

RESEARCH HIGHLIGHTS

Potential hybrids:

- Four inbreds, viz., IML 11, IML 12, IML 13 and IML 21 were registered with NBPGR, New Delhi as resistant sources against *Turcicum* leaf blight.
- A total of eight lines, viz., MLSP 10116, MLSP 10117, HKI 323, HKI 1105, 1710410C2, IMR 284, IMR 331 and IML 127-1 were converted into CMS lines in order to develop the cytoplasmic male sterile-based baby corn hybrids.
- The genotype UMI 1201 was found to be resistant against *Maydis* leaf blight.
- Five hybrids namely IQPMH 2001, IQPMH 2002, IQPMH 2004, IQPMH 2007 and IQPMH 2012 have been promoted for testing in advance trials from AVT1 to AVTII.



IML 11 (INGR21126)



IML 12 (INGR21209)



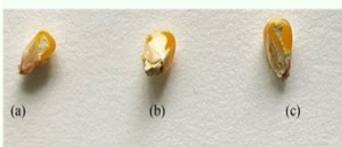
IML 13 (INGR21210)



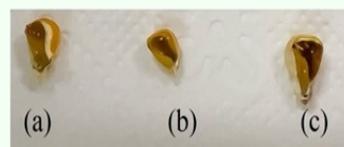
IML 21 (INGR21208)

Promising germplasm

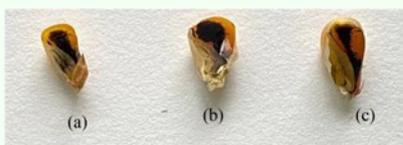
- A simple and rapid screening method, named as Cut Grain Dip Method (CGD), has been developed for amylose estimation in maize kernels. A Rapid Amylose Estimation Solution (RAES) was applied to cut grains which leads to gradual colour development. The time taken for maximum coloration had an inverse relation to the Amylose Content (AC). The method does not rely upon costly reagents and gets completed in one min, therefore is suitable for large scale screening of
- maize germplasm including mutants and wild types.
- An ion-exchange chromatography-based protocol was standardized for purification of extracellular ligninolytic enzymes, secreted by a co-culture of *Phanerochaete chrysosporium* and *Pleurotus ostreatus* using corn stover as the substrate. This enzyme preparation has the potential to be used for delignification of corn lignocellulose for bio-ethanol.
- Meta-QTL analysis for understanding the mechanism of resistance or susceptibility to biotic stresses (fungal and viral) was initiated.
- Twelve food products including QPM Biscuits, QPM Cookies, QPM Burfi, Pop Corn Ladoos, Pop Corn Ghajakh, QPM Muffin, QPM Cakes, QPM & Normal Maize pasta, QPM & Normal Maize Chapati, Baby Corn Candy, Sweet Corn Milk, Baby Corn Powder developed under Agri Business Incubator.



Fresh kernels



After 10 seconds of RAES



Maximum colour development

Characterization of maize germplasm conserved at National Genebank (NGB), New Delhi

ICAR-Indian Institute of Maize Research in collaboration with ICAR-National Bureau of Plant Genetic Resources (NBPGR) undertook a massive exercise to characterize the entire set of 11674 maize germplasm conserved at National Genebank of ICAR-NBPGR, New Delhi at the Regional Research Station and Seed Production Unit of ICAR-IIMR at Begusarai, Bihar during winter season of 2020-21. The entire germplasm accessions were stratified at three levels into 170 classes based on passport information with the NGB before implementing the characterization experiment. The data on 30 morphological traits were collected which includes 17 morphological traits, five each of agronomic and reproductive traits and three vegetative traits. The opportunity was used to collect record observations on 31 additional traits which are often considered for making selection in the germplasm such as stay green, root lodging, stalk lodging, ear aspects (rotting, quality) etc. The DNA from all the accessions was also collected to establish DNA library in future. The images of harvested selfed ears were also captured for all the accessions to facilitate the breeders to choose germplasm for their breeding programs. Few traits like chlorophyll content, plant height were also recorded for all the accessions using advanced drone technology.



Bird eye view of germplasm characterization and data capture using drone

IMPORTANT EVENTS

ICAR Foundation Day and Recognition of ICAR-IIMR Annual Report

The ICAR-Indian Institute of Maize Research, Ludhiana bagged the Best Annual Report Award-2020 in the category of Small Institute during the 93rd ICAR Foundation Day held virtually on July 16, 2021. ICAR-IIMR celebrated the auspicious 93rd ICAR Foundation Day by organizing a tree plantation drive

at Ludhiana. Regional centres in Bihar and Telangana have also undertaken tree plantation drives at their respective campuses.



Glimpses of the plantation drive

High yielding maize cultivation

Dr. Sujay Rakshit, Director ICAR-IIMR spoke to The Hindu Business Line on July 18, 2021 on “Pest Attacks on Maize Cultivation” whereby he apprised the English Daily of various pests and their control measures in order to cultivate high yielding crop.



'Azadi Ka Amrut Mahotsav' lecture series

As a part of 'Azadi Ka Amrut Mahotsav', ICAR-IIMR has organized a series of lectures being delivered by eminent personalities in different spheres of Agriculture and other Sectors. These lectures were held online and also streamed on the ICAR-IIMR's YouTube channel. These lectures were attended by more than 100 participants from the industry as well as public research organizations. In this series, a special lecture on "Commercial Plant Breeding-Perspectives" was organized on July 31, 2021. The lecture was delivered by Dr Selvarangam Venkatesh, Corteva Agriscience. On August 7, 2021, Dr Subhash Chander, Director, ICAR-NCIPM, New Delhi delivered a lecture on "Application of Simulation and Geospatial tools in Pest Management". Similarly, on August 21, 2021, Dr Anitha Kodaru, officer in charge of ICAR-NBPGR, Regional Station, Hyderabad delivered a talk on “Global Exchange of Crop Germplasm: Phytosanitary Regulations and Procedures with reference to India”. In this series, Dr P. Usha Sharma, CSIR Emeritus Scientist, ICAR-IARI, New Delhi delivered a special lecture on "*Aspergilli*: Advances and Challenges" on August 23, 2021. On August 26, 2021, Dr. D. Shobha, Assistant Professor, AICRP (PHET), UAS, GKVK, Bangalore delivered a special lecture on "Maize processing and value addition-key for maize growth". A special lecture on "Agrifood System: Current Challenges and Cross-Industry Technical Solutions" was delivered by Dr V. Praveen Rao, Hon'ble Vice-Chancellor, PJTSAU, Hyderabad, on October 5, 2021. Further, a special lecture on the occasion of National Unity Day was delivered by Prof Ashok K Sarial, former Vice-Chancellor, CSKHPKV, Palampur on October 31, 2021.



