Black Cutworm Management for Corn

- Corn seedlings can be clipped by black cutworm (*Agrotis ipsilon*) larvae, which may result in stand loss and reduced yield potential.
- Some corn fields are more susceptible to black cutworm damage than others.
- To avoid stand loss from clipped seedlings, persistent scouting is needed to help determine if economic thresholds have been met.

Corn at Highest Risk

Black cutworm (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 southern winds to lay eggs. Adult BCW moths lay eggs near sources of food. They prefer winter annual weeds over corn plants. Fields that contain chickweed, curly dock, mustards, and soybean crop residue are especially susceptible to BCW infestations.[1] Maintaining a weed-free field at planting can help reduce the likelihood of moths using it as an egg laying site. 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 no longer available and BCW larvae begin feeding on corn, as it is the only food source available. For fields that are at 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 at the same time as BCW. 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, as DCW overwinters locally in the larva stage. BCW can be distinguished from DCW by the four tubercles on each body segment.[2]

BCW have two small tubercles and two large tubercles (Figure 1), whereas the four tubercles on each DCW body segment are the same size.

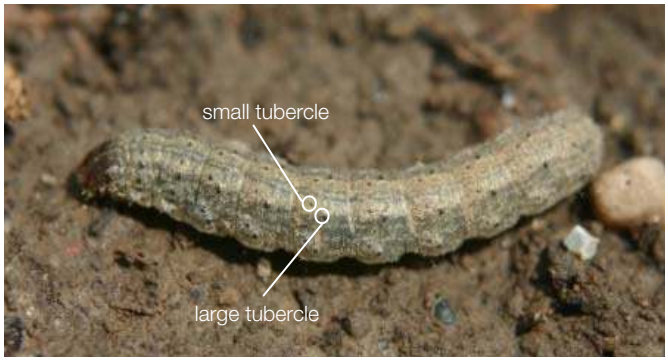

Figure 1. BCW have four tubercles (spots) on the back of each body segment, two are small and two are large.

Estimating Clip Dates

A common method to estimate potential clip dates is 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 an approximate accumulation of 300 growing degree days (GDD) from the time of egg laying.

To monitor BCW flights, affected states will monitor traps to estimate potential clip dates. Tracking of degree day accumulation begins at the first day of intense capture. It is considered an intense capture if more than 8 adult BCW moths are captured over a 2 night period by a sticky wing trap, or 17 BCW moths captured in 1 night in a larger Texas-style metal cone trap.[3] Once an intense capture has occurred, it is estimated that cutting will begin 300 GDD later. 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.

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Scouting

BCW scouting should begin prior to estimated cutting date, or 300 GDD after a significant moth flight. Fields should be scouted twice a week starting at emergence and continuing 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 may wilt and discolor as they die. Corn clipped below-ground may not survive if it has been cut below the growing point. Corn clipped above-ground may survive, but will be more susceptible to disease. In addition to cut or missing plants, leaf feeding may also be an indication of BCW damage (Figure 2). BCW are nocturnal, and may be found by removing soil near damaged plants. Body length can estimate larvae growth stage. Iowa State University recommends checking 50 plants in 5 areas of each field, once a week, to check for damage.[4] Areas with suspected damage should be noted and revisited to assess future damage.

Figure 2. Corn seedling damaged by BCW leaf feeding.

Economic/Action Threshold

If larvae found in the field are smaller than 3/4 of an inch, a rescue insecticide is warranted if 2-3% of plants are wilted or cut. If larvae are larger than 3/4 of an inch, the threshold increases to 5% cut plants. When corn prices are high, the threshold may be decreased to 1% of damaged plants with small larvae, and 2-3% of damaged plants with larger larvae.[5]

Iowa State University developed a dynamic black cutworm action threshold that accounts for plant density, anticipated yield, and estimated market value. Based on this calculation, growers may determine if a rescue treatment is economically warranted. More information and the downloadable spreadsheet template may be found at the following address:[6]

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

Management

Managing BCW starts with a clean seed bed. Removing weeds 2 to 3 weeks prior to corn emergence either through tillage or herbicide application can help decrease BCW larvae survival. A fall application of Roundup® agricultural herbicide tank mixed with 2-4,D in addition to pre-plant applications of Roundup® agricultural herbicide 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 that are attractive to BCW population establishment.

A systems approach with 2 sites of action against BCW is offered with Genuity® SmartStax® technology and an accompanying seed treatment package. Products with Genuity® SmartStax® technology provide above-ground protection from BCW damage, and Acceleron® Seed Treatment Products for Corn with Poncho®/VOTiVO® include clothianidin to offer additional protection from BCW damage. Use of these technologies has the potential to reduce the risk of stand loss from BCW.

Preventative insecticide application is an option; however, it may not be economically worthwhile due to the sporadic nature of BCW. Rescue treatments are recommended if action thresholds are met. Several post-emergence insecticides are available as rescue treatments.[7] Be sure to follow label directions and make sure that insecticide treatments comply with insect resistance management requirements.

For additional agronomic information, please contact your local seed representative.

Sources:

[1] Cullen, E. 2014. Scout corn fields for black cutworm—significant moth flight. University of Wisconsin. Integrated Pest and Crop Management. http://ipcm.wisc.edu/.
[2] Wright, R.J., Hunt, T.E., and Jarvi, K.J. 2013. Corn cutworms. University of Nebraska-Lincoln. G1153. http://ianrpubs.unl.edu/.
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[4] Sisson, A. Jesse, L., and Hodgson, E. 2013. 2013 Black cutworm scouting advisory. Iowa State University. Integrated Crop Management News. http://www.extension.iastate.edu/.
[5] University of Minnesota Extension. 2014. 2014 University of Minnesota cooperative black cutworm trapping network. University of Minnesota. Report #5. http://swroc.cfans.umn.edu/.
[6] Hodgson, E., and Tollefson, J. 2009. Dynamic black cutworm action threshold. Iowa State University Extension and Outreach. Integrated Crop Management News. http://www.extension.iastate.edu/
[7] University of Nebraska-Lincoln Department of Entomology. 2013. Cutworm biology. University of Nebraska-Lincoln. http://entomology.unl.edu/.