Hackberry gall caused by a psyllid.
Source: University of Minnesota Extension.

**Ornamental IPM Pest Notes**

*Steven K. Rettke, Ornamental IPM Program Associate*

✔ **HACKBERRY GALLS:** Hackberry (Celtis) is a common native plant found growing in open fields, along roadsides, and in many types of soil. It is admirable that this hardy genus is especially able to grow well in dry soils. However, over 10 types of gall-making insects attack hackberry foliage. A common one is the hackberry nipple gall, which causes small, oblong protrusions on hackberry that are pale green to red in color. These galls are raised from the leaf surface, somewhat shaped like a nipple. These are most prevalent on shrubby forms of hackberry. The hackberry blister gall, on the other hand, forms small round blister-like galls on the surface of hackberry. Adults of both of these species are psyllids, about 1/3 inch in length, black in color, and have a jumping habit.

Adults begin emerging in September and can continue to emerge well into the fall season. They can be extremely annoying to people, as they alight by the hundreds on cars, buildings, and other objects near large hackberry trees. They will over-winter inside of homes or in cracks and crevices of tree bark before becoming active again next spring. Eggs will be laid just as new growth emerges and then nymph feeding will cause new galls to form. As is the case with many leaf galls, they are a curiosity to many, but rarely are chemical sprays warranted.

✔ **PINE OYSTERSHELL SCALE:** A partial second generation occurs on Japanese Black Pine in the fall. Crawlers emerge in early September and blow with the wind to disperse, settling just beneath the needle sheath. Monitor declining Japanese Black Pines by peeling back needle pairs (like a banana). Look for yellow-orange crawlers (<1/8") or the brown, oyster shaped adult scales (1/4"). Control trials have shown >90% control using a mixture of Orthene + 1% oil the first week of September.

✔ **LARCH CASEBEARER (2375-2805 GDD):** A relatively uncommon pest of larch. The spring feeding of this caterpillar gives the tree a ragged look. Close examination of the needles shows feeding damage causing the browning of foliage. The caterpillar lives inside a case made of a mined needle lined with silk. This provides protection and is the prime reason it goes undetected by the untrained eye. It also over-winters in the case. The adult moths emerge in June/July from the case after pupating and then lay eggs at the base of the needles. The larva feeds inside the needle as a miner for the first two months and then produces

*See IPM Notes on page 2*
the case from that needle. There are parasites that attack the casebearer, but they are unable to hold it completely in check. Tempo2 (cyfluthrin) is effective when the caterpillar is feeding in the fall or again in the spring.

✔ **ARBORVITAE LEAFMINER** (1800-2200 GDD): The silvery gray adult moth is present in late June through early August, laying eggs in the tips of foliage. Larvae hatch and begin feeding within foliage in mid-late August, through next spring. Foliar discoloration (yellowing) becomes apparent in late August. The presence of dead leaf tips interspersed among healthy foliage is a good indication of the presence of this pest. The dead tips are empty now. Look for the discoloration of the tips in late August that indicate the presence of the new larvae. Action during the fall will avoid the worst of the damage. The systemic pesticide Orthene (acephate) will control the larvae.

✔ **REDHEADED PINE SAWFLY:** Primarily a pest of 2 and 3 needle pines, these pests are rarely seen feeding on other conifers. Fully-grown sawfly larvae are 1 inch long with reddish heads and yellowish-white bodies with rows of black spots. Heavy infestations can cause defoliation and may kill small pines. There are two generations per year with the second from August through October.

Pine trees located in stressful sites are most readily prone to attack. When larvae are small, their mouthparts cannot consume the entire needle. This partial feeding causes a few dry, curled, golden brown needles at the tips of branches. Careful observation may uncover brown, oval, 0.25-inch pupal cases attached to a branch. These cocoons are the over-wintering stages of the pine sawfly.

Handpick or prune out small populations of larvae feeding in clusters. Horticultural oils and soaps can control populations when the larvae are young and small, with thorough coverage. When larvae are larger, various residual pesticides can be sprayed, including Conserve. Since the sawflies are not caterpillars, the bacterial insecticide B.t. (Bacillus thuringiensis) will NOT be effective.

✔ **APHIDS:** Many of the aphid species that were present this spring on the new growth of many plants (e.g., burning bush and spirea) have long ago left to feed on alternate hosts. However, many shade trees (maples, oaks, lindens, birches, tulip poplars, etc.) still have populations of aphids. When encountered, first consider if the pest is presenting an aesthetic problem. Is the honeydew/sooty mold an eyesore on the tree or is it a nuisance, appearing on objects under the tree such as cars, patio furniture, or sidewalks and driveways. Aphids rarely threaten the health of the tree, particularly later during the season. Action is only necessary if the customer is upset or inconvenienced by the presence of honeydew or sooty mold. If left alone, predators may maintain the population within acceptable levels.