Speakers delivering their talks in the lecture series

Agribusiness Incubator program

Maize based value-added product, ready to eat (RTE) food, ice cream, maize milk for dietary diversification provides a good opportunity for agri-business to infuse healthy food in India. It also has a good business opportunity for export. ICAR-IIMR guided Mr Dharambir Kamboj, an Agri-Business Incubatee for making these products and indigenous machines for wet maize shelling, milk extractor, etc. A maize food festival was celebrated to showcase the success in maize value-added products and machines at Damla on July 31, 2021.



A glimpse of the food festival celebration at Damla

Independence Day celebration

75th Independence Day was celebrated at ICAR-IIMR, Ludhiana and its Regional centres with enthusiasm and full zeal. On this occasion, the national flag was hoisted at the institute headquarter and regional stations the programme through video conferencing.



National Flag hoisting ceremony on the Independence Day

National Workshop

Dr. Sujay Rakshit, Director, ICAR-IIMR attended a "National Workshop on Bridging the Yield Gaps to Enhance Food Grain Products: A Way Forward" organised on August 28, 2021 by Trust for Advancement of Agricultural Sciences (TAAS) and shared his thoughts on the above-said topic.



Few glimpses of the National workshop

Visit of Honourable DDG, Crop Science

Dr Tilak Raj Sharma, Deputy Director General (Crop Science), Indian Council of Agricultural Research, inaugurated the Seed store and Implement Shed of ICAR-IIMR on August 21, 2021 at Ladhawal, Ludhiana in the presence of Dr N Kotwaliwale, Director, ICAR-CIPHET and Dr Sujay Rakshit, Director, ICAR-IIMR. DDG (CS) also visited experimented plots, upcoming infrastructures, labs and the Agribusinesses incubator centre. The scientists apprised the DDG (CS) about their research works.



DDG (CS) visit to Ladhawal farm and inauguration the Seed store and Implement Shed

Vigilance Awareness week

Vigilance Awareness Week with the theme ‘Self Reliance with Integrity’ was organised from October 26 to November 1, 2021. The integrity pledge was taken by staff members at all the centres of the institute. Vigilance Awareness Week coincides with the birthday of Sardar Vallabhbhai Patel, known to be a man of high integrity. The purpose of Vigilance Awareness Week is to generate awareness in the public at large about the ill effects of corruption.



ICAR-IIMR staff undertaking the integrity pledge



Glimpse of live telecasting of Hon’ble Prime Minister program

Live telecasting of Hon’ble Prime Minister program

ICAR-IIMR, Ludhiana and its regional centres live telecasted the program of the Hon’ble Prime Minister, Sh. Narendra Modi on September 28, 2021 whereby the Hon’ble Prime Minister dedicated 35 crop varieties to the nation and launched the “Mass Awareness Campaign for Large-Scale Dissemination of Climate Resilient Technologies and Methods.” The program was attended by all the staff of the institute. The participants enthusiastically listened to the issues raised by the Prime Minister regarding Climate Change under the “Mass Awareness Campaign for Large-Scale Dissemination of Climate Resilient Technologies and Methods”. Sh Sarveshwar, MLC Darbhanga, Vidhan Parishad Khetra, graced the occasion as the Chief Guest of the programme organized at RMP&SPC, Begusarai where farmers keenly listened to the PM’s address. Drs. Dharam Paul Chaudhary, Priyajoy Kar and Romen Sharma, interacted with farmers of village Lambra Kangri, Distt. Hoshiarpur, Punjab and highlighted the various climate-resilient technologies and adaptation strategies with the maize farmers. Dr J.C. Sekhar, In-charge, Winter Nursery Centre, Hyderabad discussed the climate adaptation and mitigation issues which are the need of the hour and the importance and significance pertaining to the Prime Minister’s meeting. The staff of WNC Hyderabad also performed the activities with great zeal and enthusiasm. A total of 227 participants including farmers, students, agricultural workers and scientists participated in the programme.

Constitution day celebration

The constitution day was celebrated at Unit Office, ICAR-IIMR, New Delhi on November 26, 2021. The institute staff joined through Web Portal and also online broadcasting of the programme organized by Government of India and read the preamble led by the President of India.



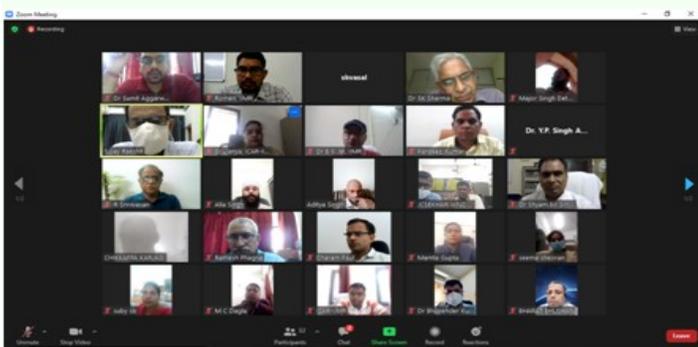
Glimpse of constitution day celebration

IMPORTANT MEETINGS

Research Advisory Committee (RAC) Meeting

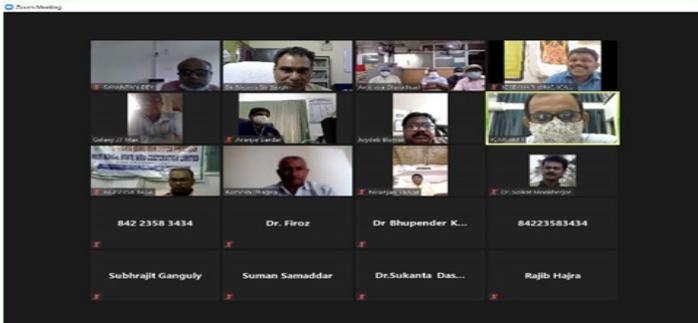
The meeting of the Research Advisory Committee (RAC) of the institute was held through virtual mode on July 07-08, 2021 under the Chairmanship of Prof. S.K. Sharma, Honorary Professor & Former Vice-Chancellor, HP Agricultural University, Palampur. In his remarks Dr S.K. Sharma emphasized that maize has become more of feed and industrial crop than food crop and the Institute should gear up its research activities in this direction. He further suggested that the Institute should find the ways and

means to enhance farmers' profitability following the diversification of the rice-wheat cropping system where maize can play an important role. This was followed by the presentation on the overview of accomplishments in research at the Institute as well as in AICRP by Dr. Sujay Rakshit, Director ICAR-IIMR. The RAC appreciated the scientists for their research achievements particularly when the institute is in the infancy stage. Members emphasized the need to focus research on the biology and management strategies of fall armyworm (FAW). The importance of germplasm enhancement and improvement and its heterotic grouping were highlighted. There is a need to procure the germplasm tolerant to different biotic and abiotic stresses from various sources and efforts should be made to adapt these materials into local environments. Further, there is a need to focus on particular traits to develop the resistant/tolerant genotype like the stay-green trait may be explored for controlling post-flowering stalk rot (PFSR). The seed production of single-cross hybrids should be strengthened to meet the requirement of the farmers and a location-wise package of practices may be developed.



