

Plant Health Care Report

Scouting Report of The Morton Arboretum



July 1, 2016

Issue 2016.7

Send comments regarding the Plant Health Care Report to Sharon Yiesla at syiesla@mortonarb.org.

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. You'll also find a table of accumulated growing degree days (GDD) throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. Arboretum staff and volunteers will be scouting for insects and diseases throughout the season. We will also be including information about other pest and disease problems based on samples brought into The Arboretum's Plant Clinic.

We are continuing to use last year's format: full issues alternating with growing degree day issues; focus on more serious pests; minor pests covered in shorter articles; alerts issued for new major pests. Readers who received our email blasts in the past will continue to receive one weekly, either to announce that the newsletter is available or, on alternate weeks, when the growing degree day information is available. To be added to the email list, please contact me at syiesla@mortonarb.org

Quick View

What indicator plant is in bloom at the Arboretum?

Wild hydrangea (*Hydrangea arborescens*) is in bloom (fig. 1)

Accumulated Growing Degree Days (Base 50): 1032.5 (as of June 30)

Accumulated Growing Degree Days (Base 30): 3188 (as of June 30)

Insects

- Japanese beetles
- Oak slug sawfly
- Two-marked tree hopper
- Columbine leaf miner
- Mystery bug on *Rudbeckia*
- Galls, episode 3
- Look-alike insects
- *Euonymus* webworm update

Diseases

- *Rhizosphaera* needle cast
- *Septoria* leaf spot
- *Guignardia* on Boston ivy
- Downy mildew of grapes

Weeds

- Yellow nutsedge



Figure 1 Wild hydrangea

Degree Days and Weather Information

We are adding a new location, Lisle, on the GDD list this year. Although we have our own weather station here at the Arboretum, we have noted that the Lisle weather station GDD often differs from our readings. So we are offering Lisle readings right above the Arboretum readings. This just goes to show that temperatures can vary over a short distance, which means growing degree days can be quite variable as well.

As of June 30, we are at 1032.5 base-50 growing degree days (GDD). The historical average (1937-2013) for this date is 957 GDD₅₀.

Location	B ₅₀ Growing Degree Days Through June 30, 2016	Precipitation (in) June 24-30, 2016
Carbondale, IL*	1781	
Champaign, IL*	1469	
Chicago Botanic Garden**	939 (as of 6/29)	.90 (6/23-29)
Chicago O'Hare*	1238	
Kankakee, IL*	1272	
Lisle, IL*	1266	
The Morton Arboretum	1032.5	.07
Northbrook, IL**	1023	
Quincy, IL*	1628	
Rockford, IL*	1090	
Springfield, IL*	1556	
Waukegan, IL*	1036	

**Thank you to Mike Brouillard, Northbrook Park District and Chris Beiser, 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/>

How serious is it?

This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked "serious". Problems that have the potential to be serious and which may warrant chemical control measures will be marked "potentially serious". Problems that are seldom serious enough for pesticide treatment will be marked "minor". Articles that discuss a problem that is seen now, but would be treated with a pesticide at a later date, will be marked "treat later". Since we will cover weeds from time to time, we'll make some categories for them as well. "Aggressive" will be used for weeds that spread quickly and become a problem and "dangerous" for weeds that might pose a risk to humans.

Pest Updates: Insects

Japanese beetles (Potentially serious)

That special time of year has arrived. It's Japanese beetle time. They suddenly seem to be everywhere. We have had reports of adult Japanese beetles (*Popillia japonica*) in several locations in Dupage County. I have even spotted a couple of them as far north as Boone County not far from the Wisconsin border (and that was almost two weeks ago!). Japanese beetles are up to 1/2 inch long, and have oval, metallic green bodies with coppery brown wing covers (fig. 2). 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, the spots are actually tufts of hair.



Figure 2 Japanese beetle adult

Adult beetles feed on nearly 300 different species of ornamental plants with about 50 species being preferred. Highly preferred hosts include rose, crabapple, cherry, grape, and linden. The adults feed on leaf tissue between veins, resulting in skeletonized leaves (fig. 3). Severely infested plants may be almost completely defoliated. Early infestations of Japanese beetle may be missed since the insects start feeding in the tops of trees.



