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#### ICAR Appointment

Prof. A.K. Srivastava has assumed additional charge of Chairman, Agricultural Scientists Recruitment Board (ASRB) from 12th July, 2017. Before joining ASRB, he worked as Director, ICAR-National Dairy Research Institute, Karnal. He is fellow of NAAS, NAVS, NADS and others. He is recipient of several prestigious awards.

## RESEARCH HIGHLIGHTS

### Promising Technologies

Eleven single cross maize hybrids (5 normal, 2 specialty corn and 4 nutrients-enriched) have been released by Central Variety Release Committee (CVRC) during the year 2017-18. Out of 11 released hybrids three were contributed by ICAR-IIMR.

#### Hybrids released by AICRP on Maize during 2017

Sl. No.	Cultivar	Organization/Center	Maturity	Area of adaptation	Cropping season
<b>Normal maize hybrids</b>					
1	DMRH1301	ICAR-IIMR, Ludhiana	Medium	Eastern Uttar Pradesh, Bihar, Jharkhand, Odisha, West Bengal, Rajasthan, Gujarat, Madhya Pradesh & Chattishgarh	Rabi
2	DMRH1308	ICAR-IIMR, Ludhiana	Late	Rajasthan, Gujarat, Chattishgarh & Madhya Pradesh	Rabi
3	KNMH-4010141	PJTSAU, Telangana State	Medium	Maharashtra, Karnataka, Andhra Pradesh, Telangana & Tamil Nadu	Kharif
4	Central Maize VL 55	ICAR-VPKAS Almora	Medium	Jammu & Kashmir, Himachal Pradesh, Uttarakhand, NE Hills, Maharashtra, Karnataka, Tamil Nadu, Telangana & Andhra Pradesh	Kharif
5	Pant Sankar Makka-4	GB Pant University of Agriculture and Tech, Pantnagar	Early	Uttarakhand	Kharif
<b>Specialty corn hybrids</b>					
1	DMRHP 1402 (Popcorn)	ICAR-IIMR, Ludhiana	Early	Punjab, Haryana, Delhi NCR & Western Uttar Pradesh, Rajasthan, Madhya Pradesh, Chattishgarh & Gujarat	Kharif
2	Vivek Hybrid 27 (Babycorn)	ICAR-VPKAS, Almora	Early	Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Delhi, Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, Gujarat, Rajasthan, Chhatisgarh & Madhya Pradesh	Kharif
<b>Nutrition enriched maize hybrids</b>					
1	Pusa Vivek QPM-9	ICAR-IARI, New Delhi	Ex. Early	Jammu & Kashmir, Himachal Pradesh, Uttarakhand (Hills) & NEH states, Maharashtra, Karnataka, Andhra Pradesh, Telangana & Tamil Nadu	Kharif
2	Pusa HM4	ICAR-IARI, New Delhi	Medium	Punjab, Haryana, Delhi, Uttarakhand (Plain) & Uttar Pradesh (Western region)	Kharif
3	Pusa HM8	ICAR-IARI, New Delhi	Medium	Maharashtra, Karnataka, Andhra Pradesh, Telangana & Tamil Nadu	Kharif
4	Pusa HM9	ICAR-IARI, New Delhi	Medium	Bihar, Jharkhand, Odisha, Uttar Pradesh (Eastern region) & West Bengal	Kharif



### Appointment of Dr. Sujay Rakshit as Director, ICAR-IIMR

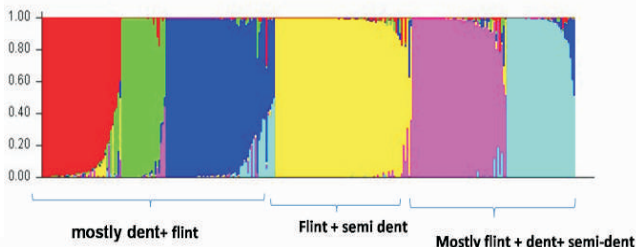
Dr. Sujay Rakshit has joined as Director, ICAR-Indian Institute of Maize Research, Ludhiana on 24<sup>th</sup> March, 2017. Earlier, he was working as Principal Scientist, ICAR-Indian Institute of Millets Research,

Hyderabad. He has made 128 publications in journal of national and international repute. He has edited three books. He has one QPM hybrid, 20 genetic stocks and over 700 DNA sequences registered to his credit. He is recipient of several prestigious awards like: Indian Society of Genetics & Plant Breeding (ISGPB) Fellow, NE Borlaug fellow (USDA), JSPS Post-doctoral fellowship for Foreign Researchers, BOYSCAST Fellowship, CSIR Scientist Travel Fellowship, Indian Science Congress Association Young Scientist Award, ICAR Jawaharlal Nehru Award, UNESCO fellowship in Biotechnology, Best Ph.D. Student of IARI Medal, IARI Merit Medal, Jawaharlal Nehru Memorial Award, Binani gold Medal, BHU Gold Medal among others. He has visited Australia, Germany, Netherlands, Singapore, Japan, Bangladesh, Malaysia, Thailand and the USA.

### Research Activities

#### Basic and Strategic Research

A diverse Association Mapping Panel (AMP) consisting of 300 maize genotypes has been constituted and studied for its population structure. Partial substructure (total six sub-populations) has been observed in the panel. The AMP has been phenotyped for multiple traits, viz., major maize diseases (Turcicum Leaf Blight, Charcoal Rot, Maydis Leaf Blight and Common Rust) and biochemical traits (Fe & Zn) at multiple sites across the country.



