Plant Health Care Report

The Morton Arboretum

Scouting Report of The Morton Arboretum

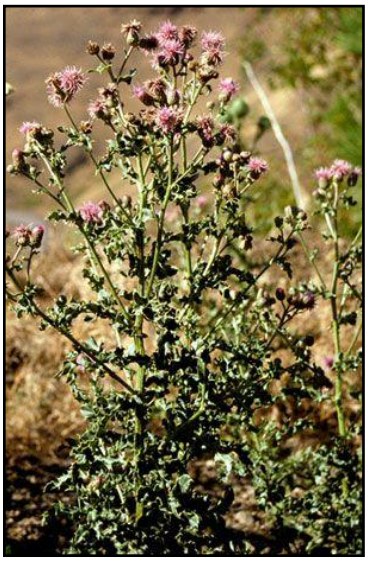
August 12, 2011 Issue 2011.16

Our report includes up-to-date disease and insect pest and abiotic problem information for northeastern Illinois. You'll also find a table of accumulated growing degree days throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. The Report is published bi-weekly on Friday in April and August, and weekly May-July. The last two issues will be published August 12 and 26.

Arboretum employees and volunteers will be scouting our grounds for insects and diseases throughout the season. Information about other pest and disease problems based on samples brought into the Arboretum's Plant Clinic from homeowners and professionals will also be included.

Over the course of this year the Plant Health Care Report (PHCR) will be undergoing some format changes, but will still be offering the same content. If you prefer a PDF version of the PHCR, please click here to download and print.

If you would like to receive a notification email when the PHC Report is available on-line, send me an email (sadams@mortonarb.org) with 'subscribe to PHCR notification' in the subject. The emails on the notification list are only used for the notification and nothing else.



Accumulated Growing Degree Days ($Base_{50}$): 1912
Accumulated Growing Degree Days ($Base_{30}$): 4481
This week's indicator plant according to Orton: Canada thistle is just finishing blooming

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Weather update

As of August 10, 2011, we are at 1912 base-50 growing degree days (GDD_{50}), which is 212 GDD_{50} (about 10 calendar days) behind 2010, and behind the historical average (1937-2010) by 99 GDD_{50} (5 calendar days). July received 6.38" and August 1.41" of precipitation, which brings 2011 to 28.63" total. This is 5.03" less precipitation than 2010, but 3.54" more than the historical average (1937-2010).

	B_{50} Growing Degree Days through August 12, 2011	**Precipitation (inches) July 27 - August 10**
Aurora, IL*	2100	
Carbondale, IL*	3133	
Chicago Midway*	2010	
Chicago Botanic Gardens**	1928 (8/10/11)	2.62 (8/5-8/10)
Chicago O'hare**	2069 (8/10/11)	1.56 (8/3-8/9)
Crystal Lake, IL*	2056	
Harvard, IL*	1967	
Kankakee, IL*	2322	
The Morton Arboretum	1912 (8/10/11)	0.88 (8/5-8/10)
Peoria, IL*	2541	
Quincy, IL*	2696	
Rockford, IL*	2091	
Springfield, IL*	2699	
Waukegan, IL*	1835	
Champaign, IL*	2526	

**Thank you to Mike Brouillard, Northbrook Park District, and Chris Henning, Chicago Botanic Gardens, for supplying us with this information.

*We obtain most of our degree day information from the GDD Tracker from Michigan State University web site. For additional locations and daily degree days, go to http://www.gddtracker.net/?zip=60185&model=2&state=IL

Bacterial leaf scorch sampling

Bacterial leaf scorch is a disease that occurs on many tree species including elm, oak, maple, mulberry, and sycamore caused by the bacterium *Xylella fastidiosa*. Trees infected with *X. fastidiosa* exhibit marginal leaf browning, often bordered by a pale halo. Leaf discoloration begins at the leaf margin and moves toward the midrib. Trees typically begin to show bacterial leaf scorch symptoms during early to mid summer. These symptoms will progressively worsen until leaf drop in the fall. Symptoms recur each year and spread over the tree's crown; thus, reduction in growth and dieback are common in affected trees. Bacterial leaf scorch spreads systemically and causes slow decline and death of a tree.

