



UNIVERSITY OF ILLINOIS EXTENSION

HOME, YARD & GARDEN PEST

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NEWSLETTER

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PLANT DISEASES

White Pine Decline Evident

The word “decline” is frequently used to label a disease situation in which many factors are involved to cause slow deterioration of plant health. Decline also indicates a situation in which we cannot pinpoint one factor or pathogen as the cause of the problem. White pine has its decline disease, appropriately named white pine decline. The unseasonably warm temperatures in early spring and recent dry spells in much of the state seem to have helped intensify symptoms on trees with this problem.

White pine problems seem to be present throughout the state, especially in central and southern areas. Symptoms vary but generally include some pattern of needle yellowing or browning, small needle size, stunted growth, sparse foliage, shriveled bark on branches or trunk, sap exudate on branches, and, in some cases, death of the tree. Affected trees have ranged in size from 2 feet to more than 20 feet, indicating that trees of any size could be affected.

White pines as understory trees thrive in the cool, moist, well-drained soils of Wisconsin forests. They grow with intermittent success in Illinois landscapes. Many of the problem trees we have seen in Illinois are situated on clay sites or exposed to the elements (planted in new housing developments or used as wind-breaks). It is likely that site stress has contributed to the decline of these trees. Both flooding and drought can add to the problem, causing additional root injury.

Of the many white pines examined over the years at the Plant Clinic, the common factor seems to be root decline. Few live, fibrous, white roots have been found on white pines in decline; and in most cases, fungal pathogens have not been found. The healthy roots have many fibrous roots that hold onto the soil. Roots may be in decline for many reasons. Some factors contributing to white pine decline include clay or poorly drained soil, compaction, heat stress to roots, drought, flooding, deep planting, girdling roots, and sudden extremes in temperature and moisture. Pines prefer acidic soil, so the high-pH soils in Illinois may also be part of this complex. In a few cases, oozing sap near the soil line has been associated with *Procerum* root rot, a root decline

caused by a weak pathogen known to invade stressed trees.

Often, trees with white pine decline do not recover. Because there is nothing infectious in these trees, waiting to see if the trees recovers does not jeopardize the health of nearby white pines. Watering helps (except in cases of flooding stress), as does the use of natural mulch (such as shredded bark) over the root system. Still, without adequate root mass, plants cannot use the available water quickly enough to replace what is used by the foliage. The result is sudden browning or off-color needles and death of branches. (Nancy Pataky)

Creative Disease Management

One of the most common disease problems in Illinois landscapes is Diplodia blight. The name started out as Diplodia blight, was changed to Sphaeropsis blight for about 20 years, and is now Diplodia blight again. The disease is easy to spot in the landscape. It causes needles at the tips of branches to turn brown and die. The canker phase of the disease can cause some unsightly branch oozing and may kill the infected branch. There are articles about this disease every year. For more information, consult the *Report on Plant Disease*, no. 625, “Sphaeropsis Blight or Diplodia Tipblight of Pines,” available on the Web at <http://www.ag.uiuc.edu/~vista/horticult.htm>.

Management of this disease is difficult. Removing infected branch tips helps. Because the fungus may be found on the cones, raking and removing them from the site helps reduce fungal inoculum. It has been shown that drought-stressed pines are more susceptible to infection, so another cultural control is to provide water to your pines in periods of extended drought. For many of us, that means watering now. Fungicides are also an option when used as preventives to protect new growth. Consult the Illinois *Commercial Landscape & Turfgrass Pest Management Handbook* or the *Home, Yard, and Garden Pest Guide* for options; the books are sold online at <https://PubsPlus.uiuc.edu/>. Chemical control requires three sprays per year and can become quite costly, especially on large trees. In addition, trees may be infected before they show symptoms.

