NATIONAL CEMETERY ADMINISTRATION
SED
Agronomic Information Sheet # 8

Elimination of White Grubs in Established Stands of Turfgrass

Introduction: The insect pests commonly referred too as "grubs" are technically the immature larval stage of several different species of beetles. They damage turfgrass stands as they feed on the roots of grass during their periods of active growth. This can occur during the spring and the fall and depends on which of the several species of beetle larvae are present in the soil. As a group, white grubs include the immature larval stages of Japanese beetle, European chafer, northern masked chafer, southern masked chafer, Oriental beetle and Asiatic garden beetle. In general, these species complete their life cycle in one year. Adults emerge from the soil, eggs are laid on or beneath the soil surface, hatch, and the larvae feed on the roots of turfgrass during its growing season, potentially causing extensive damage. Another group of white grub species complete their life cycle in 2 or 3 years and are the immature stage of the beetles referred to as May beetles or "June bugs". In the geography encompassed by SED, Japanese beetles, May beetles or one of the chafers are the most likely culprits to be encountered. With the insecticides available today for the elimination of these pests however, it makes little or no difference which specific species is present. The recommended products will control them all.

Control Strategies: The first step in developing an effective control strategy for these common insect pests, is determining whether the soil population of larvae is sufficiently large to warrant application of an insecticide. The presence of a few larvae per square foot does not constitute a population level high enough to cause significant turfgrass damage. At what level does this occur? The answer to this question varies with the nature of the turfgrass area. Golf courses would tolerate higher populations in their roughs than in their close cut fairways or putting greens. The turf in the cemeteries of SED can also tolerate higher white grub populations than a golf course fairway. Generally however, a white grub population in excess of 12 to 15 per sq. ft. would warrant an insecticide treatment. Periodic population counts should be made in areas with a history of previous grub damage, turfgrass bordering wooded areas where high levels of adult beetle activity have been observed, areas where turfgrass injury symptoms appear, in areas where significant mole activity is observed or where skunks or raccoons are seen digging up the turf in search of food.

Counts are best conducted by laying back a section of sod that has been sliced on three sides to expose the soil surface at the root soil interface of the turfgrass. This is best timed in late May or September when beetle larvae are most likely to be actively feeding near the soil surface. In order to get a more thorough accounting of all grubs in the area, prepare a solution of sudsy water and pour it over the entire exposed soil surface. This will drive any grubs not fully visible out of hiding and onto the soil surface.

Recommended Insecticide Treatments: Two approaches for the control of white grubs are in general use by turfgrass managers. The more common employs a moderately residual insecticide applied in a preemptive manner during the spring feeding period. This treatment will control grubs actively feeding then as well as exhibit sufficient soil residual activity to control any larvae that surface for feeding in late August through September. Two newer molecules are being widely used in this approach. Imidacloprid (Trade name Merit) and halofenozide (Trade name Mach 2) are both highly effective for controlling white grubs when used in this manner. Of course, application of these two products can also be made in late summer prior to the heavy fall feeding period of newly hatched beetle larvae. In situations where white grub populations have progressed beyond reasonable expectations of control from Merit or Mach 2 and a rescue treatment is warranted, the choice is trichlorfon (Trade names Dylox and Proxol). Trichlorfon is an organophosphate insecticide and as such should be handled with care to avoid any exposure to applicators or others. Of course as with all pesticides, proper storage, safe handling and application procedures must be adhered to at all times.

It is suggested that annual monitoring for white grub population levels become a routine part of the turfgrass maintenance operation at every SED cemetery property. Detecting and treating when populations warrant will prevent a serious build up to potentially damaging levels.