

# Plant Health Care Report

Scouting Report of The Morton Arboretum

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June 21, 2013

Issue 2013.10

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Our report includes up-to-date disease and insect pest reports, as well as color images, 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 Fridays in April and August, and weekly May-July.

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 from homeowners and professionals.

If you have any comments or concerns regarding the Plant Health Care Report, please send them to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

The Plant Health Care Report will not be published on July 5<sup>th</sup> due to the holiday.

## Quick View

### What indicator plant is in bloom at the Arboretum?

Catalpa (*Catalpa speciosa*) is in full bloom (figure 1)

**Accumulated Growing Degree Days (Base 50): 700.5 (as of June 20)**

**Accumulated Growing Degree Days (Base 30): 2246.5 (as of June 20)**

### Insects:

- Japanese beetles
- Spruce spider mites
- Lecanium scale
- Bagworm
- Imported currantworm
- More galls!

### Diseases:

- Rust on rose
- Rhizosphaera needle cast
- Phyllosticta leaf spot



Figure 1 Catalpa (photo credit: John Hagstrom)

## Degree Days and Weather Information

As of June 20, we are at 700.5 base-50 growing degree days (GDD). In 2012, when we were having an abnormally warm season, we had accumulated 1027 GDD base-50 by this date. On average we usually have accumulated 741 GDD base-50 by this date. So we are still fairly close to average this year. From June 14 through 20 we have had .13 inches of rain.

Location	B <sub>50</sub> Growing Degree Days Through June 20 , 2013	Precipitation (in) June 14-20 , 2013
Carbondale, IL*	1270	
Champaign, IL*	1054	
Chicago Botanic Garden**	635.5	.9 (6/12-20)
Chicago O'Hare*	786	
Kankakee, IL*	962	
The Morton Arboretum	700.5	.13
Northbrook, IL**	659	.12 (6/13-19)
Quincy, IL*	1039	
Rockford, IL*	787	
Springfield, IL*	1066	
Waukegan, IL*	623	

\*\*Thank you to Mike Brouillard, Northbrook Park District and Mike Annes, 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/>

**New this year:** To make the Plant Health Care Report (PHCR) more effective, each pest/disease article will be marked parenthetically this year 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 included in the PHCR, but 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, are 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. As the season goes on please give me feedback as to whether this system helps you or not. Contact me at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

## Pest Updates: Insects

### Japanese beetles (potentially serious)

It seems a little too early to talk about this, but we have already had one report of Japanese beetle (*Popillia japonica*) adults. A Plant Clinic volunteer reported this finding to us on June 14! Japanese beetles are up to 1/2 inch long, and have oval, metallic green bodies with coppery brown wing covers (figure 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 white hair.



Figure 2 Japanese beetle adults

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 (figure 3). 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 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. Last year's drought may have made egg-laying more difficult. We'll have to wait and see what size population emerges. Larvae (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.



Figure 3 Japanese beetle damage

**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.

Japanese beetle grubs have a different management strategy. If areas of turfgrass are dying, peel the lawn back and look underneath to assess the population. 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. To achieve the most effective control, insecticides should be applied when grubs are small and feeding near the soil surface (from early August until cold weather drives them deeper into the soil). Insecticide applications in spring are often ineffective since the grubs are quite large or, in late spring, they could be pupating.

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 and is often not very effective at all in colder, northern states. Also if you have grubs that come from another 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. 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](http://www.oardc.ohio-state.edu/nematodes/nematode_suppliers.htm)

Good websites:

<http://www.mortonarb.org/component/content/article/193-insects-diseases/767-japanese-beetles.html>

<http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2504.html>

### **Spruce spider mites (potentially serious)**

Spruce spider mites (*Oligonychus ununguis*) were found on black spruce (*Picea mariana*) at the Arboretum. Spider mites are very tiny (you need a hand lens to see them clearly) and have eight legs. Spider mites have needle-like mouth parts which they use to suck up cells. They can cause severe stippling of spruce needles (Figure 4). Badly infested needles appear bronze and fall off the tree. Spruce spider mites prefer cool temperatures in the 60s to low 70s F and become inactive during the hot summer months. This is unlike two-spotted spider mites that prefer warm weather. Damage from spruce spider mites often becomes visible later in the season after the mites are gone. In addition to spruce, arborvitae is a frequent host. Juniper, hemlock, pine, Douglas fir, Fraser fir, and larch can also be attacked by this pest.



