

Plant Health Care Report

Scouting Report of The Morton Arboretum

July 1, 2011

Issue 2011.11

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 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 (Base₅₀): 874
Accumulated Growing Degree Days (Base₃₀): 2683

This week's Indicator Plant: Elderberry (*Sambucus canadensis*)

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Weather update

As of July 1, 2011, we are at 874 base-50 growing degree days (GDD₅₀), which is 266 GDD₅₀ (13 calendar days) behind 2010, and behind the historical average (1937-2010) by 225 GDD₅₀ (10 calendar days). June received 5.44" of precipitation, which brings 2011 to 20.84" total. This is 1.42" more rain for June than the historical average for June.

	B₅₀ Growing Degree Days through June 27	Precipitation (inches) June 9 - 27
Aurora, IL*	970	
Carbondale, IL*	1804	
Chicago Midway*	903	
Chicago Botanic Gardens**	801 (June 30)	0.03 (Jun 25-30)
Chicago O'hare**	879 (June 29)	0.06 (Jun 22-28)
Crystal Lake, IL*	939	
Harvard, IL*	886	
Kankakee, IL*	1155	
The Morton Arboretum	874	0.08
Peoria, IL*	1313	
Quincy, IL*	1407	
Rockford, IL*	987	
Springfield, IL*	1448	
Waukegan, IL*	763	
Champaign, IL*	1323	

**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>

Pest Update: Insects

Japanese beetles

Japanese beetle (*Popillia japonica*) adults have been seen in both Naperville and Winfield. Japanese beetles are up to 1/2 inch long, and have oval, metallic green bodies with coppery brown wing covers. They appear to have five white spots along each side and two additional white spots behind their wing covers. Upon examination under a hand lens (which we know you carry around faithfully), the spots are actually tufts of white hair.

Adult beetles feed on nearly 400 different species of ornamental plants with about 50 species being preferred. Highly preferred hosts include rose, crabapple, Norway maple, apple, cherry, grape, and linden. The adults feed

on leaf tissue between veins, resulting in skeletonized leaves that soon wither and die. Severely infested plants may be almost completely defoliated.

Japanese beetles overwinter as larvae (grubs) about four to eight inches beneath the soil surface. In spring, as the soil temperatures warm to about 55° F (usually mid-April), the grubs move upward and feed on plant roots. Adults emerge in late June through July. Within a few days after emergence, females mate and burrow into the soil to lay their eggs at a depth of two to four inches. Nearly all eggs are laid by mid-August. In sufficiently warm and moist soil, eggs will hatch in about ten days. Larvae feed on plant roots until cold weather forces them to greater depths in the soil for the winter. There is one generation of this beetle per year. Sometimes it seems like the adult stage lasts forever, especially if they attack your roses.

Management:

Adults: Adult Japanese beetles can be handpicked. This is the control we use here at the Arboretum. It is easiest to catch them by placing a container directly under the leaf that they are chewing on and then shaking the leaf. For reasons known only to Japanese beetles, they nearly always fly straight down, right into the 'collecting container.' Be careful that you aren't trying to collect bees which are also found on roses this time of year.

Sometimes pheromone traps are used to collect Japanese beetles. This is a bad idea - you will be attracting even more beetles to your property. While most of them will be killed in the trap, a large number will eat your plants!

In severe infestations, insecticides can be used. Applications should be made when adults are most active—mid-July through early August. For information about chemical control, refer to the *2010 Commercial Landscape Turfgrass Pest and Management Handbook* (CPM) if you are a commercial applicator or the *2008 Home, Yard and Garden Pest Guide* (HYG) if you are a homeowner.



When choosing new plants, select resistant species. For a list of susceptible and resistant plants see: <http://extension.entm.purdue.edu/publications/E-75.pdf>

Larvae (Grubs): If areas of turfgrass are dying, peel the turfgrass back and look underneath the sod to assess the population. Treatment for grub infestations in turfgrass is not considered necessary unless the population exceeds 10 to 12 grubs per square foot.