Figure 3 Japanese beetle damage

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, the grubs move upward through the soil to pupate. Adults normally emerge from late June through July. Within a few days after emergence, the females mate and burrow into the soil to lay eggs. Nearly all eggs are laid by mid-August. In sufficiently warm and moist soil, eggs will hatch in about ten days. Grubs 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.

Management: Adult Japanese beetles can be handpicked. It is easiest to catch them by placing a soapy-water filled container directly under the leaf that they are chewing on and then

shaking the leaf. The soapy water ensures that the beetles die while you're collecting them. The beetles generally fly straight down into the collecting container. Sometimes Japanese beetle pheromone traps are used to trap them. This is not recommended as you will be attracting even more beetles to your property (more than the trap can collect). Insecticides can be used in the case of valuable plants.

Managing the Japanese beetle grubs that will hatch out around late July may help to reduce populations of adult beetles for next year. First, be sure your lawn has grubs. In late July and August, if areas of turfgrass are dying, peel the lawn back and look underneath to see the grubs. Treatment for grub infestations in lawns 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 lawn irrigation during the egg-laying period when beetle populations peak (mid-July through early August). Japanese beetles also avoid laying eggs in shade, which is another great reason to plant more trees and shrubs. Insecticide applications are effective in controlling young larvae.

If you plan to manage grubs with insecticides, know that the timing of application depends on the product selected. There are now many insecticides available to treat grubs and they have different application times. Traditional insecticides like trichlorfon are applied to the lawn when young grubs are active (August and September). Imidacloprid can be applied once in mid-July in areas where adult beetles were numerous. A newer product, chlorantraniliprole, is applied in spring to kill new grubs that hatch out in late July. It will not kill grubs present in spring. (Insecticide information from University of Illinois and Michigan State University). The bottom line is to read the product label carefully and use it at the appropriate time.

We receive a lot of questions about the use of the biological control 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. This is a slow method at best in the warmer southern states (may take 3-5 years to build up in soil enough to be effective) and is often not very effective at all in colder, northern states. Also if you have grubs that come from another type of beetle, it won't work on them at all. This product is really not recommended for our area.

Beneficial nematodes can be watered into turf, again in late July, where they infest and kill grubs. Products containing *Heterorhabditis bacteriophora* nematodes are recommended by the University of Illinois. Beneficial nematodes are not always available in stores; they are available through mail order/internet sources.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/japanese-beetles>
<http://www.turf.msu.edu/home-lawn-grub-control-products-2>

Oak slug sawfly (minor)

Oak slug sawfly (*Caliroa quercuscoccineae*) larvae were found feeding on oak (*Quercus* sp.) last week. The sawflies feed on the lower layer of the leaf, leaving behind the upper epidermal layer and creating a 'window pane' effect (fig. 4). The larvae are about 1/8 inch long, pale yellow-green, and slimy; they will reach about 1/2 inch when mature (fig.5). There are two to three generations per year.



Figure 4 Oak slug sawfly damage

Completely skeletonized oak leaves drop prematurely. Pin oak and scarlet oak are preferred hosts, but this insect will feed on white and black oaks as well. Normally, damage is an aesthetic problem.

Management: This pest is generally kept in check by parasites, microbial disease, and other natural enemies. Even noticeable outbreaks are generally not dangerous to the health of the host oaks.

Good website:

http://www.na.fs.fed.us/spfo/pubs/pest_al/sawfly/sawfly.pdf



Figure 5 Oak slug sawfly larva

Two-marked tree hopper (minor)

Two-marked treehopper (*Enchenopa binotata*) adults were found on wafer-ash (*Ptelea trifoliata*) shoots. Adults (fig. 6) are dusky brown with two yellow spots on their backs (thus the name), have high, curved horns that point forward coming out of their thorax, and are less than 1/2 inch long. The nymphs look quite different from the adults (fig. 7). They're about 1/8 inch long, dark gray to brown, and have spines sticking out of their abdomens. There may still be some nymphs around. Both stages can, as you may imagine by their name, jump! Everyone should see two-marked treehoppers at least once in their lives, because they're so amusing the way they march along on twigs.



