How to manage fall armyworm

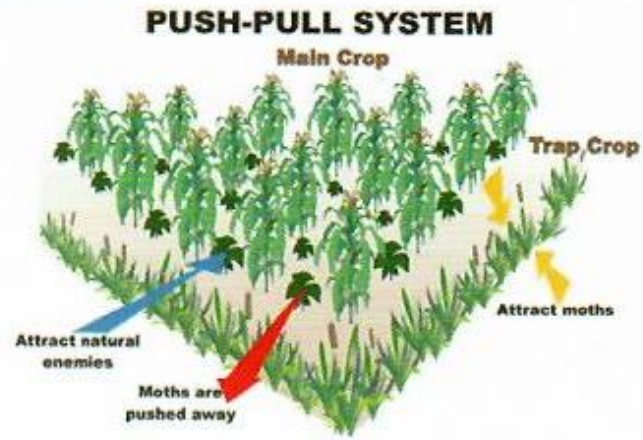
Prevent

1. Use high quality certified seed recommended for the area. The seed should germinate well, be disease-free and possess other desirable qualities such as high yields.

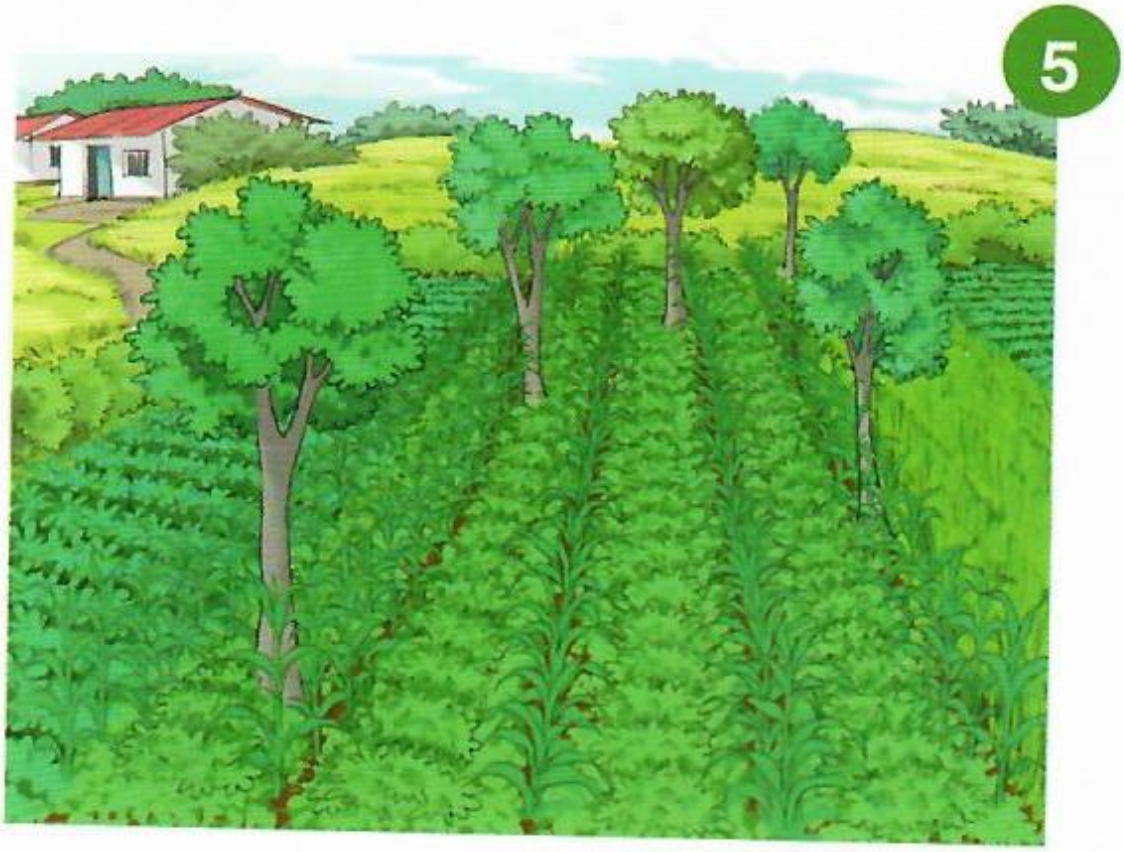
2. Improve plant health with appropriate plant spacing, soil management and crop nutrition through the use of organic or inorganic fertilizer, or intercropping with nitrogen-fixing legumes. Practices that boost plant vigour help crops to better withstand pest attacks and escape damage.