Eggs and first instar larvae require moisture to survive; therefore, the easiest way to reduce grub populations is to limit turfgrass irrigation during the egg-laying period when beetle populations peak (mid-July through early August). We've always found turfgrass to be boring anyway. After all, we're the Arboretum; we think the world should be full of trees, shrubs, and mulch! Japanese beetles also avoid laying eggs in shade, which is another great reason to plant more trees and shrubs.

But if you insist on growing turfgrass and have a bad grub infestation, insecticide applications are effective in controlling young larvae. To achieve the most effective control, insecticides should be applied when grubs are

small and feeding near the soil surface. Insecticide applications in spring are often ineffective since the grubs are quite large or, in late spring, they could be pupating. Refer to the CPM and HYG for specific chemical recommendations. Although not too effective in colder climates, the most commonly used biological control is milky spore disease (*Bacillus popilliae*). This is a bacterium that is specifically toxic to the grub stage of the Japanese beetle and is applied to the soil.

However, if you are using this to kill white grubs in your lawn, the first step is to be positive that the problem is caused by Japanese beetle grubs. In this area, more lawn damage is caused by southern masked chafer grubs (also known as annual white grubs) than by Japanese beetle grubs, so you want to know who you're dealing with. There is a pretty simple way to distinguish between the two. And this could be another neat party trick that will amaze and astound your friends. "Wanna know what kind of grubs these are?" Most people will run in fright from you, but if you have the right kind of friends, they'll be amazed and impressed with your vast entomological knowledge.

Anyway, don't get squeamish on me here. You need to look at the underside of the back end of the grubs. Grubs have a pattern of hairs on the last abdominal segment called rasters. You need at least a 10X lens to see the hairs. The rasters on the Japanese beetle grubs are in a distinct inverted "V" shape, while the raster pattern on the southern masked chafer grubs is random. Ohio State University has a really neat web site that shows the different common grubs and their raster patterns: <http://ohioline.osu.edu/hyg-fact/2000/2510.html>

Beneficial nematodes are now available that can be watered into turf where they infest and kill grubs. Products containing *Heterorhabditis* spp. appear to be more effective than those containing *Steinernema carpocapsae*. Beneficial nematodes are not available in stores; they are only available through mail order sources. Ohio State University keeps a web site listing good mail order sources of beneficial nematodes at: http://www.oardc.ohio-state.edu/nematodes/nematode_suppliers.htm

Suggested reading: <http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2504.html>
<http://ohioline.osu.edu/hyg-fact/2000/2001.html>
<http://www.uwex.edu/ces/wihort/gardenfacts/X1062.pdf>

Linden looper

Evidence of linden looper (*Erannis tiliaria*) larvae feeding on American linden (*Tilia americana*) has become quite apparent. Feeding by young larvae causes small holes in expanding leaves. Older larvae consume the entire leaf, except midribs and major veins. Serious infestations may result in defoliation. The larvae have rusty-brown heads and yellow bodies, with thin, wavy black longitudinal lines on their backs. They reach 3.8 cm (1.5 in) at maturity. Preferred hosts include: maple, linden, oak, apple, birch, elm, hickory, crabapple, and hawthorn.

Management: Infestations are rarely severe so control is generally not warranted. For



severe infestations, *Bacillus thuringiensis* var. *kurstaki* (Btk) is effective against young larvae and should be applied now.

Suggested reading: <http://www.forestpests.org/hardwood/lindenlooper.html>

Columbine leaf miner

One of the Scouting Volunteers has reported seeing mines in columbine leaves created by the columbine leaf miner (*Phytomyza aquilegivor*) in her garden this week (my condolences!). Damage is serpentine or snake-like white mines in leaves, usually after the plants flower. The adults are small flies that deposit eggs on the underside of leaves. After hatching, the maggots burrow into the leaves, creating the mines. They drop down into the soil to pupate, emerging as adults to lay the next generation's eggs.



Management Removing and destroying infested leaves early in the season before maggots emerge from the leaves. This will help reduce later infestations, because there are several generations.

