UNIVERSITY OF ILLINOIS EXTENSION
HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

No. 12 • July 6, 2005

PLANT DISEASES

Clematis Stem Problem (aka Clematis Wilt)

For a few years now I have heard people refer to a problem they call 'clematis wilt'. When I look in standard pathology texts, I do not find this disease listed. *Westcott's Plant Disease Handbook* (5th ed.) makes no mention of it. Pascal Pirone in *Diseases and Pests of Ornamental Plants* discusses a stem rot caused by a fungus, *Ascochyta clematidina,* infecting stems near the soil line, girdling the stems and causing tissue above to die. The same fungus also causes a leaf spot. The fungal host index used by pathologists, *Fungi on Plants and Plant Products in the United States,* lists fungal diseases reported in the literature. That comprehensive text reports several fungi that infect clematis stems. Some are fungi common in Illinois, including *Ascochyta, Botryosphaeria, Mycosphaerella, Diplodia, Dothiorella,* and *Phoma*. Only Ascochyta and Phoma are listed as stem cankers. There is no mention of a vascular wilt pathogen. Authors of *Diseases of Annuals and Perennials* show clematis with Ascochyta wilt symptoms showing early signs of the disease.

It appears that clematis wilt is a term that has evolved over time to describe the wilting symptom on stems infected with one of the fungi listed above. It is not a term that is intended to implicate a vascular wilt pathogen such as Verticillium. This clematis stem disease causes individual shoots to suddenly wilt and die, thus the moniker of clematis wilt. The causal organism is usually a fungus called Ascochyta, which can be found at the base of affected stems. We do not always find the causal fungus on plant specimens sent to the lab because often only the top portion of the stem is submitted. Look for small lesions at the soil line. The fruiting bodies of the fungus appear as black, pinhead-sized specks in the lesions.

When plants are lush and full, any type of injury low on a stem seems to make whole sections of the plant wilt and not recover. With new clematis, plant deeper than you might normally. You want at least two sets of opposite buds under the soil line. Dig the hole and lay the plant down while gently curving the stem at the right place to get two buds below the soil. Clematis planted in this manner have a much hardier root system and a better chance of recovering from stem blight. Also make sure your clematis has adequate support to help minimize wind injuries to stems. Always be careful when working around clematis. Don't allow them to become water stressed, especially when they are filled out. Clematis species prefer neutral to slightly alkaline soil with lots of organic matter. The soil should be kept cool and evenly moist. Roots should be in shade or mulched.

If this stem disease is present in your plants, follow the suggestions given. At the end of this season, cut affected stems (or the entire plant) back to a few buds above the soil. Remove all stems and fallen leaves. This should remove most of the inoculum from the site. Chemicals are not recommended, although in severe cases a general fungicide such as thiophanate methyl may slow the disease progress. (*Nancy Pataky*)

Rose Rosette

Rose rosette is a lethal disease of roses that may look very much like chemical injury. Unfortunately, there is no lab test for rose rosette, so understanding symptom expression is helpful in deciding whether to remove a plant or change chemical application practices in the area.

Symptoms of rose rosette disease include thick, redder-than-normal stems with many times the normal number of thorns. Multiple stems at the ends of branches produce a witches' broom growth and often small, distorted, and chlorotic leaves. Some herbicides may cause the witches' brooms, distorted growth, and discoloration, but they do not cause the prolific production of thorns. In addition, chemical injury should appear on all the roses or broad-leafed plants in the area. Investigate the use of herbicides in the area, including products applied nearby, on the lawn around the plants, and to the plants themselves. Rose rosette disease often appears in spurts, possibly related to increases in population of the eriophyid mite vector.

Rose rosette is caused by a double-stranded RNA, which means that it is a virus-like disease. It cannot be cultured in a lab, and diagnosis relies on symptom expression. Plants usually die within about 22 months of infection. Multiflora, climbers, hybrid teas, floribundas, miniatures, and a number of old variety roses have been infected with rose rosette. Hybrid teas typically show a color that is more yellow than red. So far, no other host besides rose has been found. Our clinic has seen a few cases of this disease on hybrid roses in the past few years.

The vector of this disease is an eriophyid mite, a mite so small that 20 could fit on a pinhead. Eriophyid mites are much smaller than the red spider mites, which are commonly seen on plants. You can see eriophyid mites with a magnifying glass 10X or greater. In the lab we use a dissecting microscope to view the new growth. As we pick apart the buds, the mites can be found scurrying away from the light and heat. Grafting can also spread rose rosette disease.

