stresses and providing the adequate training to AICRP Scientists in the niche areas. Dr Tilak Raj Sharma, DDG (Crop Science), ICAR stressed on the need for extensive utilization of pre-breeding, speed breeding and allele mining tools and techniques to bring out significant yield enhancement and quality improvement in the oilseed crops.

Dr DK Yadav, ADG (Seeds), ICAR highlighted the need for replacing the old varieties with the newly released cultivars. Dr SK Jha, ADG (O&P) urged the scientists for addressing the gaps in FLDs for expanding the area under oilseeds. Dr MK Naik, Vice-Chancellor, University of Agricultural and Horticultural Sciences, Shivamogga, Maharashtra emphasized on identifying one hotspot area for each of the diseases and conducting the screening trials to identify the resistant lines for exploitation in the breeding programmes. Dr PK Chakrabarthy, Member, Agricultural Scientists' Recruitment Board urged on considering the approaches for conservation and deployment of pollinators while developing the pest management strategies. Dr P Raghava Reddy, Former Vice-Chancellor, Acharya NG Ranga Agricultural University, Hyderabad emphasized on the need for setting the higher targets for yield and utilizing the germplasm available for enhanced tolerance to biotic and abiotic stresses and sustainability in production. Dr A Vishnuvardhan Reddy, Director, ICAR-IIOR and Dr Rajani Bisen, Incharge, Project Coordinating Unit (Sesame and Niger) presented the achievements of 4 Kharif Oilseed Crops.

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Meeting on ICAR-Geoportal Spatal Data Infrastructure

Nagpur, 2 June, 2020. ICAR-National Bureau of Soil Survey and Land Use Planning (NBSSLUP), Nagpur organized the Virtual Meeting of Experts on "ICAR-KRISHI Geoportal Spatial Data Infrastructure and

Applications—Way forward". Dr Suresh Kumar Chaudhari, DDG (National Resource Management) and Chairman, Steering Committee, ICAR Research Data Repository for Knowledge Management, ICAR emphasized on the need of convergence of all the repositories in ICAR-KRISHI Geoportal through interoperability with other Geoportals for developing the services and applications for the users. Dr Tauqueer Ahmad, Director, ICAR-Indian Agricultural Statistics Research Institute (IASRI), New Delhi stressed on the need to strengthen ICAR KRISHI portal for providing services in different agricultural applications to the stakeholders. Dr Rajender Parsad, Principal Investigator, ICAR-KRISHI emphasized on developing synchronization mechanism and strategy for ICAR-GeoPortal. Dr P Chandran, Director, ICAR-NBSSLUP, Nagpur, highlighted the need of interoperability of Geoportals with feedback mechanism to get back the value-added information to Geoportals.

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National group meeting on forage crops

Jhansi, 1 June, 2020. ICAR-All India Coordinated Research Project on Forage Crops and Utilization, Jhansi, Uttar Pradesh organized the "Virtual National Group Meeting on *Kharif*-2020". Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) highlighted the need of forage crops technologies for enhancing the farmer's income and increasing livestock productivity. Appreciating the technologies and varieties developed during the last 3 years, Dr Mohapatra urged for innovations, technology development, their effective dissemination through demonstrations and use of digital platforms, particularly, in regional languages. The DG stressed on critical appraisal of schemes and centres' performance, their need based resource strengthening and reorienting them for achieving the desired outputs.

Dr Tilak Raj Sharma, DDG (Crop Sciences), ICAR accentuated on pre-breeding by using the diverse gene pools to develop parental lines with resistance to major biotic and abiotic stresses along with high fodder yield. He urged for more active collaboration with related crop Institutes developing comprehensive and adoptable technologies in a synergistic manner. Dr VK Yadav, Director, ICAR-

IGFRI, Jhansi, Uttar Pradesh highlighted the various new initiatives being taken by the Institute to augment the fodder resources in the country. Around 20 Publications including ICAR-AICRP on Forage Crops and Utilization's Annual Report and 19 Farmers' Friendly Literatures in regional / national languages were released by the dignitaries.The dignitaries also felicitated the various ICAR-AICRP Forage Centres for developing varieties and technologies during the last year. The ICAR-AICRP on Forage Crops, Tamil Nadu Agricultural University, Coimbatore Centre was awarded the Best Performing Centre Award.

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Workshop of 51 KVKs of Maharashtra and Goa

Pune, 27 May, 2020. ICAR-ATARI, Pune, Maharashtra organized the "Virtual State Level Online Annual Action Plan Workshop of 51 KVKs of Maharashtra (49) and Goa (2)". Dr Ashok Kumar Singh, DDG (Agricultural Extension), ICAR urged the KVKs for changing the way of working and maintaining the tempo and zeal to do work. He emphasized on the upcoming Kharif season along with the secondary agriculture, floriculture, IFS model, marketing system and supply chain management. Dr KP Viswanatha, Vice-Chancellor, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra stressed on carrying out the planning meticulously considering the area specific problems. He also accentuated on focusing on thr weekly planning, end-to-end planning, marketing intelligence, reduction in cost

of cultivation at KVK level. Dr SK Singh, Director, ICAR-ATARI, Jodhpur accentuated on the adoption of problem solving approach, providing alternative solution and technology integration. Dr Atar Singh, Director, ICAR-ATARI, Kanpur, Uttar Pradesh urged the KVKs for focusing on nutria-rich minor millets, simple IPM modules for pulses/ oilseed crops and developing functional demonstration units. Dr Lakhan Singh, Director, ICAR-ATARI, Pune urged to make contingency planning to combat the distress situation. Dr Singh stressed on including the latest cultivars/ technologies developed by the State Agricultural Universities and ICAR Institutions under on farm trials and frontline demonstrations.

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Webinar on Biodiversity

Bengaluru, 5 June, 2020. ICAR-Indian Institute of Horticultural Research (IIHR), Bengaluru organized a Webinar on "Conserve and Celebrate Biodiversity on the occasion of the World Environment Day-2020. Dr MR Dinesh, Director, ICAR-IIHR emphasized the need for conservation in agricultural and horticultural crops. He highlighted the Institute's role and activities in collecting and conserving the germplasm in various horticultural crops. Dr Dinesh also emphasized the role of the Institute in popularizing the three jackfruit varieties collected from the farmers' field.

In his deliberations on "Tree Fruit Diversity - India's goldmine", Dr R Ramanatha Rao, Co-Founder, Global Research for development Support Ventures highlighted about the fruit biodiversity and its contribution towards the nutrition, economy and sustainability. He also emphasized on the role of custodian farmers in conserving the diversity on farm.

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Webinar on Sugarcane

Lucknow, 12 June 2020. ICAR-Indian Institute of Sugarcane Research (IISR), Lucknow, Uttar Pradesh organized a Webinar on "Sugarcane Sector in Post COVID-19 and Way Forward".

Shri VK Shukla, Additional Cane Commissioner, Govt. of Uttar Pradesh outlined the Government's initiatives taken during the COVID-19 Pandemic and the future strategy for smooth sailing of the industry in the state. Shri Roshan Lal Tamak, Executive Director and CEO, Sugar Business, DCM Shriram discussed the issues related to sugar industry perspectives encompassing factory operations, marketing, hygiene, farmers' livelihood and digitalization, etc.

Professor Narendra Mohan, Director, National Sugar Institute, Kanpur, Uttar Pradesh discussed in detail on the topic "Reorienting technological approach for process and product diversification to mitigate Corona crisis". He urged industry executives for

revisiting the sugar mills during the off-season to decide revised standard operating procedure in the wake of the Corona crisis. Dr AD Pathak, Director, IISR, Lucknow, Uttar Pradesh shared his views on emerging challenges in sugarcane research and development to address issues in post COVID-19 era.

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Webinar on FPOs: A future need

Baramati, Maharashtra, 26 May, 2020. The Agricultural Development Trust's KVK, Baramati, Pune, Maharashtra organized a Webinar on "Farmers' Producers' Organizations (FPOs): A Future Need". Apprising farmers about the importance of the FPOs and group dynamism, the Chief Guest, Dr Lakhan Singh, Director, ICAR-Agricultural Technology Application Research Institute, Pune, Maharashtra encouraged them for establishing the FPOs/ FPCs. Dr Singh also appreciated the work done by KVK, Baramati for the FPOs. Dr Syed Shakir Ali, Head,

KVK, Baramati outlined the participants about the various activities of the KVK related to FPOs. Dr Sanjay Pandhare, Co-coordinator Maha FPO Federation, Pune apprised the farmers about the importance of FPOs, their rules and regulations and different Government Schemes for the FPOs. The Webinar was aimed at creating the awareness and motivation in the farming community.

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Webinar on formation of FPOs

Narayangaon, Pune, 9 June, 2020. The KVK, Narayangaon, Pune; Project Director, Agricultural Technology Management Agency (ATMA), Pune and Maha Farmers' Producers' Organization Federation (FPO), Pune, Maharashtra jointly organized a Webinar on "Formation of Farmers' Producers' Organizations". Dr Lakhan Singh, Director, ICAR-ATARI, Pune, Maharashtra emphasized on forming the FPOs and their benefits to the farmers. He stated about principles of voluntary and open membership, farmer-member economic participation, self help, capacity building, cooperation, working together, concern for community and sustainable development followed by the FPOs.

Dr Sanjay Pandhare, Enterprise and Resource Generation Specialist-SMART Project, Government of Maharashtra stated about the scope and objective of the FPCs. He also advised about the complete documentation process and other important information required for establishing the company. Shri Rajendra Sabale, Project Director, ATMA, Pune outlined about the establishment of more than 400 Farmers' Producers' Companies (FPCs) in the last 8 to 9 years under the MACP Project out of which most of the FPCs are working successfully and helping the farmers. Dr Prashant Shete, Head, KVK, Narayangaon, Pune urged farmers to join orientation training courses at the KVK. Shri Satish Pate, President, Shivtej Farmers' Producers' Company, Narayangaon, Pune stressed on having unity for the success.

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Webinar on ICT tools for resilient agriculture education in India

New Delhi, 21 May, 2020. The Education Division of ICAR, New Delhi organized a Webinar on "Panel Discussion on ICT Tools for the Resilient Agriculture Education in India". Dr RC Agrawal, DDG (Agricultural Education), ICAR and National Director, National Agricultural Higher Education Project (NAHEP), ICAR, New Delhi highlighted that NAHEP jointly financed by the Government of India and the World Bank supports the participating Agricultural Universities and ICAR in providing more relevant and higher quality education to Agricultural Universities' students.

