

New partnership will accelerate growth in tef yields and markets

SDC and SFSA build on successes to deliver more seed for Ethiopia's crucial cereal

Summary

Tef is the staple cereal for more than 70 million people in the Horn of Africa. It is now also growing in importance internationally. However, tef is an under-researched "orphan" crop. Yields are therefore much lower than they could be.

Our Foundation (SFSA) has supported tef breeding since 2006. A recent partnership with the Ethiopian Institute for Agricultural Research ([EJAR](#)) and local seed companies developed five improved varieties and produced more than 2000 tons of early generation seed (EGS). That is enough to plant more than 150,000 hectares for seed production. These varieties' yield gains and better quality have created \$10-30m in extra value.

This impressive impact has led to a new partnership with the [Swiss Agency for Development and Cooperation](#) (SDC). A major goal is to increase the capacity of the Ethiopian seed sector to meet smallholders' need for improved tef genetics. Building on the resulting productivity gains, the partnership also aims to sustainably expand value chains and add value on tef products. Beneficiaries of the new income opportunities will include rural women and youth.

Tef (*Eragrostis tef*) is the key staple cereal in the Horn of Africa. In Ethiopia alone, about 6.5 million farmers grow the crop on three million hectares. Tef provides the staple food for some 70 million Ethiopians. Its main use is in *injera*, a spongy bread eaten at almost every meal. Tef is rich in mineral nutrients, essential amino acids and fiber. It is also gluten-free. These features make the cereal attractive for health-conscious consumers worldwide. The large Ethiopian and Eritrean diaspora represents a further international market opportunity.

Many Ethiopian farmers are proud to grow tef because of its huge importance in the national diet. They also like the crop for good practical reasons. Tef is resilient and grows under both dry and waterlogged conditions. This will be an increasingly important feature as climate change leads to greater extremes of drought and rainfall. Farmers also benefit from strong consumer demand. Prices are at least 30% higher than for other cereals. Post-harvest handling and logistics are also much easier than with other cash crops such as vegetables and fruit.

In addition, tef offers numerous off-farm income opportunities. An increasing number of businesses create remunerative jobs, notably for women and youth. They include bakeries across Ethiopia as well as processing facilities for domestic and export markets. There is also huge untapped potential for alternative tef products for societies with no *injera* tradition.

Tackling the challenges

Despite all these positive aspects, tef is an "orphan crop". Largely neglected so far by international R&D, it suffers from low investment in varietal improvement and seed delivery. Lack of modern breeding technologies and concepts limits productivity. Ethiopia's [Statistics Agency](#) reports that farmers currently harvest only 1.8 tons per hectare. That is at least 50% less than for other major cereals. Much more investment is also required in the popularization and delivery of improved varieties.

In 2017, SFSA engaged with EIAR and local seed companies to improve this situation. Their joint aim is to develop better varieties and establish seed systems that can deliver these to smallholders at scale*. The first phase concluded in 2022. The partnership has developed five improved tef varieties. They all yield 0.2-1t more per hectare than farmers' currently main choices. The new varieties incorporate important traits that meet local agroecological challenges and/or consumer preferences.

Variety Name	Released	Observed Yield	Specific traits
<i>Tesfa</i>	2017	2.5 t/ha (station) 2 – 2.4 t/ha (farm)	Thick stem (anti-lodging) Compact panicle (prevents seed shattering)
<i>Ebba</i>	2019	2.3 – 3 t/ha (station) 2 – 2.6 t/ha (farm)	Tolerant to fungal disease High yield
<i>Bora</i>	2019	2.2 - 3 t/ha (station) 1.8 – 2.4 t/ha (farm)	Early maturity
<i>Bishoftu</i>	2020	2.4 – 3.2 t/ha (station) 2 – 2.8 t/ha (farm)	High yield Drought-tolerance
<i>Boni</i>	2021	2.4 – 2.8 t/ha (station) 2 – 2.6 t/ha (farm)	Early maturity White seeds

To bring benefits at scale, the improved varieties need to be easily available to farmers. To enable this, SFSA has taken several steps. One is agronomy training for more than 6000 seed-producing 'lead' farmers. Company personnel and other seed system stakeholders have benefited from capacity-building. SFSA has also worked with EIAR to deliver adequate quantities of pre-basic and basic seed. The result has been production of more than 2000 tons of EGS, sufficient to plant 150,000 ha for basic seed. We estimate the direct economic benefit at already around \$10-30 million. Additionally, substantial indirect benefits stem from informal multiplication and dissemination by the lead farmers.

* This work builds on a partnership between SFSA and the University of Bern since 2006. This focuses on using modern molecular, non-GM, tools to breed lines with improved traits, notably for raising yield through tolerance to lodging and/or drought.



Lead farmer in a field of the new *Ebba* variety in the Minjar region

The successes so far have provided considerable motivation to expand the collaboration. In 2022, the Swiss Agency for Development and Cooperation (SDC) agreed to scale up the delivery of improved genetics through both formal and informal channels. This new partnership also seeks to engage more with value chain players. The aim is to better understand and meet their needs for improved genetics and agronomic innovation. SDC and SFSA are each investing \$200,000 in the tef seed sector by the end of 2023. Together, they will focus on four aspects:

- a) Building the Ethiopian seed sector's capacity by analyzing current limitations and investing in production capacity
- b) Better understanding the relationship between formal and informal sectors to maximize the delivery of improved varieties through both channels
- c) Continuing to develop and deliver improved genetics. By the end of 2023, the aim is to have two new varieties released, 750 additional tons of Early Generation Seed produced, 150 new seed inspectors trained and 60 new lead farmers with access to pre-basic seed of improved varieties
- d) Engaging with value chain players to guide future breeding and trait development. Target breeding profiles will be created for at least three value chains and agro-ecological zones in Ethiopia.

We expect this new partnership to start a multistakeholder initiative. This would involve partners from along the tef value chain, as well as donors and investors. Sustainable productivity gains derived from improved genetics and agronomy will catalyze both domestic and export value chains. Attracting investment into tef will therefore drive much-needed economic growth in the Horn of Africa.

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