Details of Population structure and diversity in the association mapping panel

Highly resistant and susceptible maize genotypes have been identified after severe drought and water logging stress. RNA sequencing of root and shoot samples is being carried out for the same set of samples.

### New Research initiatives:

New research initiatives have been taken up by the scientists in the form of submitting new project proposals to the institutes as well as externally funded agencies. Eleven new institute project proposals were discussed and approved by Institute Research Council (IRC).

### New Project Proposals Approved in IRC-2017

Sl. No.	Title of the project
<b>Basic Sciences</b>	
1	Physio-biochemical basis of nitrogen use efficiency in maize
2	Analysis of starch diversity and digestibility in maize
<b>Crop Improvement</b>	
3	Development of early maturing maize hybrid
4	Genetic enhancement of QPM germplasm
5	Breeding for development of baby corn hybrids
6	Development and enhancement of white maize germplasm
7	Diversification of sweet corn germplasm
8	Breeding for high yielding and better quality fodder cultivars in maize
<b>Crop Production</b>	
9	Development of precision conservation agriculture practices in cereal-based system in Indo-Gangetic Plains
10	Sensor guided nitrogen management in maize based cropping system under conventional and conservation agriculture practices
<b>Crop Protection</b>	
11	Management of maize stem borers through host plant resistance

### Germplasm Registered with NBPGR

- ✓ Two inbred lines (DQL 2105-1 and DQL 2048) have been registered for resistance to Maydis Leaf Blight (MLB) resistance.
- ✓ Three inbred lines (DQL 1019, DML339 and DQL1019) have been registered for charcoal rot resistance.

### Germplasm Imported

Sixty six tropical maize inbred lines were received from CIMMYT, Mexico in July 2017 and two Brown



Midrib mutant lines were received from Genetics Stock Centre, USA in August 2017.

### **Germplasm characterization**

Three hundred germplasm lines were received from NBPGR, New Delhi under the CRP-Agrobiodiversity Project. These lines were evaluated and characterized during *kharif* 2017.

### **Germplasm Distribution**

Indian Institute of Maize Research (IIMR) organized a Maize Germplasm Field Day at its 'Winter Nursery Centre' (WNC), Hyderabad on February 27, 2017. A total of 1401 maize accessions were grown in a compact block for assessment and selection by breeders, pathologists, agronomists and entomologists from 27 AICRP centres representing SAUs and ICAR institutes. The material included inbred lines from CIMMYT, NBPGR and large segregating materials with subtropical and temperate background from IIMR and seven AICRP centres. Thirty-eight participants from AICRP centres, SAUs and ICAR institutes participated in the field day. During the year, 546 accessions were distributed to 34 centres.



Maize Germplasm Field Day organized by ICAR-IIMR at WNC, Hyderabad

### **AICRP on Maize Automation System**

AICRP on Maize Automation System was developed in collaboration with ICAR-NAARM, Hyderabad and ICAR-IASRI, New Delhi for online trial management and analysis of AICRP trials. It has the facility to generate the trial, download data book, review of submitted data and analysis of the respective trials data in one go. Under this, respective PIs of different coordinating centres can upload the data and pictures of various trials conducted at respective centres. It will help in better processing and handling of huge data generated

from a number of AICRP trials, thus saving time and resources. The site was launched by Hon'ble Dr. Trilochan Mohapatra (Secretary, DARE & DG, ICAR).



Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR launches AICRP on Maize Automation System

## **IMPORTANT EVENTS**

### **Diamond Jubilee (60<sup>th</sup>) Annual Maize Workshop at Udaipur, Rajasthan**

ICAR-Indian Institute of Maize Research, Ludhiana organized the Diamond Jubilee 60<sup>th</sup> Annual Maize Workshop from April 2 - 4, 2017 at Maharana Pratap University of Agriculture and Technology, Udaipur. The workshop was inaugurated by honourable Dr. J. S. Sandhu, DDG (CS), ICAR. He mentioned that adoption of single cross hybrid technology resulted in phenomenal increase in maize production of the country. He also emphasized on effective weed management, conservation agriculture and precision farming. Annual Report of AICRP on Maize and the achievements of various disciplines was presented by Dr. Sujay Rakshit, Director, ICAR-IIMR. Tremendous improvement in maize production and productivity over last six decades was acknowledged by Dr. I. S. Solanki, ADG (FFC), ICAR. Dr. Uma Shankar Sharma, Vice Chancellor, MPAUT, Udaipur highlighted the importance of short duration QPM varieties to overcome the problem of malnutrition for the state of Rajasthan. Former maize Directors, *viz.*, Dr. N. N. Singh, Dr. Sain Dass and Dr. O. P. Yadav were felicitated on the occasion. In his lead talk on "Retrospect of maize research in India", Dr. N. N. Singh gave a brief historical recap of maize research in India and suggested roadmap ahead. Panel discussion on "Challenges in maize under climate change" was organized in which the speakers were Dr. Sain Dass, Dr.

P. H. Zaidi, Dr. M. L. Jat, Dr. Bijender Pal and Shri R. J. Aggarwal. In Variety Identification Committee, out of 32 proposals received 22 were identified. Dr. T. Mohapatra, Secretary, DARE & Director General, ICAR addressed the gathering during valedictory session. He commended the progress made in maize production and productivity over the last 60 years. He put forth the way ahead of maize research and development in India.