✔ **BANDED ASH BORER:** Often starting in late August and continuing through September, this clearwing moth is mating and laying eggs on ash trees (especially green ash street trees in open areas). Look for sawdust frass accumulating on the trunk, or small holes beneath the tree. Light brown pupal “skins” protrude from the trunk as a result of adult emergence. Pheromone traps are the best tools to determine when to apply controls. When the first male is caught in the trap (usually around Labor Day), count 10 days and then apply Astro (permethrin) before eggs hatch. Spray the bark and major branches thoroughly. Research has also shown greater than 50% control by spraying tree bark with beneficial nematodes in October or late spring.

✔ **MAGNOLIA & TULIPTREE SCALE:** Although most soft scale crawlers hatch and emerge during the late spring and early summer, the magnolia and tulip-tree scale species have active crawlers during the early fall season. During the month of August, mating occurs and eggs are laid under the protective female cover. It is also at this time when large populations create copious amounts of honeydew that produce the black sooty mold and attract ants, bees and wasps. The egg laying and honeydew production continues to occur well into the month of September.

Unfortunately, many landscapers make the mistake every year of applying controls against these soft scales during the weeks of August and early September. During the final weeks of summer, the eggs are still present under the female and sprays are not effective. With small trees, it is possible to physically remove adults before eggs hatch and crawlers emerge. When this is not practical and treatments are required, wait until all crawlers have emerged and then apply horticultural oil or a residual insecticide. The next best timing of a spray material therefore may not be until October. A dormant oil spray in late winter or early spring that targets the over-wintering black nymphs on the bark is also effective.

✔ **WHITEFLIES:** The three species commonly found within the landscape are azalea, mulberry and maple whiteflies. The azalea and maple whiteflies feed only on the hosts that bear their names, while the mulberry species feed upon holly, mountain laurel, magnolia, maple and mulberry. Heavy infestations may cause leaves to wilt, turn yellow and drop prematurely. Lower leaves first become covered with honeydew, followed by sooty mold.

Adults are white, 1/16 to 1/8 inch in length, and resemble tiny moths. When the plant is disturbed, large numbers of adults will fly up in a “white cloud” before settling back down on the plant to feed. Nymph and pupa stages are flat and resemble scale insects. All stages feed on the underside of leaves.

Numerous ants present on the foliage may also indicate a population of whiteflies (they feed on the honey-
Whiteflies from page 2

Control is not always needed, as damage is often insignificant. Rake up and destroy fallen leaves. If sooty mold and damage are significant, spray the undersides of infested leaves with insecticidal soap or horticultural oil. Parasitoids and predators often maintain these pests at minimal levels.

✔ BOXELDER BUG HOSTS: Boxelder bugs are dark sucking insects with red wing markings/abdomens that build up large populations in late summer/early fall. Boxelder bugs are considered to be a nuisance pest because of their habit of gathering in large numbers in sunny southern locations (such as your front door) as well as over-wintering inside dwellings (such as your attic). Many older publications state that the sole plant reproductive host of the boxelder bug is the female boxelder tree (a type of maple that often grows wild). Control measures were targeted at finding and removing this plant host, although this often resulted in poor long-term control.

For over a decade there have been many reports of boxelder bugs feeding and breeding on different plants. The following is a list of plant hosts documented as a food source for boxelder bugs: apple, cherry, plum, peach, pear, grapes, almond, pistachio, strawberry, tulip, ash, pin oak, tree of heaven (Ailanthus), mulberry, elderberry, iris, hollyhock, peony, asparagus, ampelopsis, geranium, cacti, lilies, coleus, ageratum, pigweed, crabgrass, and foxtail grass. (Reference: R. Rosetta, Oregon State; D. Shetlar, Ohio State)

✔ WITCHES’ BROOMS: The development of witches’ brooms on woody plants and the resulting formation of abnormal growth can cause curiosity and concern to your clients. Typically, the new growth is distorted and a proliferation of leaves or fruit/cones closely clumped together appears when apical dominance is lost. Witches’ Brooms are created on plants when the transfer of growth hormones is disrupted (perhaps caused from the introduction of a foreign substance). Insects (e.g., aphids), fungi, bacteria, phytoplasmas, and herbicides have all been implicated in causing the formation of witches’ brooms in a large number of plant species. It is interesting to note that sub-lethal doses of glyphosate (Round-Up) when applied late in the season can cause witches’ brooms on new plant growth the following spring.

✔ CARPENTER ANTS: Carpenter ants can infest live trees, but their presence indicates that there is dead wood in that plant, and the tree is potentially a hazard. Carpenter ants rest in moist, rotted wood and excavate cavities, often leaving a hollow shell of live wood that may easily snap off during a windstorm or snow/ice load.

