



National Wheat Coordinator Dr. Ruth Wanyera gives a lesson to pathology interns in the field of a fungicide efficiency trial at KALRO Njoro Research Station, Nakuru, Kenya 2017. Photo: CIMMYT/ Peter Lowe.



CIMMYT has long worked in Kenya with Kenyan researchers, policymakers, crop scientists, agricultural organizations and farmers. These collaborations date back to 1964 when CIMMYT and Kenyan scientists developed the first maize hybrid variety in 1964. Since then, CIMMYT has been committed to collaborating with Kenyan partners to improve the quality, quantity, and dependability of Kenya's production systems and cereal crops.

CIMMYT's Kenya headquarters opened in 1975 and is now housed at the CIFOR-ICRAF center in Nairobi. Over 60 CIMMYT employees are based in Kenya, spread out among the home office in Nairobi and other outposts in Kiboko, Naivasha, and Kibos. Greenhouses and testing facilities are located in Kitale, Kakamega, Kirinyaga, Embu, and Meru.

## Wheat

The alarm for Ug99, a virulent new stem rust race, was first sounded by Nobel Peace Laureate Norman Borlaug in a meeting in Nairobi in 2005. From there, CIMMYT and KALRO established a world class screening nursery in Njoro, where over 50,000 wheat lines were tested for resistance to Ug99 and other rusts.

Njoro is also the site of the East African wheat breeding pipeline, established in 2022. The pipeline accelerates breeding techniques and reduces the time necessary for variety development and release. This strategic alignment between CIMMYT and Kenya extension organizations has proven to be very effective in addressing critical gaps, including high-yield potential, disease resistance, and climate resilience, and aligns with CIMMYT's overall wheat strategy for Africa.

The Wheat Disease Early Warning Advisory System (DEWAS) is built upon the efforts of CIMMYT and KALRO to track the spread of Ug99. It will provide near-real-time, model-based risk forecasts for governments



Wheat harvest near Belbur, Nakuru, Kenya 2017. Photo: CIMMYT/ Peter Lowe.

resulting in accurate, timely and actionable advice for farmers to respond proactively to migrating wheat diseases, including rusts and wheat blast.

## Maize

CIMMYT and KALRO established two major facilities that have been crucial for maize breeding in sub-Saharan Africa: the Maize Doubled-Haploid (DH) facility and the Maize Lethal Necrosis (MLN) screening facility in Naivasha and Kiboko, respectively. These facilities have made immense contributions to the rapid development of higher-yielding, climate-resilient and disease-resistant maize varieties for smallholder farmers.

The MLN facility is the largest in Africa and has evaluated over 330,000 rows of maize. It is the only quarantine facility in the world capable of screening for MLN under artificial inoculation.

When MLN was first identified in Kenya in 2011, there were only five maize varieties offering any resistance. To date, over 50 elite and diverse CIMMYT lines with MLN resistance have been

released. CIMMYT and KALRO researchers have screened 221,450 germplasm entries (>343,013 rows) against MLN under artificial inoculation at the Naivasha facility.

The Doubled-Haploid process is an innovative effort that produces genetically superior maize varieties within a year to serve as breeding building blocks for improved

varieties. The DH facility in Kiboko allows small and medium-sized seed companies in Kenya access to this expensive technology and produces more than 60,000 DH lines every year.

## Inclusivity

In the past, staff at the Kiboko office were majority male, but CIMMYT and KALRO are taking pro-active action to ensure more equal access.

Eliminating conscious and unconscious gender bias is a critical initial step. This involves removing biased hiring practices that perceive certain roles as exclusive to one gender. We have done this by ensuring diverse hiring panels, and considering female candidates alongside male, to send a powerful message of inclusivity.

Gender is being integrated at the project level and into socio-economic studies on access, adoption, and impact. Breeders are being trained on how to integrate gender into their work plan and institutions.



Harvesting WEMA maize trials at KALRO Kiboko Research Station, Makueni, Kenya 2017. Photo: CIMMYT/ Peter Lowe.

Out in the fields, efforts to encourage sustainable agricultural practices among smallholder farmers have recognized the role of women in making sustainable farming decisions.

## Capacity Building

For more than three decades, CIMMYT has conducted research trials at the Kiboko Research Station, focusing on drought tolerance, nitrogen use efficiency, and resistance to pests and diseases, such as Fall Army Worm and stem borer. Recent upgrades worth USD500,000 have now equipped the facility with five new seed drying machines, a dedicated shed to house these units, a cold room for storing breeding materials, and an additional irrigation dam/reservoir.

Moreover, the crop management research training (CMRT) curriculum at Egerton University, originally developed with CIMMYT, has made Kenya the regional focus for hands-on, analytical training in field agronomy.