Release of the book 'Maize Research in India: Retrospect and Prospect' by Dr. T. Mohapatra, Secretary, DARE & Director General, ICAR

### Visit of Dignitaries at ICAR-IIMR

#### Visit of Secretary, DARE & Director General, ICAR to ICAR-IIMR, Ludhiana

Hon'ble Secretary, DARE & DG, ICAR, Dr. Trilochan Mohapatra visited the institute on October 17, 2017. He visited the experimental farm area of IIMR at



Tree plantation by Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR during his visit at experimental farm, Ladhawal, Ludhiana

Ladhawal along with other eminent dignitaries like Dr. B. S. Dhillon (Vice Chancellor, Punjab Agricultural University), Dr. Sujay Rakshit (Director, ICAR-IIMR), Dr. Rajbir Singh (Director, ICAR-ATARI), Dr. Sain Dass (Former Director, ICAR-IIMR) and others. Later, he interacted with scientists of the institute and provided valuable insights on future maize research necessities.

Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR made his second visit to the institute on December 15, 2017. He appreciated the effort being made by IIMR staff to establish at a new place.



Visit of Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR to ICAR-IIMR, Ludhiana

#### Visit of Secretary, DARE & Director General, ICAR to ICAR-IIMR, Delhi

Hon'ble Secretary, DARE & DG, ICAR, Dr. Trilochan Mohapatra visited IIMR field in Delhi on March 26, 2017. He appreciated the work being carried out on long term conservation agriculture. He pointed out the need of in depth scientific studies to understand the long term impact of conservation agriculture.



Visit of Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR to ICAR-IIMR field at Delhi



**Visit of Additional Secretary, DARE and Secretary, ICAR to ICAR-IIMR, Ludhiana**

Shri Chhabilendra Roul, Additional Secretary, DARE and Secretary, ICAR visited the institute on December 11, 2017. He praised the staff of IIMR for their active effort in institute building and development of research facilities in a very short span of time. He also visited the farm at Ladhawal.



Tree plantation by Shri Chhabilendra Roul, Secretary, ICAR and Additional Secretary, DARE at ICAR-IIMR during his visit at experimental farm, Ladhawal, Ludhiana

**Visit of Deputy Director General (Horticulture & Crop Science), ICAR to ICAR-IIMR, Ludhiana**

Honorable DDG (Horticulture & Crop Science), ICAR, Dr. A. K. Singh visited the experimental farm of IIMR at Ladhawal on October 7, 2017. On this occasion Dr. B. S. Dhillon (Vice Chancellor, Punjab Agricultural



Interaction of Dr. A. K. Singh (DDG, Horticulture & Crop Sciences), ICAR with the staff of ICAR-IIMR



Dr. A. K. Singh, DDG (Horticulture & Crop Science), ICAR sharing his views with Dr. B. S. Dhillon (VC, PAU) during farm visit at Ladhawal

University), Dr. N.S. Bains (Director Research, PAU), Dr. Rajbir Singh (Director, ICAR-ATARI) and Dr. K.S. Thind (Additional DR, PAU) were also present. Dr. A. K. Singh motivated the staff of IIMR and encouraged them to work in collaboration with PAU.

**Visit of Dr. Balraj Singh, Vice Chancellor, University of Jodhpur, Rajasthan and Dr. Tara Satyavathi, Project Coordinator, AICRP on Pearl Millet**

Dr. Balraj Singh, Vice Chancellor, University of Jodhpur, Rajasthan visited the institute on April 4, 2017. He shared his experience on conservation techniques in agriculture with the scientists of IIMR. On the same day Dr. Tara Satyavathi, Project Coordinator, AICRP on Pearl Millet also visited the institute and shared her experience with scientists.



Dr. Balraj Singh, Vice Chancellor, University of Jodhpur, Rajasthan and Dr. Tara Satyavathi, Project Coordinator, AICRP on Pearl Millet sharing their experience



**'Swachhta Hi Sewa'**

ICAR-IIMR has been implementing the Central Government scheme of 'Swachh Bharat Abhiyaan' with full dedication and zeal. An extensive 'Swachhta Hi Sewa' campaign was observed and celebrated at the institute and its regional stations. On this occasion the staff also constructed toilet for underprivileged section at nearby area of experimental farm, Ladhawal.

**Dates of organizing various activities under 'Swachhta Hi Sewa' campaign (2017)**

Events	Date
Sewa Diwas	September 17
Samagra Swachhta Diwas	September 24
Sarvatra Swachhta Diwas	September 25
Cleaning of Tourist and Public Place	October 03

**'Sewa Diwas' Celebration (Cleaning of campus area)**



Cleaning of ICAR-IIMR Ludhiana store room by ICAR-IIMR staff

**'Samagra Swachhta Diwas' celebration (Development of a toilet facility in a disadvantaged area)**



Construction of toilet at a disadvantaged area at Ladhawal by the staff of ICAR-IIMR, Ludhiana

**'Sarvatra Swachhta Diwas' celebration (Cleaning of public place)**



Cleaning of bus shelter (Rajendranagar) by Staff of ICAR-IIMR, WNC, Hyderabad



Cleaning of Lakho railway station by Staff of ICAR-IIMR, RMR&SPC, Begusarai

**Cleaning of Tourist and Public Place**



Cleaning of Children Park by ICAR-IIMR Delhi staff



## Hindi Activities

### Hindi Workshop

The institute is promoting Hindi language amongst its employees by organizing various events regularly. To promote the use of Hindi language in day to day office work, Hindi Workshop was organized at the institute on August 17, 2017. Guest speaker Mrs. Kiran Sahni, Assistant Director, Rajbhasha, Income Tax Office, Ludhiana spoke about simple means and ways to include Hindi in our daily office work.

