

53. White Grubs

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Hosts

Larvae of several genera of May or June beetles, commonly known as white grubs, feed on the roots of many herbaceous and woody plants. All coniferous and hardwood seedlings are susceptible to attack. Some common genera that cause losses in nurseries include *Phyllophaga*, *Diploptaxis*, *Dichelonyx*, *Serica*, *Cotalpa*, and *Anomala*. *Phyllophaga*, with more than 100 species, is the most important genus.

Distribution

White grubs are widespread, with species from the various genera found over most of North America. Most species occur in the eastern half of the continent.

Damage

Small amounts of white grub feeding reduce seedling vigor and growth. Heavy feeding usually kills the seedlings. Severe losses can occur in seedbeds where white grub populations number more than one larva per square foot of soil surface.

Diagnosis

Look for the characteristic C-shaped white grub larvae (fig. 53-1), which are easily detected in freshly prepared soil during seedbed preparation. White grub larvae have strongly curved, milky-white, shiny bodies. The abdominal segments are somewhat translucent, permitting visibility of the body contents through the skin. The head is brown and has well-developed mandibles. Three pairs of prominent legs vary in length from 3 mm immediately after



Figure 53-1—Typical larvae (white grubs) of *Phyllophaga*.

hatching to over 6 mm before pupation.

Wilted and/or discolored foliage may indicate root damage has occurred. Examine the roots for feeding injury. Feeding damage varies from the removal of a small portion of the fibrous roots to total consumption of the lateral roots (fig. 53-2). Damage also may include the girdling or removal of the entire taproot just below the soil surface.

Adults of the genus *Phyllophaga* are robust, oval, brown to brownish-black June beetles. They are nocturnal and generally emerge from the soil at night and move to foliage of nearby trees and shrubs to mate and feed (fig. 53-3). At dawn they return to the soil.

Biology

Life cycles of *Phyllophaga* spp. vary from 1 to 4 years. In the South, the beetle completes its life cycle in from 1 to 3 years but usually takes 2 years. In the Northern States, cycles range from 2 to 4 years, although 3-year cycles predominate.



Figure 53-2—Root damage on seedlings caused by feeding of white grubs.



Figure 53-3—Feeding damage on leaf made by *Phyllophaga* adults.

The females lay their eggs deep in the soil, 2 to 6 inches below the groundline. Oviposition begins about a week after mating and may continue over several weeks during spring and summer.

The larvae, or white grubs, hatch in 2 to 3 weeks and begin feeding on organic matter in the soil. Soon, however, they feed on the tender roots of nearby seedlings. In the fall, the larvae

to deeper, safe soil levels to overwinter. These soil depths are determined by prevailing winter temperatures and frost levels.

In the spring, the grubs move upward through the soil and begin feeding again when seedling growth resumes.

Control

Chemical—Fumigate seedbeds with a methyl bromide-chloropicrin formulation before seeding to eliminate white grubs. Applications of granular insecticides to beds of established seedlings and root dipping of transplants have also been effective in reducing damage.

Selected References

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