

AGRONOMIC Spotlight



Technology
Development
by MONSANTO®

Corn Earworm (*Heliothis zea*) Management and Monitoring

Yield losses in field corn from corn earworm (CEW) damage is estimated at 2.5% annually¹. Between the difficulty of effectively controlling CEW with insecticides and the damage generally being overlooked until harvest, many farmers have elected to accept the lost yield potential. New tools are becoming available to combat CEW and help protect yield potential.

Life Cycle

There are multiple generations per year in the south and usually two generations in much of the Midwest. CEW migrate in from the south with winds and storms from southern states. Moths typically lay eggs in corn and other host crops. The first generation larval stage feeds in the whorl of corn and other food sources although first generation damage is generally minimal.

First generation moths lay eggs in the whorl of the corn plant while, second generation lay eggs on corn silks. These larvae can travel down silks within one hour of hatching. Larvae feed on kernels for most of the larval stage.

Identification

Larvae of CEW, fall armyworm (FAW), and western bean cutworm (WBC) are often mistaken for each other (Figure 1). Accurately identifying them is critical to manage them appropriately.

CEW larvae are light green to dark brown, usually have an orange head capsule, and 3 to 4 stripes across their body length. WBC larvae are tan with a darker, faint diamond-shaped pattern on their back, and dark stripes immediately behind their head. Larvae turn pinkish tan or pale brown as they mature. FAW have an inverted Y on their head capsule, and vary from light tan or green to almost black.

Management

Planting early can help avoid peak moth flights. Corn with tight husks also help reduce feeding potential. Several foliar insecticides are labeled for control of CEW. However, the contact needed between CEW larvae and foliar insecticides for good efficacy is rare due to larvae burrowing down the silks soon after hatching.

While the YieldGard® family of traits has assisted in providing control for many major corn insects, CEW is only suppressed by these products. Genuity® SmartStax® and Genuity® VT

Triple PRO™ corn provide farmers with the first ever dual mode of action for above ground insect protection, which can improve grain quality and increase yield potential (Figure 2). CEW control through advanced trait technology will be a farmer's best option for reducing kernel damage, which can potentially reduce mycotoxin contamination and increase yield potential.



Figure 1. Larvae commonly mistaken for each other.



Figure 2. (A) CEW feeding damage and ear mold. (B) Ear with Genuity® VT Triple PRO™ trait on left and without on right.

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Monitoring Insect Feeding

Scouting for CEW is done in early spring. Potential damage is estimated by using pheromone traps to count adult moths entering an area to lay eggs. Later in the season, growers can monitor fields for CEW damage by evaluating corn ears. Although the insect damage has already been done at this time, growers can assess and compare trait efficacy. Your local area agronomist recommends following the non-destructive steps outlined below to evaluate CEW damage while keeping the ear intact.

Monitoring CEW Damage

1. When silks begin appearing, lightly pull on the silks.
2. If the silks have resistance, the silks are intact and **NO** CEW damage has occurred (Figure 3).
3. If silks are not intact and can be pulled, continue to pull using slight pressure until the silks pull out. If CEW are present, the corn silks will show CEW feeding where they were cut and CEW and/or ear damage will be present (Figures 4 and 5).

To help distinguish corn earworm damage from other lepidopterans, corn earworm typically feed on the ear tip and when discovered they will curl into a c-shape or try to fight².



Figure 3. When there is no CEW damage present, corn silks CAN NOT be pulled out easily.



Figure 4. Corn silks can be pulled out easily when they have been cut or damaged by CEW.



Figure 5. A corn ear with cut silks and CEW feeding damage.

Sources: ¹K.A. Cook and R. Weinzierl. 2004. *Corn Earworm Insect Fact Sheet*. University of Illinois Integrated Pest Management; ²M.L. Boyd and W.C. Bailey. 2001. *Corn Earworm in Missouri*. University of Missouri Extension. Publication No. G7110; Additional references used in developing publication: K. L. Steffey et al. 1999. *Handbook of Corn Insects*.

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