Plant Health Care Report

The Morton Arboretum

Scouting Report of The Morton Arboretum

June 3, 2011 Issue 2011.07

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.

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 the next 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.

Accumulated Growing Degree Days ($Base_{50}$): 357
Accumulated Growing Degree Days ($Base_{30}$): 1626
This week's Indicator Plant: Beauty bush (*Kolkwitzia amabilis*)

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Weather update

As of May 31, 2011, we are at 357 base-50 growing degree days (GDD_{50}), which is 212 GDD_{50} (11 calendar days) behind 2010, and behind the historical average (1937-2010) by 153 GDD_{50} (10 calendar days). May saw 5.13" precipitation, which brings us to 15.4" of precipitation for the year. This is 0.42" less than the historical May average from 2007-2010 and 0.25" less than the yearly average precipitation (2007-2010).

	B_{50} Growing Degree Days through June 2	**Precipitation (inches) May 27 - June 2**
Aurora, IL*	394	
Carbondale, IL*	1005	
Chicago Botanic Gardens**	287	3.13
Chicago Midway*	344	
Chicago O'hare**	338	5.44 (May 25-31)
Crystal Lake, IL*	378	
Harvard, IL*	352	
Kankakee, IL*	514	
The Morton Arboretum	357	4.11
Peoria, IL*	647	
Quincy, IL*	724	
Rockford, IL*	405	
Springfield, IL*	748	
Waukegan, IL*	267	
Champaign, IL*	646	

**Thank you to Mike Brouillard, Northbrook Park District, and Chris Henning, Chicago Botanic Garden, 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

Pest Update: Insects

Hydrangea bud gall

A sample of hydrangea bud gall was brought into the Plant Clinic recently. This gall is caused by a midge (*Asphondylia hydrangea*), which has not been studied extensively. Felt wrote that the midge is approximately 0.5 inch long. This is not really a major problem, but more of an FYI.

Felt, Ephraim Porter. 1965. *Plant Galls and Gall Makers.* Noble Offset Printers, Inc. Pp. 244.

Phylloxera gall

A species of phylloxeran insects (there are at least 29 that attack various species of hickory) is feeding on the developing leaves of shagbark hickory (*Carya ovata*) causing galls to form. The galls are round, about 15 mm (5/8 inch) in diameter, hollow, and green.
Phylloxera, an aphid-like insect, overwinters as eggs in bark cracks and crevices and in the crevices of old galls. Nymphs hatch in early spring, then crawl into expanding buds and feed on the tissue, which induces gall formation. When mature, the phylloxera lay eggs inside the galls from which more phylloxera hatch. As the galls dry out, they darken and split open, releasing another generation of phylloxerans that emerge from the gall to lay eggs and continue the cycle.

Management: Damage is primarily aesthetic and therefore treatment is not necessary.

Aesculus leafminer

There are numerous species of minute insects known as leafminers that live and feed inside leaves of many different plant species. Leafminer larvae eat leaf tissue between the upper and lower epidermis, leaving the leaf intact. Leafminers and their black frass can be seen within the mined leaf by holding a damaged leaf up to sunlight. This week we found the serpentine mines on Ohio buckeye (*Aesculus glabra*) caused by the Aesculus leafminer.

Management: Leafminer injury is generally an aesthetic problem so control is rarely justified. The occasional severe infestation can be controlled with systemic insecticides that should be applied when mines first appear. Refer to the *2010 Commercial Landscape & Turfgrass Pest Handbook* (CPM) and *2008 Home, Yard & Garden Pest Guide* (HYG) for timing and chemical recommendations.

Suggested reading: http://www.forestry.gov.uk/fr/INFD-6Q3AS5

Alder leafminer

European alder leafminer (*Fenusa dohrnii*) likely laid eggs on European alder (*Alnus glutinosa*) about two weeks ago, because we found some medium-sized mines. The miners begin mining along the midvein, but the insect will eventually mine entire leaves. If you hold the leaf up to the light, you can see tiny larvae and frass in the mines. There are two generations per year in this area.

