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White Grubs in Turfgrass



Species

White grubs (grubworms or simply, grubs) are the C-shaped larvae of a large group of beetles called scarabs. Many species of scarabs are found in the United States and several of these attack turfgrasses. The most important species are: Japanese beetle, *Popillia japonica* Newman; May or June beetles, *Phyllophaga* spp.; northern and southern masked chafers, *Cyclocephala* spp.; and black turfgrass ataenius, *Ataenius spretulus* (Haldeman). Other, more localized, white grub pests are: European chafer, *Rhizotrogus majalis* (Razoumowsky); the Asiatic garden beetle, *Maladera castanea* (Arrow); and the green June beetle, *Cotinis nitida* (Linnaeus).

Distribution

White grubs are perennial pests of the cool-season and transition zone turf grasses. May/June beetles, masked chafers and Japanese beetles are found in all areas of the midwest (and generally east of the Mississippi River). The European chafer, Asiatic garden beetle and Oriental beetle are more recent introductions to and these pests are commonly encountered in counties bordering Lake Erie. The green June beetle is a native pest that seems to be causing more damage in southern counties. The black turfgrass ataenius can be found throughout the state where it is a perennial pest on golf courses.

Damage Symptoms

White grubs eat organic matter including the roots of plants. Therefore, damage first appears to be drought stress. Heavily infested turf first appears off color, gray-green, and wilts rapidly in the hot sun. Continued feeding will cause the turf to die in large irregular patches. The tunneling of the larvae cause the turf to feel spongy under foot and the turf can often be rolled back like a loose carpet. Grub populations may not cause observable turf injury but predatory mammals such as skunks, racoons, opossums, and moles dig in the turf in search of a meal.

Description of Stages

Scarabs have a complete life cycle with eggs, larvae, pupae and adults. Japanese beetles, masked chafers, green June beetles, European chafers, Oriental beetles and Asiatic garden beetles have annual life cycles. The May/June beetles usually take two to three years to develop but some

southern species have annual cycles. The black turfgrass ataenius has two to three generations per summer. Most turf scarabs overwinter as larvae but the black turfgrass ataenius and mature May/June beetles overwinter as adults.

Eggs Most eggs are a creamy-white in color, about 1/16-inch (1.5mm) long and slightly oval when first laid in the soil. These absorb water from the soil and swell slightly, becoming more round.

Larvae The C-shaped white grubs are thick bodied, creamy-white with brown head capsules and short legs. All species have three instars, that is, the larvae molt three times.

Pupae The pupae are often slightly longer than the adults and are formed in chambers one to two inches in the soil. The pupae are first cream colored and darken before the adults emerge.

Adults The adults are typical scarabs - robust, oval beetles with the antennae ending in a large club of flattened plates. Most genera are easy to identify by sight but species identification of May/June beetles and masked chafers require a specialist.

Identification of Species

The adults are easily identified to genus but the grubs are the stage usually found in the turf. The grubs are identified by the form, shape and arrangement of bristles (the raster) on the last abdominal segments. A 10 to 15 power hand lens is usually adequate for identification and the common white grub groups can be identified using a raster pictorial key. White grubs seem to be periodic pests, attacking turf areas irregularly from year to year. The major factor influencing development of damaging numbers of grubs is soil moisture and rainfall. In general, in years with normal or above normal rainfall, grub populations increase. Well maintained turf next to ornamental plants favored by the adults seems to be more commonly attacked. However, masked and European chafer adults do not feed as adults and these pests build up in well watered and maintained turf. Black turfgrass ataenius and green June beetle adults seem to be highly attracted to turf with decaying thatch layers.

Cultural Control - Host Plant Modifications - Certain species of scarab adults prefer specific host plants. Where Japanese beetles are common, do not plant roses, grapes and lindens around high maintenance turf areas. May/June beetles prefer oaks and the green June beetles feed on ripening fruit such as peaches. The fine and tall fescues are not as severely attacked as Kentucky bluegrass and perennial ryegrass.



This information supplied by The Ohio State University Extension.