

PILOTING BIOPESTICIDE USE TO MANAGE FALL ARMYWORM IN SOUTH SUDAN

Locations	South Sudan
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Summary

Crop protection in Africa relies heavily on the use of synthetic chemical pesticides. They are perceived to be more effective than other methods but human health concerns and the resistance to them in pest populations is shifting the tide towards lower risk pest management methodologies. Biopesticides are considered a suitable alternative in fall armyworm (FAW) management as they are typically more specific than most synthetic pesticides and are a lower risk to health and the environment. However, those commercial biopesticide products that are available, from the Americas and Europe, to use against FAW in Africa are not accessible due to inadequate knowledge on their efficacy. Together with donors and partners, CABI will support the pilot use of Fawligen, a baculovirus biopesticide, to manage FAW among 500 smallholder farmers in South Sudan.

The problem

Fall armyworm (FAW) is an invasive pest that was first detected in 2016 and has since been confirmed in over 40 countries across Africa and Asia. The FAW caterpillars infest over 80 crops but prefer maize and sorghum – their infestations cause losses of 20-55%. The pest was first reported in South Sudan in 2017, and since then, has spread across all major maize producing agro-ecological zones in the country.

Pesticides are currently the main method for managing FAW in Africa. Their extensive use is attributed to ease of access and the widespread belief that they provide better control than other management methods. However, given the high number of sprays and highly hazardous products being deployed, (some banned internationally), they can pose serious risks including both acute and chronic human health burdens, effects on natural enemies and pollinators.

In addition, continuous use of pesticides could result in insecticide-resistant FAW populations and farmers coping with this by using un-trialled cocktails of pesticides. Biopesticides can, however, be a highly effective alternative to FAW management as they are generally more specific than most pesticides and do not pose the same health risk to spray operators and the environment. When used in conjunction with good crop management, they can help to keep FAW levels under control, reducing the need to apply other pesticides.

While biopesticides are increasingly used against FAW outside the continent, very few products are registered for use in Africa. Therefore, if suitable products were available, they would offer safer alternatives to chemicals.

What we are doing

A partnership between CABI, a private sector partner, AgBiTech, CIMMYT, the Food and Agriculture Organization, USAID and the South Sudan Ministry of Agriculture and Food Security (MAFS), piloted the use of a baculovirus biopesticide called Fawligen to manage FAW among 500 smallholder farmers (500 ha in total) in South Sudan at Yambio, Bor and Juba regions.

The farmers were clustered into 10-20 groups of 50 farmers. Each cluster identified a lead farmer who was trained to support other farmers and use his, or her, own farm as a learning /demo site where they could follow a standard protocol and use available tools.

Drawing from experience gained from testing Fawligen in Kenya, CABI designed the protocol for the demonstration, building upon our experience in community action programmes, and provided local technical training and support to the farmers in South Sudan.

Results so far

Crop yield data collected at the end of the growing season from three of the four sites, representing a total of 315 feddans in Bor, Juba, and Yambio, demonstrated that the application of Fawligen resulted in a 63% yield gain on average, or 0.81t/ha, when compared to untreated maize fields.

The increased production was equivalent to $609/ha which more than covered the $72/ha cost for six sprays of Fawligen.

A survey carried out at the end of the pilot with farmers revealed that 63.2% felt the Fawligen treatment had been very successful, and 95% were willing to pay for Fawligen if it was available at a stockist near to them, at a price comparable to a synthetic insecticide.

A Phase II pilot was planned to apply the lessons learned during Phase I, expand the product reach to an additional 600+ households and further refine an integrated package of technologies to manage FAW as well as other maize crop pests. Unfortunately, Phase II did not go ahead.

Donors

	CIMMYT, USAID, Food and Agriculture Organization (FAO), AgBiTech
Partners	Star Trust Organization (STO), South Sudan Ministry of Agriculture and Food Security (MAFS)
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