COOPERATIVE EXTENSION SERVICE

HOME, YARD & GARDEN PEST NEWSLETTER

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Biweekly Issues Starting

This is the last weekly issue of *Home, Yard, and Garden Pest Newsletter* for 1998. Issues will be produced every other week through September. We will finish the year with monthly issues produced in late October and November. *(Phil Nixon)*

PLANT DISEASE

More on Crown Gall

Crown gall disease was discussed in issue no. 12 of this newsletter. In that article, it was stated that the pathogen can survive in the soil for a number of years and only plants resistant to the disease should be used in areas known to be infested with the causal bacterium. Since that article was published, we've received several requests for lists of plants from which to choose a suitable replacement.

A bit of Web searching turned up a provisional list of woody plants not susceptible to crown gall. (The word "provisional" is to protect the innocent.) The following plants are not known to be hosts of the disease, according to information from Cornell University (http://pmep.cce.cornell.edu/recommends/treerecommends-lib/crown.gall.dis.tree96.html): barberry, hornbeam, true cedars, ginkgo, golden-rain tree, tuliptree, mahonia, spruce, linden, boxwood, catalpa, beech, holly, larch, magnolia, black gum, pine, Douglas-fir, bald cypress, and hemlock. A list from Auburn University (http://www.acesag.auburn.edu/department/ipm/cgo.htm) adds birch, firethorn, redbud, smoke tree, and sweetgum. Of course, no one can guarantee that crown gall will never occur on these plants, but it is a starting point.

A list of plants with resistance to crown gall also appears in *Plant Health Care for Woody Ornamentals*, a publication developed by authors at several institutions and funded by the International Society of Arboriculture. In addition to the plants mentioned above, the list in this publication adds deutzia, serviceberry, yellowwood, yew, and Zelkova. *(Nancy Pataky)*

Tomato Wilt Problems

This year we've had more calls than usual about wilting and dying tomato plants. Wilt diseases of tomato can be caused by three different pathogens, as well as a toxin produced by walnut roots. **Walnut wilt** produces similar symptoms to the wilts caused by pathogens, including brown discoloration of internal woody tissue. For more on walnut wilt, try the University of Illinois Extension's Hort Solutions Web site (http://www.ag.uiuc.edu/~robsond/solutions/hort.html). Other noninfectious causes of wilting of tomatoes include flooding or rotting of roots (common this year), some herbicide injuries, and mechanical injury to the roots or stem.

The infectious vascular wilt pathogens of tomato include bacteria and two fungi. The two fungi are *Fusarium* and *Verticillium*. 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 might show symptoms, whereas leaves on the other side appear normal. Wilting could occur at or during the hottest part of the day or when the plants are stressed from dryness or a heavy fruit load. Infected leaves might dry up before the wilting is detected, so initial symptoms may appear as stems with dead leaves.

A key diagnostic sign for both fungal diseases is discoloration of the vascular (woody) tissues. The very center of the stem is the pith. The vascular tissue is the tissue between the pith and the outside of the stem. 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 are discolored. The discoloration is more of a grayish color with Verticillium wilt. However, this distinction is not always clear cut, so laboratory isolation is required to distinguish these two pathogens from each other and from walnut wilt. 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 sudden wilt of the plant without leaves first discoloring. The center of the stem (pith) will be water-soaked at first, then brown, and eventually may become hollow. If the plant wilts as described but does not have any discoloration of the stem, carefully dig up and inspect 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 someone asks, "Why do my VFN tomatoes have symptoms of Verticillium or Fusarium wilt?" The first possibility is that the symptoms are the result of something other than these two diseases, or it may be that the plants were not actually the variety that they were labeled. Another possible explanation is that a race of the fungus is present in your garden to which this variety does not have resistance.