Many landscapers have begun to work with this disease problem rather than try to eradicate it. We all know

there is no ideal tree. Why not keep your pines, manage the disease as well as you can, and still plan for the future? For example, young firs can be planted under a line of declining Scotch pines with *Diplodia* blight. As the Scotch pines become thinned out, the younger trees get more sun and room to grow. Eventually the firs replace the Scotch pines, but the row of trees remains. It is best not to put all your eggs in one basket. Plant a diversity of species. If a disease or insect problem develops, it is less likely that all trees will be affected.

The concept of planting replacement trees near declining trees can be used with other diseases as well. First, determine whether your plant has a disease that is a threat to nearby trees. For instance, a tree with Dutch elm disease needs to be removed to protect other nearby elms. If the disease is not a threat to other trees, consider the management options. Not all diseased trees have to be removed; and chemicals are not always the answer. Devise a plant that is best for you, your plants, and your neighbors' plants. Be creative. (*Nancy Pataky*)

Quince Rust on Hawthorn

This disease was discussed in issue no. 1 of this newsletter. Quince rust, also called cedar–quince rust, is the most damaging of the *Gymnosporangium* rusts. It causes galls on stems, kills fruit, and may kill leaf petioles. Cedar–quince rust has two hosts. The telial stage of the fungus is found on junipers, including red cedars, causing little damage and usually requiring no action. The aecial stage is found on many rosaceous hosts, the most important landscape host being hawthorn. It might also appear on cotoneaster, quince, serviceberry, and mountain-ash in our area; but it seems to cause the most damage on hawthorn.

This spring has been so hot and dry that foliar and stem diseases have been fairly mild in much of the state. Hawthorns, however, are still showing infection by cedar–quince rust. If you see infection on hawthorn fruit with very few associated leaf rust pustules, then cedar–quince rust is the probable disease.

Why are we seeing this disease when it seems so little else is affected this year? There are several possible reasons. The fungus overwinters as telia on junipers. In the spring, these telia germinate within a few hours to form basidiospores that infect hawthorn. The basidiospores are blown to the hawthorn host at the time succulent new growth is present. These basidiospores need only 2 hours on wet leaves to germinate. So it takes only an overnight period of wetness when telia are mature for an infection to develop. Additionally, the aecial stage can overwinter on hawthorn cankers. This means spores are present in springtime as growth resumes. The aeciospores can be released in rain or in dry air. This seems to be a fungus that will be around for a while, rain or shine. (*Nancy Pataky*)

INSECTS

Bagworm

Bagworm hatched early this year in Illinois. Typically, egg hatch occurs in central Illinois in mid-June, but this year they hatched in late May. Last year, they hatched in early June. Bagworms are hatching in northern Illinois at this time, a couple of weeks earlier than usual.

Bagworm eggs overwinter in the old female bags hanging on the tree. After hatching, the tiny caterpillars crawl out the lower tip of the bag. Although about only 1/8 inch long, they each form a cone-shaped silk tent around their body and stick pieces of leaf or any other material that they can find on the outside of the silk tent.

For about 2 weeks, they repeatedly climb to the top of the tree or other object, spin out a 2- to 3-foot-long strand of silk, and hang there until a gust of wind blows them off of the tree. This ballooning is the main way that populations spread, as the female is wingless. During this ballooning period, the caterpillars cause window-feeding damage to foliage. The caterpillars eat away one epidermis and the mesophyll of the leaf, leaving the other epidermis intact. These whitish areas of the leaves soon turn brown. Because the larvae are still small, they don't eat very much, causing very little damage.

When they cease ballooning, they settle down to feed in earnest, eating the leaf margins or holes in the middle of the leaf. On needled evergreens, they eat one needle after another from the tip back to the base. Settled bagworms have 1/4- to 3/8-inch-long bags and grow larger from there. Typically, they start feeding at the top of the tree and work their way down. They feed on a wide range of trees, as one might suspect, because the larvae have to feed on whatever tree the wind blows them onto. Needled evergreens—including spruce, arborvitae, eastern white pine, eastern red cedar, and other junipers—are the most severely damaged because defoliated branches or trees usually die. They also feed on broad-leaved hosts, including oak, crabapple, maple, and honey locust; but damaged branches releaf.