### 'Hindi Saptah'

'Hindi Saptah' was observed in the institute from 8 to 14 September, 2017. The occasion was marked with various competitions in Hindi like debates, essay writing, poems etc. Winners were awarded on 16<sup>th</sup> September 2017. Mrs. Kiran Sahni, Assistant Director, Rajbhasha, Income Tax Office, Ludhiana was invited as a chief guest in the programme.



Mrs. Kiran Sahni addressing ICAR-IIMR staff during Hindi Workshop



IIMR staff attending the 'Hindi Saptah' during the ceremony

## Vigilance Week

Vigilance week was observed in ICAR-IIMR and its regional stations from October 30 to November 4, 2017. Integrity Pledge was taken by every staff of the institute. A discussion on sensitization to preventive vigilance was held in IIMR, Ludhiana.



Discussion on Preventive Vigilance at ICAR-IIMR, Ludhiana



Integrity Pledge being taken by staff at ICAR-IIMR, Delhi Unit



Integrity Pledge being taken by staff at ICAR-IIMR, WNC, Hyderabad

**Memorandum of Understanding (MoU)*****MoU signed between ICAR-IIMR and PJTSAU***

Memorandum of Understanding (MoU) between ICAR-Indian Institute of Maize Research, Ludhiana and Professor Jayashankar Telangana State Agricultural University, Hyderabad was signed by Director, ICAR-IIMR and Registrar, PJTSAU on August 21, 2017. The MoU was exchanged in the presence of IIMR QRT team and Vice-Chancellor of PJTSAU. As per the MoU, training of the students/ post graduate and Ph.D. research work is facilitated between these two institutions. Further, lease deed for providing land and other facilities for Winter Nursery Centre activities were also signed and exchanged between Registrar, PJTSAU and Director, ICAR-IIMR on the same day.



Memorandum of Understanding being expanded between ICAR-IIMR, Ludhiana and PJTSAU, Hyderabad

***MoU signed between ICAR-IIMR and PAU***

The Memorandum of Understanding (MoU) was signed between ICAR-Indian Institute of Maize Research, Ludhiana and Punjab Agricultural University, Ludhiana to promote collaboration in the field of research and teaching on October 16, 2017. The MoU recognized the scientific staff of IIMR, Ludhiana as a



MoU exchanged between ICAR-IIMR and PAU on teaching and research

faculty member of PAU, Ludhiana. According to the MoU instrument and library facilities of both the organizations will be shared between both the parties. Another MoU was also signed between ICAR-IIMR and PAU on November 20, 2017 regarding breeder seed production of wheat.



MoU signed between ICAR-IIMR and PAU on breeder seed production

***MoU between ICAR-IIMR and ICAR-DRMR***

To promote the production of quality seed of mustard for the benefit of farmers of the country the Memorandum of Understanding (MoU) was signed between ICAR-Indian Institute of Maize Research, Ludhiana and ICAR- Directorate of Rapeseed-Mustard Research, Bharatpur on March 27, 2017. Both the parties agreed to develop mutual collaboration and production of quality seed in participatory mode.

**Important Meetings*****Institute Research Council (IRC)***

The Institute Research Council (IRC) meeting was held at conference room of CIPHET, Ludhiana from 15 to 16 June, 2017 under the Chairmanship of Dr. Sujay Rakshit, Director, ICAR-IIMR. The progress of ongoing research projects was reviewed and new project proposals were discussed. Dr. K. S. Thind, Head Department of Plant Breeding & Genetics, PAU Ludhiana and Dr. J. S. Chawla, Senior Maize Breeder, PAU Ludhiana were invited as external expert. Dr. Ishwar Singh, Member-Secretary-IRC welcomed the participants of the IRC meeting. In his opening remarks Dr. K. S. Thind highlighted the importance of maize crop in doubling farmer's income by 2022. Dr. J. S. Chawla stressed upon the need of concerted efforts for breeding of high yielding single cross maize hybrid resistant to biotic and abiotic stresses. The Director in his remarks



highlighted the importance of development of climate resilient hybrids to cope up with the changing global climate. This was followed by individual presentation of progress of 20 ongoing research projects during 2016-17. A total eleven new project proposals were discussed and approved.



