



White Grubs

Only a fraction of the insect species teeming from your lawn actually causes damage. Even Low Risk or Allowed Pesticides can kill both beneficial and harmful insects. Natural lawn and garden care practices increase the health and pest resistance of your lawn, and should help eliminate the need for pesticides. Being aware of your lawn's needs through careful monitoring and responding correctly to these needs are essential actions in pest prevention. Diagnosis of pest problems should be a careful process, because what may initially appear to be insect damage may be caused by a variety of other factors present in the dynamic environment of your lawn.

Insect Identification

White grubs are the larval stage of the European Chafer, Japanese Beetle or June Bug. These common summer insects over winter in soil, and come up in May and early June to lay eggs. As eggs grow they transform into ½" to 1" (2 to 4 cm) long, C-shaped, plump, off-white larva. The Larvae have three pairs of legs located near a brown head. You'll find these grubs curled up near the first 3 to 6 inches of the soil.

Prevention

A deep rooted, healthy lawn will tolerate a few grubs. Annual, good horticultural practices such as: aerating, mowing high, de-thatching, and watering wisely will create a lawn that is insect resistant. Proper fertilization in the spring or fall, with a slow-release fertilizer is ideal to maintain a bug resistant turf. Adding compost (a slow release fertilizer) will increase the wealth of microorganisms in the soil, which help fend off turf predators. Fast release, nitrogen-rich fertilizers promote rapid plant growth. This provides a wonderful meal for grubs as they feast on tender roots. Yearly, overseeding with a mixture of grass seed will help maintain a vigorous lawn. Ryegrass, which contains endophytes, protect against above-ground insects. Kentucky bluegrass roots provide a gourmet delicacy for grubs and also have shorter roots, which are more sensitive to drought. Lawns with a diversity of plant life (e.g. include Clover), are more resistant to grubs.

Lawn Damage and Diagnosis

Grubs feed on grass roots, which causes patches of grass to turn brown and die. If the number of grubs increases, dead patches can spread across the lawn. Grub damaged grass feels spongy and pulls back easily because the roots are destroyed. Depending upon the type of beetle, grub damage occurs in spring and fall, but tends to be most visible in late summer and fall. Monitor for grubs before damage occurs – this best done in late May and mid-August. A good indication of grubs in your lawn is the secondary damage caused by birds, raccoons and skunks digging in your lawn for grubs to eat.

To check if your lawn has white grubs, cut three sides of a 12 by 12 inch square (30 x 30 cm) and 4 inches (10 cm) deep piece of sod. This is best done at the outer edge of the brown patches. Fold back, scrape off the soil, and count the grubs. A standard of about 10 grubs per square foot is recognized as an infestation. Some action may be needed. Less than this amount can be tolerated with little to no visible damage to your lawn.

Cultural Control

It is necessary to repair the lawn first to improve its health. Practice preventative horticultural techniques. De-thatch, aerate, top-dress with compost and re-seed with mixed lawn seed containing a variety of ryegrass and fescues.

Biological Control

Till the soil and leave open for a few days, allowing the birds to feed on the grubs. Then, top-dress with compost and re-seed. The common flicker likes to eat white grubs so encourage this and other birds in your neighborhood by planting native trees, shrubs and perennials.

Beneficial parasitic nematodes can effectively combat an infestation of white grubs. Nematodes are microscopic non-segmented worms that feed on lawn grubs. You can purchase nematodes and apply as per instruction on the label. Strains of nematodes available are: *Steinernema feltia*, *Steinernema carpocapsae*, *Heterorhabditis bacteriophora*.



This treatment is 95%-97% effective for grub control. Beneficial nematodes do not affect worms, birds, pets or humans. Nematodes travel through water in the soil and will die if they dry out, so it is important to keep lawn moist. If the thatch is more than ½" (1 cm) thick, de-thatch before applying nematodes so they can easily reach the soil. They start to work 48 - 72 hours after application.

Biological Control Treatment Frequency:

- Can be done in mid- May, and/or Aug./Sept.
- Treat twice a year for bad infestation
- The soil must be 15 °C or more before treating. They can be applied when soil is cooler but the nematodes will not be as active.

How:

Nematodes (with directions for use) come on a damp sponge in plastic bags. They must be kept cool until within 30 minutes of use to keep the worms in a dormant state. The package is purchased with a cool-pack. The cool pack should be wrapped so that the plastic bag does not come in direct contact with the pack. The bag can be kept in the fridge for up to 2 months if the sponge is kept moist (by adding a few drops of water when necessary).

- A pack contains 1 million that will cover 2000-3000 sq. ft. They also come in larger packs.
- Use a hose-end spray bottle, fill with water to intensity required (15 gals to 1 million) and jiggle the sponge around in the water. The sponge can be left in the spray bottle but be careful it doesn't block the spray mechanism. Rinse out the bag and add it to the bottle.
- Spray starting in the most infected area and move out from there. Cover the total area. They will penetrate only where they land on the ground via the water transport mechanism.
- Keep the jug agitated continually while spraying or all the nematodes will sink to the bottom and you will not get an even treatment.
- The spray must be used within 30 minutes of removing from refrigeration

Watering: The soil must be well soaked before applying nematodes as they need water for transport down to the root system. It is easiest to spray after a heavy rain, and grass is spongy to walk on. Water daily, for three days after application to keep the soil moist. Then water every five days to get good results. Remember, nematodes will die without moisture!

If you hire a lawn care company to maintain your lawn, ask what alternatives to pesticides they offer, or if they practice pesticide reduction/pesticide free strategies such as the cultural techniques mentioned above. Should you use pesticides yourself, read the label before use and follow the manufacturer's directions closely.

Practical Solutions for Problem Areas

For those areas that continue to suffer from leatherjacket infestation, consider ground covers instead of grass. Creeping juniper, wild strawberry, Ajuga, clover, pachysandra, sedums, daylilies, thyme, etc. require less maintenance, may be drought tolerant, are attractive and some stay green through all seasons.

If you hire a lawn care company to maintain your lawn, make sure they are aware of the City of Hamilton Pesticide Bylaw and ask which cultural techniques or low risk pesticides – "Allowed Pesticides" under the bylaw – they plan to use on your property. Should you use a low risk or allowed pesticide product yourself, read the label before use and follow the manufacturer's directions closely.

Call the **Yard Improvement Helpline** at **905-540-8787 ext. 18** for tips on natural lawn and garden care.
Visit www.naturallyhamilton.ca for links to the Ontario Pesticide Ban.