✔ YELLOW JACKETS become a major nuisance this time of year when they develop an increased taste for sugars/starch over meat (they are excellent predators earlier in the year). A study in Passaic County determined that liverwurst was the most effective bait to trap yellow jackets. (Source: Passaic Co. Office of Recycling)

✔ TREE STAKING: No staking is necessary for newly transplanted trees that can stand by themselves or have branches to the ground. Compared to rigidly staked trees, unstaked trees will: develop a 33% greater basal trunk area; grow 19% less in height; develop a 30% greater trunk taper; develop a stronger, larger root system; develop more uniform xylem to support itself upright; have few or no rubbing or girdling injuries. (Source: Harris, Arbor Age)

✔ WEED SEEDS: Farmers say, “One years’ seeding means 7 years weeding.” This adage indicates how long weed seeds remain viable in the soil. For example, if a soil contains 10,000,000 (ten million) weed seeds per acre, 50% will typically decay per year. Assuming no replenishment through reseeding, at the end of 7 years the population will be reduced to approximately 100,000. This is a lower number, but still significant. Also realize that the weeds that emerge each year often account for less than 5% of the soil’s weed seed population. (Source: R.B. Taylorson, Univ. R.I. Turf Notes)

Whiteflies from page 2
Diseases of Turfgrass
Bruce B. Clarke, Ph.D., Specialist in Turfgrass Pathology

General

Dollar spot, crown rust and gray leaf spot are apparent on golf and landscape turf. Expect these diseases to continue to be a problem through October. Summer patch, fairy ring, slime mold and anthracnose are becoming less apparent due to the cooler weather. Pythium and brown patch can still be troublesome in September if the hot, humid weather returns so maintain preventive sprays for another week or two. Refer to recent issues of this newsletter for further disease control information.

Fairy Ring

This disease, caused by a group of fungi known as basidiomycetes, is visible on many golf greens and home lawns at this time. Symptoms typically appear as continuous or interrupted rings of dark-green turf. Mushrooms, which are often associated with fairy ring, usually develop in the spring and fall. Although fungicides are not effective against all species of the fungi that cause fairy ring, Bayleton, Endorse, Headway, Heritage, Insignia and ProStar have provided good control in many university tests. For best results, maintain adequate soil moisture and fertility to mask symptom expression. Spike affected turf prior to irrigation and the application of fungicides to enhance water movement into the soil profile. The use of surfactants may enhance fungicide efficacy and aid in symptom suppression.

Gray Leaf Spot

This has been an excellent year for Gray leaf spot on perennial ryegrass. Many new plantings have been severely damaged by the causal agent Pyricularia oryzae. Symptoms first start as tiny, brown leaf and stem lesions within 1 to 2 inch patch. In severe cases, the leaves twist and curl in a “J-shape” and lesions may extend the entire width of the leaf blade. As the disease progresses, infestations coalesce into large (1 to 2 ft diameter) patches of blighted turf. Extensive foliar blighting may occur during warm (70-85°F days and 60-75°F nights), wet weather. When conditions are conducive to disease development the pathogen produces abundant one to two celled, pear-shaped spores (conidia). Newly established seedings (4-5 weeks post emergence) are more susceptible to Gray Leaf Spot than mature plantings, so be sure to use a mixture of perennial ryegrass cultivars with improved resistance to this disease (e.g., 1G Squared, AllStar 3, Apple GL, Charismatic II GLSR, Dart, Derby Xtreme, Exacta II GLSR, Fiesta 4, GL-2, Harrier, Manhattan 5 GLR, Palmer IV, Palmer V, Panther GLS, Paragon GLR, Regal 5, Repell GLS, Revenge GLX, Secretariat II GLSR, Soprano, SR 4600, and Stellar GL are currently some of the more tolerant cultivars). To suppress this disease now in the field, avoid high rates of nitrogen (i.e., do not apply more than 0.25 lb N per 1,000 sq ft) and avoid extended periods of leaf wetness (i.e., do not water between 6 PM and midnight). Arma-da, Compass, ConSyst, Disarm, Headway, Heritage, Insignia, Spectro, Tartan, and thiophanate-methyl are most effective when applied on a preventive basis every 14 to 28 days from mid-July to late-September. Chlorothalonil (e.g., Daconil) and the DMI (sterol-inhibiting) fungicides (e.g., Banner or Bayleton) may provide effective control when disease pressure is moderate. Isolates of P. oryzae resistant to the QoI (Strobilurin) fungicides and strains with reduced sensitivity to the DMI’s have been reported in New Jersey, so alternate or tank mix with different fungicide chemistries whenever possible to reduce the potential for fungicide resistance. For additional information and pictures of gray leaf spot symptoms, access Rutgers Cooperative Extension Fact Sheet #1048 at www.turf.rutgers.edu/outreach//rcepublications.html.

