Fighting back against fall armyworm

Fall armyworm, or *Spodopetera frugiperda*, is a wide-ranging pest that damages multiple crops including corn, cotton and sugarcane. The destruction it causes can negatively affect agricultural production and food security. In the U.S., the fall armyworm has been found in virtually every state east of the Rocky Mountains.[1] The pest tends to start the season in Gulf Coast states and spread north throughout the growing season.

The armyworm problem

The prevalence and spread of fall armyworm are part of what makes the species a problem. The pest's habit of dining on multiple types of crops is also a concern. After hatching, they go through six larval stages, doing the most damage during the later larval stages. As caterpillars, masses of the pests can leave extensive defoliation in their wake—reducing corn plants to ribs and stalks or feeding on corn kernels after eating through the husk.

In a trial conducted in Florida, researchers found that corn plants were most susceptible to damage during the late whorl stage. At that development stage, as few as 0.2 to 0.8 insects per plant were able to reduce its final yield by 5-20%.[1]

In addition to the damage it creates, the pest can be hard to find, allowing it to continue spreading within a field. Larvae will feed within the whorl of a plant making them harder to spot and more challenging to reach with insecticide applications.

Where is armyworm a problem?

- **The pest initially emerges in warmer climates like the southern portions of Florida, Texas and along the Gulf Coast.**
- **The adult, or moth form, can travel more than 62.1 miles a night and may move up to 310 miles from its hatching site if assisted by winds or storms.**
- **Summer storms in 2021 brought the pest to Pennsylvania, an area it does not often reach.[2]**
- **Southern states may see five generations or more attack crops in a year.**
- **Northern states could experience one to three waves of the pest.**

Scouting for armyworm

When fall armyworm presence is suspected, field scouting becomes an important tool to manage infestations and support informed decision-making. The process involves walking the field looking for signs of egg masses or damage. Scouting should be done at least once a week, if not more often, during times when infestation is suspected or likely. These periods include when crops are in the vegetative state if, there's an increase in trapped adult moths or when egg masses have already been found.

Recognizing and locating masses of fall armyworm eggs is an important part of the scouting process. Eggs tend to be in clusters of 50-200 eggs and are covered in a whitish film. In corn, eggs are often found on the underside of leaves near the stalk.

Other signs of fall armyworm infestation include spotting larvae and crop damage. Before scouting fields, it's important to understand how to correctly identify fall armyworm in relation to other, similar-looking insects. As young larvae, the pests are pale green or yellowish, but turn grayish brown to dark brown as they age, with head colors that range from orange to brown. Older larvae also display a white, upside down "Y" on the head, have large dark spots toward the end of the body that form a square and have dark lateral bands with lighter bands on the lower side.

Traps also can be used to locate adult fall armyworms. However, the presence of adult moths alone should not automatically trigger insecticide use.

[1] Capinera, John. "Featured Creatures: Fall armyworm," University of Florida. Last modified June 2020. https://entnemdept.ufl.edu/creatures/field/fall_armyworm.htm.

[2] Gibson, Mary Jo. "Fall Armyworm Invasion," PennState Extension. Last modified September 16, 2021. https://extension.psu.edu/fall-armyworm-invasion.

[3] Global Action for Fall Armyworm Control (website), FAO. Last modified 2022. https://www.fao.org/fall-armyworm/en/.

[4] Croft, Genevieve. "Fall Armyworm: USDA Research Lends a Hand in International Pest Outbreak," USDA. Last modified August 2, 2021. https://www.usda.gov/media/blog/2018/02/26/fall-armyworm-usda-research-lends-hand-international-pest-outbreak.

Fall armyworm goes through six larval growth stages, or instars, before reaching the pupa stage with most damage done in later growth stages.

Throughout the larval stages, fall armyworms can cause extensive crop damage.

Egg masses tend to be on the underside of leaves.

THE GLOBAL INFLUENCE OF ARMYWORM

The fall armyworm isn't just a U.S.-based problem, but one with an international presence. The FAO—the United Nation's Food and Agriculture Organization—started a global action response group in 2019 based on the rapid, international spread of the pest. The group seeks to take "direct and coordinated measures" against fall armyworm.[3]

By 2021, fall armyworm had traveled from the Americas and spread to more than 70 countries in Africa, the Near East and Asia Pacific. Annually, it threatens food security and corn crops worth $18 billion per year in just those three regions.[3] The USDA also has been helping farmers address outbreaks of fall armyworm in Africa.[4] In uncontrolled outbreaks of the pest in Central America, yield losses of up to 70% were documented. In Brazil, total crop losses have been reported following crop damage by late-stage larvae.

Controlling fall armyworms

Multiple methods can be used to help manage fall armyworm:

1. Fall armyworm has several predators, meaning **biological control methods**, like introducing natural predators, can help address an infestation.

2. **Chemical control methods** also are available, including baits and insecticides, such as Success® Naturalyte® insect control, Intrepid Edge® insecticide and Delegate® WG insecticide. However, foliar insecticides should only be applied in specific cases. Use is improved when part of a holistic Insecticide Resistance Management (IRM) plan, as fall armyworm are already known to be resistant to several types of insecticides.

3. Some **trait technologies**, like PowerCore® Enlist® corn, have been developed to provide control of fall armyworm. In the case of PowerCore Enlist corn, the technology provides three different modes of action to control fall armyworm. Other common trait technologies only provide two modes of action against fall armyworm.