Institute Research Council (IRC) meeting held at ICAR-IIMR, Ludhiana

### **Research Advisory Committee (RAC)**

The meeting of the Research Advisory Committee (RAC) of ICAR-Indian Institute of Maize Research, PAU Campus, Ludhiana was held from 3 to 4 July, 2017 under the chairmanship of Dr. S.K. Sharma, CSIR-Emeritus Scientist & Former Vice-Chancellor, CSK-HPKV, Palampur (HP). Other members who attended this meeting included Dr. I. S. Solanki, ADG (F&FC), ICAR, Dr. Sujay Rakshit, Director, IIMR, Dr. B. L. Jalali, Ex-Director of Research, CCSHAU, Hisar and Dr. R. K. Malik, Senior Agronomist, CIMMYT & Ex-Director of Extension, CCSHAU, Hisar. Director, IIMR welcomed the Chairman and Members of RAC and other participants. Dr. Ishwar Singh, Member-Secretary, presented the Action Taken Report (ATR) on the recommendations of previous RAC meeting and major accomplishments of the Institute during 2016-17. The Committee appreciated the outstanding work done by IIMR scientists and particularly the quality of publications in refereed journals, submission of new project proposals for external funding and efficient resource generation. The major recommendations of committee was to initiate fodder maize programme in collaboration with IGFRI, to use the registered lines for resistance or tolerance with NBPGR as check in all the future studies, to evaluate all the germplasm at one place to remove duplication and to assess the impact of technologies developed by IIMR.

### **Quinquennial Review Team (QRT)**

Quinquennial Review Team (QRT) consisting of Dr. Swapan Kumar Datta (Chairman), Dr. Sain Dass, Dr. I. P. S. Ahlawat, Dr. K. Srinivas, Dr. A. K. Sharma and Dr. Shankar Lal Jat reviewed the work done by the Institute and AICRP on Maize during the five-year period from 2011 to 2016. The committee held its meeting at Delhi (June 20, 2017), Godhra (July 19-20, 2017), Santiniketan (August 8-9, 2017), Hyderabad (August 21-22, 2017) and Ludhiana (October 15-17, 2017) during June to October, 2017.



Interaction of QRT team with Dr. Trilochan Mohapatra, Secretary, DARE and DG, ICAR

### **Institutional Biosafety Committee (IBSC)**

The Institutional Biosafety Committee (IBSC) meeting was held on September 7, 2017. Dr. Sujay Rakshit (Chairman), Dr. Tanushri Kaul (DBT Nominee), Dr. Amrita Srivastava (Medical Officer), Dr. Monika Dalal (External Member), Dr. Chikkappa G. K. (Member), Dr. Bhupender Kumar (Member), Dr. Krishan Kumar (Member Secretary) and Dr. Alla Singh (Member) attended the meeting. The committee appreciated the new initiative being taken up by the institute.

### **Scientific Seminars & Invited Talks**

#### **Scientific Seminars**

With an objective to have regular and active scientific discourse and keep the scientific and research staff updated with the advancements in the field of Agricultural research in general and maize research in particular, a series of in-house seminars and invited lectures were planned and successfully executed at the institute.

*List of seminars organized at IIMR, Ludhiana during 2017*

Sl. No	Date	Topic	Presenter
1	March 28	Vision of Maize Research in India	Dr. Sujay Rakshit (Director)
2	April 27	Paper presentation on "Engineering and two-stage evolution of a lignocellulosic hydrolysate tolerant <i>Saccharomyces cerevisiae</i> strain for anaerobic fermentation of Xylose from AFEX pretreated corn stover"	Dr. Alla Singh (Scientist)
3	May 26	Plant Biosecurity system in Australia	Dr. K.S. Hooda (Principal Scientist)
4	May 26	Bioremediation of contaminated soils through maize cultivation (under Swachh Bharat Mission)	Dr. Alla Singh (Scientist)
5	August 16	Purple corn : A potential Natural colorant and protective agent against diseases	Dr. Sapna (Scientist)

*List of seminars organized at IIMR, Delhi Centre during 2017*

Sl. No.	Date	Topic of Seminar	Name & Designation
1	March 24	Vision of Maize Research in India	Dr. Sujay Rakshit (Director)
2	April 15	Host Pathogen Interactions as Affected by dsRNA and Plasmids in <i>Rhizoctonia</i> sp.	Dr. Vimla Singh (DST-Woman scientist)
3	May 02	SMARTER De-stressed Cereal Breeding	Dr. Chikkappa G.K (Scientist)
4	May 18	Genetic Transformation of Indian Maize Germplasm	Dr. Alok Abhishek (RA-NASF)
5	June 19	Genome Editing with Engineered Nucleases	Dr. Chetna Aggarwal (SRF-NASF)
6	August 11	MicroRNA Mediated Regulation of Drought Stress Tolerance in Contrasting Maize Lines	Ms. Anuradha Gautam (Ph.D. student)
7	August 23	Embryo Specific Silencing of a Transporter Reduces Phytic Acid Content of Maize	Ms. Shivani Singh Gangoliya (PDF)
8	September 07	Association Mapping: A Sophisticated Highway to Explore QTLs in Plants	Dr. Harpreet Kaur (SRF-CRP, Biofort)
9	September 21	MATRILINEAL, a Sperm-Specific Phospholipase Mediated Haploid Production in Maize	Ms. Thungri Ghoshal (SRF-CRP, MB)
10	October 04	Epigenetic and Chromatin Based Mechanisms in Environmental Stress Adaptation and Stress Memory in Plants	Ms. Avni (Scientist)
11	December 05	Physiological Implications of C4 Genes Transfer into C3 Plants	Ms. Ragini Bhardwaj (Ph. D. Student)



**Invited Lectures at IIMR, Ludhiana during 2017**

Sl. No	Date	Topic	Presenter
	April 22	Application of Remote Sensing in Indian Agriculture	Dr. Vinay Sehgal (Professor, Agricultural Physics, IARI)
1	May 26	Studies on Decontamination of Heavy Metal Pollutants (under Swachh Bharat Mission)	Dr Rajeev Sikka (Professor, Soil Science, PAU)

**INSTITUTE OUTREACH PROGRAMMES**

To deliver the newly developed technologies to the farmers of the nation, IIMR is regularly organizing Frontline Demonstrations (FLDs), field days and various trainings programmes.

