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NEWSLETTER

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PLANT DISEASES

Vinca Stem Blight

This fungal disease, called Phoma blight or vinca stem blight, made its appearance at the Plant Clinic recently. I have seen it in several gardens in central Illinois so far this season as well. The pathogen is a fungus called *Phoma exigua* var. *exigua*. Symptoms include dark brown to black girdling lesions on the stems, some leaf spotting, and ultimately girdling and death of the runners. Where healthy stems touch the soil or infected plant parts, new lesions may develop. Within a few weeks, the disease may spread to stems and leaves, causing large sections of the bed to die. This disease can be very persistent because the fungus can survive for long periods hidden in moist soil and plant debris under the foliage in a vinca planting.

Strive to design the vinca bed so that it dries out quickly, discouraging new infections. Try to avoid overhead watering. Water the soil rather than the foliage. It may be helpful to improve air circulation in the area by pruning surrounding plant material and overhanging branches. Because the fungus can survive in the soil on dead plant material, remove fallen leaves and dead tissue. This task may seem to be impossible because you may not be able to remove all of the dead material and still have live plants remaining. Work with plants when they are dry to avoid spread of the disease. It has been suggested that new plantings be mulched with black plastic perforated every 4 to 6 inches and then covered with pea gravel or ground corn cobs. In most cases, we would avoid the plastic mulch suggestion; but this may be the only way to establish a healthy bed of vinca. Despite the popularity of shredded bark mulches, an old-fashioned pea gravel mulch promotes quicker drying, which helps discourage disease spread.

It is difficult to control this disease. Nothing cures the problem. The fungus is in the stems of the plants, and there is no method of removing all infected stems unless you remove infected plants. Even then, the fungus may be in lower stems below ground. The fungus primarily overwinters in infected runners. Disease management suggestions include removing infected plants, thinning the vinca bed, and reducing overhead shade. If fungicides are needed, your choices are copper (sold as Ferti-lome Blackspot and many other trade names) or potassium bicarbonate (Bonide Remedy). There are literally dozens of copper products. Consult with garden center staff to find available copper compounds. Mancozeb also works well but is difficult to find. Always read chemical labels carefully to be certain they are cleared for use on vinca and do not warn of any phytotoxic effects that may injure plants. Sprays need to be applied as new growth starts in the spring and repeated according to label directions.

For more information about this disease and its control, consult *Report on Plant Disease,* no. 640, "Stem Blight of Vinca," available in Illinois Extension offices or on the Web at http://www.ag.uiuc.edu/~vista/horticul.htm. *(Nancy Pataky)*

Daylily Leaf Streak

In 1999, U.S. daylily growers and gardeners went through a rough time, concerned about a disease called daylily rust. Depending on the susceptibility of the daylily cultivar, this disease can cause quite a bit of damage. As it turns out, the daylily rust pathogen cannot overwinter this far north and has to blow up from the South every year. Fortunately for us, daylily rust is not a threat in Illinois. We still see another fungal disease called daylily leaf streak. Although far less of a threat to daylily plant health, this common daylily disease still elicits many questions from daylily gardeners.

Daylily leaf streak is caused by a fungus, *Aureobasidium microstictum*. Symptoms begin as chlorosis along leaf midveins, often starting from the tip and moving down the leaf. Necrotic tissue follows. Small reddish brown flecks or spots develop in this tissue. Daylily leaf streak may be confused with rust, but there are no pustules and no rusty spores to wipe off on your finger, as we would find with daylily rust. Leaves infected with daylily streak eventually have yellow and brown steaks and specks on the leaves.

Daylily cultivars vary in susceptibility to streak, so you see differences among varieties in your planting. Fruiting bodies of the fungus are difficult to find. Try looking for them along the veins in folded leaves. Unfold the leaves and look along the brown spots near the vein. The fungus develops most quickly when temperatures are warm but not hot. You should be able to find daylily leaf streak in susceptible daylily beds now. It spreads by splashing spores or spores spread on animals (including us). To avoid spread, try to irrigate the soil rather than the foliage, and avoid working with plants when they are wet. Also try to keep plants thinned to provide better air movement.

