AGRONOMIC Spotlight

Technology Development & Agronomy by MONSANTO

Black Cutworm Management for Corn

Corn seedlings can be clipped by black cutworm (BCW, *Agrostis ipsilon*) larvae, which can result in stand loss. To avoid stand loss from clipped seedlings, persistent scouting is needed to help determine if economic thresholds have been met. Management options include; planting Genuity® SmartStax® traits. Applying Acceleron® Seed Treatment Products, starting with a clean field, and utilizing insecticide rescue treatments.

Corn at Highest Risk

BCW do not typically overwinter in the Corn Belt. Adult moths overwinter in coastal areas of the Gulf of Mexico and migrate northward in the spring on strong winds from the south to lay eggs. Adult BCW moths lay eggs where there is a food source. They prefer weeds, such as winter annuals, over corn. Fields that contain chickweed are especially susceptible. Therefore, if a field is weed free at planting, it will not be desirable. Economic injury is more likely in fields that are in the VE-V4 (1-4 leaf) growth stage. Fields that are most at risk for BCW damage are fields with:

- Poorly drained and low lying areas
- Natural vegetation nearby
- Late tillage
- Reduced tillage
- Weeds prior to planting
- Late-planted corn
- Corn planted after soybean

Damage occurs when weed hosts are destroyed and BCW larvae begin feeding on corn because it is the only food source available. For fields that are high risk for BCW damage, identification and scouting are key for proper management.

Identification

BCW larvae vary from light gray to black and are about 1.5 inches long when fully grown. Numerous convex skin granules make the larvae appear shiny and "greasy".

Dingy cutworm (DCW) larvae may also be present in fields. However, this cutworm usually feeds on leaves and does not cause cutting problems in fields. Larger cutworms found at the beginning of the BCW cutting dates are often DCW because the DCW overwinters in the larva stage. BCW can be distinguished from DCW by the four tubercles (spots) on each body segment[3]. BCW have two tubercles that are small and two that are larger (Figure 1). DCW have four tubercles on each body segment that are the same size.

Scouting

Fields should be scouted for BCW from the time corn emerges until the V5 growth stage. Plants cut below the soil by BCW may be partially pulled under the soil and can appear as if angled out of the ground surface. These plants wilt and discolor as they die. In addition to cut or missing plants, leaf feeding is an early indication of BCW damage (Figure 2). When scouting, larvae can be found by digging in the soil near a damaged plant and the larvae growth stage can be estimated by measuring body length. Iowa State University recommends checking 50 plants in 5 areas of each field, once a week, for damage. Take note of areas with suspected damage and return to assess further damage.

Resources for Estimated Clip Dates

Some states estimate clip dates by predicting when eggs laid by BCW moths will become larvae large enough to clip corn plants (4th instar). To reach the 4th instar growth stage it takes

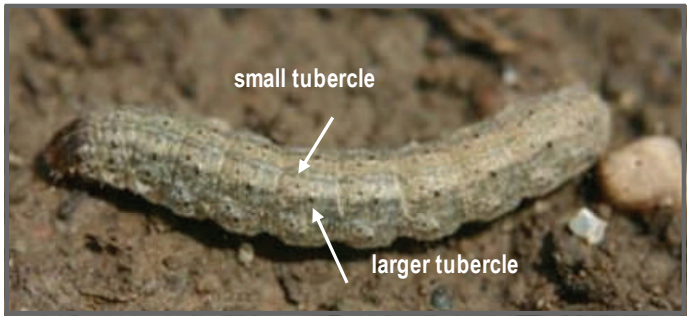

Figure 1. BCW have four tubercles (spots) on the back of each body segment, two are small and two are large.

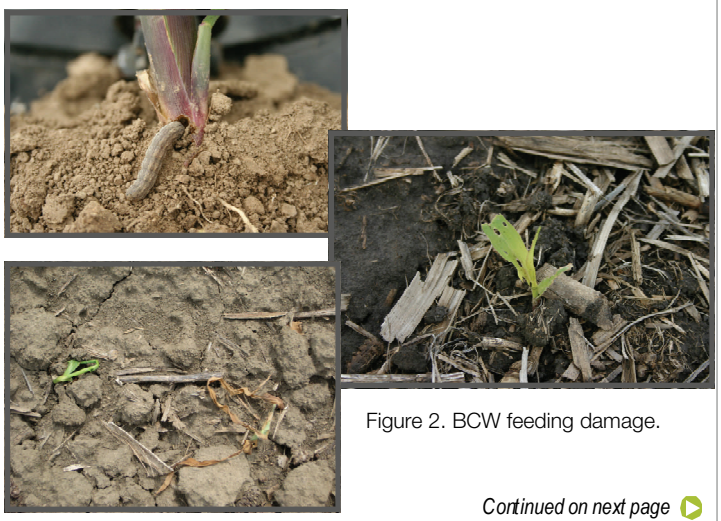

Figure 2. BCW feeding damage.