Management: Bacterial leaf scorch is transmitted by xylem-sap feeding insects such as spittlebugs and leafhoppers. Avoid wounding susceptible trees to prevent infection by these vectors. Infected trees should be

removed to prevent spread to healthy trees. There is no known effective preventative treatment or cure for bacterial leaf scorch. Trunk injections with antibiotics have been shown to suppress symptoms and delay tree death. Pruning infected branches has met with limited success.

As a part of the Illinois Department of Natural Resources Forest Health Protection program the IDNR is teaming with The Morton Arboretum to test for bacterial leaf scorch (BLS) in hardwood trees around Illinois. Testing costs $25 for the first sample and $10 for any subsequent sample.

How to collect samples: Collect the tip of one symptomatic branch that has 10-20 leaves attached. The leaves need to remain attached to the branch. Place the branch in a sealed plastic bag. If samples are unable to be mailed immediately, place them in a sealed plastic bag and refrigerate until they can be mailed. Please fill out one form for each sample submitted. Make sure your sample numbers on the plastic bag correlate with the numbers on the form. Please attach each form to their respective samples.

Please have all samples submitted by September 5, 2011.

Pest Update: Insects

Sycamore tussock moth caterpillar

Sycamore tussock moth caterpillars (*Halysidota harrisiis*), also known as Harris' tussock moth, were found feeding on sycamore (*Platanus occidentalis*). The larvae have orange heads and yellow bodies covered with yellow hairs and longer orange and white tufts of hair (called hair pencils – we did not make this up) on the second and third thoracic segments. Fully grown caterpillars are about one inch long. The larvae feed on leaves of sycamore and London plane trees and are generally present from July through October. They overwinter as pupae.

Management: Damage is generally aesthetic and controls are not warranted. In a serious infestation, *Bacillus thuringiensis* var. *kurstaki* (Btk) can be effective on younger larvae.

Suggested reading: http://www.forestpests.org/sycamore/foliage.html

Goldenrod leaf gall midge

Flat oval-round whitish-gray to tan galls have been found on the leaves of goldenrod (*Solidago* sp.) in the Schulenburg prairie. These leaf galls are caused by midges in the genus *Asteromyia*. They don't cause that much damage. In years when populations are high, sanitation by cleaning up any infested tissue is the best management practice.

Goldenrod ball gall

Goldenrods (*Solidago* sp.) have been found with ball galls on their stems. These galls are caused by flies or fruit flies in the family Tephritidae (not related to the pest *Drosophila melanogaster*, which is in the family Drosophilidae, and is used in genetics experiments). Overall, the galls do not harm the plant and management is not suggested.

European fruit lecanium scale on locust and elm

Lecanium scales were reported earlier on white oak in issue 2011.11 (July 1, 2011).

Fall webworm

Fall webworm (*Hyphantria cunea*) caterpillars are feeding on alder (*Alnus glutinosa*). This caterpillar is known to feed on more than 100 species of deciduous trees. Preferred hosts include hickory, ash, birch, black walnut, crabapple, elm, maple, oak, and pecan. The caterpillars are pale green to yellow, sometimes with black spots, and covered with long, silky white hairs. There are two races, black-headed and red-headed. The black-headed webworms are supposed to appear about a month earlier than the red-headed race. Full-grown caterpillars reach about one inch in length.

Fall webworms overwinter in the pupal stage in the ground, under loose bark, and in leaf litter. Adult moths appear from late May through August, and females deposit eggs in hair-covered masses on the underside of host leaves. Eggs hatch into caterpillars in about one week and begin to spin a silken web over the foliage on which they feed. The webs increase in size as caterpillars continue to feed, and heavily infested trees can be completely covered with nests. In about six weeks, caterpillars will drop to the ground and pupate.

Damage is generally aesthetic since this pest usually eats leaves late in the season and webs are typically concentrated to limited areas.

Some people confuse fall webworm and eastern tent caterpillar. How can you tell the difference? It's easy. Just remember that the Eastern tent caterpillars are spring caterpillars, and eat many plant species, but have shown preference to species in the rosaceae. Fall webworm caterpillars are active much later in the season and have a much larger number of host trees.

