

## Fall Management of the European Chafer

The European chafer grubs caused quite a stir early this spring in portions of Lehigh and Northampton Counties. The white grubs, which are the immature form of the European chafer beetle, caused extensive damage to lawns and other turf areas by feeding on the roots. The question many homeowners have is what to expect now and how to deal with these insects to prevent future lawn damage.

It is important to understand the life cycle of the pest so that management decisions are properly timed to coincide with susceptible life stages.



The European chafer life cycle is similar to other white grubs in our area, except that it is earlier. The adult European chafer is a brown beetle, slightly longer than 1/2 inch, that spends the daylight hours buried in the soil. At night the beetles emerge, congregating on trees or other vertical objects like light poles or chimneys. They may sound like a swarm of bees buzzing around the trees (only at night!) They mate and fall to the ground to lay eggs. The adults live no longer than 2 weeks.

Eggs will hatch after about 2 weeks and the larvae (white grubs) feed throughout the summer and fall. They feed on grass roots, and can cause brown dead patches of turf. During late fall and winter as the soil temperatures cool off, grubs move down into the soil to hibernate below the frost line. They can tolerate (and continue to feed during) temperatures much colder than other grubs in our area. For this reason, damage to turf is often more pronounced since they feed longer into the fall and begin feeding very early in spring. This year there were reports of grubs actively feeding in late February.

In Northampton County, adult beetles were caught in special traps to document the timing of their life cycle. The adults started flying June 7, and continued until the end of the month. The peak adult flight seemed to occur around mid-June. The adults were mating and laying eggs then, and the eggs were hatching beginning in late June until mid- July.

The general recommendation for controlling white grubs in home lawns is to use an insecticide that will control the tiny grubs as they emerge from their eggs. For many grub species, that means having a preventative insecticide treatment on the ground by mid-August. Products with the active ingredients halofenozide or imidichloprid are intended to be used in this way-to control the very small grubs upon hatching. With European chafers, eggs hatch sooner than our other grub species, so preventative insecticides needed to be in place by early to mid-July to be effective.

If preventative insecticide treatments were not applied, homeowners should begin checking for grub feeding damage during August and early September. If you experienced the sound of beetles buzzing in trees during evenings in late June, you should begin looking in the grass around those trees. This is



accomplished by cutting a one foot square of sod about 2 inches deep and examining the upper soil and thatch for grubs. The white grubs are C-shaped, creamy white in color, and have a brown head capsule.

Most grubs look alike from a distance, but you can distinguish between species by examining the raster pattern, which is a distinct pattern of bristles on the underside of the grub's abdomen. The raster pattern will tell you if the grub is a European chafer, asiatic garden beetle, or the easier-to-control Japanese beetle grub.

If you find more than ten grubs per square foot of turf area, it may be a good idea to treat before the grubs kill the lawn. Most lawns can handle numbers less than that, especially if they are healthy and growing without other stress, like drought stress.

To treat white grubs successfully in the fall:

1. Scout early and often. Small grubs are much easier to control than larger ones.
2. Once grubs are actively feeding, it is necessary to use a curative application of insecticide. Preventative products (mentioned above) are no longer effective.
3. For curative applications, consumers should check which grub control products are available locally. Products containing the active ingredients diazinon, carbaryl, or trichlorfon, are often available and labeled for white grub control. Make sure that white grubs are listed on the product label of the specific product you choose.
4. Spot treat just the problem areas. There is no need to treat the whole lawn unless grubs are everywhere. Most studies of European chafers indicate that they tend to be found in localized areas, right under and around the tree or other vertical object they were congregating on. Large open expanses of lawn are usually not affected and can remain untreated.
5. Follow the label directions on the insecticide you choose. Drought restrictions allow watering in a grub control application one time during the season. It is necessary to follow the watering directions carefully, since failure to water in the insecticide will result in NO CONTROL.

Beneficial nematodes are a biological control that can be used to combat European chafer. The nematode *Heterorhabditis bacteriophora* has been shown to be effective against small grubs. The nematodes are safe to humans, pets and plants, and can kill grubs within 24-48 hours. They are fragile, requiring special handling and must be applied soon after purchase. Soil moisture is important both before and after application. There are sources for this nematode in the US, and it can be shipped by mail. Sources can be found on the following websites:

<http://www.nysaes.cornell.edu/ent/biocontrol/pathogens/nematodes.html>

<http://www.ianr.unl.edu/pubs/insects/nf182.htm>

Large grubs are difficult to control. Trying to treat grubs in late fall, or even worse, in the early spring, will not be successful. If grubs are not spotted until damage is severe, a rototiller and reseedling will be necessary.

Photos: Vittum, Patricia J., Villani, Michael G., and Tashiro, Haruo. 1999. Turfgrass Insects of the United States and Canada, 2nd edition. Cornell University Press.

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