

Plant Health Care Report

Scouting Report of The Morton Arboretum

May 27, 2011

Issue 2011.06

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.

In order to give our audience the information they want and in the format that works best for them, we're polling our readers to find out our reader's demographics, interests, and how they access the PHCR. Please take a few minutes to take this eight question survey through Survey Monkey (no sign-up required):

<http://www.surveymonkey.com/s/BD72GMQ>

Accumulated Growing Degree Days (Base₅₀): 297

Accumulated Growing Degree Days (Base₃₀): 1449.5

This week's Indicator Plant: Pagoda dogwood (*Cornus alternifolia*)

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Pagoda dogwood (*Cornus alternifolia*)

Diseases

- *Fusarium meristemoides*
- Cedar apple and hawthorn rusts

Weather update

As of May 25, 2011, we are at 297 base-50 growing degree days (GDD₅₀), which is 104.5 GDD₅₀ (6 calendar days) behind 2010, and behind the historical average (1937-2010) by 94.8 GDD₅₀ (8 calendar days). May has seen 1.02" precipitation, which brings us to 11.29" of precipitation for the year, which is 0.20" more than 2010, but 3.11" less than May's average precipitation 2007-2010 (4.13").

	B₅₀ Growing Degree Days through May 25	Precipitation (inches) May 18-25
Aurora, IL*	294	
Carbondale, IL*	817	
Chicago Botanical Gardens**	223	0.89
Chicago Midway*	249	
Chicago O'hare**	267	0.66 (5/24/11)
Crystal Lake, IL*	283	
Harvard, IL*	263	
Kankakee, IL*	392	
The Morton Arboretum	297	0.34
Peoria, IL*	509	
Quincy, IL*	574	
Rockford, IL*	305	
Springfield, IL*	597	
Waukegan, IL*	185	
Champaign, IL*	502	

**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

Hemlock rust mites

Hemlock rust mites (*Nalepella tsugifolia*), an eriophyid mite, have been found on Eastern hemlock (*Tsuga canadensis*). Rust mites suck the juices from conifer needles, causing the infested needles to turn yellow then brown. If the infestation is severe, mite-ridden needles will drop off the tree. The mites themselves are cigar-shaped, pale yellow, about the size of dust, and can only be viewed using a strong hand lens or dissecting scope. These cool season mites may also attack fir, yew, and spruce.

Management: We are unaware of any cultural controls. For severe infestations, insecticidal soaps, summer oils, or miticides should be applied after eggs hatch, which is usually when saucer magnolia is in the pink bud stage. For further information on chemical controls, refer to the *2010 Commercial Landscape & Turfgrass Pest Management Handbook* (CPM) or the *2008 Home, Yard & Garden Pest Guide* (HYG).



Hemlock rust mites (*Nalepella tsugifolia*)

Suggested reading: <http://www.entomology.umn.edu/cues/Web/146HemlockRustMite.pdf>

Honeylocust podgall midge

Honeylocust podgall midges (*Dasineura gleditchiae*) have been found on thornless honeylocusts (*Gleditsia triacanthos* f. *inermis*). Midges are in the same family as flies (Diptera), but are much smaller (3 mm long) than houseflies. Midge adults hatch in spring around the same time honeylocusts begin leafing out. The females lay their eggs along the rachis (the midrib of a compound leaf) and on the young leaflets, where they have a short



Honeylocust podgall midges (*Dasineura gleditchiae*)

incubation period before hatching and beginning to feed. The larval feeding causes the leaflets to cup, become fleshy, and become a pod-like cocoon for the pupae. According to the Johnson and Lyon, there can be between 5-7 generations a year in Connecticut. The final generation pupates in leaflets, which fall to the ground to overwinter.

Management: The galls can be somewhat unsightly, but overall are not a problem. They can be managed with natural insect predators, parasitic wasps, or with insecticides. Midges also compete with plant bugs and spider mites for food, which can

change the population sizes from year to year.

Johnson, Warren T. and Howard H. Lyon. 1991. *Insects that feed on trees and shrubs*. Comstock Publishing Associates. Page 466.

