



ICRISAT in Eritrea



Country Profile

Eritrea is located in East Africa and is bordered by the Red Sea to the northeast and east, Sudan to the west, Ethiopia to the south, and Djibouti to the southeast. The country lies between latitudes 12° and 18°N and longitudes 36° and 44°E.

Agriculture is one of the main economic activities in Eritrea, contributing 20% of the gross domestic product (GDP) in 2021. The country has 565,000 hectares (1,396,000 acres) of land under arable and permanent crops. Agriculture employs 70% of the Eritrean workforce and accounts for roughly one-third of the economy.



ICRISAT and Eritrea

Eritrea has a long history of collaboration with ICRISAT. Given the country's dry climate, sorghum and pearl millet are its main cereal crops. Several varieties have been released through collaboration with ICRISAT.

The partnership has also supported capacity development through postgraduate education and

short-term training. Between 2023 and 2024, six breeders and seed specialists from Eritrea received one week of training at ICRISAT's field station in Kiboko, Kenya. Eritrean researchers also jointly evaluate materials, mainly kits, developed by ICRISAT at Kiboko.

Currently, a set of pearl millet and sorghum varieties is at an advanced stage of evaluation for release. A PhD student is also working with ICRISAT on sorghum for fodder production in Eritrea. ICRISAT and Eritrean partners have collaborated through several initiatives, including the Harnessing Opportunities for Productivity Enhancement of Sorghum and Millets in sub-Saharan Africa and South Asia (HOPE) project, an Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)-initiated project, and CGIAR Research Programs (CRPs). Several of the varieties currently under production in Eritrea were released through these collaborative efforts.

Summary of ICRISAT's HOPE Project in Eritrea



Project Overview

The Harnessing Opportunities for Productivity Enhancement (HOPE) project, funded by the Bill & Melinda Gates Foundation, aimed to improve the productivity and resilience of sorghum, pearl millet, and finger millet in sub-Saharan Africa and South Asia. In Eritrea, the project's primary focus was on sorghum, a staple crop crucial for food security.



New Sorghum Cultivars

ICRISAT, in collaboration with the National Agricultural Research Institute (NARI) of Eritrea, released several new sorghum cultivars between 2009 and 2010. These cultivars include:

Seare (2010): A high-yielding, white grain variety with no tannin.

Harriray (2010): Known for its high yield and grain quality suitable for food products.

P9401 and P9407 (2009): Both are *Striga*-resistant, white-seeded varieties.

Bushuka (2009): Another high-yielding variety.



Productivity Gains

The adoption of improved cultivars and better crop management practices led to significant productivity gains in Eritrea. For instance, on-farm trials showed a 60% increase in sorghum yield, from 2,250 kg/ha using the local variety Harriray with 33 kg N to 3,600 kg/ha with the variety ICSV 111 IN and the same nitrogen application.



Challenges and Outcomes

While the project achieved notable success in increasing crop yields, it also faced challenges, particularly in areas with below-normal rainfall, which affected trial outcomes in regions like Shambiko and Goluj.



Capacity Building

The project emphasized capacity building through training and information dissemination. Numerous national program staff and farmers received training in improved agricultural practices. Diverse communication products and channels, such as training manuals, brochures, local radio, and field demonstrations, proved effective in reaching a wide audience.



Lessons Learned

Key lessons from the project include the importance of early partner engagement to establish project ownership and the need for a focused approach to maximize resource use and collaboration. Integrating improved varieties with effective soil fertility, water management, and pest control practices was essential for enhancing productivity.



Conclusion

The HOPE project in Eritrea successfully introduced new, high-yielding sorghum varieties and improved agricultural practices, leading to significant yield increases and enhanced food security. The project's capacity-building efforts and the lessons learned provide a strong foundation for future agricultural development initiatives in the region.

