
Seed For Sorghum That Is Resistant To Striga Is Available From ECHO

Scientists Larry Butler and Gebisa Ejeta at Purdue University have developed this variety and successfully tested it in Africa.

First, what is striga? The following excerpt from the home page of the International Development Research Center (IDRC) in Canada, written by Philip Fine, describes this parasitic seed plant well.

“When the head of a family farm in Mali looks out over crops of maize or millet and sees a vibrant pink flower spreading throughout the family’s land, the reaction is one of resignation. The farmer knows that the treacherous weed named striga has returned. It means lost hard work, diminished potential income, and less food available for the family. The family may pull out some of the weeds, but the damage began long before the striga flowers appeared [Ed: the roots of a young striga plant enter the roots of the sorghum or millet and began living off of the host plant’s sap.] Even rotating the crops or using new fertilizers does little to stop the weed’s spread. Each striga plant yields thousands of seeds [Ed: which may survive in the soil for up to 30 years] which means that next year’s crop will likely be stunted as well.”

“Striga is a serious constraint to sorghum, millet and maize production in the dryland zones of Africa, accounting for crop losses as high as 70% among subsistence farmers. Striga is also a problem in sub-humid to humid regions. It is estimated that two-thirds of the 73 million hectares (180 million acres) devoted to cereal crops in Africa are seriously affected by striga, which thrives under conditions of low soil fertility and decreasing plant diversity. The overall revenue loss from striga in Africa is estimated at US\$7 billion per year.”

If striga is a problem in your area, you can write ECHO for a single packet of striga-resistant sorghum seed to try. The variety mix was kindly provided to us by the World Vision Food Security Africa Region program in Accra, Ghana, where the Purdue varieties are being multiplied. If it does well, you can increase your seed year by year. It is possible the resistant variety has already been tried in your area and seed may already be locally available from World Vision or another organization.

Katrin Wilkins, a German missionary who has worked for four years in Chad, says that in the region where she works, striga affects millet, sorghum, maize and rice. “It does not appear every year. My first two years there we didn’t see it, the last two years we saw it a lot.”

"One reason for the variability in striga incidence appears to me to be the rainfall pattern. I've read that the too little rain creates favorable conditions for striga, but in our situation it seems that when there is too much rain it seems to develop a lot. In our region [a very dry part of Africa] it seems that 2-3 weeks of drought during the growing season holds it down. It is also much worse when the soil is poor. Intercropping with cowpea or adding manure helps. In some years rice was badly hurt, especially in poor soil. It is not as much of a problem in heavier soils as in sandy soils. The effect of manure on the plants was very evident in the worst year of striga incidence. With no manure, ears were very small and not filled out very well. Where the manure piles had been located there was no striga at all."

"We obtained our striga-resistant seed from ECHO two years ago. We are now multiplying it. We have not yet done controlled experiments because there was so little seed. We wanted to grow that in good, manured soil, where striga would probably not have shown up anyway."

According to the IDRC home page, Researchers at McGill University in Canada and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) are working on another possible striga control. They have found that *Fusarium oxysporum*, a naturally occurring soil fungus, effectively controls the striga weed.

"In 1991, IDRC funded a team at McGill University in Montreal to search for substances present in African soil that could control the cereal-killing weed. Although striga has no known natural enemies, the researchers identified a hundred promising fungal pathogens in the fields of Burkina Faso, Niger and Mali. In experiments conducted in Canada, eight of the soil pathogens proved effective in stopping the striga weed. Studies showed that the most deadly foe of striga, *Fusarium oxysporum*, is not toxic to humans and causes no harm to cereal crops. In 1995, the scene shifted from a quarantined facility at McGill to testing in a sorghum field in Mali. The results were dramatic. Eighty-five percent of the striga weed was wiped out at the seedling stage by the *Fusarium* fungus, which had been grown on sorghum waste, dried, and then spread over the fields. At harvest time, there was almost twice as much grain and 70% less striga.

"While such data are encouraging, scientists caution that further studies are needed to evaluate the effectiveness of *Fusarium* under different climate and soil conditions. By 1999, the McGill team which is collaborating with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Mali's Institut d'Économie Rurale expects to have more conclusive results. One of the most encouraging properties of the *Fusarium* fungus is that it is relatively easy to multiply. In the next phase of this project, team members will seek the input of Malians and visit local villages to see whether *Fusarium* production could be handled by individual farmers or by cooperatives set up for this purpose. The dried fungus, which can be stored for months without any measured reduction in potency, will eventually stay in the hands of local farmers. If all goes well, someday they can spread the fungus on their fields, preventing them from turning pink with striga."
[The above two paragraphs were excerpted from an article in IDRC Reports by Philip Fine.]