Each bagworm finally reaches a size of 1 to 1-1/4 inches inside a full-size bag. It then pupates and becomes stationary. As long as the caterpillar is feeding, it attaches fresh bits of green foliage to the top of the bag. If a bag has no green foliage on it, the larva inside has probably pupated or died. The winged male (moth) emerges in a few days, but the adult female is wingless and remains within her bag for the rest of the summer. There is one generation a year.

To control bagworms, remove the overwintering large bags, until the eggs hatch in the spring, as they are filled with eggs. Dispose of these bags in a place that will not allow the larvae to escape back to the foliage once they hatch (do not just drop the bags on the ground).

Control bagworms once the young caterpillars have quit ballooning and settled down to feed. This has occurred in southern and central Illinois. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide), spinosad (Conserve), cyfluthrin (Tempo), and other pyrethroid insecticides are the most effective. As the caterpillars grow larger, they become harder to control. If the bags are 1 inch long or larger, Btk may not be very effective. Older chemical insecticides such as malathion, carbaryl (Sevin), chlorpyrifos (Dursban), and diazinon are not very effective once the bags reach 1/2 inch long. Chlorpyrifos and diazinon are no longer labeled for landscape use. Once pupation has occurred and the bag has become stationary, chemical control is ineffective. (*Phil Nixon, Morton Arboretum*)

Sod Webworm

Sod webworm moths are common around lights. If the current dry spell continues, we may be seeing sod webworm damage in nonirrigated turf in a few weeks. Now is the time to be looking for the moths and considering treatment.

Sod webworms are usually a serious pest problem on nonirrigated turf in Illinois during seasons of drought. The larvae are very susceptible to diseases, particularly under cool, damp conditions. These conditions occur often enough in Illinois that outbreak numbers usually do not occur. Several species of sod webworms occur in Illinois. The most common is the larger sod webworm, the species primarily discussed here. Other Illinois species of turfgrass-feeding webworms appear similar but may be slightly different in size and may prefer some turfgrass species to others.

Sod webworms overwinter as larvae in the thatch. Sod webworm larvae are slender caterpillars that are grayish to tan and covered with brown spots. They construct a silk-lined burrow in the thatch, where they hide during the day. At night, they leave their burrow to feed on grass blades. They cut individual grass blades within 1/8 inch of the plant's crown and take many of the blades back to their burrow to eat. Fully grown, 1-inch-long caterpillars pupate in their burrow, emerging later as adult moths.

The adult moths are tan, about 3/4-inch long, with a wingspan of about 1 inch. The palps on the front of the head are elongated, giving the moth the appearance of having a long snout. When at rest, the wings are held tightly against the body so that the body appears tube-shaped; these moths are commonly called tube moths or closed-wing moths. They sit in the turf during the day. When disturbed, the moths rarely fly higher than 5 or 6 feet above the turf and fly in a jerky up-and-down manner before settling back into the turf within 30 feet of where they were disturbed. If a moth is approached

slowly and quietly, it can be observed at rest, typically sitting crosswise on a grass blade. The above characteristics can be observed and the moth identified.

The moths mate, and females drop eggs into the turf as they fly closely above it. Within a couple of weeks, the eggs hatch into larvae. There are usually three generations per year in Illinois. Overwintering larvae emerge as adults from late May to mid-June, with the second generation present as moths from late July to mid-August. The third generation will be present as moths from late August to September or even October, depending on the year. These moths lay eggs that hatch into the overwintering larvae.

Damage appears as scattered brownish areas of turf, with these areas combining into large brown areas later. Close examination reveals firmly rooted turf that appears brown because many of the grass blades are missing and the thatch is exposed. Close inspection of the crowns of the turfgrass plants reveals very short stubs remaining from green grass blades eaten off by the sod webworm larvae. Green, pinhead-sized, fecal pellets will be easily seen at the base of the plants. Damage may occur from spring into fall but is most common in midsummer. Areas of turf that have turned brown due to hot, dry weather should be checked frequently for sod webworms. It is common in Illinois that some of these areas will fail to green up with subsequent rainfall or irrigation due to sod webworm attack.

