

RESEARCH HIGHLIGHTS

Single cross hybrid development

Four field corn (IMH 225, IMH 226, IMH 227, IMH 228) and one baby corn (IBCH 401) hybrids were released by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops (CSS on CSN&R VAC) in the 91st meeting held on 21st November 2023, and notified vide Govt of India Gazette notification no. S.O. 1560 (E) Sl. No. 81 Dated: 26th March, 2024

IMH 225: This is a medium maturity single cross field corn hybrid released for cultivation during the rabi & spring seasons in Punjab, Haryana, Plains of Uttarakhand, Western UP and Delhi. It has grain yield of 10.25 t/ha and has shown significant yield superiority (18.07%) over the relevant best check in the North Western Plains Zone (NWPZ). This hybrid has a yellow, large dent kernel and is moderately resistant (MR) to charcoal rot in proposed NWPZ. Also showed resistant (R) response to Maydis Leaf Blight (MLB) and moderately resistant (MR) to Turcicum Leaf Blight

(TLB) and Fusarium Stalk Rot (FSR) at the regional/national level. This hybrid is also moderately resistant (MR) to Chilo partellus, pink stem borer (*Sesamia inferens*) under artificial epiphytotic conditions and is resistant to fall armyworm under natural infestation. IMH 225 is responsive to high inputs.

IMH 227: This is a medium maturity single cross field corn hybrid released for cultivation during the rabi season in Eastern UP, Bihar, Jharkhand, Orissa and West Bengal. It has a grain yield of 10.91 t/ha and has shown significant yield superiority (17.65%) over the relevant best check in the North Eastern Plains Zone. This hybrid has yellow, semi-dent kernel and is moderately resistant (MR) to major diseases of the North Eastern Plains Zone (NEPZ), namely MLB, TLB and Charcoal Rot/ChR with 3.5, 4.5 and 4.5 score on a 1-9 scale at regional/national level. This hybrid is also moderately resistant (MR) to fall armyworm (under natural infestation). IMH 227 is responsive to high inputs.



Fig. 1: Field view and ear/seed photograph of IMH 225



Fig. 2: Field view and seed photograph of IMH 227

IMH 228: This is a medium maturity single cross field corn hybrid released for cultivation during the rabi season in Eastern UP, Bihar, Jharkhand, Orissa and West Bengal. It has a grain yield of 10.57 t/ha and has shown significant yield superiority (13.96%) over the relevant best check in the North Eastern Plains Zone. This hybrid has a yellow, large dent kernel and is moderately resistant (MR) to major diseases of North

Eastern Plains Zone (NEPZ), namely MLB, TLB and Charcoal Rot/ChR with 3.6, 4.3 and 4.6 score on a 1-9 scale at regional/national level. This hybrid is also moderately resistant (MR) to fall armyworm (under natural infestation). IMH 228 is responsive to high inputs.

IBCH 401: This is a medium maturity single cross baby corn hybrid released for cultivation during the



Fig. 3: Field view and ear/seed photograph of IMH 228



Fig. 4: Field view and ear/seed photograph of Baby corn IBCH 401 (IMHSB 19KB-2)

kharif season in the Peninsular Zone (Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu and Telangana) and the Central Western Zone (Rajasthan, Gujarat, Madhya Pradesh & Chhattisgarh). It has baby corn yield of 1.583 t/ha in (PZ) and 1.627 t/ha in CWZ, besides 23.8 to 25.8 t/ha green fodder. It has creamy white 7.75 to 9.1 cm long baby corn. This hybrid has moderate resistance (MR) to TLB, Charcoal Rot/ChR, FSR with 4.3, 4.6 and 4.5 scores and resistant (R) to Curvularia Leaf Spot with 2.7 score on a 1-9 scale. This hybrid is also found to be moderately resistant (MR) to Chilo partellus and fall army worm (FAW) under artificial infestation.

Development of waxy maize lines through marker-assisted selection

Two hybrids, CMH-08-282 (UMI 1200 × UMI 1230) and CMH 08-292 (UMI 1201 × UMI 1230), were targeted for conversion in waxy maize through MAS. Kernel amylopectin content of UMI 1200, UMI 1201 and UMI 1230 was 75%, 78% and 72% respectively,

whereas the donor parent recorded 96% of kernel amylopectin. Donor parents had the favourable allele for the waxy gene (ϕ i027), whereas recurrent parents amplified the unfavourable allele. Parental polymorphism for background markers identified 90-100 markers for each pair of donor and recurrent parents. The donor and recurrent parents were crossed to develop and subsequently, the backcross generations (BC1F1, BC2F1 and BC2F2) were developed. The mean amylopectin content of improved UMI1200, UMI1201 and UMI1230 was 97%, 95% and 96% respectively, whereas the maximum amylopectin content in UMI1200, UMI1201 and UMI1230 was 97.51%, 96.19% and 97.17% respectively.

Analysis of inbred lines for lysine, tryptophan and methionine

A set of 25 newly developed inbred lines was planted at four locations (Ludhiana, Bhubaneshwar, Karnal and Bajaura) during Kharif, 2023 and the selfed grains were analysed for methionine, lysine and tryptophan

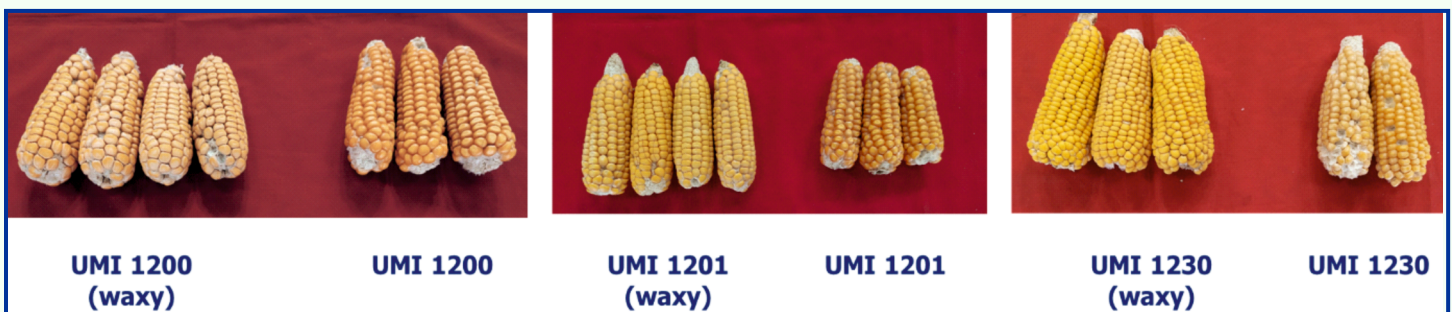


Fig. 5: Developed waxy maize lines at ICAR-IIMR, Ludhiana

content. Eight lines, namely QIL-4-2784 (Methionine: 2.35%, Try.: 0.74 % & Lysine: 3.18%), QIL-4-2800 (Methionine: 2.36%, Try.: 0.73 % & Lysine: 3.03%), QIL-4-3080 (Methionine: 2.39%, Try.: 0.92 % & Lysine: 3.68%), QIL-4-2825 (Methionine: 2.38%, Try.: 0.71 % & Lysine: 2.95%), QIL-4-2829 (Methionine: 2.60%, Try.: 0.72 % & Lysine: 2.92%), QIL-4-2830 (Methionine: 2.44%, Try.: 0.76 % & Lysine: 3.13%), QIL-4-2831 (Methionine: 2.296%, Try.: 0.73 % & Lysine: 3.05%) and QIL-4-2311 (Methionine: 2.42%, Try.: 0.70 % & Lysine: 2.89%), recorded high methionine as well as lysine & tryptophan content.

