



RESEARCH PROGRAM ON  
Climate Change,  
Agriculture and  
Food Security



RESEARCH  
PROGRAM ON  
Wheat



## STATE LEVEL MAIZE DAYS



### PROGRAMMES REPORT



**28 August 2021**

**Dana Mandi, Garhshankar, Hoshiarpur (Punjab)**

**and**

**11 September 2021**

**ICAR- Central Soil Salinity Research Institute (CSSRI)**

**Karnal (Haryana)**

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## Background

Maize, a multi-faceted crop used as food, feed and industrial crop globally, has a very prominent role to play in the Indian economy too. Currently this coarse grain is cultivated in about 10.2 million ha in India. The increasing interest of the consumers in nutritionally enriched products and rising demand as poultry feed, which accounts 47% of total maize consumption, are the driving forces behind increasing consumption of maize in the country. As per the demand estimates, the Indian maize production has to grow with CAGR of 15% in next 4-5 years. It is in response to such increasing demand that India needs to plan production by productivity increase, and also reorient value chain if it is to serve the basic goal of remunerative prices for farmers.

The rice-wheat cropping system in Indo-Gangetic Plains has contributed immensely to the national food basket over past 5 decades. However, over the time sustainability of the intensive rice-wheat systems of Northwest India has become a major challenge owing to –faster depletion of groundwater table, stagnating or declining productivity growth, degrading soil health and environmental quality including air pollution and public health concerns, and diminishing farm profitability. Therefore, diversification of rice crop is the need of hour to sustain the declining natural resources to ensure food security in long-run in Punjab and Haryana. Replacement of rice with maize crop in this ecology could be one of the best options as its cultivation consumes 80% less water and energy with over 10% enhancement in wheat production. However, the stakeholders need handholding, and strategy for its promotion is much needed with best agronomic production practices.

State Levels Maize Days organized this year has gained in stature and popularity on account of the focus on covering very relevant participation from right stakeholders and covering topical issues. The programmes were focused on solutions that will help increase maize productivity by building efficiencies in entire chain and thus generating higher value for the farmers.

In these programmes, an entrepreneur urged farmers to grow maize for higher price realization due to use in export and industrial uses. Another entrepreneur in Punjab engaged in silage making told that farmer can earn Rs 50 thousand/acre by selling maize for silage at milking stage which will also help in early field vacation for next crop. A visit to farmer's field where participatory potential yield demonstration was taken was also organized at Pachelewal village near Garhshankar. The stalls of key stakeholders involved in maize value chain were also displayed.

### **Programmes detail**

1. The ICAR-Indian Institute of Maize Research, Ludhiana and CIMMYT in collaboration with state Agriculture Department, Government of Punjab, Punjab Agricultural University, Ludhiana organized this State Level Maize Day at Dana Mandi, Garhshankar Village, Hoshiarpur on 28 August 2021. In the meeting, over 600 farmers participated.
2. State Level Maize Day organized by the ICAR-Central Soil Salinity Research Institute (CSSRI), Karnal, Haryana; ICAR-Indian Institute of Maize Research (IIMR), Ludhiana, Punjab and International Maize and Wheat Improvement Center (CIMMYT) in collaboration with the State Agriculture Departments, Government of Punjab and CCS Haryana Agricultural University, Karnal, Haryana on 11 September 2021 at CIMMYT-CSSRI research platform, Karnal (Haryana), India. In the meeting, over 300 farmers participated.

### **Speakers' views**

## 1. Punjab programme



Shri Suresh Kumar, Chief Principal Secretary, Government of Punjab was the chief guest of a state level Maize Field Day held at Dana Mandi, Garshankar, Hoshiarpur, Punjab. He was impressed with the performance of ICAR-Indian Institute of Maize Research and its commending efforts for bringing maize cultivation and meeting expectations for bringing it in Punjab for diversification. The maize can be grown in place of rice as was obvious during field visit, and he was impressed with crop yield touching at 7 t/ha or more. Hoshiarpur is a potential district for maize cultivation. To save earth and to save health, paddy is to be replaced with maize. He urged scientists and private partners to convince farmers with credible solution to enhance credibility by giving a proof of the technology at the farmers' field. Timely availability of the input is critical for farmers and providing good market is essential for realisation of diversification with maize replacing rice. Price deficiency scheme (bhavantar yojana) can be a solution for enhancing remuneration in maize cultivation. In the programme, a policy paper on "Diversification of cropping system in Punjab and Haryana through cultivation of maize, pulses and oilseeds" developed by ICAR institutes was released. A document folder on "Participatory innovation platform on potential yield realization of maize based cropping system in Punjab and Haryana" in Hindi, English and Punjabi was also released. A newsletter of ICAR-Indian Institute of Maize Research (IIMR) was also released.

Welcoming the guest, Dr Sujay Rakshit, Director, ICAR-IIMR briefed that these demonstrations are critical for the diversification in the Punjab for sustainability. The IIMR have developed 12 maize hybrids of which one was released for Punjab and Haryana region. Maize-based value added product for dietary diversification and entrepreneurship development, was also developed at the institute.

Chairman of the function, Dr Tilak Raj Sharma, Deputy Director General (Crop Science), Indian Council of Agricultural Research, urged farmers to adopt maize based cropping system technology demonstrated at farmers' field, at a very faster rate to save water and enhancing profitability. The declining water-table is demanding more energy for pumping water for rice cultivation. He stressed that use of machineries in cultivation, quality protein maize, value added product, sweet corn, baby corn etc., needs to be integrated in maize production systems for enhancing profitability. ICAR initiated a new project on emerging pests and diseases in which fall armyworm (FAW) of maize is also an important component.