Dr Anil Rai, ADG (ICT), ICAR discussed about the existing system of ICAR related to ICT and the ICAR's future plans related to ICT. Dr N Kumar, Vice-chancellor, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu briefed about the ICT activities of TNAU regarding the online exams, online classes and many other academic activities during the COVID-19 lockdown. Dr Kelly Millenbah, Senior Associate Dean and Director (Academic and Student Affairs), College of Agriculture and Natural

Resources, Michigan State, USA, discussed on MSU response to the academic continuity due to COVID-19 and use of ICT and Remote learning across research, education and extension by the University.

Dr Dilupa Nakandala, Associate Professor and Associate Dean (Postgraduate Studies), School of Business, Western Sydney University, Australia outlined the various options for online classes and response of the University—Western Sydney University to academic activities during the Pandemic. The Webinar was aimed at exploring the use of ICT for increasing the resilience of the Agricultural Higher Education in the face of natural disaster, including the current pandemic, especially, how the current COVID-19 Pandemic has disrupted the academic environment in the Agricultural Universities, the national and global examples of ICT use to address these disruptions and the resilience planning for Academic continuity.

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Webinar on Mithun husbandry

Medziphema, Nagaland, 5 June, 2020. ICAR-National Research Centre on Mithun, Medziphema, Nagaland organized a Webinar on "Perspective of Agroforestry for Improved Mithun Husbandry" on the occasion of World Environment Day. Dr SK Chaudhari, DDG (NRM), ICAR applauded the Institute's conservation efforts for a steady increase in Mithun population in the country. Dr Chaudhari stressed on the judicious selection of trees for improved Mithun nutrition and the adoption of the Khonoma model of agroforestry. Appreciating the popularization of semi-intensive Mithun farming, Dr Habibur Rahman, Regional Representative (South Asia), International Livestock Research Institute, and Former DDG (Animal Science), ICAR urged for transferring the developed technologies and packages of practices to poor farmers. Dr Shiv Kumar Dhyani, Senior Agroforestry Specialist, ICRAF-South Asia Regional Programme deliberated on the researchable issues pertaining to nutrient composition and strategic propagation of fodders for mithun husbandry. Dr Virendra Pal Singh, Representative for South Asia at CIAT, CGIAR stressed on determining the forest land's carrying capacity for making Mithun Husbandry sustainable. Dr Abhijit Mitra, Director, ICAR-NRC on Mithun highlighted the socio-economic importance of champion animal of North-East India-Mithun.

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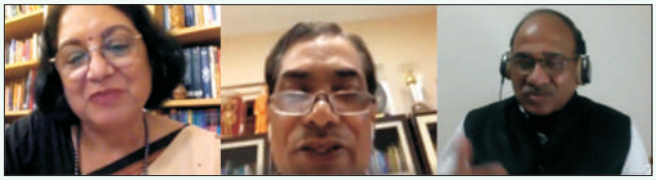
Webinar on Science, Society and Exponential change

New Delhi, 20 May, 2020. The Education Division of ICAR, New Delhi organized a Webinar on "Science, Society and Exponential Change: Re-imagining the Future". Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) stated about initiation of the use of many exponential disruptive technologies in Agriculture by the ICAR. He emphasized that the Council is keeping pace with the latest technologies. Dr RC Agrawal, DDG (Agricultural Education), ICAR informed participants about the articulation of the advisories under the facets of Curricula delivery through e-learning; Implementation of Student READY Programme; rescheduling of Academic Session-2020-21; conduct of ICAR-All India Entrance Examination for Admission (ICAR-AIEEA); Examinations and Evaluation; Students Research and its Evaluation, etc.



Dr Pratibha Jolly, Former Principal, Miranda House College, Delhi University, Delhi emphasized that transformative changes in the educational ecosystem will hold the key to the future. Dr Jolly accentuated that underpinning the new ways of doing things is the spectacular evolution of computing power that is irrevocably changing the structure of organizations and business alike. She emphasized on rapid diffusion of technological tools and services, digital transformation and progression to a highly networked and knowledge-based society that is now clearly discernible to the society at large.

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Challenges posed by COVID-19 on production mechanization

Bhopal, 8 June, 2020. ICAR-Central Institute of Agricultural Engineering (CIAE), Bhopal, Madhya Pradesh organized a Web-based Workshop (Webshop) on "Challenges Posed by COVID-19 Pandemic on Production Mechanization and Way Forward during and post COVID-19 Era". Dr K Alagusundaram, DDG (Agricultural Engineering), ICAR in his address emphasized the need of mechanization and proper planning of activities for sustainable agricultural production during the COVID-19 situations. He urged ICAR-All India Coordinated Research Projects and

State Governments to address the region specific problems in the current scenario.

Dr SN Jha, ADG (PE) stressed on the need to reorient the future research works towards automations in agricultural operations using robotics, Internet of Things, sensor networks, etc. Dr Kanchan K Singh, ADG (Farm Engineering), ICAR stressed on the need for converting the challenges into opportunities. He opined for taking skill development programmes at a faster pace to generate employment for the migratory labor.

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Zone-XI farmers' FIRST programme

Bengaluru, 11 June, 2020. ICAR-ATARI, Bengaluru organized the "Review cum Action Plan Workshop and Zonal Programme Management Committee (ZPMC) meeting of Farmer FIRST Programme". Dr MJ Chandre Gowda, Chairman, Zonal Programme Management Committee (ZPMC) and Director, ICAR-ATARI, Bengaluru emphasized the need to link the current year progress with the cumulative progress achieved over the years. He stressed that the Action Plan must give attention to study impact of each intervention in comparison with benchmark data. Dr AK Mehta, Member, ZPMC and Former ADG (AE), ICAR urged for implementing all technological modules effectively. He also stressed on taking special efforts for tackling the mastitis in dairy animals. Dr H Phillip, Member,

ZPMC and Former Director of Extension, Tamil Nadu Agricultural University, Coimbatore highlighted the importance of documentation with exact data and standardized methodology. The Three implementing Centres, viz. ICAR-CPCRI, Regional Station, Kayamkulam; ICAR-IIHR, Bengaluru and ICAR-NIANP, Bengaluru presented the progress for year 2019-20 and Action Plan for 2020-21.

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29th Annual workshop of AICRP

Bengaluru, 21 May, 2020. ICAR-National Bureau of Agricultural Insect Resources (NBAIR), Bengaluru organized the "Virtual XXIX Annual Workshop of All India Coordinated Research Project on Biological Control of Crop Pests". Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) urged research organisations to go beyond commercialization by strengthening the partnerships with private companies for testing, validating and registering the potential bio-control products. The DG stressed on exploring the measures to advise the companies for reducing the pesticides applications. Accentuating on establishing an active collaboration with the State Government, the DG, KVKs urged for conducting more field demonstrations and trainings. He also stressed on conducting field trials on biological control in North-Eastern States, especially, in Sikkim.

Dr Tilak Raj Sharma, DDG (Crop science), ICAR accentuated on the need for using local isolates of bio-agents and studying their impact through socio-economic expert analysis. Dr Sharma urged for studying the market share of the bio-agents in comparison with chemical insecticides. Stressing on the need for conducting the research on plant-pest-microorganism interactions and stability and host range of bio-agents, the DDG also emphasized on developing the nano-carriers for bio-pesticides and drones to apply bio-agents.

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River ranching and Dolphin awareness

Barrackpore, Kolkata, 11 June, 2020. ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata conducted a "Series of 5 consecutive River Ranching and Dolphin Awareness Programmes" from 11th to 16th June, 2020. The programmes were organized as part of "Namami Gange" during post lockdown situation. Dr B.K. Das, Director, ICAR-CIFRI and Principal Investigator, CIFRI-NMCG Project highlighted the importance of the day that calls for the sustainable fishery of open waters, conservation of aquatic biodiversity and restoration of fish habitat, etc. The ranching programmes extended over four major districts - Burdwan, Nadia, Hooghly and North 24 Parganas of West Bengal. A total of 2 lakh advanced fingerlings were released during the ranching week at different stretches of the river Ganga namely Nabadwip, Kalna, Balagarh, Tribeni and Barrackpore.

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Annual review workshop of farmers' programme

New Delhi, 17 June, 2020. The two-day "Virtual Annual Review Workshop of Farmers' FIRST Programme was organized by Agricultural Extension Division, ICAR. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) stressed on documentation and economic analysis of the intervention under FFP. Dr Mohapatra also accentuated a paradigm shift from production-centric to post-production and markets-centric approach for enhancing the farmers' income. Dr Mohapatra urged to take into account the farmers'

perspectives and innovations while implementing the project. He stressed that the project should be focused towards benefiting the farmers. He emphasized for the convergence of Farmers' FIRST Programme with the Government schemes like *Aatma Nirbhar Bharat Abhiyan*, etc.

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Ashwagandha stakeholders' Meet-2020

Anand, Gujarat, 20 May, 2020. ICAR-Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand, Gujarat organized the virtual "*Ashwagandha* Stakeholders' Meet —Opportunities and Challenges in the wake of COVID-19 Pandemics in India". Dr Anand Kumar Singh, DDG (Horticulture Science), ICAR urged farmers to harness the potential of medicinal and aromatic plants for doubling farmers' income. He emphasized on developing research programmes for application of space technologies for accurate estimation of acreage of *Ashwagandha* and use of sensors for quality assessment.

Dr T Janakiram, ADG (Horticulture Science), ICAR stressed on addressing the gap between demand and supply of Ashwagandha in the country by strengthening the seed chain and value-addition in the crop. Dr PK Trivedi, Director, CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP) Lucknow highlighted on overview of the research achievements in *Ashwagandha* of CSIR-CIMAP, Lucknow. Dr HS Gupta, Former Director, IARI, New Delhi urged for setting-up of a certification agency to ensure the best quality planting materials for cultivation. Dr Gupta also emphasized on having Farmers' Producers' Organizations (FPO) in *Ashwagandha* to ascertain the best market price to farmers. Dr Satyajit Roy, Director, ICAR-DMAPR, Anand, Gujarat outlined the genesis and research achievements of ICAR-DMAPR. He highlighted the important role played by *Ashwagandha* in ensuring primary healthcare.

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Meeting of ICAR-DMAPR, Anand and CSIR-CIMAP, Lucknow

Anand, Gujarat, 26 June, 2020. ICAR-Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand, Gujarat and CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, Uttar Pradesh organized a "Collaborative Virtual Meeting". Dr RK Singh, ADG (Commercial Crops), ICAR appreciated efforts taken by both Directorates. Dr S Roy, Director, ICAR-DMAPR, Anand, Gujarat delivered the introductory address. The modalities of testing medicinal and aromatic plants entries from the CSIR-CIMAP, Lucknow, Uttar Pradesh in multi-locational trials of AICRP on MAP&B and possible areas of collaboration in medicinal plants in post COVID-19 situation were emphasized during the Webinar.