**'Makka Kisaan Mela'**

'Makka Kisaan Mela' was organized at Ladhawal farm on October 7, 2017. On this occasion, Dr. A.K. Singh, Deputy Director General (Horticulture and Crop Science), ICAR was the chief guest. Dr. B.S. Dhillon, Vice Chancellor, Punjab Agricultural University also graced the occasion. Other dignitaries present were Dr. Sujay Rakshit (Director, ICAR-IIMR), Dr. Rajbir Singh (Director, ICAR-ATARI), Dr. N.S. Bains (Director Research, PAU), Dr. K.S. Thind (Additional DR, PAU), Dr. G.S. Buttar (Additional Director Extension, PAU), Dr. K.B. Singh (Director, University Seed Farm, Ladhawal), Dr. J.S. Chawla (Senior Maize Breeder,

PAU), Dr. Baldev Singh (Chief Agricultural Officer) and Dr. Subhash Chaoudhary (Agricultural Officer, Gadshankar). The event was attended by more than hundred progressive maize farmers, who came from various maize-growing areas across Punjab, viz., Pathankot, Nawashehar, Hoshiarpur, Ludhiana, etc. Dr. Dhillon stressed on the need of encouraging maize cultivation in Punjab. Dr. A. K. Singh noted in his address that maize crop is going to gain more popularity in coming days due to it has diversified uses. He motivated the farmers to interact more with the scientists of IIMR and PAU to become more aware of emerging technologies for enhanced productivity to achieve the mission of 'Doubling Farmer's Income' by 2022. This was followed by field visit by the eminent scientists and the farmers, where IIMR demonstrated 71 hybrids from public as well as private sectors.



Dr. A. K. Singh, DDG (Horticulture & Crop Science), ICAR sharing the stage with Dr. B. S. Dhillon, Dr. Sujay Rakshit and other dignitaries during 'Makka Kisaan Mela 2017'



Participating farmers during 'Makka Kisaan Mela 2017'

### Front line demonstrations (FDL)

A total of 85 ha FLD was conducted during *rabi* 2016 - 17 and *spring* 2017. An yield advantage of 10.3 - 58.8% was recorded in *rabi* season, while 38.9 - 65.5% yield gain over farmers practise was recorded in *spring* season. In *kharif* 2017, FLDs were conducted under NFSM on 106 hectare areas at farmers field in various states.

#### Front line demonstrations (FLD) conducted during 2017

S. No.	Name of the centre	FLDs conducted (ha)
<b>Rabi 2016-17</b>		
1.	WNC, Rajendra nagar, Hyderabad (A.P.)	10
2.	AAU, Gossaingaon (Assam)	10
3.	TCA, Dholi (Bihar)	10
4.	RMR&SPC, IIMR, Begusarai (Bihar)	10
5.	Arbhavi UAS, Dharwad (Karnataka)	10
<b>Spring 2017</b>		
6.	COA, Iroisemba, CAU, Imphal	10
7.	IIMR New Delhi in western U.P.	5
8.	ICAR Research Complex for NEH region, Barapani, Meghalaya	10
9.	CCSHAU, Uchani (Haryana)	10
<b>Kharif 2017</b>		
10.	SKUAST, Srinagar	10
11.	VPKAS, Almora	10
12.	DrRPCAU, Dholi	10
13.	MPUAT, Udaipur	20
14.	MPUAT, Banswara	10
15.	AAU, Godhara	10
16.	PJTSAU, Hyderabad	10
17.	IGKV, Ambikapur	10
18.	BHU, Varanasi	10
19.	RVSKVV, Jhabua	6

### Tribal Sub Plan (TSP)

Under TSP programme training and demonstrations are being focused for technology dissemination along with critical input distribution among the tribal farmers. During January to March, 2017, 190 Hand Maize Sheller, 45 Battery Sprayers, 111 Sprayers, 1007 kg seeds, 46 baby corn cane, 50 QPM Kheer and 50 QPM Chips were distributed. Five training programmes were conducted by ICAR-IIMR at Delhi and Hyderabad where 218 farmers were benefitted. Similarly three training programmes were conducted at other stations benefitting 186 farmers. To enrich the knowledge literatures like मक्का, बेबीकॉर्न की खेती एवं उपयोग, कक्का का साइलेज पशुओं के लिये पोष्टिक आहार, खरीफ में मक्का की उन्नत खेती, Specialty Corn Cultivation in India and Rabi Maize were given to farmers. Apart from this critical inputs like Trench hoe (20), Battery operated sprayer (2), Manual maize sheller (35), Battery operated Knapsack sprayers (50), Sprayer Pumps (60), Taurpaulin (50), Sickle (50), Mumty (50) etc. were also given to tribal farmers.



Special training for tribal farmers of Nabarangpur, Odisha

### Training in Biotechnology held at IIMR from Feb 1-15, 2017

A training program entitled, "Biotechnology Platforms for utility products in maize" was held at IIMR from Feb 1-15, 2017 for 10 undergraduate students. The program was coordinated by Dr. Alla Singh and Dr. Dharam Paul. It included lectures by eminent scientists and faculty from IIMR, PAU, GNDU & CIPHET.