Figure 6 Two-marked tree hopper adult

Nymphs and adults suck plant juices, but don't do much damage. The damage appears as pale yellow stippling on the leaves. Treehoppers do, however, produce honeydew which encourages sooty mold. Female adults can injure twigs by laying eggs in slits made in the bark. Black locust, bittersweet, redbud, and viburnum are also hosts for this insect.

Management: Control is not necessary.

Good website:

http://www.na.fs.fed.us/spfo/pubs/howtos/ht_walnut/treehop2.htm



Figure 7 Two-marked tree hopper nymphs

Columbine leaf miner (minor)

The flower garden is also under attack this year. We are seeing mines in columbine (*Aquilegia* species and hybrids) leaves created by the columbine leaf miner (*Phytomyza aquilegiovora*). Many plants this year are experiencing extensive mining. Luckily the damage is not fatal to the plants. Damage is serpentine or snake-like white mines in leaves (fig. 8), 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.



Figure 8 Columbine leaf miner

Management: Removing and destroying infested leaves early in the season will help reduce later infestations, because there are several generations.

Good web site: http://www.urbanext.uiuc.edu/focus/per_aquilegia.html

Mystery bug on *Rudbeckia* (minor)

One of our staff members presented us with an interesting problem on *Rudbeckia subtomentosa* 'Henry Eilers'. For the last two or three years, the plant has shown distorted leaves and stems, but normal flowers. We considered that it might be a virus or herbicide damage from a nearby lawn, but neither idea fit as well as we would like. We examined samples under the microscope and found very tiny, immature insects. We have not yet been able to identify them, but suspect they are sap feeders and that their feeding is the cause of the distortion. Since we are finding immature insects in mid-season and the damage started some time ago, it is likely that the insect has more than one generation per year. The same problem was found on *Rudbeckia subtomentosa* at another location at the Arboretum.

Management: Control should not be necessary.

Galls, episode 3 (minor)

We had no galls to report in our last full issue, but we are more than making up for it in this issue. Remember that most galls really don't harm the plant and there is generally no cause for alarm. We put this information in the newsletter so when you come across one of these you can say "Oh, that's just another gall."



Figure 9 Gall on sumac (photo:S. Yiesla)

We are seeing galls on fragrant sumac (*Rhus aromatica* 'Gro-low'). These are caused by eriophyid mites and look like small round bumps in the leaves (fig. 9). *Viburnum dentatum* was found with another mite-caused erineum gall. This looks like a light-colored felt-like mat on the leaves. Bald-cypress (*Taxodium distichum*) has cypress twig gall beginning to form on the stems. When you first see the trees, they seem to have white cones hanging on the leaves.

The cypress twig gall midge (*Taxodiomyia cupressiananassa*) causes the heavy, spongy galls to form on leaf bud tissue. When numerous, the galls may cause branches to droop under their weight. Galls are oval, light green to whitish in color, about 3/4 inch long, and located at the tips of new growth (fig. 10). Needles (leaves) grow out of the galls. The larvae overwinter in the gall and emerge as flies beginning in mid-May. Females lay eggs on newly developing leaves, and the midge larvae induce the gall formation by the leaflets. At the end of the growing season, galls turn brown, and, in autumn, they drop to the ground with the leaves.



Figure 10 Cypress twig gall

Not to be outdone, the oaks are providing us with a number of galls including the hedgehog gall and oak petiole gall. Hedgehog galls are produced by the cynipid wasp, *Acraspis erinacei*, and are usually attached to the leaf midvein. They range in size from 6 to 12 mm (1/4 to 1/2 inch) in diameter and are a yellow and red color (fig.11). They are actually attractive little guys! The oak petiole gall, true to its name, forms on the petiole of oak leaves. It is usually round to a bit oval in shape and is also caused by a cynipid wasp.