Suggested reading: <http://www.ext.colostate.edu/pubs/insect/05571.pdf>
http://oregonstate.edu/dept/nurspest/Honey_Locust%20Pod%20Gall%20Midge.htm

Galls

Galls are irregular plant growths that occur on leaves, buds, bark, twigs, roots, and flowers of many plant species. Most galls are caused by irritation or stimulation of plant cells due to feeding or egg-laying by insects such as mites, midges, aphids, and wasps. Some galls are the result of infections by bacteria, fungi, or nematodes. There are numerous types and forms of oak leaf galls. We are now seeing leaf stem and base galls, also referred to as spring galls because they develop while leaves are expanding. Autumn galls will begin to appear on oaks in mid-summer when leaves are fully expanded.

Maple bladder gall

Maple bladder galls have been found on the upper leaf surface of silver maple (*Acer saccharinum*). The galls look like small, round red beads. They are caused by eriophyid mites (*Vasates quadripedes*) that overwinter in bark crevices. The mites become active in spring and migrate to feed on expanding leaf buds. The feeding induces formation of galls on leaves.

Management: Although the leaves may seem unsightly and there may be some early leaf drop, these galls do not cause much injury to the trees and, therefore, control measures are not needed.



Maple bladder galls

Suggested reading: <http://ohioline.osu.edu/hyg-fact/2000/2004.html>

Spindle gall on linden

Spindle leaf galls were found on the leaves of little leaf linden (*Tilia cordata*). The galls generally appear as small red bumps or spindle-like protrusions on leaf surfaces. They are very interesting to look at. These particular galls are caused by eriophyid mites that overwinter in bark crevices or wounds. The mites become active in spring and migrate to feed on expanding leaf buds.

Management: Although the leaves may seem unsightly, and there may be some early leaf drop, these galls do not affect tree health so control is not required.



Spindle leaf galls

Suggested reading:

<http://www.extension.umn.edu/distribution/horticulture/DG1009.html>

<http://www.extension.iastate.edu/Publications/IC417.pdf>

Erineum gall on linden

Erineum galls have been found on little leaf linden (*Tilia cordata*). These galls (Eriophyidae), which are microscopic (0.05 – 2 mm; 0.002 – 0.008 in). The velvety red patches are found on the underside of the leaves, while the upper surfaces show slight disfiguring due to feeding damage. Erineum galls are found on several plant species including maples, beech, and birch, even though the mites are host specific. The mites overwinter as adults under the bark of the host trees and emerge in the spring and immediately begin feeding. Although the galls are very visible due to their bright colors, the hosts are rarely harmed enough for treatment.

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Suggested reading:

<http://www.entomology.umn.edu/cues/Web/167MapleVelvetgallMites.pdf>

<http://www.ipm.iastate.edu/ipm/hortnews/node/2105>



Erineum galls



Oak apple gall

Oak apple galls, caused by cynipid wasps, were found on the leaves of pin oak (*Quercus palustris*) near the Research and Administration building at The Arboretum. The galls are spherical, 25 to 50 mm (1-2 in) in diameter, filled with a spongy mass, and usually found on the midribs of leaves. The adult cynipid wasp lays eggs in developing leaves, which causes adjacent plant cells to grow and engulf the egg, thereby providing it with food and shelter.

Management: Leaf galls rarely affect tree health so control is not required.



Oak apple galls

Suggested reading: <http://www.jmu.edu/biology/k12/galls/oakapp.htm>
<http://www.fs.fed.us/r8/foresthealth/pubs/oakpests/p34.html>

Spring and fall cankerworms



Cankerworm

Spring (*Alsophila pometaria*) and fall (*Paleacrita vernata*) cankerworms have hatched and have been found on lindens (*Tilia* sp.) and Moline American elm (*Ulmus americana* 'Moline'), respectively. Commonly known as the 'inchworm', cankerworms are in the same family as loopers (Geometridae) and have a characteristic 'looping' form of movement.

The fall cankerworm caterpillar eggs are laid in late fall and winter. The spring cankerworm caterpillar eggs are laid in early spring. Both fall and spring cankerworm eggs hatch at budbreak. Full-grown cankerworms are about 2.54 cm (1 in) long and range in color from yellow-green to black.

Cankerworms feed on the buds and new leaves of host trees in spring, eventually devouring all but the midrib of a leaf, and often defoliating an entire tree. Currently, small holes are being seen in the leaves. Trees suffering from a heavy defoliation will usually produce a second crop of leaves, but their overall vitality may be diminished. Large caterpillars often spin down on silk threads from large trees and feed on dogwood flowers (*Cornus*), rose (*Rosa*) buds, and other landscape ornamentals. Cankerworms infest many deciduous trees and shrubs, but prefer elms (*Ulmus*) and apples (*Malus*).



