



No. 10 • June 30, 1999

INSECTS

Japanese Beetles

It is the time of year that adult Japanese beetles appear in Illinois, and they are very numerous around Collinsville in the southern part of the state. They are only present in small numbers in central and northern Illinois, but those numbers will increase as adult emergence continues. Adult Japanese beetles feed on many deciduous trees, shrubs, and vines such as linden, sassafras, Japanese maple, sycamore, Norway maple, birch, elm, Virginia creeper, and grape. Their favorite plants are those in the rose family, which includes rose and crab apple. Japanese beetle adults also feed on flowering herbaceous plants such as zinnia, marigold, and hollyhock. They generally do not feed on dogwood, forsythia, holly, snowberry, or lilac.

Adult Japanese beetles cause plant damage by skeletonizing leaves, removing all leaf tissue between the veins. The leaves then turn brown and fall off. Their feeding damage can reduce a plant's aesthetic quality and subject it to stress. Japanese beetle adults are generally found feeding on plants in groups. They are most active during the warmest parts of the day and prefer feeding on plants that are fully exposed to sunshine. For this reason, adults generally start feeding on the top of plants.

Japanese beetle adults are metallic green, 1/2 inch long, with copper-colored wing covers. Unlike other beetles, they have a series of white hair tufts extruding from the end of the abdomen. Japanese beetles overwinter as late instar larvae (grubs) in the soil, where they feed on plant and turfgrass roots. Adults pupate in late May or early June. They emerge and start feeding from mid- to late June with peak densities occurring around July 1. Adults generally stay around until early to mid-August. They are present for approximately 6 weeks, living from 30 to 45 days. After mating, females lay small groups of eggs below the soil surface. Female beetles can lay between 40 to 60 eggs, which hatch into grubs during early August.

Grubs feed on plant and turfgrass roots until the arrival of cold weather, which forces them to migrate deeper down in the soil profile. Japanese beetles are annual white grubs and take one year to complete their life cycle.

Insecticides such as carbaryl (Sevin) and cyfluthrin (Tempo) can be used to manage Japanese beetle adult populations when they are actively feeding. These are both contact insecticides so they must be applied when beetles are numerous and exposed in order to obtain maximum control. Because these insecticides generally last only one week, repeat applications may be necessary. Avoid using Japanese beetle traps as they generally attract more beetles and can result in higher levels of plant damage, especially if susceptible plants are present. Monitoring plants that are highly susceptible to Japanese beetles helps minimize potential damage. In addition, planting resistant varieties of roses and crab apples may result in fewer adults feeding and lead to less aesthetic injury to plants. (*Raymond Cloyd, Ron Cornwell, and staff at The Morton Arboretum*)

Steelblue Flea Beetle

The steelblue flea beetle or a close relative is attacking evening primrose in several areas of Illinois. We have had reports of damage in the Morris, Springfield, and Pontiac areas. Although these cities are all in the northern half of the state, this insect may occur at any location. Steelblue flea beetle appears to be a relatively new insect pest in Illinois; it is new to the growers in these areas, and it has not been noticed before in samples submitted to U of I Extension.

The adult insect is about 1/8 inch long and is metallic blue to bronze in color. It is a roundish beetle that jumps when it is disturbed; its hind legs are thickened. These adult beetles eat small holes in foliage, but most of the damage comes from the larvae, which do extensive window feeding. They eat one leaf surface and interior mesophyll, leaving one leaf surface or epidermis intact. This surface is whitish at first but soon dries and turns brown. The larvae grow to about 3/8 inch long and are slender and blackish with short spines all over their bodies.

Information in the literature suggests that the steel-blue flea beetle, *Altica torquata*, occurs in southern California, Arizona, and New Mexico, where it feeds on desert and evening primrose, as well as grape. Specimens from Illinois that have been sent to me ignore grape but feed heavily on evening primrose, both as larvae and adults. Another species, *Altica fuscoaenea*, occurs naturally in eastern North America and also feeds on primrose. Finally, there are two other species of *Altica* in Eurasia that feed on primrose. We will continue trying to determine which species is present here.

Carbaryl (Sevin) provides control of this insect. There is one report of acephate (Orthene) not providing control. We would be interested in hearing if this beetle is found in other locations and the outcomes of control efforts. (Phil Nixon)

Burrowing Sod Webworm

Burrowing sod webworm has been reported near Salem in south-central Illinois. This insect is uncommon enough that its appearance causes headaches for landscapers. The damage it causes is similar to that caused by other sod webworms in that the larva feeds on grass blades at night, causing indistinct brownish turf areas due to thatch showing. Any of several insecticides provides effective control. Subsequent irrigation usually restores the turf's health.