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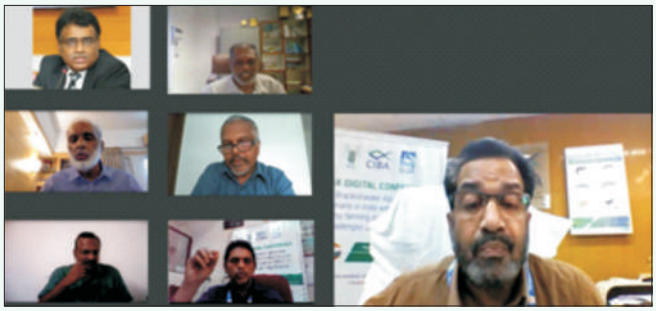
Digital conference on Brackishwater aquaculture

Chennai, 3 June, 2020. ICAR-Central Institute of Brackishwater Aquaculture (CIBA), Chennai in association with the Society for Coastal Aquaculture and Fisheries organized the first Digital Conference on "Brackishwater Aquaculture Scenario in India with a focus on shrimp farming during COVID-19: Challenges and Way Forward".

Dr Jujjavarapu Balaji, IAS, Joint Secretary, Fisheries, Government of India highlighted the programmes envisaged by the Central Government for supporting and promoting Indian Aquaculture Sector including shrimp farming. He stressed on the need for diversifying the species in the farming basket. Dr Balaji also outlined about having native Indian white shrimp as species of choice for the future and its genetic improvement through selective breeding.



Highlighting the ICAR-CIBA's significant role in the Brackishwater Aquaculture Sector, Dr Pravin Puthra, ADG (Marine Fisheries), ICAR emphasized on the extent the ICAR can contribute to the sector. Dr Arul Victor Suresh, President, Society of Aquaculture Professionals (SAP), urged the stakeholders to communicate frequently and work together, particularly, concerning the policies for ensuring the sustainable development of the brackishwater aquaculture. Dr KK Vijayan, Director, ICAR-CIBA highlighted the various issues and challenges faced by the different stakeholders of the brackishwater aquaculture sector, particularly, by shrimp farming sector during COVID-19 lockdown scenario. He articulated the survey conducted by ICAR-CIBA

projected a scenario of 40% loss in farmed shrimp production and export worth ₹ 10,000 crores due to lockdown. Resource scientists from ICAR-CIBA also shared possible adaptive measures pertaining to seed production and supply, species diversification, feed on input supply, water quality, disease diagnosis and management, farm automation, institutional credit and insurance support and extension outreach through training and communication through mobile application and digital platforms, etc.

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Annual conference of VCs

New Delhi, 10 April 2020. The Annual Conference of Vice-Chancellors (VCs) of Agricultural Universities (AUs) was held through Video Conferencing under the Chairmanship of Dr T Mohapatra, Secretary, DARE and ICAR. Dr T Mohapatra explained the objectives of virtual conference during COVID-19 lock-down. He appreciated the efforts made by universities in taking necessary steps to continue academic, research and extension activities during the crisis. He emphasized on the need to strengthen the required online resources for making the learning process more effective. The DG, ICAR stressed upon the need to conduct classes regularly and keep active connect with students during Covid-19 crisis. He advised to make best use of Turnitin anti-plagiarism software, made available by MHRD. He highlighted the capacity building of faculties and students under NHAEP, in various Centres of Excellence abroad, and appreciated the fact that undergraduate students have got excellent exposure. He stressed upon further need to take Student READY programme very seriously and urged VCs to look at this component critically for making students future ready and demand responsive. In this regard, a blue print on strengthening of activities of Student READY need to be prepared by the Council.

Mr Sanjay Singh, Additional Secretary, DARE and Secretary, ICAR stressed that such virtual meetings should be held more frequently by taking advantage of the latest technology which shall save time and other resources. Dr RC Agrawal, DDG (Agril. Education) informed about various advisories given to agricultural universities and the decision to extend the date of submission of Online Application Forms for ICAR's AIEEA from 31 March to 30 April 2020.

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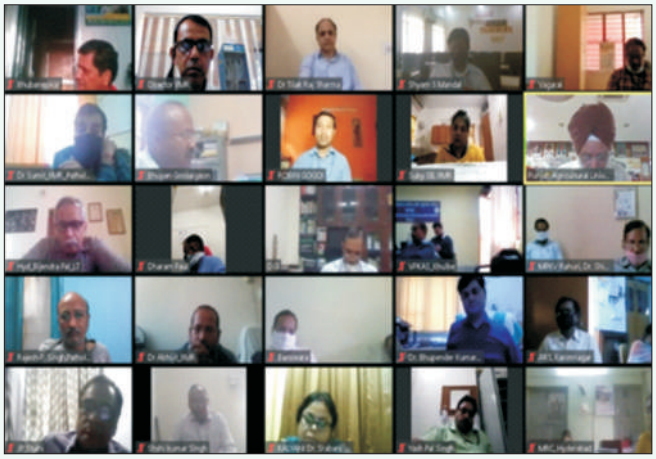
Online workshop of AICRP on maize

New Delhi, 20 April, 2020. ICAR, New Delhi conducted "63rd Online Workshop of the ICAR-All India Coordinated Research Project on Maize". The three day online workshop was organized to contain the spread of deadliest Coronavirus Disease-19 (COVID-19). Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR)



emphasized on the importance of ICAR-Indian Institute of Maize Research (IIMR), Ludhiana, Punjab for carrying out the basic, strategic and applied research to enhance the crops' production, productivity and its sustainability. The DG launched a Bilingual Mobile App "MAKKA" (Maize Agri-Knowledge and Knowhow App) for farmers, industries and other stakeholders in maize. Dr Tilak Raj Sharma, DDG (Crop Science), ICAR stated that it is the first of its own kind online review workshop of any AICRPs of ICAR. Dr Sharma emphasized that Maize is a very important crop used as poultry and animal feed and raw material in starch industries besides, being used as food. Dr SK Chaudhari, DDG (Natural Resource Management), ICAR and Dr PK Chakrabarty, Member, Agricultural Scientists' Recruitment Board along with other senior officials of ICAR also attended the online workshop. Around 8 new maize hybrids were identified as promising to be released in different seasons and agro-ecologies of the country during the workshop. The Zero Tilled Maize after Rice, Green Seeker Sensor-based Nitrogen Management, Post Emergence Herbicide for Weed Control (Atrazine with Tembotrione/ Topramezone at 15 days after sowing) were recommended to enhance farm profitability, input use efficiency and reduce drudgery in maize production.

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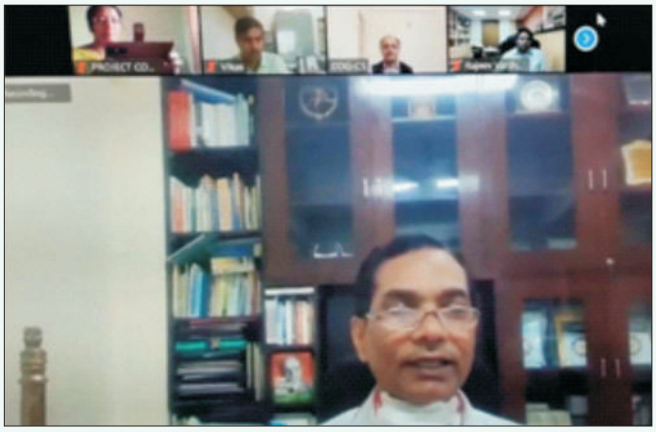
55th annual group meeting on pearl millet

Jodhpur, 29 April, 2020. ICAR-AICRP on Pearl Millet,



Jodhpur, Rajasthan organized its 55th Annual Group Meeting through Video Conferencing. Chief Guest, Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) applauded the participants for successfully coordinating the various activities of ICAR-AICRP on Pearl Millet. Dr Tilak Raj Sharma, DDG (Crop Sciences), ICAR emphasized on carrying out the basic and strategic research for enhancing crops' production, productivity and its sustainability. Dr Sharma stressed on pre-breeding by using the diverse gene pools for developing parental lines with resistance to major Pearl Millet diseases like blast, downy mildew and rust. The Publications on Pearl Millet were also released during the plenary session. The ICAR-AICRP on Pearl Millet presented various awards to Best Performing Centers and Scientists in different categories.

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International Linkages

FAO includes ICAR advisories for fisheries sector across the globe

New Delhi, 7 May 2020. ICAR, DARE, Ministry of Agriculture and Farmers Welfare, Govt. of India, through its research Institutes have taken several innovative steps to sensitize all concerned in different sub-sectors. Covid-19 pandemic has significantly affected the fisheries and aquaculture sectors in a multitude of ways in the country. ICAR institutes released Advisories to fisheries sector across the globe in 12 languages.

In fisheries sector, including capture fisheries, aquaculture and other associated activities, ICAR took lead in developing and issuing advisories through the Fishery Institutions, for safety of the workers and preventing the spread of the disease. In this endeavor, ICAR-Central Institute of Fisheries Technology (CIFT), Kochi prepared advisories for the benefit of fishermen, fishing boat owners, fishing harbour, fish market and seafood processing plants in 10 different regional languages, besides English and Hindi.

Recognizing the importance of these timely advisories, the Food and Agricultural Organization (FAO), Rome has recommended these advisories prepared by ICAR-CIFT and ICAR-CIFRI by including them as Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries under the Asia-Regional initiatives for the benefit of fisheries sector across the globe (Webpage: http://www.fao.org/3/ca8959en/ca8959en.pdf). This is a huge acknowledgement of efforts by ICAR and its institutes. The global fishery sector is expected to benefit from these efforts of the Council.

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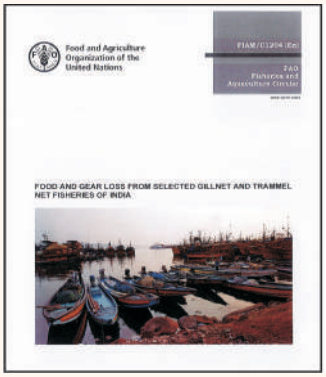
FAO publishes ICAR-CIFT's work

Kochi, 18 May 2020. ICAR-Central Institute of Fisheries Technology's (CIFT's) work on "Food and fishing gear loss", the first attempt from the country in the area of fishing gear loss has got appreciation from Rome based Food and Agricultural Organization (FAO) and published by the world food body as 'FAO Fisheries and Aquaculture Circular No.1204 "Food and gear loss from selected gillnet and trammel net fisheries of India" (Thomas, SN, Edwin, L, Chinnadurai, S, Harsha, K, Salagrama, V, Prakash, R, Prajith, KK, Diei-Ouadi, Y, He, P and Ward, A 2020. Food and gear loss from selected gillnet and trammel net fisheries of India. FAO Fisheries and Aquaculture Circular No. 1204. Rome, FAO. https://doi.org/10.4060/ca8382en).