Cankerworm feeding damage

Management: Light infestations are not harmful to tree health, and natural enemies such as flies, wasps, and birds help to control the cankerworm populations. Heavy infestations can be controlled with *Bacillus thuringiensis* var. *kurstaki* (*Btk*) or insecticides (acephate, bifenthrin, carbaryl, neem oil, permethrin). To obtain good results, *Btk* or insecticides should be applied when larvae or feeding damage is first noticed in the spring. Refer to the CPM and HYG for management recommendations.

Suggested reading: <http://ohioline.osu.edu/hyg-fact/2000/2558.html>
<http://www.fs.fed.us/r8/foresthealth/idotis/insects/fallcank.html>

European pine sawfly

European pine sawfly (*Neodiprion sertifer*) larvae have hatched and are feeding on needles of red pine (*Pinus resinosa*). As a defense mechanism, groups of sawfly larvae rear up their heads simultaneously when disturbed, making the group appear to be one much larger organism. Right now the larvae are less than 0.65 cm (0.25 in) long, but already you can see their black heads. When fully grown, the sawflies will be about 1.9 – 2.54 cm (0.75 - 1 in) long and have several light and dark green stripes on each side of their bodies. Their heads and the first three pairs of legs are black. Their mouths are so small chewed-on needles look like straw. Eventually as the insects mature, they are able to eat entire needles. The larvae feed for weeks on old conifer needles but are finished feeding before current year's needles emerge. Then they drop down into the ground to pupate, emerging in September as adults to mate and lay eggs. The eggs look like small gold dots along the needles. In an extremely heavy infestation, trees could be entirely defoliated or stunted. But because new growth is rarely attacked, the trees survive.

Management: Birds feed on the larvae and rodents eat the pupae in the soil, but these predators are usually inadequate to control the larvae. At the Arboretum, larvae are handpicked and squished for control. If you can find the needles before the larvae hatch, remove the needles. European pine sawfly larvae are not caterpillars, thus Btk does not control them. In severe infestations, insecticides are also effective if applied early (acephate, bifenthrin, spinosad, carbaryl, neem oil). For more chemical recommendations, refer to the CPM or HYG from the University of Illinois if you are a homeowner.

Suggested reading:

http://woodypests.cas.psu.edu/factsheets/insectfactsheets/html/European_Pine_Sawfly.html



European pine sawfly (*Neodiprion sertifer*)



European pine sawfly (*Neodiprion sertifer*) eggs



Euonymus webworms (*Yponomeuta cognatella*) damage

Euonymus webworm

Euonymus webworms (*Yponomeuta cognatella*), also known as euonymus caterpillars, are feeding on running strawberry-bush (*Euonymus obovatus*). Larvae are pale yellow with black spots, eventually reaching 2.54 cm (1 in.) at maturity.

They are leaf-feeding insects that live in colonies within thin webs at branch ends. The web increases with size as the larvae feed on the leaves and continue to grow themselves. Euonymus webworm also attacks spindle tree (*E. europaeus*).

Management: Small populations can be managed by pruning out webs now and soaking them in soapy water. *Bacillus thuringiensis* var. *kurstaki* (Btk) will control young larvae, although it is less effective on mature larvae. Spray the web thoroughly with Btk, as the insects must eat the Btk in order for it to work. Other effective insecticides include acephate, carbaryl, and spinosad.

Suggested reading: <http://hyg.ipm.illinois.edu/pastpest/200806g.html>

Pest Update:

Diseases

Fusarium meristemoides

Ironwood (i.e. American hophornbeam) (*Ostrya virginiana*) is a lovely small to medium size native tree in Illinois. Dirr mentions that its native environment is the understory of gravelly or rocky dry slopes, but it is able to flourish in the landscape as well. The nursery industry has not paid this tree much attention, but it has gradually made it on people's radar as a valuable tree. One particular beneficial quality is its lack of serious insect or disease problems.