Suggested reading: http://www.urbanext.uiuc.edu/focus/per_aquilegia.html

Lecanium Scale

European fruit Lecanium scales (*Lecanium* sp.) were found on white oak (*Quercus alba*). Lecanium scales are common pests in North America and include about a dozen species that attack a wide variety of shade and fruit trees and ornamental trees and shrubs. They vary in size, color, and shape, depending somewhat on the host plant they attack. The adult scale length varies from 3 mm - 12 mm (0.125 to 0.5 in).

Most species of Lecanium scales have similar life cycles. Eggs are laid beneath the females beginning in late spring to early summer. After egg laying, the female's body dries, becomes brittle, and turns brown. This 'scale' covering provides protection to the developing eggs. Crawlers emerge soon after and migrate to leaves to feed on plant sap. Infested plant leaves are often covered with sooty mold, a black



fungus that grows on the honeydew excreted by the scales as they feed. In severe infestations, Lecanium scales will cause some twig dieback and premature leaf drop.

Management: Prune out heavily infested branches. Control heavy infestations with summer oils, insecticidal soaps, or insecticidal sprays. Beneficial insects, such as ladybird beetles and parasitic wasps, help control these pests so use insecticides sparingly and only if less toxic means don't work. Applications should be made when crawlers are present. Repeat applications will likely be needed. Dormant oil sprays can be applied next year in early spring, prior to leaf emergence, to control overwintering females.

Note – some summer and dormant oil applications may be toxic to certain maple species, including Japanese and sugar. Also, oils should not be used on plants when wilting or under drought stress, or during excessive heat and humidity conditions. For chemical control recommendations refer to the CPM or HYG.

Suggested reading: http://www.mortonarb.org/plantinfo/plantclinic/pests_scaleinsects.pdf
http://www.ipm.uiuc.edu/greenhouse/insects/lecanium_scales/

Jumping oak gall

Jumping oak galls have been found on bur oak (*Quercus macrocarpa*) here at The Arboretum. The galls are caused by a small wasp laying its eggs on the leaves. When this common oak gall falls from its host, the larvae inside causes the gall to jump up to several centimeters off the ground. The reason for the jumping isn't entirely known. It has been speculated that the jumping allows the gall to find a crevice in the soil where it will overwinter.

Management: The galls, like most leaf galls of oaks, cause no significant harm to the tree. Therefore, no controls are recommended.



Figure 6 Jumping oak gall damage. Photo courtesy of Jim Baker - North Carolina State University



Imported willow leaf beetle

Imported willow leaf beetle (*Plagiodera versicolora*) larvae and adults have been found feeding on the leaves of bluestem willow (*Salix irroata*). Young larvae feed in groups and skeletonize leaves. As they mature, larvae consume all leaf tissue except the veins. Adults, who cause minor damage, chew notches and holes in leaves. Larvae are black, and very young larvae can be a cream color that may darken with age. Adults are about a ¼ inch long, oval, and metallic black to greenish blue. Adult beetles overwinter under loose bark of willows and poplars or in piles of

nearby debris and leaf litter. Adults begin feeding on young foliage in late April to early May and lay eggs shortly thereafter. Young larvae emerge a few days later and begin feeding. There are two to three generations per year in our region.

Management: Treatment of imported willow leaf beetle is generally not necessary. However, in severe and repeated infestations, control may be warranted. Insecticides should be applied now to control first generation larvae. Refer to the CPM or HYG for specific chemical control recommendations.

Suggested reading: <http://www.entomology.umn.edu/cues/Web/154ImportedWillowLeafBeetle.pdf>
<http://www.entomology.cornell.edu/cals/entomology/extension/idl/upload/Imported-Willow-Leaf-Beetle.pdf>

Slugs

Although slugs feed all summer, it's pretty late in the season for reporting the first sign of slug feeding damage on Hosta leaves, but it's true. Slugs are a common pest in wet weather or if landscapes are watered. They are mollusks, not insects, and are related to oysters, octopi, and clams. Slugs secrete a slimy substance to help them move about. They need moisture to create this slime, so they are highly dependent on soil moisture. Slugs feed at night when humidity is high, so the best time to see them feeding on our plants is to check the plants at night with a flashlight. They feed on many plants in the landscape, including annuals, perennials, bulbs, ground covers, trees and shrubs, preferring succulent foliage and fruit lying on the ground. Slug damage on leaves appears as irregularly shaped holes or tattered edges. Insects also eat leaf margins, but large holes in leaves are more indicative of slug feeding.