This publication assumes significant importance as it is the first work from India on assessment of abandoned, lost or otherwise discarded fishing gear (ALDFG) which is a major problem leading to "ghost fishing". Besides, assessment studies on food loss from the fish harvest sector is a rather unexplored area in the country. In the context of emerging issues in food security and resource conservation, this work is very relevant.

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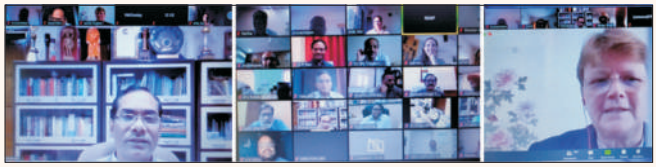
Review of DARE-ICAR research collaboration with CGIAR centres

New Delhi, 4 May 2020. DARE/ICAR conducted the Annual Review Meeting of its Partnership for Agricultural Research and Development with the Consultative Group on International Agricultural



Research (CGIAR) Centres under Chairmanship of Dr T Mohapatra, Secretary, DARE and DG, ICAR. CGIAR has 15 international organizations working on food and agriculture. India is a donor member of CGIAR System for decades and contributes substantially through Window-I and Window III of the CGIAR System. Presently, India is one of the voting members in the CGIAR System Council representing the South Asia Constituency. The partnership between DARE/ICAR and the CGIAR system dates back to 1974 and so far ICAR has developed strong working linkages with 12 of them.

A total of 102 participants joined the meeting from different CG organizations including DG, ICRISAT, as well as senior officials of DARE and ICAR. Dr Mohapatra gave an account of the Covid-19 situation and urged all to carry out activities using digital platform as much as possible. Shri Sanjay K Singh, Additional Secretary (DARE) and Secretary (ICAR) emphasized on developing SoPs for laboratory as well as field functions so that activities can continue. DG, ICAR recorded appreciation to all the CG Centres for their research partnership in steering Indian agriculture. Further, he urged that the products emerging out of this ICAR-CGIAR partnership need to be systematically promoted to realize the impact of this collaboration.

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MoU

ICAR and IFFCO inks MoU

New Delhi, 10 June, 2020. ICAR and Indian Farmers Fertilizer Cooperative Ltd. (IFFCO) signed a Memorandum of Understanding (MoU) here. The MoU aims at carrying out the collaborative research, test and validating the different products through ICAR Institutes and KVKs, disseminate technological advancements through training, awareness programmes, campaigns, field trials and demonstrations for the farmers' benefits.

Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) emphasized that the collaborative research and extension with the reduction of fertilizer's consumption to even 15% will be a significant contribution. Dr Mohapatra stressed on technology validation and commercialization. Dr Udai Shanker Awasthi, Managing Director, IFFCO stressed that the MoU will help in solving farmers' problems. Dr Ashok Kumar Singh, DDG (Agricultural Extension), ICAR briefed about the MoU. Shri Yogendra Kumar, Marketing Director, IFFCO stated that the MoU will help in testing, validating and disseminating the

innovative products at a fast pace that will benefit the farmers. Dr Malhotra, Commissioner (Agriculture); Dr Randhir Singh, ADG (Agricultural Extension), ICAR; Dr Shiv Prasad Kimothi, ADG (Coordination), ICAR; Directors of ICAR-ATARIs and representatives of KVKs were present during the occasion.

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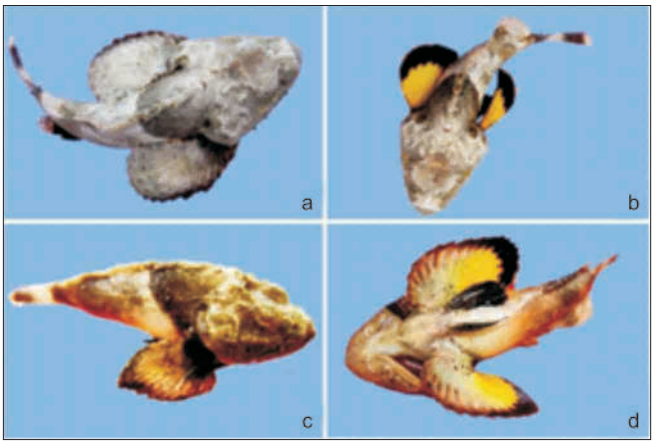
Capacity Building

ICAR-CMFRI finds rare scorpion fish

Kochi, 31 May 2020. ICAR-Central Marine Fisheries Research Institute (CMFRI) scientists have found alive a rare fish that changes colour and carries neurotoxic venom in its spines, for the first time in Indian waters.

Camouflaged within seagrass meadows, the band-tail scorpionfish (*Scorpaenospsis neglecta*) was found off Sethukari coast in the Gulf of Mannar during an underwater exploratory survey of the seagrass ecosystem in the region. Dr R Jeyabaskaran, Senior Scientist, ICAR-CMFRI led the team of researchers.



The fish is called 'scorpion fish' because its spines contain neurotoxic venom. A nocturnal feeder, the band-tail scorpion fish lays motionless in the sea bottom and waits for the prey to come close to it. Most of them feed during night time with an ability to attack and suck its prey in lightning speed. Having a highly powerful sensory system, the fish could even detect respiratory ventilation flows produced by crabs at a distance of 10 cm in dark environment. Unlike other fishes, band-tail scorpion fish uses its lateral sensory system instead of eyes to hunt its prey. This fish mainly feeds on small benthic fishes like gobies and blennies, crustaceans and other benthic macro invertebrates. The specimen was deposited in the National Marine Biodiversity Museum of ICAR-CMFRI.

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Enhancing livelihood through wetland fisheries

East Champaran, Bihar, 18 May 2020. During this challenging time of lockdown, the livelihood of fishers of Kothia *maun* of East Champaran District of Bihar was enhanced through increase in production and productivity and increase in fishing days. Kothia *maun*, located 38 kms of Motihari Town and typically "Oxbow" shaped in appearance has maximum water spread area of 60 ha and the depth ranged between 2-7 m. Around 200 fishers' families earn their livelihoods by carrying out fishing under the control of Tetaria Block Fisherman Cooperative Society. The fishing is being carried out in the wetland as per ICAR-CIFRI's guidelines for wetlands and reservoirs for COVID-19 management like using face cover, maintaining social distance of 1.5 meters between two fishers and a distance of 4 meters between two boats. The fishers harvested around 3.6 tonnes of fish in 10 days and sold them at the wetland site only. The fish catch includes Indian Major Carp Rohu, Catla, Mrigal, Exotic carps Amur carp, Grass carp and small fishes like *Gudusia chapra*. During the lockdown period, the Fisherman Cooperative Society earned ₹4 lacs through open water fisheries. The ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore initiated development project at this wetland in August, 2018 for implementing the scientific management norms in a participatory mode.

The programme "Wetland Fisheries Development Projects of Bihar under Central Sector Scheme (CSS) *Blue Revolution*" has successfully demonstrated the Institute's technological intervention in optimum exploitation of under-exploited wetlands of Bihar in respect of fish yield with financial assistance from NFDB, Hyderabad. The three prolonged strategies adopted by the institute was input, infrastructure and information dissemination to implement fisheries enhancement protocol developed for ox-bow lakes. The ICAR-CIFRI's technological interventions in Kothia *maun* have brought several fold improvements in catch per unit effort, increase in fishing days from 30 days to 90 days and fish yield from 55 to 160 kg/ha. The prolonged fishing days have also reduced migration of fishers for non-fishing jobs to other cities.

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ICAR-CIPHET, Ludhiana develops UViC

Ludhiana, 13 May 2020. ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, Punjab has developed a smart, compact and Portable Smart UViC Disinfection System (named UViC) that is useful in fighting against the COVID-19 Pandemic. The UViC is capable to disinfect the personal items and office stationery, papers, files and similar items for reducing the risk of infection among people. Unlike chemical sanitizers, UViC does not leave a residue and does not require extensive safety equipments. It works as a mode of surface sterilization by destroying the nucleic acid and disrupting the DNA of micro-organisms. The working capacity of the unit in terms of the total surface area of the objects to be treated / exposed is 25 × 25 cm^2. The estimated cost of the unit is approximately ₹ 1,500. However, the system can be scaled up as per the need. The system has been tested for inactivation of *Escherichia coli* as classic examples of gram-negative bacteria. In this experiment, *E. coli* was spread on LB agar plates and half portion of each plate was exposed to UViC radiation. The influence of the treatment parameter,

that is, the time has been investigated on *E. coli*. Findings indicated that no visible *E. coli* colonies were observed after six minutes of continuous UViC exposure. ICAR-CIPHET has granted a licence of this technology to M/s Sakhi Soaps Hindustan Soaps and Salts Company, Prakasam, Andhra Pradesh on 18 May 2020.

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ICAR-CAZRI, Jodhpur designs self-disinfectant walk-in tunnel

Jodhpur, 11 April 2020. ICAR-Central Arid Zone Research Institute (CAZRI), Jodhpur, Rajasthan has developed a Self-Disinfectant Walk-In Tunnel to be used by the persons entering the ICAR-CAZRI campus (24×7). The unit has been fabricated using the angle iron of dimension - 2.43 m×1.21 m×1.82 m (L×W×H) and the structure has been cladded with UV established polythene sheets fixed using aluminum profiles. A tank of 500 liters capacity is being used as a container to fill the disinfectant, that is, sodium hypo-chloride. The total 9 foggers are fixed along the side walls and roof for creating a uniform misting condition inside the chamber. The water supply is pumped to the chamber through a filter using a half HP centrifugal pump. The facility also provides fresh water supply to wash hands with soap after exiting from the disinfectant tunnel. The facility is being used by the instate employees, their family members and laborers working in the Institute. The disinfectant solution required per person for a 5 seconds walk is 275 ml which costs around ₹ 0.20 per person. The estimate cost of complete unit is approximately ₹ 15,000. Further details can be obtained from ICAR-CAZRI Jodhpur.