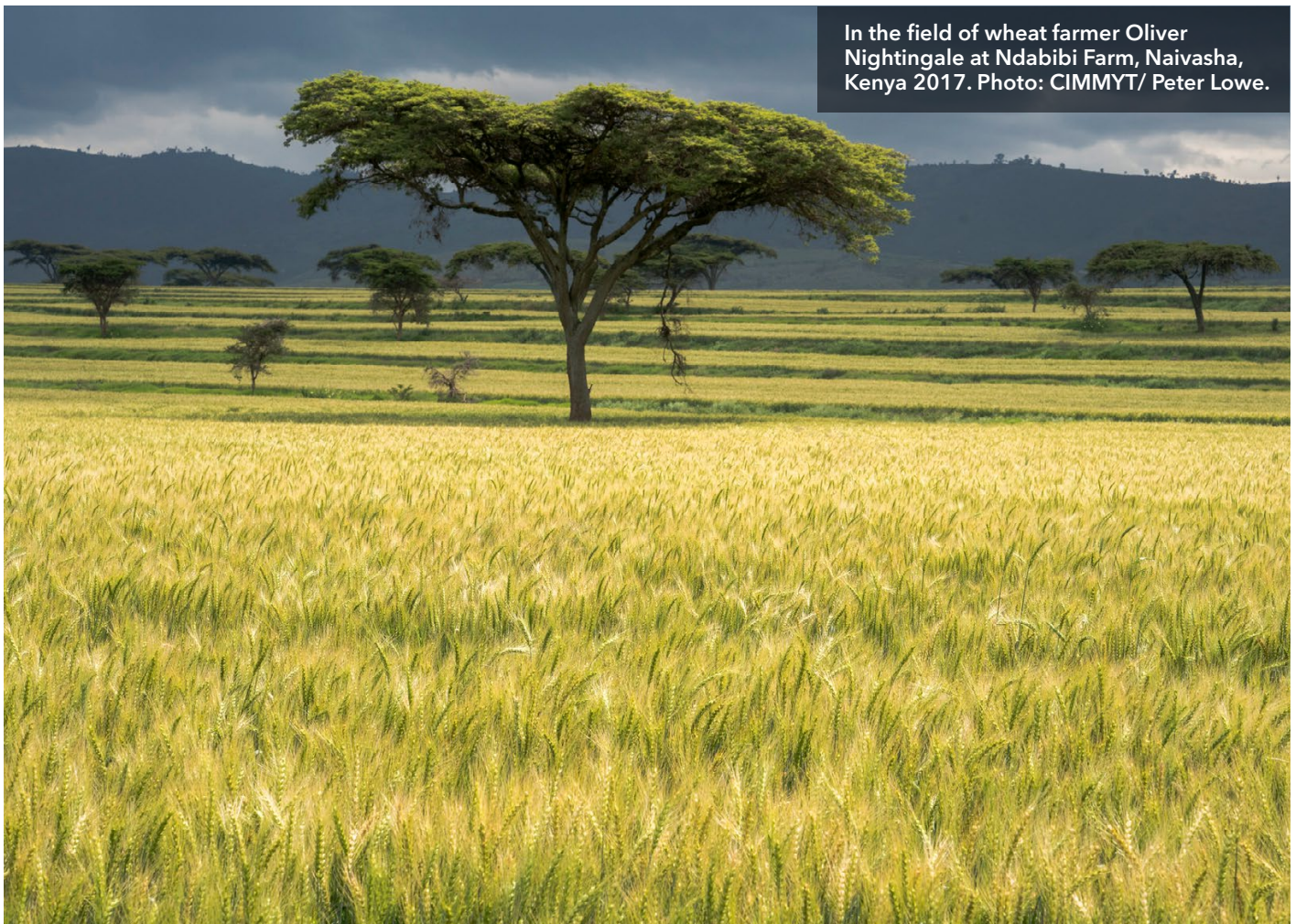
In an effort to accelerate Kenya's breeding programs, KALRO received 23 units of equipment including seed counters, label printers, handheld data collectors, tablets and package printers to enhance the accuracy of various breeding processes, including seed preparation, data collection and data analysis. They will also support inventory management within KALRO's maize, wheat, rice, sorghum, bean, soybean and potato breeding programs at six of its research centers in Kenya.

The CGIAR's Plant Health Initiative is testing integrated pest management packages against Fall Army Worm in partnership with smallholder farmers and agricultural extension officers at the Plant Health Innovation Platform at the KALRO Kiboko Research Station.

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**More than 80 Kenyan farmers have actively participated in initiatives to expand extension services and promote the adoption of best agronomic practices. Their valuable input and collaboration has been instrumental in shaping these efforts to better serve the broader farming community.**

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In the field of wheat farmer Oliver Nightingale at Ndabibi Farm, Naivasha, Kenya 2017. Photo: CIMMYT/ Peter Lowe.

## Ongoing collaborative research projects and funders in Kenya

- ◆ Accelerating Genetic Gains in Maize and Wheat (AGG), funded by USAID
- ◆ ACRC Phase 5: Optimizing genetic control of wheat rusts through high value resistance genes, funded by CSIRO and GRDC
- ◆ EiB II: Cross-Crop Support Services for Breeding Acceleration, funded by BMGF
- ◆ VACS Quick Wins for Under-Invested Crop Seed Systems, funded by USAID
- ◆ IFDC-Soil Advisories Project, funded by IFDC
- ◆ Fall Armyworm Management in Africa and Asia, funded by USAID
- ◆ ShelfPlus: Reducing millet rancidity through gene editing, funded by BMGF
- ◆ Seed Production Technology for Africa Phase II, funded by BMGF
- ◆ TELA™ Maize Traits Launch Project, funded by AATF
- ◆ 1000Farms-MaizeSelect, funded by BMGF
- ◆ 1,000 Farms Research Platform, funded by Alliance Bioversity-CIAT
- ◆ Wheat Disease Early Warning Advisory System (DEWAS), funded by BMGF
- ◆ Assessing Marketing Innovations Impact on Seed Variety Turnover (SMIA), funded by Context Global Development
- ◆ Scaling Climate Smart Agriculture in Eastern and Southern Africa, funded by USAID



Field workers harvesting WEMA maize trials at KALRO Kiboko Research Station in Makueni, Kenya 2017. Photo: CIMMYT/ Peter Lowe.

### 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.*

All of these CIMMYT-managed projects are aligned with Kenya Vision 2030 and the value of CIMMYT projects in Kenya is currently USD30 million.

### CIMMYT's major partners in Kenya

Kenya Agricultural and Livestock Research Organization (KALRO)

Egerton University