Guest of Honour, Shri Anirudh Tewari, ACS(D) and Vice-Chancellor, Punjab Agricultural University, Ludhiana, emphasized that the whole maize-based cropping system should be encouraged for demonstration and emphasized to convince farmers for water saving and enhancing profitability. After introduction of combine harvesting, problem of residue burning enhanced enormously increasing environmental problem. Good yielding ability of maize system will certainly help in achieving goals of sustainability.

Director Agriculture, Government of Punjab, Dr S.S. Sidhu emphasized on maize lead diversification for sustainability in Punjab.

Dr M.L. Jat, Principal Scientist, CIMMYT briefed that Secretary DARE and Director General, ICAR, New Delhi has advised to establish such participatory innovation platforms of maize system with value chain for diversification of rice in Punjab and Haryana. With this objective, the ICAR-Indian Institute of Maize Research (IIMR), Ludhiana, in collaboration with International Maize and Wheat Improvement Center (CIMMYT), India, State Departments of Agriculture in Punjab and Haryana, and other key stakeholders have established the participatory “Innovation Platform on Potential Yield Realization of Maize-based Cropping Systems” in Punjab and Haryana. Demonstrations have been conducted on maize-wheat-mungbean or maize-mustard-mungbean cropping system or other vegetable- based maize systems to document benefits and plan strategy and future pathways for diversification in Punjab and Haryana. In Punjab, 100 acres platform sites at Jalandhar (14), Hoshiarpur (13.5), SBS Nagar (15), Rupnagar (17.5), Pathankot (16.5) and Ludhiana (21.5) have been established. In these sites, knowledge on improved agronomic production technologies and agro-inputs such as seeds of improved maize varieties, herbicides, and pesticides to control fall armyworm have been distributed to the farmers.

The programme was also graced with presence of Ms. Apneet Riyait, DC, Hosiarpur, Dr N.S. Bains, Director (Research), Dr J.S. Mahal, Director (Extension), PAU, Dr J.P.S. Gill, Director (Research), GADVASU, Shri Vinay Kumar and Shri Subhash Chander of Punjab Agriculture Department, Dr Ramesh Kumar, Dr D.P. Chaudhary, Dr S.L. Jat, Dr Romen Sharma, Dr Seema Sheoran and Dr Priyajoy Kar of ICAR-IIMR.

## 2. Haryana programme



In his address, the Chief Guest, Dr B.R. Kamboj, Vice-Chancellor, CCS Haryana Agricultural University, Hisar, Haryana stressed on the need of thinking holistically for the value-chain development to realize the results of diversification. The need of involvement of the KVK and Department of Agriculture for enhancing the adoption of diversified crops was also emphasized by Dr Kamboj.

The Special Guest, Dr Suresh Kumar, Former Additional Director (Agriculture Extension), Government of Haryana accentuated on adopting the holistic Maize-Mustard-Mungbean Systems to enhance profitability for replacing the Rice-Wheat System. He also urged for convincing the farmers to save water and enhance profitability.

Shri Aditya Dabas, Deputy Director (Agriculture), Karnal, Government of Haryana outlined the State Government's initiatives for the diversification by incentivizing with Rs 7,000/acre for maize cultivation.

Dr Sujay Rakshit, Director, ICAR-Indian Institute of Maize Research, Ludhiana, Punjab, stated about the establishment of such participatory innovation platforms of Maize system with value-chain for the diversification of rice in Punjab and Haryana as advised by the Secretary (DARE) and DG (ICAR). He also outlined about the establishment of participatory "Innovation Platform on Potential Yield Realization of Maize-based Cropping Systems" in Punjab and Haryana by the ICAR-IIMR, Ludhiana and ICAR-Central Soil Salinity Research Institute, Haryana in collaboration with the International Maize and Wheat Improvement Center (CIMMYT), India, State Departments of Agriculture in Haryana; CCS Haryana Agricultural University, Hisar, Haryana and other key stakeholders.

Dr P.C. Sharma, Director, ICAR-CSSRI, Karnal, Haryana highlighted the establishment of a long-term research trial for comparison of Maize v/s Rice Systems in 2009 in collaboration with the CIMMYT.

Underlining the current issues of watertable decline and residue burning, Dr M.L. Jat, Principal Scientist, CIMMYT, India urged the farmers to adopt maize for the sustainable resources for future generations.

The senior officials of ICAR Institutes and State Agricultural Departments were also present during the occasion.

### **Key issues**

- Policy research
- Moisture stress (drought)
- Inadequate availability of quality seed
- Lack of early maturing varieties
- Post-flowering stalk rot
- Unbalanced/improper use of fertilizers
- Improper maize-based intercropping system
- Storage
- Proper marketing

### **Key messages**

- The experts and farmers observed that maize has potential for product diversification under a new economic regime as its demand is shifting from food to feed for livestock and poultry.
- For foods, new types of maize-based products (soups, vegetables, edible oils) are in demand among people in the higher-income strata.

- New opportunities need to be tapped by providing appropriate technologies to farming communities.
- Future maize production will largely depend on how markets are developed except in the non-traditional maize growing region.
- A strong seed sector and an effective extension network would go a long way towards augmenting income from maize.
- Across India, less area is allocated to winter maize than that to rainy-season maize, but yield levels during the winter season are considerably higher, and comparable to global averages and yields in many developed countries.

### **Way forward**

**As a way forward, and as agreed upon during the programme, to provide significant push to the sector, an effective implementation of Maize vision in future would be required. In addition to production push through rapid technology adoption, formation of farmer groups and market linkages, creation of enabling infrastructures, innovative PPP models across value chain and creating an enabling policy environment, would be necessitated for overall sectoral growth.**