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Solar-powered vegetable vending vans during lockdown

Bengaluru, April 6, 2020. The hi-tech vans designed by IIHR keep vegetables fresh for two days with the help of evaporating cooling technology at a time when people are living under lockdown. A solar-powered vegetable and fruit vending van designed by the Indian Institute of Horticultural Research (IIHR) has come in handy to buy fresh vegetables near people's houses in a few districts where such vans are deployed by the Horticulture Department. The van is designed to keep vegetables and fruits not only dust-free and hygienic, but also fresh for two days with the evaporating cooling technology, says G Senthil Kumaran, Principal Scientist at the IIHR's Post Harvest Technology and Agricultural Engineering Division, who designed the van in 2017-18. The van has facility to keep trays for storing vegetables, leafy vegetables and fruits with a cooling chamber. In the backside, it has a LED TV for displaying the prices of produce. The TV can also be used for disseminating social messages and crucial information to farmers on horticulture, points out Dr Kumaran. An audio system too has been fitted to provide for announcements. An electronic weighing machine with computerised billing facility too has been provided. The solar-powered vegetable vans have caught the attention of other states too with Haryana government buying three such vans while Kerala has bought one. Haryana has also announced a subsidy on those from its state buying such vans, according to Dr Senthil Kumaran.

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ICAR-NRC on Meat, Hyderabad receives FSSC/ISO 22000 Certification

Hyderabad, 15 June 2020. ICAR-National Research Centre on Meat, Hyderabad has received the Food Safety System Certification (FSSC 22000) V 4.1 Certificate by the BSI India after a series of In-house trainings, GAP analysis, Stage-I and Stage-II Auditing. The scope of FSSC 22000 certification include slaughtering of chicken and processing of ready to eat chicken products. The Institute has successfully implemented the Food Safety Management System (FSMS) in its Meat Products Processing Plant and Poultry Processing Unit since 1st April, 2019. The Institute has been demonstrating the Good Production Practices, implementation of Hazard Analysis Critical Control Point (HACCP) and globally recognized FSMS among the meat/ poultry producers. The team led by Dr S Vaithiyanathan, Director, ICAR-NRC on Meat worked together for successfully implementing the FSMS.

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Sahbhagita reviving hope for doomed poultry industry

Lucknow, 15 April 2020. The *Sahbhagita*, a self-help group formed by the ICAR-Central Institute for Subtropical Horticulture (CISH), Lucknow, Uttar Pradesh has come up as a helping hand for enhancing the egg and chicken production in the mango belt,

Malihabad. Dr Shailendra Rajan, Director, ICAR-CISH stated about the launching of the intervention of Mango based poultry farming in 3 villages of Malihabad covering 100 farm families by the Institute around two years ago. Farmers were provided the capacity building at the ICAR-Central Avian Research Institute (CARI), Bareilly, Uttar Pradesh to make them self-reliant. During the lockdown, the farmers of Sahbhagita were provided the technical information through WhatsApp group and telephone. Sharing his experience, Shri Mohammad Shafiq stated that during the lockdown, he is fetching ₹ 300 per tray, which is ₹ 30 per egg in case of Kadaknath breed. The trained farmers and SRF posted in village proved to be very helpful in educating the farmers regarding the social distancing and hygiene.

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PUSA sanitizing tunnel and smart hand wash

New Delhi, 16 April 2020. Shri Kailash Choudhary, Union Minister of State for Agriculture and Farmers' Welfare inaugurated a unique facility of PUSA Sanitizing Tunnel and Smart Hand Wash to fight menace of Novel COVID-19. Dr Trilochan Mohapatra, Secretary (DARE) and DG (ICAR) and Dr A K Singh, Director, ICAR-IARI, New Delhi were also present on the occasion. The facility has been designed, fabricated and installed by Division of Agricultural Engineering, ICAR-IARI, New Delhi. The foot operated Smart Hand Wash System enables washing of hands using liquid soap without touching the soap dispenser and the water tap. The sensor based sanitization tunnel uses Quaternary Ammonium Compounds (QAC) at a concentration of 0.04% for full body fogging of the person passing through tunnel for a period of 10 second.

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Bamboo disinfectant tunnel developed

Jhansi, Uttar Pradesh, 21 April, 2020. Shri Lal Chand and Dr Sangramchavan, Scientists of ICAR-Central Agroforestry Research Institute (CARI), Jhansi, Uttar radesh along with the other scientists of the Institute have constructed a Disinfectant Tunnel. The tunnel to be installed near the main entrance of the Institute has been prepared by bamboo. The tunnel has been covered with Nylon Mesh. It consists of a 500 water tank connected half HP Motor along with one inch filter and 9 foggers. With this, the fogging of around

1% solution of sodium hypochloride is carried out. The tunnel can be helpful in disinfecting staff members of the Institute and their family members each time they enter the tunnel. Taking the possible side-effects of sodium hypochloride on the human body, it is advised to use it in limited quantity. The tunnel can be helpful in preventing the spread of such deadliest diseases in the near future as well. The facility to wash hands is also made available as soon as one exits the tunnel. The tunnel has been developed with locally available bamboo sticks. Total expense of developing the facility is around ₹ 10,000.

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ICAR-CIAE, regional centre, Coimbatore develops touch-free hand wash system and hand sanitizer unit

Coimbatore, 1 May 2020. Scientists of ICAR-Central

Institute of Agricultural Engineering (CIAE), Regional Centre, Coimbatore have developed a Touch-free Hand Wash System and Portable Touch-free Hand Sanitizer Unit. The Unit can be adopted for hospitals, offices, malls, crowded markets, railway stations and industries, etc., for preventing the spread of COVID-19. It can disinfect the hands of one person at a time.

Touch-free Hand Wash System

The developed Touch-free Hand Wash System consists of water tank, photo diffuser sensor, 12 V DC water pump, DC speed regulator, 12 V DC Battery, relay board, touch-free sanitizer dispensing unit and water disposing plastic hose.

Portable Touch-free Hand Sanitizer Unit

The Touch-free Soap Hand Sanitizer Unit is a stand-alone wall mounted or placed on the table for dispensing the sanitizer without touching the unit. In this unit, a Photo diffuser sensor is located near the outlet in order to detect the users' hands. As soon as the hand is detected, the relay (act as switch) triggers the AC/ DC pump to operate and up to 5 ml of sanitizer can be dispensed at delivery end. The provision is given to use 12 V DC water pump with 12 V DC Battery. The cost of the Portable Touch-free Hand Sanitizer Unit is about ₹ 1,000 only.

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ICAR-CIFT, Kochi develops sanitizer units

Kochi, 31 April 2020. ICAR-Central Institute of Fisheries Technology (CIFT), Kochi has developed two variants of Pedal-Operated Hand Sanitizer Unit for containing the spread of Coronavirus Disease-19 (COVID-19). Having the feature of automatically disinfecting the hands of one person at a time without touching the dispenser, the units require no power supply. This can be well adopted as a low-cost and users' friendly initiative for breaking the chain at different offices, markets, malls, railway stations, airports and industries, etc., to contain the spreading of COVID-19.

Wall-Mounted Portable Pedal Operated Hand Sanitizer Unit

Completely made from the scrap materials, the Unit can be wall-mounted or placed on the table to dispense the sanitizer. It consists of Sanitizer Dispensing Unit and a wire connecting the dispenser unit and pedal.

Stand-Alone Pedal Operated Hand Sanitizer Unit

The Unit is stand-alone and made with MS angle iron (3 mm thickness) and Multi-wood. It consists of Sanitizer Dispensing Unit and MS rod (10 mm thickness) connecting the dispenser unit and pedal. The sanitizer (600 ml) is placed in the shelf provided with MS angle iron frame.

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ICAR-CIPHET, Ludhiana develops touch-free automatic dispenser

Ludhiana, 20 April 2020. ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, Punjab has designed a sensor-based Touch-free Dispenser of the Hand Sanitizer. The device has been developed to promote the practice of hand-sanitization for containing COVID-19. The efficient and touch-free mechanism reduces the infection's risk at use in public places and ensures right volume as per the requirement of the user for hand sanitation purpose. The device operates on 12V DC electric power supply. The prototype is built on a small stainless steel 316 encasing the electronics circuit. This small and smart device can play a vital role in reducing the infection's risk. The device has been developed by Er. Yogesh Kalnar and Dr Rahul K. Anurag, Scientists under the guidance of Dr R.K. Singh, Director, ICAR-CIPHET, Ludhiana. Punjab.

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ICAR-NBSSLUP, Regional Centre, Jorhat prepares hand sanitizers

Assam, 10 April 2020. ICAR-National Bureau of Soil Survey and Land Use Planning (NBSSLUP), Regional Centre, Jorhat, Assam organized a Training Programme for preparing the Hand Sanitizers in Majuli District, Assam. The programme was initiated under the leadership of Dr GK Sharma, Scientist along with Mr Pradeep Kotoki, Technical Assistant, ICAR-NBSSLUP, Regional Centre, Jorhat, Assam. The ICAR Centre at Jorhat has experimented and standardized the method of preparing hand sanitizers as per WHOs standards in the wake of outbreak of COVID-19 in the

country. Employees of Swachhagrahis were provided the training and first hand information under the Public Health Engineering Department (PHED) Majuli, Assam. Shri Bikram Kairi, IAS and Deputy Commissioner, Majuli District, Assam; Shri Naranarayan Nath, Chief Executive Officer, Zila Parishad, Majuli along with PHED workers were present during the training programme. Shri Palash Rajkumar Ahom, Additional Deputy Commissioner, Majuli arranged all the necessary chemicals and a modest laboratory for preparing the hand sanitizers.

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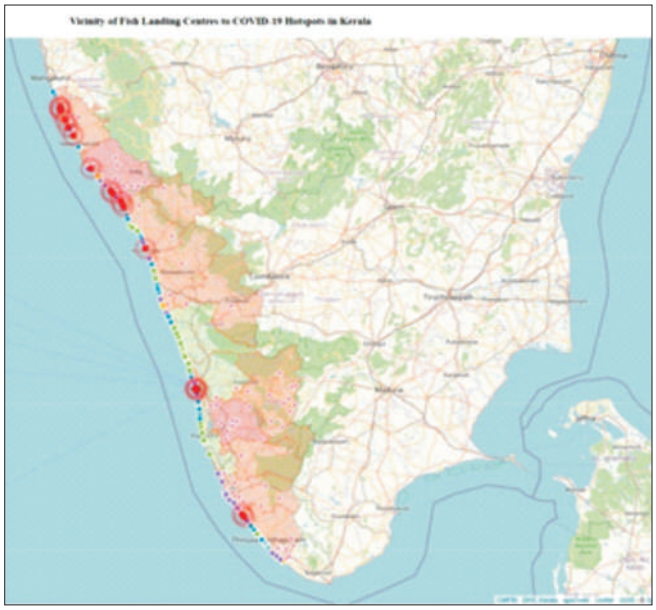
ICAR-CMFRI launches GIS based database on fish landing centres

Kochi, 6 May 2020. ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi launched a novel initiative for enabling the online GIS tracking of the Marine Fish Landing Centres and their proximity to the COVID-19 hotspots in the different maritime states. The online GIS-based database depicting the vicinity of marine fish landing centres to the COVID-19 hotspots in Kerala, Andhra Pradesh and Karnataka would become crucial in monitoring the activities at various marine fishing landing centres in the country on a daily basis.