Development of automated Maydis leaf blight disease detection system for maize crops using UAV images and convolutional neural network models

The convergence of new technologies such as the Internet of Things (IoT), unmanned aerial vehicles (UAVs) and machine learning (ML) has

revolutionized precision agriculture applications such as plant disease detection with high accuracy. Maydis Leaf Blight (MLB) in maize plants is a serious fungal disease that significantly affects maize yield and traditional crop disease analysis methodologies are time-consuming and labour-intensive work, specifically for large agricultural areas. An automated MLB disease detection system for maize crops using UAV images and Convolutional Neural Network (CNN) architectures were proposed. The images were captured from the experimental field of ICAR-IIMR, RMR and SPC, Begusarai, Bihar, that includes healthy and MLB disease-infected maize plants aerial images using a UAV embedded with a high-resolution RGB camera. In this work, steps to process UAV images are proposed, such as segregation of blur UAV images and removing unwanted excess soil background sub-images using linear regression model with 95%

Table 1: List of genotypes and their amino acid estimation

| Sr No. | Genotype | Methionine (% / 100g protein) | Tryptophan (% / 100g protein) | Lysine (% / 100g protein) |
|--------|----------------------|-------------------------------|-------------------------------|---------------------------|
| 1 | QIL-4-2784 | 2.35 | 0.74 | 3.18 |
| 2 | QIL-4-2800 | 2.36 | 0.73 | 3.03 |
| 3 | QIL-4-3080 | 2.39 | 0.92 | 3.68 |
| 4 | QIL-4-2825 | 2.38 | 0.71 | 2.95 |
| 5 | QIL-4-2828 | 1.70 | 0.81 | 3.24 |
| 6 | QIL-4-2829 | 2.60 | 0.72 | 2.92 |
| 7 | QIL-4-2830 | 2.44 | 0.76 | 3.13 |
| 8 | QIL-4-2831 | 2.96 | 0.73 | 3.05 |
| 9 | QIL-4-2836 | 1.56 | 0.86 | 3.42 |
| 10 | QIL-4-2840 | 1.83 | 0.61 | 2.17 |
| 11 | QIL-4-2841 | 1.62 | 0.74 | 3.12 |
| 12 | QIL-4-2047 | 1.67 | 0.62 | 2.38 |
| 13 | QIL-4-2124 | 1.75 | 0.73 | 2.63 |
| 14 | QIL-4-2160 | 1.61 | 0.75 | 2.85 |
| 15 | QIL-4-2169-1 | 1.60 | 0.71 | 2.84 |
| 16 | QIL-4-2170-2 | 1.74 | 0.63 | 2.12 |
| 17 | QIL-4-2192 (Check) | 1.65 | 0.70 | 3.21 |
| 18 | QIL-4-2209-1 (Check) | 2.09 | 0.65 | 2.47 |
| 19 | QIL-4-2234 | 1.71 | 0.73 | 3.00 |
| 20 | QIL-4-2243 | 1.84 | 0.60 | 2.78 |
| 21 | QIL-4-2295 | 2.07 | 0.51 | 1.90 |
| 22 | QIL-4-2297 | 2.12 | 0.60 | 2.70 |
| 23 | QIL-4-2300 | 1.80 | 0.72 | 3.10 |
| 24 | QIL-4-2306 | 1.74 | 0.68 | 3.30 |
| 25 | QIL-4-2311 | 2.42 | 0.70 | 2.89 |

accuracy. Three different CNN architectures, such as MobileNet (MobileNetV1, MobileNetV2 and MobileNetV3), InceptionV3, and ResNet50 were trained using a transfer learning approach on UAV sub-image datasets consisting of 3 classes, such as MLB, healthy, and weeds. Among the considered CNN architectures, the simple MobileNetV1 model achieved the best performance with an accuracy of 93%, evaluated on separate test datasets. Further using the MobileNetV1 model, mapping of MLB sub-images on respective high-resolution UAV images is proposed, which can give an overall insight about the severity of MLB disease affecting the maize crops.

Important research accomplishments in insect pest management

1. Three genotypes, namely DHO-82-7, DHO-82-2 and MIL 2-280-1 were found promising against fall armyworm.
2. Two genotypes, namely 343-X/14 and MIL-1-11 were found promising against pink stem borer.
3. Morphological traits such as higher trichome density, leaf thickness and biochemical traits, namely higher levels of potassium, acid detergent

fiber, acid detergent lignin, total phenol content, and total tannin content impart resistance to fall armyworm.

Unleashing agricultural transformation through rabi maize farming in Assam

Maize as a staple crop crucial to global food security, has demonstrated its transformative potential in various regions. Since 2010, systematic techno-policy interventions by ICAR-IIMR have significantly expanded maize cultivation in West Bengal, increasing the area from 0.89 to 3.93 lakh hectares (L ha) and boosting yields from 4.0 to 6.8 tonnes per hectare (t/ha) during 2010-11 to 2023-24. Currently, West Bengal is a key maize-producing state in India with the highest productivity. To replicate this success in the maize-deficit North Eastern Hill (NEH) region, demonstrations during the rabi season under the National Food Security Mission in Assam began after 2020, receiving positive responses from farmers. However, the acreage did not pick up until 2022-23. The IIMR, Ludhiana under the Assam Project on Agribusiness and Rural Transformation (APART), a World Bank-financed project, initiated training and



Fig. 6: Rabi Maize Farming in Assam and Field Day

awareness programs from July 2023 onwards. This included 12 master training programs for trainers across 12 districts of Assam, followed by training sessions for 520 progressive farmers and technical training for >1500 farmers. These initiatives emphasized linking farmers to markets and existing feed and grain-based distilleries for ethanol production, which proved crucial for large-scale maize adoption in Assam. Involvement from maize input providers (seed, agrochemicals) resulted in their significant presence before the onset of the 2023-24 rabi season. Advanced agricultural techniques and high-yielding maize hybrids demonstrated at farmers' fields across 1440 plots yielded between 8.73 and 12.58 t/ha, averaging 10.94 t/ha. Remarkably, the crop was grown with minimal irrigation due to Assam's significant rainfall, which averages >200 rainy days/year. Economically, this initiative greatly benefited farmers, allowing them to earn Rs. 60-65 thousand from a 0.25-hectare plot by selling maize. Additionally, green fodder harvested after cob maturity provided valuable livestock feed, showcasing maize's dual-purpose value. The IIMR-APART initiatives addressed challenges like knowledge gaps, inadequate irrigation, storage, transportation, and pest control by providing essential training and resources. As a result, rabi maize cultivation expanded from no recorded data in 2022-23 to 39,000 ha in 2023-24. Assam needs 25 lakh metric tonnes (LMT) of maize for feed and ethanol production and can add 3.0 L ha under maize by utilizing rabi fallows and expanding irrigation with a productivity target of 6-7 t/ha. This growth will support the piggery, poultry, and livestock industries in the NEH region. The Government of India has approved a 725 kilolitre-per-day capacity (KLDP) bioethanol plant in Assam, requiring an additional 10 LMT of maize annually by 2025-26. Therefore, the total maize requirement will exceed 25 LMT against a current production of 4 LMT. This highlights that scaling up maize production based on regional conditions and market opportunities can ensure sustainable livelihood security in Assam through an improved maize value chain.

Research initiatives

ICAR-Indian Institute of Maize Research is focusing on to meet the rising demand of maize for sustainable ethanol and silage production in India. The Govt. of India has approved the three mega projects for the institute with a total budget of Rs 24.52 crores for the three years to work on these aspects. The institute is working on developing high-yielding maize hybrids

suitable for bio-ethanol production, identifying the microbial cultures, and standardizing the mechanism for better ethanol recovery. The dream project on developing catchments around the distilleries has been implemented in 15 states of the country in which scientific maize cultivation is being demonstrated for higher productivity. Further, in the north western plain zone (NWPZ) particularly in Punjab and Haryana, demonstrating technology and production potential of kharif silage maize, establishing a supply chain of silage maize for the household dairy sector, and studying the socio-economic impacts on silage maize have been targeted for the diversification of the rice-wheat cropping system with maize-wheat for sustainability. Further Institute has also started working on genome editing for developing new plant types and genomic selection for improving breeding efficiency.

