



Damage caused by insects like the hunting billbug can open the door to other pest invasions like diseases and weeds.

Insect Damage Allows Other Pests to Thrive

By Doug Richmond

Too often, turf managers will point a finger at weeds or poor fertility when turfgrass starts to look bad. In many cases, however, these outward signs are only symptoms of a much less obvious problem — root-feeding insects.

It is important to remember that the foundation for insect management is built on cultural practices that promote healthy turfgrass plants. Healthy plants are more tolerant of insect feeding and are better able to recover from damage.

Proper turfgrass species and cultivar selection, mowing height, fertility, and water management can all decrease the likelihood that insect pests will cause noticeable damage in the first place. For instance, there is strong evidence that proper fertility management can have a disproportionate influence on plant susceptibility to insects, diseases and other environmental stresses. Overfertility or poorly timed fertility can reduce root growth, making plants more vulnerable to drought and damage by root-feeding insects. Excess fertility can also promote the growth of succulent tissues that insects and diseases favor. On the other hand, soil insects can also be at the root of problems that are not so obviously related.

Although root-feeding insects can reduce the vigor of turfgrass plants, only rarely do we make the connection between this damage and other ensuing problems such as diseases or weed invasions. In fact, we tend to think of weeds, insects and diseases as separate and independent concerns in turfgrass management. To a large extent, our approach toward research and extension reflects this thinking. However, most biologists would admit that there can be a great deal of interdependence among these different components, even if the connections aren't always obvious.

A turfgrass manager who relies on his/her biological knowledge to solve pest problems will have a broader view of how turfgrass systems work and will be more likely to make proper diagnoses.

When turfgrasses are attacked by insects such as billbugs or white grubs, their ability to compete with encroaching weeds is compromised. Worse yet, when turfgrass plants die as a result of insect damage, the new occupant of the formerly turfgrass-covered site will likely be a weed.

In a recent study, I watched weed invasions into stands of Kentucky bluegrass suffering from different levels of billbug damage. At the undamaged site, few weed seedlings were ever present,

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QUICK TIP

Tax advantages abound in 2004 for golf courses acquiring capital equipment. Check with your course owner or controller to see if the Jobs and Growth Tax Relief Reconciliation Act of 2003 has been evaluated and if there is an opportunity to take advantage of this year's special tax incentives to acquire new equipment.

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and none of these weeds were able to establish. However, at the site where moderate billbug damage was apparent, weeds became a significant problem.

What would be the normal course of action for a turfgrass manager under the previous circumstances? Billbug damage, for example, is often misdiagnosed as dormancy, drought stress, or soil compaction, so it may be easy to overlook a billbug problem. An effort could be made to relieve suspected soil compaction through aeration or to irrigate to revive the turfgrass. However, neither of these measures will completely solve the problem.

I suspect that most of us would reach for the herbicide to get rid of the encroaching weeds, and this would most likely be effective over the short term. Unfortunately, the herbicide will have little effect on the billbugs, which are likely to be a chronic problem. So year after year herbicide applications may be made to an ever-enlarging area, but this will only be treating the symptoms of the problem. The tug-test would have quickly revealed the billbug infestation, and a one-time insecticide treatment would have significantly reduced billbug numbers.

Because billbugs are slow to migrate into new areas, another application would likely not be needed several years. Without the billbugs, the turfgrass would be vigorous and weeds would likely not be a problem.

The previous example is only one in a long list of cases where our one-at-a-time, separate-and-independent management philosophy lacks efficiency. For instance, notable increases in the severity of rhizoctonia have been associated with mole cricket infestation in the South. Root-feeding insects may also compromise the ability of plants to outgrow the symptoms of foliar diseases. Although above-ground feeding insects like cutworms and armyworms can also affect plant performance, grasses are generally well-adapted to the periodic removal of above-ground tissues.

Due to a number of adaptations, including placement of the meristematic zone close to the soil surface and storage of nutrient reserves in underground tissues, grasses can quickly replace foliage as long as basic resources are available. Root-feeding insects, however, impose a different suite of pressures on plants that may have more serious effects than leaf feeding. Root-feeding insects can influence plant growth, biomass production and nutrient status, and may alter the nutrient profile of the rhizosphere. As a result, proper management of root-feeding insects can have dramatic effects on overall turfgrass quality. Keep in mind that these out-of-sight, out-of-mind insects are easy to overlook. It's important to understand that other pest management concerns, such as weeds and diseases, may be more closely linked to their presence than commonly recognized.

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