Country Profile

CIMMYT MR
International Maize and Wheat Improvement Center

CIMMYT IN NEPAL

A long-standing alliance

Although official partnerships started in 1985, CIMMYT has collaborated with Nepal since the 1960s, through visits and scientist training. New wheat varieties developed and introduced to Nepal by Norman Borlaug, Nobel laureate and CIMMYT wheat scientist, ensured the nation's entry into the Green Revolution. Resulting joint research raised maize and wheat productivity in the southern Terai region and in the hills of Nepal.

Women use a mini-tiller for direct seeding in Ramghat, Surkhet, Nepal. (Photo: P. Lowe/CIMMYT)

Agriculture is a key sector under the "Prosperous Nepal, Happy Nepalis" vision of the government of Nepal.

The International Maize and Wheat Improvement Center (CIMMYT) contributes to food security and improved livelihoods of small farmers in the country through its research and capacity development in cereal-based agri-food systems.

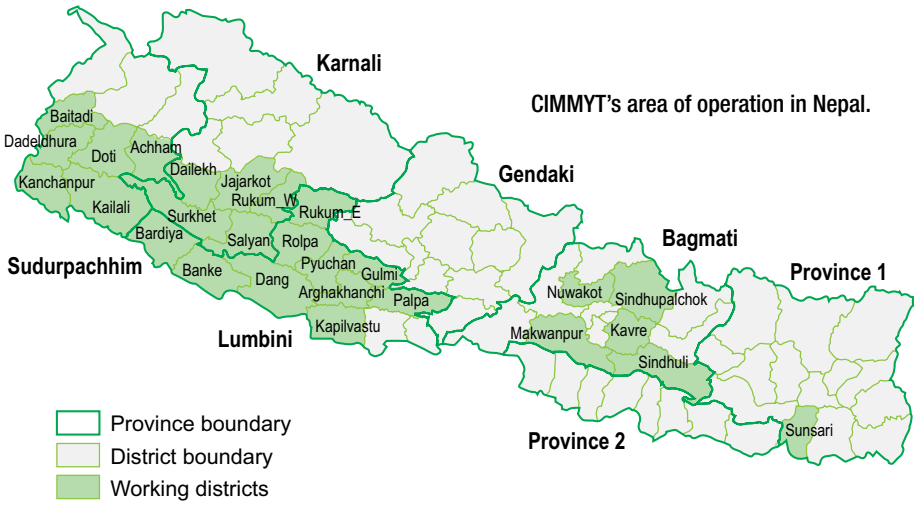
CIMMYT has been partnering with Nepal since 1985, leading to many successes in agricultural development.

CIMMYT works on improving crops and varieties, increasing the sustainability of cropping systems, developing policies to encourage small-scale mechanization, scaling of agricultural innovations, and developing seed and fertilizer value-chains.