Baker and Simone wrote an article about this disease called "Leaf Streak Disease Revisited." (Gary Simone helped establish the University of Illinois Plant Clinic in 1975.) They suggest a four-step approach to management of leaf streak. The first is to be able to identify the disease. Second, growers are encouraged to implement cultural changes. This includes removing affected foliage by pulling or cutting the entire leaf off the plant. At the very least, remove dead leaves with brown spots and streaks in the fall. Don't let these overwinter and provide inoculum for spring infections. Avoid overhead irrigation, which helps spread the spores. The third step is to use fungicide options if necessary. Compass is a product by Bayer that is registered for use on daylily for this disease. It contains trifloxystrobin and is a local penetrant, which means it is locally systemic and has limited movement in the plant. Thiophanate-methyl has a general ornamental label and has been shown to be effective at preventing infection by the leaf streak fungus. The fourth step is for breeders. They are encouraged to avoid using leaf streak–susceptible parents. Growers can also help by removing the most susceptible cultivars from their gardens. *(Nancy Pataky)*

Chlorosis of Trees

Although some parts of Illinois have recently received soaking rain, others are still experiencing drought. We have received many examples of chlorotic foliage from trees in these drought-stressed areas. Drought is not the cause of chlorosis, but it may aggravate or intensify the problem. Root injury may have occurred as a result of last year's drought as well.

Chlorosis is another word for yellowing. It usually refers to leaves or needles that are light green or yellow rather than a healthy dark green. Often, the leaf veins remain dark green while the rest of the blade is lighter in color. This condition is very common in Illinois on pin oaks, silver maple, red maple, sweetgum, and birch but may occur on many other species as well. If left untreated, chlorosis can eventually lead to branch decline and death.

In Illinois landscape areas, the soils typically have a high (alkaline) pH level. Where irrigation is used, the pH of the water is also an issue. City water often has a very high pH level and can influence the soil pH where supplemental watering is frequent. These higher pH soils may cause problems to trees. Minor nutrients are often tied up or bound within the soil chemistry, making them unavailable to the tree. In fact, these nutrients might be present in the soil, but they cannot be absorbed by roots. Iron or manganese are the most limiting micronutrients in a high soil pH system in Illinois. The symptoms caused by iron or manganese deficiency are very similar. Manganese deficiency is most likely if symptoms are worse on older leaves. Iron deficiency is often more a problem on new leaves first. An Illinois Extension report discussing iron and manganese chlorosis *(Report on Plant Disease,* no. 603, "Iron Chlorosis of Woody Plants: Cause and Control") can be accessed at http://www.ag.uiuc.edu/%7Evista/horticul.htm or in Illinois Extension offices.

Whenever roots are injured, stressed, or growing poorly, nutrient absorption is limited. Symptoms may intensify in drought or wet periods. High clay content or poorly drained soils aggravate the problem.

The question is how do we treat trees that are deficient because of the pH of the soil? Start by determining the soil pH. Consult your local soil-testing lab for this service. The Plant Clinic does not test soils for nutrients or pH level. Next, determine the soil pH at which your tree thrives. Michael Dirr, in *Manual of Woody Landscape Plants*, often lists the desired pH for trees and shrubs discussed. Soils with a pH below 6.7 seem to be ideal pH levels for red maples. Birches thrive at a pH of 6.5 or below. Illinois landscape soils usually have a pH of about 7.4.

You may have read about foliar treatments with chelated iron or manganese. Such treatments work only on leaves sprayed, so this approach is temporary and benefits only the leaves currently expanded. New leaves emerging after the spray will not turn darker green unless a more permanent solution is utilized.

Adjusting the soil pH has long-lasting efficacy but is the slowest treatment in terms of plant response. This process may take several years to change the soil pH. Soil treatment is best done when the soil is moist in April, May, or early June. The amount of product used depends on soil type. Trunk injections are another option. Suggested treatment options are discussed in the fact sheet on iron chloros mentioned above. *(Nancy Pataky)*

INSECTS

Japanese Beetle

Adult Japanese beetles are out throughout the state. To the best of our knowledge, they were first found in the Urbana area on June 20, and in Quincy and at the Morton Arboretum in Lisle on June 21. This is about a week earlier that we would normally expect them to emerge, but the spring insect emergence and phenology plants seemed to be running 2 to 3 weeks early before the cold 10 days that we experienced in late May. That cold period with highs in the low 50s probably slowed the insects down that many days because insects generally develop very slowly at temperatures below 50 ºF. As a result, many insects are still being found about a week earlier than normal. Japanese beetle appears to be following that trend.

Feeding damage is already noticeable, and adult beetles are easily found on their favorite plants, including rose, willow, crabapple, birch, and linden. They also feed on many other deciduous trees and shrubs. Over recent years, Japanese beetles have continued to expand their range across Illinois. They are found in all major cities in Illinois and are expanding into nearby smaller communities and rural areas. They are common even in rural areas through the two or three eastern rows of counties, south to the Lawrenceville area. They are also numerous in the southwestern counties of Madison, Randolph, and St. Clair.