The gray garden slug is the most common slug in our area. They average about 1.9 cm (0.75 in) long, but may reach up to 3.81 cm (1.5 in). They have two pairs of tentacles on the front end of their body. Most slugs overwinter as eggs in debris. When they hatch in spring, the young slugs begin to feed immediately.

Management: Hostas with thick leaves are much less likely to suffer from slug damage. A combination of strategies is necessary to combat slugs. They can be handpicked and placed in a jar of soapy water. They are not strong swimmers and drown in the jar. Temporary traps of rolled, wet newspaper and boards placed near damaged plants provide shelter for the slugs during the day. Check the boards and papers in the morning. The slugs can then be collected and destroyed. The key to this is to collect and destroy the slugs. If you skip this step, you are aiding and abetting the slugs. Slug hideouts, such as excessive mulch piles and weeds, should be eliminated. Watering late in the day should be avoided because the moist conditions make slug movement easier.

Some gardeners place shallow pans of beer (cheap beer works fine, keep the good stuff for yourself) in slug-infested areas. The slugs are attracted to the yeast and drown in the beer. Thin strips of copper bands placed around the bases of shrubs and trees repel slugs by giving them an electric shock when their bodies touch the

copper. Make sure the slugs are not inside the copper bands when setting them out.

Insecticides are not effective against slugs because they are not insects. Registered commercial slug baits are available. For more information, refer to the CPM if you are a commercial applicator or the HYG if you are a homeowner.

Suggested reading: <http://www.ext.colostate.edu/PUBS/INSECT/05515.html>

Pest update: Diseases

Frogeye leaf spot



Crabapples and hawthorns are showing symptoms of frogeye leaf spot. Frogeye is caused by the fungus *Botryosphaeria obtusa*, which also infects the fruit and bark. Right now, the disease appears as round, purple leaf spots with tan centers. The spots turn gray-brown as they age and can develop concentric circles; hence the name frogeye.

Early frogeye is sometimes mistaken for apple scab, and the two may occur together, but the symptoms are quite different. Frogeye spots also contain pepper-like fruiting structures (pycnidia) that are visible with a hand lens in mature lesions.

The Arboretum has evaluated more than seventy crabapple cultivars for resistance to both frogeye leaf spot and scab diseases during the last two years. The frogeye disease level varies from year to year and is worse after very cold winters. Below is a list of cultivars from University of Illinois Extension that are considered good for Illinois and without other major disease problems.

Crabapple (*Malus* sp.) that show good resistance to frogeye leaf spot in Illinois

Cultivar	Form (H x W)	Flower	Fruit
<i>Malus baccata</i> var. <i>jackii</i>	20'x 20'	white	red-purple
<i>M. 'Lancelot'</i>	10'x 8'	white	gold
<i>M. 'Prairie Maid'</i>	20'x 25'	pink	orange- red
<i>M. 'Prairifire'</i>	20'x 20'	red-purple	purple-red
<i>M. 'Red Jewel'</i>	18'x 12'	white	red
<i>M. sargentii</i>	8'x 15'	white	red-purple
<i>M. 'Silver Moon'</i>	20'x 15'	white	red