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312-364 growing degree days. Some links to university websites that estimate BCW clip dates follow:

http://www.extension.iastate.edu/CropNews/2013/0517sissonjessehodgson.htm [1]

http://datcpservices.wisconsin.gov/pb/pests.jsp?categoryid=4&issueid=200 [4]

http://ppp.missouri.edu/pestmonitoring/bcw/bcwpestalert.cfm [5]

http://www.isws.illinois.edu/warm/pestdata/sqlchoose1.asp?plc=#top [6]

Throughout the participating states, cooperators volunteer to trap adult moths. If more than nine adult moths are captured over a two day period it is considered an intense capture. Tracking of degree day accumulation starts from the first day of intense capture. This method provides a general idea of what to expect from BCW, but it does not provide information on the amount of BCW larval damage that will occur or which fields will most likely be targeted by BCW moths.

Economic/Action Threshold

If larvae found in the field are smaller than 3/4 of an inch, then a rescue insecticide is warranted if 2 to 3 % of plants are wilted or cut. If larvae are larger than 3/4 of an inch, the threshold increases to 5% cut plants.

Due to the high market price of corn and fluctuations in inputs, Iowa State University has a dynamic action threshold. The action threshold calculation determines when it is economical to treat for BCW based on plant population, expected yield, anticipated market value, and the cost of control:

http://www.extension.iastate.edu/CropNews/2009/0527hodgson.htm

Corn clipped below ground is more likely to die. If corn is clipped above ground, it may survive, but it has a higher risk for disease infection. Wet soils often favor above-ground clipping. Once corn is at the V5 or V6 growth stage, it is less susceptible to BCW damage.

Management

Genuity SmartStax traits have a mode of action which can provide control of BCW. Traits from these corn products are complimented with Acceleron® Seed Treatment Products, which include clothianidin insecticide to provide additional suppression for black cutworm. Use of these new technologies has the potential to reduce the risk of stand loss from BCW.

Starting with a clean seed bed is also a good management option for BCW. BCW larvae can not survive if weeds are tilled or treated with a herbicide 2-3 weeks before corn emergence. A pre-plant application of Roundup® agricultural herbicide can help keep the seed bed clean. Additionally, a fall application of a Roundup® agricultural herbicide tank mixed with 2-4,D can be an effective way to manage winter annual weeds. Fall herbicide applications can be more effective than spring applications in controlling winter annual weeds such as common chickweed and purple deadnettle.

Preventative insecticides may be another management option, although many extension offices question their worth due to the sporadic nature of BCW. However, an insecticide rescue treatment is recommended when thresholds are met (Table 1). Follow label directions and make sure that insecticide treatments comply with insect resistance management requirements.

Sources: [1] A. Sisson, et al. May 17, 2013. 2013 Black Cutworm Scouting Advisory. Iowa State University Extension. Integrated Crop Management News; [2] W. Bailey. April 13, 2011. First Intensive Captures of Black Cutworm Moths. University of Missouri. Volume 21, No. 6; [3] R.J. Wright, et al. 2007. Corn Cutworms. University of Nebraska– Lincoln. Neb Guide. Pub no. G1153; [4] K. Hamilton. May 16, 2013. Corn: Black Cutworm. Wisconsin Pest Bulletin. Volume 58, No. 3; [5] MU Pest Monitoring Network 2013 Missouri Black Cutworm Intensive Capture Counts. April 1, 2013; [6] Daily Pest Degree Calculator. 2013. Illinois State Water Survey's Illinois Climate Network.

Table 1. Common insecticides for foliar BCW rescue treatment.

Common Name	Trade Name	Rate of formulated material per acre
permethrin	Ambush® 25WP	6.4 to 12.8 fl oz
permethrin	Ambush® Insecticide	6.4 to 12.8 fl oz
chlorpyrifos	Lorsban® Advanced	1 to 2 pt
zeta-cypermethrin	Mustang MAX®	1.28 to 2.8 fl oz
lamda-cyhalothrin	Warrior II with Zeon Technology®	0.96 to 1.6 fl oz
cyfluthrin	Baythroid® XL	0.8 to 1.6 fl oz
zeta-cypermethrin + bifenthrin	Hero®	2.6 to 6.1 fl oz

Source: University of Missouri[2]