The GIS database would be helpful for the authorities and policy makers to monitor the daily activities and help them easily understand the fish landing centres where strict safety measures are to be imposed and fish harbors where safety measures could be relaxed. This can be identified simply by a click at the info graphics published by the ICAR-CMFRI at its website: www.cmfri.org.in. This will help the concerned authorities for strategic execution of safety measures in accordance with their vicinity to the COVID-19 hotspots.

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Patent mass production of Bt by ICAR-VPKAS, Almora

Almora, 23 May 2020. An application No. 1627/DEL/2008 dated July 8, 2008 entitled "A process for the mass production of Bacillus thuringiensis (Bt) biocide using millet grain based agro-medium" invented by ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan (VPKAS), Almora has been granted patent No. 336230. The inventors of this mass production of Bt. are M Mohan, SN Sushil, JC Bhatt, S Saha, HS Gupta and J Stanley.

The invention employs cost effective high yielding agro based growth medium for the early, profuse sporulation and the process for the mass production of bio-insecticide, *Bacillus thuringiensis*. The millet based agro based medium comprised of finger millet grain powder; defatted soybean, etc. The invention discloses a process for preparation of biocide using a cold tolerant/environmentally competitive and highly entomopathogenic isolate (strain VLBt 6) of *Bacillus thuringiensis* subsp. galleriae/colmeri (MTCC 8997) isolated from the North-Western Himalaya. The strain is highly entomopathogenic and capable of producing larger quantity of delta-endotoxin (crystal toxin) with broad range as well as enhanced pesticidal/insecticidal activity. Further, the strain is found highly insecticidal against diamondback moth *Plutella xylostella*, cabbage butterfly *Pieris brassicae*, cabbage semiloopers *Thysanoplusia ni* and *T. orichalcea*, cabbage leaf webber *Crocidolomia binotalis*, amaranth leaf webber *Hymenia recurvalis* and tomato fruit borer *Helicoverpa armigera* etc.

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ICAR-CMFRI helps Tamil Nadu village

Kochi, 15 June 2020. ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi has successfully implemented the Government of India's Scheduled Caste Sub Plan Project for helping the Scheduled Caste families in Puthukudi Village, Thondi, Thiruvadanai Taluk in Ramanathapuram District of Tamil Nadu to empower them through the seaweed

and marine ornamental fish farming. The Mandapam Regional Centre of ICAR-CMFRI made the villagers capable of earning an additional income of ₹ 96,000 annually through seaweed farming. The Institute's efforts are underway to help them reap profit through other forms of Mariculture like Marine Ornamental Fish Seed Rearing.

A total of 28 fishers in 10 groups were selected for undertaking the seaweed farming of *Kappaphycus alvarezii* under the SCSP component of the Institute, AINP on Mariculture and NICRA Projects. Each fisher was provided with 20 monoline units. The cost for making one monoline unit is ₹ 1,600 and the entire cost for making 575 monoline units was borne under the SCSP component of the Projects. The Seaweed farming of *Kappaphycus alvarezii* was initiated with 20 monoline units during the second week of November-2019. The total fresh seaweed production from three cycles was around 90 tonnes. Since, the entire Start-Up cost was met under the SCSP project; each fisher will earn ₹ 96,000 annually, around ₹ 10,000 per month with five crops in a year depending on the climatic conditions.

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ICAR-NRC on Equines discover drug against corona virus

Haryana, 6 June 2020. Scientists at National Centre for Veterinary Type Cultures of ICAR-NRC on Equines, Hisar (Haryana) are pioneers in exploring the possibilities of targeting cellular proteins for antiviral drug development. In a recent article published last week in the Clinical Microbiology Reviews (a prestigious Journal of the American Society of Microbiology), scientists have discussed potential benefits of host-directed antiviral therapy. They have been able to identify several antiviral agents against diverse group of viruses in the recent past.

Scientists at ICAR-NRC on Equines rapidly evaluated antiviral efficacy of some natural products; those which are safe for human use (presently with no safety issues and risks) and are commonly used to treat cough and fever. Rather than directly acting on virus particles, most of the natural products act indirectly by regulating host responses thereby mimics host-directed antiviral therapy. The chicken coronavirus called infectious bronchitis virus (IBV), was the first corona virus identified during 1930. It causes a severe respiratory, nephrotic and reproductive infection in poultry. This chicken IBV infection model was used in the study to investigate the antiviral effect of certain herbal plants. In a preliminary study, a natural product (namely VTC-AntiC1) gave encouraging results against IBV coronavirus. At a non-cytotoxic concentration, VTC-AntiC1 was able to completely protect chicken embryos upon lethal IBV challenge infection. Besides, the growth of embryos in VTC-AntiC1-treated group was much better than the vehicle-control-treated group. In addition, VTC-AntiC1 also showed a potent *in vitro* (Vero cells) antiviral efficacy against some other RNA (Newcastle disease virus) and DNA (buffalopox virus) viruses. This suggests that VTC-AntiC1 has the potential to treat coronavirus and may be repurposed to treat COVID-19 patients.

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ICAR-CIFRI adopts Salia Reservoir

Odisha, 5 June 2020. ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, Kolkata in association with the Fisheries Department, Government of Odisha and Primary Fisheries Cooperative Society, Salia initiated an "Innovative Reservoir Enhancement Programme" in Salia Reservoir under the Schedule Caste Sub Plan Programme. The programme is aimed at improving the production from 30 tonnes to at least 60 tonnes from the reservoir to help more than 200 Schedule Caste households that are dependent on the reservoir for their livelihoods. The ICAR-CIFRI conducted a successful fish seed stocking programme in the reservoir on 21st and 22nd May, 2020. The stocked advanced fingerlings were approximately 30 g in size. The objective of growing these fish seed in captive nursery is to develop stunted fingerlings. During this, 25,000 advanced stunted fingerlings of Indian Major Carps were stocked in Salia Reservoir. Approximately, 10 tonnes fish production can be additionally achieved from the reservoir. This is the first phase of seed stocking and the approximately 50,000 fish seeds in the nursery will be released in phased manner in June 2020.

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Wonder variety of sugarcane Co 0238

Karnal, 5 April 2020. The Co 0238 - Sugarcane variety, a progeny of the cross CoLk 8102 × Co 775 evolved at ICAR-Sugarcane Breeding Institute (SBI), Regional Centre, Karnal, is an early maturing variety released and notified during 2009. The variety was recommended for Uttar Pradesh during 2012-13. The variety, being a rare combination of two major negatively correlated characters, that is, cane yield and sugar recovery, has been benefiting both farmers

and sugar industry. As a result the area under this variety expanded at a faster rate throughout the subtropical India. The gain in area was maximum in Uttar Pradesh, the largest sugarcane producing state in India. With the increase in area under Co 0238 in the UP, the average cane productivity increased from 61.6 t/ha during 2012-13 to 80.5 t/ha during 2018-19. Similarly, the sugar recovery improved from 9.18% to 11.46% in corresponding years. In other words, there have been a phenomenon increase in the cane yield (18.9 t/ha) and the sugar recovery % (2.28 units).

The economic impact analysis revealed a gross value of ₹ 120.8 thousand crores during 2014-15 to 2017-18 accounting to ₹ 30,192 crores per year. The total additional benefit from sugar and by-products during the period was ₹ 28,795 crores or ₹ 7,199 crores per year. Due to the phenomenal performance of Co 0238, UP became the number one state in terms of sugarcane and sugar production in the country. Co 0238 has greatly contributed towards achieving the highest ever sugar production (33.2 million tonnes) in the country during 2018-19, that in turn led to a Governments' Policy decision on permitting direct conversion of sugarcane juice and B-Heavy molasses into ethanol (Annon., 2018).

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ICAR-CIPHET develops low-cost portable ozone base purifier

Ludhiana, 22 May 2020. ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, Punjab has developed a "Low-Cost Portable Ozone based Fruits and Vegetable Washer-cum-Purifier (named Ozo-C) technology." Highlighting the technology's unique features, Dr RK Singh, Director, ICAR-CIPHET, Ludhiana stated that it is an excellent ozonator which removes the pesticides, bacteria, viruses and harmful chemicals from fruits and vegetable, sea foods and meat's surface to make them hygiene. He emphasized on the working of the system on the principle of silent "Corona Discharge Method" that uses electric discharge for producing ozone by splitting the normal oxygen molecules in the air into single atoms. These atoms recombine with air (O_2) to form ozone (O_3). The device designed and developed by Dr Ranjeet Singh, Dr K Narsaiah and Ms Surya Tushir under the guidance of Dr RK Singh, Director, ICAR-CIPHET has been made with a unit cost of ₹ 3,500.

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Harvest your own vegetables

Izatnagar, Bareilly, 21 May, 2020. ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar, has launched a weekly programme "Harvest your own vegetables". The KVK effectively implemented the

programme conceived and conceptualized by Dr Mahesh Chander, Joint Director (Extension Education), ICAR-IVRI, wherein, the campus residents harvested vegetables of their choice like okra, brinjal, bitter gourd, ridge gourd, banana, sweet corn, mint, cucumber, etc., and made digital payments. Dr Raj Karan Singh, Head, KVK emphasized on the organization of the programme initially on the weekly basis on every Thursday depending on availability of produce for sale. Dr RK Singh, Director, ICAR-IVRI applauded the KVK's innovative effort and opined that the programme can be up-scaled by taking it to the farmers of nearby areas. Dr Singh highlighted the possibility of developing KVK Farm as Agri-Tourism Centre.

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Awareness on hygienic meat

Hyderabad, 15 May 2020. ICAR-National Research Centre on Meat, Hyderabad organized the Awareness Programme for the promotion and popularization of the clean and hygienic meat production among the meat processors, butchers, retailers and safe meat consumption among consumers. The participating shopkeepers were made aware about the three basic principles for ensuring safety during the Covid-19 Pandemic, viz. maintaining high level of personal hygiene, practicing social distancing at all time and following proper cleaning and sanitation. The shopkeepers were also encouraged to take good production practices and preventive measures for ensuring the public health. Around 100 retail meat shops across Hyderabad were distributed a kit comprising of hairnet, reusable mask, alcohol-based sanitizer and hand washing liquid soap.

