CIMMYT Maize Research-for-Development in Asia

Demand for maize in Asia is increasing and expected to double by 2050, driven largely by demands for food, feed and industry needs. CIMMYT works with public and private sector partners in Asia to improve the livelihoods of smallholder maize farmers, with the overall aim to enhance food security, improve human health and nutrition, and ensure more sustainable management of natural resources.

Maize in Asia

- Asia produces over **310 million metric tons of maize** annually from a harvested area of **over 60 million hectares**.
- **China ranks first** in the world in terms of area under maize, with nearly **36 million hectares**.
- In **South** and **South East Asia**, maize is cultivated on more than **22 million hectares**, where farmers produce nearly **80 million metric tons**.

Partnerships

- Under the CGIAR Research Program on Maize (MAIZE), CIMMYT works with **over 300 partners worldwide**.
- CIMMYT maize researchers work with **over 100 partner organizations across Asia**.
- In Asia, CIMMYT is engaged in **12 projects focusing on maize** research-for-development in several countries, including Bangladesh, Bhutan, China, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam.

Climate-resilient, nutritious maize

In South and South East Asia, **80%** of the maize-growing area is rainfed and **prone to drought**, while **60%** is **prone to heat stress**. Development of **improved maize** varieties with drought-tolerance, heat-tolerance, nitrogen use efficiency, disease resistance and **improved nutritional quality**, are crucial in responding to emerging constraints to maize production in Asia.

Improved maize for improved livelihoods

During 2016-2018, partners in South Asia released **9 heat-tolerant** CIMMYT-derived **maize varieties** that have the potential to significantly **minimize yield losses**. CIMMYT lines were used to develop drought-tolerant varieties that are now on the market in India and Sri Lanka, helping farmers **adapt to climate change**. Several countries in South Asia are testing varieties that offer enhanced nutritional value, including **Quality Protein Maize** (QPM), **provitamin A** and micronutrients, such as zinc through **biofortification** to fight hidden hunger.

Gender responsiveness

CIMMYT applies **gender-aware approaches** to ensure **both male and female farmers** have equal access to opportunities. Projects in Nepal – a country where women carry out farming predominantly – engage women in the **testing and deployment of technology** and initiate **mainstreaming of extension services** to involve socially marginalized communities.

Farming innovations

CIMMYT researchers work with partners and farmers to tailor **sustainable intensification practices**, such as conservation agriculture (CA), that boost food production while **limiting environmental impact**. Geospatial targeting technologies and decision tools help smallholders precision-manage nutrients and water. When layered with CA practices, this approach can **boost maize production by 20-25%**, improving farmers' income by up to US **$200-300 per hectare**.

Scale-appropriate mechanization

CIMMYT creates and promotes the use of scale-appropriate mechanization to **reduce farmers' workload** and **increase productivity** and profits. These efforts can attract **young rural entrepreneurs** as machinery service providers, allowing them to make a living by providing **mechanization services** to farmers.

Strengthening local capacities

Annual training courses in Asia are organized for more than **200 scientists and technicians** from public and private sector institutions, and **several thousand farmers**. Researchers published 163 peer-reviewed journal articles in 2017, 37 of which involved work in Asia. MAIZE supported **110** degree **students** from **26 countries** worldwide, including Bangladesh, China, India, Nepal and Pakistan.

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For further Information, contact: Dr. B.M. Prasanna
Director, CGIAR Research Program on Maize and CIMMYT Global Maize Program
Email: b.m.prasanna@cgiar.org

CGIAR RESEARCH PROGRAM ON Maize