Figure 4 Spruce spider mite damage

Remember that not all spider mites are pests. Some mites are predacious mites, that is, they eat the bad spider mites. So, how can you tell the difference between the pests and the predators? Shake a branch vigorously over a blank, white piece of paper. If the tree has mites, you will see tiny dots running around on the paper. If you crush them with your finger, they will be either green or yellowish-orange. The green ones have been eating plants, but the yellowish orange ones have been eating other spider mites. Predaceous mites also move faster and generally have longer legs. Having a lot of predaceous mites reduces your need to use chemicals.

**Management:** There are many predators of spruce spider mites, including lady beetles (ladybugs). Sometimes a strong spray of water can blast spider mites off the tree. Applying insecticidal soap can be effective. Horticultural oils also kill mites, but will remove the blue color on blue spruce. Other chemicals are not warranted unless you have severe outbreaks.

Good websites:

<http://www.mortonarb.org/component/content/article/193-insects-diseases/770-mites.html>

[http://woodypests.cas.psu.edu/FactSheets/InsectFactSheets/html/Spruce\\_Spider\\_Mite.html](http://woodypests.cas.psu.edu/FactSheets/InsectFactSheets/html/Spruce_Spider_Mite.html)

<http://extension.psu.edu/ipm/program/christmas-tree/pest-fact-sheets/needle-discoloration-and-injury/spruce-spider-mite.pdf>

### **Lecanium scale (minor)**

Lecanium scale (*Lecanium* sp.) adults (figure 5) and eggs have been 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 1/8 to 1/2 inch.

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 are expected to emerge at 900-1200 growing degree days (base 50), and we may reach that range this weekend if we get the heat that is predicted. After the crawlers hatch, they 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.



Figure 5 Lecanium scale adults



**Management:** Hand removal is possible on small trees/saplings/plants. Heavily infested branches may be pruned out to reduce infestations. A summer oil or insecticidal soap can be sprayed when the crawlers are active.

Good web site:

<http://www.mortonarb.org/component/content/article/193-insects-diseases/812-scale-insects.html>

<http://www.ces.ncsu.edu/depts/ent/notes/O&T/trees/note36/note36.html>

### **Bagworm (potentially serious)**

Bagworms (*Thyridopteryx ephemeraeformis*) have been found by our scouts on European larch (*Larix deciduas*). Bagworms overwinter as eggs inside the female bag. The bag can contain between 300 and 1,000 eggs. The eggs hatch in early summer and the young larvae suspend from a silk string and are often “ballooned” by wind to nearby plants. When a suitable host plant is found, larvae begin to form bags over their bodies. By mid-August the larvae have matured and are 1 to 1-1/2 inches in length, and their completed bags are 1-1/2 to 2-1/2 inches long (figure 6). They move to a sturdy branch, attach the bag with a strong band of silk, and then pupate. About four weeks later, adults emerge and mate. The sedentary female, which has no eyes, wings, legs, antennae, or functional mouthparts, lays eggs and is then mummified around the egg mass within the bag.



Figure 6 Bagworm

The tiny cone-shaped brownish bags are constructed from silk and camouflaged with bits of twigs and foliage from the host plant. Larvae stick their heads and front legs out of the top of the bags to feed and move. The feeding by young larvae results in holes in the foliage. As the larvae grow, they enlarge their bags and feed on the entire leaf leaving only veins. Bagworm populations can build rapidly and quickly defoliate their hosts. Healthy deciduous trees can usually tolerate three consecutive years of severe defoliation before they are killed. Evergreen trees, on the other hand, are frequently killed by just one year of severe defoliation. Bagworm larvae feed on over 120 species of trees and shrubs. Their bags are made of the foliage they’re feeding on, so a bagworm feeding on pine will have pine needles in its bag, while a bagworm feeding on a crabapple will have pieces of crabapple leaves decorating its bag.

Until a few years ago, bagworms were generally considered more of a problem south of Interstate 80. They can now be found in the Chicago area. They have survived in this area in the last few years due to the warmer winter temperatures. Once a plant is infested, populations can grow quickly on that plant.

**Management:** Bagworms can be a serious problem. *Bacillus thuringiensis* var. *kurstaki* (Btk) and insecticidal sprays are effective but need to be used on young larvae. It is best to wait until they have stopped ballooning before applying insecticide. Handpicking bags in winter and early spring will also help control populations.

