agKnowledge Spotlight
Shedding light on the concerns of your fields.

# Black Cutworm in Corn

- Feeding injury from black cutworm,Agrotis ipsilon, larvae can cause stand loss due to clipped or tunneled corn seedlings.
- It is important to know what fields have the highest risk of black cutworm injury, how to identify black cutworm, possible cutting dates, thresholds, and management options.
- Several management options, including preventative and rescue treatments, are available to control black cutworm.

## Susceptibility

Black cutworm (BCW) do not typically overwinter in the Corn Growing Region. 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 singly or in masses near food sources. They prefer winter annual weeds and soybean residue over corn, and fields that contain chickweed, curly dock, and mustards are especially attractive for egg laying. Controlling weed pests and crop residue through winter can help reduce the opportunity for egg dispersal. Economic injury to corn is more likely in fields that are in the VE-V4 (1 to 4 visible leaf collars) growth stages. The most at risk fields for BCW damage are fields with:

- Weeds near or in the field
- Poorly drained and low lying areas
- Late or reduced tillage
- Late-planted corn or corn planted after soybean
- A history of BCW damage[1]

Damage occurs when weed hosts are exhausted as food sources and BCW larvae begin feeding on corn. For fields that are high at risk for BCW damage, scouting and identification are key for proper management.

## Identification

Black cutworm larvae are about a quarter of an inch long when hatched, and continue growing until roughly 2 inches long. Color ranges from light gray to black and several coarse, rounded, convex skin granules make the larvae appear glossy.[2]

Dingy cutworm (DCW) larvae may also be present in fields at the same time as BCW. DCW overwinters locally in the larval stage, and may be larger than BCW. DCW also tends to feed on leaves and does not cut or tunnel into corn seedlings. 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), while DCW have four tubercles on each body segment that are the same size.

Figure 1. Black cutworm distinguished by two large and two small tubercles per body segment.

## Estimating Cutting Dates

A common method to estimate potential cutting dates is to predict when eggs laid by BCW moths will become larvae large enough to cut corn plants (4th-instar). To reach the 4th-instar stage, it takes an accumulation of about 300 growing degree days (GDD) from the time of egg laying (Table 1).

To monitor BCW flights, several states monitor traps to estimate potential clip dates. Tracking of degree day accumulation begins at the first day of an intense capture. An intense capture is considered if more than 8 adult BCW moths are captured over 2 consecutive nights by a sticky wing trap, or 17 BCW moths captured in 1 night in a larger Texas-style metal cone trap.[4] Once an intense capture has occurred, it is estimated that seedling cutting will begin 300 GDD later. This method provides an estimation of when to expect BCW, but it cannot estimate the amount of BCW larval damage or which fields will most likely be targeted by BCW moths.

**Table 1. Growing degree days (GDD) and black cutworm development.**

| GDD | Stage | Activity |
|---|---|---|
| 0 | Intensive moth capture | Egg laying |
| 90 | Egg hatch | --- |
| 91-311 | 1st - 3rd instar | Leaf feeding |
| 312-364 | 4th instar | 1st cutting |
| 365-430 | 5th instar | Cutting |
| 431-640 | 6th instar | Cutting slows |
| 641-949 | Pupa to moth | Cutting stops |

Source: Crop Science Extension and Outreach. Black cutworm. University of Illinois. http://extension.cropsci.illinois.edu/.

## Scouting

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. BCW larvae 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.[5] Areas with suspected damage should be noted and revisited to assess future damage.

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Plants cut below the soil by BCW may be partially pulled under the soil and appear angled out of the soil surface. Cut 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.

## Threshold

A rescue treatment is recommended if BCW larvae found in the field are smaller than 3/4 of an inch and 2-3% of plants are cut. If larvae are larger than 3/4 of an inch, the threshold increases to 5% cut plants. When corn market 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.[6]

Iowa State University has developed a dynamic black cutworm action threshold to determine if a rescue treatment is economically necessary. This calculation accounts for plant density, anticipated yield, and estimated market value. More information and the downloadable spreadsheet template may be found at the following address:[7]
http://www.extension.iastate.edu/CropNews/2009/0527hodgson.htm

## Management

A clean seed bed will help reduce the incidence of BCW. Weeds that are tilled or treated with a herbicide application 2-3 weeks prior to corn emergence will help discourage BCW establishment. A pre-plant application of a Roundup® brand agricultural herbicide can help keep the seed bed clean. Additionally, a fall application of a Roundup® brand agricultural herbicide tank mixed with 2-4,D can also be an effective way to manage winter annual weeds. Fall herbicide applications may be more effective than spring applications in controlling winter annual weeds like common chickweed and purple deadnettle.

In addition to a clean seed bed, seed trait and seed treatment technologies may also reduce the risk of stand loss from BCW. Products with Genuity® SmartStax® technology provide above-ground protection from BCW damage. Products with Genuity® SmartStax® technology may be complimented with Acceleron® Seed Applied Solutions for corn with Poncho®/VOTiVO®, which includes clothianidin insecticide to provide additional protection for BCW. 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.[8] Be sure to follow label directions and make sure that insecticide treatments comply with insect resistance management requirements.

### Sources


[1] Crop Science Extension and Outreach. Black cutworm. University of Illinois. http://extension.cropsci.illinois.edu/.

[2] Tooker, J. 2009. Black cutworm. Penn State Extension. http://ento.psu.edu/.

[3] Wright, R.J., Hunt, T.E., and Jarvi, K.J. 2007. Corn cutworms. University of Nebraska-Lincoln. G07-1153. http://digitalcommons.unl.edu/.

[4] MU Pest Monitoring Network. 2014. Missouri black cutworm monitoring. University of Missouri. http://ipm.missouri.edu/.

[5] 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/.

[6] University of Minnesota Extension. 2014. 2014 University of Minnesota cooperative black cutworm trapping network. University of Minnesota. Report #5. http://swroc.cfans.umn.edu/.

[7] 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/.

[8] University of Nebraska-Lincoln Department of Entomology. 2013. Cutworm biology. University of Nebraska-Lincoln. http://entomology.unl.edu/.

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