Research highlights of Basic Sciences

- ❖ Previously, Dr. Krishan Kumar and his team developed an efficient regeneration and transformation protocol in maize using mature seed as starting material. In our standardized protocol, the best genotype demonstrating the highest regeneration frequency is a hybrid, i.e., DMRH 1308. The same is used for genome editing work in Indian maize. Since we are using a hybrid for genome editing work, therefore obtaining fixed events may require 4-6 backcrosses, hence it will be time-consuming. To address the same, we have developed DMRH 1308-derived RIL population (250 lines) and evaluated few lines for callusing and regeneration potential. Cloned gene-specific gRNAs and developed CRISPR/Cas9-based genome editing constructs for the KRN2 gene in maize. Further, we are pursuing genetic transformation work.
- ❖ A total of 23 public and private maize hybrids were sown at eight AICRP maize centres, i.e., Pantnagar, Delhi, Begusarai, Bhubaneswar, Hyderabad, Kolhapur, Banswara, and Chindwara locations. These hybrids cover the category of early, medium and late maturity group. These were tested for starch present in the endosperm. The starch was estimated through a polarimeter. These early, medium and late maturity hybrids have the starch in the range of 56.4-64.2, 56.0-67.6 and 56.4-65.9 percent, respectively. Statistical analysis revealed significant differences in starch content among different hybrids and locations ($p < 0.05$). The hybrids have starch percentages of

64.25 (CP 111), 67.6 (LG 34.05) and 65.9 (NK 6240) and were identified as top performers in the early, medium and late maturity groups, respectively. High starch content in maize hybrids is highly beneficial for bioethanol production due to higher conversion efficiency, enhanced fermentation, and cost-effectiveness.

- ❖ Dr. Alla Singh and team developed a bioprocess for first-generation ethanol production, which has been applied for Indian Patent (Application No. 202411013155). In addition, we are working on yeast encapsulation to recycle yeast for bioethanol production.
- ❖ An MTA (Material Transfer Agreement) was signed on 28.07.2023 between ICAR-IIMR, Ludhiana, and ICAR-NIPB, New Delhi, for acquiring the clones containing the vip gene from ICAR-NIPB, New Delhi, under the institutional project "Exploring the potential of Vip3A-type proteins for the management of fall armyworm" (PI-Dr. Mamta Gupta). The constructs were subsequently received and work on protein isolation from the received constructs is currently ongoing.
- ❖ During the reporting period, 12 research/review papers having NAAS scores from 6 to 12 and 8 book chapters were published. Four technologies were certified by the Council. One patent has been applied.
- ❖ Dr. Krishan Kumar and the group won a multi-institute project on maize genome editing funded by DBT with a budget outlay of 2.52 crores.

IMPORTANT EVENTS

Republic day celebrations

The staff of the institute celebrated 75th Republic Day at ICAR-IIMR, Ladhawal, Ludhiana with great



Flag Unfurling Ceremony on the 75th Republic Day

enthusiasm, unfurling of the National Flag, reflecting a remarkable spirit of unity and patriotism. Simultaneously, the respective Incharges at various centers conducted the flag-unfurling ceremony with deep respect and dedication. In his address, the Director emphasized the importance of upholding our constitutional duties and responsibilities. He encouraged every member of the institute to commit themselves to the upliftment and progress of the farming community and highlighted the importance of collective efforts in fostering national growth.

10th Foundation day celebrations of ICAR-IIMR, Ludhiana

ICAR-Indian Institute of Maize Research, Ludhiana celebrated its 10th foundation day on February 9, 2024. On this occasion, Sh. BS Sidhu (Former Agriculture Commissioner, Govt. of Punjab) graced the occasion as chief guest and Dr. Nachiket Kotwaliwale (Director, CIPHET, Ludhiana), Dr. Parvender Sheoran (Director, ATARI, Ludhiana) and Dr. Rajbir Singh (ADG, AAF&CC, ICAR) were the guests of honor. During the event, Dr. H.S. Jat, Director of ICAR-IIMR, Ludhiana, highlighted the institute's achievements and emphasized the growing importance of maize in both crop diversification and meeting industrial demand. He



Glimpses of 10th Foundation Day of ICAR-IIMR

shared that the institute released 9 maize hybrids this year, launched a bioethanol and silage project, and expanded maize cultivation in Assam under a World Bank project. The institute has also supplied 57.89q breeder seeds to various agencies with a share of 65% in the seed indent by the Govt. of India. Further, 6257q of certified hybrid seed was also produced in participatory mode. Various coordinated massive training and demonstration programs were also conducted to train more than 10,000 stakeholders.

Sh. BS Sidhu, chief guest of the event, lauded the efforts made by the institute for providing a technology-based solution for making maize a competitive crop. The guests of honor emphasized the need for government policies for maize procurement, highlighted the role of climate-smart technologies, value addition, the role of AI in maize research, the significance of assured market prices, and collaboration with agricultural universities to promote the diversification of rice with maize. On this occasion, four IIMR publications, viz., "Specialty maize cultivation practices"; "Conservation Agriculture in maize system"; "Insect pest of maize and their management" and "Maize disease and their management" were also released. The progressive

farmers of the region also shared their experiences on innovative maize technology, and the institute has also recognized 48 women farmers for their remarkable work in maize value addition through the FPO formed by Grand Thornton.

Signing of MOUs for research collaborations, startups and extension activities

ICAR-IIMR signed a Memorandum of Understanding (MoU) with a startup, Yamdagnipuram Farmer Producer Company Limited, Jaunpur, Uttar Pradesh on March 15, 2024, to promote value addition in maize. Following this, an agreement was formalized on April 4, 2024, with Shunya Fodder and Forage Agritech Private Ltd., a New Delhi-based pioneering startup committed to addressing India's fodder shortage and providing essential animal nutrition solutions to farmers. Maize holds a significant place in their strategy.

On May 3, 2024, ICAR-IIMR, Ludhiana, signed another MOUs with Bionex Agrigenetics Private Ltd. for the seed production of DMRH 1305 and LQMH 1. On the same day, ICAR-IIMR also entered into a collaborative partnership with Agrowin Agri Solution Pvt. Ltd. to focus on research related to the production of the IMH 224 hybrid.



Signing up/Exchange of MOUs

An important agreement was signed on 21st May, 2024 between ICAR-IIMR and Uttar Pradesh Distilleries Association (UPDA) for collaborative research on developing and testing suitable maize hybrids for bioethanol production.

On May 16, 2024, a MoU was signed between ICAR-IIMR, Ludhiana and CSIR-IIP, Dehradun for collaborative research.

IMPORTANT MEETINGS

Brainstorming session on 'Maize to ethanol in India: prospects and strategies'

ICAR-IIMR, Ludhiana, in association with National Academy of Agricultural Sciences (NAAS), New Delhi, conducted brainstorming in hybrid mode on "Maize to Ethanol in India: Prospects and Strategies" on 3rd April, 2024, under the chairmanship of President NAAS and DG, ICAR, Dr. Himanshu Pathak. A total of 81 participants from diverse fields, including the eminent scientists from public and private sectors, policy makers and stakeholders from the distilleries, participated in it. There was thorough debate and discussion on maize as a potential feedstock for bio-ethanol production in India, and the strategies to meet the increasing demand for maize in the country.

Workshop on promotion of climate resilient technologies

On April 25, 2024, ICAR-Indian Institute of Maize Research organized a workshop on "Promotion of Climate Resilient Technologies of Maize" among the farmers of Punjab. The programs were conducted as a part of the Awareness/Campaign Programs under Mission LiFE (Lifestyle for Environment), aligning with the theme of World Environment Day, 2024. This event was organized at Pahadpur, Ropar and Gehlewal, Machhiwara Sahib and Ludhiana districts of Punjab.



Workshop on Promotion of Climate Resilient Technologies

Annual maize workshop

The 67th Annual Maize Workshop-2024 was jointly organized by ICAR-Indian Institute of Maize Research (IIMR) and Professor Jayashankar Telangana State Agricultural University (PJTSAU) from May 8-10, 2024, at the PJTSAU campus in Rajendranagar, Hyderabad. The workshop brought together leading maize researchers, agricultural scientists and policymakers across the country to discuss advancements in maize cultivation. Participants focused on key challenges such as climate resilience, productivity enhancement, market diversification and



Glimpses of Annual Maize Workshop held at PJTSAU Campus, Hyderabad

future directions in expanding the area under maize crop. The event also highlighted collaborative efforts to promote sustainable maize production for food security and economic growth.

