



Early Season Insects in Corn

Key Points

- Scouting for early season insect pests in corn should begin shortly after planting.
- Common early season insect pests include: black cutworms, seedcorn maggots, wireworm, various species of white grubs, and others.
- Preventative measures include soil-applied insecticides and seed treatments.
- Scouting procedures, economic thresholds, and management decisions will vary by pest and environment.

Beginning shortly after planting, growers should start scouting corn fields for early season corn insects that can damage seeds and seedlings. Damage may include seed, shoot, or root feeding and may or may not have visible symptoms above ground. Cool, moist soil conditions are a favorable environment for many soil insects. These conditions can also slow corn growth allowing soil insects a longer time to feed on tender plant tissue.

Insect Species

Black cutworm (*Agrotis ipsilon*) larvae grow to about 1 1/2 inches long and their color ranges from gray to nearly black (Figure 1). Their skin consists of convex, rounded, coarse granules interspersed between smaller granules. Black cutworm larvae feed below ground and sever corn plants from their roots near the soil line. Fields with lush winter annual weed growth provide an attractive egg laying environment for adult cutworm moths that migrate from southern states.

Seedcorn maggots (*Delia platura*) can be a problem in soils that are high in organic matter (where manure has been spread or a cover crop is decaying) because the adult flies are attracted to the rich organic material in which to lay eggs. The yellowish white maggot is about 1/4 inch long when mature and feeds on seed contents (Figure 2).



Figure 1. Black cutworm



Figure 2. Seedcorn maggot

Wireworm (*Elaeteridae spp.*) larvae are hard, smooth, slender, and wire-like (Figure 3). The larvae range from 3/4 inch when young to 1 1/2 inches long when mature. They change from yellowish-white to a shiny coppery color and have three pairs of small, thin legs behind the head. Larvae feed on seeds and roots and can bore into the stalk just above the roots killing the growing point. Damage may be more prominent in corn fields that were previously planted in small grains two to four years prior. As soil temperatures increase, larvae move downward into the soil profile and become less of a feeding threat.



Figure 3. Wireworm

Several species of white grubs can damage or kill corn seedlings by pruning roots and feeding on the mesocotyl. True white grubs, the immature stage of May or June beetles (*Phyllophaga spp.*),



Figure 4. Masked chafer beetle grub (left); Japanese beetle grub (center); June or May beetle-true white grub (right).

have a three year life cycle and may cause stand loss during two of their three years. The masked chafer beetle (*Cyclocephala spp.*) larvae, also called annual white grubs, and Japanese beetle (*Popillia japonica* Newman) larvae have the potential to damage seedlings but are usually near the end of their larval stage by the time corn is planted. All three grubs are C-shaped, creamy white, and covered with tiny bristles. True white grubs can be identified by the zipper pattern of hairs on the underside of the last tail segment (Figure 4).

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There are several other insects that may be of concern in your area. Depending on your location and field conditions, some other common early season insects may include chinch bugs, flea beetle, green stinkbug, billbug, and grape colaspis. Your Channel Seedsman can assist you in identifying which insects may be causing issues in your field.

Sampling/Scouting

Scouting for black cutworm larvae should begin at plant emergence and continue through V4-V5 growth stages. Examine 25 plants at 10 different areas of the field to determine larval size, cutting damage, and where feeding occurs on the plant.

Scouting for seedcorn maggot can be done after planting by examining the soil in areas where plants have failed to emerge. Dig up 2 linear feet of row in each of 5 areas of the field and examine ungerminated seeds for damage and maggots.

Bait stations for wireworm sampling can be made by digging a hole approximately 3-4 inches deep by 9-10 inches wide and burying ½ cup mixture of equal parts untreated corn and wheat seed. The holes should be filled in and mounded over, then covered by an 18-inch square of black plastic and a 1-yard sheet of clear plastic. Cover the plastic edges with soil to keep them down. Plastic helps to speed the germination process and germinating seeds attract wireworms. Bait stations should be set 2-3 weeks prior to planting and checked a few days before planting to determine the number of wireworms present at each. It is recommended to place one dozen stations per 40 acres in representative areas of the field.

Direct soil sampling can be used to determine the presence of white grubs. Dig a 1 foot by 2 feet by 6 inch (1 cubic foot) sample of soil and place it on a large piece of black plastic. Carefully sifting through the soil, determine the species of grubs present using Figure 4 and count the number of each per square foot. This process can be used a few days prior to planting when planting into a set-aside field or one where large numbers of Japanese beetles were present the previous season, or post-emergence when grub damage becomes apparent.

Management

While some insect infestations can be remedied with rescue treatments, that is not always the case and timing can be critical. In many situations, preventative treatments such as soil applied insecticides (SAI) and seed treatments are needed to provide control (Table 1). Insecticide seed treatment products, such as clothianidin, can help reduce damage caused by pests including: black cutworm, wireworm, true white grub, Japanese beetle larva, and seedcorn maggot. Fields should be scouted on a regular basis to determine which insect pests are present and how many. Treatment thresholds will vary by state, pest, and stage of crop development. Consult your state's Extension entomology resources and/or your Channel Seedsman or agronomist for local recommendations. If a threshold is met and a rescue treatment is recommended, the appropriate insecticide should be applied promptly and according to label directions.

Sources:

¹ Boyd, M., and Bailey, W. 2002. Black cutworm in Missouri. University of Missouri Extension. G7112. <http://extension.missouri.edu/>.

² Ratcliffe, S.T., Gray, M.E., and Steffey, K.L. Wireworms. University of Illinois Extension. Integrated Pest Management. <https://ipm.illinois.edu/>.

³ Seedcorn maggot. 2009. Purdue University. Field Crops IPM. <http://extension.entm.purdue.edu/>.

⁴ White grubs. 2009. Purdue University. Field Crops IPM. <http://extension.entm.purdue.edu/>.

Jensen, B. 2012. Diagnosing early season corn insect damage. University of Wisconsin. Integrated Pest and Crop Management. <http://ipcm.wisc.edu/>.

Web sources verified 03/10/15.

| Early season corn insects | Treatment options and thresholds |
|---------------------------|---|
| Black cutworm | Rescue treatment when 2 to 4% of the plants are cut below ground or 6 to 8% of the plants are cut above the soil surface. ¹ |
| Seedcorn maggot | No rescue treatments available. Replant decisions should be based on percentage of remaining healthy plants. ³ |
| Wireworm | Preventative seed treatment or soil applied insecticide (SAI) when 1 or more wireworms are found per bait station. ² |
| White grubs | Two or more grubs per cubic foot may cause problems. No rescue treatments available. Some seed treatments and SAIs labeled for white grub control. ⁴ |

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Leaf Design® is a registered trademark of Monsanto Company. Channel® and the Arrow Design® and Seedsmanship At Work® are registered trademarks of Channel Bio, LLC. All other trademarks are the property of their respective owners. ©2015 Monsanto Company. 140418060809 031015MEC