Management: Chemical control is generally not warranted. The unsightly webs can be pruned out of small trees. Since these caterpillars stay in the web while feeding, pruning the webs at any time of day will eliminate the caterpillars, unlike Eastern tent caterpillars which leave the web during the day to feed. Webworms also have many natural enemies including birds, predaceous bugs, and parasitic wasps. Don't burn the nests in the trees because you will only do additional harm to your tree. Btk can control the larvae, but you must penetrate the webs in order to be effective. Btk is also not as effective against mature larvae. For information about chemicals to use for serious infestations, refer to the *2010 Commercial Landscape Turfgrass Pest and Management Handbook* (CPM) if you are a commercial applicator or the *Home, Yard and Garden Pest Guide* (HYG) if you are a homeowner.

Suggested reading:http://ohioline.ag.ohio-state.edu/hyg-fact/2000/2026.html
http://www.bugwood.org/factsheets/webworm.html

Sycamore lace bug

Sycamore lace bug (*Corythucha ciliata*) adults have been found feeding on American sycamore (*Platanus occidentalis*). Lace bugs are a common pest of ornamental trees and shrubs, and most lace bug species are host specific. An exception is the hawthorn lace bug (*C. cydoniae*) that attacks several species within the Rosaceae family including cotoneaster, flowering quince, crabapple, mountain ash, pyracantha, and hawthorn. Most lace bug species have two or more generations per year. The hawthorn lace bugs have only one generation per year.

The sycamore lace bug overwinters as an adult under loose bark of its host and becomes active in early spring as leaves begin to develop. Soon afterwards, the female lays eggs on the undersides of leaves. Eggs hatch within a few days, and spiny, wingless, black nymphs begin feeding. Within 4 to 6 weeks the nymphs pupate and the next generation of adults emerge. Adults are 1/8 to 1/4 inches long with lacy wings. Sycamore lace bug adults and nymphs live on the lower surfaces of leaves and feed on leaf sap, causing yellow and white stippling on the upper leaf surface. As the insects feed, they deposit brown varnish-like excrement, referred to as tar spots, on the underside of leaves. Heavy infestations may lead to complete stippling of the leaf and premature leaf drop.

Management: There are several naturally occurring predators including green lacewings, mites, and assassin bugs. A forceful spray of water will dislodge newly hatched nymphs, and they will often die before they find their way back to suitable leaves. Plant site selection is also important as lace bugs prefer bright, sunny locations. Insecticides generally are not necessary except for severe infestations. Avoid using insecticides if natural predators are present. For

further information about chemical control and timing, refer to the CPM and HYG.

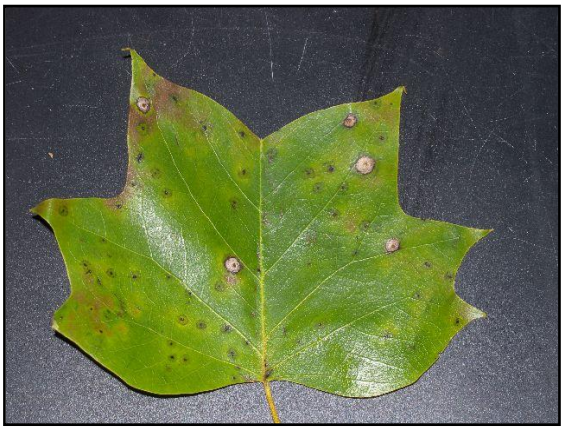
Suggested reading:http://entnemdept.ufl.edu/creatures/trees/sycamore_lace_bug.htm

Wool sower leaf gall on pin oak

Wool sower galls have been reported on pin oak (*Quercus palustris*). These 1.5 - 2 inch round whitish-pink fluffy galls are the result of a gall wasp, *Callirhytis seminator*. The galls are found on white, chestnut, and basket oaks in mid to late summer (Felt, 1965). Overall, this gall does not cause problems and management is not suggested.

Felt, Ephraimm Porter. 1965. Plant Galls and Gall Makers. Hafner Publishing Company, New York. Page 126.

Pest Update: Diseases



Mycosphaerella leaf spot

Purple leaf spots were found on the upper surface of leaves tuliptree (*Liriodendron tulipifera*). The spots are caused by the fungus *Mycosphaerella nyssaecola*. This disease can cause defoliation in a severe infection.

Management: Rake up and destroy infected leaves in the fall.

