



BLACK CUTWORM

Agrotis ipsilon (Hufnagel)

The black cutworm is a cosmopolitan pest that poses an economic threat to many agricultural plant species. In Pennsylvania field crops, it is most often a pest of corn, but can also cause trouble in wheat and tobacco. It will also attack some vegetable crops, including sweet corn, and can be problematic in turf grasses. While black cutworm has the potential to be a very serious pest, it is sporadic with major outbreaks being relatively rare (1980 was a particularly bad year in Pennsylvania with at least 5,000 acres of corn being decimated). Nevertheless, it warrants attention because losses can be severe if it infests fields at the right time.

DESCRIPTION

Newly hatched larvae are about a quarter inch long and grow to be about two inches long when full sized. Their color ranges from gray to nearly black. There is a pale rather indistinct narrow stripe along the center of the back (Fig. 1). The texture of the skin is characteristic and distinguishes them from all other cutworms. The skin texture consists of convex, rounded, coarse granules with smaller granules interspaced between. Magnification to five times or more is needed for this characteristic to be readily seen.

The moths are relatively large compared to similar species and have wingspans of 40-55 mm (1.5-2.0 inches). They are brownish in color and their forewings have small but distinct black dagger-like markings that extend distally (i.e., toward the end of the wing) from bean-shaped wing spots. The forewings also have an irregular whitish band that extends across the wings and is just off the tip of the dagger-like markings (Fig. 2).

LIFE HISTORY

Black cutworm has three generation per year. It is a somewhat sporadic pest because it is mostly migratory with few individuals surviving the winter in northern states like Pennsylvania. It should be noted however that there are anecdotal accounts of overwintering moths as far north as Delaware. Most black cutworms spend the winter as pupae or adults along the Gulf Coast and migrate northward on leading edges of cold fronts. This annual migration begins in February, but is heaviest in April and May. Adult female moths of this first and most-damaging generation lay eggs singly or in masses (as many as 30) on grasses, dense patches of weeds,



Image by Shepard, Camer and Ooi, Bugwood.org

Figure 1. Black cutworm caterpillar.



Image by Ian Kimber, Bugwood.org

Figure 2. Black cutworm moth.

and debris. Eggs are often laid prior to crops being planted. Black cutworm has a minimum developmental threshold of 50°C and degree-day accumulation can be used to predict larval damage. Degree-day accumulation begins when pheromone traps detect a significant flight of moths (typically 9 males over 2 nights), then cutting activity tends to occur after about 300 Fahrenheit degree days, and pupation occurs after about 640 degree days. Moths of the second and third generations are active in July and early autumn, respectively, with individuals of the final generation flying south to escape dropping temperatures.

DAMAGE

Black cutworms exhibit two types of feeding patterns depending upon the amount of moisture in the soil and size of plants. Where soil moisture is adequate and plants are small, the larvae

hide in the soil during the day and move to the soil surface at night where they cut off plants just above the soil surface (Fig. 3). This is typical damage for most cutworm species. One larva will cut off an average of five corn plants during its development. In situations of dry soil conditions, the larvae do not move to the surface to feed, but instead, they chew into the plant just below the soil surface. This causes the corn plants to wilt and usually die. Loss of plants in infested fields will vary from 10 to 80 percent. Seldom is a field completely destroyed, rather severe damage is usually confined to portions of the field.

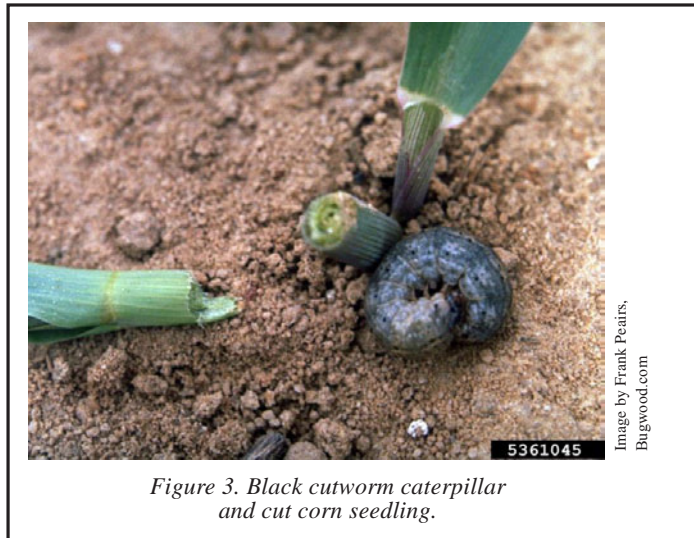


Figure 3. Black cutworm caterpillar and cut corn seedling.

CONTROL

For fields that are infested year after year, cultural control is possible. In particular, removal of cool season weeds along field edges can starve young caterpillars. Growers should avoid planting corn following pasture, alfalfa or red clover. Soil insecticides can be incorporated at planting, but because of the sporadic nature of black cutworm, timely scouting and the use of rescue treatments appears to be among the economical options (see Penn State's Agronomy Guide for some potential insecticide options). Widely accepted thresholds are 2, 3, 5, and 7 cut plants per 100 for seedling, V2, V3, and V4 stage plants, respectively. Some lines of transgenic Bt corn, particularly those expressing the Cry1f toxin (e.g., Herculex[®] lines), can provide some protection against black cutworm as can higher rates of neonicotinoid seed treatment, though no rates appear to be completely effective.

WARNING

Pesticides are poisonous. Check the Agronomy Guide or consult with your pesticide supplier or county agent for details of pesticide use. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

John Tooker
Assistant Professor
Dept. of Entomology
March 2009

FC-4

©The Pennsylvania State University 2009

This publication is available in alternative media on request.

Where trade names are used, no discrimination is intended and no endorsement by The Pennsylvania State University or Pennsylvania Department of Agriculture is implied.

Entomological Notes are intended to serve as a quick reference guide and should not be used as a substitute for product label information. Although every attempt is made to produce Entomological Notes that are complete, timely, and accurate, the pesticide user bears the responsibility of consulting the pesticide label and adhering to those directions.

Issued in furtherance of Cooperative Extension Works, Acts of Congress May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. D. Jackson, Director of Cooperative Extension, The Pennsylvania State University.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Bouke Building, University Park, PA 16802-5901, Tel 814-865-4700/V, 814-863-1150/TTY.