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Online course on Psychology of Learning

Hyderabad, 1 to 15 May, 2020. ICAR-National Academy of Agricultural Research Management

(NAARM), Hyderabad has organized a new "Massive Open Online Course (MOOC) on Psychology of Learning". Dr Ch. Srinivasa Rao, Director, ICAR-NAARM highlighted the importance of course for teachers, faculties, trainers and other staff members. He stated that the programme has been quickly conceptualized, synthesized and launched keeping in view the present scenario that demands the utilization of time while staying at home. The MOOC Programme is offered though the ICAR-NAARM E-learning Portal at: https://elearning.naarm.org.in.

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Patent for Tamarind Seed Husk

Bengaluru, 25 June 2020. ICAR-National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru has got the patent on the use of Tamarind seed husk to ameliorate enteric methane emission in ruminants. This will be a giant step towards reducing the enteric methane emission in livestock through this "Green Technology" and a classic example of "Waste to Wealth." A team of researchers led by Dr Raghavendra Bhatta, Director, ICAR-NIANP initiated comprehensive and systematic research for developing farmers' friendly and economically viable technologies for methane amelioration from livestock. The tamarind (*Tamarindus indica*, common name in Hindi *Imli*) is grown in more than 50 countries worldwide. India alone annually produces more than 98 thousand metric tonnes of tamarind. Its seed is roasted for removing the outer covering (dark brown in color) and the inside white colored seed is used for extraction of starch. The Tamarind seed husk is an agricultural waste and constitutes 35% of the decorticated seed. Generally, it is used as a manure and sometimes, biomass fuel in replacement to wood and any other alternate biomass fuels. The tamarind seed husk contains 13% to 15% of tannins (a natural polyphenolic compound) and highly effective in the modulation of rumen fermentation. The husk is relatively inexpensive and costs only ₹ 3 to 4 per kilogram. The systematic studies in different livestock species have established that a reduction of about 17% to 20% in enteric methane emission is achievable by inclusion of Tamarind Seed Husk in the ruminant diet, without any adverse effect.

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Celebrations

World Environment Day 2020

ICAR-Hq

New Delhi, 5 June 2020. Shri Kailash Chaudhary, Union Minister of State for Agriculture and Farmers Welfare termed the pollution caused by burning paddy straw as a very serious problem for environmental protection and called upon farmers and scientists to protect the environment in future rather than burning straw. Dr Trilochan Mohapatra, DG (ICAR) and Secretary (DARE) emphasized radical changes in agriculture, especially the direct sowing of paddy, so that greenhouse gases (Methane) emission is low. Apart from this, he emphasized on the development of anti-flood and anti-drought species, so that farmers can get maximum benefit in the changing perspective of environment. Dr Ashok Kumar Singh, Director, IARI stated that the aim of World Environment Day this year was biodiversity conservation. In this series, along with Sita Ashoka (Sarraca asoca) tree, other trees were also planted in Pusa Institute.

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ICAR-CIBA

Chennai, 5 June, 2020. ICAR-Central Institute of Brackishwater Aquaculture (CIBA), Chennai celebrated World Environment Day. The Chief Guest, Dr Smt C Suvarna, IFS, Commissioner of Fisheries, Government of Telangana presented a talk on "Biodiversity and Natural Resources Management" on

this year's World Environment Day's theme "Biodiversity". Dr Suvarna made a presentation on Indian Biodiversity's richness, anthropogenic activity's impact, such as, industrial and domestic waste disposal on the pollution of natural resources, water and soil. Dr KK Vijayan, Director, ICAR-CIBA opined the necessity of keeping environmental balancing between food production activities and sustainable use of natural resources that will be possible only by the departmental collaboration of various agencies involved in ecosystem services.

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ICAR-IISS

Bhopal, 5 June, 2020. ICAR-Indian Institute of Soil Science (IISS), Bhopal, Madhya Pradesh organized a Webinar on "Soil Pollution—Threat to Soil

Biodiversity" with the aim of creating awareness on the need for sincere effort to conserve soil and its biodiversity through prevention of pollution as well as mitigation of its impact. Dr SK Chaudhari, DDG (NRM), ICAR expressed concerns on the degradation of environmental quality due to polluted effluents and hazardous wastes being generated from urban and industrial activities in the country. Dr AK Patra, Director, ICAR-IISS interlinked the soil degradation and biodiversity decline as a result of anthropogenic and industrial activities. Dr Patra regarded the decline in soil biodiversity as a major concern for everyone on the earth.

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World Milk Day 2020

ICAR-IVRI

Izatnagar, Bareilly, 1 June 2020. The four-day long "World Milk Day" was organized at the ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar, Bareilly, Uttar Pradesh. Dr RK Singh Director and Vice-Chancellor, ICAR-IVRI, Izatnagar, Bareilly distributed

milk packets and other value-added milk products to around 115 contractual workers working in the Institute. The inaugural session of the celebrations marked the distribution of milk packets and other value-added products to the needy and poor people in the slums and households of the weaker sections of the state seeing the contingency of the situation caused by the outbreak of COVID-19. The slogan titled "Drink Milk-Be healthy" was raised during the celebrations to create an awareness about the milk's importance as a complete food. A total of 600 litres of milk from ICAR-IVRI Dairy Farm along with butter milk mainly was distributed to women and children including the orphanages, rehabilitation centres, leprosy ashrams and slums, etc., through doorstep initiative. The Institute also distributed milk and other products to the corona warriors—UP Police.

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ICAR-NRC on camel

Bikaner, 1 June, 2020. ICAR-National Research Centre on Camel (NRCC), Bikaner, Rajasthan organized a "Virtual Interaction Meet on the occasion of World Milk Day" with the potential consumers of camel milk. Dr RK Sawal, Director, ICAR-NRCC highlighted the importance of camel milk in improving the immune status due to presence of immunoglobulins and other compounds. During the online interaction, parents of special children suffering from autism spectrum disorders shared their experiences of improvement in

hyperactivity, loss of voice, dribbling of saliva from the mouth, uncontrolled movement, eye contact and increase in weight with use of camel milk therapy for the treatment. The people suffering from Diabetes Type-1 (especially, from Bikaner, Shri Ganganagar, Surat, Mumbai) also shared their success stories of improvement in appetite / thirst, tiredness and eye sight as well reflection of positive change after consuming the camel's milk. Camel's milk contains high amount of iron, zinc, copper and Vitamin-C that helps in keeping it fresh for a long time and increases its nutraceutical value that is beneficial for children suffering from milk allergy. Even after a drastic decline of camel population in 2012 and 2019, the improvement of nearly 30% in the number of female camels shows potential utility of camel for milk as source of livelihood sustenance. This has led the society to adopt a conscious and positive attitude to promote camel milk as dairy business.

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Foundation Day 2020

ICAR-NRC on Mithun

Medziphema, Nagaland, 2 June, 2020. ICAR-National Research Centre on Mithun (NRCM), Medziphema, Nagaland celebrated its "32nd Foundation Day" through video conferencing. While inaugurating the ICAR-NRC on Mithun's new website and state-wise painting and drawing competition for school children, Dr Trilochan Mohapatra Secretary (DARE) and DG, ICAR applauded the Institute's efforts in deciphering the Mithun's origin by next-generation sequencing, attaining a high success rate of artificial insemination in Mithun and providing regular training to farmers on Mithun rearing activities. Dr Mohapatra urged for exploring and utilizing latest technologies like microchip and GPS tracker for traceability of Mithuns left freely in the forest areas for grazing. Dr Kamal Malla Bujarbaruah, Former Vice-Chancellor, Assam Agricultural University, Jorhat and DDG (Animal Science), ICAR underlined the Mithun's remarkable ability for thriving in forests without being susceptible to a wide range of pathogens and parasites.

Dr Bhupendra Nath Tripathi, DDG (Animal Science), ICAR appreciated the Institute's efforts in overall increase of the Mithun's population and its conservation that is benefiting the tribal population of the North-East India, especially Mithun farmers. Dr Abhijit Mitra, Director, ICAR-NRCM highlighted the Institute's achievements over the last 32 years.The Directors of ICAR Institutes along with the farmers from Mithun rearing states of Arunachal Pradesh, Manipur, Mizoram, and Nagaland participated through video conferencing.

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ICAR-DCR

Puttur, Karnataka, 18 June, 2020. The ICAR-Directorate of Cashew Research (DCR), Puttur, Karnataka celebrated its "35th Foundation Day". The "Schedule Caste Sub Plan Farmers Meet" was also organized during the occasion.

The Chief Guest, Shri Chaniya Kalthadka, President, Sullia Taluk Panchayat appreciated the Directorate's efforts for benefitting the farmers of SC community to make them self-reliant. The Guest of Honor, Shri Radhakrishna Borker, President, Puttur Taluk Panchayat urged the stakeholder farmers to utilizing the facilities being provided by the government. Dr MG Nayak, Director, ICAR-DCR briefed about the Institute's initiation and activities. The three Extension Folders prepared by scientists and Annual Report of the Directorate were also released on the occasion.

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Visits

ICAR-CMFRI launches new farming challenge towards food security

Kochi, Kerala, 14 May, 2020. Shri VS Sunil Kumar, Minister for Agriculture, Government of Kerala launched the "New Farming Challenge" by planting ginger saplings. The challenge has been started by ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi, Kerala in association with the KVK, Ernakulam among the Government Organizations towards food security. The model initiative includes

farming of tubers and pulses along with vegetables in an area of around 3-acre barren land in its premises of residential complex in Kochi city. The Minister also urged KVK, Ernakulam for designing and demonstrating a working model of the mini rice mill required for each paddy field. He stressed that the medium paddy farmers in Kerala have been facing the major crisis of lack of such mini rice mills. Dr A Gopalakrishnan, Director, ICAR-CMFRI highlighted the objective of the initiative that primarily aims to intensify the drive for achieving self-reliance in producing safe food in Kerala and setting a model for other Government Institutions.

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Trainings

Medziphema, Nagaland. 19 April, 2020. ICAR-National Research Centre on Mithun, Medziphema provided the hands-on-training to the Medical team of Christian Institute of Health Sciences and Research (CIHSR), Dimapur.

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Rahuri, Maharashtra, 29 April 2020. Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri organized the "Online Orientation Training for Farmers" under the Farmers' FIRST Project.

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Pedavegi, Andhra Pradesh, 30 April, 2020. ICAR-Indian Institute of Oil Palm Research (IIOPR), Pedavegi, Andhra Pradesh organized a training-cum-demonstration programme of recommended aluminium poles and sickles to harvest bunches from tall oil palms for farmers.

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Vyara, Gujarat, 4 May 2020. KVK, Navsari Agricultural University, Vyara, Tapi, Gujarat organized an

Online Khedut Shivir on "Awareness Programme about COVID-19 among farming community and Sugarcane Pest and Disease Management".

