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College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana - Champaign
Illinois Natural History Survey, Champaign

NEWSLETTER

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INSECTS

True White Grub Damage

We have had several reports of scattered grub damage, particularly in northeastern and central Illinois. Some of these reports have been verified as true white grubs. Reports have mentioned counts as high as eight to ten grubs per square foot, enough to cause heavy root pruning and turf browning. In other areas, turf managers are seeing mainly skunk, raccoon, and bird damage. This type of wildlife damage occurs at grub levels of three to five per square foot.

True white grubs belong to the genus *Phyllophaga*. This genus contains many species that vary in appearance as well as life cycle length. True white grubs are also known as three-year white grubs because several species have a three-year life cycle. However, there are other species of true white grubs with longer and shorter life cycles. The most common species that are important to turf in Illinois have three-year life cycles and emerge in the spring as adults that are about one inch long and dark to reddish brown.

Earlier this spring, we had a large emergence of these beetles. They feed at night on the leaves of oak, crabapple, ash, and other trees. Because they feed as adults, eggs are laid over a period of several weeks. This results in some larvae being much larger than others, a characteristic recently reported by turf managers.

The grubs feed on roots all summer, go deeper in the soil for the winter, and return to the root zone in the spring to feed for another summer. They do this for two cycles, until mid-summer of their third year. They then pupate in the soil, becoming adults in early fall but staying underground throughout the third winter, emerging the following spring. These grubs are responsible for the sighting of large grubs in the soil at various times during the growing season.

Types of grubs can be differentiated by looking at the raster pattern, a series of thickened setae or fine spines on the underside of the last abdominal seg-

ment. Annual white grubs (*Cyclocephala*) have no distinct pattern, Japanese beetle grubs have a V-shaped pattern, and black turfgrass *Ataenius* have two padlike structures rather than spines. True white grubs have two parallel rows of spines that may be long or short, and stay parallel or fan out posteriorly or anteriorly. Even if the spine rows fan out, they are parallel for much of their length. The patterns of these parallel rows of spines and the number of spines in the rows are used to help identify individual species of true white grub.

If grub numbers are high and enough damage is occurring to warrant control, use a shorter-acting insecticide such as bendiocarb (Turcam, Intercept), trichlorfon (Dylox), or diazinon. Treatment at this time with bendiocarb or diazinon may also control annual white grubs; if that type of grub is numerous and you use trichlorfon, the treatment will need to be repeated. In either case, scout for annual white grubs in early August in areas where you have to treat now for true white grubs. It is still too early to treat with any of these insecticides and be certain of a high level of control. (*Phil Nixon and Tom Voigt*)

Annual White Grubs

Earlier we reported a peak of southern masked chafer adults at The Morton Arboretum the last weekend of June. Another huge number occurred there on July 7, when we normally expect this insect to emerge in northern Illinois. We will have to observe how long these beetles are present before predicting when larvae will have hatched. Last year, we had an extended emergence of these beetles in northern Illinois, with adults emerging late and being present over a six-week period. Because these beetles don't feed as adults, they die about two weeks after emergence.

Degree-day and plant phenology has been running about two weeks ahead of a normal year throughout this growing season at The Morton Arboretum in northeastern Illinois. Along the lakefront, the Chicago Botanic Garden measurements have indicated that they are about two and a half weeks ahead of normal.

In central Illinois, we have been about one week ahead of normal.

In central Illinois, the adult annual white grubs appear to be declining. Their appearance is spotty, being heavy in some areas and light in others. This is why it is important for you to observe on your own as well as refer to these reports. (Phil Nixon)

Scouting Report

Japanese beetles are spotty throughout central and northern Illinois—high numbers in some areas, much lower in others. In northern Illinois there are some areas of low populations where there were heavy numbers last year. Possibly there are more beetles yet to come, but the combination of the calendar and the earliness of other occurrences makes it likely that most of the emergence is over. In central Illinois, Japanese beetles are quite numerous in some areas, but feeding is already starting to decline. Typically, these beetles are present for about six weeks.