These are very difficult diseases to control. The first step in managing the problem is to be certain you have accurately identified the cause of the wilt. Hopefully this article will help. Further details on wilts of tomato can be found in *Report on Plant Diseases* No. 929. Details on Verticillium wilt on many crops can be found in *RPD* No. 1010. *(Nancy Pataky)*

Iron Chlorosis

Chlorosis is the condition of yellowing of plant foliage, usually with green veins. If the chlorosis is due to a lack of iron, we call it iron chlorosis. Usually, newest leaves show symptoms most intensely.

In Illinois, iron chlorosis is common on many tree species, most commonly pin oak, sweetgum, maple, and birch. In most cases, the soil has plenty of iron for tree growth, but our high pH soils bind up the iron and make it unavailable to the roots. Iron is available to plants only as the Fe++ ion and is available in that form only when soil pH is between 5.0 and 6.5. Soils with high levels of zinc, manganese, or copper also aggravate the iron chlorosis problem. This is also the case with large amounts of limestone or ash, a deficiency of potassium, or excessive applications of fertilizers high in phosphorus.

As chlorosis intensifies, we see brown speckling of the leaves, then totally necrotic leaves, branch tip dieback, and eventually death of branches and even mature trees. The process is a slow one, taking several years before dieback occurs and branches die.

We have seen more than the usual amount of chlorosis on trees this summer. Some of the chlorosis may be wet soil conditions that cause root injury and thus inhibit uptake of nutrients. Many of the cases we have seen at the Plant Clinic are on oaks and appear to be iron chlorosis.

Why is the situation worse this year, and why does a tree that has gone unaffected for 15 or 20 years start to show chlorotic symptoms? Iron chlorosis seems to occur when roots grow into an area of high pH: the foundation of a building, the area under a sidewalk, a gravel parking lot or driveway, or many other alkaline sites. This can explain why an older tree would start to show symptoms. Logically, any factor that affects root health could cause a nutrient uptake problem.

This year we've had an abundance of rain, often in flooding quantities. Such conditions rob soil of oxygen, causing root injury and inefficient nutrient absorption.

What can be done to remedy the situation? Any of several treatments can be used, depending on the intensity of the problem, the age of the tree, the pH of the soil, and site restrictions. Options are discussed in *Report on Plant Diseases* No. 603, Iron Chlorosis of Woody Plants: Cause and Control, or "Horticulture Facts" NC-3-80, Iron Chlorosis of Woody Plants: Symptoms and Control. *(Nancy Pataky)*

INSECTS

Boring Pine Moths

Two species of moth are likely to bore into the trunks of pine, causing masses of pitch to accumulate. Repeated attacks may cause the death of major branches or the trunk to snap off. If the trunk snaps off, the tree typically develops multiple leaders, drastically changing its final shape.

Now is the time to treat for **Zimmerman pine moth**. The adults are gray with a mottled forewing of red and gray. Eggs probably have been laid near the edges of wounds on branches through the first half of August. The eggs hatch in about two weeks, so hatch can occur from mid-August to the end of August.

Young larvae wander over the tree before finding a sheltered place under the bark to spend the winter. In spring, they feed on the bark and then enter the tree where the bark is thin and tunnel into the cambium. The larvae will become 3/4 inch long and are pink to green or grayish with black spots. The larvae tend to feed under the bark of branches and trunk where the branches join the trunk. Masses of pitch accumulate on the bark over feeding areas. Scotch pine is the preferred host, but other species of pine are also readily attacked. Sprays of chlorpyrifos (Dursban) or dimethoate (Cygon) will be effective now but will be even more effective next spring when *Magnolia* x *soulangiana* is in pink bud to early bloom.

The **pitch mass borer** prefers white pine, but will also attack Austrian, Scotch, and jack pines as well as white, Norway, and Colorado blue spruce. The adult is a black moth with an orange spot in the middle of the body and orangish markings on the underside. This moth has bluish-black wings and is wasplike in appearance. Eggs are laid in late June and July around old and new wounds and on the trunk under branches. The hatching larvae feed under the bark in the cambium, causing large amounts of pitch to accumulate on the bark. Larvae will be up to one inch long and are creamy white. Dursban or Cygon will be effective in mid-July.