Good web sites:

<http://www.mortonarb.org/component/content/article/193-insects-diseases/727-bagworms.html>

<http://www.uky.edu/Agriculture/Entomology/entfacts/trees/ef440.htm>

<http://ento.psu.edu/extension/factsheets/bagworm>

### Imported currantworm (potentially serious)

Imported currantworm (*Nematis ribesii*) larvae are feeding on currant (*Ribes mandchuricum*). The young larvae chew leaves of currants and gooseberries. Larvae are light green with many black spots in rows that go across the body. They have dark heads. As they mature, larvae become more voracious eaters, completely stripping plants of foliage. The full-grown larva is approximately three inches long, greenish yellow with a black head, and covered with black spots.

Larvae will drop to the ground. Most will not pupate until the next year, but a few may pupate this season as a second, smaller generation.

**Management:** Hand picking can be effective for small infestations. In more severe infestations, insecticides control larvae and should be applied now. *Bacillus thuringiensis* var. *kurstaki* (Btk) is NOT effective since the currantworms are sawflies, not caterpillars.

Good websites: <http://bugguide.net/node/view/282721>

### More galls! (minor)

The parade of galls continues. We are seeing quite a selection of galls this season. We present them here so you can recognize them when you see them. Remember that the majority of galls are harmless, a cosmetic problem.

This week we have seen white oak club gall on white oak (*Quercus alba*). This gall is caused by a small wasp. For photos go to <http://bugguide.net/node/view/365480>.

We have also seen leaf petiole gall on black walnut (*Juglans nigra*) (figure 7). This gall is caused by an eriophyid mite.



Figure 7 petiole gall on black walnut

We are also seeing an interesting gall caused by a hickory gall midge (*Caryomyia* species) (figure 8). There are a number of galls produced by different species of hickory gall midge. The one we are seeing looks like a little volcano!

Plant Clinic received a sample of cone gall on witch hazel last week (figure 9). This gall is caused by an aphid. On the lower side of the leaf, you can see a hole where the gall maker left the gall (figure 10).



Figure 8 Hickory gall caused by gall midge



Figure 9 Cone gall on witch hazel



Figure 10 exit hole for gall maker

### **Pest Updates: Diseases**

#### **Rust on rose (potentially serious)**

Rust on rose (*Rosa* spp.) leaves and canes is being reported to the Plant Clinic. Bright orange “powder” (figure 11) 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 re-infect 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 disease may gradually decline in vigor.



Figure 10 rust on roses



**Management:** Infected plant parts should be pruned out and destroyed immediately. Do not work with the plants in wet weather and provide ample air circulation in plantings. When buying new roses, select roses that are resistant to rust. It is too late to use fungicides. They must be applied as new growth emerges in the spring

Good websites: <http://ohioline.osu.edu/hyg-fact/3000/3063.html>

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

For the past few years, we have received numerous reports of *Rhizosphaera* needle cast on blue spruce (*Picea pungens*). The problem seemed less severe last year, most likely due to dry conditions. With the return of the rains, we are starting to receive reports of *Rhizosphaera* again. Our scouts recently found it on the Arboretum grounds. *Rhizosphaera* needle cast is a disease caused by the fungus *Rhizosphaera kalkhoffii*.



Figure 12 *Rhizosphaera* spores on needles

*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 initially yellow, and small dot-like fruiting bodies (pycnidia) can be seen (with a hand lens) erupting through the stomata (figure 12). 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. Hosts in other genera include true firs, Douglas fir, and pines.

**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 websites:

<http://www.mortonarb.org/tree-plant-advice/article/748/spruce-diseases.html>

<http://ohioline.osu.edu/hyg-fact/3000/3059.html>

<http://www.extension.umn.edu/yardandgarden/ygbriefs/p435rhizosphaera.html>

### ***Phyllosticta* leaf spot (minor)**

Leaf spots caused by *Phyllosticta nyssae* were found on black tupelo (*Nyssa sylvatica*). The spots are irregularly round, less than 5 mm in diameter, and are usually found on lower leaves (figure 13). They are brown at first, then develop a tan center and a dark purple border. Small black fruiting bodies are often visible in lesions on the upper side of the leaf. In severe infections, lesions may grow together forming large, irregularly shaped areas of diseased tissues. Damage is mostly aesthetic.



Figure 13 *Phyllosticta* leaf spot

**Management:** Rake and destroy fallen leaves to reduce the source of inoculum.

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The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Clinic Assistant 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 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.

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 that are in this report. The Scouting Volunteers include: LeeAnn Cosper, Deborah Finch-Murphy, Anne Finn, Ann Klingele, Arnis Krusow, Jack Leider, Loraine Miranda, Bill Sheahan and Kathy Stephens. Your hard work is appreciated.

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 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 as a PDF 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](mailto:plantclinic@mortonarb.org) . Inquiries or comments about the PHC reports should be directed to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org) .

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