Institutional biosafety committee (IBSC) meeting

The Institutional Biosafety Committee (IBSC) meeting of ICAR-Indian Institute of Maize Research (IIMR), was held online via videoconferencing on 17th May 2024 under the chairmanship of Director IIMR. The following members- Dr. H. S. Jat (Director & Chairman), Dr. Parveen Chhuneja, (Principal Molecular Geneticist, PAU, Ludhiana & DBT nominee), Dr. Anita Srivastava (Medical Officer, IARI

dispensary & Biosafety Officer), Dr. Monika Dalal (Principal Scientist, NIPB & outside expert), Dr. Chikkappa G. Karjagi (Principal Scientist, IIMR & member), Dr. Bhupender Kumar (Sr. Scientist, IIMR & member), Dr. Alla Singh (Scientist, IIMR & member) and Dr. Krishan Kumar (Scientist, IIMR & Member Secretary) attended the online IBSC meeting. At the outset, the Chairman welcomed all the IBSC members. The member secretary briefed the agenda of the IBSC meeting. The committee reviewed the biosafety aspects of one new project involving 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 satisfactory.

Stakeholders meeting for catchment area of ethanol industries

ICAR-IIMR Ludhiana organized a stakeholder meeting on June 21, 2024, to promote the project entitled "Enhancement of Maize Production in the Catchment Area of Ethanol Industries". The meeting brought together representatives from distilleries, seed industries, farmer producer organizations (FPOs), farmers, and experts from PAU, ICAR-CIPHET and

IIMR. This initiative, sponsored by the Ministry of Agriculture and Farmers Welfare, Government of India, aims to boost the target of achieving 20% Ethanol Blended Petrol (EBP) by 2025-26.

Sh. K S Pannu, retired IAS and Chief guest, highlighted the growing significance of maize in the ethanol sector and emphasized the challenges and concerns raised by various stakeholders. Dr. H.S. Jat, Director of ICAR-IIMR, underscored the importance of strengthened collaboration among stakeholders to achieve the 20% EBP target by 2025-26, and address the concerns raised by participants. Dr. S.L. Jat, Senior Scientist and Principal Investigator of the project, provided a comprehensive overview of the project. Additionally, inputs were also distributed to the farmers. The meeting saw the active participation of over 86 individuals, both in-person and offline.

Meeting with Odisha governments on Mukhyamantri Maka Mission

The Director of Agriculture & Farmers Welfare chaired the inaugural meeting of the Knowledge Secretariat at Krushi Bhawan, conducted on February 20, 2024 to strategize on fulfilling the objectives of the Mukhyamantri Maka Mission (MMM). The meeting



Glimpses of Stakeholders Meeting conducted at ICAR-IIMR, Ludhiana



Scientific Discussion During Interactive Meet

included participation from key members of the Knowledge Secretariat, such as representatives from IARI, ICAR-Indian Institute of Maize Research, the International Maize and Wheat Improvement Centre (CIMMYT) and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).

During the meeting, the Director, ICAR-IIMR, highlighted the crucial role of the Knowledge Secretariat member's technical expertise in advancing the mission's goals. Key focus was given to areas such as enhancing seed production, hybrid seed production, farm mechanization, and addressing the growing demand for ethanol production from maize.

Workshop on "Maize for North East hill region: challenges and opportunities"

The workshop on 'Maize for North East Hill Region: Challenges and Opportunities' was held from 11-12 March, 2024 at the College of Agriculture, CAU, Imphal. The event was graced by Dr. Lalita Mohan Garnayak (Director of Research), Dr. L. Nabachandra Singh (Dept. of Agronomy) and Dr. Shankar Lal Jat (Senior Scientist, ICAR-IIMR, Ludhiana), and Dr. N. Brajendra Singh (Dept. of Genetics & Plant Breeding), who served as presidium members. The workshop was



Inauguration Ceremony of Maize Workshop Organized at CAU, Imphal



Glimpses of Farmer's Technical Training at Nagaon, Assam

organized to disseminate recent advances in maize production, promote maize-based entrepreneurship and strengthen the maize value chain.

Speaking as the Chief guest, Dr. Lalita Mohan Garnayak briefed the audience on the diverse maize varieties available in the North East Region and emphasized the need for developing small tools to ease labor-intensive farming in hilly terrains. Dr. Shankar Lal Jat, calling maize an "amazing crop and the safest food," emphasized its potential for enhancing food and feed security in the North East Region. He discussed the benefits of biofortified maize and the Government of India's focus on maize for bio-ethanol production. Dr. L. Nabachandra emphasized the need to address challenges in maize cultivation and production in the region. Dr. N. Brajendra Singh highlighted the potential of maize in uplifting farmers' socio-economic status by exploring opportunities for specialty corns like sweet corn, baby corn, popcorn, and forage maize.

EXTENSION AND OUTREACH

Farmer's technical training at Nagaon, Assam

A farmers' technical training program was successfully conducted on January 11, 2024, at Sologuri, Batadrawa in Nagaon, Assam. The training aimed to enhance farmers' skills and knowledge in modern agricultural practices, with a focus on improving productivity and sustainability of maize. Key officials present at the event included Anirban Saikia, Research associate from the IIMR-APART project, and Arup Kr. Nath, block technology manager of Batadrawa. They provided valuable insights and guidance to the participants for advancing farming techniques in the region

Training cum input distribution program

A one-day training cum input distribution program was held on February 12, 2024, at Mahesh Nagar, Barnala, under the Scheduled Caste Sub Plan (SCSP) program of ICAR-IIMR, Ludhiana. This collaborative effort





Input Distribution to farmers under SCSP program

between ICAR-IIMR, Grant Thornton Bharat, and the HDFC Parivartan Project was aimed at enhancing the livelihood of SC farmers through maize technology-based interventions. A total of 50 progressive SC women farmers from four Farmer Producer Companies (FPCs) in the Kotduna, Bhotna, Rureke Kalan, and Sehna clusters of Barnala District participated in the event. Each beneficiary received improved maize hybrid seed covering a total of 40 acres.

Dr. Pardeep Kumar, Scientist, ICAR-IIMR, Ludhiana, and incharge of the SCSP program, emphasized the institute's commitment to sustainable livelihood creation and socio-economic transformation in rural communities. He further extended gratitude to Dr. H S Jat, Director, ICAR -IIMR, Ludhiana, for his guidance and support. Additionally, Dr. Ph Romen Sharma, Scientist, ICAR-IIMR, Ludhiana, shared insights on adopting best management practices to optimize crop yields while minimizing expenditures to ensure profitable outcomes.

Agri drone demonstrations

ICAR-IIMR, Ludhiana, conducted an agricultural drone demonstration on February 14, 2024, for micronutrient spraying at the farmer's field in Kot

Umara village, Ludhiana. Following this, on March 8, 2024, ICAR-IIMR showcased another drone demonstration for micronutrient and chemical spraying at the farmers' field in Lallian Kallan village, Jalandhar district. These demonstrations were led by the drone pilot Dr. Deep Mohan, Scientist and coordinated by Ph. Roman Sharma, Scientist.

Technical training at Nalbari, Assam

The farmer's technical training was successfully conducted by ICAR-IIMR on February 20, 2024, at the Barkhetri block of Nalbari District, Assam. This training aimed to enhance the skills and knowledge of local farmers in modern agricultural practices, focusing on improving productivity and sustainability in their farming techniques. During training, participants were given the opportunity to engage with expert trainers, share their experiences, and gain valuable insights to advance their agricultural practices.

