

Harnessing plant hormones for food security in Africa

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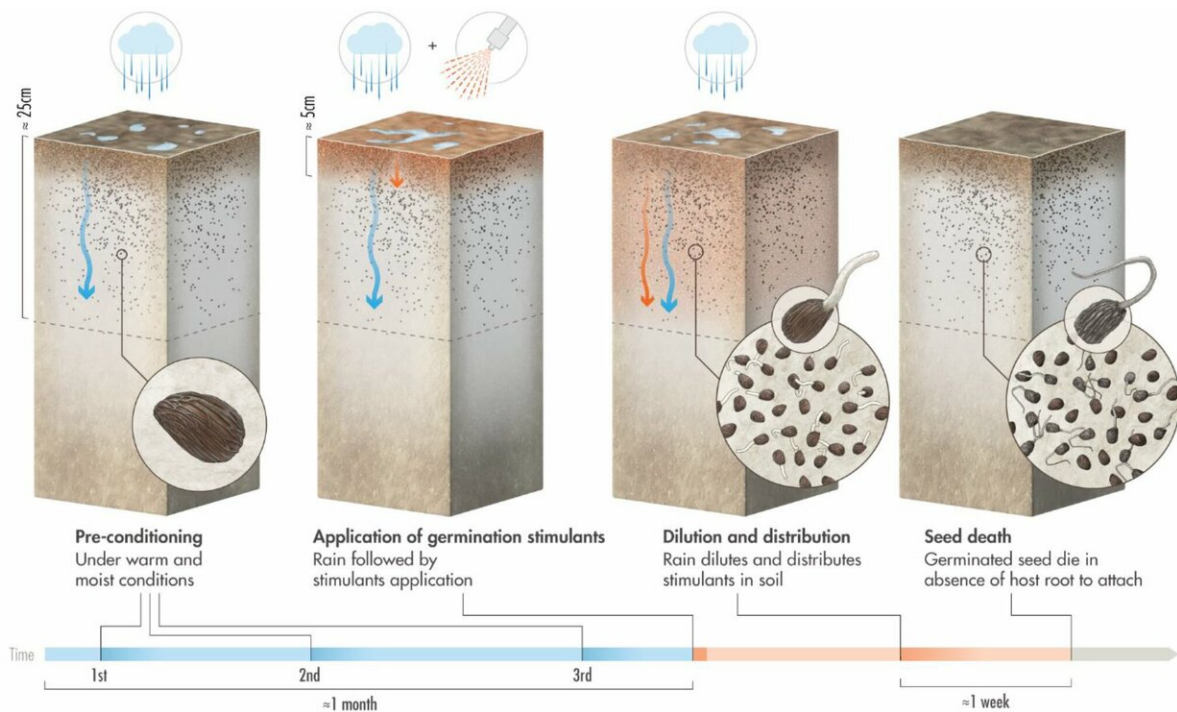


Figure 2 from Kountche et al., Protocol for the plant-hormone treatment. 1: Pre-conditioned *Striga* seeds are ready to germinate in the warm, moist conditions at the start of the rainy season; 2. Artificial plant hormones are applied to the soil after rainfall; 3. *Striga* seeds sense the artificial plant hormones and germinate; 4. Without host plants, the *Striga* seedlings die. Credit: Salim Al-Babili

Striga is a parasitic plant that threatens the food supply of 300 million people in sub-Saharan Africa. Scientists have found that they can take

advantage of *Striga*'s Achilles' Heel: if it can't find a host plant, it dies. The scientists have developed a technique that has potential to reduce the impact of *Striga* by more than half, helping to safeguard food supplies and farmers' livelihoods.

Striga hermonthica, also known as purple witchweed, is an invasive [parasitic plant](#) that threatens food production in sub-Saharan Africa. It is estimated to ruin up to 40 per cent of the region's [staple crops](#), the equivalent of \$7-10 billion, putting the livelihoods and [food supplies](#) of 300 million people in danger.

Striga has an Achilles' heel: it's a parasite that attaches to the roots of other [plants](#). If it can't find a [host plant](#) to attach to, it dies. Scientists have found a way to exploit *Striga*'s Achilles' heel to eradicate it from farmers' fields.

Salim Al-Babili, associate professor of plant science at the King Abdullah University of Science and Technology, and colleagues found that they could trick *Striga* seeds that a host plant was growing nearby. When conditions are right, the *Striga* seeds germinate, but without a host plant to attach to, they cannot survive.

The scientists take advantage of plant hormones called strigolactones, which are exuded by plant roots. It is these hormones that trigger *Striga* seeds to germinate. By treating bare crop fields in Burkina Faso with artificial strigolactones, the scientists found that they were able to reduce the number of *Striga* plants by more than half.

The scientists' solution can be applied to crop fields over the course of a crop rotation, and doesn't require additional water—the treatment begins to work when the rains fall. This has obvious advantages in a region where water is scarce. Al-Babili has been awarded a \$5 million grant by the Bill & Melinda Gates Foundation to continue developing real-world

solutions to the *Striga* problem.

This new method will allow farmers and scientists to work together to combat the spread of the invasive *Striga* plant and help protect the food security of 300 million people in sub-Saharan Africa. The work will be published in *Plants, People, Planet*.

More information: *Plants, People, Planet* [DOI: 10.1002/ppp3.32](https://doi.org/10.1002/ppp3.32)

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