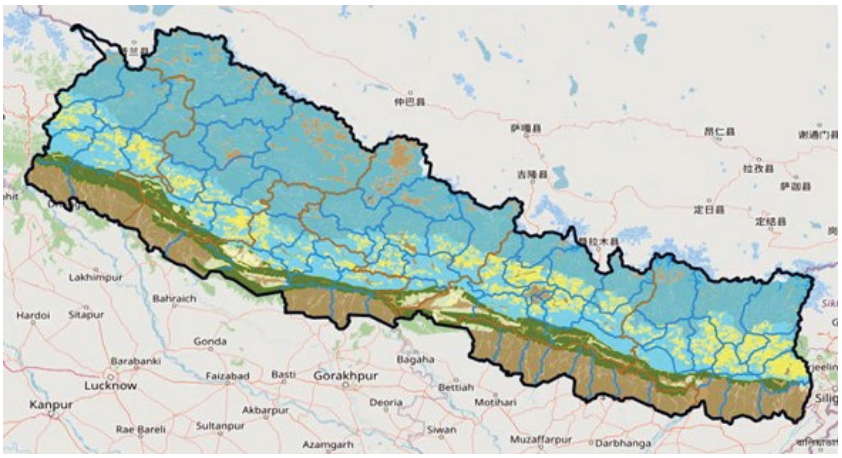
At a glance

- **Maize germplasm development and deployment:** Maize is the second most important food crop in Nepal after rice. In the last decade, Nepal's maize area has increased by 9 percent and production by 46 percent. Between 2010 and 2020, Nepal Agricultural Research Council (NARC) has released 16 new maize varieties, including five hybrids from CIMMYT's germplasm source. CIMMYT provides elite lines and hybrids to NARC and private seed companies for testing and release, and supports the development of local seed companies. Nepal has also released nutritious maize products (Poshilo Makai-1 and Poshilo Makai-2, QPM varieties released in 2008 and 2018, respectively). New biofortified maize products are in the pipeline for registration, including Kernel Zinc and Provitamin A-enriched hybrids and synthetics.
- **Wheat germplasm development:** Wheat is the third most important crop after rice and maize in Nepal. The partnership between CIMMYT and NARC has led to the dissemination of wheat varieties, starting in the 1960s when semi-dwarf wheat varieties were first introduced in Nepal. In the following decades, in partnership with the National Wheat Research Program (NWRP) and later under NARC, 11 wheat varieties have been released in Nepal using CIMMYT germplasm, including Bheri-Ganga, Borlaug 2020, Himganga, Khumal-Shakti, Zinc Gahun 1 and Zinc Gahun 2. In the last 20 years alone, wheat yield in the country increased by 62 percent and production by 78 percent.
- **Crop management:** CIMMYT's collaboration with Nepal has addressed agronomic concerns like water management, weed control, fertilizer management, crop establishment, and tillage. Resource–conserving practices introduced by CIMMYT in the 1980s have greatly facilitated earlier sowing and increased grain yields, while using fewer inputs. Tens of thousands of farmers, many of them women, have applied improved technologies.

- **Pulse intensification and diversification:** Pulses such as lentil and mungbean can provide important nutritional benefits, as well as diversifying and intensifying cereal-based systems by using the fallow period before the kharif or monsoon season. CIMMYT showed that productivity could be doubled with best management practices and new varieties. By demonstrating the increased productivity, working with seed companies on seed supply, and linking farmers to markets, more than 8,000 farmers in 2019 grow mungbean instead of letting the land fallow.
- **Scale-appropriate mechanization:** CIMMYT works closely with the private sector, the Nepal Agricultural Machinery Entrepreneurs' Association (NAMEA), and the public sector to create and support local machinery service provision. For example, in the mid-hill region over 20,000 minitillers have been adopted by farmers, 16 percent of them women. In the Terai region, the number of reapers in use has increased from 14 in 2014 to almost 3500 in 2019. CIMMYT and its partners also promote the adoption of seed drills, 2-wheel tractors and combine harvesters, providing training in their use and maintenance.
- **Capacity development and private sector engagement:** CIMMYT's relationship with Nepal is much more than just an agricultural exchange — it also fosters intellectual exchange. More than 200 Nepali researchers and senior officials benefitted from scientific training, visits, and study fellowships. CIMMYT has also helped to strengthen the private sector, by building the capacity and developing the productivity of local seed and fertilizer entrepreneurs, increasing the capacity of small mechanization service providers, and scaling up advisory services for farmers and intermediaries. CIMMYT and its partners also train 4,000-8,000 farmers each year on innovations, agronomic best practices and pest management.
- **Advocacy for agricultural policies:** CIMMYT has promoted public-private coordination to fast-track varietal registration and exclusive licensing to private companies. It supported the development of hybrid seed production and certification guidelines for the first time in Nepal, endorsed by the government. CIMMYT works closely with the Ministry of Agriculture and Livestock Development to create policy guidelines for producing and promoting blended fertilizers in Nepal. CIMMYT also works with provincial governments through its Roadmaps project to identify changes needed to increase adoption and impact.
- **Digital soil mapping and nutrient management platform:** CIMMYT, in collaboration with NARC's National Soil Science Research Center (NSSRC), has produced a high-resolution digital soil map, for the first time in Nepal. The Prime Minister of Nepal officially launched the map in February 2021. This map can be used to drive the development of market-led fertilizer products, and to inform and update soil management recommendations. The platform also provides information on crop distribution and infrastructure, suitable crops and varieties for a particular area, best management practices and APIs to access data for cereals and some vegetable crops.
- **Digitally Enabled Seed Information System (DESIS):** In 2020 DESIS developed under technical and financial support of CIMMYT, a digital seed information system, was launched by the Seed Quality Control Centre (SQCC). It provides a catalogue of all released varieties and enables public and private seed stakeholders to monitor and plan seed supply and demand. The platform, available on the web and mobile devices, helps to aggregate information about early generation seeds available in-country and share it with partners in near-real time.
- **Tackling pests and diseases:** CIMMYT, as a global and regional organization, is well placed to tackle outbreaks of major trans-boundary pests and diseases, such as the fall armyworm. This is a major pest of maize which has significantly reduced maize productivity in Nepal and other parts of South Asia, as well as in Africa. CIMMYT, in collaboration with public and private partners, and using knowledge gained from tackling this pest in Africa, has worked to increase awareness and management of fall armyworm, and disseminated knowledge to control and manage the pest through various media, community mobilization and digital monitoring tools.
- **Climate Change:** Increased variability in monsoon rainfall events and heat stress during grain or seedfilling in winter sown crops are important climatic constraints affecting productivity. CIMMYT and partners promote adaptations to these constraints, such as timely irrigation in rice and earlier wheat sowing. CIMMYT, in collaboration with ICIMOD, the PMAMP and Agriculture Knowledge Centers, has also been issuing climate advisories to raise awareness among farmers.
- **Gender and social inclusion:** CIMMYT supports women and the members of disadvantaged castes, ethnic and religious groups to improve their access to and use of improved technologies, such as mechanization. CIMMYT provided training to women to enable them to effectively own and operate small machinery. CIMMYT helped guide policies and lending practices for banks thereby enabling more women to purchase agricultural machinery and to form small businesses. In the last five years, about 13,051 farmers — 5,233 of whom are women — have gained affordable access to and benefited from scale-appropriate machinery for crop establishment.