RAC Chairman discussing the research agenda

Interaction Meeting

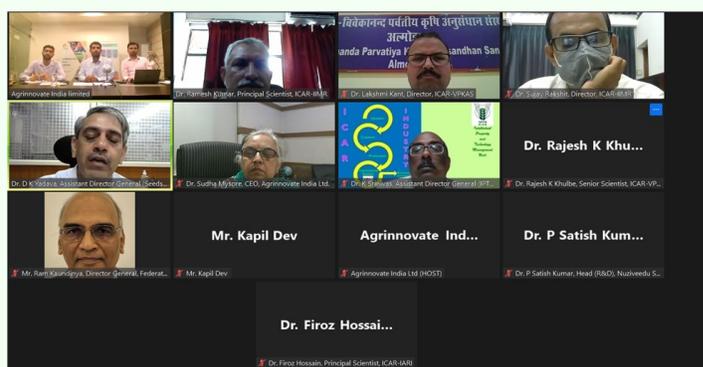


Participants of the interaction meeting

ICAR-IIMR organized a virtual interaction meeting on July 13, 2021 with West Bengal State Seed Corporation Officials regarding collaborations to enhance maize cultivation in the state.

Institute Industry interface on Maize Technologies

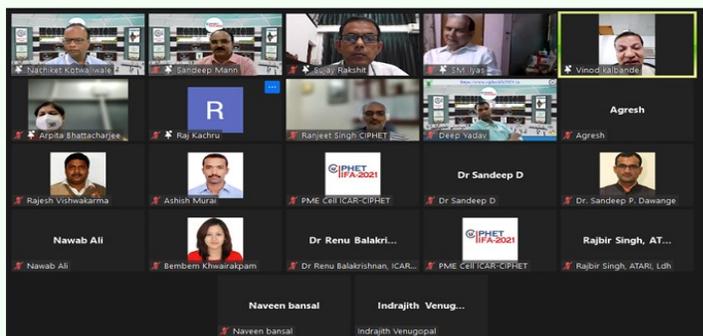
Agrinnovate has organised one webinar on "Institute Industry interface on Maize Technologies" On August 31, 2021. Dr Sujay Rakshit, Director, ICAR-IIMR presented the focus areas of maize research during this webinar and Dr Ramesh Kumar, Pr. Scientist & in charge of ITMU cell, ICAR-IIMR presented the hybrids and technologies developed by ICAR-IIMR and AICRP centres. He invited private sector companies to visit the National demonstration planted at Ludhiana and select the hybrids of their choice for signing MoU for commercialization.



Participants of Institute Industry interface

Panel Discussion

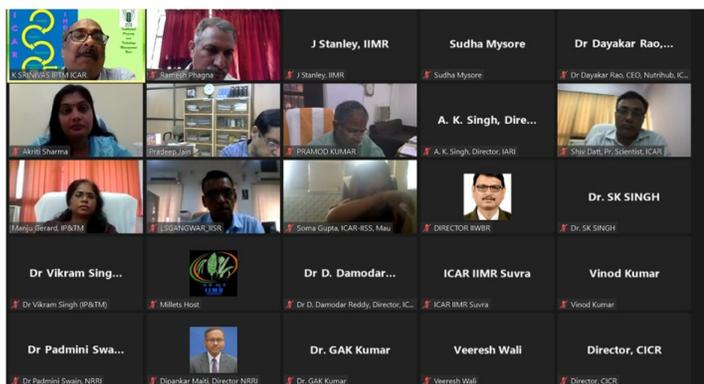
Dr Sujay Rakshit, Director ICAR-IIMR participated in the Panel Discussion held on October 03-04, 2021 on the occasion of 33rd Foundation Day & ICAR-CIPHET and joined as one of the expert's panellists on the discussion themed at Entrepreneurship Development, Success Stories & Way Forward.



Director IIMR attending the panel discussion

ICAR level ITMU meeting

The online review meeting of ITMU at the ICAR level was held on October 11, 2021. Dr AK Singh, Director, IARI & Dr K. Srinivas ADG (IPTM) were Chair and Co-chair during this session. Dr Ramesh Kumar, Pr. Scientist & In-charge ITMU presented the progress report of the ITMU unit of ICAR-IIMR, Ludhiana.



Participants of the HTMA Annual Review Meeting

Start-Ups

Mr SomilSoni, M/S Conflux Sciences, joined as an incubatee on October 27, 2021 under Agri-Business Incubation (ABI) Centre, ICAR-IIMR, Ludhiana.



Technology Commercialization

ICAR-IIMR, Ludhiana signed an MoU with Nutranta Seeds Pvt. Ltd under Agrinnovate India Limited for seed production of institute developed hybrid DMRH 1301.



Institutional Biosafety Committee (IBSC)

The Institutional Biosafety Committee (IBSC) meeting of ICAR-Indian Institute of Maize Research, was held online via video conferencing on November 30, 2021 under the Chairmanship of Director ICAR-IIMR. The other members who attended the meeting includes Dr Parveen Chhuneja, (Principal Molecular Geneticist, PAU, Ludhiana & DBT nominee), Dr Anita Srivastava (Medical Officer

ICAR-IIMR dispensary & Biosafety Officer), Dr Monika Dalal (Principal Scientist, NIPB & outside expert), Dr Bhupender Kumar (Scientist, ICAR-IIMR & member), Dr Alla Singh (Scientist, ICAR-IIMR & member) and Dr Krishan Kumar (Scientist, ICAR-IIMR & Member Secretary). The committee reviewed the biosafety aspects of one newly sanctioned in-house project that involve the use of rDNA technology/ Genetically Modified Organisms (GMOs) and approved the project for execution. The committee also reviewed the biosafety aspects of the ongoing work and found them to be satisfactory.



Members discussing agenda items during the IBSC meeting

Interaction Meeting with DG, ICAR

Scientists of ICAR-IIMR took part in the Interaction Meeting of ICAR Scientists with Secretary DARE & DG ICAR on October 28, 2021.



