

INSECT IDENTIFICATION AND MONITORING TECHNIQUES

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Before a turf manager can control a turf insect problem, he or she must be able to identify the insect which is present and determine whether the insect is present in large enough numbers to cause visible damage. Identifying insects is usually a bit easier than identifying diseases, because most of the insects are large enough to be seen without a magnifying glass. Even so, there are some “tricks of the trade” which should help a turf manager to identify turf insects.

One of the simplest sampling techniques involves getting down on your hands and knees and looking closely at the turf surface. Some insects can be seen moving about the turf surface, especially on sunny days. Fruit fly and annual bluegrass weevil (*Hyperodes weevil*) adults can be seen running about on the surface on hot days in mid summer. Chinchbugs can often be disturbed into moving just by moving your hands lightly across the turf surface.

A soil sample can be used to determine whether any white grubs are present in the area. Use a shovel or garden spade to cut three sides of a square (6 to 12 inches on a side), and flip the sod back on the fourth side of the square, revealing the soil underneath. Use a hand trowel to dislodge the soil at the thatch/soil interface and to break up any clumped soil in the top three or four inches of the sample area. Any white grubs will be dislodged readily. Grubs are cream colored and vary in size from 1/8 inch to 1 inch long, so usually are quite noticeable against the dark soil background. Toss the grubs into a small dish or pan and count them after you have completely inspected the cut area.

A cup cutter can be used as an alternative sampling tool. The standard golf course cutter (4.25 inch diameter) has an area of 0.1 square foot, which makes conversions to “insects per square foot” very easy—just multiply your count by 10. In addition, the sample cores seem to heal more quickly than larger squares, especially when conditions are dry. Soil samples can be used for a variety of grubs, including Japanese beetles, European chafers, masked chafers, oriental beetles, and black turfgrass *ataenius*.

Another simple turf insect sampling technique is the “flotation” technique. Take an empty coffee can (or another can of similar dimensions), remove both ends of the can, and insert one end of the can into the turf to a depth of about two inches. Fill the can with water and wait for about five minutes. Any insects which are inside the sample area will float to the surface of the water and swim about on the surface, at least for a few minutes. This technique is particularly useful for sampling for chinchbugs.

The main drawback to this sampling technique is that the thatch which is common in cool season turfgrass settings often makes it very difficult to insert a can through the thatch. An alternative approach is to use a cup cutter to cut a sample core, place the core in a bucket, and fill the bucket with water. The end result is the same—insects are driven out of the thatch and to the surface of the water, where they can be counted.

A third sampling technique is known as an “irritating drench.” Combine about two tablespoons of a lemon-scented dish detergent in about two gallons of water, stir it up so the mix is “frothy,” and pour the contents over an area of turf about two feet on a side. Any caterpillars or earthworms in the area will be irritated and forced to the surface, where they can be counted. This technique is particularly useful for cutworms or sod webworms, particularly because these caterpillars are normally active at night and well hidden during the daytime. The caterpillars normally will come to the surface within three to five minutes after the soapy water has been poured on the turf. Note that the soapy water can act like a magnifying glass on hot sunny days in mid summer, so after you have counted the insects in the sample area, rinse the area with straight water to dilute the soap and reduce the chance of burning the turf.

Insect traps can also be useful for monitoring adult activity. Some traps use attractive lures to attract one or both sexes of a particular species. For example, commercial Japanese beetle traps usually include a sex lure which attracts males and a floral scent which attracts both sexes. Gypsy moth traps use a sex lure which attracts only male moths. These kinds of traps can be useful in determining when particular events occur—first flight, heaviest flight, and so on. Normally, however, these traps cannot be counted on to control insect populations.

Many turf insect adults are attracted to lights at night, so black light traps also can be used to attract those night flyers. Cutworm and sod webworm moths can be attracted to black light traps. Again, the traps should be used to note the date of peak flight, which can in turn be used to predict the best time (date) to apply a biological or chemical control material.

There are several techniques which can be used to monitor insect activity in turf. The ones discussed here are the principle techniques with which cool season turf managers should be familiar. Regular monitoring will enable a turf manager to keep track of insect activity, diagnose problems in a timely manner, and optimize his control efforts.