Most sod webworm larvae create horizontal silk-lined tunnels in the thatch where they hide during the day. Burrowing sod webworm constructs a vertical tunnel. When the larvae are reaching maturity, they construct very thick, white tunnel linings. Birds commonly feed on the larvae at this time, and in the process of pulling the larvae out, they also pull out this thick burrow lining. The birds eat the caterpillars but leave the burrow lining on the turf surface. This white lining is about 2 inches long by 1/4 to 1/2 inch wide. From a distance, they look like cigarette butts scattered all over the lawn. (Phil Nixon and Harold Hunzicker, Marion County Unit Leader)

PLANT DISEASES

Crown Gall

Crown gall is a bacterial disease that infects hundreds of plant species, but it is most common on creeping euonymus, grape, raspberry, and rose. The causal bacterium, *Agrobacterium tumefaciens*, enters the plant through a wound, and the plant forms a gall in response to this infection. Galls appear on the trunk,

crown, roots, and sometimes on the stems of the host plant. Young galls are white or tan, usually round, and are quite soft and spongy. As the gall ages, it develops an irregular, convoluted, rough, corky surface and a dark brown, hard, woody interior. These galls might be mistaken for insect galls, but if you cut into the gall, you will see the difference. Galls from crown gall disease appear as a mass of undifferentiated tissues; insect galls have galleries or pockets with or without insects present.

This disease is quite persistent because *Agrobacterium* can survive in the soil more than five years. It is easily spread in soil water or rain splash but can penetrate plants only through fresh wounds. Such wounds might be made during pruning, cultivating, transplanting, budding, or grafting, or during feeding by insects or other pests. If you let your dog run through the planting, enough wounding will occur to let the pathogen enter.

Controlling this disease is very difficult. If you decide to remove plants and start over, use plants that will not host this disease. For instance, if you had a bed of creeping euonymus with crown gall, do not put healthy creeping euonymus back in that bed. They will become infected in time. If you are moving to a new site, inspect new plants for galls. Do not buy plants with galls. Because plants may have crown gall disease and remain symptomless, do not try moving seemingly healthy plants from your infected bed to the new site.

Some plants that are not reported to host crown gall include barberry, hornbeam, true cedars, ginkgo, goldenrain tree, tulip tree, mahonia, spruce, linden, boxwood, catalpa, beech, holly, larch, magnolia, black gum, pine, Douglas-fir, bald cypress, hemlock, birch, firethorn, redbud, smoke tree, sweet gum, deutzia, serviceberry, yellowwood, yew, and zelkova. For more information on crown gall, consult *Report on Plant Disease* No. 1006. (Nancy Pataky)

Tomato Wilts

It is common at this time of year to see many odd symptoms on tomato plants. Wilt diseases may be a problem in your garden or production area. Wilt diseases of tomato can be caused by three different pathogens as well as by a toxin produced by walnut roots. Walnut wilt produces a brown discoloration of internal woody tissue similar to the infectious wilts. We do not see walnut wilt often, but it does occur. It is a reaction of the tomato to the toxin in the roots, so plants must be within the root zone of the walnut. Check out the Extension solutions page at <http://>

www.ag.uiuc.edu/~robsond/solutions/hort.html for more information on walnut wilt. Other noninfectious causes of wilting of tomatoes include flooding or rotting of roots, some herbicide injuries, and mechanical injury to the roots or stem.

The infectious vascular wilt pathogens of tomato include bacteria and two fungi. *Fusarium* and *Verticillium* are the fungi that cause the very similar Fusarium wilt and Verticillium wilt diseases. Infected plants might be somewhat stunted; and leaves turn yellow and die, often starting at the base of the plant and progressing upward. Leaves on one side of the plant may show symptoms, while leaves on the other side appear normal. Wilting may occur at or during the hottest part of the day or when plants are stressed because they are dry or bearing a heavy fruit load. Infected leaves may dry up before wilting is detected, so the first symptom may be stems with dead leaves. The most diagnostic symptom of these diseases is discoloration of the vascular (woody) tissues. With Fusarium wilt, the vascular tissue of stems and petioles throughout the plant becomes brown to reddish brown; with Verticillium wilt, only the lower stem tissues take on a grayish color. This distinction is not always clear cut, however, and laboratory isolation is required to distinguish these two pathogens positively. Both fungi are soilborne and infect plants through root systems, and both are able to survive in soils in the absence of a susceptible tomato plant for many years. Fusarium can also be seedborne.

Bacterial wilt is caused by a *Pseudomonas* species and affects potatoes, eggplants, and peppers, as well as tomatoes. This pathogen causes a plant to wilt suddenly without its leaves discoloring first. The center of the stem is water soaked at first, then brown, and eventually it may become hollow. If the plant wilts as described but does not have any discoloration of the stem, carefully dig it up and inspect its roots for root rot. Roots injured by excess water and/or root rot will also cause these symptoms.