Scientist attending interaction meeting with Secretary DARE & DG ICAR

EXTENSION AND OUTREACH

Crop Diversification Trials

Maize potential yield trials at farmers' fields in Punjab and Haryana was undertaken by ICAR-IIMR and CIMMYT in collaboration with the state agriculture departments. The demonstration trials with the improved package of practices covered 100 acres in Punjab and over 50 acres in Haryana. The programs envisage diversifying non-basmati rice and darker zone of water availability for sustainable agriculture in these states.



Few glimpses of crop diversification trials

Farmers Field Day

District level Maize field day at farmer's field was organised on August 3, 2021 at Barna village, Tehsil Thanesar, Distt. Kurukshetra, Haryana under the ICAR, CIMMYT and State Agriculture Departments collaborative initiatives to demonstrate maize potential yield at farmers' fields in Haryana and Punjab. A large number of farmers attended the field day. Improved varieties and a package of practices were demonstrated to embolden the must needed crop diversification with maize-based cropping systems for sustainable agriculture in the state.



Glimpses of crop diversification field day

Parthenium Eradication Campaign

16th Parthenium awareness week was observed from August 16-22, 2021 at Parthenium eradication campaign

at Ladhawal Farm, ICAR-IIMR, Ludhiana and its Regional Maize Research and Seed Production Centre (ICAR-IIMR) Begusarai. One of the major events was organized at Village Tulsipur and RMR&SPC farm Kushmahaut on August 19, 2021 to aware farmers about Parthenium weed which is commonly known as congress grass or gajarghas and is locally known as 'titki' in Tulsipur village. Parthenium is an alien weed that entered India along with wheat imported from the USA in the early 1950s. The farmers were sensitized about the threat posed by this weed to the living beings including humans and animals by Dr S.B. Singh (Principal Scientist). This weed is notorious to cause many diseases like skin allergy, hay fever, breathing problems in human beings and animals besides reducing agricultural productivity and loss of biodiversity. The main motive of this programme was to educate the farmers and general public about the harmful effects of Parthenium and ways of its management. All the staff have taken up two hours shramdaan in their respective blocks for uprooting parthenium weed.



Glimpse of the Parthenium eradication campaign

National Level Campaign on "Food and Nutrition for Farmers"

In line with the "Azadi Ka Amrit Mahotsav" celebration series and under the aegis of ICAR's National level campaign on "Food and Nutrition for Farmers", a Gosthi, field visit and an exhibition was organized jointly by the Winter Nursery Centre of ICAR-IIMR and Maize

Research Centre of Professor Telangana State Agricultural University (PJ TSAU) on August 26, 2021. A total of 20 farmers from the Burjugadda Thanda village of Ranga Reddy district of Telangana participated in the programme.

Field Visit: The farmers were shown the experimental fields, where mechanization and use of the latest weedicides for control of weeds – both through tractor operated boom sprayers and inter-cultivation, were exhibited.

Under Gosthi, the maize-based technologies like silage for dairy, QPM for poultry and the use of fodder varieties like African Tall and J-1006 at the village level were discussed. Farmers evinced keen interest in these new avenues, which would lead to Food and Nutrition security at the village level through improved milk and poultry productions. The farmers were also shown the relevant Mobile Apps of Bharti MAKKA, Plantix and FAO-FAMEWS as part of the Gosthi.

Kushmahaut and nearby villages participated in the programme. Dr S.B. Singh (Principal Scientist) delivered the lecture and awaken the participants about the nutritious food products of maize for the human diet. He also tells about many local food products and processed foods that are being made by maize like Ladoo, Halwa, Kheer, Namakpara, Bread, Biscuits, Cake, Muffin etc. He emphasized the benefits of QPM maize for human consumption. All the staff members of the Centre also participated in the programme.



Glimpse of National Level Campaign on “Food and Nutrition for Farmers

Farmer Awareness Programme

An awareness programme on “Different nutritious food products of maize for human diet (मानव आहार हेतु मक्का के विभिन्न पौष्टिक खाद्य उत्पाद)” is organized at Regional Maize Research and Seed Production Centre, ICAR-IIMR, Begusarai on August 26, 2021. A total of 67 farmers of



Participants of Farmer Awareness programme

Field visit

A team of Maize scientists from Maize Research Centre, PJ TSAU, ARI, Rajendranagar along with Agricultural Extension Officers of Balanagar and Jadcherlamandals of Mahaboobnagar District visited maize fields at Chinna Revalli and Pedda Revalli villages of Balanagar (M) and Gollapalli village of Jedcherla (M) and interacted with the farmers on August 26, 2021. The famers were advised to go for the recommended dose of fertilizer application and sensitized on post-emergence herbicides and FAW management. It was also suggested to grow maize during rainy season only if farmers are having supplemental irrigation facility as maize cannot withstand prolong dry-spells.

Later, the team participated in a training programme attended by village sarpanches, Dept of Agriculture officials, organized by the Panchayatraj Division. The team explained the measures to be followed in maize cultivation

during the rainy season and also highlighted the role of maize in the food and nutrition of farmers on the occasion of Amruth Mahostava celebrations of 75th Independence Day.



Glimpse of field visit

State Level Maize Day

The ICAR-Indian Institute of Maize Research, Ludhiana and CIMMYT in collaboration with the State Agriculture Department, Government of Punjab and Punjab Agricultural University, Ludhiana organized a State Level Maize day at Dana Mandi, Garhshankar, Distt. Hoshiarpur on August 28, 2021. More than 600 farmers participated in the event. Shri Suresh Kumar, Chief Principal Secretary, Government of Punjab was the chief guest. Welcoming the guest, Dr Sujay Rakshit, Director, ICAR-IIMR briefed that the field demonstrations organized by the institute in collaboration with CIMMY are critical for crop diversification in Punjab. The ICAR-IIMR have developed 12 maize hybrid of which one is released for the Punjab and Haryana region. The institute also developed maize-based value-added products for dietary diversification and entrepreneurship development. The chief guest was impressed with the performance of ICAR-Indian Institute of Maize Research and its commending efforts for bringing maize cultivation and meeting expectations for bringing it to Punjab for diversification. He urged the scientists and private partners

to convince farmers with a concrete solutions to enhance credibility by giving proof of the technology in their field. Chairman of the function, Dr Tilak Raj Sharma, Deputy Director General (Crop Science), Indian Council of Agricultural Research, urged farmers to adopt maize-based cropping system technology demonstrated at farmer's field at a very faster rate to save water and enhance profitability. Guest of Honour, Sh. Anirudh Tewari, ACS (D) & Vice-Chancellor, Punjab Agricultural University emphasized that the whole maize-based cropping system should be encouraged for demonstration and emphasized to convince farmers for water-saving and enhancing profitability. Director Agriculture, Government of Punjab, Dr S.S. Sidhu emphasized maize lead diversification for sustainability in Punjab. Dr M.L. Jat, CIMMYT briefed that Secretary DARE & Director General, ICAR, New Delhi has advised establishing such participatory innovation platforms of maize system with value chain for diversification of rice in Punjab and Haryana. The programme was also graced with presence of Ms. Apneet Riyait, DC, Hosiarpur, Dr N.S. Bains, Director (Research), Dr J.S. Mahal, Director (Extension), PAU, Dr J.P.S. Gill, Director (Research), GADVASU, Shri Vinay Kumar and Shri. Subhash Chander of Punjab Agriculture Department. The stalls of key stakeholders involved in maize value chain were also displayed. The stage was organized by Dr. Dharam Paul Chaudhary,



