

AGRONOMIC

Spotlight



Technology
Development
by MONSANTO™

Fall Armyworm

Fall armyworm (FAW) can injure corn at several growth stages. In the US, damage from FAW can cause annual losses estimated at \$300 to \$500 million. Additionally, FAW ear feeding can increase risk of mycotoxins, such as aflatoxin. Early scouting and accurate identification can help to protect yield potential.

Life Cycle

Throughout the spring and summer, winds from the southern states bring FAW moths to the Midwest. Moths lay eggs on corn leaves. Within 3 to 5 days, the eggs hatch into larvae and move toward the whorl.

Identification

Larvae of FAW, armyworm (AW), corn earworm (CEW), and western bean cutworm (WBC) are often mistaken for each other (Figure 1). Correct identification can impact management decisions. FAW larvae have an inverted Y on their head capsule and vary from light tan or green to almost black. Four dark spots are arranged in a square on top of the 8th abdominal segment. AW larvae have a gray or greenish-brown head covered with a network of lines. CEW larvae usually have an orange head. WBC larvae are tan with a darker, faint diamond shaped pattern on their back, and dark stripes immediately behind their head.

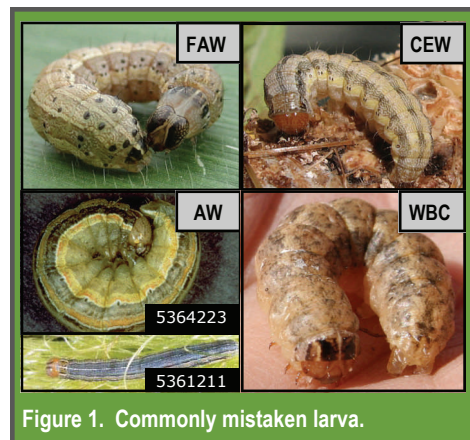


Figure 1. Commonly mistaken larva.

Scouting

Early FAW damage appears as 'window paning' and shot-holes in leaves. Damage from larger larvae results in ragged leaves (Figure 2). As corn ears develop, FAW larvae migrate from the whorls to the ears and damage kernels. If you see whorl damage, scout 20 consecutive plants at 5 places in the field. Determine the percentage of plants damaged by FAW. Pull some whorls and unroll the leaves to find larvae. Estimate the average length of FAW. Larvae over 1.5 inches pupate soon and feeding is almost done. Parasitized larvae, which have elongated

white balls (eggs of a parasitic fly usually near the back of the larva's head), will have reduced feeding and eventually die.



Figure 2. FAW damage on corn with larva in whorl.

Management

While YieldGard® Corn Borer technology offers suppression of FAW, the introduction of Genuity® corn traits can improve grain quality and increase yield potential by providing multiple modes of action for advanced above-ground insect protection. Genuity® VT Double PRO™ and Genuity® VT Triple PRO™ corn provide dual modes of action and Genuity® SmartStax™ corn provides triple modes of action against lepidopteran species such as FAW.

If the corn doesn't contain Bt traits that offer protection against FAW, consider an insecticide application when 75% of the plants show feeding damage and larvae are less than 1.25 inches long. Insecticide applications should occur prior to larvae reaching the whorl. This is because frass (larval waste) can block the FAW feeding tunnel into the whorl, reducing the efficacy of the insecticide. Consequently, insecticides to control FAW in ear tips are generally not effective.

When applying insecticides, use ground rigs set up to direct the insecticide over the row, instead of broadcast. Due to high water volumes needed for adequate control, aerial application is not recommended.

Source: R. Bessin. 2003. FAW in Corn. Univ. of KY Ext. J. Obermeyer, and others. 2002. Fall Armyworm-Like Damage Reported in Corn Whorls. Pest & Crop, Issue 14. Purdue Ext. Frank Peairs. Colorado State University. Bugwood.org; Armyworm photos 5364223 and 5361211; University of Georgia Archive, University of Georgia, Bugwood.com; photo1673007; K. L. Steffey and others. 1999. Handbook of Corn Insects. Entomological Society of America. I. Cruz and F.T. Turpin. 1983. Yield Impact of Larval Infestations of the Fall Armyworm to Midwhorl Growth Stage of Corn. J. Econ. Entomol. 76:1052-1054.

Monsanto Company is a member of Excellence Through Stewardship® (ETS). Monsanto products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with Monsanto's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. This product has been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product. Excellence Through Stewardship® is a registered trademark of Biotechnology Industry Organization. **B.t. products** may not yet be registered in all states. Check with your Monsanto representative for the registration status in your state.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate. Genuity®, Genuity and Design®, Genuity Icons, Roundup®, Roundup Ready®, Roundup Ready 2 Technology and Design™, SmartStax™, Technology Development by Monsanto and Design(SM), VT Double PRO™, VT Triple PRO™, and YieldGard® are trademarks of Monsanto Technology LLC. Ignite® and LibertyLink® and the Water Droplet Design® are registered trademarks of Bayer. Herculex® is a trademark of Dow AgroSciences LLC. Respect the Refuge® and Respect the Refuge and Corn Design® are registered trademarks of National Corn Growers Association. All other trademarks are the property of their respective owners. ©2010 Monsanto Company. EJP061909; AMB051210



Before opening a bag of seed, be sure to read and understand the stewardship requirements, including applicable refuge requirements for insect resistance management, for the biotechnology traits expressed in the seed as set forth in the Monsanto Technology Agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with those stewardship requirements.

