



European Chafer

Overview

The European chafer (*Amphimallon majale*) is a beetle that can cause severe damage to turf in its larval (or grub) form. It was first introduced to the United States in the 1940s on the East Coast but was identified in the Pacific Northwest in 2015 and has become a prolific problem on golf courses, home lawns, athletic fields, and recreational turf. Proper identification, understanding the European chafer life cycle, and control strategies are key to successfully managing this pest.



Figures 1-3. European chafer adult, 3rd instar larvae, raster pattern for identification and comparable size of 3rd instar larvae depicted by C on penny. Photos credit: Figures 1-2 Gwen Stahnke. Washington State University; Figure 3 Kyle Wickings, Cornell University

Identification

- Adults are approximately ½ inch long. Both males and females are tan to light brown in color (Figure 1).
- Larvae are C-shaped white grubs that are approximately one inch long and ¼ inch wide. They can be identified by their raster pattern which is the arrangement of hairs located near the tip of the abdomen. European chafers have two distinct, nearly parallel rows of dark, coarse hair that diverge outward at the tip of the abdomen, similar to a slightly open zipper (Figures 2-3).

Life Cycle

- Typically completes development in one year. Adults emerge from the soil mid-June through early July. They will fly a few hours before and after sunset when temperatures are above 65°F with peak activity lasting 2-3 weeks. Female adults lay their eggs in the soil 2-6 inches below the turf. After 10-14 days, eggs hatch and grubs emerge and immediately begin feeding on turfgrass roots.
- Grubs feed from July until the soil freezes and overwinter just below frozen soil. Surviving grubs return to the root zone to feed as soon as soil temperatures exceed 50°F for several weeks. In late May, grubs descend 2-10 inches into the soil to pupate (transform into an adult). After 10-14 days, adult beetles emerge from the turf around mid-June.

Risk

- European chafer adults occasionally feed on tree leaves, but rarely cause any significant damage, unlike adult Japanese beetles which are commonly very destructive.
- However, the grubs can cause more turf damage than Japanese beetles as they tend to feed later into the fall and resume feeding earlier in the spring.
- European chafer grubs are often not a problem in irrigated turf as most damage occurs on non-irrigated turf.

Control Strategies

- Current thresholds estimate that 5-8 European chafer grubs per square foot of low maintenance turf is the point at which damage may be noticeable and treatment necessary. A higher threshold of 15-20 grubs per square foot is estimated on irrigated turf as watering helps to mitigate turf stress and allow it to recover.
- Turf damage can be amplified by skunks or other animals digging to feed on the grubs (Figure 4).
Integrated grub control:
 - Grow healthy turf – implement proper cultural practices including mowing, fertilization, irrigation, and aerification.
 - Manage thatch layer ensuring no more than $\frac{1}{2}$ - $\frac{3}{4}$ inch of thatch.
 - It is crucial to make sure any insecticide application is timed properly and watered-in to desired depth to optimize grub control. Simple concept – insecticide must come in contact with grub to be effective!
- Preventive grub control:
 - The optimal way to manage European chafer grubs is to apply a preventive insecticide prior to egg hatch.
 - Products containing chlorantraniliprole like Asentra™, Asentra™ G, or Deforo™ 600 SC can be applied once in May through June and provide season-long control.
 - If applied early, chlorantraniliprole will also provide control of billbug larvae and European crane fly larvae.
 - In addition, EPA classifies chlorantraniliprole as a reduced risk pesticide. There are no adverse effects on beneficial and non-target organisms including earthworms and honeybees.
- Curative grub control:
 - If turf damage is observed in late summer through fall by second and third instar grubs, Dylox® 6.2G applied at 130 lbs. per acre is very quick acting, killing grubs in 1-3 days.
 - It is critical that Dylox gets moved through the thatch into the soil profile by irrigation or rainfall (0.25-0.5 inch) within 24 hours after application.
 - Under dry conditions where significant thatch is present, irrigate the area to be treated prior to application. Wetting the thatch/soil interface encourages the grubs to move closer to the surface.



Figure 4. Turf damage as a result of animals feeding on 3rd instar white grubs in the fall. Photo credit: Rob Golembiewski, Atticus