



New partnership to accelerate growth in tef yields and markets

Summary

The **Syngenta Foundation for Sustainable Agriculture (SFSA)** has supported tef breeding since 2006. A recent partnership with the **Ethiopian Institute for Agricultural Research (EIAR)** and local seed companies has developed five improved varieties and produced more than 2000 tons of early generation seed. 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 successful collaboration not only had a tremendous impact on tef technology, but it has also led to a new partnership with the **Swiss Agency for Development and Cooperation (SDC)**. This partnership aims at increasing the capacity of the Ethiopian seed sector to provide smallholders with improved tef varieties. 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.

Tackling the tef challenges

Largely neglected by international Research and Development programs, tef suffers from low investment in varietal improvement and seed delivery. Currently, farmers harvest only 1.8 tons per hectare, which is 50% less than for other major cereals. This clearly demands for more investment in the popularization and delivery of improved varieties.

In 2017, SFSA engaged with EIAR and local seed companies to develop better varieties and establish seed systems that can deliver them to smallholders at scale. This work builds on a partnership between SFSA and the University of Bern (Switzerland) that uses modern molecular, non-GM, and breeding tools to introduce agronomically relevant traits, such as lodging and drought tolerance, into tef varieties.

The first phase of this project concluded in 2022 with the development of four improved tef varieties **Tesfa, Ebba, Bora and Boni** and, with the SFSA partial contribution, the development and release of the **Bishoftu** variety. All these varieties yield 0.2-1 t more per hectare than farmers' currently main choices, and they incorporate important traits that meet local agroecological challenges and/or consumer preferences (**Table 1**).

To bring benefits at scale, and make the varieties easily available to farmers, the SFSA has taken several steps. First, SFSA has provided agronomy training for more than 6000 seed-producing 'lead' farmers. Company personnel and other seed system stakeholders have benefited from capacity-building. Second, SFSA has worked with EIAR to deliver adequate quantities of pre-basic and basic seeds. This joint effort has



resulted in the production of more than 2000 tons of pre-basic seed, 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.

Table 1. Technical characteristics of the new released Tef varieties

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

These successes have provided considerable motivation to expand the collaboration. In 2022, the SDC agreed to scale up the delivery of improved genetics through both formal and informal channels. This **new partnership** 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:

1. Building the Ethiopian seed sector's capacity by analyzing current limitations and investing in production capacity
2. Better understanding of the relationship between formal and informal sectors to maximize the delivery of improved varieties through both channels
3. 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
4. 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 agroecological zones in Ethiopia.

We expect this new partnership to start a multistakeholder initiative, involving 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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