Glimpses of State Level Maize Day

State-level Maize Day

The ICAR-CSSRI, ICAR-IIMR and CIMMYT in collaboration with the state Agriculture Department, Government of Punjab, CCS Haryana Agricultural University organized the State Level Maize day at ICAR-CSSRI on September 11, 2021. During the programme, an entrepreneur urged farmers to grow maize for higher price realization to use in poultry uses. Over 300 farmers and stakeholders participated in the event. A field visit to the long-term research trial on maize systems at ICAR-CSSRI and the learning platform of farmers' field at Kulwehri, Karnal was also organized where a good crop of maize impressed the stakeholders.



Participants of state level maize day

ABI Trainings

Agri-Business Incubation Centre, ICAR-Indian Institute of Maize Research, Ludhiana organized two days of training on "Value addition of Biofortified maize" from October 16-17, 2021 at Regional Maize Research & Seed Production Centre, Begusarai (Bihar). The training was organized in collaboration with "JEEVIKA" an NGO working in Bihar. Dr Sujay Rakshit, Director, ICAR-IIMR, Ludhiana gave introductory remarks and urged trainees to take full benefit of training organized by ABI.

Dr K. Srinivas, ADG (IP&TM), ICAR, New Delhi was the Chief Guest on this occasion. He elaborated the different activities of ABI and urged JEEVIKA officials to take FSSAI registration of the products which they want to launch in the market after learning in the training. Dr Ramesh Kumar, Pr. Scientist & In-charge ABI delivered a lecture on "Biofortified maize" and another lecture on "Cultivation of specialty corns for increasing income of farmers". Dr SB Singh delivered a lecture on "Hybrid Seed Production of Single Cross Hybrids of Maize". Around 35 farmers participated in the training programme and the majority were women. They learned how to make maize pasta, pasta salad, QPM burfi, biscuits, cookies, muffins and cakes during the training programme. District Manager of JEEVIKA assured that they will make one successful entrepreneur from this group and market the products prepared from maize.



2nd Day of Non - Residential Training



Participants of the training programme organized by

Silage-Maize awareness programme

A farmer's awareness programme on "Silage-Maize" was organized jointly by Professor Jayashanker Telangana State Agricultural University (PJTSAU), ICAR-IIMR and the National Dairy Development Board (NDDB) at Edira Village Kondurg Mandal, Mahbubnagar district of Telangana on November 30, 2021. The meeting was organized at *RaytuVedita* in

village. Mr Digvijay Singh, Mr. B. Mahesh Kumar, from National Dairy Development Board (NDDB), Dr N Sunil from Winter Nursery Centre, ICAR-IIMR Ludhiana, Dr M V Nagesh Kumar, Head, MRC, Hyderabad, PJTSAU and Dr D Sreelatha, Agronomist, MRC, Hyderabad provided inputs on silage preparation from maize, advantages of maize silage for both farmers and dairy and profitability of taking up silage-maize *vis-a-vis* Grain maize and urged farmer's to take up maize silage preparation with technical support from NDDB and PJTSAU.



Glimpse of Silage-Maize awareness programme

Training programme attended

Name of the Scientist	Name of the training program attended	Venue	Date
Drs. S. B. Singh, Pardeep Kumar	Attended CIMMYT's training programme on Accelerating Genetic Gains (AGG) Early Career Maize Breeding Course on: Module 1: Foundations of maize breeding, product profiles, inbred line and hybrid development. Module 2: Stage-gate Process and Genetic Gains" Module 3: Doubled Haploids and Molecular Markers in Maize Breeding Module 4: Breeding for Abiotic Stress Tolerance and Nutritional Quality Module 5: Breeding for biotic stress resistance. Module 6: Seed production, Gender and farmer trait preferences.	Online	September 03, 2021 September 10, 2021 September 13, 2021 September 16, 2021 September 21, 2021 September 24, 2021
Dr. S. B. Singh	Generic Online Training Course in Cyber Security organized by Centre for Development of Advanced Computing, Ministry of Electronics and Information Technology (MeitY), Government of India.	Online	January 5, 2021
Chikkappa G. Karjagi	Analysis of Multi-Location Experiments (conducted by ICAR-NAARM, Hyderabad)	Online	October 28, 2021 to November 1, 2021

Training programme conducted

Name of the Scientist	Name of the training program conducted	Institutes/ Organizations Involved	Date
Dr. S. B. Singh	"Maize Research Field Experimentation and Hybrid Seed Production Techniques" for B.Sc. Ag Students of BHU, Varanasi under RAWI programme	RMR & SPC, Begusarai	Dr. S. B. Singh
Dr. S. B. Singh	A training programme under DBT project on "Cultivation practices of Biofortified maize hybrids and its seed production" for collaborative partner scientists/project staff and farmers.	RMR & SPC, Begusarai	September 24, 2021

Training programme conducted contd...

