Country Profile

CIMMYT in Pakistan

Over six decades of collaboration

CIMMYT, the International Maize and Wheat Improvement Center, an international organization headquartered in Mexico (www.cimmyt.org), has a long history of collaboration and impact with national agricultural research and extension systems in Pakistan and has played a vital role in achieving food security since the Green Revolution. CIMMYT has continuously provided germplasm, financial as well as human resource support to Pakistan's agriculture research for development. Since the 1960s, CIMMYT has steadily supplied elite wheat and maize breeding lines and populations to Pakistan. The CIMMYT office in Pakistan is located at the National Agricultural Research Council (NARC) in Islamabad; the Center also has offices in Faisalabad and Pirsabak, Nowshera, with 12 staff, and CIMMYT work extends throughout Pakistan, in cooperation with public and private partners.

Dr. Norman E. Borlaug, Nobel Peace laureate, kept a close relationship with Pakistani researchers and policymakers and introduced the high-yielding white grain wheat variety "Mexi-Pak" to help address the national food security crisis. Pakistan imported 150 tons of Mexi-Pak seed in 1966, the largest seed purchase of its time, and two years later became the first Asian country to achieve self-sufficiency in wheat. In 2023 Pakistan harvested closed to 28 million tons of wheat, which roughly matches its annual consumption of the crop.

CIMMYT | CGIAR

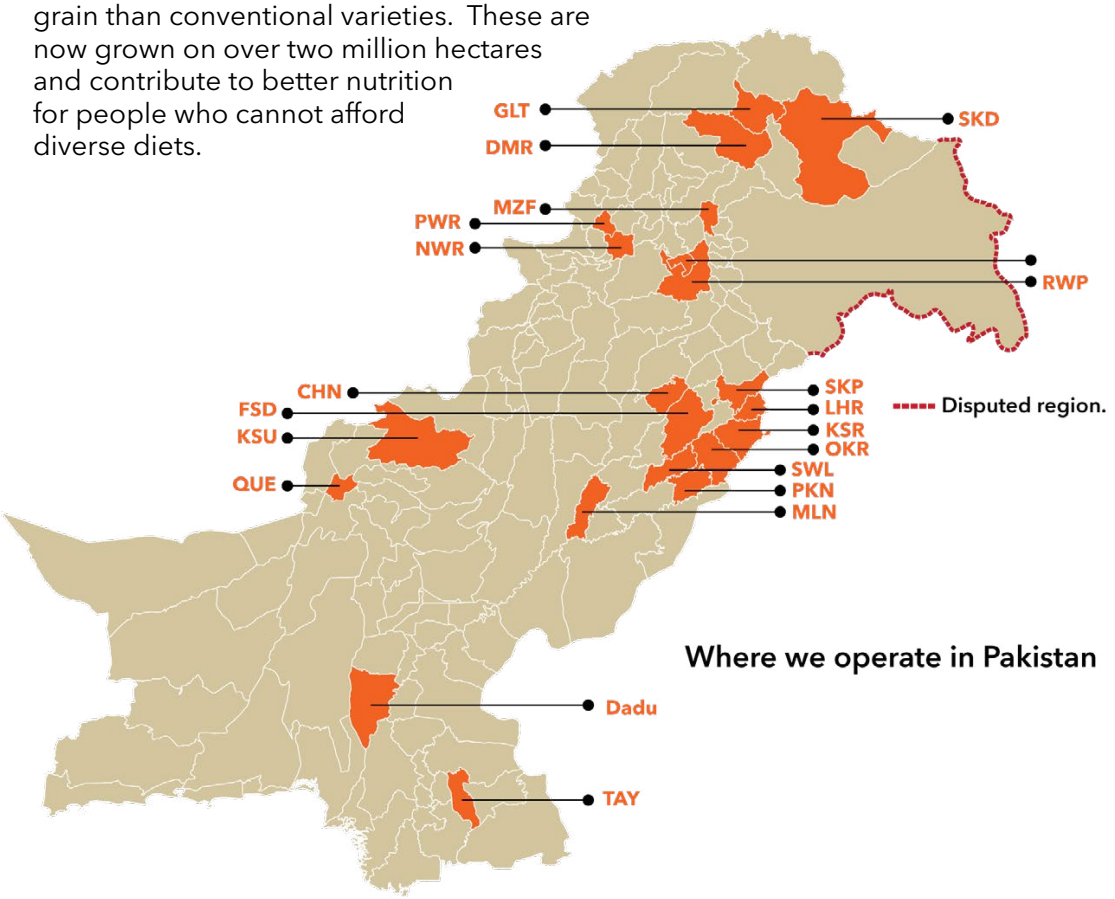
CIMMYT supports Pakistan research and competencies in plant breeding, seed systems, market development, sustainable intensification of cropping systems, climate change adaptation and mitigation, soil fertility improvement, fostering the adoption and impact of innovations, social and behavioral science, geo-spatial analytics, communication and capacity development.