Cedar quince on hawthorn fruit

Symptoms of cedar quince rust infecting hawthorn fruits was published in the previous PHCR, but we didn't have a photo of the symptoms at that time.

Melapsora rust

Melapsora rust, caused by the fungus *Melapsora epitea*, has been found on peach-leaved willow (*Salix amygdaloides*). Small yellow spots have developed on upper leaf surfaces with corresponding small yellow-orange pustules on lower leaf surfaces. In late summer, the pustules turn dark brown to black and become crust-like. Occasionally, the rust will be severe enough to cause leaf drop. If the rust is severe for several years in a row, it may slow the growth of a tree, but otherwise is not too big of a problem in landscapes except in small trees.

The fungus overwinters in fallen leaves. In spring, spores are blown by air currents to alternate hosts (e.g., larch, Douglas-fir, and balsam fir) and infect expanding needles during wet periods. The needles of alternate hosts develop yellow spots on their upper surfaces. During the summer, spores are produced on the conifer needles and are dispersed by wind to willows where they cause the spots we are seeing now.

Severe infections may cause willow leaves to become distorted, wither, and drop prematurely. Repeated infections may slow the tree growth, but this slow growth is often masked by the normally rapid growth of willows. Usually Melapsora rust is not a problem in landscape willows.

Management: Rake and destroy fallen leaves in the fall to reduce inoculum.

Suggested reading: http://www.ipm.uiuc.edu/diseases/series600/rpd605/

Alternaria rot on tomato fruit

Alternaria rot, caused by the fungus *Alternaria* sp., has been diagnosed on heirloom tomatoes. Alternaria infections exhibit different symptoms depending on host species. Typical symptoms are small dark brown leaf spots with tan centers. On the tomato the infested area was near the petiole, where the surrounding area was dark, sunken and squishy. Dark brown conidia (spores) form in the infested tissue. Alternaria spores were visible microscopically. Generally, *Alternaria* spp. are common saprophytes (live on dead material), but a few are pathogenic to trees, shrubs, and plant commodities.

Management Alternaria overwinters as mycelium and thick-walled spores in plant debris. Collect and destroy debris in the fall to reduce the source of inoculum.

Suggested reading:
http://www.mobot.org/gardeninghelp/plantfinder/IPM.asp?code=2&group=39&level=s

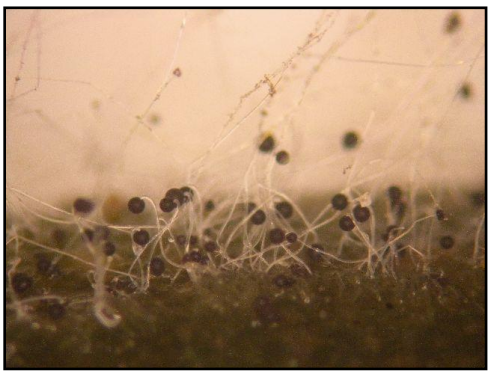
Phytophthora infestans on tomato fruit

A green tomato being grown in our Children's Garden was brought in after it began developing a discolored, sunken, squishy area on one side. *Phytophthora infestans* was identified from the white myceillial fluff growing on the skin of the fruit. *Phytophthora* species are a very important group of plant pathogens; they were discussed earlier this year in issue 2011.03.

Phytophthora infestans is especially important because it is the species that causes late blight of tomato and potato, which led to the Irish potato famine in the late 1800s. This disease epidemic inspired Anton DeBary, the father of plant pathology, to figure out what was causing the wide-spread potato death, which laid the brickwork for modern plant pathology.

Choanephora cucurbitarum on zucchini

A VERY squish, slimy, limp (and might I add, gross) zucchini was brought in from our Children's garden, which was suffering from *Choanephora cucurbitarum*, also known as 'wet rot'. This fungal infection occurs during periods of high humidity and heat on cucurbits, peppers, and tomatoes. The fungus is more closely related to black bread mold, which are both in the Phylum Zygomycota. Entire plants are susceptible to infection. Common signs on infested tissue are small gray/black 'whiskers', which are the fruiting bodies of the fungus. The spores are moved in wind, rain, and mechanically (humans, insects).



