Facilities Upgrade and Mechanization Improvement project

Achieve higher genetic gains on farmers' fields by implementing sustainable improvements in infrastructure and mechanization methods

The project is designed to address various challenges faced at breeding stations, which include:

- Low level of adoption of mechanization which limits the efficiency of breeding
- Limited irrigation capacity on breeding stations: old or poorly maintained systems
- Improper storage and lack of seed equipment jeopardizing seeds' viability
- Lack of infrastructure and capacity limiting CGIAR/NARES' ability to standardize their processes and equipment

In a nutshell

Lead organisation:

CIMMYT

Participating countries:

Ghana, Ivory Coast, Kenya, Malawi, Mozambique, Nigeria, Senegal, Uganda, Zambia, Zimbabwe

Project budget:

USD 15 million

Project duration:

2 years

Implementation period:

01-2023 to 12-2024

Targeted crops:

Banana, Beans, cassava, cowpea, groundnut, maize, millets, potato, rice, sorghum, sweet potato, wheat, yam

Objectives

Facilities Upgrade and Mechanization Improvement's primary objective is to achieve greater genetic gains on farmers' fields in Africa. This project focuses on improving the infrastructure and mechanization capabilities of 16 priority stations across the participating countries and it will have a positive impact on multiple breeding programs. To accomplish this, the project will provide the breeding stations with essential equipment like planters, solar and irrigation systems, field preparation tools, and harvesting equipment, while also providing comprehensive training and ongoing support to ensure successful implementation. It is part of a wider multi-funder program called *Crops to End Hunger* (CtEH), and it is implemented by CGIAR's Breeding Resources Initiative (BRI).

About Crops to End Hunger

In 2017-2018, a multi-Funder group, including the United States Agency for International Development (USAID), the Bill & Melinda Gates Foundation (BMGF), the UK Department for International Development (DFID), the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Australian Centre for International Agricultural Research (ACIAR), agreed to launch a modernization program for public plant breeding in lower-income countries, called "*Crops to End Hunger (CtEH)*". The CtEH program will invigorate breeding for the staple crops most important to smallholder farmers and poor consumers. In 2022, a new grant was launched, covering 14 projects implemented in the years 2023-2024, and including the present one.

Logic of intervention and components

CGIAR's Breeding Resources Initiative (BRI) primarily concentrates on enhancing processes, people, and information in breeding programs. However, in the identified breeding stations, there is a significant technological gap that hinders BRI's ability to deliver services effectively. Investment from CtEH through *Facilities Upgrade and Mechanization Improvement* will bridge this gap by providing the necessary funds to acquire equipment, train staff and establish proper infrastructure at priority stations.

This project's approach has four components:

- **Research equipment:** Providing planters, harvesting and threshing equipment, tractors, etc., along with training to use and maintain the equipment.
- **Irrigation systems**: Providing irrigation infrastructure and sensors, along with training to use and maintain the equipment.
- **Seed processing:** Seed processing equipment, drying equipment, seed processing infrastructure, etc., along with training to use and maintain the equipment.
- **Establishing service catalogs:** for the breeding stations to offer services to breeding programs using the infrastructure and equipment established.

Outcomes

The project will enhance the infrastructure and operational capabilities of key CGIAR/NARES stations. Aligned with OneCGIAR goals, the project will provide support to multiple breeding programs, benefiting approximately 100 breeding pipelines.

Results

- ✓ Stations adopt new machinery and equipment; they increase their mechanization capacity to conduct experiments with significantly reduced human error and improved data quality.
- ✓ Capacities of priority stations are increased by expanding irrigated areas to facilitate the implementation of nurseries and trials. Trials currently managed in non-irrigated areas move to irrigated fields. Irrigation systems are equipped with solar power where possible, and operational staff receives adequate training.
- ✓ Seed processing, drying capacity and seed storage gaps are filled at the priority stations. Breeding materials (germplasm) are properly processed and maintained.
- ✓ All 16 breeding stations are closing the pre-existing infrastructure and mechanization gap. They are able to provide related services to breeding programs.