

CORN INSECTS—BELOW GROUND

For safe and effective use of insecticides, always identify the problem correctly.



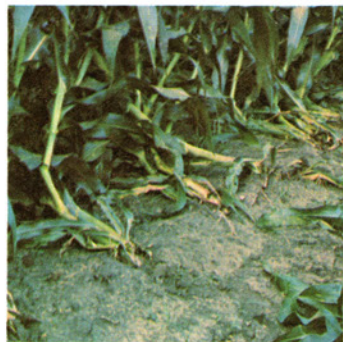
2. Corn rootworm larva



5. Wireworm



6. White grub



3. "Goose-neck" symptoms of corn rootworm infestation



7. Black cutworm



8. Corn root aphid



1. Corn rootworm adults (top-bottom: Northern, Western and Southern)



4. Corn rootworm damage



9. Grape colaspis and damage



10. Seed corn maggot



11. Seed corn beetle



12. Billbug (feeds on seedling corn plants below ground; holes in lower leaves of larger corn are evidence of this earlier feeding)

Missouri Corn Insects--Below Ground

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1. Corn rootworm adults. Adult beetles may keep silks eaten off during period of pollination, resulting in poor grain set. The northern and western species have one generation annually and overwinter in the egg stage. These eggs are laid from August into October in the soil of corn fields primarily. The southern species overwinters as adults, and possibly as eggs. The southern species has two or three generations annually, and they will feed on and lay eggs in a wider variety of crops than the other species.

2. Corn rootworm larva. The eggs of the northern and western species hatch in late May and early June. The rootworm larvae feed upon and tunnel into the primary roots and later into the brace roots. The slender, creamy white larva, with a reddish-brown head and a dark brown spot on the tip of the abdomen, are about $\frac{3}{8}$ inch in length when grown. The southern rootworm larvae are similarly shaped but are slightly larger and more yellowish in color.

3. "Goose-neck" symptoms. Corn that has had the roots largely destroyed by rootworm larvae often falls or is blown over during a rain and wind storm. If moisture is plentiful, these plants will attempt to right themselves, resulting in a lower stalk curvature often called "goose-necking."

4. Corn rootworm damage. Heavy rootworm infestations usually completely destroy the more tender roots, especially the last two sets of primary roots and the first set of brace roots. The tips of roots may be eaten off, tunneled into, or completely destroyed, resulting in a brownish and rotting of the injured areas.

5. Wireworm. The hard, slick, orange colored larvae are from $\frac{1}{2}$ to $1\frac{1}{2}$ inches in length. They feed on the seed, bore into the underground portion of the stalk of seedling and small corn, and eat the more tender roots. From two to three years are required to complete a generation, but generations overlap so that all stages are present every year. Corn following grasses or sod is most subject to attack.

6. White grub. The larvae or grubs of the large, brown May or June beetles damage corn by eating off the primary roots. Injured corn shows stunting and patchy growth, is off color, and often dies. Three years are required to complete a generation, but generations overlap so that all stages are present each year. Corn following sod is most subject to attack.

7. Black cutworm. These and some other species of cutworm larvae may cut off seedling and small corn at or

just above the ground during wet weather. In drier soils, the feeding is largely underground where the cutworms chew into the stalk, causing death of the above-ground portion. Damage is usually greatest in wet, heavy river bottom soils. Cutworms overwinter as partially grown larvae. Migrating moths lay eggs during the early spring. A second generation may occur in June and July following excessive rainfall and flooding.

8. Corn root aphid. These aphids overwinter as eggs in the nests of the corn field ant. In the spring, the ants carry the young aphids to the roots of small corn. The small, bluish-green aphids suck sap from roots. During dry weather, infested plants may become stunted and have reddish-yellow tinting on lower leaves.

9. Grape colaspis and damage. Corn following lespedeza or clover may show stunting, wilting, discoloration of upper leaves; or it may be killed by very small, fat, curved, white grubs which have eaten the primary roots. The small, elliptical, tannish-colored beetles feed on pollen, silks, and foliage of corn and soybeans during July.

10. Seed corn maggot. During cool, wet springs, and especially in soils with a high organic matter content, the germination of corn and soybean seed is often reduced by small, dirty grayish-white maggots which tunnel into and feed within the seed. The adult flies are about one-half the size of house flies and are often attacked by a fungus during warm, humid weather. Dead flies may be seen attached to vegetation. There are several generations each year.

11. Seed corn beetle. During cold weather that slows germination, corn seed may be chewed into by a ground beetle about $\frac{3}{8}$ inch in length with brownish-black wing covers margined with dull yellow. Large numbers of beetles are often seen at lights and both the larvae and adults are believed to be mostly predaceous.

12. Billbug. Several species of dirty, grayish-black weevils or snout beetles, about $\frac{3}{8}$ inch in length, overwinter and attack seedling and small corn in the spring. The billbug eats one or more small holes in the stalk at or near ground level. When the damaged leaves unfold, they exhibit a series of concentric holes across the blades. The fat, curved, legless, white grubs may also tunnel in the pith of the lower stalk. The problem is more severe on corn planted in bottom fields where reeds and sedges have been growing or in old timothy meadows.