Training cum input distribution at Kokri Kalan, Moga

In a significant step towards enhancing the livelihoods of Scheduled Caste farmers, a one-day training cum input distribution program was successfully held in Kokri Kalan, Moga, on February 22, 2024. This



Drone Technology Demonstration



Glimpses of Technical Training at Nalbari, Assam



Spray Pumps Distribution to Farmers at Kokri Kalan, Moga

initiative, organized under the Scheduled Caste Sub Plan (SCSP) program of the ICAR-Indian Institute of Maize Research (ICAR-IIMR), Ludhiana was conducted in collaboration with Grant Thornton Bharat and the HDFC Parivartan Project. A total of 95 progressive SC women farmers from three Farmer Producer Companies (FPCs) in the Moga 1, Moga 2, and Bhagapurana clusters of Moga District actively participated in the event and each beneficiary received a spray pump as part of the program. The training program was designed to empower these women farmers by providing them with knowledge on advanced maize cultivation techniques, with a special focus on promoting value addition in maize crop. Dr. Bharat Bhusan, Senior Scientist at ICAR-IIMR, Ludhiana, highlighted the institute's commitment to fostering sustainable livelihood creation and socio-economic transformation in rural communities. He also expressed his gratitude to Dr. H S Jat, Director, ICAR-IIMR, Ludhiana for his guidance and support in implementing the program. Dr. Ph Romen Sharma, Scientist at ICAR-IIMR, Ludhiana, shared valuable insights on adopting best practices to optimize crop yields with minimal expenditure, ensuring profitable crop outcomes for the farmers.

Three days training in Koraput district, Odisha

The ICAR-IIMR successfully conducted a three-day training program entitled "Best Management Practices in Maize Cultivation and Entrepreneurship Development to Enhance Farmer Livelihoods" in Koraput District, Odisha from February 26-28, 2024. This event took place in the Conference Room, MS Swaminathan RF Centre, Jeypore, Koraput. The training was organized as part of the DMF-funded project "Improving the livelihood and nutritional security through scientific maize cultivation and maize-based entrepreneurship development in Koraput District, Odisha".

Farmer's awareness cum training

ICAR-IIMR organized a farmer's awareness cum training program on "Farmer's Rights and Scientific Maize Cultivation". The event took place at RMR&SPC in Begusarai on March 3, 2024. The program aimed to educate farmers about their rights and promote best practices in maize cultivation. All participants received valuable information to enhance their farming techniques and awareness of their rights.



Three days training program at Koraput district, Odisha



Farmer's awareness cum training program at RMR&SPC in Begusarai

Farmer's awareness program on farmer's right under PPV&FRA

A Farmer Awareness Program on Farmers' Rights under the PPV&FRA, along with training on scientific maize cultivation, was conducted at RMR&SPC, Begusarai on March 3, 2024. Dr. S. B. Singh highlighted the importance of conserving germplasm and the various benefits associated with it.



Farmers awareness program under PPV&FRA at RMR&SPC, Begusarai

Training cum input distribution

A one-day training cum input distribution program aimed at improving the livelihood of Schedule Caste farmers through improved maize technologies was successfully conducted in Chokkar Village, Ludhiana on March 9, 2024. This initiative was held under the Scheduled Caste Sub Plan (SCSP) program of ICAR-Indian Institute of Maize Research, Ludhiana, in collaboration with Grant Thornton Bharat, and the HDFC Parivartan Project. The program focused on enhancing the livelihoods of Scheduled Caste farmers through interventions based on improved maize technologies. A total of 38 progressive Scheduled Caste women farmers attended the event, and each beneficiary received improved maize hybrid seeds, covering a total area of 38 acres.



Distribution of maize hybrid seeds in Chokkar Village, Ludhiana

Promotion of bio-fortified maize through value addition

Three training programs under the title "Promotion of Bio-fortified Maize for Entrepreneurship Development through Value Addition for Nutritional and Livelihood Security" were conducted from March 18-20, 2024, at three different locations viz., Mehndali



Glimpses of trainings conducted at various districts under the DBT Biotech Kisan project

village (Block Anandpur Sahib), Bhotna village (Barnala District) and Lopon village (Moga District). This collaborative event between ICAR-IIMR, Grant Thornton Bharat, and the HDFC Parivartan Project was organized under the DBT Biotech Kisan project, with a primary focus on empowering women farmers through value addition using bio-fortified maize.

During the training, the Agri-business Incubation Centre of ICAR-IIMR demonstrated the preparation of various value-added maize products using quality protein maize (QPM). Dr. Ph Romen Sharma from ICAR-IIMR, highlighted the role of bio-fortified maize in improving nutrition and enhancing livelihood security and he also suggested farmers to adopt this innovative technology. Mr. Manpreet Singh, Manager

at Grant Thornton Bharat LLP, emphasized the importance of mobilizing farmers into Farmer Producer Companies (FPCs) and encouraged women farmers to explore entrepreneurship opportunities through maize value addition. This training session witnessed the active participation of 100 progressive women farmers from each location.

Distribution of tarpaulins to women farmers under SCSP program

On March 23, 2024, a tarpaulin distribution event was organized at Balliewal village, Ludhiana, benefiting 100 women farmers under the SCSP (Scheduled Caste Sub Plan) program. This initiative aimed to support marginalized communities by providing essential agricultural resources. The tarpaulins will help the women farmers in protecting their crops and produce from adverse weather conditions, thereby enhancing their livelihood and boosting productivity. This distribution marks a significant step towards empowering women in agriculture and promoting sustainable farming practices in the region. Dr. Pardeep Kumar, Scientist and Dr. Ph. Romen Sharma also encouraged the farmers to adopt improved maize technologies for the betterment of livelihood of the farmers.



Tarpaulins Distribution to women farmers at Balliewal village, Ludhiana

Training for new agribusiness incubates at ICAR-IIMR, Ludhiana

The ICAR-IIMR, Ludhiana successfully conducted training for newly admitted incubates under its Agribusiness Incubation Centre on March 27, 2024. As part of the induction process, ICAR-IIMR formalized Memorandums of Understanding (MoU) with 12 Farmer Producer Companies (FPOs), marking their entry into the ABI unit. These incubates will focus on various aspects of the maize value chain, including seed production, maize value addition, and Agri-drone technologies. These MoU aim to enhance the capacities



Training for Newly Admitted Agribusiness Incubates



of both the FPOs and incubates through targeted interventions related to maize. Dr. H S Jat, Director of ICAR-IIMR, encouraged FPO members to actively engage in seed production and highlighted the importance of value addition through bio-fortified maize. The participants were also enlightened about the benefits of bio-fortified maize. Around 47 participants took part in the program.

Development of custom hiring centre under SCSP

On April 25, 2024, ICAR-Indian Institute of Maize Research provided two multi-crop threshers to two Farmer Producer Companies (FPCs) in Punjab. The recipients were Mnumeh Farmer Producer Company Limited in Ropar and Sutluj Women Farmer Producer Company in Gehlewal, Machhiwara Sahib, Ludhiana. This initiative aims to enhance livelihoods by strengthening Custom Hiring Centers for Scheduled Caste farmers in Punjab, thus empowering their agricultural activities. Dr. M C Dagla, Pardeep Kumar, Ph. Romen Sharma and Deep Mohan Mahala hand over the machinery to the FPO members.

Field visits

Following the success of hybrid seed production in

West Bengal, the production of IIMR hybrid DMRH 1308 is also thriving in Telangana state as well. During an extensive two-day visit from March 6-7, 2024, our Director, Dr. H.S. Jat, and Dr. Bhupender Kumar visited several production sites in Telangana, where they identified over 2,500 quintals of hybrid seed production. Representatives from seed companies, cooperatives, and Farmer Producer Organizations (FPO) also visited the sites and expressed great excitement after hearing farmer's feedback on the hybrid. They highly praised IIMR's efforts in successfully implementing large-scale seed production in a participatory manner and expressed their interest in signing MoU with IIMR for hybrid seed production.

The Director of ICAR-IIMR extended an invitation to the representatives to witness live demonstrations of IIMR's hybrids, alongside those from other public and private sectors. He also expressed sincere gratitude to the dedicated farmers and officials from various cooperatives and FPOs for their active contributions to the program.

Participation in PAU Kisan Mela

ICAR-IIMR showcased improved maize hybrids, value-added products, and advanced technologies



Glimpses of Development of Custom Hiring Centre under SCSP



A Glimpse of Field visits

during the PAU Kisan Mela, held from March 14-15, 2024. During the two-day event, scientists from ICAR-IIMR addressed the various queries raised by farmers and explained advanced techniques to reap better harvests. They also engaged in meaningful interaction with farmers growing maize from different districts of the state.



