SCIENCE & ENVIRONMENT

Two-in-one technology for pest, weed control

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The International Center of Insect Physiology and Ecology (*icipe*) has developed a technology that will help small scale farmers simultaneously fight stemborers, striga, and poor soil fertility -the three major constraints in the cultivation of maize and sorghum.

The technology known as "push-pull" combines plants which, when intercropped with cereals, act as both a trap and a repellent for stemborers and striga. The two plants, so far, employed by *icipe* are Napier grass, which attracts moths and desmodium, which produces chemicals that repel stemborers.

To ensure that many farmers adopt the technology, *icipe* has developed a Farmer Field Schools Curriculum for "Push-pull".

Speaking during the launch of the curriculum in East Bukusu, Bungoma District, Dr. Khan stated, "Push-pull is a knowledge intensive technology, which is why we saw the need for a curriculum to guide farmers in learning its principles and practices."

The curriculum, Dr. Khan said, is a major step towards integrating push-pull into the national extension system. *Icipe* developed the technology in collaboration with the Kenya Agricultural Research Institute, Ministry of Agriculture, Kenya's Livestock and Fisheries and Rothamsted Research, United Kingdom.

The Napier is planted around the maize and sorghum fields where invading adult moths become attracted to chemical emitted by the Napier.

Instead of landing on the maize or sorghum, the insects head for what appears to be a tastier meal. These grasses provide the "pull" in the "push-pull strategy. They also serve as a haven for the borers' natural enemies, says *icipe* project leader, Zeyaur Khan.

Desmodium is planted intimately within the rows of maize or sorghum to "push" the pests, while Napier, planted as a border around the main crop, "pulls" them away.

In addition, the roots of desmodium produce several chemicals, some of which induce the germination, while others prevent the attachment of striga seeds to the roots of the cereal.

Napier grass has away of defending itself against the pest onslaught: once attacked by a borer larva, it secrets sticky substance that physically traps the pest.

The natural enemies lurking among grasses go into action and dispatch the borers. *Icipe* says farmers can lose up to 80 per cent of their crops to stemborers. Losses due to striga range from 30 to 100 per cent. But when the two occur together, farmers often lose their entire crop.

Spraying with pesticides is not only expensive and harmful to the environment, but usually ineffective as the chemicals cannot reach deep inside the plant stems where stemborer larvae reside.

More than 7,000 farmers in 19 local districts and in five districts in Uganda are practicing "push-pull", while demonstrations have started in Tanzania.

In these sites, "push-pull" has increased maize yields by an average of 25 per cent in the areas where only stemborers are present, by more than 80 per cent where both stemborers and striga are a problem.

In addition, "push-pull" has contributed to the augmentation of livestock production, especially on small farms where pressure on land is high, since Napier grass provides quality fodder for livestock.