

Sorghum Farming for Growth and Security

Striga-Resistant Sorghum Offers a Sustainable Alternative for Kenyan Farmers

Striga Threatens Sorghum Cultivation Across Kenya

Sorghum was the third largest cereal crop in Kenya in 2020, following maize and wheat, with a gross production value of more than US\$260 million.¹ This staple crop is threatened by parasitic *Striga* plants, which pose a major constraint to food production in Kenya and throughout sub-Saharan Africa.² Shifting sorghum cultivation to *Striga*-resistant varieties developed by a Kenyan team of scientists is an opportunity to increase crop yields for small-scale farmers in western Kenya.

New Sorghum Varieties Have Durable *Striga* Resistance and Meet Farmers' Needs

Using new techniques for genetic mapping, researchers at Kenyatta University identified sources of naturally occurring resistance to *Striga* that are occasionally found in individual sorghum plants.³ The research team also partnered with sorghum farmers to identify traits and qualities farmers look for in selecting varieties of grain for crops. Researchers then crossbred plants to develop sorghum varieties that are both resistant to *Striga* and align with farmers' preferences. Use of such new varieties would enable farmers to plant entire crops of sorghum that are reliably resistant to *Striga*.⁴ These new varieties maintain their resistance to *Striga* over time, especially when grown with nitrogen-rich fertilizer. Partnerships with agribusiness will help researchers bring these new varieties with durable *Striga* resistance to commercial markets in the future.

Cultivating *Striga*-resistant sorghum and using nitrogen-rich fertilizer are *Striga*-smart agricultural practices that can strengthen sorghum yields and lead to increased economic growth and food security.

WHAT IS *STRIGA*?

Striga, commonly known as witchweed, is a genus of parasitic plants that can devastate cereal crops, including sorghum. *Striga* attaches to sorghum roots underground and drains nutrients. By the time farmers see *Striga* plants growing above ground, it is too late to salvage the sorghum. One *Striga* plant can produce thousands of tiny seeds that may stay dormant in soil for years, putting future crops at risk.

WHAT DO FARMERS WANT?

Participatory research with farmers in western Kenya revealed that farmers prefer sorghum grains that are *Striga*-resistant and:

- Contain optimal tannin levels, making them less desirable to birds.
- Have large grain heads.
- Mature early.





Increasing Sorghum Cultivation Benefits Economic Growth and Food Security

Sorghum is a drought- and heat-resistant crop that can thrive in a range of soils, including low-fertility soil. Compared to maize, sorghum is more nutritious and yields more grain in the same land area. County leaders can encourage farmers to cultivate *Striga*-resistant sorghum to foster economic growth in agriculture and food security locally. Agricultural extension programs play a key role in reaching small-scale farmers with evidence-based information about *Striga*-smart practices to increase crop yields.

BEING *STRIGA*-SMART

Striga-smart practices can increase sorghum yields and advance progress toward goals in the *Kenya Agricultural Sector Transformation and Growth Strategy, Kenya Vision 2030*, and U.N. Sustainable Development Goals to increase agricultural yields, strengthen food security, and improve nutrition.

POLICY CHANGES CAN SUPPORT *STRIGA*-SMART PRACTICES IN WESTERN KENYA

Leaders can strengthen agricultural yields and local food security by supporting small-scale farmers to increase the land area devoted to sorghum cultivation and increase the use of *Striga*-smart practices.

COUNTY OFFICIALS SHOULD:



Prioritize *Striga*-smart sorghum cultivation in county-level agricultural sector transformation and growth opportunities, implementation plans, and incentives.



Increase funding for agricultural extension programs that support small-scale subsistence farmers with evidence-based information about strengthening crop yields, especially for sorghum.

AGRICULTURAL EXTENSION WORKERS SHOULD:



Include information about the benefits of *Striga*-resistant sorghum varieties when engaging with small-scale farmers.

COUNTY GOVERNMENTS SHOULD:



Support partnerships among government, research institutions, and agribusiness to advance evidence-based agricultural practices, including *Striga*-smart sorghum production.

AGRIBUSINESSES SHOULD:



Partner with researchers to bring the newest *Striga*-smart sorghum varieties with durable resistance to commercial markets.

References

- 1 Food and Agriculture Organization of the United Nations, "[FAOSTAT database](#)," accessed January 17, 2023.
- 2 Evans Atuti Atera et al., "[Striga Infestation in Kenya: Status, Distribution and Management Options](#)," *Sustainable Agricultural Research* 2 no. 2, 2013.
- 3 Sylvia Mutinda et al., "[Harnessing the Strigolactone Biosynthesis Mutant *lgs1* to Combat Food Insecurity in Africa](#)," *Authorea*, February 18, 2023.
- 4 Immaculate M. Mwangangi et al., "[Combining Host Plant Defence With Targeted Nutrition: Key to Durable Control of Hemiparasitic *Striga* in Cereals in Sub-Saharan Africa?](#)" *New Phytologist* 230, 2021.

Acknowledgments

This document was produced by Population Reference Bureau under the Research Technical Assistance Center (RTAC). RTAC is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of contract no. 7200AA18C00057. The contents are the sole responsibility of RTAC and NORC at the University of Chicago and do not necessarily reflect the views of USAID or the United States government. Funding for *Striga*-smart practices was provided by the Royal Society under the International Collaboration Awards 2019 contract number ICA\R1\191195.

For more information

Dr. Steven Runo
runo.steve@ku.ac.ke
<https://africenter.isaaa.org/>



USAID
FROM THE AMERICAN PEOPLE



KENYATTA UNIVERSITY



ISAAA AfriCenter