*Details of training conducted under TSP programme during 2017*

S. No.	Title	Date	Beneficiaries
<b>National Level Training conducted at IIMR, New Delhi, Ludhiana and Hyderabad</b>			
1.	कृषि लाभप्रदता बढ़ाने हेतु विशिष्ट मक्का	February 25-27	46
2.	कृषि लाभप्रदता बढ़ाने हेतु विशिष्ट मक्का	March 02-04	50
3.	Maize Production and Protection Technologies	March 21	45
4.	Maize Production and Protection Technologies	March 28	30
5.	लाभप्रदता हेतु सामान्य एवं विशिष्ट मक्का की उन्नत तकनीकियाँ	March 27-29	47
<b>Regional Level Training conducted by AICRP Centres TNAU, Vagarai, Tamil Nadu</b>			
1.	Maize Production technologies	March 07	50
<b>RMD, CARS Ambikapur (Chhattisgarh)</b>			
2.	Improved Maize Production Technology	February 15	60
3.	Improved Maize Production Technology	March 20	76

**'Mera Gaon Mera Gaurav'**

The IIMR is implementing the 'Mera Gaon Mera Gaurav' programme by regular visit and interaction of the scientists with the farmers in the states of Telengana, Bihar, Haryana and the Punjab. The major activities undertook during July to December 2017 were visit to adopted villages, literature distribution, farmer scientist interaction meetings and demonstration of the improved technologies in the farmers field.



Interaction of scientists of ICAR-IIMR with farmers under 'Mera Gaon Mera Gaurav' Programme at Jhundpur, Sonipat, Haryana

**HUMAN RESOURCE DEVELOPMENT****Training received by staff of ICAR-IIMR during 2017**

Name of scientist/staff	Programme	Venue	Date
Dr. S. B. Singh	Training-cum-workshop on "Precision phenotyping and digital data management for abiotic stresses"	Institute of Agricultural Sciences (IAS), Banaras Hindu University (BHU), Varanasi, INDIA	May 29-31
All staff of ICAR-IIMR	Operation of GeM (Government eMarket Place) for the purchase of various articles / equipments	ICAR-CIPHET, Ludhiana	July 25
Dr. Sujay Rakshit	Executive Development Programme	NARM, Hyderabad	July 28- August 01
Dr. Mukesh Choudhary	HRD training on 'Statistical genetics-analysis and interpretation using SAS and R' (21 days)	ICAR-National Academy of Agricultural Research Management, Hyderabad	July 21- August 10
Dr. Pardeep Kumar	HRD training on 'Molecular breeding techniques for crop improvement' (28 days)	ICAR-Indian Institute of Rice Research, Hyderabad	July 21- August 17

Name of scientist/staff	Programme	Venue	Date
Dr. Pardeep Kumar	ICAR-DBT brain storming on forage crops	IGFRI, Jhansi	December 21-22
Dr. Mukesh Choudhary	Training on "Analysis of Experimental data" (7 days)	NAARM, Hyderabad	August 03 - 09
Dr. Laxmi Soujanya	Training programme on "Administrative matters"	ICAR-Indian Institute of Millets Research, Hyderabad	August 16 - 18
Dr. S. L. Jat and Dr. A. K. Singh	Invited talk at International Conference on "Advances in potassium research for efficient soil and crop management"	Organized by IPNI at NASC, New Delhi	August 28 - 29
Dr. Ramesh Kumar	National Conference on "Enhancing efficiency and effectiveness of Institutional Administration/ Management and effective Implementation of Official Language Policy in ICAR"	IIHR, Hassraghatta, Bangaluru	November 08
Dr. Pravin Bagaria	Workshop on "Simulation Modelling In Agricultural Research: Modelling Plant Disease Epidemics And Yield Losses"	Department of Plant Pathology & Indian Society of Plant Pathologists, Department of Plant Pathology PAU, Ludhiana-141004.	November 13 -15
Dr. S. B. Singh	International conference on "Global Research Initiatives for Sustainable Agriculture & Allied Sciences"	MPUA&T, Udaipur	December 02 - 04
Dr. Ramesh Kumar	International conference on "Global Research Initiatives for Sustainable Agriculture & Allied Sciences"	MPUA&T, Udaipur	December 02 - 04
Dr. Mukesh Choudhary	HTPG workshop on "Forward Breeding for Crop Improvement" (3 days)	ICRISAT, Hyderabad	December 03 - 06
Dr. S. L. Jat	ICAR sponsored winter school on 'New generation Smart Agrochemical Oriented Approaches for crop and human health management	Division of Agricultural Chemicals, ICAR-INDIAN Agricultural Research Institute, New Delhi	December 07 - 27
Dr. A. K. Singh	Invited talk at 82nd Annual Convention of ISSS held at the	Amity University, Kolkata, West Bengal	December 12

### Foreign Deputation

Name of scientist	Programme	Location	Date
Dr. Pranjal Yadav	Study leave for Postdoctoral Research (PDF)	Stanford University, USA	January 30, 2017 - January 29, 2019
Dr. Sujay Rakshit & Dr. J. C. Sekhar	As an expert to provide input in the workshop on "Maize Mega Environment of South Asia"	Dubai, UAE	July 10-11, 2017
Dr. Sujay Rakshit	As an expert to participate in review and planning meeting of the project "Heat Stress Tolerant Maize for South Asia (HTMA)"	Bangladesh	August 09-10, 2017
Dr. Sapna	Presented paper and attended 10 <sup>th</sup> International conference on Agriculture and Horticulture (Agri-2017)	London, United Kingdom	October 02-04, 2017
Dr. Sujay Rakshit	As a trainee to participate in "Crawford Fund Master Class in Agricultural Research Leadership and Management"	Malaysia	October 30- November 03, 2017



### ICAR Zonal Sports Meet

Scientist and technical staff of ICAR-IIMR participated in ICAR Zonal Tournament held at ICAR-CIAE, Bhopal from 10-13 November 2017. Mr. Mukesh Choudhary secured third position in high jump competition.