3. Avoid late planting or staggered planting in plots of different ages. If your field is one of the few late-planted plots, all the female moths in a region will come to your plot to lay their eggs.

4. Increase plant diversity in your plots. Some plants emit chemicals that attract or repel moths. The "push–pull" technology is one example of this, using one plant species that pushes fall armyworm away from maize and another species that pulls them to where they can be controlled easily. Intercropping maize with non-grass species such as cassava, cowpea, bean or pigeon pea also prevents infestation. Plant diversity can also increase populations of natural enemies, which kill eggs and caterpillars.



5. Practise conservation agriculture, combining use of no-tillage, residue retention, rotation and cover crops such as Mucuna and Lablab. This has been found to increase the numbers and diversity of natural enemies (spiders, beetles and ants) and improve soil health.



Monitor

1. Farmers should visit their fields frequently to observe, learn and take action. Beginning one week after planting and at least once a week thereafter, farmers should walk through their fields every 3–4 days. While doing this, they should observe the general health of the plants:

- do they have a nice dark green colour (indicating good nutrition)?
- do they appear moisture-stressed?
- are there signs of damage (from fall armyworm, other insects or diseases)?
- are there weeds (especially Striga)?

2. check for presence of natural enemies such as ants or wasps, or larvae that appear to have been killed by a pathogen such as a fungus or virus.

Note: sometimes maize plants can compensate for certain levels of leaf damage without losing much yield. Not all fall armyworm damage results in lower yields (Figure 22).

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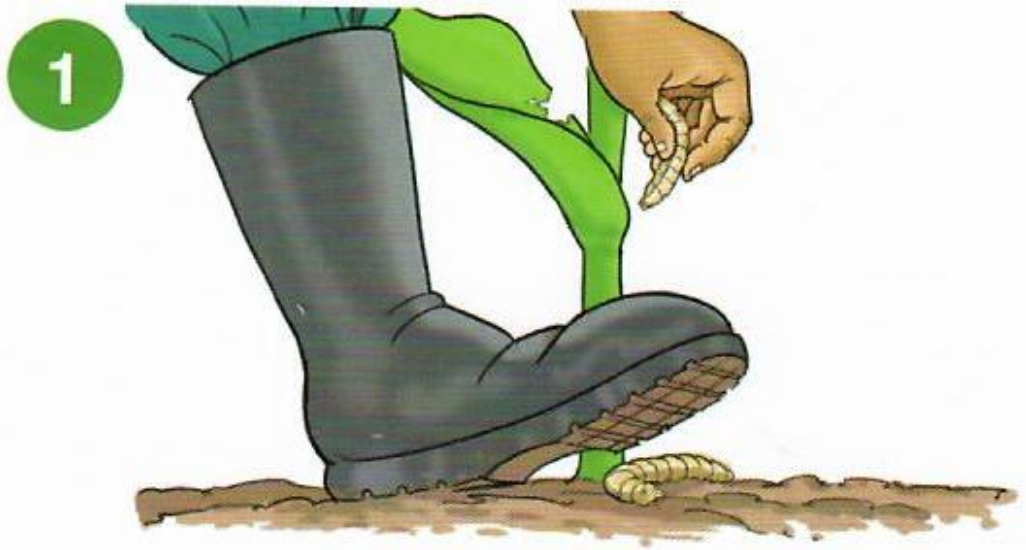
Act

Effective and sustainable fall armyworm management requires action. Some actions prevent fall armyworm from entering the field, while others are required when fall armyworm has already entered and is present in your field.