For those unfamiliar with Japanese beetle, they are stocky, metallic green beetles, 3/8 to 1/2 inch long, with copper-colored wing covers. They appear to be sun-loving beetles, feeding heaviest on the upper side of the upper leaves of trees and shrubs. They feed through the upper leaf surface (epidermis) and leaf center (mesophyll), typically leaving the lower epidermis intact. This type of feeding is called window-feeding. The thin lower epidermis that is left behind is somewhat transparent and whitish until the cells die and turn brown. These leaves usually stay on the tree for several weeks, making it easy to locate damaged trees. The brown upper leaves are easily noticed. This damage characteristic also causes this insect to be an important aesthetic injury pest.

Because leaves generate much of the sugars for the tree during the spring when the leaves are relatively young, the loss of major amounts of leaf tissue after early July is not a major health threat to the tree. Because of this, the wide host range, and the need for repeated insecticide application, we recommend that only heavily attacked trees and shrubs located in visually important areas of the landscape be treated. For instance, control the Japanese beetles on attacked plants near heavily used building entrances or building aspects that are obvious to passersby, but avoid treating plants behind and/or remote from buildings, where the damage will be less obvious. This practice lowers the cost to the client and reduces the amount of insecticide put into the environment.

Japanese beetle adults are present for about 6 weeks in numbers high enough to cause important damage. Although a few are present into early October, control is normally not warranted after mid-August. Cyfluthrin (Tempo), permethrin (Astro), and other pyrethroids, as well as carbaryl (Sevin) sprays, are effective in reducing population numbers and preventing beetle feeding damage for 10 days to 2 weeks.

Every 3 days, Japanese beetle adults switch feeding hosts, typically flying 1 to 2-3/4 miles to a new host. They are attracted to plants that have already been attacked by Japanese beetles, so reapplications of insecticides are needed. With damaging beetles being present for about 6 weeks, typically at least three applications are needed. Because these beetles prefer previously damaged hosts, initial sprays are more important than follow-up applications.

This also allows early hand-removal of beetles by homeowners and others to be effective. When disturbed, the beetles typically respond by folding their legs and dropping to the ground. They can be easily collected by holding a wide-mouthed jar containing rubbing alcohol or soapy water under individual beetles and poking at them. The beetles fall into the liquid and are killed. In heavily infested areas, a person can usually collect a pint of beetles within a half hour or so. Doing this on a daily or every-other-day basis for a week or two when the beetles first emerge greatly reduces plant damage. As a result, season-long damage is greatly lessened.

Limited research shows that Japanese beetle traps are effective in attracting adult beetles from a block or more away but not as effective at trapping them. Although many beetles will be caught and killed, many that are attracted do not enter the trap. Instead, they feed on nearby plants, causing more damage than they would have had without the trap. *(Phil Nixon)*

Oystershell Scale

Now is the time to "take action" against the brown race of oystershell scale, *Lepidosaphes ulmi,* because the eggs are hatching into crawlers throughout many portions of Illinois. The crawler stage, as with all scale species, is most susceptible to insecticide applications. As the scales mature later in the season,

they become more difficult to control because both the females and males form a protective covering. The brown race crawlers are typically found feeding on dogwood and lilac. Oystershell scale is about 2 to 3 millimeters in length and, in this case, brown in color. Oystershell scale overwinters as eggs, which are laid beneath the female covering. Eggs hatch into young, brown crawlers that are active throughout June. The crawlers eventually find a place to settle and use their piercing–sucking mouthparts to remove plant fluids. This results in leaf yellowing, plant stunting, and possibly death. Branches or twigs that are encrusted with oystershell scale eventually die. If the scales do not directly kill a tree or shrub, then they "stress" it, increasing susceptibility to wood-boring insects.

The implementation of proper cultural practices such as watering, fertility, and mulching minimizes stress, thus allowing plants to tolerate low to moderate infestations of oystershell scale. If oystershell scale populations are excessive, then the use of insecticides is warranted to prevent permanent plant damage. Insecticides recommended for control of oystershell scale include acephate (Orthene), bifenthrin (Talstar), carbaryl (Sevin), cyfluthrin (Tempo), insecticidal soap, malathion, and horticultural (= summer) oil. All these insecticides need to be applied when the crawlers are active, which increases the overall effectiveness of any spray application. You can visually inspect branches for crawlers or use double-sided sticky tape wrapped around selected branches or twigs infested with oystershell scale. Repeat applications may be warranted 10 to 12 days following an initial treatment because the eggs don't all hatch at the same time. Remember that oystershell scale is a hard scale, so the systemic insecticide imidacloprid (Merit) applied to the soil is not effective against this scale species.

Oystershell scale is susceptible to numerous natural enemies, including parasitoids and predators. However, natural enemies generally appear too late during the season to prevent injury. In addition, natural enemies are typically present in sufficient numbers only when oystershell scale populations are "high" and causing plant injury. *(Raymond A. Cloyd)*

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