Marasmius

There have been numerous reports recently about the appearance of small mushrooms protruding from brown leaf blades. These structures, belonging to the fungus Marasmius, are approximately ½ to ¾ inch in length, and consist of a dark brown stem and a small tan to orange colored cap. Marasmius often appears in areas that have been thinned by brown patch. Although this fungus may appear to be pathogenic, it is actually invading senescing and decaying tissue and thus is not a threat to the surrounding healthy turf.

Stem and Crown Rust

Both of these diseases are evident in autumn on susceptible Kentucky bluegrass and perennial ryegrass cultivars, respectively. As rust intensifies, the turf prematurely yellows and orange pustules called uredia (reproductive structures) appear on affected leaf blades. To control both stem and crown rust, maintain adequate fertility and soil moisture and apply Armada, Banner, Bayleton, chlorothalonil, Compass, Eagle, Headway, Heritage, Insignia, mancozeb, Tartan, thiophanate-methyl or Trinity per manufacturer’s recommendations.

Yellow Ring

This disease, caused by the fungus Trechispora alnicola, is evident on Kentucky bluegrass lawns and sod fields at this time. Patches are 1 to 2 feet in diameter and consist of green grass surrounded by faint yellow rings (1 to 2 inches in diameter). Upon close inspection of the thatch, a dense mat of white mycelium is often apparent. Infected turf rarely dies and rings do not always reappear the following year. Symptoms are most apparent during cloudy weather between May and October. The fungus is primarily a saprophyte that colonizes organic matter in the thatch. Since damage is cosmetic and affected turf recovers during cool weather in the fall and spring, control is rarely warranted. In ar-

See Turf Diseases on page 5
White Rust on Chrysanthemums
Carl P. Schulze, Jr., Director, Division of Plant Industry, New Jersey Department of Agriculture

White Rust (Puccinia horiana) has been detected at chrysanthemum producers in the tri-state area, including garden mum growers. Classic signs of the disease are whitish pustules on the undersides of leaves.

Chrysanthemum White Rust is a quarantine significant pest - infected plants or flowers cannot be moved or sold.

Symptoms of Chrysanthemum White Rust start as pale-green to yellow spots up to an inch in diameter found on the upper leaf surfaces. Raised, waxy, pink-colored pustules are formed on lower leaf surface. As they mature and produce spores, the pustules turn whitish in color.

White rust survives on living chrysanthemum foliage. Teliospores in the leaf pustules produce basidiospores that are airborne and infect by direct penetration. Cool, damp weather favors the disease. Not all cultivars are susceptible.

Once the disease is confirmed, USDA and NJDA require a control program of 3 to 5 applications of myclobutanil (Eagle or Systhane). Growers can rotate with mancozeb (Dithane) and chlorothalonil (Daconil) as a protectant treatment program, until flowering.

View a free training webinar at www.safnow.org or www.anla.org. More information on white rust can be found on USDA APHIS PPQ’s website at: http://www.aphis.usda.gov/plant_health/plant_pest_info/cwr/index.shtml or by contacting the New Jersey Department of Agriculture, Division of Plant Industry at (609) 292-5440.

Turf Diseases from page 4

eas where symptom expression cannot be tolerated, turf managers should dethatch affected turf. No chemicals are currently labeled for the control of yellow ring.

Turfgrass Expo

This year’s Turfgrass Expo will be held at the Trump Taj Mahal Casino/Resort on December 8-10, 2009. To help celebrate the 40th anniversary of the New Jersey Turfgrass Association, this year’s EXPO will feature past graduates of the Rutgers Turfgrass Program, so this is a unique opportunity to receive the latest turf management information from nationally renowned speakers. For additional information, please contact Cece Peabody (973) 812-6467 or e-mail execdirector@njturfgrass.org or Anne Diglio (732) 932-9400 ext. 339 or e-mail diglio@aesop.rutgers.edu.
Weekly Weather Summary
Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 70 degrees north, 73 degrees central and 76 degrees south. Extremes were 91 degrees at Hammonton on the 30th, and 57 degrees at several locations on the 31st. Weekly rainfall averaged 1.60 inches north, 1.61 inches central, and 2.14 inches south. The heaviest 24 hour total reported was 3.71 inches at Cape May Courthouse on the 28th to 29th. Estimated soil moisture, in percent of field capacity, this past week averaged 88 percent north, 86 percent central and 72 percent south. Four inch soil temperatures averaged 73 degrees north, 76 degrees central and 78 degrees south.

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* missing some data
WES KLINE -- GDD BASE 40 PINEY HOLLOW
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THIS WEEK 251 (Ending 8/31/09)