1. Picking off and crushing fall armyworm eggs and caterpillars is best done as soon as possible, beginning a week after planting. Eggs are laid in a mass which is easily found on maize leaves. Small caterpillars can be picked off the leaves before they penetrate deep into the whorl or funnel.
2. Removing and destroying volunteer plants, weeds and infested crop residues is important, as they provide shelter and food for the pest.
3. "Recycling" of pathogens can be done when dead larvae are found that appear to have been killed by a virus, fungus or bacterium. These can be collected from the field, taken home, ground and mixed with water before sieving. The liquid that is collected after sieving can be diluted and sprayed back onto infested plants. This is a free and effective biopesticide. Many farmers spray only into the whorls or funnels of infested plants so as not to waste the liquid.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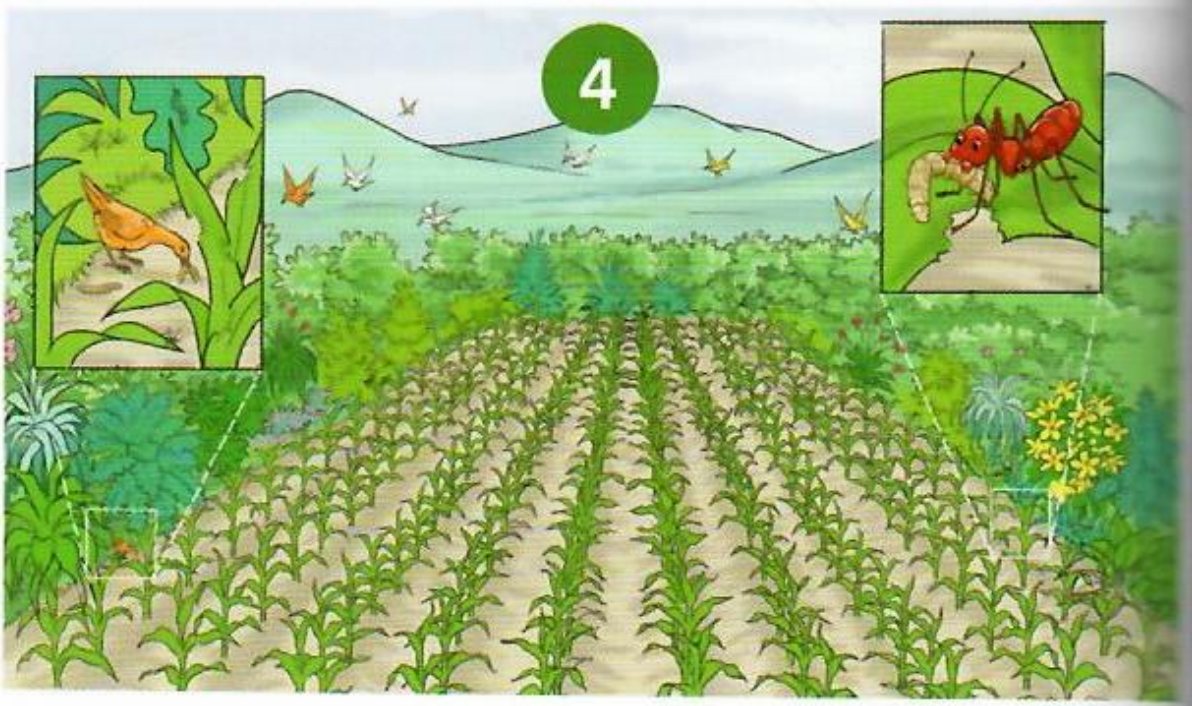
4. Attracting predators and parasitoids is another natural means of keeping pest populations down. Ants are important natural predators of fall armyworm caterpillars. Farmers are encouraged to maintain good crop diversity to attract these natural enemies, and to reduce or eliminate completely the use of pesticides that kill these "farmer friends".



5. A number of local substances applied directly to the whorls or funnels of infested plants have been used by farmers with reported success. These include soil, ash, sand, lime, salt, soaps, oils and extracts from local plants such as hot peppers, Tephrosia, marigold flowers and neem. Farmers can try these and other solutions and then compare and share the results to see which work best under their particular conditions. They may find that some of the traditional methods have potential for fall armyworm management.