In the last few years Arboretum staff have received few samples of this disease. However, several emails, have described an orange ooze exuding from the stem during the spring months. Diagnosing plant diseases by email photos is very difficult, but the symptoms the infection sounds to be related to a fungal infection by *Fusarium merismoides*. There are few publications that cover *F. merismoides*, but the findings by Dukes has alluded to *Ostrya* being infected by *F. merismoides* var. *chlamydosporale*. Leslie and Summerell consider *F. merismoides* a ubiquitous saprophytic fungus that is also able to infect tomato, grape, and potato.



Ironwood (i.e. American hophornbeam) (*Ostrya virginiana*) with orange ooze

There are no published management protocols for this pathogen, but as with any canker-causing fungus, sanitation is the best way to handle the situation.

Dirr, Michael. 1998. *Manual of Woody Landscape Plants*. Stipes Publishing L.L.C. Page 690-1.

Leslie, J. F. and B.A. Summerell. 2006. *The Fusarium Laboratory Manual*. Blackwell Publishing. Pages 196-7.

George H. Dukes, Jr. "The occurrence of *fusarium merismoides* var. *chlamydosporale* in Rankin County, Mississippi". *Journal of the Mississippi Academy of Sciences*. FindArticles.com. 25 May, 2011.

http://findarticles.com/p/articles/mi_hb3039/is_2_48/ai_n28994212/

Cedar apple and hawthorn rusts

Telial horns have emerged from cedar-apple and –hawthorn rust galls on Eastern red cedar (*Juniperus virginiana*). The fungi causing cedar-apple and -hawthorn rusts (*Gymnosporangium juniperi-virginianae* and *Gymnosporangium globosum*, respectively) complete their life cycles on two different hosts, alternating between *Juniperus* species (such as red cedar or ornamental junipers) and *Malus* species, (eg. apple and crabapple), or *Crataegus* species (hawthorn). In spring, the brown galls (about 10-30 mm (0.39-1.18 in.) in diameter for apple rust, and about 3-15 mm (0.11-0.59 in.) for hawthorn rust) that formed the prior year begin to swell and produce orange, gelatinous tendrils (telial horns). At present, the telial horns are only about 3 mm (0.11 in.) long. The horns will elongate to up to 50 mm (2 in.) and release spores especially during dry, windy weather that follows spring rains. The spores (one of four different spore types formed by this fungus) are then blown to the apple or crabapple hosts when leaves are young (four to eight days old) and most susceptible to infection.



Cedar-apple, hawthorn, and quince rust galls on Eastern red cedar (*Juniperus virginiana*)

Management: The best control is to plant resistant cultivars or varieties of *Malus* and *Crataegus*. It is also helpful to remove one of the two host plants if they are in close proximity, and to avoid planting the alternate hosts near each other. You can also physically prune galls from the twigs of the juniper host. This is only effective if a few plants are lightly infected.

Be sure to consider whether a cultivar or variety is resistant to other diseases. The following crabapples and hawthorns have been found to be resistant to cedar-apple and –hawthorn rust:

Cedar-apple rust resistant crabapples (*Malus*):

'Adams'*
'Beverly'
'Bob White'
'Coralburst'
'Donald Wyman'*
'Dolgo'
'Indian Magic'
'Indian Summer'*
'Liset'*
'Prairifire'*
'Profusion'
'Professor Sprenger'*
'Red Jewel'
M. baccata 'David'
M. baccata 'Jackii'*
M. floribunda *
M. sargentii
M. sargentii cv. 'Tina'
M. zumi var. *calocarpa**

Cedar-hawthorn rust resistant hawthorns (*Crataegus*)

Crataegus phaenopyrum
C. viridis 'Winter King'
C. crus-gallis
C. crus-gallis var. *inverness* (thornless)
C. altaica
C. marshallii
C. pruinosa
C. douglasii
C. pentagyna
C. sanguine
C. pseudoheterophylla
C. calpodendron

The above list is by no means all-inclusive; there are hundreds of crabapple cultivars. For other resistant cultivars, see http://www.mortonarb.org/index.php?option=com_content&view=article&id=858&Itemid=6

For chemical recommendations on the Malus and Crataegus host, refer to the CPM or the HYG.

<http://www.mortonarb.org/component/content/article/193-insects-diseases/733-cedar-apple-and-related-rust-diseases.html>

<http://urbanext.illinois.edu/focus/cedarhawthornrust.cfm>

What to look for in the next week: Spittle bug, spruce needleminer, honeylocust plant bug adults, ash plant bug, gypsy moth larvae

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 Cospers, 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 .