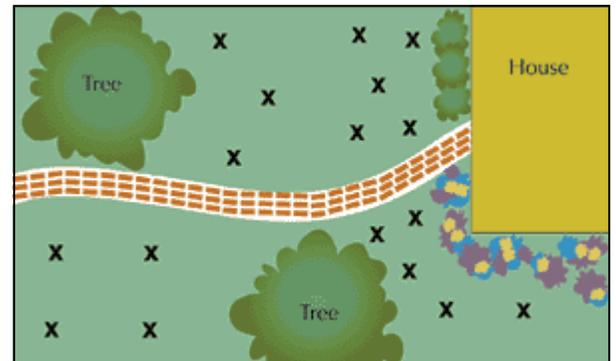


How to De-Grub Your Lawn...

...Organically

Monitor for White Grub Populations in Mid-August

- White Grubs damage turf by chewing off roots close to the soil's surface. Major damage is inflicted during drought conditions in late August through the fall months. By sampling in mid-August you will get a chance to survey grubs before they start to voraciously consume your lawn.
- Adult beetles lay eggs in sunny, well-managed & well-watered lawns. This is the area you should focus on for your sampling survey.
- To sample for grubs, cut a foot square piece of your lawn and sample to three inches deep. Record #'s of grubs and species. (see pg. two for a guide to grub species)
- Grubs can be damaging in a range of 6-10 grubs per sq ft.



Sample on a grid so you can determine population size. *Illustration by Karen English*

Organic Grub Treatments

- **Milky spore®** is a natural way to control Japanese Beetles and other grub species. Apply to your lawn mid-August to September.
- There are **Insect Parasitic Nematodes** that can be applied to your lawn that will attack certain varieties of grubs. Once you survey what types of grubs you have you can then go to a local gardening store to purchase various types of Insect Parasitic Nematodes.
- Apply these treatments to your lawn in mid-August to September will be most effective in killing grubs before they start to devour your lawn.
- Both Milky Spore and Insect Parasitic Nematodes are available at local gardening shops. Call before you go. If you have trouble locating a shop, go to www.ctnofa.org to find a local purveyor.

