

TROUBLESOME TURF INSECTS: HOW TO LIVE WITH OR MANAGE THEM

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Lawn care is an industry that serves to provide aesthetic quality turfgrass that surrounds many of our living areas: homes, schools, industrial buildings, churches, parks, businesses, and cemeteries. One advantage lawns have over golf courses, in terms of insects, is mowing height. Grass on lawns is typically mowed to 1 or 1½ inches and is only mowed once per week. When turfgrasses are mowed at higher heights, many of these grasses can withstand more pressure from feeding insects. However, the trade-off between golf course turf and home lawn turf is that lawns often do not show insect damage until it is too late. There are five major insect pests of home lawns in the temperate United States: chinch bugs, sod webworms, bluegrass billbugs, Japanese beetles, and May/June beetles.

Chinch bugs are serious, but sporadic, pests of home lawn turf, especially perennial ryegrass, Kentucky bluegrass, red fescues, and bentgrasses. These insects have piercing/sucking mouthparts, which pierce stems and crowns and suck the sap of the grass plant. Injury first appears as yellowing, but will resemble drought stress or sun scald symptoms if populations reach high enough levels. Chinch bugs are most damaging in periods of hot, dry weather, often in late summer. These insects also prefer home lawns with thick thatch layers. Flotation is an effective method for detecting population size; vacuuming is also an option for monitoring chinch bug populations. Endophytic ryegrasses have been shown to be successful in reducing chinch bug damage in home lawns. Chemical control is most effective against peak activity of third-instar nymphs. Degree-day models are available for the hairy chinch bug.

Sod webworm is a primary pest of home lawns, particularly newly established lawns. Young larvae feed on leaf and stem tissues of the grass plant. As the larvae age, they chew off blades of grass and drag them into their tunnels to eat them. Often, damage is mistaken for disease – little brown spots of severely shortened grass. This damage shows up in late summer when sod webworm larval populations are at their peak. Soapy flushes can provide initial estimates of webworm populations. Webworm thresholds vary for differently managed lawns; high maintenance home lawns have lower thresholds than lawns maintained with less rigor. Insecticides provide adequate control for sod webworm, but they must be applied late in the day to be effective against the night feeding larvae.

Bluegrass billbugs are common pests of home lawns, but their damage is often mistaken for turf dormancy, white grub damage, or disease damage. The larvae of this weevil burrow into the grass stems and feed their way to the grass crowns. The stems are killed individually in this process, but if larvae are left untreated, the damage can result in large areas of dead turf in June and July. Preliminary damage can be detected by inspecting stems of the grass plant – they break off easily, and they are filled with billbug excrement, which closely resembles sawdust. This close inspection will prevent misdiagnosing the early stages of damage as dollar spot disease. Moderate fertilization and proper irrigation can reduce visible billbug damage. Resistant cultivars exist to prevent long-term billbug damage. Endophytes have also been shown

to be effective against billbug larval populations. Insecticidal control is effective if pesticides are targeted at feeding adults in the spring or at larvae with systemic insecticides later in the season. Nematodes have also shown some success in controlling billbug populations.

Japanese beetles are part of the white grub family that are common pests of turfgrass. Japanese beetles are key pests of both home lawns and golf courses. These classically C-shaped grubs feed on the roots of the turf – if populations reach extremely high numbers, turf can be rolled back like a carpet due to lack of anchoring roots. Wilt is the first sign of grub damage, but high numbers of larvae can result in the death of large areas of turf. Large populations can also attract mammalian pests, such as raccoons or skunks, which cause significant destruction of turf when feeding on the underground insects. Pheromone traps in conjunction with floral scent are useful to attract flying adult beetles, but these traps cannot reduce the overall level of beetles. Turf managers can use these traps to monitor incoming adult Japanese beetles. However, attractants can often lure insects into a particular area in which they may not have intended to land; therefore, trapping is not recommended for home lawn use. Counting the number of grubs in one square foot and relating those numbers to a provided threshold is an effective method to monitor insects. Grass under no stress can tolerate 10-15 grubs per foot while stressed grasses show grub feeding at much lower thresholds. Chemical applications are the standard method of control of Japanese beetle grubs. Newer products that are applied at time of oviposition have reduced the population of grubs significantly. However, applying pesticides early in the season with no predictive knowledge of future insect populations is a recipe for insecticide resistance. A naturally occurring wasp, *Tiphia vernalis*, has been shown to reduce the numbers of grubs in the soil, but more research is needed to verify these preliminary findings. *Bacillus popilliae*, milky spore disease, is a bacterium that infects feeding grubs, but these spores have been difficult to establish in the field. The nematode species, *Heterorhoaditis bacteriophora*, also shows promise for future Japanese beetle larval control.

May/June beetles are other members of the white grub family. Many species of *Phyllophaga* reside in the United States, but only larvae of a few species cause significant turf damage. These large grubs feed on the roots close to the turf surface, which results in more severe damage than if the grubs fed on lower portions of the grass roots. These insects have a one to four year life cycle depending on the species. Therefore, these pests can potentially damage a single lawn for as many as two years with a full season of feeding in the second year. Monitoring techniques for May/June beetle larvae are similar to Japanese beetle grubs, but threshold levels are lower due to the large size of the larvae. Insecticide treatments applied for *Phyllophaga* control are similar to Japanese beetle as well, but proper timing depends on the life cycle.