



INTEGRATED MANAGEMENT OF THE FALL ARMYWORM ON MAIZE

A GUIDE FOR FARMER FIELD SCHOOLS IN AFRICA



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Tens of millions of smallholder farmers across Africa are facing a new foe in their fields: the Fall Armyworm (FAW). Newly arrived from the Americas, this insect prefers to eat maize, but can live on over 80 plant species. Farmers are alarmed by the ragged maize leaves in their fields caused by the FAW larval feeding, and worry about yield losses and threats to their food security.

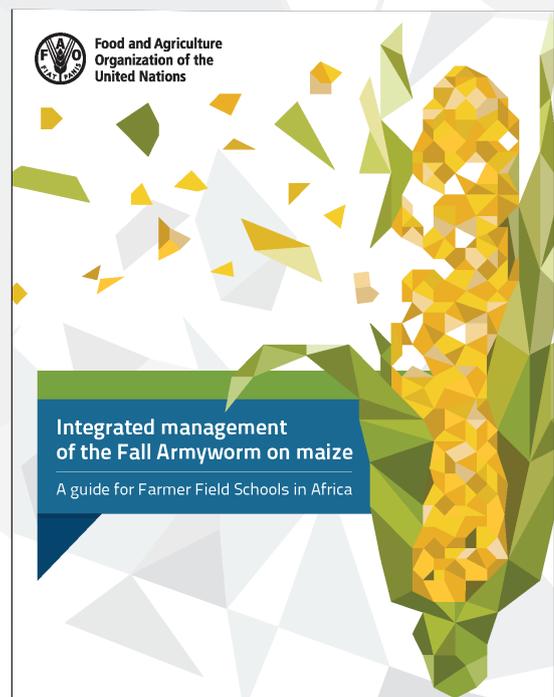
A new guide

The good news is that smallholder farmers in the Americas have been managing FAW for centuries. Lessons learned from them, as well as advances in technologies, were tried and tested by experts and master trainers from Farmer Field Schools across Africa to craft the newly-launched “Integrated Management of the Fall Armyworm on maize” guide. Developed in collaboration with a host of partners¹, it provides systematic advice in both structuring the relevant learning approach, as well as the biology, ecology, and management options for the FAW. The new guide combines technical information with experiences.

Farmer Field Schools, a community-driven approach to agricultural training and education, are an effective way to reach millions of smallholder farmers and successfully engage them in a learning process resulting in better management of their crops, animals and natural resources. In fact, farmer

education and community action have shown to be critical elements in the strategy to sustainably manage FAW populations - which is why Farmer Field Schools are used to roll-out the information in this guide.

The guide provides many examples of field studies, experimentations and exercises that can be done with farmers in Farmer Field Schools and in short field trainings. It includes detailed practical guidance on organizing training courses for extension workers and farmers on the integrated management of the Fall Armyworm.



www.fao.org/3/I8665EN/i8665en.pdf

¹ International Institute of Tropical Agriculture (IITA), International Centre of Insect Physiology and Ecology (ICIPE), Lancaster University, Centre for Agriculture and Biosciences International (CABI), Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), Colegio de la Frontera Sur (ECOSUR), United States Department of Agriculture (USDA)

Key information:

- **Visit the field and look at the status of the crop:** its health and signs of presence of FAW – egg masses, young larvae, and typical FAW damage to the leaves. Farmers can take direct action by crushing egg masses and young larvae.
- **Farmers and governments need a calm, steady approach to FAW management.** Its arrival in Africa is not cause for panic. Smallholder maize farmers in the Americas have been managing FAW in their maize fields for many years. When FAW acts as a defoliator, the damage can look alarming, but maize plants have a good capacity to compensate for that damage and often little yield is lost.
- **It is necessary for farmers to learn about the biology and ecology of FAW.** For example, understanding how and where the adult female moth lays her eggs can lead to planting mixed stands of crops, or identifying plants that repel FAW. This is the basis of the push-pull technology. Plant diversity also supports higher populations and diversity of natural enemies. Pest management begins with prevention.
- **Farmers need to understand the important role of natural biological control in managing FAW.** Farmers must be able to recognize the FAW natural enemies and learn how to conserve and use them. Ants have already shown to be important FAW predators in Africa. Farmers are learning how to attract ants to their fields, using lard or fish remains. Fields in Nigeria have already shown high levels of natural FAW mortality due to fungal and viral entomopathogens. Farmers are learning how to ‘re-cycle’ these naturally-occurring pathogens, by collecting dead larvae, grinding them and re-applying the solutions of pathogen spores and particles.
- **Farmers are trying “local remedies”,** including application of ash, lime, sand, or soil directly into infested whorls. They are also making mixtures of botanicals from local plants, and trying soap and oil-based solutions.



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- **Insecticide applications are costly** – posing some risks – due to, for example, resistance build-up, poor application techniques, low-quality pesticides. Insecticides can have negative effects on the natural enemies of FAW. FAW is in Africa to stay and will be infesting maize fields in the future. Sustainable solutions, emphasizing prevention, must be found and pesticides should be considered as a last resort.
- **At a national policy level , information and recommendations on the pesticides being used are urgently needed.** The strategy of focusing on the use of synthetic pesticides is not sustainable, and the use of older, well-known dangerous pesticides puts farmers, their families and communities directly at risk. It also poses risks to the environment under the local conditions of use.

Hazardous pesticides, banned in industrialized countries, are often still readily available and widely used in African countries. Furthermore, their use may result in pesticide residue levels that become a constraint to the marketability of crops both on domestic and export markets.

- **Bio-pesticides, including those based on bacteria, virus, and fungus have been tested, developed, registered and used successfully in Latin America.** The use of botanical and biological insecticides (certain strains of *Bacillus thuringiensis* (Bt), fungi and virus to manage FAW in an IPM context has been reported to be effective, but bio-pesticides are not always locally available in the affected countries.



FAO Response to Fall Armyworm in Africa

Programme for Action. In 2017, FAO developed a five-year Programme for Action for Sustainable Management of FAW in Africa, endorsed by the African Union. Aimed at supporting farmers, public institutions, and Governments, universities and research institutes, it focuses on:

- immediate actions and recommendations
- short-term research priorities
- communications and training
- monitoring and early warning
- policy and regulatory support

Strategic Partnering. Partnership Framework, endorsed by the African Union, will optimize, synergize and foster effective collaboration.

Scaling-up training. A continent-wide training of Master Trainers aimed to create an All-Africa Programme of Farmer Field Schools for the sustainable management of FAW.

Regional coordination. National Task Forces will be established to coordinate action among key stakeholders at country level.

Monitoring and Early Warning. FAO developed a Fall Armyworm Monitoring and Early Warning System (FAMEWS) consisting of a mobile app to be used by farmers, community focal points and extension agents to collect data when scouting fields.

- FAMEWS includes a tool to diagnose FAW damage and a web-based early warning platform.
- FAMEWS data will be incorporated into national dashboards to provide an up-to-date overview of the situation
- FAMEWS real-time risk assessment maps will help fast track on the ground response in hot spot areas.

The FAMEWS mobile app for smartphones and training material are available at the following link: bit.ly/2BZEW8q

#FallArmyworm

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