Management: In a severe infestation, The University of Illinois recommends that a systemic insecticide be used to obtain control of the larvae within the leaves. Acephate has traditionally been the insecticide of choice although imidacloprid is becoming more popular. Unfortunately, for optimum effectiveness against the first generation of these leafminers, you should apply it as a soil drench the previous fall.

Suggested reading: http://www.ext.colostate.edu/pubs/insect/05548.html

Calico scale

Calico scale (*Eulecanium cerasorum*) has been found on saucer magnolia (*Magnolia soulangiana*). This colorful dark brown/white mottled scale is most noticeable at maturity, and then gradually darkens with age. This scale is capable of growing 6-8 mm (0.25 – 0.32 in) and can easily be identified by its colorful characteristics. This time of year the overwintering nymphs are mature and begin to lay eggs. The crawlers will emerge later in the summer and will settle upon some of the leaves. While on the leaves they feed on the sap resulting in a lot of honeydew and subsequent sooty mold. In the fall, they make their way back to the woody parts of the plants, where they overwinter.

The host list for this scale is fairly broad. According to Johnson and Lyon, the host list includes all stone fruit and their cultivars, Persian walnut, elm, zelkova, maple, pyracantha, pear, Liquidambar species, Boston ivy, Virginia creeper, dogwood, buckeye, wisteria, bayberry, and flowering crabapple.

Management: Calico scale does not cause much harm to the plant from its feeding, but the resulting sooty mold does reduce the plant's ability to absorb sunlight and photosynthesize.

Suggested reading: http://woodypests.cas.psu.edu/factsheets/insectfactsheets/html/Calico_Scale.html

http://www.entomology.umn.edu/cues/Web/085CalicoScale.pdf

Johnson, Warren T., Howard H. Lyon. *1991. Insects that feed on trees and shrubs*. Comstock Publishing Associates. 2nd edition. Pp. 354.

Bristly roseslug sawfly

The larvae of bristly roseslug sawflies (*Cladius difformis*) were found feeding on roses. Roseslugs are not slugs, but are a sawfly. One symptom that a rose may be infested with bristly roseslug sawfly is the excess amount of frass (feces) on the plant. There are three kinds of roseslug sawflies that feed on roses, but the bristly roseslug is the most common. The 1.27 cm (0.5 in) long larvae of all three are light green with brownish-orange heads. The bristly roseslug is not slimy like the others, but has short bristly hairs, thus the name. When they are young, they feed from the underside of the leaf, creating a window. When older, they eat irregular holes in the leaves. Right now we're seeing the irregular holes in leaves. Roseslug females cut slits along the edges of rose leaves with their saw-like ovipositors and insert eggs into the slits. There may be several generations per year.

Management: A hard spray of water knocks sawfly larvae from plants, and they are unable to crawl back onto roses. They are susceptible to natural enemies, including predators and parasitoids; but the natural enemies may not occur in large enough numbers to prevent damage. Insecticidal soap may be sprayed on the insects.

Suggested reading: http://hyg.ipm.illinois.edu/article.php?id=145
http://plantdiagnostics.umd.edu/level3.cfm?causeID=194

Spittle bug

Spittle bugs (*Aphrophora* sp.) are now active on red pine (*Pinus resinosa*). You can identify them by the frothy white mass found on foliage and twigs. It looks like tiny areas of dish soap bubbles. The spittle, consisting of plant juices, is made by the immature bug to keep it moist and protect it from its enemies. Spittlebugs suck plant sap but inflict little damage on mature plants. There are a number of species of spittlebugs that feed on both deciduous and evergreen plants in our region.

Management: Control is rarely necessary, but according to Michigan State University, hosing the plants down forcefully with water is usually sufficient to remove most of the insects. This may need to be repeated a few times.

Suggested reading: http://urbanext.illinois.edu/focus/spittlebug.cfm

Oystershell scale

An oystershell scale (*Lepidosaphes ulmi*) sample were brought into the plant clinic. The oystershell scale attacks over 130 trees and shrubs including lilac, beech, and viburnum. The scale overwinters on twigs and branches as eggs under the females' waxy scale cover, which closely resembles one-half of an oystershell. In late spring (275-500 GDD), minute pale-yellow crawlers emerge and attach themselves to the bark of twigs and branches to feed. As crawlers mature, they develop their scale cover. The fully developed scale cover is elongated, curved, and is about one eighth of an inch long with brown or gray concentric bands. Adults cluster together and, in severe infestations, may cover the bark of branches completely.

