

### European Corn Borer

European corn borer (ECB) is a common pest of corn. The impact of ECB on corn yield is often underestimated due to lack of scouting, large changes in ECB populations from year to year, and the ability of corn to withstand some feeding injury.

#### Life Cycle

First generation larvae damage is typically limited to leaf feeding and stalk tunneling. The second generation of ECB moths emerges from approximately mid-July to mid-August and deposits eggs until the end of August. Female moths prefer to lay eggs in fields that are tasseling and in the green silk growth stage. In general, the heaviest egg lay and infestations will occur in later maturing fields or hybrids. Young second generation larvae feed on leaves and pollen in the leaf axils. Later instar larvae continue feeding on the corn stalk tassel, ear shank, and cob. ECB larvae can enter through different locations on the ear and may not leave entrance holes.

#### Identification

Larvae are usually pinkish in color, have a dark (almost black) head capsule, and five pairs of abdominal prolegs, including a pair of anal prolegs. Additionally, they have a dark gray mid-dorsal line across their body length (Figure 1). Full grown larvae are approximately 0.8" to 1.2" (20 to 30 mm) in length.

#### Management

Scout for first generation corn borer by examining at least 25 corn whorls at four locations in each field. Look for pinhole or shot-hole leaf damage. Record the total number of plants damaged. Pull up and unroll several whorls at each field locations and count the number of live worms present. Use these numbers with information from local universities to determine the economic threshold for treatment.



Figure 1. European corn borer larvae.

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. MEA061009; AMB051110

Scout for second generation ECB damage by examining corn fields for stalk tunneling, ear shank damage, and damage to the ear tips (Figure 2). Ear tip feeding can cause kernel loss, but stalk and ear shank boring likely cause the most significant yield loss. Evaluate the presence of frass (insect excrement) and tunneling activity where the stalk broke to distinguish lodging from greensnap. Determine if ear drop resulted from corn borer feeding or some other event. Thoroughly scout all corn fields



Figure 2. Second generation ECB stalk tunneling.

because ECB populations vary among fields and the level of damage can vary by corn product. Economic thresholds vary, but consider treatment for second generation larvae if 25% of the plants have fresh or hatched egg masses or young larvae in leaf axils.

Allowing an infested crop to remain in the field may result in higher yield losses due to lodging and ear drop. Harvest order should be determined based on stalk and ear shank tunneling, lodging, and dropped ears.

Management of ECB starts with corn product selection. For the past 10 years, products containing the YieldGard® Corn Borer trait have provided control of ECB. 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 ECB.

Sources: F. B. Peairs. 2006. Stalk borers in Colorado field corn. Colorado State University Coop. Ext. Pub. No. 5.537. Online at: <http://www.ext.colostate.edu>. 6/10/09; K.L.

Steffey. 1999. Handbook of Corn Insects. Entomological Society of America.



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.