Scouting for sod webworms can be accomplished through several methods besides observing damage signs. Probably the most common method of scouting is to observe when sod webworm moths are present in large numbers in turf areas. Through turf maintenance such as mowing or fertilization, the moths fly up and are easily recognized by their jerky, short flights. Note heavy numbers on the calendar, and plan to scout for larvae or treat with insecticide about 2 weeks after large numbers of moths are seen. Because the moths in the turf lay eggs that take 2 weeks to hatch, a treatment after egg hatching effectively controls a large population before they cause meaningful damage. If the weather is cool and damp, scouting for larvae is recommended before treatment occurs because insect development may be slow and diseases kill many of the larvae.

Insect-feeding birds, particularly starlings, feed heavily on sod webworm larvae in turf. The presence of starlings and other birds in large numbers on turfgrass areas for several days in midsummer is a clue that they may be feeding on sod webworm larvae. Close examination of the turf reveals holes (poked into the turf by beaks) that are 1 to 2 inches deep and almost 1/2 inch in diameter. Further turf examination should reveal sod webworm feeding damage or frass.

Although sod webworm larvae are difficult to locate in the thatch, they can be brought to the surface where

they can be easily seen and counted. Irritating drenches of 1 teaspoon of 6 percent pyrethrin (or 1 ounce of liquid dishwashing detergent per gallon of water) applied to 1 square foot of turf drives out the sod webworms. Two or more sod webworm caterpillars per square foot are sufficient to cause obvious damage.

Control sod webworms by applying bifenthrin (Onyx, Talstar), carbaryl (Sevin), deltamethrin (DeltaGard), halofenozide (Mach 2), lambda-cyhalothrin (Scimitar), spinosad (Conserve), or trichlorfon (Dylox) to the turf, usually as a liquid, and allowing it to dry on the grass blades to poison the sod webworm larvae when they feed on the grass blades at night. Granular insecticides are effective, but they must be watered lightly to activate them. Always verify before treatment that sod webworm larvae are present through the presence of fresh frass, newly clipped grass blades, or flushed larvae. This verification will avoid needless treatments when the cause is drought, disease, or old damage without any treatable caterpillars present.

Nonchemical control in Illinois occurs naturally almost every year by microsporidian diseases of the sod webworm larvae, particularly during the winter. In addition, birds and predatory insects are effective control agents. The insecticidal nematode, *Steinernema carpocapsae* (Biosafe), is also effective. Endophyte-containing turfgrasses, such as some fescues and ryegrasses, effectively control sod webworm larvae as well. (Phil Nixon)

Scouting Watch

Thrips are being reported as being numerous on plants and coming into houses through much of the state. Specimens that I have seen appear to be eastern flower thrips, being tan, slender, and about 1/16 inch long. They are strongly attracted to lights at night and are small enough to go through window-screening. They

probe whatever they land on to determine whether it is edible. This feels like a bite when they do it to people, but there is usually no wound left behind. There has been a report in southern Illinois of large numbers of black thrips on arborvitae and boxwood. These may be onion thrips but do not appear to be causing damage. Thrips scrape away the leaf epidermis and suck up the juices inside, resulting in whitish streaks that later turn brown. If damage is occurring, pyrethroid insecticides should be effective on outdoor infestations.

Armyworm moths are being reported in large numbers in central Illinois. These moths are about 1 inch long, with a wingspan of about 1-1/2 inches. The front wings are orangish brown, with a single spot near the tip. Armyworm caterpillars feed on wheat and other small grains, but we have no reports of the larvae being present in high numbers. When present in high numbers, they eat the grass blades off of lawns near grain fields, leaving only brown thatch and crowns. These lawns recover with irrigation. The caterpillars can be controlled with the same insecticides as recommended for sod webworms. There is no control for the moths. (Phil Nixon)

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