Disease resistance is the most common and economic means of controlling the fungal diseases. Tomato varieties labeled "VFN" have resistance to *Verticillium*, one or more races of *Fusarium*, and nematodes. Occasionally, I hear: Why do my VFN tomatoes have symptoms of Verticillium or Fusarium wilt? The first possibility is that the symptoms are caused by something other than these two diseases. It may be that the plants are not actually the variety that they were labeled. Another explanation is that a race of the fungus is present in your garden to which this variety does not have resistance. The Plant Clinic

does not have the ability to identify fungal races.

Rotation out of an affected area for five to seven years can help reduce the incidence of Verticillium wilt, but shorter rotations will be of little benefit. Removing infected plant parts, including roots, might reduce the buildup of inoculum. Research shows that using nitrate forms of nitrogen can help reduce the severity of Fusarium wilt, while ammonium forms promote disease development. Because low soil pH also favors *Fusarium*, increasing soil pH to a range of 6 to 7 can help control Fusarium wilt. Higher than pH 7.5 increases problems with Verticillium wilt. Details on the wilts of tomato can be found in *Report on Plant Disease* No. 929. Details on Verticillium wilt on many crops can be found in *Report on Plant Disease* No. 1010. (Nancy Pataky)

Bacterial Leaf Scorch of Trees

In issue No. 5 of this newsletter, we discussed scorch of trees. That discussion involved noninfectious leaf scorch, but there is also an infectious bacterial leaf scorch that is less well known. The infectious leaf scorch is caused by the bacterium *Xyllela fastidiosa*. Although this disease is found predominantly in eastern and southern states, it is also frequently found in western Kentucky and Indiana. It has been reported in several areas of Illinois, and we are aware of two laboratory confirmations of its presence. Its occurrence in the state is probably greater, but most growers cannot identify its symptoms.

The most frequent hosts of this disease include elm, oak, sycamore, mulberry, sweet gum, sugar maple, and red maple. A recent confirmation by AGDIA, Inc., in Indiana involved an Illinois river birch with bacterial leaf scorch. Look for scorch symptoms that occur in early summer (now) to midsummer and then intensify in late summer. The scorched leaf edges or tissue between veins may be bordered by a yellow or reddish-brown color. The symptoms occur first on one branch or section of branches and slowly spread in the tree from year to year. Symptoms will show on **oldest** leaves first, and they progress toward the stem tips. Noninfectious scorch starts on the newest leaves and moves down the stem. Bacterial scorch often allows infected leaves to remain on the tree until the fall.

The bacterial pathogen is found only in xylem tissue. Xylem-feeding leafhoppers and spittlebugs are thought to spread the bacterium in landscape trees. It can also be transmitted between trees through root grafts.

If you have a sample with a history of progressive scorching and leaf retention, you may want to seek laboratory help. The Plant Clinic cannot perform the required serological test, but we can determine whether further assistance is needed. Fresh, scorched leaves, still attached to small stems, are needed for testing. Call before sending this type of sample so that the lab can be prepared to get it to the appropriate people before it dries. (Nancy Pataky)

Plant Clinic Disease Specimens

I have not taken the time to search the records, but probably only about 25% of the samples that are received at the Plant Clinic actually involve a disease problem. Many involve insects, but the greatest number of diagnoses involve environmental, site, or “people” stress. If you are sending a sample for diagnosis, it is extremely important to provide plenty of facts, descriptions, sample material, and even photos. Remember, “garbage in means garbage out.”

Recently, some of the more common disease problems we have dealt with on ornamental plants include Verticillium wilt, oak wilt, Dutch elm disease, Sphaeropsis blight, cankers of many types, Rhizosphaera needle cast on spruce, Septoria leaf spots, anthracnose, oak leaf blisters, crown gall, Pythium root rot, white pine decline, and iron chlorosis. (Nancy Pataky)

Home, Yard & 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.

Major authors are Phil Nixon, (217) 333-6650, Fredric Miller, (708) 352-0109, Raymond Cloyd, (217) 244-7218, entomologists; Nancy Pataky, plant pathologist, (217) 333-0519; and Tom Voigt and David Williams, horticulturists, (217) 333-0350. Phil Nixon is the executive editor of the Home, Yard & Garden Pest Newsletter. This newsletter is written by faculty in the Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences. The newsletter is edited by Phyllis Picklesimer, typeset by Oneda VanDyke, and proofread by Erin Cler, all of Information Technology and Communication Services.

For subscription information, phone (217) 333-2666 or (800) 345-6087, or e-mail acesnews@uiuc.edu. Web subscriptions are available (<http://www.ag.uiuc.edu/cespubs/hyg>).

State • County • Local Groups—U.S.D.A. Cooperating
The Cooperative Extension Service provides equal
opportunities in programs and employment.



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



Return Service Requested

NEWSLETTER SERVICES
UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN
69 MUMFORD HALL
1301 WEST GREGORY DRIVE
URBANA IL 61821

Presorted First Class
U.S. Postage Paid
Permit #75
Champaign, IL