A Glimpse of Kisan Mela at PAU, Ludhiana

Front line demonstration

A field visit was conducted by Dr. S L Jat (Senior Scientist) and a team from ICAR-IIMR, Ludhiana, under the Maize APART project to assess various maize demonstrations in the Hajo development block of Kamrup district, Assam. The team healthy crops that were free from pests and diseases, indicating the successful transfer of technology by IIMR, Ludhiana. Farmers from the area expressed their satisfaction with the techniques implemented, signaling the potential for a bumper maize harvest in Assam. This success highlights the critical role of effective technology dissemination in agricultural development.

Additionally, Dr. S.L. Jat (Senior Scientist), along with Dr. V.K. Arya (Resident Consultant), Dr. Vishal (Research Associate from Kamrup), and Mr. Anirban



A glimpse of Front-Line Demonstration

Saikia (Research Associate from Nagaon) visited the maize demonstration in the Batadrawa Block of the Nagaon district. Their presence significantly boosted efforts to enhance maize cultivation practices in the region, emphasizing the importance of collaboration and the exchange of expertise in agricultural development.

Exposure visits

ICAR-IIMR, Ludhiana host various exposure visits, 23 students of BFIT University, Dehradun visited and interacted with the scientist of ICAR-IIMR at Ladhawal Farm on 4th May, 2024. On June 6, 2024, 16 students from Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut visited the ICAR-IIMR Ladhawal farm for an educational tour.



Exposure Visit

Maize hybrid seed production

Director Dr. H S Jat and Dr. Bhupender Kumar visited some of the production sites of IIMR hybrid DMRH 1308 in the Telangana state. During two days of extensive travelling from 6 to 7th March 2024, they could trace approximately 2500 quintals of hybrid seeds production of DMRH 1308. Partners from seed companies, cooperatives and FPOs also visited and felt very much excited to see and listen to the farmers feedback on the said hybrid. They immensely appreciated the efforts of IIMR for taking successful



Production site of IIMR hybrid DMRH 1308 in the Telangana state

large-scale seed production in participatory mode. They also expressed their interest in signing MoUs with IIMR for hybrids.

HUMAN RESOURCE DEVELOPMENT

Awards/Honours/Recognition

- o Dr. Shyam Bir Singh received the Appreciation Award for developing five maize hybrids on the 10th Foundation Day of ICAR-IIMR, Ludhiana.
- o Dr. P. Lakshmi Soujanya received the Best Research Paper Award titled "Role of morphological traits and cell wall components in

imparting resistance to pink stem borer, *Sesamia inferens* Walker in maize" published in *Frontiers in Plant Science Journal* during the 10th Foundation Day of ICAR-IIMR held on February 9, 2024, at Ludhiana.

- o Dr. Mamta Gupta received the Best Research Paper Award titled "Meta-QTL analysis for mining of candidate genes and constitutive gene network development for fungal disease resistance in maize (*Zea mays* L.)." published in *The Crop Journal*. 2023 during the 10th Foundation Day of ICAR-IIMR held on February 9, 2024, at Ludhiana.
- o Dr. Sumit Kumar Aggarwal received the Appreciation Award for outstanding contribution to the institute on the 10th Foundation Day of ICAR-IIMR, held on February 9, 2024, at Ludhiana.
- o Dr. Deep Mohan Mahala received the Best Scientist Award for outstanding contribution to the institute on the 10th Foundation Day of ICAR-IIMR, Ludhiana, held on February 9, 2024, at Ludhiana.
- o Dr. Mukesh Choudhary completed his Ph.D. from The UWA Institute of Agriculture, The University of Western Australia, Perth, WA 6009, Australia on 17th April 2024.

Participation in training programs

| Sl. No. | Name of scientist | Training programme attended | Venue/Organized by | Date |
|---------|----------------------|--|---------------------------------------|--|
| 1 | Shyam Bir Singh | Three days training on "SRIJAN: Empowering ZTMCs/ITMUS of ICAR Institutes" | NASC, New Delhi | January 17-19, 2024 |
| 2 | Pardeep Kumar | Online Training Programme on "Data Visualization using R" organized | ICAR-NAARM, Hyderabad, Telangana | March 01-08, 2024 |
| 3 | Dr. Mukesh Choudhary | ITU/FAO Workshop on "Cultivating Tomorrow: Advancing digital agriculture through IoT and AI" | NASC, New Delhi | March 18-19, 2024 |
| 4 | Sumit Kumar Aggarwal | ITU/FAO Workshop on "Cultivating Tomorrow: Advancing digital agriculture through IoT and AI" | NASC, New Delhi | March 18-19, 2024 |
| 5 | Deep Mohan Mahala | ITU/FAO Workshop on "Cultivating Tomorrow: Advancing digital agriculture through IoT and AI" 21 days Winter School on "Climate Smart Agricultural Practices for System Resilience in Cereal Based Cropping Systems" | NASC, New Delhi ICAR-CSSRI, Karnal | March 18-19, 2024 Feb 15 to March 6, 2024 |

Participation in Conferences/Workshops/Symposium/Seminars/Important Meetings

| Sl. No. | Name of the Scientist | Foreign visits/Conferences/ Workshops/Symposium/ Seminar/ Important Meeting attended | Venue/Organized by | Date |
|---------|-----------------------|--|--|--|
| 1 | Shyam Bir Singh | Attended a special meeting regarding "summer rice cultivation and their adverse impact on climate and replacement of summer rice and promotion of summer maize in district Udham Singh Nagar" 67th Annual Maize Workshop | District Collector Office, Rudrapur, Udham Singh Nagar PJ TSAU, Hyderabad | May 16, 2024 May 8-10, 2024 |
| 2 | Suby S. B. | National Seminar on 'Maize Production Technology: Perspective for Income and Employment Generation' at Purnea 67th Annual Maize Workshop | BAU, Sabour PJ TSAU, Hyderabad | February 6-7, 2024 May 8-10, 2024 |
| 3 | Yatish K R | Workshop on "Generative AI Tools for Agriculture" 67th Annual Maize Workshop | ICAR-NAARM, Hyderabad PJ TSAU, Hyderabad | June 26-28, 2024 May 8-10, 2024 |
| 4 | Abhijit Das | Workshop on "Generative AI Tools for Agriculture" 67th Annual Maize Workshop | ICAR-NAARM, Hyderabad PJ TSAU, Hyderabad | June 26-28, 2024 May 8-10, 2024 |
| 5 | Pardeep Kumar | "Rejuvenating Salt Affected Ecologies for Land Degradation Neutrality under Changing Climate" 67th Annual Maize Workshop | ICAR-Central Soil Salinity Research Institute, Karnal PJ TSAU, Hyderabad | February 14-16, 2024 May 8-10, 2024 |
| 6 | Mamta Gupta | National Symposium on "Genomics Revolution to Foster Advances and Innovations in Crop Improvement" Stakeholders meet on "Enhancement of Maize Production in the Catchment Area of Ethanol Industries" 67th Annual Maize Workshop | PAU, Ludhiana ICAR-IIMR, Ludhiana PJ TSAU, Hyderabad | February 27-29, 2024 June 6, 2024 May 8-10, 2024 |
| 7 | Krishan Kumar | 67th Annual Maize Workshop Meeting on Price Policy for Kharif Crops 2024-25 season under the chairmanship of Chairman, CACP | PJ TSAU, Hyderabad Krishi Bhawan, New Delhi | May 8-10, 2024 January 18, 2024 |
| 8 | Alla Singh | National Symposium on "Genomics Revolution to Foster Advances and Innovations in Crop Improvement" Stakeholders meet on "Enhancement of Maize Production in the Catchment Area of Ethanol Industries" | PAU, Ludhiana ICAR-IIMR, Ludhiana | February 27-29, 2024 June 6, 2024 |
| 9 | B. S. Jat | Attended 39th AGM of AICRP on Seed (Crops) 67th Annual Maize Workshop | UAS, Bangalore PJ TSAU, Hyderabad | May 2-3, 2024 May 8-10, 2024 |
| 10 | M.Choudhary | 67th Annual Maize Workshop | PJ TSAU, Hyderabad | May 8-10, 2024 |
| 11 | P.K. Bagaria | 67th Annual Maize Workshop | PJ TSAU, Hyderabad | May 8-10, 2024 |
| 12 | Ph Romen Sharma | Stakeholders meet on "Enhancement of Maize Production in the Catchment Area of Ethanol Industries" 67th Annual Maize Workshop | ICAR-IIMR, Ludhiana PJ TSAU, Hyderabad | June 6, 2024 May 8-10, 2024 |

| | | | | |
|----|------------------|--|--|---|
| 13 | Alok Kumar Sahoo | Meeting regarding varietal selection International Seminar on Empowering Agriculture and Rural Economy as oral paper presenter at Bihar Agricultural University, Sabour 67th Annual Maize Workshop | Krishi Bhawan, Patna Bihar Agricultural University, Sabour PJTSAU, Hyderabad | May 6, 2024 June 13-14, 2024 May 8-10, 2024 |
|----|------------------|--|--|---|