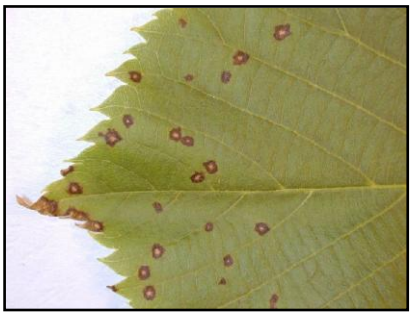
Management: Fungicides have not been found to be useful for *C. cucurbitarum* infections. It is best to prevent any sort of fruit injury, soil-fruit contact, and water on the foliage. It is recommended to place plastic mulch or a tarp under plants to prevent soil contact, or install trellises.

Cercospora leaf spot on zinnia

Cercospora leaf spot, caused by a *Cercospora* species, was found on zinnia. The spots are about ¼ inch in diameter and dark brown with a distinct margin. There is a yellow halo around most of the spots. The microscopic fungal spores are long, thin, and multi-cellular.

Management: Like other leaf spots, damage in the atter part of the growing season causes minimal stress to the plant overall. Gathering and destroying the leaves in the fall helps reduce inoculum. The inoculum of this disease overwinters in fallen leaves; therefore, discard or compost infested plant material in the fall. Practices that

improve air circulation and keep humidity levels around the plant low will minimize spread. Chemical control is probably not necessary.



Potential virus on kohlrabi

A colleague recently brought in a kohlrabi from their garden that looked nothing like a kohlrabi. They mentioned that last year, in the same location, their broccoli also grew in a disfigured-manner. Without doing molecular testing on the sample, it can probably be broadly assumed that they have a brassicaceae-virus in their garden. Luckily, most viruses are relatively host specific so other vegetable plants may be planted in the area in the future.

The interesting thing about viral infections is that the virus does not "want" to kill the host, because it needs the host in order to reproduce, but it does make the host weaker and more susceptible to other infections. Viruses are unable to move on their own, they rely on vectors to move them around. The vectors may be insects, humans, or anything else that can carry the viral particle and create a piercing wound into the host. The only way to prevent a viral disease is to control the vector.

Management: The best way to manage a viral disease is to improve the health and vigor of the host. Running a soil test and adding the needed nutrients to the soil, mulching, and watering during dry periods are the best ways to manage. Removing the infested plant will prevent insects from acquiring viral particles during feeding, and spreading them to nearby plants.

What to look for in the next week: tar spot on maple

Thank you...I would like to thank the volunteers that scouted this past week and found most of the insects and diseases that are in this report. The Scouting Volunteers for this Report include: Fritz Porter, Ann Klingle, Loraine Miranda, Bill Sheahan, and Jack Leider. Your hard work is appreciated.

The Plant Health Care Report is prepared by Stephanie Adams, M.S., Plant Health Care Technician, and edited by Fredric Miller, Ph.D., research entomologist at The Morton Arboretum and professor at Joliet Junior College;

Sharon Yiesla, Plant Clinic Assistant; Doris Taylor, Plant Information Specialist; and Carol Belshaw, an Arboretum Volunteer. The information presented is believed to be accurate, but the authors provide no guarantee and will not be held liable for consequences of actions taken based on the information.

Literature recommendations:

- Cranshaw, Whitney. 2004. *Garden insects of North America, the ultimate guide to backyard bugs.* Princeton University Press.
- Johnson, Warren T. and Howard H. Lyon. 1991. *Insects that feed on trees and shrubs.* 2nd edition. Comstock Publishing Associates.
- Orton, Donald A. *Coincide, The Orton System of Pest and Disease Management*. http://www.laboroflove conservatory.com/

Sinclair, Wayne A. and Howard H. Lyon. 2005. *Diseases of trees and shrubs*. 2nd edition. Comstock Publishing Associates.
- The *2010 Commercial Landscape & Turfgrass Pest Management Handbook* (CPM), for commercial applicators, and the *Home, Yard & Garden Pest Guide* (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).
- Wagner, David L. 2005. Caterpillars of North America. Princeton University Press.

This report is available on-line at The Morton Arboretum website at http://www.mortonarb.org/tree-plant-advice.html For pest and disease questions, please contact the Plant Clinic at (630) 719-2424 between 10:00 and 4:00 Mondays through Saturdays or email plantclinic@mortonarb.org . Inquiries or comments about the PHC reports should be directed to Stephanie Adams at sadams@mortonarb.org .