Name of the Scientist	Name of the training program conducted	Institutes/ Organizations Involved	Date
Drs. J.C. Sekhar, P.L Soujanya, Suby S.B, Yathish K.R, Priyajoy Kar and S.L Jat	TCP/3709/IND/FAW- National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management” for PZ.	FAO India, ICAR-IIMR and DPPQ&S	September 28 -30, 2021
Dr. S. B. Singh	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन एवं प्रसंस्करण	RMR & SPC, Begusarai	October 2-6,2021
Drs. J.C. Sekhar, P.L Soujanya, Suby S.B, Yathish K.R, Priyajoy Kar and S.L Jat	TCP/3709/IND/FAW- National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management” for CWZ.	FAO India, ICAR-IIMR and DPPQ&S	October 6-8, 2021
Drs. J.C. Sekhar, P.L Soujanya, Suby S.B, Romen Sharma, Yathish K.R. Priyajoy Kar and S.L Jat	TCP/3709/IND/FAW- National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management” for NWPZ	FAO India, ICAR-IIMR and DPPQ&S	October 25-27, 2021
Drs. J.C. Sekhar, P.L Soujanya, Suby S.B, Romen Sharma, Yathish K.R. Priyajoy Kar, S.LJat and S.B. Singh	TCP/3709/IND/FAW- National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management for NEPZ.	FAO India, ICAR-IIMR and DPPQ&S	November 15 -17, 2021
Drs. J.C. Sekhar, P.L Soujanya, Suby S.B, Yathish K.R, Priyajoy Kar and S.L Jat	TCP/3709/IND/FAW- National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management for NHZ.	FAO India, ICAR-IIMR and DPPQ&S	November 23 -25, 2021
Drs. J.C. Sekhar, Yathish K.R, Sunil N. Basavraj Jesurajan and Vanishree	Farmer Field School on Sustainable Management of Fall Armyworm in Maize.	FAO India, ICAR- IIMR and NIPHM	December 23, 2021
Dr. S. B. Singh	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	RMR & SPC, Begusarai	December 29-30, 2021.
Dr. Krishan Kumar	Guided Mr. Yash Tomar, student of B. Tech. (Biotechnology), Amity University, Noida (UP) for his summer training programme on, “Hands-on training on maize tissue culture and molecular techniques”	ICAR-IIMR, Delhi unit	May 31-July 9, 2021

Awards/Honours/Recognition

Dr. Bhupender Kumar has been awarded with “Prof. Mahatim Singh Memorial Award-2021” of society for wheat and barley research karnal SAWBAR, ICAR-IIWBR

Dr. Bhupender Kumar has been awarded with “Dr. Joginder Singh Memorial award-2021”, of Indian Society of Genetics and Plant Breeding (ISGPB)

P. Lakshmi Soujanya received Vasanthraj David Foundation Scientist award during 3rd National conference on “Recent Advances in Crop Protection” on October 17, 2021.

Dr Shankar Lal Jat conferred with ISA Associate by Indian Society of Agronomy (ISA) on November 23, 2021 during the 5th International Agronomy Congress at PJTSAU, Hyderabad.

P. Lakshmi Soujanya received best oral presentation award during International Conference on “Global Perspectives in Crop Protection for Food Security” held from December 8-10, 2021 at TNAU, Coimbatore, Tamil Nadu.

One review article on "Genetically modified crops: current status and future prospects" published as first and corresponding author in Planta (NAAS rating 10.11) in 2020 was highlighted as One of the best papers of 2020 by Springer Nature group.

Dr. Krishan Kumar delivered an oral presentation in 7th International Conference on Agricultural and Biological Sciences (ABS 2021) held during August 9-11, 2021.

Dr. Bhupender Kumar has been awarded with “Young Scientist Award-2021”, of National Education Empowerment and Development Foundation, U.P (NEEDEF).

Lecture /TV/ radio talks

Scientist	Topic	Programme	Venue	Date
Dr. S.L. Jat	खरीफ मक्का की बुवाई एवं देखभाल	हेल्लो किसान लाइव कार्यक्रम	डीडी किसान	July 16, 2021
Dr. S.L. Jat	Understanding basics of Climate Smart Agriculture (CSA),	In: Online national certificate course on Policies, Institutions and Marketing for Climate Smart Agriculture. Organized.	CAAST, MPKV, Rahuri (online)	August 9-29, 2021
Dr. S.L. Jat	Crop management practices adopted by the farmers	In: Online national certificate course on Policies, Institutions and Marketing for Climate	CAAST, MPKV, Rahuri (online)	August 9-29, 2021
Dr. S.L. Jat	मक्का में समसामयिक कार्य	किसान की बात कार्यक्रम	ऍफ़ एम गोल्ड	August 25, 2021
Dr. S.B. Singh	Different types of maize their uses and production technology.	RAWE training programme of B.Sc. Ag. Students of BHU,	RMR&SPC, Begusarai.	September 05,2021
Dr. S.B. Singh	Field experimentation for maize trials and experiments	RAWE training programme of B.Sc. Ag. Students of BHU,	RMR&SPC, Begusarai.	September 05,2021
Dr. S.B. Singh	Methodology of single cross maize hybrid seed production	RAWE training programme of B.Sc. Ag. Students of BHU,	RMR&SPC, Begusarai.	September 06,2021
Dr. S.B. Singh	Seed production technology of biofortified maize hybrids	A training programme organized for collaborative partner scientists/project staff/farmers under DBT project. “Cultivation practices of Bio-fortified maize hybrids and its seed production”	Online Training Programme on	September 24, 2021
Dr. S.L.Jat	जलवायु परिवर्तन का फसलों के उत्पादन पर प्रभाव	किसान की बात कार्यक्रम	ऍफ़ एम गोल्ड	October 31, 2021
Dr. S.L.Jat	मक्का: एक परिचय, उत्पादन व उपयोग	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 02, 2021

Lecture /TV/ radio talks contd...

Scientist	Topic	Programme	Venue	Date
Dr. S. K. Aggarwal	Makka ke Mukhya rig avum unka ekikrat rabhandhan	Farmer's training	RMC&SPC, Vishnupur, Begusarai (Online)	October 4, 2021
Dr. S.B. Singh	अधिक उत्पादन हेतु मक्का की वैज्ञानिक पद्धति द्वारा खेती	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 4, 2021
Dr. S.B. Singh	मक्के की खेती में अन्तरवर्ती फसल प्रणाली द्वारा अधिक आय प्राप्ति	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 4, 2021
Dr. S.B. Singh	किसानों की आय दुगना करने हेतु संकर मक्का बीज उत्पादन	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 5, 2021
Dr. S.B. Singh	संकर मक्का बीज प्रसंस्करण, संवर्धन, संग्रहण, प्रमाणीकरण एवं विपणन तकनीकियां	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 5, 2021
Dr. S.B. Singh	बीज उत्पादन हेतु मक्का की प्रजातियां	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 5, 2021
Dr. S.B. Singh	मक्का की फसल में अवशेष प्रबंधन	मक्का की वैज्ञानिक खेती, संकर बीज उत्पादन तकनीकी एवं प्रसंस्करण	RMR&SPC, Begusarai.	October 6, 2021
Dr. S.L. Jat	जलवायु परिवर्तन का फसलों के उत्पादन पर प्रभाव	किसान की बात कार्यक्रम	ऍफ़ एम गोल्ड,	October 13, 2021
Dr. S.L. Jat	रबी मक्का की बुवाई	हेल्लो किसान लाइव कार्यक्रम	डीडी किसान	November 15, 2021
Dr. S.L. Jat	रबी मक्का में समसामयिक कार्य	किसान की बात कार्यक्रम	ऍफ़ एम गोल्ड	November 19, 2021
Dr. S.L. Jat	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	RMR&SPC, Begusarai.	December 29, 2021
Dr. S.L. Jat	मक्के की खेती में आय वृद्धि हेतु अन्य विकल्प	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	RMR&SPC, Begusarai.	December 29, 2021
Dr. S.L. Jat	मक्का फसल में फॉल आर्मीवर्म की पहचान व रासायनिक रोकथाम	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	RMR&SPC, Begusarai.	December 29, 2021
Dr. S.L. Jat	मक्का फसल में सूक्ष्म पोषक तत्वों की कमी के लक्षण एवं प्रबंधन	एकल संकर मक्का का गुणवत्तायुक्त बीज उत्पादन	RMR&SPC, Begusarai.	December 29, 2021