Figure 11 Hedgehog gall

Look-alike insects

It seems to be human nature to kill any bug in sight. We might want to control that urge. Sometimes the insect we are seeing is a good guy and sometimes it is just an innocent bystander. Take the mealybug and the mealybug destroyer. The mealybug is a pest of many plants. It sucks the sap out of our plants. It also produces a sticky substance called honeydew. Black sooty mold grows on this honeydew and before you know it your lovely plant is a mess.

Mealy bugs are white and covered with fluff. This description also fits the mealybug destroyer. The mealybug destroyer, however, is our friend because it eats mealybugs (and other pests). The destroyer is actually the larval form of a ladybug! The predator and prey can be hard to tell apart, but generally, the destroyer is twice as big as the actual mealybug. They will often be found close together because the ladybug lays her eggs in the egg sac of the mealybug.



Figure 12 Mealybug destroyer (a ladybug larva)

Here's another case of mistaken identity. We all know boxelder bugs, because they come inside and visit us in our homes every fall. They are not harmful, but certainly unwelcome. This season, our scouts have brought in two insects that looked like boxelder bugs. Upon close inspection, their true identities were revealed. One was the red-shouldered bug (*Jadera haematoloma*) and the other was a species of *Lopidea* (this guy doesn't even get a common name). They are both related to boxelder bug and are minor plant feeders. They just don't often show up uninvited in our homes. To see these look-alikes go to these two links: <http://bugguide.net/node/view/520569> (for red-shouldered bug) and <http://bugguide.net/node/view/674713> (for *Lopidea*)

So, the bottom line is that good identification makes for good insect management. Take a minute to learn the enemies and the good guys.

***Euonymus* webworm update**

Back in Issue 3, we reported on *Euonymus* webworm caterpillars feeding on euonymus. Our scouts have brought in some fresh samples, and we are now seeing cocoons and adult moths present, so the time for management has ended. The moths are quite interesting (fig. 13).



Figure 13 Adult moth of the *Euonymus* webworm

Pest Updates: Disease

***Rhizosphaera* needle cast (serious)**

A couple of years ago we were receiving numerous reports of *Rhizosphaera* needle cast. After the rainy spring we had, we are starting to receive a few reports of *Rhizosphaera* again. *Rhizosphaera* needle cast is a disease caused by the fungus *Rhizosphaera kalkhoffii*.

Rhizosphaera kalkhoffii infects needles on the lower branches first and gradually progresses up the tree. Although needles become infected in May and June (when new needles are emerging), symptoms do not usually appear until late summer to late fall or the following spring. Infected needles turn yellow, and small dot-like fruiting bodies (pycnidia) can be seen (with a hand lens) erupting through the stomata (fig. 14). Later, the needles turn purple to brown and begin to drop (it may take 12-15 months from the time of infection for all these symptoms to develop). Although trees are not immediately killed by this pathogen, trees which lose needles for 3 to 4 consecutive years may die. If left unchecked, the disease can turn the tree into an undesirable landscape specimen in two to three years. Colorado blue and Engelmann spruces are highly susceptible to *Rhizosphaera* needle cast. White spruce is moderately susceptible and Norway spruce is relatively resistant. Other hosts include true firs, Douglas fir, and pines.



Figure 14 Spores of *Rhizosphaera*

Management: Rake and dispose of infected needles to reduce the source of inoculum. Prune off lower branches, provide adequate spacing between trees, and control weeds and unwanted shrubs to improve air movement. Chemical controls are most effective if the disease is detected early. Fungicides should be applied when needles are half-grown (as soon as bud caps fall off) and again when fully elongated. Two years of applications are usually required.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/spruce-diseases>

Septoria leaf spot (minor)

We don't usually see *Septoria* leaf spot on dogwood until late July, but it is showing up already this year, most likely due to the rainy spring we had. *Septoria* leaf spot was diagnosed on Ivory Halo™ Siberian dogwood (*Cornus alba* 'Bailhalo'). The spots are present only on leaves. They have purple brown margins with pale centers, are angular, about 1/8 of an inch in diameter, and limited by veins (fig. 15). The spots get larger and more numerous as the growing season progresses, but the disease is actually of little consequence to the plant.



Figure 15 *Septoria* leaf spot

Management: Sanitary measures, such as collecting and discarding infected leaves as soon as they become apparent, should help reduce spread to new leaves and plants.

