
Protecting Maize with “Weeds”

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In eastern and southern Africa, stemborer insect larvae and striga (*Striga hermonthica*, a parasitic weed) cause huge losses in maize yields. Together, the two pests can destroy an entire crop. A habitat management system to control stemborers and striga has been developed by the International Centre of Insect Physiology and Ecology (ICIPE), along with Kenya's Ministry of Agriculture, the Kenya Agricultural Research Institute (KARI), and IACR-Rothamsted of the UK. The system is called a 'push-pull' strategy. Trap crops that are attractive to stemborers, such as Napier grass (*Pennisetum purpureum*) and Sudan grass (*Sorghum vulgare sudanense*), are planted around a maize field to 'pull' stemborers away from the maize. Napier grass produces a sticky substance that attracts the stemborer larvae, then traps and kills them. Meanwhile, plants that repel stemborer, like desmodium species (such as forage silverleaf, *Desmodium uncinatum*) and molasses grass (*Melinis minutiflora*), are used as an intercrop to 'push' stemborers away from the maize. Molasses grass also attracts a parasitic wasp that is a natural enemy of stemborers.

Several other benefits result from the use of these plants. For one thing, each of them can be used for fodder. For another, *Desmodium* species fix nitrogen and can improve the soil. *Desmodium* also suppresses *Striga hermonthica*, a parasitic plant often referred to as 'witchweed.' When maize was intercropped with *Desmodium*, striga was suppressed 40-fold compared to a maize monocrop.

This 'push-pull' habitat management system has been tested on more than 2000 farms in Kenya and in six districts. Farmers are enthusiastic; farmers in two different districts have reported maize yield increases of 18-20% and 20-25%. Some farmers are also generating extra income by growing desmodium seed to meet the high demand!

In the Suba district of Kenya, use of the 'push-pull' plants for forage has also resulted in higher milk production. The number of improved dairy cattle in the district increased from only a handful in 1997 to 220 in 2000.

Economic analysis of on-farm trials showed that planting maize, Napier grass and desmodium together led to a return of US\$2.30 for every \$1.00 invested. When maize was planted as a monocrop, the return was only \$1.40. The 'push-pull' system does not require expensive inputs like pesticides or fertilizers. Special seeds are also unnecessary; the conventional hybrid seeds used by many farmers work well in the system.

If you want to try this 'push-pull' habitat management technique, you should be aware that Napier grass can become invasive, especially in areas of high rainfall.

For more information, contact the International Centre of Insect Physiology (ICIPE), P.O. Box 30772, Nairobi, Kenya. E-mail: icipe@icipe.org. Website: <http://www.icipe.org> (<http://www.icipe.org>)

We read about this management system in the following publications: LEISA 17(4): 17-18; *Appropriate Technology* 28(3): 5-7; *New Scientist* 24: 25; *Footsteps* Sept. 2001.

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