Lecture /TV/ radio talks delivered

| Sl. No. | Name of scientist | Lecture Delivered | Organized by | Date |
|---------|-------------------|---|--|---|
| 1 | Shyam Bir Singh | Online lecture on "Single Cross Maize hybrid Seed Production Technology" in the 21-days Training Program on Empowering Youth in Strengthening Seed Sector Online lecture on "Advanced breeding strategies for climate resilient cultivar development in maize" delivered on in the 21 days Winter School on "Emerging Problems & Recent Advances in Applied Sciences: Traditional & Innovative Approaches" | ICAR-DW&BR, Karnal Astha Foundation, Meerut, U.P. | March 01, 2024 February 12, 2024 |
| 2 | Suby S. B. | Lead lecture 'Enhancing maize resilience: Integrated Pest Management strategies post fall armyworm invasion' in National Seminar on 'Maize Production Technology: Perspective for Income and Employment Generation' at Purnea Lecture 'Insect pests of maize and their management' in ICAR-NBAIR organized training programme for technical officials | BAU, Sabour ICAR-NBAIR, Bengaluru, Karnataka | February 6, 2024 March 18, 2024 |
| 3 | Pardeep Kumar | Delivered a lecture on "Baby corn: a nutritious fodder for livestock on one-day training programme for milk union officers of Bihar | ICAR-IIMR, Ludhiana | June 14, 2024 |

Participation of Kisan Mela/Kisan Goshti/ Exhibition/ Field Day/ Lectures

| Sl. No. | Name of scientist | Name of the program | Venue/Organized by | Date |
|---------|-------------------|--|--------------------------------|--------------------------------|
| 1 | Suby S. B. | Field day at Basantpur Village, Kasba, Purnea | BAU and BISA | February 7, 2024 |
| 2 | Yatish K R | Attended Maize IMIC Field Day Attended Harvest Field Day | CIMMYT, India CIMMYT, India | March 6, 2024 April 5, 2024 |
| 3 | Abhijit Das | Attended Maize IMIC Field Day Attended Harvest Field Day | CIMMYT, India CIMMYT, India | March 6, 2024 April 5, 2024 |
| 4 | Mamta Gupta | PAU Kisan Mela | PAU, Ludhiana | Mar 14-15, 2024 |
| 5 | P. K. Bagaria | PAU Kisan Mela | PAU, Ludhiana | Mar 14-15, 2024 |
| 6 | Ph Romen Sharma | PAU Kisan Mela | PAU, Ludhiana | Mar 14-15, 2024 |
| 7 | Alok Kumar Sahoo | Participated with ICAR-IIMR, Institute stall at Krishi Mela at BAU, Sabour | BAU, Sabour | Feb.17-19, 2024 |

Organized Seminar and Conference /Workshops and Conducted Trainings /Field Days/Students/Trainees visits

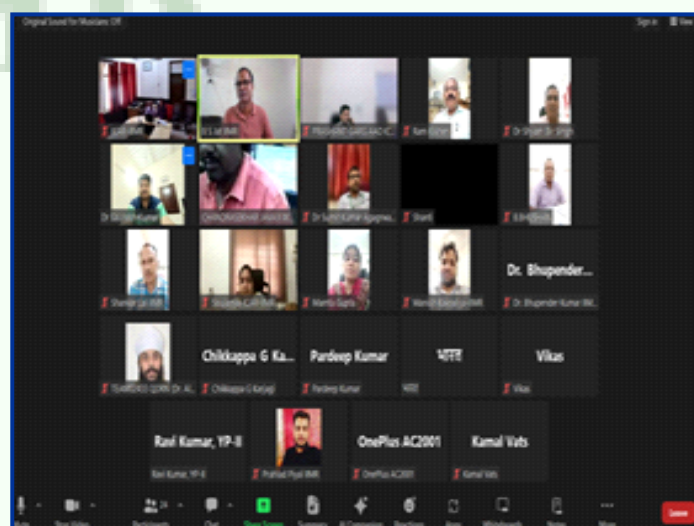
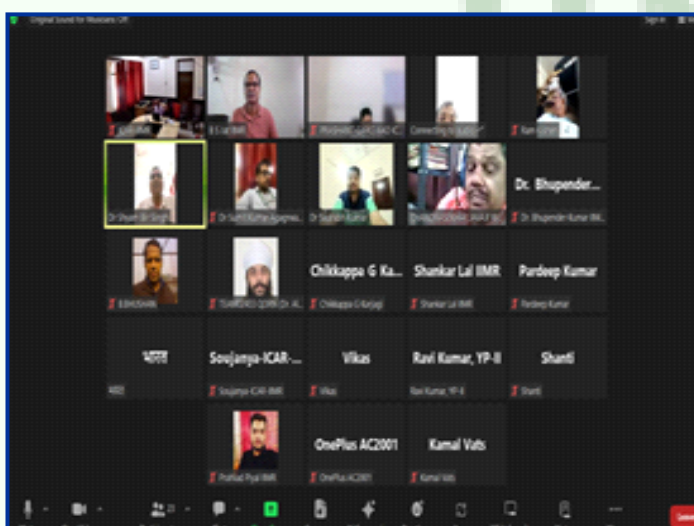
| Sl No. | Name of the Scientist | Name of the Program | Venue/Organized by | Date |
|--------|-----------------------|--|---|---------------------------------|
| 1 | J C SEKHAR | 67th Annual Maize Workshop Maize Germplasm Field Day | PJTSAU, Hyderabad WNC, ICAR-IIMR, Hyderabad | May 8-10, 2024 March 5, 2024 |
| 2 | Shyam Bir Singh | Farmer's Rights under PPV&FR Act | RMR&SPC, Begusarai | March 03, 2024 |
| 3 | N. Sunil | 67th Annual Maize Workshop | PJTSAU, Hyderabad | May 8-10, 2024 |
| 4 | P. L. Soujanya | Maize Germplasm Field Day | WNC, ICAR-IIMR, Hyderabad | March 5, 2024 |
| 5 | Yatish K. R. | Maize Germplasm Field Day Hyderabad | WNC, ICAR-IIMR, | March 5, 2024 |
| 6 | B. S. Jat | हिंदी के लिए संवैधानिक प्रावधान-सरकारी कार्यालयों में हिंदी के उपयोग को बढ़ावा देने वाले संवैधानिक अधिदेशों और कानूनी प्रावधानों समझना विषय पर हिंदी कार्यशाला | भारतीय मक्का अनुसंधान संस्थान, लुधियाना, पंजाब | जून 28, 2024 |
| 7 | Ph Romen Sharma | Improving the livelihood of scheduled caste farmers through improve maize technologies at Mahesh Nagar, Barnala, Punjab | ICAR-IIMR, Ludhiana | Feb. 12, 2024 |
| | | Improving the livelihood of scheduled caste farmers through improve maize technologies at Kokri Kalan, Moga, Punjab | ICAR-IIMR, Ludhiana | Feb. 22, 2024 |
| | | Best Management Practices in Maize Cultivation and Entrepreneurship Development to Enhance Farmer Livelihoods in Koraput District, Odisha | ICAR-IIMR, Ludhiana | Feb.26-28, 2024 |
| | | Improving the livelihood of scheduled caste farmers through improve maize technologies at Chokkar Village, Ludhiana, Punjab | ICAR-IIMR, Ludhiana | March 9, 2024 |
| | | Promotion of Bio-fortified Maize for Entrepreneurship Development through Value Addition for Nutritional and Livelihood Security at Mehndali village, Ropar, Punjab | ICAR-IIMR, Ludhiana | March 18, 2024 |
| | | Promotion of Bio-fortified Maize for Entrepreneurship Development through Value Addition for Nutritional and Livelihood Security at Bhotna Village, Barnala, Punjab | ICAR-IIMR, Ludhiana | March 19, 2024 |
| | | Promotion of Bio-fortified Maize for Entrepreneurship Development through Value Addition for Nutritional and Livelihood Security at Lapon Village, Moga District, Punjab | ICAR-IIMR, Ludhiana | March 20, 2024 |