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New Delhi, 8 May, 2020. ICAR, New Delhi organized a one-day Online Workshop on "Training Management Information System (TMIS) for HRD Nodal Officers of ICAR".

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Nagpur, Maharashtra, 11 May, 2020. ICAR-Central Institute for Research in Cotton Technology (CIRCOT), Mumbai conducted training programme for cotton farmers for procuring unsold cotton from them before onset of the monsoon.

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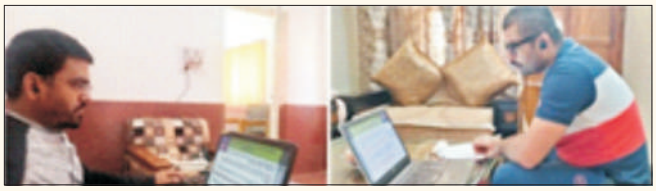
Hyderabad, 20 May, 2020. The ICAR-NAARM, Hyderabad completed the contact sessions for One-Year Distance Education Programme-PG Diploma in Educational Technology and Management (PGDETM) using online mode from 20th to 29th May, 2020.



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Tapi, Gujarat, 22 May, 2020. KVK, Tapi, Gujarat in collaboration with Reliance Foundation organized the "Virtual Training Programme on Poultry Farming for Rural Poultry Farmers".

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Hyderabad, 8 June, 2020. Virtual Training Workshop on "Contemporary Education Technologies for Agricultural Education" was organized by ICAR-NAARM, Hyderabad.

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Success Story

Small scale poultry farming: Pathway of prosperity in Doon valley

One of the many successful farmers and presently an entrepreneur Shri Sanjay Kumar S/o Late Shri Raghuvir Singh, resident of village Dharmawala, District Dehradun, Uttarakhand was a small farmer with land holding of 2 acre. After passing high school, he opted ancestral farming as livelihood with little or meager scientific experience. Being unemployed, Shri Sanjay Kumar was busy in traditional agriculture and livestock farming. It was difficult to sustain six family members with limited resources. He was practizing paddy-wheat farming system with rearing of two buffaloes and one cow. Nearness of KVK-Dhakrani to farmer become a source of inspiration and transformed from traditional to commercial poultry farmer.

Source of motivation

During the year 2007-08, an initiative was taken by KVK, Dehradun to select farmers for conductance of FLD on poultry farming. Through various meetings and persuasions, he offered himself to start new work on poultry. He was called to attend 7 days vocational training at centre. He is a beneficiary of KVK Dhakrani-Dehradun and source of inspiration to large number of farmers. He started his poultry farming unit with hundred chicks in a rented poultry shed. Further KVK Dehradun provided him five days poultry farming training and provided thirty chicks of CARI-Dhanraja breed fetched from CARI, Izzatnagar under Front Line Demonstration programme. The continuous monitoring and guidance of KVK scientist to farm of Shri Sanjay Kumar develop the confidence on brooding, feeding,

housing and disease management. After 50 days the reared birds were sold off as meat and got hefty income of ₹3000. This small success become great source of motivation to him and he experimented more number of batches over a period of time. By the year 2009 he had maintained 300 chicks per batch.Under the regular guidance of the scientists from KVK, Dehradun, he tried to excel technically, so that he can gain the maximum revenue from poultry farming. Shri Sanjay Kumar has already developed new techniques of reducing cost of feed and other practices for maximization of profit regularly. Nowadays, his family is constant support for management of poultry bird and marketing without any technical problems.

Technology and innovation adopted

Major intervention and series of activities, i.e. training and demonstration of proper vaccination, group discussion and diagnostic visit as well as technical knowhow, include adoption of dual purpose poultry breed namely CARI-Devendra, CARI Dhanraja, Croilore, RIR Crosses, Vencobb etc. about poultry farming management by the scientist of KVK Dehradun on his poultry farm. He kept himself updated with latest techniques through the training held at KVK, Dehradun. He gained experiences about merits and demerits of poultry farming and replaced the manual drinker system and brooding technique into automatic manner for proper hygienic practices to reduce expenditure of the farm. His family members themselves worked at the poultry farm to cut down the labour cost. He used poultry manure in his fields of crops which gave him an excellent output and reduced the consumption of chemical fertilizer. In year 2010, Shri Sanjay Kumar constructed an improved automated drinking system poultry shed in the area of 2,100 Sqft at his farm opted continuing in and out method of chicks. As a result yearly, he had sold five batches of two thousand poultry birds at regular interval of 45-50 days. Earlier, Shri Sanjay Kumar had production of rice, wheat, sugarcane and milk as his main source of income, which was obviously not quite helpful in economically sustaining his family. Poultry farming came as a huge support for him and made him economically much more stable. It reduced the consumption of chemical fertilizers for cultivation of crops by using poultry manure.

Contributing factors

Shri Sanjay Kumar strengthened his poultry unit and developed it into a two storey poultry shed building with a capacity of three thousands chicks with the financial support of NABARD, Dehradun. This was possible with the technical help of KVK Dehradun which provide him with technical support. With his hard work and perseverance, Shri Sanjay Kumar has now established himself as a successful poultry farmer in the district of Dehradun.He also farmed SHGs namely *Pantnagar Kukut Palak Samooh* for women empowerment. Shri Sanjay Kumar has under taken poultry farming as his main occupation with the help and support of his family. He is successfully selling off 4-5 batches of three thousand chicks of Vencobb, CARI-Devendra,Vanraja annually. Thus, maintaining himself a reliable source of income. He is a source of inspiration for unemployed rural youth in the district, who can opt for self employment and thus improve their lives with support of more than hundreds of poultry farmers both at backyard and commercial levels for meat and dual purpose.

Awards/ recognition

In the year 2012 and 2017, Shri Sanjay Kumar was awarded by Vice Chancellor of GBPUAT Pantnagar in the presence of Director ICAR-IISWC Dehradun during

the Kisan Mela as a progressive poultry famer in the district. He was also awarded *Kisan Sri* and *Kisan Bhushan* by the Department of Agriculture, Dehradun. A documentary was made at his poultry farm for the ZCU Kanpur in April 2011. Doordarshan, Dehradun has also recorded his experiences at his poultry farm. His efforts have earned a good economic return as well as increased his social status in the area. Many farmers, agriculture students and line department officials and visitors visited his poultry farm.

The model poultry unit developed by Shri Sanjay Kumar has not only proven economically viable beneficial for him, but he has become a driving force for youth of the area. He encouraged more than 100 poultry farmers through linkage for chick's availability and marketing facilities as cooperative manner. Through his experience and hard work, Shri Sanjay Kumar today draws net income of ₹ 2.38 lacs from poultry farming, followed by ₹ 10,000 from dairy farming and ₹ 80,000 from agriculture farming.

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Income increase through adoption of diversified agriculture

Mr Ramesh Singh S/o Late Chandra pal Singh Village-Hasanpur Akori, Block-Arayan, District-Fatehpur (212655) is an innovative farmer having 2.2 ha land out of which he was doing cultivation on only one hectare land earlier, since rest of the land was unfertile. He was following only Rice-wheat cropping pattern in a year. He has 3 daughters and 2 sons whose livelihood was totally based on agriculture. Sometimes he faced huge financial crises due to crop losses. Mr Ramesh was in touch with KVK since a decade but he was not adopting proper technologies. In 2014-15 he faced financial problem of giving better education to his children. He decided to change his way of cultivation to diversified agriculture. He started a small dairy with 3 buffaloes and constructed vermicompost unit to utilized dung and he started using his vermicompost to his field by which cost of cultivation was reduced. His confidence level was high and he started cultivation on unfertile land also. In a year he found that his income had increased, so he purchased 4 buffaloes to increase his dairy unit. After that he started rose cultivation and plant nursery. He purchased a tractor on loan and seed drill on subsidy by Department of Agriculture. He started timely line sowing of wheat crop of his own field and custom hiring of other farmers sowing. Now he is a Progressive Farmer of Fatehpur District.

Mr Ramesh Singh was able to convert whole farm dung in Vermicompost because it is better than any other organic manure. Mr. Singh was producing 5-6 times Vermicompost per unit/ year which was fetching more earning by selling vermicompost and worms and reducing cost of cultivation and maintaining soil health. He is in regular touch with KVK-Fatehpur scientists, and doesn't miss a single training /Farmers Fare organized by KVK and Department of Agriculture. He visited different Agricultural Institutions through Exposure Visit organized by KVK/Department of Agriculture and Horticulture where his knowledge was improved. After adopting diversified agriculture his annual income from Vermicompost and worms is ₹ 40,000/ year, from Dairy Unit ₹ 100,000/year, from Rose cultivation and Plant Nursery ₹ 125,000/year and from Custom Hiring ₹ 30,000/year. His total Net income is ₹ 445,000 which is 66% higher over traditional methods. More than 125 farmers have purchased worms to start their own unit. Around 10 Nursery growers purchased Vermicompost for their units. More than 12 villages have been covered under Vermicompost units. About 110 farmers were guided for Vermicompost production units under supervision of Mr Ramesh Singh.

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Deep Condolences to a "Great Visionary"

Dr Pushkar Nath Bhat passed away on 11 June 2020. Entire Animal Science community offered their condolences and remembered him as a great Animal Scientist. Dr Bhat born in Nunar, Ganderbal, Kashmir, India on 9 October 1937 and educated at College of Veterinary Science and Animal Husbandry, Mathura, 1955-59; Post Graduate College of Animal Sciences, Indian Veterinary Research Institute, Izatnagar 1959-61; Institute of Population Genetics, Purdue University, Indiana, USA, 1961-65. He was a pioneer animal breeder and served as Head, Division of Animal Genetics, 1971-79, IVRI, Izatnagar; Director, Central Institute for Research on Goats (CIRG), Makdhoom, 1981-84; Director/Vice Chancellor, IVRI, Izatnagar, 1984-92; Animal Husbandry Commissioner to Government of India, Department of Animal Husbandry and Dairying 1992-94; Deputy Director General (Animal Sciences), ICAR, 1992-94; and Officer on Special Duty (DIPA now DKMA), ICAR, New Delhi, 1994-97. He was a Fellow of National Academy of Sciences, India, 1987; National Academy of Veterinary Sciences, 1993, National Academy of Agricultural Science, 1993 and worked as Chairman, World Buffalo Trust and Centre for Integrated Animal Husbandry and Dairy Development.

May his noble soul rest in peace.

Personnel

Appointment/Retirements of RMP in the Council during January to March, 2020

Retirement from Council's Service

Name, Post	Date of Appointment
Dr K. Nirmal Babu Director, ICAR-IISR, Kozhikode (Kerala)	31.05.2020
Dr (Mrs) C.R. Ballal Director, ICAR-NBAIR, Bengaluru	31.05.2020

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