CIMMYT's area of operation in Nepal.



High-resolution digital soil map for Nepal, developed by CIMMYT and NARC.

Some of our partners and funders:

- Ministry of Agriculture and Livestock Development (MoALD) and Department of Agriculture (DoA)
- Nepal Agricultural Research Council (NARC)
- Prime Minister Agriculture Modernization Project (PMAMP)
- Provincial Governments, including Agriculture Knowledge Centers (AKCs)
- Seed Quality Control Center (SQCC)
- Plant Quarantine and Pesticide Management Center (PQPMC)
- Seed Entrepreneurs' Association of Nepal (SEAN)
- Nepal Fertilizer Entrepreneurs' Association (NeFEA)
- Nepal Agricultural Machinery Entrepreneurs' Association (NAMEA)
- Agricultural universities and CGIAR Centers
- CBOs/NGOs/INGOs
- United States Agency for International Development
- Bill & Melinda Gates Foundation
- Australian Centre for International Agricultural Research (ACIAR)
- Swiss Agency for Development and Cooperation (SDC)

Highlights of current initiatives

Cereal Systems Initiative for South Asia (CSISA)

CSISA aims to use sustainable intensification technologies and management practices to enhance the productivity of cereal- based cropping systems, increase farm incomes, and reduce agriculture's environmental footprint. CSISA works on rice, wheat, maize and lentils, mainly in the western districts of the country. CSISA has also successfully pioneered and promoted appropriate- scale mechanization (two-wheel tractors, mini-tillers, reapers, spreaders, lazer land leveler) in Nepal. CSISA works with regional and national efforts, collaborating with a myriad of public, civil society and private-sector partners. https://csisa.org/

Nepal Seed and Fertilizer (NSAF) project

NSAF's goal is to build competitive and synergistic seed and fertilizer value chains for inclusive and sustainable growth in agricultural productivity, business development, and income generation. NSAF is working on maize, rice, lentils, onions, cauliflower, and tomatoes in 26 districts. With funding from USAID, the project works with public, private and cooperative sectors to increase the use of improved seeds and integrated soil fertility management technologies to beneficiaries, including women and socially disadvantaged groups. NSAF is suporting the government of Nepal to meet the targets of the National Seed Vision 2013-2025 and to transition to a balanced soil fertility management approach. https://cimmyt.org/projects/NSAF

Sustainable and Resilient Farming Systems Intensification (SRFSI) project

SRFSI focuses on research and promotion of zero tillage and conservation agriculture. The project is currently focusing on sharing the learning from the last five years. An associated project, Roadmaps, focuses on helping provinces to create an enabling environment that increases adoption and impact. SRFSI works in both Provinces 1 and 2, alongside locations in India and Bangladesh. https://cimmyt.org/projects/SRFSI

Transforming Smallholder Food Systems in the Eastern Gangetic Plains project

This project investigates the processes and practices that can be applied to achieve sustainable, efficient, diversified food systems at scale in the Eastern Gangetic Plains. This includes: [1] technical options, [2] scaling interventions, [3] policy settings and [4] implementation strategies. This focuses primarily on a farmer livelihood context, with interventions across crops and (farm and non-farm) livelihood activities. This project builds on the achievements of Sustainable and Resilient Farming Systems Intensification (SRFSI) project.

Women harvest provitamin A maize in Kailali, Nepal.

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Last updated: June 2021