Guignardia on Boston ivy (minor)

A sample of Boston ivy (*Parthenocissus tricuspidata*) came into Plant Clinic this week, infected with a leaf spot caused by *Guignardia bidwellii*. The spot is relatively round with a dark margin (fig. 16). The dark fruiting bodies can also be found in this leaf spot. This disease also affects Virginia creeper (*Parthenocissus quinquefolia*). While this disease is fairly minor on ornamental plants, it also causes black rot of grapes which is more serious.



Figure 16 *Guignardia* on Boston ivy

Management: Removing fallen leaves may help to destroy the overwintering inoculum. On Boston ivy and Virginia creeper, removing badly infected leaves may help. Improving air flow may also help, since the spores are spread and germinate under moist to wet conditions.

Good website:

<http://hort.uwex.edu/articles/guignardia-leaf-spot>

Downy mildew of grapes (potentially serious)

Speaking of grapes, let's step into the vineyard and see what is attacking them this year. We had a report this week of downy mildew on grapes. Downy mildew on grapes can be very damaging. The disease is caused by *Plasmopara viticola*. A whitish growth develops on the lower side of the leaves. The upper surface will develop yellow-green lesions that eventually turn brown and may cover a large portion of the leaf. These leaf infections can lead to premature defoliation, which can lead to poor fruit production. Shoots and fruit can also become infected and will have a coating of white spores.

Management: Grape vines should be spaced to provide good air circulation. Pruning out old, unproductive growth will also help with air circulation. Fungicides are available to treat this disease, but application must begin in spring. It is too late to treat this season. Clean up and destroy any infected tissue. Good sanitation will go a long way to minimize problems next season.

Good website:

http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-S-13.pdf

Pest Updates: Weeds

Yellow nutsedge (Aggressive)

It's been a big year for aggressive weeds, and the rains of this season have awakened the yellow nutsedge (*Cyperus esculentus*). When this first comes up, it has the appearance of being one more grassy weed, but it is not. How do we know? Because sedges have edges! The stem, when viewed in cross-section, will be triangular (fig. 17). Roll the stem between your fingers and you will be able to feel the edges. The leaves are stiff and when viewed from above, they stick out in three directions.



Figure 17 Yellow nutsedge stem in cross section

This plant is aggressive in many ways. In summer, spiky clusters of small green flowers (fig. 18) will form and eventually go to seed. Each plant can produce tens of thousands of seeds. Luckily many of them will not germinate. The plant will also spread underground by rhizomes. As a bonus, the plant produces small tubers, (the 'nut' in nutsedge). Cold weather will kill the plant, but not the tubers. This plant was designed to survive! Nutsedge does best in wetter areas, so check those areas of your yard first.



Figure 18 Yellow nutsedge in flower

Management: There are no really easy choices here and it may take time to manage this weed. In small areas, try digging out the tubers and reducing the population that way. Most weed killers, including glyphosate, give poor to no control. Some products will kill off the plant, but have no effect on the tubers. Look for herbicides that are specifically labeled for nutsedge (many will have the word nutsedge in the product name). It may take multiple treatments to manage this weed.



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The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Stephanie Adams, M.S. Research Specialist in Plant Health Care; Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Doris Taylor, Plant Clinic Manager, and Carol Belshaw, 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.

Thank you...I would like to thank the volunteers who will be scouting for us this season. They find most of the insects and diseases reported here. The Scouting Volunteers include: LeeAnn Cosper, Anne Finn, Ingrid Giles, Emily Hansen, Ann Klingele, Loraine Miranda, and Bill Sheahan. Your hard work is appreciated. Thanks also to Donna Danielson who shares her scouting findings.

Literature/website recommendations:

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/>

Additional information on growing degree days can be found at:

http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects
http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf

The Commercial Landscape & Turfgrass Pest Management Handbook (CPM), for commercial applicators, and Pest Management for the Home Landscape (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).

This report is available as a PDF at The Morton Arboretum website at

<http://www.mortonarb.org/visit-explore/news-events/arboretum-news?tid=259>

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 PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org .

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