

Agronomic Spotlight

Western Bean Cutworm Management for Corn

- Western bean cutworm (WBC), can be a severe pest of corn and dry beans, but not soybean.
- 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.
- Insecticide application timing is critical for WBC control as once larvae enter the ear, insecticide application is ineffective.

Western bean cutworm (WBC) can be a severe pest of corn and dry beans (but not soybean). WBC larvae feeding can reduce yield potential and grain quality and it is considered a late-season pest (Figure 1). Unlike many other cutworm species. WBC larvae do not cut plant stems, they feed on the reproductive parts of plants. In the past, WBC was primarily limited to the western Great Plains but over the last 15 years has expanded its range eastward as far as Pennsylvania.1

Life Cycle and Identification

Western bean cutworm overwinter in the

soil as a non-feeding larvae (prepupae), then pupate, and later emerge as adult moths. There is one generation per year. As early as mid-June moth flights begin, then peak in mid- to late-July and usually end by late August.² However, adult emergence and peak flight periods can vary depending on climate and location. Farmers may be able to receive updates concerning WBC moth catches from flights at: http:www.insectforecast.com.

Growing degree days (GDD), base 50 °F

accumulation since May 1, can be used to predict adult moth emergence. GDD totals for 25%, 50%, and 75% moth emergence are 1319, 1422, and 1536, respectively.1

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



Figure 1. WBC larvae feeding on ear.

Figure 2. Adult moth with whitish stripe at the front margin of each forewing (indicated by the red arrows).







Figure 3. WBC egg masses: freshly laid pearly-white egg mass (left) and close to hatching purple egg mass (right).

Western bean cutworm moths prefer to lav 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. 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 (Figure 3-left). Shortly before hatching eggs turn a purple coloration (Figure 3-right).

Eggs hatch in about 5 to 7 days. Larvae remain clumped near the egg mass for several hours after hatching, feeding on their egg shells (Figure 4). Larvae go through six larval-instar stages and feed for about a month.3 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.

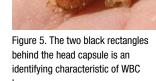


Figure 4. Newly hatched WBC larvae.

Western Bean Cutworm Management for Corn

The newly hatched larvae are initially dark with black heads. Larvae will lighten to a light tan or pinkish hue with subtle longitudinal stripes as they develop. Fourth-instar and larger larvae, 0.5 to 1.5 inches long, are readily identified by two black "rectangles" behind the noworange head, and generally have a smooth skin (Figure 5).

Fourth through sixth-instar larvae are often found feeding on kernels in the ear, usually on the tip but sometimes the sides (Figure 1). Entry holes and/or frass are not always visible; therefore, scouting for WBC



always visible; therefore, scouting for WBC larvae should include pulling back corn husks. A single egg mass may produce larvae that infest nearby plants within a 6 to 10 feet circle, as plant to plant movement is common.

Field Scouting

Begin scouting by examining twenty consecutive corn plants in at least five locations in the field. Inspect 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.

Management and Treatment

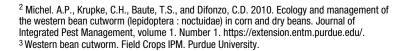
If 5 to 8% of corn plants have egg masses and/or small larvae, consider an insecticide application.¹ If an application is needed, timing is critical. If most eggs have hatched, an insecticide application should be made after 95% of the tassels have emerged, but before the larvae move into the silks and 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.⁴

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. 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. These insecticides may be more effective should the larvae reach the silks prior to treatment.

SmartStax® RIB Complete® corn blend products offer broad-spectrum control against many above and below-ground insects including WBC. The built-in insect protection from 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

¹ 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://extensionpublications.unl.edu/.



⁴ Peairs, F.B. 2014. Western bean cutworm: characteristics and management in corn and dry beans. Fact sheet no. 5.538. Colorado State University Extension. http://extension.colostate.edu/topic-areas/insects/western-bean-cutworm-characteristics-and-management-in-corn-and-dry-beans-5-538/.

https://extension.entm.purdue.edu/fieldcropsipm/insects/western-bean-cutworm.php.

⁵ Krupke, C.H., Obermeyer, J.L., and Bledsoe, L.W. 2016 Corn insect control recommendations. Field Crops. Purdue University.. http://extension.entm.purdue.edu/. Web sources verified 05/16/16. 140702134055

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 Excellence Through Stewardship.

B.t. products may not yet be registered in all states. Check with your Monsanto representative for the registration status in your state.

IMPORTANT IRM INFORMATION: Genuity® RIB Complete® corn blend products do not require the planting of a structured refuge except in the Cotton-Growing Area where corn earworm is a significant pest. See the IRM/Grower Guide for additional information. Always read and follow IRM requirements. 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 technology contains genes that confer tolerance to glyphosate, an active ingredient in Roundup® brand agricultural herbicides. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate. Tank mixtures: The applicable labeling for each product must be in the possession of the user at the time of application. Follow applicable use instructions, including application rates, precautions and restrictions of each product used in the tank mixture. Monsanto has not tested all tank mix product formulations for compatibility or performance other than specifically listed by brand name. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance. Genuity®, RIB Complete®, Roundup Ready 2 Technology and Design®, Roundup Ready®, Roundup® and SmartStax® are trademarks of Monsanto Technology LLC. LibertyLink® and the Water Droplet Design® is a registered trademark of Bayer. Herculex® is a registered trademark of Dow AgroSciences LLC. Respect the Refuge and Corn Design® and Respect the Refuge® are registered trademarks of National Corn Growers Association. Some of the product(s) discussed herein are restricted use pesticide(s) and may not be registered in all states. The distribution, sale, or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited. Check with your local dealer or product representative for the product registration status in your state. All other trademarks are the property of their respective owners. ©2016 Monsanto Company. 140702134055 051916DLB



Before opening a bag of seed, be sure to read, understand and accept 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/Stewardship Agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with the most recent stewardship requirements.