Prying off masses of pitch in early June and digging larvae out of the trunk will enable you to tell which borer you have. If you check for larvae now, you may find pitch moth larvae, but you will not know whether you have Zimmerman pine moth unless you find the one-inch-long, brown pupal skins of recently emerged moths sticking out of the burrows. *(Phil Nixon; staff at The Morton Arboretum; Cliff Sadof, Purdue University)*

Wasps and Bees in the Landscape, Part Two

In last week's newsletter, we covered the proper treatment of wasp and bee nests likely to be a hindrance to landscaping activities. This article describes some species likely to be encountered.

Bald-faced hornets build football-sized and -shaped paper nests in trees and shrubs. The one-inch-long black hornets with whitish faces and rear ends fly in and out of an opening near the bottom of the nest. In the evening, soak the nest through this opening with diazinon or wasp and hornet spray. This species of wasp posts guards outside the nest day and night, so be sure to wear protective clothing.

Honeybees are amber or brown and black banded, hairy, and about 1/2 inch long. They nest in the hollows inside tree trunks and build walls in colonies that may contain tens of thousands of individuals. They also swarm in groups of several hundred, particularly in the spring. The swarm is likely to form a mass of bees on a tree branch or other support. Most of these swarms leave on their own within a few days. Ones that remain after a week may need to removed by a beekeeper or sprayed with an insecticide. Honeybees in swarms are usually docile and those with colonies in trees rarely attack unless provoked. The Africanized honeybee or so-called "killer bee" looks like any other honeybee but attacks from the hive more readily and swarms more easily. The only place where it is found in North America is Mexico and the southwestern United States.

Yellowjackets are 1/2-inch-long, black-and-yellow-banded wasps that many people call "bees." They live in underground nests in old rodent burrows. They may also make a nest in a woodpile, pile of brush, hollow tree, or wall of a house. Late in the summer, nests may contain several thousand wasps. Of the Illinois bees and wasps, this is probably the most likely to sting.

Bumblebees are 1/2- to one-inch-long, yellow and black, hairy, stout-bodied insects that nest underground. There are usually fewer than 60 individuals per nest, which is usually built in an old rodent burrow.

Burrowing bees are hairy, 1/2-inch-long bees that are usually drab in color, with bands of black and brown or gray. They make individual nests in the ground with 1/4-inch openings. Often, many individuals nest in the same area; the bees tend to fly about six inches above the nest. They are very unlikely to sting. Weeding, trimming, and even tilling can usually be done in the nest area without the risk of being stung.

Cicada killers are about 1-1/2 inches long, have reddish transparent wings, and are black with yellow bands. **Sand wasps** may be reddish or grayish and up to two inches long. Cicada killers and sand wasps build individual nests with 1/4- to 1/2-inch entry holes in the soil. Males usually patrol the air space above the nests and will zoom around passersby, creating a considerable amount of anxiety. Because these wasps rarely sting people (although they will sting if stepped on or grabbed), control is not necessary unless residents can't control their fear or the wasps are being a problem to golfers.

Tiphiid wasps are slender, one-inch, yellow-and-black-banded wasps. **Scoliid wasps,** also about one inch long, are stouter wasps that are black with an abdomen that is predominantly orangish. Both wasps feed as larvae on white grubs and thus are beneficial. These wasps may be numerous in turf areas, particularly in southern Illinois. They are unlikely to sting.

Leafcutter bees are about 1/4-inch, gray-and-black-banded, and hairy. **Small carpenter bees** are also about 1/4-inch long and hairy, but are roundish with yellow and black bands. Both nest in the stems of flowers, weeds, and shrubs, hollowing out the pith to make a suitable cavity. They commonly nest in the pruned ends of rose, raspberry, and blackberry. Leafcutter bees separate and surround the larval cells in the stems with 1/2-inch diameter, circular pieces of leaf tissue that they cut out of rose, redbud, maple, and other leaves. Neither bee is likely to sting. *(Phil Nixon)*

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