Currently, infected plants cannot be cured or salvaged. Plants with symptoms should be dug up and destroyed, including roots, when first noticed. It is strongly suggested that multiflora and garden roses be separated from each other as far as possible. The efficacy of mite control has been questioned regarding rose rosette, but if miticides are used, research suggests that the critical mite transmission time is May and June, so concentrate your efforts then. For details of this disease, consult RPD No. 666, *Rose Rosette Disease*. This can be viewed on the University of Illinois Extension VISTA web site at http://www.ag.uiuc.edu/%7Evista/horticul.htm or it can be obtained from your local Illinois extension office. (*Nancy Pataky*)

Conditions Ripe for Powdery Mildew

Symptoms of powdery mildew include a white to gray mildew type of growth on the leaves, shoots, buds, flowers, or stems. This mildew is composed of thread-like mycelium and asexual spores of the fungus. The spores can be blown to other plant parts and cause further infection. The fungus is superficial, growing on the plant surface and sending structures into the epidermal cells. These structures obtain nutrients from the plant cells. New growth is particularly sensitive. The disease is very obvious and often unsightly. Occasionally infected foliage will exhibit a purple cast rather than a white color, as is true of infected apple or crabapple foliage or strawberry leaves.

Powdery mildew infection is favored by high humidity. The spores do not need a film of water to germinate and infect. Once infection has occurred, the mycelium on the leaf continues, rain or shine. Given additional high humidity, spores will continue to cause additional infection. The six common genera of powdery mildew fungi in the Midwest all prefer warm, humid days.

Powdery mildew is a common fungal disease problem on many perennials as well as annuals, shrubs, and even trees and turf. The most common hosts in Illinois seem to be lilac, zinnia, phlox, and rose, but certainly other species are affected. There are many different types of powdery mildew fungi, and most are very host specific. For that reason, we will probably never see an epidemic of this disease in Illinois. Still, on one plant the disease may spread very quickly, especially in humid weather. Although this disease does not kill plants, if your zinnias, roses, or other plants are infected, that may be a major aesthetic concern. Usually the powdery mildews in our landscape cause symptoms in mid-July, but high humidity in June this year has started the ball rolling early. The powdery mildew fungi on dogwood are active all summer.

To avoid problems with powdery mildew, provide conditions for adequate airflow in the planting. This may mean that plants need to be thinned or pruned to allow better air movement. Use recommended mature plant spacings when establishing new plants. Because the pathogen thrives in humid conditions, water plants early in the day to promote rapid drying. Avoid syringing foliage, and try to water the soil rather than the foliage.

Resistant varieties are the easiest means of disease control, but resistant plants are not always available or may not offer the flower color or size you prefer. Fungicides are available to control the mildews, and if sprays are begun at the first sign of mildew, control can be attained. Scout for the appearance of the disease and then treat the plants according to label directions. Often damage is minor and sprays are unnecessary. Consult the latest *Commercial Landscape and Turfgrass Pest Management Handbook* or the *Home, Yard, and Garden Pest Guide* for a list of registered fungicides by host and by disease. These manuals are available in your local Extension office and at http://www.PublicationsPlus.uiuc.edu. Report on Plant Diseases no. 617, *Powdery Mildews of Ornamentals,* is available at http://www.ag.uiuc.edu/~vista/horticul.htm or in Extension offices and provides detailed information about powdery mildew. (*Nancy Pataky*)

INSECTS

Fall Webworm

Fall webworm, *Hyphantria cunea,* is evident in southern Illinois and parts of central Illinois as young, small

nests or webs on trees and shrubs. Fall webworm has two generations per year in southern Illinois, the first one occurring now. There is typically only one generation per year in the northern portions of Illinois. The second generation, which occurs from late summer into fall, is usually more numerous and potentially more destructive—however, by that time, trees are preparing to discard their leaves.

Fall webworm feeds on over 100 different species of deciduous trees, including ash, birch, black walnut, crabapple, elm, hickory, maple, oak, pecan, and sweet gum. Fall webworm typically doesn't feed on conifers, such as pines, firs, and spruce. In June, adult females fly around and are capable of laying up to 500 white eggs on leaf undersides. Adults are white moths with brown spots on the forewings. They are about 2 inches long with tiny red-orange spots at the base of the front legs.

