

CIMMYT and

India



Brief history

CIMMYT has a longstanding and significant partnership with India spanning over six decades. The collaboration started with Nobel laureate Dr. Norman E. Borlaug visiting India in 1963 to usher in the Green Revolution in active partnership with the Government of India.

Maize and wheat science for improved livelihoods

CIMMYT works with hundreds of partners across the developing world to improve livelihoods and foster more productive, sustainable maize and wheat farming systems.

Through collaborative research, partnerships, and training CIMMYT promotes a new generation of national agricultural research and extension services in maize and wheat growing nations.

Headquartered in Mexico, CIMMYT is a member of CGIAR (a global partnership for a food-secure future), and is the global leader in publicly funded maize and wheat research and related farming systems. CIMMYT's germplasm bank is home to humanity's largest collection of maize and wheat varieties made freely available to scientists, researchers, and farmers around the world.

CIMMYT receives support from governments, foundations, development banks and other public and private agencies.

Established in 2001, the CIMMYT-India office currently has 19 international and 144 national staff across Delhi, Punjab, Haryana, Bihar, Madhya Pradesh, Uttar Pradesh, Maharashtra, Odisha, Karnataka, and Telangana. On 5 October 2011, the Indian Council of Agricultural Research (ICAR) and CIMMYT launched the Borlaug Institute for South Asia (BISA) – a collaborative initiative dedicated to food, nutrition, livelihood, and environmental rehabilitation in South Asia.

More than two dozen international scientists from India work at CIMMYT offices around the world; more than 100 Indian scientists collaborate with CIMMYT throughout the year. The partnership between India and CIMMYT plays a pivotal role in developing improved wheat and maize varieties with climate smart and sustainable agricultural practices to meet newer challenges of climate change in economically fragile agroecosystems.

CIMMYT contributions to Indian agriculture

- More than 275 wheat varieties developed in the last 60 years, where CIMMYT lines were used as a parent or grandparent
- In the last decade alone, 85 wheat varieties released in India of which 34 came from CIMMYT-ICAR-BISA collaboration.
- Since 2017, about two dozen biofortified wheat varieties (rich in grain zinc) released. The first two biofortified wheat varieties were WB2 and HPBW 02.
- In 2020, for the first time in India, wheat varieties released for early sowing (October). This included the first >8t/ha wheat variety DBW 303. Since then, about ten varieties released for early sown condition in north-western India.
- Every year, CIMMYT receives more than 400 requests for trials and nurseries from national partners comprising public and private sectors.
- BISA annually distributes more than 15,000 seed packets of CIMMYT advanced lines to Indian partners and shares data from all three BISA sites.
- About two dozen wheat blast resistant varieties released since its first report in 2016 in Bangladesh.
- Twenty-six open pollinated maize varieties and 11 high-yielding stress-resilient hybrids of maize released. CIMMYT maize lines are used as one of the parents in a number of maize hybrids released by public and private sector partners.
- CIMMYT has been the sole source of quality protein maize (QPM) germplasm, which are used in developing and release of several QPM hybrids by Indian maize program.
- Over 430 breeding lines per year are being shared with Indian maize program partners, including lines developed by CIMMYT Asia maize program based in Hyderabad, lines from Mexico and other outreach offices.
- A state-of-the-art maize doubled haploid (DH) facility, first of its kind in Asia, is established in Kunigal in Karnataka, serving public and private maize breeding programs.
- Conservation agriculture practices such as residue management, zero tillage, direct-seeded rice, precision land leveling, water and nutrient efficiency, systems optimization adopted in the Indo-Gangetic plains and other states of India. "Zero tillage" has already been adopted on a limited area in northern India. The practice mitigates severe seasonal air pollution, increases profits of farmers by \$150-200 in reduced costs and improved yields per hectare.
- CIMMYT, along with ICAR, CCAFS (CGIAR Research Program on Climate Change, Agriculture and Food Security) and BISA introduced the concept of climate smart agriculture in close to 2,000 villages of Bihar, Madhya Pradesh, Punjab, Maharashtra and Haryana.
- CIMMYT facilitated capacity building for about 30,000 stakeholders in India. This includes more than 2,000 agriculture scientists across different institutions of India.



Key research interventions for present and future

- Development of high yielding climate resilient wheat and maize germplasm tolerant to biotic and abiotic stresses including climate change.
- Breeding biofortified wheat and maize for high nutrition and quality.
- Breeding program for high-yielding BNI wheat is underway under the JICA-ICAR-BISA collaboration.
- Innovative breeding strategies that incorporate molecular markers, genomic selection, high throughput precision phenotyping and novel statistical designs to maximize genetic gains and climate resilience.
- Innovative research in use of wild relatives to introduce important traits such as disease resistance, drought tolerance, and nutrition in wheat and maize.
- Systems research for sustainable intensification of wheat and maize farming systems based on conservation agriculture.
- Research and advocacy for resource-conserving farming practices to help address perennial rice-wheat rotation problems, including severe water and soil depletion and falling profitability.
- Scale appropriate farm mechanization solutions especially for smallholder farmers.
- Precision water and nutrient management practices.
- Developing climate smart villages to scale up adaptation practices and technologies.
- Cross-cutting agricultural research for social and gender inclusiveness.
- Development of climate adaptation atlas for South Asia.
- Capacity building for a new generation of researchers. Between 1969 and 2023, more than 2,000 Indian scientists improved their knowledge and skills through training at CIMMYT.



Did you know?

- India is the second largest wheat producer after China
- In 2023, the harvest of wheat surpassed 110 million tons for the first time
- Of the top ten bread wheat varieties in India in terms of current coverage of area, six are derived from the ICAR-CIMMYT-BISA collaboration
- Indian and CIMMYT wheat scientists, policymakers, and farmers apply innovations that ensure national food security and resource conservation
- In May 2024, Dr. Ravi Prakash Singh, former Distinguished Scientist - CIMMYT Global Wheat Program, was awarded the prestigious 'Padma Shri' award by Government of India.
- In April 2024, Dr. Arun K Joshi, CIMMYT Regional Representative for Asia and Managing Director BISA, was awarded the prestigious VS Mathur Memorial Award for his outstanding contribution to wheat improvement in India.



Partners

National

Indian Council of Agricultural Research (ICAR) and its associated institutions in India.

State Agricultural Universities (SAUs); Department of Agriculture in different states of India; Indian Meteorological Department.

Private Sector

Partners and stakeholders from seed industry, agro-input and agri-machinery industries.

International

Borlaug Institute of South Asia (BISA), New Delhi; Nepal Agriculture Research Council (NARC), Nepal; Bangladesh Wheat and Maize Research Institute (BWMRI), Dinajpur; Department of Agriculture, Royal Government of Bhutan; International Rice Research Institute (IRRI), Philippines; International Food Policy Research Institute (IFPRI), USA; Cornell University, USA; International Fertilizer Development Centre (IFDC), USA; Rothamsted Research, Harpenden, Hertfordshire; International Potato Center (CIP); International Livestock Research Institute (ILRI); International Water Management Institute (IWMI), Sri Lanka; WorldFish, Malaysia; Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia.



About CIMMYT

CIMMYT is a cutting edge, non-profit, international organization dedicated to solving tomorrow's problems today. It is entrusted with fostering improved quantity, quality, and dependability of production systems and basic cereals such as maize, wheat, triticale, sorghum, millets, and associated crops through applied agricultural science, particularly in the Global South, by building strong partnerships.

CIMMYT is a core CGIAR Research Center, a global research partnership for a food-secure future, dedicated to reducing poverty, enhancing food and nutrition security and improving natural resources.

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