Participation in Seminar/Symposium/Conferences/Workshop/Important meeting

Name of the Scientist	Name of the Conference/ Seminar/Workshop/ Meeting Attended	Venue	Date
J.C.Sekhar, Yathish, K.R	International webinar on “Desert locust <i>Schistocerca gregaria</i> (Forsk.)-International scenario and a potential threat to india”	NIPHM	July 2, 2021
J.C.Sekhar	Pre workshop review meeting of AICRP Biocontrol	ICAR-NBAIR	July 10, 2021
J.C.Sekhar	Virtual FAO-Asia-NENA: Invitation to Mid-Year meeting with the GA Demonstration countries on fall armyworm	FAO Rome	July 2, 2021
J.C.Sekhar	AICRP-BC Annual Review Meet	ICAR-NBAIR	July 14-15, 2021
J.C.Sekhar	Virtual meeting with FAO India on updating GA work plan on Fall armyworm	FAO, India	July 15, 2021
J.C.Sekhar, Yathish, K.R	Webinar on “Remote sensing and drone applications in Agriculture- research opportunities”	PJTSAU, Hyderabad	July 17, 2021
J.C.Sekhar	30 th BP Pal Memorial lecture “Resilient Agriculture: The Pivot For Sustainable Development” Dr. G. R. Chintala Chairman, NABARD, Mumbai	Division of Genetics and Plant Breeding IARI, New Delhi	July 20,2021
J.C.Sekhar	webinar on “Genome editing tools and its applications for targeted plant breeding” was successfully organized on July 21, 2021	Asia-Pacific Association of Agricultural Research Institutions (APAARI) in association with Korea Biosafety Clearing House (KBCH) and Biotech Consortium India Limited (BCIL)	July 21,2021
J.C.Sekhar	Webinar on” Artificial Intelligence for Smart Agriculture ”	ICAR Research Complex for Eastern Region, Patna	July 22,2021
J.C.Sekhar	Expert talk on “Emerging AgriTech towards transforming Indian Agriculture” by Dr V Praveen Rao	ICAR-IIOPR, Pedavegi, Andhra Pradesh	July 23,2021
J.C.Sekhar	AICRP-BC Technical Program	AICRP NBAIL	July 24, 2021
J.C.Sekhar	Webinar on “Migration of butterflies in the Western Ghats” by Ashokumar Raj and “Overview of spiders in Mysuru” Dr Abhjith APC	Dept of Zoology, University of Mysuru	July 24, 2021
J.C.Sekhar	Webinar on "Empowering Farmer Decision-Making through Effective Communications" ASEAN FAW Action plan	ASEAN FAW Singapore	July 27, 2021
J.C.Sekhar, Yathish, K.R	Kosambi International Webinar Series on Plant Genomics	Dept. of Botany, Savitribai Phule Pune University, Pune and NABI, Mohali, India	July 31,2021
J.C.Sekhar	Webinar on "Advancing genome edited plants from lab to land"	APAARI in association with KBCH and BCIL	August 04, 2021
J.C.Sekhar	Azadi ka Amrit Mahotsav lecture series ICAR-IIMR” Application of simulation and geospatial techniques in pest management" Dr. Subhash Chander Director NCIPM	ICAR-IIMR	August 7, 2021

Participation in Seminar/Symposium/Conferences/Workshop/Important meeting contd...

Name of the Scientist	Name of the Conference/ Seminar/Workshop/ Meeting Attended	Venue	Date
P. Lakshmi Soujanya	7 th International Conference on Agricultural and Biological Sciences (ABS 2021) held virtually	Bohai University, China	August 9-11, 2021
J.C.Sekhar	National Webinar- Integrated Farming System for Sustainable Livelihood and Nutritional Security on 12th August, 2021 at 11:00 AM onward	ICAR- Indian Institute of Farming Systems Research, Modipuram, Meerut	August 12, 2021
J.C.Sekhar	Azadi ka Amrit Mahotsav National national webinar on : Food and nutrition security: Challenges and opportunities in rainfed areas	Indian society of dry land agriculture and ICAR-CRIDA	August 16, 2021
J.C.Sekhar	Azadi ka Amrut Mahotsav lecture series "Trichoderma: A suorer star of biopesticide Industry" by Dr H.B.Singh	ICAR-NCIPM	August 17, 2021
J.C.Sekhar	Webinar on "Enabling policies for genome editing in agriculture	APAARI in association with KBCH and BCIL	August 18, 2021
J.C.Sekhar	Different programmes-Azadi ka Amrut Mahotsav: Food and nutrition for farmers different programs	WNC ICAR-IIMR, MRC PJTSAU	August 26, 2021
J.C.Sekhar	"National workshop on bridging the yield gaps to enhance food grain production"	TAAS, New Delhi	August 26, 2021
J.C.Sekhar	CHaBits Monthly seminar series "Dealing with pressure: Maize responses to abiotic and biorci stresses" By Dr Kevin Begey, University of Florida, USA	CHaBits	August 26, 2021
J.C.Sekhar	Institute Industry Interface on "Maize Technologies"	Agriinnovate India Limited	August 31, 2021
J.C.Sekhar	FAO INDIA TCP/3709/IND/FAW Meeting	FAO INDIA	September 1, 2021
J.C.Sekhar	ICAR Lecture series #26 Innovations for transformation by Dr Krishna Ella Chairman & MD of Bharat Biotech	ICAR-NAARM	September 1, 2021
J.C.Sekhar	Webinar on "Gene Clusters and Speciation – Unraveling Complex Plant Genomes	Samplix, Denmark	September 7, 2021
J.C.Sekhar	IQAC Enabled online International Workshop on "Changing Contours in Pest Management"	Dept, Entomology, Annamalai University	September 7-8, 2021
J.C.Sekhar	Webinar on "Essential Tips for Publishing in High Impact Journals"	Elsevier	September 8, 2021
J.C.Sekhar	Brainstorming Workshop on AI and Sensing for Monitoring and Management of Pests and Diseases in Rice	Purdue University, USA and ICAR-IARI, New Delhi, India	September 10-11, 2021
J.C.Sekhar	Stakeholder Workshop- Regional Consultation " Validation of Engagement Levels and Ecosystem Mapping for Fall Armyworm in India"	CABI	September 13, 2021
J.C.Sekhar	Nutri cereals Multi stakeholders mega convention 3.0	ICAR-IIMR (Millets), Hyderabad	September 17, 2021
J.C.Sekhar	Run -up for International year of Millets 2023	ICAR-IIMR and DAC&FW, at Hyderabad	September 18, 2021
J.C.Sekhar	Swasth Bharath:Nutritional challenges with Daal-Roti by Sridevi Annapurna Singh, CSIR-CFTRI	ICAR HQ	September 21, 2021
J.C.Sekhar, Yathish, K.R	International webinar on Bilological control: A global sustainable approach for eco friendly agriculture	NIPHM, Hyderabad	September 24, 2021

