Pests, weeds, and poor soil conditions are among just a few of the threats to food security in sub-Saharan Africa. One wouldn’t think that a farming method relying on adding more plants into the mix would solve any of those problems, but the Push-Pull technique is doing just that.

Push-pull is a technique developed over the last two decades by the International Centre of Insect Physiology and Ecology (icipe), one of the IPM Innovation Lab’s collaborators, in partnership with Rothamsted Research, U.K. The cropping system reaches thousands of farmers throughout Africa and is steadily increasing access to healthy, pest-free, pesticide-free crop yields.

While Push-Pull is relatively simple, its outcomes are complex. The “push” refers to intercropping, where plants that repel pests, like Desmodium, are planted alongside maize or sorghum in a field. The stemborer, an insect that tunnels its way into plant stems and significantly decreases crop yields, is thus pushed away from attacking the central crops. Meanwhile, the “pull” refers to trap crops, like Napier grass or Brachiaria, planted around the border of a field, pulling in the stemborer before it enters the primary growing area. The grasses attract natural enemies of the stemborer as well, adding another layer of protection to maize and sorghum, two of Africa’s staple cereal crops.

“Evidence indicates that food security is achieved through higher crop yields and improved livestock production from an integrated push-pull technology approach,” said Tadele Tefera, country head for icipe in Ethiopia. “It can support rural households under existing socioeconomic and agro-ecological conditions. Push-pull technology guarantees increased grain yields from one to three tons per hectare.”

The benefits of Push-Pull don’t just lie in the cereal crops it helps nourish, but everything, or everyone, it nourishes along the way as well.

A pest-repellant plant like Desmodium inhibits the growth of harmful invasive weeds like Striga, whose spread results in almost complete yield losses in maize and sorghum. Desmodium also naturally adds nitrogen to soil, improving soil fertility, and is a low-growing plant that won’t impede on the growth of the tall cereal crops it’s meant to protect. Napier
Grass and *Brachiaria* are perennial—their long-lasting and resilient growth conserves soil moisture, improves soil stability, and prevents run-off.

Further, when Napier grass or *Brachiaria* aren’t rooted in the earth, they can also be of use above ground, by acting as high-quality, significant sources of fodder for livestock. Farmers have reported a substantial increase in improved milk yields as a result of using Push-Pull.

“Push-Pull suppresses weed activity, but benefits other living things, too,” Tefera said. “Women and children, for example, benefit significantly from it, as weeding is often left to women and children in Africa. Comparing Push-Pull adopters to non-adopters, you’ll see an increase in income and household dietary diversity in Push-Pull adopters, which is a significant win from a nutritional perspective.”

Tefera said that the increased cereal productivity that comes from Push-Pull also helps to reduce the presence of aflatoxin (mycotoxin), toxins common in grains that deeply constrain the economic value of important crops.

Since its inception, Push-Pull has both decreased stemborer exit holes and reduced the presence of *Striga* by up to 50 percent. It has also increased plant height, and as an example of just one country it’s helping to feed, Tanzania has seen crop yields increase by up to a quarter.

“We are very pleased to collaborate with icipe towards transforming communities in Africa,” said Muni Muniappan, director of the IPM Innovation Lab. “Most recently, we’ve seen the invasion of the fall armyworm in Africa and we are hopeful the Push-Pull technique will be effective in helping to suppress the pest that can destroy acres of crops in very little time.”

With the fall armyworm now threatening hundreds of plant species across Africa, and now Asia, Muniappan’s hope about the future is shared—in reports from icipe, farmers are calling Push-Pull a “lifesaver.”

So, when you imagine a field of healthy maize, by any means, don’t imagine it alone. Like many relationships, a little give and a little take is needed for growth to begin to happen.