Wheat facts and accomplishments

- Each year CIMMYT provides approximately 2,000 new wheat lines to strengthen national wheat breeding for disease resistance, drought and heat tolerance, higher yields, and biofortification.
- Over 40 high-yielding, heat and disease resistant varieties released since 2019 have contributed to a 20% gain in farmers' wheat yields. Several genotypes are in the pipeline for commercial release.
- Years of biofortification research and breeding have resulted in the development of the wheat varietiesZincol-16, Akbar-19, Nawab-21, Tarnab Renbar and Tarnab Gandam 1, as well as other varieties that carry 20 percent more zinc in the grain than conventional varieties. These are now grown on over two million hectares and contribute to better nutrition for people who cannot afford diverse diets.
- A 200% increase in the number of wheat crosses has led to more varietal releases and diversity, reducing farmers' risk and helping to ensure food security in rural communities.
- A state-of-the-art Wheat Rust Research Laboratory established at the Crop Disease Research Institute at Murree is contributing to wheat breeding for durable resistance to new rust pathogen races.
- A wheat rust forecasting model is being developed.

Maize facts and accomplishments

- Maize is Pakistan's third most important cereal, with high production potential and being grown across 1.4 million hectares and with average yields over 5 tons per hectare.
- A network of public and private partners tested over 3,000 CIMMYT maize varieties and hybrids across 300 environments in Pakistan for adaptation.
- Partners are evaluating more than 100 zinc and provitamin A biofortified maize hybrids.
- Between 2017and 2020, partners released over 20 CIMMYT-derived varieties and hybrids, including climate resilient (drought and heat stress tolerant) and nutritious maize. More varieties are in pipeline for release.



Where we operate in Pakistan

CHN	Chiniot
DMR	Diamer
FSD	Faisalabad
GLT	Gilgit
KSR	Kasur
KSU	Killa Saif Ullah
LHR	Lahore
MLN	Multan
MZF	Muzafarabad
NWR	Nowshera
OKR	Okara
PKN	Pakpattan
PWR	Peshawar
QUE	Quetta
RWP	Rawalpindi
SWL	Sahiwal
SKD	Sakardu
SKP	Sheikhupura
TAY	Tando Alla Yar
ISB	Islamabad
Dadu	Dadu Sindh

- More than 3,500 Pakistani maize researchers, farmers, students, technicians and managers have received technical and business development training.
- The first national maize stem borer mass rearing facility has been established to generate maize varieties able to tolerate this deadly pests.
- Using CIMMYT parental lines, Pakistan released two hybrids of quality protein maize hybrids, whose grain contains enhanced levels of the essential amino acids, lysine and tryptophan. In addition, three Provitamin A-biofortified hybrids were licensed and shared with partners for testing, variety registration, and seed production.
- To accelerate the development of maize inbred lines and hybrids via double haploid methods, CIMMYT has shared tropically adapted haploid inducers to maize partners in Pakistan.