| | | | | |
|---|------------------|---|---------------------|-----------------|
| | | Improving the Livelihood of Scheduled Caste Farmers through Improve Maize Technologies at Balliewal Village, Ludhiana, Punjab | ICAR-IIMR, Ludhiana | March 23, 2024 |
| | | Promotion of Bio-fortified Maize for Entrepreneurship Development through Value Addition for Nutritional and Livelihood Security at ICAR-CIPHET, Ludhiana District, Punjab, Workshops on "Promotion of Climate resilient technologies of maize among the farmers of Punjab" under Awareness/Campaign Programs on Mission LiFE (Lifestyle for Environment) at Pahadpur, Ropar & Gehlewal, Machhiwara Sahib, Ludhiana | ICAR-IIMR, Ludhiana | March 27, 2024 |
| | | Enhancement of Maize Production in Catchment Areas of Ethanol Industries at Ludhiana | ICAR-IIMR, Ludhiana | April 25, 2024 |
| | | Exposure visits of students of BFIT University, Dehradun at Ladhawal Farm | ICAR-IIMR, Ludhiana | June 21, 2024 |
| | | Exposure visits of students of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut at Ladhawal Farm | ICAR-IIMR, Ludhiana | June 5, 2024 |
| | | Exposure visits of students of Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut at Ladhawal Farm | ICAR-IIMR, Ludhiana | June 6, 2024 |
| 8 | Alok Kumar Sahoo | Best Management Practices in Maize Cultivation and Entrepreneurship Development to Enhance Farmer | ICAR-IIMR, Ludhiana | Feb.26-28, 2024 |

भा.कृ.अनु.प.-भारतीय मक्का अनुसंधान संस्थान में राजभाषा कार्यान्वयन संबंधी गतिविधियाँ

राजभाषा कार्यान्वयन समिति (ओएलआईसी) बैठकें संस्थान में राजभाषा हिंदी का सुचारु रूप से कार्यान्वयन के लिए

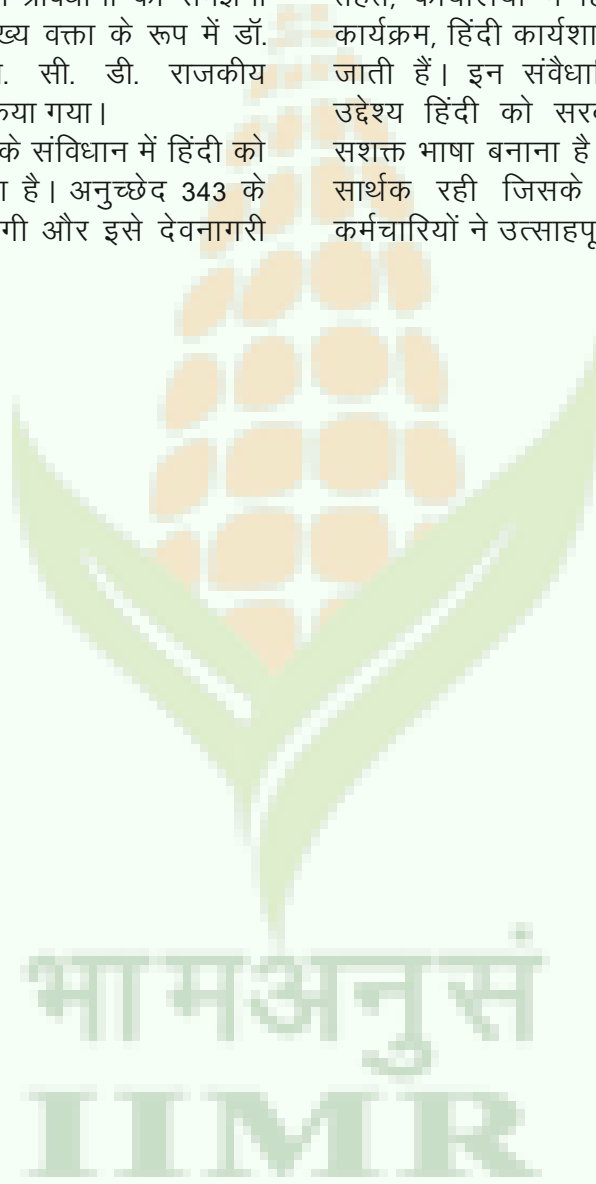
संस्थान राजभाषा कार्यान्वयन समिति की जनवरी से जून, 2024 छमाही के दौरान 21 जून, 2024 को एक बैठक आयोजित की गयी। जिसके अंतर्गत संस्थान में हो रहे हिंदी कामकाज की समीक्षा की गई तथा भविष्य में कार्यालय में हिंदी को बढ़ावा देने



एवं लक्ष्य प्राप्ति हेतु चर्चा की गई। हिंदी कार्यशालाएं राजभाषा हिन्दी के प्रगतिशील प्रयोग एवं कार्यान्वयन को गति देने के उद्देश्य से संस्थान में समय-समय पर कार्मिकों को प्रशिक्षित करने के लिए हिन्दी कार्यशालाओं का आयोजन किया जाता है। इस क्रम में जनवरी से जून, 2024 छरूमाही के दौरान भा.कृ.अनु. प.-भारतीय मक्का अनुसंधान संस्थान, लुधियाना ने ऑनलाइन माध्यम से एक हिंदी कार्यशाला का आयोजन किया गया। इस कार्यशाला का शीर्षक हिंदी के लिए संवैधानिक प्रावधान-सरकारी कार्यालयों में हिंदी के प्रयोग को बढ़ावा देने वाले संवैधानिक अधिदेशों और कानूनी प्रावधानों को समझना रखा गया था। कार्यशाला के लिए मुख्य वक्ता के रूप में डॉ. सौरभ कुमार, सह-प्राध्यापक, एस. सी. डी. राजकीय महाविद्यालय, लुधियाना को आमंत्रित किया गया।

डॉ. सौरभ कुमार ने बताया कि भारत के संविधान में हिंदी को संघ की राजभाषा घोषित किया गया है। अनुच्छेद 343 के अनुसार, हिंदी संघ की राजभाषा होगी और इसे देवनागरी

लिपि में लिखा जाएगा। अनुच्छेद 351 हिंदी के विकास और उसके प्रयोग को प्रोत्साहित करने की दिशा में मार्गदर्शन प्रदान करता है। यह हिंदी को एक समृद्ध भाषा बनाने और अन्य भारतीय भाषाओं के साथ समन्वय स्थापित करने का दायित्व निर्धारित करता है। सरकारी कार्यालयों में हिंदी के प्रयोग को बढ़ावा देने के लिए राजभाषा अधिनियम, 1963 लागू किया गया। इस अधिनियम के तहत सरकारी पत्राचार, आदेश और रिपोर्ट में हिंदी के उपयोग को अनिवार्य बनाने के लिए दिशा-निर्देश जारी किए गए। राजभाषा नियमावली के तहत, कार्यालयों में हिंदी में कार्य करने के लिए प्रशिक्षण कार्यक्रम, हिंदी कार्यशालाएं और प्रतियोगिताएं आयोजित की जाती हैं। इन संवैधानिक प्रावधानों और अधिनियमों का उद्देश्य हिंदी को सरकारी कामकाज और जनसंचार की सशक्त भाषा बनाना है। हिंदी कार्यशाला बहुत उपयोगी एवं सार्थक रही जिसके तहत में कुल 28 अधिकारियों/ कर्मचारियों ने उत्साहपूर्वक भाग लिया।





Nurturing diversity, Resilience, Livelihood and Industrial inputs

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