Oystershell scale feeding causes cracked bark and chlorotic, stunted foliage. Twig and branch dieback occurs in heavy infestations. Occasionally, a plant will die from an infestation.

Management: Reduce scale population by pruning out heavily infested branches. For oystershell scale, insecticidal soaps, summer oils, or insecticides should be applied to newly hatched crawlers in early June. Additional applications are typically recommended. For further information about chemical control and timing, refer to the CPM if you are a commercial applicator in Illinois or the HYG if you are a homeowner.

Suggested reading: http://www.forestpests.org/vermont/oystershellscale.html
http://www.ipm.uiuc.edu/landturf/insects/oystershell_scale/index.html

Pest Update: Diseases

Filbert blight

A sample of filbert blight was recently brought into the Plant Clinic on Harry Lauder's Walking Stick (Corylus avellana 'Contorta'). This disease is caused by the fungus *Anisogramma anomala* infecting filbert (i.e. hazelnut) (*Corylus*) species. According to Sinclair and Lyons, the disease is limited to North American and the following species: *C. americana, C. avellana, C. colurna, C. cornuta,* and *C. maxima*. This pathogen is considered to be an obligate parasite, meaning that it must infect it's host in order to complete its lifecycle.

This disease has largely studied in Oregon, where they have cool wet winters, so the lifecycle may be different in other parts of North America (Sinclair and Lyon). The pathogen requires 2-3 years to complete its lifecycle, the length depends on the host's susceptibility. The symptoms include longitudinal cankers that are pocked with

single to multiple rows of black, raised, and oval perithecial stromata (spore-producing bodies, also known as black pustule-like bumps). The infected branches may have dead leaves attached. Although the cankers can grow 30 cm per year on susceptible hosts (Sinclair and Lyon), the tree may not die for several years.

Its lifecycle begins in the fall during rainy periods. The ascospores are moved in water and wind to surrounding plants. Once the spores adhere to a branch, they germinate and infect the plant. The perithecial stromata mature and produce the ascospores before overwintering. It's these mature overwintered spores that spread during the spring rain and winds, and infect new growth.

Management: The most common management practice is planting resistant varieties of *Corylus*. The cankers can be pruned out of the tree successfully so long as all the infected tissue is removed. It may be moved around within an infected tree on pruning tools, so sanitizing pruning tools between cuts is imperative.

Powdery mildew on *Physocarpus*

Powdery mildew is appearing on the leaves of Diablo ninebark (*Physocarpus opulifolius* 'Monlo'), turf grass, and currant (*Ribes* sp.). Hundreds of plant species are susceptible to powdery mildew, but the disease is caused by many different fungal species which are host specific. This means that the powdery mildew on coralberry will not infect lilacs and so forth.

Powdery mildew appears as a superficial white to gray coating over leaf surfaces, stems, flowers, or fruits of affected plants. Initially, circular powdery white spots appear. These spots coalesce producing a continuous patch of “mildew.” Later in the season, cleistothecia (fungal fruiting bodies that look like black pepper under a hand lens) will appear. Warm days and cool nights favor this fungal disease. This disease is one of the few that is deterred by free water since spores will not germinate in free water on leaves. However, the disease still needs high humidity to infect the plant. Leaf curling and twisting result, and in severe infestations you may see premature defoliation and deformed flower buds. Although unsightly, powdery mildew is usually not fatal in the landscape.

Management: Infected plant parts should be removed as soon as symptoms appear. Dispose of fallen leaves, and do not handle plants when foliage is wet. Water plants during periods of drought to keep them

healthy. High humidity can increase disease severity so avoid overhead watering in late afternoon or evening. Provide proper plant spacing for good air circulation. Powdery mildew on some plants can result in significant damage and fungicides may be needed. To obtain optimum results, spray programs should begin as soon as mildew is detected. For chemical recommendations, refer to the CPM or HYG. There are several ornamental plants that are resistant to powdery mildew. In the future, plant resistant cultivars and species.