Sustainable intensification of farming system: accomplishments

- Maize and wheat varieties are selected considering their suitability for specific cropping systems.
- Agricultural machinery such as the zero tillage "Happy Seeder" and direct dry seeded rice are being promoted to enhance productivity, profitability and sustainability. Local manufacturers and local service providers are encouraged to expand their businesses around resource conserving machinery and services.
- Low cost optical sensors are being used to help wheat and rice farmers to apply nitrogen fertilizer precisely.

Gender mainstreaming

- A targeted approach has been promoted for professional training, ensuring that at least 25% female scientists attend each training event.
- CIMMYT has introduced technologies that ensure equal access for male and female farmers to innovations such as new seeds and mechanized crop management practices.
- Since 2014, over 26,000 women farmers have been trained in various agricultural disciplines.
- Female scientists have enhanced their skills in wheat breeding and biometrics.

Collaborative research projects and funders

- Accelerating Genetic Gains in Maize and Wheat (AGG) (USAID).
- Agriculture Innovation Program for Pakistan (AIP), USAID.
- Wheat seed system (Seed Equal).
- Disease Early Warning & Advisory System (DEWAS) – Wheat project.
- CIMMYT's Agriculture Innovation Mission for Climate (AIM4C) Sprint
- Accelerating the mainstreaming of elevated zinc in global wheat breeding: A "Fluoride in the Water" (BMGF/FCDO).
- Heat tolerant maize for South Asia (HTMA).
- Heat stress tolerant maize for Asia (HTMA), USAID.

CIMMYT managed projects are aligned with Pakistan Vision 2025, Food Security Policy 2018 and Vision for Agriculture 2030 of the Government of Pakistan, contributing to the national food, nutrition, livelihood and environmental agenda.

CIMMYT's major partners in Pakistan

- Ministry of National Food Security and Research.
- Pakistan Agricultural Research Council (PARC).
- National Agricultural Research Center (NARC).
- Provincial Governments (Panjab, KP, Baluchistan and Sindh).
- Department of Agriculture Extension (DoA).
- Maize and Millet Research Institute (MMRI).
- Cereal Crops Research Institute (CCRI), Nowshera.
- Agricultural universities in Pakistan and the US.
- Private seed companies
- National Rural Support Program (NRSP).
- Lok Sanjh Foundation.
- Bangladesh Wheat and Maize Research Institute (BWMRI) for Blast Screening.
- Kenya Agricultural and Livestock Research Organization/CIMMYT- Kenya for Ug-99 screening.
- Borlaug Global Rust Initiative (BGRI).

Focus across research themes

- Maize and wheat variety improvement and seed systems (promoting fast-track seed multiplication and delivery, community based seed production).
- Raising system productivity and profitability, sustainable intensification, diversification and closing the yield gap.
- Addressing labor shortages through scale appropriate mechanization, pre- and post-harvest.
- Improving nutrition and reducing losses of food and feed in cereal- based systems.
- Innovations in scaling and monitoring evaluation and learning (MEL) systems, building digital agricultural intelligence systems.
- Enabling change in institutions and policies to speed and maximize impact.

Pathways to impact have been designed around these topics

- Capacity development – national systems will lead and own.
- Gender mainstreaming – targeted approach (at least 25% women headed HHs).
- Private sector development and engagement.
- Access to new technologies and attitudinal change.
- Promotion of competitive, market oriented, and inclusive seed systems.
- Convergence and synergies.
- Publications and communication.
- Lobbying to address policy issues that constrain the adoption of new and high impact technologies.

CIMMYT | CGIAR

www.cimmyt.org
Email: CIMMYT@cgiar.org

Contact:
Dr Thakur P Tiwari
Country Representative for Pakistan
Tel: +92519255522-24
CIMMYT Pakistan Office, CSI Complex, National Agricultural Research Center (NARC), Park Road, Islamabad, 44000