Eggs hatch into caterpillars that feed for about 4 to 6 weeks, depending on environmental conditions. The young caterpillars tend to skeletonize leaves, removing all leaf tissue except the veins, whereas older caterpillars consume the entire leaf. Caterpillars are pale yellow-green to white with black spots (but sometimes without) and are covered with long white hairs. Older caterpillars are 1 to 1-1/2 inches long. The caterpillars build large, protective nests or webs that are typically found on the ends of branches. They hide in the nests in large groups, or congregations, to avoid natural predators such as birds. The nest grows in size as the caterpillars feed, and heavily infested trees can be completely covered with nests. Severe early-season feeding by large populations of fall webworm can ruin the aesthetic quality of trees and shrubs. In addition, plants may be stressed enough to increase their susceptibility to wood-boring insects. Fall webworm overwinters as a pupa in loosely webbed cocoons.

Managing fall webworm involves physical removal and/or the use of insecticides. Prune out and destroy nests on small trees (but avoid ruining the aesthetic appearance). Scouting trees regularly will help detect early infestations, so that pruning will not impact the aesthetics of trees and shrubs. First-generation fall webworm may be treated with acephate (Orthene), *Bacillus thuringiensis* var. *kurstaki* (Dipel), carbaryl (Sevin), and/or spinosad (Conserve). Insecticides containing *Bacillus thuringiensis* var. *kurstaki* as the active ingredient must be applied early, when caterpillars are small and before they construct large nests. Remember—the material has to be consumed by the caterpillar to be effective. Initially, use high-pressure sprays to dislodge the nests so that the insecticide can get inside to the caterpillars that are feeding on the leaves. Second-generation caterpillars typically don't warrant spray applications because trees will soon be losing their leaves. (*Raymond A. Cloyd*)

Why Are Roses So Susceptible to Japanese Beetles?

It is Japanese beetle time again—adults have already been detected in central Illinois. However, this is earlier than "usual." I know many of you are wondering (as you do each year) why roses appear to be so susceptible to adult Japanese beetle feeding. Japanese beetle adults feed on both the flowers and leaves of roses, unlike other hosts. Research has demonstrated that natural sugar content and the presence of odoriferous compounds are important factors in determining susceptibility to attack by Japanese beetle adults. Roses contain a number of volatile chemicals, including eugenol and geraniol, that are very attractive to Japanese beetles. In fact, both chemicals have been the primary compounds used in mixtures for Japanese beetle lures. As Japanese beetle adults feed on roses, these chemicals are released, attracting more beetles to the area, which increases the likelihood of extensive feeding damage.

Several additional factors influence how attractive roses are to Japanese beetle adults: 1) roses in full sun tend to be favored more than those in wooded or shaded areas; 2) Japanese beetle adults seem to prefer and feed more extensively on white and yellow-colored rose flowers than apricot, orange, pink, mauve, and red; and 3) leaves fed upon by Japanese beetle adults produce odors or volatiles (as mentioned above) that attract other adult beetles. Other factors that may also affect susceptibility are rose height, fragrance, flower size, petal count, and number of blooms. (*Raymond A. Cloyd*)

Black Turfgrass Ataenius

Be watchful on golf courses for high populations of black turfgrass ataenius, Ataenius spretulus. They appear as small white grubs feeding in the root zone of the wettest portions of the course: greens, tees, around the aprons of greens where water collects after irrigation and in swales of fairways where water tends to puddle. The grubs are white and C-shaped, with six legs and a brown head. They appear more slender than other white grubs and are about 1/4 inch long when full grown. Although small numbers of these white grubs are common in lawns, there are unlikely to be enough to cause damage unless the turf is very highly maintained and watered heavily.

We are nearing the end of the first generation of this insect, meaning that the grubs are close to 1/4 inch long and are eating more turf roots than when they were younger. Populations of 50 or more per square foot will cause turf to wilt and turn brown. The turf will pull up easily to reveal the grubs in the root zone.

These larvae pupate to emerge later in July as 1/4-inch long, black to brownish, cylindrical beetles. The beetles are easily seen in clippings baskets of greens mowers. They mate and lay eggs, which hatch into another generation of larvae that feed through the rest of the summer. By fall, they pupate and emerge as adults who fly to wooded areas, where they overwinter under fallen leaves. The adults fly to the greens in the spring to produce another generation of white grubs.

Applications of trichlorfon (Dylox) at this time will provide control of the white grubs in about 3 days. The second generation of black turfgrass ataenius coincides with the larger white grubs, including Japanese beetle, southern masked chafer, and northern masked chafer. Applications of imidacloprid (Merit) or halofenozide (Mach 2) during July will provide control of all four species. Neither Merit nor Mach 2 is likely to provide quick control of mature ataenius grubs, nor will Dylox applied at this time provide control of white grubs that hatch later. (*Phil Nixon*)

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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