Suggested reading: http://ohioline.osu.edu/hyg-fact/3000/3047.html
http://plantclinic.cornell.edu/FactSheets/powdery/powdery.htm

Buckthorn rust

This week we've seen crown rust on buckthorn (*Rhamnus cathartica*) caused by the fungus *Puccinia coronata*. Symptoms are bright orange swollen spots (aecia) on leaves and petioles. A number of susceptible grasses, including oats and rye, are the alternate hosts for this rust. We've seen the disease on seedlings in a field with a lot of tall grasses, as well as on shrubs in the woods. Buckthorn is an invasive weed in our woodlands, so this is one time that we're cheering for the disease instead of the plant. Go, fungus!

Suggested reading: http://www.extension.umn.edu/projects/yardandgarden/ygbriefs/p418buckthornrust.html

Oak leaf blister

Early oak leaf blister symptoms caused by the fungus *Taphrina caerulescens* have been found on bur oak (*Quercus macrocarpa*). In spring and early summer, leaves develop wrinkled, raised, pale whitish-yellow blisters on their upper surface and corresponding pinkish-gray depressions on the lower leaf surface. Blisters range from 0.254 – 2.54 cm (0.10 – 1 in) in diameter. As they age and merge, the blisters turn red brown with pale yellow margins, and the leaf may become distorted. Red oak (*Quercus rubra*) is the most susceptible species. Oak leaf blister, like other Taphrina diseases (e.g., peach leaf curl and plum pockets), usually develops only during cool, wet springs and is more homely than harmful to the oaks. Infected leaves become distorted and may prematurely drop. The disease usually dissipates during the summer.

Management: The fungus survives the winter on twigs and bud scales. On oak, leaf blisters are more unsightly than harmful, so control is not a high priority. However, a single, dormant season application of fungicide can help; fungicides applied after budbreak are useless. Refer to the CPM or HYG for chemical control information.

Suggested reading: http://ipm.illinois.edu/diseases/rpds/663.pdf

Pest Update: Abiotic problems

Oak leaf tatters

A sample of oak leaf tatter was brought into the plant clinic on a white oak. Oak leaf tatter is not caused by an insect or a disease. Oak leaf tatters have been also reported in Iowa, Indiana, Ohio, Michigan, Wisconsin, Minnesota, and Missouri. It can affect all sizes and ages of primarily the white oak family. Damage appears at the time of leaf emergence in the spring. Newly emerged leaves of affected trees have a lacy or tattered appearance.

Trees will produce a new flush of replacement leaves, but this reduces important stored energy reserves. Healthy trees can overcome this stress, but repeated damage or damage in combination with other stress events (such as drought, insects and diseases) may make trees more susceptible to decline.

Oak tatters can be confused with anthracnose, a disease which also damages oak leaves in spring but causes brown lesions on the foliage. Feeding by caterpillars and other insects can cause the leaves to have a lacy appearance as well. To differentiate whether it's tatters or insect, look for frass (poop) or webbing. Other suspected causes include, environmental stress, cold damage, and herbicide drift.

In 2004, three researchers Jayesh Samtani, John Masiunas, and Jim Appleby, at the University of Illinois performed a preliminary study that indicated that drift of chloroacetamide herbicides (possibly from applications onto corn and soybean fields) was a possible factor in leaf tatters.

Suggested reading: http://fhm.fs.fed.us/posters/posters04/white_oak1.pdf
http://www.extension.uiuc.edu/mg/oaktatters.htm

What to look for in the next week: black spot on elm, Verticillium wilt, frogeye leaf spot, azalea sawfly, black vine weevil

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: Mary Carter Beary, Davida Kalina, Fritz Porter, LeeAnn Cosper, Ann Klingele, and Lorraine Miranda. Your hard work is appreciated.

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

Indicator plants are chosen because of work done by Donald A. Orton, which is published in the book *Coincide, The Orton System of Pest and Disease Management*. This book may be purchased through the publisher at: http://www.laborofloveconservatory.com/

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).

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 .