ICAR Zonal Tournament held at ICAR-CIAE, Bhopal

### Awards and Honours

- ❖ Dr. S B Singh received the awarded of “Excellence in Research Award” for Genetics and Plant Breeding, Meerut in the International Conference on Global Research Initiatives for Sustainable Agriculture and Allied Sciences held at MPUAT-Udaipur on December 02-04-2017
- ❖ Dr. Sunil Nilam received the Sipani Anushandhan Award 2017 as the Best Paper for the year 2017.
- ❖ Dr. P. Lakshmi Soujanya delivered talk on Post-Harvest management of maize and broadcasted under RythuNestham programme in Doordarshan Channel - Yadagiri (Telugu) on 7<sup>th</sup> September, 2017.
- ❖ Dr. K.S. Hooda was awarded Post Graduate Diploma in Technology Management in Agriculture (PGDTMA) in programme jointly offered by University of Hyderabad and ICAR-NAARM.
- ❖ Dr. K.S. Hooda completed Endeavour Research Fellowship (Post Doctoral Research) in Plant Biosecurity at Murdoch University, Perth, WA, Australia.
- ❖ Dr. K.S. Hooda was awarded Distinguished Scientist Award by Society for Scientific Development of Agriculture and Technology (SSDAT).



Dr. S B Singh receiving award of “Excellence in Research Award”

### Students Visit at ICAR-IIMR

IIMR celebrated Agriculture Education Day on December 3, 2017 in the memory of birthday of 1<sup>st</sup> Union Agriculture Minister and Bharat Ratna Dr. Rajender Prasad. Students from BVM Senior Secondary School, Ludhiana were invited to give them first-hand information related to agriculture sector and specially about maize research in India and around the world in order to develop their interest. They were taken to different laboratories for on-lab exposure and the maize documentary film highlighting the vision, mandate and the research work was played to give them an exposure of maize and agricultural research. They were also sensitized on 'Swacha Bharat Mission' of Government of India.



Students of BVM School visited ICAR-IIMR, Ludhiana to commemorate Agriculture Education Day

Apart from this, students of B.Sc. Biotechnology of Khalsa College of Women visited IIMR on Sept. 1, 2017. The students interacted with scientists on various aspects of applied sciences. The students were also encouraged to participate in cleanliness drives at their level.



Students of Khalsa College for Women interacting with scientists of ICAR-IIMR, Ludhiana

Similarly, visits of students to ICAR-IIMR, Delhi Unit was coordinated during last one year. In this regard, a group of 20 class XI<sup>th</sup> Biology students from Salwan Public School, Pusa Road, New Delhi visited ICAR-IIMR Delhi Centre along with their teachers (Dr. Shilpa and Mrs Bhawna) on July 25, 2017. The educational excursion, coordinated by Dr. Ishwar Singh, Ms. Avni and Dr. Krishan Kumar, was part of the institute's outreach program targeting a broad community of students and science enthusiasts to raise awareness and develop interest for agricultural research in general and Maize in particular.



Students of Sulvan Public School visited ICAR-IIMR Delhi Unit

Also, a batch of 60 B.Sc. (Ag.) final year students from Ramakrishna Mission Vivekananda University (RMVU, Coimbatore, accompanied by 4 faculty members, visited ICAR-IIMR New Delhi Centre in the afternoon of November 30, 2017 as part of their All-India study tour.



Students of RVMU Coimbatore visited ICAR-IIMR Delhi Unit

**Promotions:** On the recommendations of Agricultural Scientists Recruitment Board (ASRB) Dr. Dharam Paul, Dr. Ramesh Kumar and Dr. Sunil Neelam were promoted to the post of Principal Scientist. Congratulations to all of them.

**Compiled & Edited by:**  
Dr. Vinay Mahajan, Mr. Abhijit Das & Dr. Alla Singh

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E-mail: pdmaize@gmail.com | Website: www.iimr.icar.gov.in

### New Joining at ICAR-IIMR, Ludhiana



Dr. B. S. Jat  
(Scientist)  
January 05, 2017



Mr. Prashant Garg  
(Assistant)  
August 01, 2017



Mr. Bhagesh Sharma  
(Assistant)  
August 01, 2017



Mr. Permod Sharma,  
(AF&AO)  
November 23, 2017

### Transfers to ICAR-IIMR, Ludhiana



Dr. Pradeep Kumar,  
February 03, 2017,  
from ICAR-CPRI, Shimla



Dr. M. C. Dagla,  
July 06, 2017,  
ICAR-CAZRI, Regional  
Research Station, Bikaner,  
Rajasthan



Dr. Dharam Paul



Dr. Ramesh Kumar



Dr. Sunil Neelam