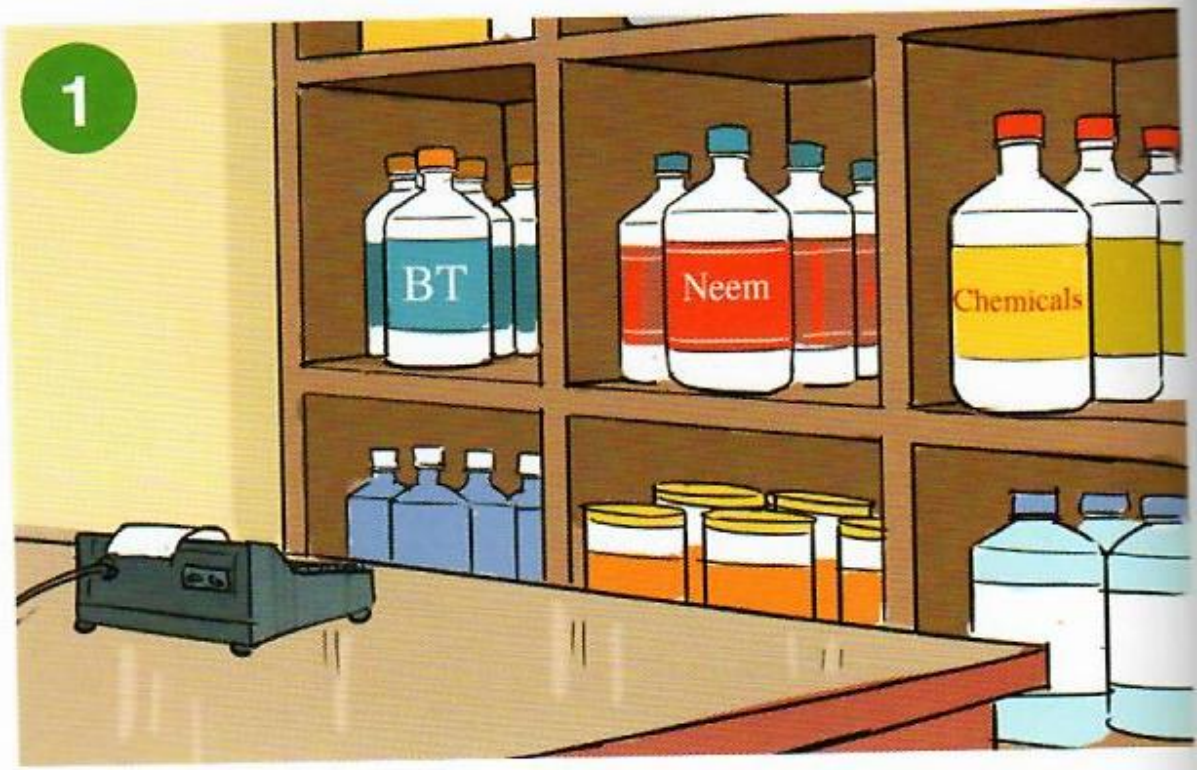
There are many ways to sustainably manage fall armyworm in Africa. Good management will depend on good knowledge, observations, innovation and action.

Farmers and extensionists are encouraged to learn about fall armyworm biology and ecology, closely observing what happens in their fields, trying some of these practices, developing new ones and sharing their knowledge and experiences!

Chemical control

Although pesticides provide a level of crop protection which cannot be guaranteed by other approaches, they are expensive, may cause health risks to humans and livestock, and may kill natural enemies and other beneficial organisms in the environment. They must be used with extreme caution.

1. Nationally registered, labelled pesticides should be chosen, with a preference for those that are locally available, target specific, rapidly degrading and a low health risk. Fake and banned products must be avoided. To prevent resistance, rotate between pesticide groups with different modes of action. A maximum of 2-3 sprays are recommended per season.



2. Farmers should use proper personal protective equipment and follow the guidance provided on the pesticide label for rates of application, re-entry and preharvest intervals. For pesticides to be effective, spray in the early morning or late afternoon when fall armyworm is more active. Aim the nozzle at the plant whorl to ensure that the target is reached with the maximum spray volume.

Find out more

The best practices for managing and monitoring fall armyworm are different in each country and region.

For more precise recommendations on what might work best in your area, talk to local extension services and experts in your Ministry of Agriculture.

A variety of online resources can be found at CABI's Fall Armyworm Portal: **www.cabi.org/fallarmyworm** This portal contains a wide range of news, research, practical extension materials, videos and other resources on fall armyworm. Additional resources are available at **www.fao.org/fall-armyworm/en**

The information is contributed by many organizations and sources, and the portal also maintains a list of organizations currently taking action on fall armyworm at **www.cabi.org/isc/fallarmywormaction**