Participation in Seminar/Symposium/Conferences/Workshop/Important meeting contd...

Name of the Scientist	Name of the Conference/ Seminar/Workshop/ Meeting Attended	Venue	Date
J.C.Sekhar	Online Workshop on CRISPR-Mediated Plant Genome Editing	Shivaji College University of Delhi, New Delhi and, The Global Plant Council in collaboration with ICAR-National Rice Research Institute, Cuttack and Shree Guru Gobind Singh Tricentenary University, Gurgaon	September 27-October 1, 2021.
J.C.Sekhar	Mass awareness campaign for large scale dissemination of climate-resilient technologies and methods By Prime Minister	ICAR HQ	September 28, 2021
J.C.Sekhar	Dry run meeting for GA FAW control interaction with Women farmer by Dr Mirko	FAO Rome	October 5, 2021
J.C.Sekhar	ICAR-NBAIR webinar series #008: Taxonomic diversity vis a vis functional diversity in insects-back to basics but looking forward by Dr (Smt) Dhriti Banerjee, Director,ZSI , Kolkata	ICAR-NBAIR	October 6, 2021
J.C.Sekhar	Webinar on FAW monitor in Bangladesh used for surveillance and early warning by Dr Timothy J.Krupnik CIMMYT	CABI	October 11,2021
J.C.Sekhar	An evening with World Food laureates Discussion on Global food and nutrition security to meet SDGs during and after Covid pandemic by Secretary DARE and DG ICAR	ICAR-IARI	October 16, 2021
P. Lakshmi Soujanya	Recent Advances in Crop Protection including IPM and Environmental Sciences from GLP Perspective	Vasanthraj David Foundation, Chennai, Tamil Nadu	October 17, 2021
J.C.Sekhar	Sensitization workshop on ARMS and monthly reporting in ICAR institutions	ICAR-IISWC	October 18,2021
J.C.Sekhar	Joint Training and Geo-zone meeting on IPM of the FAW in Northeast Asia and South Asia	FAO Rome	October 18, 2021
J.C.Sekhar	Panel Session "Enabling Food and Nutrition Security in Drylands", organized as World Food Prize 2021 International Borlaug Dialogue's virtual side event.	ICRISAT	October 19, 2021
J.C.Sekhar	Novel approaches for simplified detection of plant viruses and virus-like pathogens by Dr.V.K.Barnwal,	PPAI, Hyderabad	October 22, 2021
J.C.Sekhar	FAO IPPC FAW a global threat WEBINAR SERIES 1	FAO Rome	October 22, 2021
Dr. Pardeep Kumar	Participated online International Webinar on "Fighting the Hunger using Smart Technology"	ICAR-Indian Institute of Oil Palm Research, Pedavegi, Andhra Pradesh	October 26, 2021
P. Lakshmi Soujanya	International Symposium on 'Plant Biotechnology towards improving agri-food industry and healthcare products (ISPB-2021)	BIT Mesra, Ranchi	October 27-30, 2021
J.C.Sekhar	XIII Dr S.Pradham Memorial Lecture by Dr. Z.R Khan ICIPE	Division of Entomology, IARI	November 8, 2021

Participation in Seminar/Symposium/Conferences/Workshop/Important meeting contd...

Name of the Scientist	Name of the Conference/ Seminar/Workshop/ Meeting Attended	Venue	Date
J.C.Sekhar	A blight on maize leaves, but a model for fungal cell signaling: pathogenic development of Cochliobolusheterostrophus by Dr Benzamin A. HorwitzIsrael Institute of Technology	IPS, New Delhi	November 9, 2021
J.C.Sekhar	FAO NSP Fall Armyworm Webinar series	FAO Rome	November 19, 2021
J.C.Sekhar	Technical Meeting: One CGIAR Initiative on Plant health and rapid response for protecting income and food supply. Technical Meeting: One CGIAR Initiative on Plant health and rapid response for protecting income and food supply.	CIMMYT	November 22, 2021
J.C.Sekhar	Effective Farmer Communication for IPM: Part 4	Grow Asia	November 23, 2021
J.C.Sekhar	TCP/3709/IND/FAW Training 2-National Training-cum-webinar on “On-farm and mass production protocols of bioagents and microbial agents for Fall armyworm management	FAO India, ICAR-IIMR and DPPQ&S	November 23-25,2021
Dr S.L.Jat	5 th International Agronomy Congress	Hyderabad, India	November 23-27, 2021
J.C.Sekhar	Attended the CIMMYT DH facility at ARS Kunigal	CIMMYT & UAS-B	December 03, 2021
P. Lakshmi Soujanya	International Conference on “Global Perspectives in Crop Protection for Food Security”	TNAU, Coimbatore, Tamil Nadu	December 8-10, 2021
J.C.Sekhar	FAO NSP Fall Armyworm all Armyworm, a global threat to prevent (webinar 3: Fall armyworm response and communication).	IPPC and FAO	December 10, 2021
J.C.Sekhar	Participated in WEBINAR on “Entrepreneurship Development through Cultivation of Medicinal and Aromatic Plants”	CHF/CAU/IDP-NAHF.	December 17, 2021
J.C.Sekhar	Participated in WEBINAR on “Plenary lecture by Dr. T. Mohapatra Secretary DARE & DG ICAR on “Gen Next technologies for enhancing, productivity, profitability and resilience of rice farming “	ARRW , Cuttack	December 17, 2021
Yathish K.R	3 rd International Conference (Hybrid Mode) on Food, Agriculture and Innovations (ICFAI)	Ranchi, Jharkhand	December 24-26, 2021

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