Earwigs continue to be very numerous. They have been reported in Knox County, a new area for them. High numbers are reported in Lake County, LaSalle, Peoria, and Rockford. These insects appeared first in high numbers in Rockford three to four years ago. Usually, earwigs are very numerous for the first four years or so in a new area, then their numbers decrease. From these data, it appears that the earwigs are moving progressively west through the state. Most of the Chicago area first had heavy numbers in the 1980s.

Mimosa webworm will be entering the second generation throughout most of the state, so keep an eye on honey locust trees. Second-generation moths tend to lay their eggs into first-generation damage, so check for new, young larvae in areas with brown leaflets webbed together. This second generation will web together three to four compound leaves and feed on them, turning them brown. Scouting at this time and treating where needed will prevent heavy damage from occurring later.

White-marked tussock moth, yellow-necked caterpillar, walnut caterpillar, and other **caterpillars** are commonly numerous on deciduous trees at this time of the season. A whitish leaf may indicate a developing infestation. The moths of many caterpillars lay their eggs in clusters. The hatching caterpillars feed on the lower leaf surface and leaf interior, leaving the upper surface intact. This upper surface is whitish and is easily noticed. Close inspection is likely to reveal many small caterpillars. Ignored, these

caterpillars are likely to eat all the leaves of two or more large branches. Although this damage is not life-threatening to a healthy tree, it does cause considerable aesthetic damage. Control at this stage is as easy as plucking the infested leaf and dropping it on the ground several feet away from the tree. (Phil Nixon; Bruce Spangenberg, Extension Educator)

PLANT DISEASE _____

Bacterial Leaf Spot of Stone Fruits

If you have not seen this disease yet in 1998, you are probably in one of the dry areas of the state. Bacterial leaf spot is caused by a bacterium (*Xanthomonas*) that thrives in rainy June and July weather. It infects peach, nectarine, almond, apricot, plum, prune, and cherry. Illinois may not have high numbers of these species, but there are many ornamental equivalents (for example, flowering cherry) that also host this disease. Bacterial leaf spot is also known as bacterial shot-hole.

Numerous small spots (pinprick to 1/5 inch) form in the leaves. This stage often goes unnoticed. These spots are circular and watersoaked, but soon enlarge to become angular and deep purple to rusty brown or black. The centers of the spots often dry and tear away, so you may see this only as a shot-hole appearance or even a wind-tattered effect. Infected leaves turn yellow and drop early. Symptoms resemble nitrogen deficiency, but fruit specialist Dr. Steve Ries points out that whereas nitrogen deficiency usually causes the holes to be concentrated near the midvein on the leaf, bacterial blight causes scattered spotting. The bacterial spot bacterium also attacks twigs and fruits, reducing fruit quality and yield or reducing aesthetic appeal, in the case of ornamental species.

Some peach cultivars have resistance to this disease. Most apricot varieties are susceptible, as are many nectarine varieties. Some resistant cultivars of peach are listed in *Report on Plant Diseases* No. 810, Bacterial Spot of Stone Fruits.

Bacterial leaf spot can be managed by using balanced fertility practices and pruning the trees to improve air circulation. This makes conditions less conducive to disease development. (Nancy Pataky)

Iris Leaf Spot

This fungal leaf spot pathogen has gone through some name changes over the years. Probably the most common name for this pathogen is *Mycosphaerella*.

To make things even more confusing, the disease may infect iris, daylily (*Hemerocallis*), freesia, gladiolus, and narcissus.

Iris leaf spot occurs primarily on the leaves, but may also infect stems and flower buds. Small, water-soaked lesions develop rather rapidly into 1/2-inch-long spots with brown centers and yellow margins. These eventually merge to cause streaks of necrotic tissue with yellow to brown borders. The presence of olive-brown spore masses in the center of the spots help confirm this fungal disease.

Most leaf spot diseases do not kill the host, but they weaken the plant, cause aesthetic loss, contribute to general decline, and—in the case of iris—cause premature leaf death, which weakens the rhizomes or bulbs.

