



# Agronomic Alert

## Western Bean Cutworm in Corn

- Western bean cutworm (WBC), traditionally a pest of the Western Great Plains, has moved eastward over the last 15 years, as far as Pennsylvania.
- If 5 to 8% of corn plants have WBC egg masses or small larvae, that have not moved into the silks or ear tip, consider an insecticide application treatment. Timing of application is critical for WBC control as once larvae enter the ear, insecticide application is ineffective.

Western bean cutworm (WBC) is a native of North America and can be a severe pest of corn and dry beans (but not soybean). In the past, WBC was primarily limited to the Western Great Plains but over the last 15 years has expanded its range eastward through the corn belt to as far as Pennsylvania.<sup>1</sup> Unlike many cutworms, WBC does not cut plant stems, it feeds on the reproductive parts of plants. The WBC is a late-season pest and its feeding can reduce yield potential and grain quality.

### Life Cycle and Identification

Western bean cutworm adult moth flights can begin as early as mid-June, peak in mid- to late-July and usually end by late August.<sup>5</sup> However, variation in adult emergence and peak flight periods can occur depending on climate and location. Growers can receive updates concerning WBC moth flights from:

<http://www.insectforecast.com>. Moth emergence can be predicted based on growing degree days (GDD) base 50° F accumulation since May 1. GDD totals for 25%, 50%, and 75% moth emergence are 1319, 1422, and 1536, respectively.<sup>1</sup> There is one generation per year.

Moths are primarily grayish-brown, about 0.75 inch-long, with a wing-span of approximately 1.5 inches (Figure 1). Identifying characteristics are a whitish stripe at the front of the forewing and two cream-colored, outlined shapes immediately behind. These identifying marks are a circular spot approximately halfway along the length of the forewing and a kidney-shaped mark along the same line, approximately 2/3 of the way to the wingtip.



Figure 1. Adult moth with whitish strip at the front margin of each forewing (indicated by the red arrows).



Figure 2. The egg mass (left) and newly hatched WBC larvae (right).

Western bean cutworm moths prefer to lay eggs on late-whorl stage corn that is near pollination. Eggs are laid on the upper surface of leaves, in masses of 5 to 200 with an average of about 50 eggs per mass (Figure 2 - left). The eggs are pin-head in size, dome shaped with ridges, and usually laid on the flag leaf. Eggs are pearly white when first laid and within several days they turn tan then dark purple shortly before hatching.

Eggs hatch in about 5 to 7 days. After hatching, the larvae remain clumped near the egg mass for several hours, feeding on their egg shells (Figure 2 - right). Larvae go through six larval-instar stages and feed for about a month.<sup>2</sup> Shortly after hatching, larvae move into protected areas of the corn plant, feeding on leaf tissue, fallen anthers/pollen, and silks as they develop and move to the developing ear.

The newly hatched larvae are initially dark with black heads. As they develop, they will lighten to a light tan or pinkish hue with subtle longitudinal stripes. Fourth-instar and larger larvae, 0.5 to 1.5 inches long, are readily identified by two black “rectangles” behind the now-orange head, and generally have a smooth skin (Figure 3).



Figure 3. WBC 6<sup>th</sup> instar larvae. Note the two black rectangles behind the head capsule.

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Forth through sixth-instar larvae are often found feeding on kernels, usually on the tip but sometimes the sides (Figure 4). Entry holes and/or frass are not always visible; therefore, scouting for WBC larvae must include pulling back corn husks. Larvae from a single egg mass may infest nearby plants within a 6 to 10 feet circle, as plant to plant movement is common.

## Scouting

Examine 20 consecutive corn plants in at least five locations in the field. Check the upper three or four leaves of each plant for WBC egg masses or young larvae. Continue scouting for 7 to 10 days after peak moth flight. If the tassel has not emerged when the eggs hatch, larvae will move into the whorl and feed on the developing pollen grains in the tassel. As the tassel emerges, larvae will move down the plant to green silks and then into the silk channel to feed on the developing ear.

## Treatment and Management

If 5 to 8% of corn plants have egg masses and/or small larvae, consider an insecticide application.<sup>1</sup> Timing is critical if an application is needed. If most eggs have hatched, an insecticide application should be made after 95% of the tassels have emerged, but before the larvae move into the silks and ear tip to feed. If the eggs have not hatched and plants have tasseled, application should be timed for when most of the eggs are expected to hatch. Purple eggs should hatch within about 24 hours. Control is more difficult when the larvae reach the silks or ear tips. Infestations averaging several WBC larvae per ear may result in 30 to 40% reduction in yield potential.<sup>3</sup>

There are numerous insecticide products labeled for WBC larvae control. Consult your local Extension Office for insecticide recommendations. Insecticide products for WBC control have a pre-harvest interval ranging from 14 to 30 days and many are restricted use pesticides.<sup>4</sup> There is some evidence that pyrethroid insecticides will force larvae out of protective areas (silks and ear tips) due to the irritation properties of the active ingredient.<sup>1</sup> These insecticides may be more effective should the larvae reach the silks prior to treatment.<sup>1</sup>

Genuity® SmartStax® RIB Complete® corn blend products offers broad-spectrum control against many above and below-ground insects including WBC. The built-in insect protection from Genuity SmartStax RIB Complete corn blend products may reduce the need for WBC insecticide applications; however, fields should still be scouted and if heavy pressure exists, insecticides may be warranted.

## Sources:

- <sup>1</sup> Seymour, R. C., Hein, G.L., and Wright, R.J. 2010. Western bean cutworm in corn and dry beans. G2013. NebGuide. University of Nebraska-Lincoln Extension. <http://www.ianrpubs.unl.edu>.
  - <sup>2</sup> Western bean cutworm. 2009. Field Crops IPM, Purdue University, <http://extension.entm.purdue.edu/>.
  - <sup>3</sup> Peairs, F. 2008. Western bean cutworm: characteristics and management in corn and dry beans. Fact sheet no. 5.538. Colorado State University Extension. <http://www.ext.colostate.edu>.
  - <sup>4</sup> Krupke, C.H., Obermeyer, J.L., and Bledsoe, L.W. 2015. Corn insect control recommendations. Purdue University. Field Crops. <http://extension.entm.purdue.edu/>.
  - <sup>5</sup> Michel, A. P., Krupke, C.H., and Baute, T.S. 2010. Ecology and management of the western bean cutworm (Lepidoptera: noctuidae) in corn. Journal of Integrated Pest Management, volume 1. <http://msuent.com>.
- Web sources verified 05/28/15.



Figure 4. WBC 6th instar larvae feeding on the tip of a mature ear.

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development & Agronomy by Monsanto.

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