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Black Cutworms

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Crop damage is something that occurs almost every year from **black cutworms (BCW),** although the areas affected are highly influenced by the weather. Each year black cutworm moths come back into the corn producing regions from Texas and Mexico because they overwinter in areas where the top soil does not freeze. They move northward at night in the lower jet stream where the winds reach speeds of 30 to 80 miles per hour at 300 to 3000 feet above the earth. The moths stay in the winds until they decide to drop out, contact cold air, or fall out of the air currents with rain in thunderstorms.

Recent storms in the eastern Corn Belt have created the perfect scenario for these flights with strong winds blowing from the south. One of the best ways to monitor the movement of these moths is with pheromone traps which use a synthetic pheromone that is similar to the chemical compound that female BCW moths give off to attract male moths for mating. The synthetic pheromones are placed in sticky traps and the male moths are counted giving an indication on how large the moth flights have been. Many land grant universities have established a network of these traps across their state and the counts are posted with predicted cutting dates. Limited information that I have seen out of Iowa shows that a significant flight (more than 9 moths in a two day period) occurred the second week of April in extreme eastern Iowa and I would assume that the areas to the east would also have had significant flights where the recent storms occurred.

Black cutworm moths look for fields with heavy crop residue and areas that are protected or poorly drained, and low lying in topography. Fields that are unworked or fields with increased residue, especially soybean stubble, are more attractive to the moths because of protection but they usually have early season weed growth from winter annual or early spring emerging annual weeds. Tillage of these weeds after the moths have laid their eggs has had little effect on the survival of the eggs or the larvae, unless new weed growth is eliminated, reducing the food source for the newly hatch larvae for an extended period. Farmers that have been utilizing cover crops should be closely monitor their fields especially if the cover crops are poorly terminated.

BCW larvae have a grainy, light gray to black skin and four pair prolegs on the end of the abdomen. Each body segment has a pair of tubercles and the tubercles nearest the head are 1/2 to 1/3 compared to those closest to the abdomen.

Scouting is the best way to monitor the potential for damage from black cutworms. Types of injury will vary depending on the size of the BCW larvae and the environmental conditions occurring in the field. Small larvae will eat small irregular holes in the seedling leaves. and as they grow, they will eat holes in the side of the stalk causing plants to wilt and die. Since the cutworm cannot control their body temperature, they will tend to follow the soil moisture and they usually feed at night. If we are experiencing wet conditions, they will tend to feed higher on the plant and if conditions are dry, they will feed lower in the soil.

GUIDE TO BLACK CUTWORM DEVELOPMENT AND DAMAGE

Instar stage	Length of larvae (in.)	Approximate days left to feed	Potential no. plants (<6") that may be cut per worm
4	1/2 - 1	25	9
5	1 - 1-1/2	21	6
6	1-1/2 - 2	14	5
7	1-1/2 - 2	5	1

Treatment guidelines have varied over the years mainly due to the cost of the treatment as well as the price of corn. The thresholds for treatment change as the larvae get bigger as well as the stage of growth of the corn. Below is a chart from Purdue University that provides a guideline for treatment:

Average Instar of BCW	Number of Plant Leaves Fully Emerged					
	6 or more	5	4	3	2	1
4.5	1% +	2% +	2% +	2% +	3% +	4% +
5.0	2% +	3% +	4% +	4% +	6% +	25% +
5.5	3% +	5% +	6% +	8% +	22% +	Don't
6.0	4% +	7% +	9% +	17% +	Don't	Don't
6.5	5% +	10% +	16% +	Don't	Don't	Don't
7.0	6% +	15% +	50% +	Don't	Don't	Don't

1. Look down the column at the left labeled "Average Instar of BCW" until you find the average instar of black cutworm found in the field. This is called the Instar Row.
2. Look across the top of the table and find the number that best represents the "Number of Plant Leaves Fully Emerged" for the plants inspected. A leaf is fully emerged if the leaf collar is visible. The column of figures below this is called the Leaf Column.
3. Follow the Instar Row and the Leaf Column to the place where they intersect. This figure is the control threshold. If the percentage of cut or damaged plants in the field equals or exceeds this number, treatment may be advisable.

Chart courtesy of Purdue University

Iowa State University also has an interactive excel worksheet that considers the price of corn as well as the cost of the treatment.
https://crops.extension.iastate.edu/files/icm/BCWdynamicthresholdspreadsheet.xls

Insecticides that are applied as a rescue treatment provide the best control for black cutworms.

Questions sometimes arise about the effectiveness of soil-applied insecticides, seed treatments or Bt traits that show control in the literature.

Soil-applied insecticides have been used for many years to control BCW larvae and their control was good, especially if they were applied in a T-Band. One factor that has changed over the years was that most insecticides went to in-furrow applications for rootworm control. This does not work as well as T-Band applications for black cutworm control. We also started having issues with herbicides that limited the products that could be utilized.

High rates of neonicotinoids (Poncho®, Cruiser®, Gaucho®) can offer some control of larvae. The rates utilized will cause a variance on the size of larvae controlled. Most seed is treated with Poncho 500 and this has been shown to help control larvae up to a ½-inch. The Poncho 1250 rate will help control up to 1-inch larvae. Under heavy population situations neonicotinoids may not provide satisfactory control.

Bt hybrids that contain the Cry 1F protein (HX1) or the Vip3a protein (Viptera®) are labeled as controlling black cutworm. The issue with any Bt protein is the fact that it must be consumed to provide control and if the larvae are large or the populations are high enough. they won't provide the expected control. This was seen in the corn belt in 2012.

Summary

As the planting season progresses, and the rains and weather patterns continue to bring storms and winds from the southwest to the Corn Belt, black cutworms are potentially an issue that some will have to contend with as the 2018 crop is planted and emerging. Many universities are counting and reporting their respective black cutworm moth captures and forecasting potential cutting dates. Producers should listen to and heed the advice offered. In recent years we have not had severe outbreaks of cutworm damage, but the season is shaping up with delays in planting and the potential for black cutworm feeding is likely to increase. LG Seeds Technical Team Agronomists are ready to assist in scouting and answering any questions producers may have about black cutworms.

Sources and Additional Information

1. https://crops.extension.iastate.edu/cropnews/2018/05/black-cutworm-scouting-2018+
2. https://swroc.cfans.umn.edu/sites/swroc.cfans.umn.edu/files/black_cutworm_migration.pdf
3. https://swroc.cfans.umn.edu/agricultural-programs/pest-management/black-cutworm-reporting-network/bcw-risk