Since the fungus overwinters on plant debris, it is important to remove leaf and flower stalk debris in the fall. The fungus spreads during the summer by splashing or blowing from diseased to healthy leaves. For this reason, infected leaf tissue should be removed as it occurs. Also, space plants to promote good air circulation, avoid overhead watering of foliage, work with plants only in dry weather, and use more resistant species. The many fungicides registered for use against this disease are all preventive sprays. It is too late to use them this year, but you may want to consider them for 1999. Consult the *Illinois Homeowners' Guide to Pest Management* if fungicides are to be used. For more about iris leaf spot, see *Report on Plant Diseases* No. 628. (Nancy Pataky)

Crown Gall

In Illinois, crown gall is probably most common on creeping euonymus, grape, raspberry, and rose, though it may occur on hundreds of plants, as described in *Report on Plant Diseases* No. 1006. This disease is caused by the bacterium *Agrobacterium tumefaciens*. It appears as galls or overgrowths on the trunk, crown, roots, and sometimes stems. Galls are initially white or tan, more or less round, soft and spongy, and possibly two inches or more in diameter. As galls age, they turn dark brown and develop an irregular, convoluted, rough, corky surface and a hard, woody interior. To distinguish crown gall from an insect gall, cut it open. Crown gall shows a mass of undifferentiated tissue. Insect galls have compartments or small capsules where insects grow and develop.

The causal bacterium survives for many years in the soil and is easily spread in soil, water, or rain splash. The bacterium penetrates plants only through fresh wounds, such as those incurred by pruning, cultivating, transplanting, budding or grafting, or even by feeding of insects and other pests. A dog walking across a euonymus bed can cause enough wounding to provide infection sites. The disease interferes with the transport of water and nutrients, which makes infected plants stunted, weak, and more susceptible to winter injury.

Control of crown gall is difficult. Pruning galls is not helpful—it only provides more wound sites for possible infection. Begin by digging and destroying all severely infected plants. Do not replace them with a susceptible species; the soilborne bacterium will infect new plants. Also, before purchasing plants, inspect them for galls. Try to help plant vitality by watering in periods of drought and fertilizing in the fall with a balanced fertilizer. (Nancy Pataky)

Black Knot

Black knot is a rather ugly disease, but one that can be controlled with pruning and fungicide applications. The causal fungus, *Dibotryon morbosum*, can infect at least two dozen species of cherries, plums, and other members of the *Prunus* genus, including some ornamental species. The problem is quite common in the northern part of Illinois, but we do not often see it downstate. I don't think this has to do with the natural range of the disease as much as the greater number of intensely landscaped areas near the larger cities.

Black knot causes elongated, rough, girdling, black swellings on twigs, branches, and sometimes even the trunk. The knots are a velvety olive green in the spring when sporulation occurs. They gradually become hard, brittle, and coal black. If stems become girdled, dieback is evident. The trees gradually weaken and may die unless effective control measures are taken.

Purchase only disease-free nursery stock. The older, black knots represent at least two years of growth. Never buy trees with visible knots or abnormal swellings on the twigs and branches. Look for this disease in its early stage: light brown swellings that later rupture the bark and turn darker.

Most infections occur between budbreak and two weeks after bloom if wet conditions are accompanied by temperatures of 55°F to 77°F. For effective protection against this fungus, fungicide sprays should be

applied as soon as buds open and must be continued every two weeks until about three weeks after petals fall. Early-season fungicide sprays do much to prevent new infections but will not stop infections that are already present—in this case the fungicides are protectants, not cures. The only product we can recommend for homeowners is copper. There are many formulations of copper, so read the label carefully to be sure the formulation you choose is registered for use on your species and for use against the black knot fungus. Registered chemicals are listed in the *Illinois Commercial Landscape and Turfgrass Pest Management Handbook, 1998–1999*.

Besides spraying with fungicide in the spring, you must prune all visible knots to remove old infections. Do not prune now. In late winter, or early spring before tree growth starts and as soon as new knots appear, prune and burn (or bury) all infected wood. Make cuts four to eight inches behind any obvious, black-knot swellings. Knots on the trunk or on large limbs should be carefully cut out with a knife and chisel, removing about an inch of healthy bark and woody tissue beyond any visible gall tissue. If pos-

sible, burn all available wild, neglected, or worthless plum and cherry trees.

For more information concerning this disease, consult *Report on Plant Diseases* No. 809, Black Knot of Plums and Cherries. (Nancy Pataky)

Home, Yard and Garden Pest Newsletter is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.

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