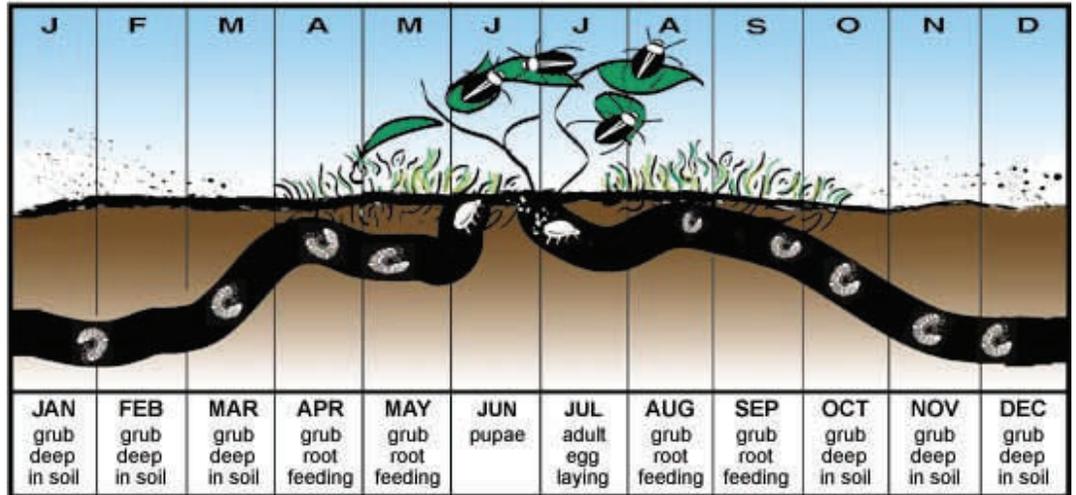
Keeping Your Lawn Free of Grub Damage

- **Plant the right grass:** Plant grasses that have deeper root systems, and resistance to heat and drought. Tall Fescue is known to be the most tolerant followed by Kentucky Bluegrass, Fine Fescue and Perennial Rye Grass
- **Keep your lawn on a 'water diet' during adult beetle activity:** Over-watering during adult beetle activity in summer will attract egg-laying females, especially if surrounding lawns are dryer. Your lawn should be able to survive on one inch of water a week (including rain water). An appropriately irrigated lawn will be more tolerant of feeding grubs.
- **Are beetle traps right for you?** Beetle Traps actually increase and attract larger numbers of females which then feed on surrounding foliage. Traps work better over larger land areas, such as a neighborhood. Get your neighbors involved if it is a regional problem.
- **Focus on Biodiversity:** Ants, parasitic wasps and flies are natural predators of grubs. Keeping your lawn full of flowering plants attracts many different kind of insects.
- **Don't Use Pesticides:** Keeping your lawn free of broad-spectrum pesticides will result in a lawn thriving with beneficial insects that may be natural predators to beetles & grubs.

Grub Life Cycle - A Story

White grubs are the lawn-damaging larvae of a large group of beetles called scarabs. Both as adults and as grubs (the larval stage), scarab beetles are destructive plant pests. Adults feed on the foliage and fruits of several hundred species of fruit trees, ornamental trees, shrubs, vines, and field and vegetable crops. Adults leave behind skeletonized leaves and large, irregular holes in leaves. The grubs develop in the soil, feeding on the roots of various plants and grasses and often destroying turf in lawns, parks, golf courses, and pastures.

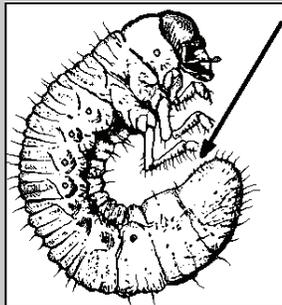
In June and July, adult beetles emerge from the soil to feed on flowering plants, fruit trees and other vegetation. After mating, they lay their eggs just below the soil. The eggs go through three stages before they emerge from the soil and start



the cycle all over again. The first two stages, from egg to 1st stage and 1st stage to 2nd stage, each last nearly three weeks. These stages are when the larvae, now known as grubs, are feeding the most and, if combined with summer drought weather, is when your lawn will show the most damage. The 3rd stage grub moves deeper in the soil once the weather gets cooler and will emerge from the soil in the following summer.

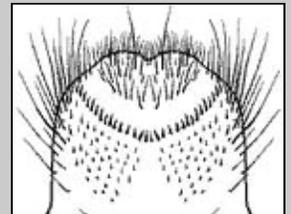
Know Your Grubs:

Most grub species can be determined by their raster, located on the underside of their abdomen. (see image at right) A 10x to 15x hand lens will help you to identify which grubs are chewing your lawn.



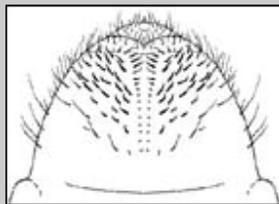
Asiatic Garden Beetle:

Crescent shaped raster. Adult beetles are a velvety brown and 1/4 inch long. They feed at night. Can be controlled with heterorhabditis nematodes.



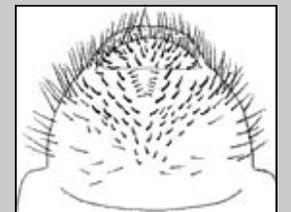
European Chafer Beetle:

"Y" shaped raster. Adults are a reddish-brown with darker head, 1/2 inch long. Can be controlled with heterorhabditis nematodes.



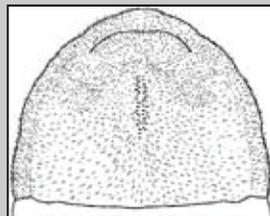
Japanese Beetle :

"V" shaped raster. Adult beetles are metallic green with copper colored wings and 1/2 inch long. Can be easily controlled with milky disease.



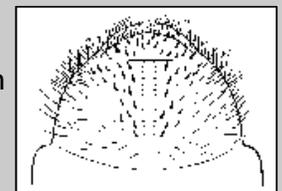
Green June Beetle:

Crescent shaped raster. Adults are velvety green and dull brown and can be 1-inch long. Insect parasitic nematodes steinernema and heterorhabditis can control them.



Oriental Beetle:

"Parallel" shaped raster. Adults are a metallic green with copper colored wing covers and 1/2 inch long. Can be controlled with nematodes steinernema and heterorhabditis



Thanks to the *NOFA Organic Lawn & Turf Handbook* for all the information on Grubs, species and life cycles.