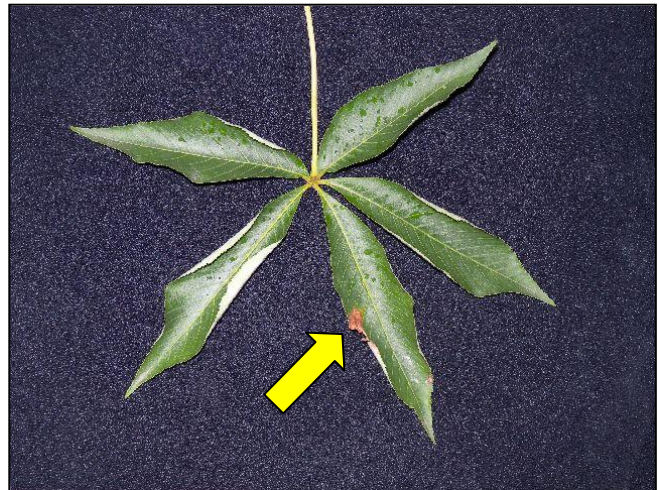
Management: Remove dead or diseased branches. Thinning-prune susceptible trees to open dense crowns. This will increase air flow and keep the leaves drier. The fungus needs periods of cool and wet condition in order to infect the leaves; increasing airflow will prevent these favorable conditions. Fruits that become spotted or dried (mummified) are another overwintering inoculum source that should be removed if possible. Choose resistant cultivars whenever possible for future plantings.

For information on how to thinning-prune a tree: http://www.treesaregood.com/treecare/pruning_mature.aspx

Suggested reading: http://www.ca.uky.edu/agcollege/plantpathology/ext_files/ppfshtml/ppfs-fr-t-3.pdf

Guignardia leaf blotch

The initial stages of Guignardia leaf blotch, caused by *Guignardia aesculi*, were found on horsechestnut (*Aesculus hippocastanum*). Right now the reddish-brown to brown lesions with a yellow border blend into the normal green leaf tissue. Upon closer inspection with a hand lens, you will soon be able to see the dark pycnidia (fungal fruiting bodies), which look like black pepper on the lesions on the upper surface of the leaf. The blotches will enlarge, coalesce, and may cover the entire leaf by the end of summer.



Premature defoliation may follow on the most susceptible hosts. This disease eventually decreases a tree's ability to photosynthesize, but generally the disease doesn't become severe until the tree's annual growth has slowed or is complete. Therefore it does not do much harm to trees in the landscape, but it does make them unsightly. It can be a major problem in nurseries. This disease is so common, that we've starting thinking that the fall color of the horsechestnut is brown. A few years ago, we rated our *Aesculus* trees for susceptibility to Guignardia. We found that in addition to bottlebrush buckeye (*A. parviflora*) being resistant, Japanese horsechestnut (*A. turbinata*), and some Ohio buckeyes (*A. glabra*) show tolerance.

Management: Removing fallen leaves may help to destroy the overwintering inoculum. Pruning trees to improve air flow may also help, since the spores are spread and germinate under moist to wet conditions.

Suggested reading: www.umassgreeninfo.org/fact_sheets/diseases/guignardia_leaf_blotch.pdf

Rose rust

Rose rust has been found on Illinois rose (*Rosa setigera* var. *tomentosa*) leaves. Bright orange powder appears initially as spots on the leaves and later may coalesce as the disease worsens. This powder is actually a cluster of aeciospores of the fungus (*Phragmidium* sp.). These spores reinfect other roses and cause orange-red spots on the leaves and long, narrow lesions on the stems. Leaves may wither and fall off and shoots may become



distorted and reddish. Plants infected by this obligate pathogen will gradually decline in vigor.

Management: Infected plant parts should be pruned out and destroyed immediately. After pruning infected material be sure to sanitize your pruning tools in isopropyl alcohol or a 5% bleach solution. Do not work with the plants in wet weather and provide ample air circulation in plantings. Planting disease-resistant roses is the best prevention. Tea roses are considered highly resistant, while hybrid teas, ramblers, and polyantha

types are moderately resistant. For chemical control, refer to the CPM or HYG.

Suggested reading: <http://ohioline.osu.edu/hyg-fact/3000/3063.html>

What to look for in the next week: azalea sawfly, woolly larch adelgid, mosaic viruses on hackberry, ash, and katsura, spiny elm caterpillar, tussock moth larvae, lacebugs, hedgehog gall

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, Jack Leider, and Kate Riha. 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; 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.