

# Plant Health Care Report

Scouting Report of The Morton Arboretum



June 3, 2016

Issue 2016.5

Send comments regarding the Plant Health Care Report to Sharon Yiesla at [syiesla@mortonarb.org](mailto: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, that the growing degree day information is available. To be added to the email list, please contact me at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org)

## Quick View

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

Old-fashioned weigela (*Weigela florida*) is in bloom (fig. 1)

**Accumulated Growing Degree Days (Base 50): 469 (as of June 2)**

**Accumulated Growing Degree Days (Base 30): 2064.5 (as of June 2)**

### Insects

- Gypsy moth
- Scale
  - Lecanium scale
  - Pine needle scale
  - Euonymus scale
- Four-lined plant bug
- Elm leafminer
- Rose plume moth caterpillar
- Galls, episode 2

### Diseases

- Apple scab
- Witch-hazel leaf spot/blight
- Rust on rose
- Viruses

### Miscellaneous

- Cold damage



Figure 1 Old-fashioned weigela

## 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 2, we are at 469 base-50 growing degree days (GDD). The historical average (1937-2013) for this date is 396 GDD<sub>50</sub>.

Location	B <sub>50</sub> Growing Degree Days Through June 2, 2016	Precipitation (in) May 27-June 2, 2016
Carbondale, IL*	976	
Champaign, IL*	754	
Chicago Botanic Garden**	364 (6/1)	2.46ö (5/26-6/1)
Chicago O'Hare*	587	
Kankakee, IL*	622	
Lisle, IL*	610	
The Morton Arboretum	469	1.89ö
Northbrook, IL**	439.5	
Quincy, IL*	834	
Rockford, IL*	502	
Springfield, IL*	793	
Waukegan, IL*	444	

\*\*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**

### **Gypsy moth (serious)**

Gypsy moth (*Lymantria dispar*) caterpillars are serious defoliators that feed on over 450 species of trees and shrubs. Last week our scouts brought in a very young caterpillar. This young caterpillar had not yet fully developed the set of blue and red bumps that are characteristic of the mature caterpillar (fig. 2), but the typical long hairs were present on the body. A mature caterpillar can eat one square foot of foliage per day. Their favorite trees are oak, crabapple, birch, linden, willow, and hawthorn. Although deciduous trees that are defoliated can put out a new set of leaves, the trees use a lot of resources to do so. Trees that suffer a lot of defoliation (greater than 50%) several years in a row may die. Severe defoliation also makes trees more susceptible to other problems. Needle-bearing conifers, including spruces and pines, cannot re-foliate and therefore may die after one season of attack.



Figure 2 Gypsy moth caterpillar

The caterpillars will be actively feeding for the next few weeks. They pupate around the end of June, generally emerging as adults in mid-July through mid-August. The adults will mate and lay eggs, then die. We don't yet know how big the population will be this year. Populations had been dropping in recent years, but last year saw a significant increase.

**Management:** *Bacillus thuringiensis* var. *kurstaki* (*Btk*), can control young larvae but is not as effective against mature larvae. Treat now while larvae are still relatively small. The first three instars remain in the tops of trees, so detection may be difficult. Mature larvae (fourth instar and later) feed at night and crawl down from the tops of trees to hide during the day in protected spots.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/gypsy-moth>

<http://www.na.fs.fed.us/spfo/pubs/fidls/gypsymoth/gypsy.htm>

<http://www.fs.fed.us/ne/morgantown/4557/gmoth/>

### **Scale (potentially serious)**

Scale insects are prominent again this year. In the last issue we reported on oystershell scale. In this issue we'll cover some other species that are showing up now.

Lecanium scale (fig. 3) populations were very heavy last year and it looks like they will be again this year. The term lecanium scale actually refers to several species that were once lumped together in the same genus. They vary in size, color, and shape, depending somewhat on the host plant they attack (hosts include maple, oak, elm and birch among others). The adult scale length varies from 1/8 to 1/2 inch.



Figure 3 Lecanium scale

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). 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.

Pine needle scale (*Chionaspis pinifoliae*) is showing up on pine, especially mugo pine. Populations also seem high here, but we are seeing some evidence of parasitoid activity (look for a hole in the adult scale). This is a good thing. Often as scale populations rise, eventually so do the populations of beneficial insects.

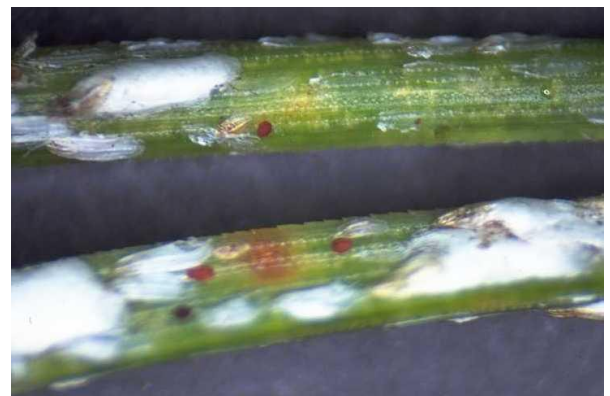


Figure 4 Pine needle scale

Pine needle scale overwinters as eggs under a female adult. The female looks like a white, tear-drop shaped fleck (fig. 4) on a pine needle. After the eggs hatch (which should be occurring now), the tiny crawlers move to a new site on the host plant to feed. They suck juice from needles. As the crawlers develop, they secrete a white, waxy covering over their bodies. By late June or early July, they reach maturity, and second generation eggs are laid. Second generation crawlers begin to appear in late July to early August. A heavy infestation will cause needles to turn yellowish brown. Pine needle scale does not produce honeydew.

Heavy infestations can give trees a flocked appearance. After multiple years of severe infestation, branches, and sometimes trees, can be killed. Pine needle scale prefers Scots and mugo pines and occasionally infests Austrian, white, and red pines.

Euonymus scale is another pest that should be in the crawler stage very soon. Our scouts brought in a sample last week but no crawlers were present. With the heat we have been having, that could change quickly.

It is time to be proactive with this common pest. Euonymus scale (*Unaspis euonymi*) is one of those pests that we can see all year long, especially on ground cover euonymus. Even though we see the adults all season, the young crawlers are out and active for only a short time. Many insecticide treatments are targeted at the crawlers when they emerge, which is generally around the early part of June (GDD 500-700). The crawlers are a pale, yellow-orange. Male adult scales are white, and the females are dark brown and oystershell-shaped (fig. 5). Euonymus scale overwinters as mated females on plant stems.



Figure 5 Euonymus scale males (white) and females (brown)

**Management:** On smaller plants, like groundcover euonymus, heavily infested branches may be pruned out to reduce the population. Chemical treatments are commonly targeted at the young (crawler stage) of the scale, so knowing which scale you have and when the crawlers are expected helps with the timing of pesticide use. Systemic insecticides may be used on some species of scale, but planning is required as these products are often applied early in the season to give them time to move through the plant. Before using any insecticide, check for the presence of beneficial insects or holes in the adult scale that indicate attack by parasitoids.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/scale-insects>

#### Four-lined plant bug (minor)

Be looking for the four-lined plant bug (*Poecilopsus lineatus*). Our scouts found a nymph feeding on butterfly bush (*Buddleia davidii*) last week. This insect feeds on 250 species, including many kinds of perennials, vegetables, and shrubs such as bluebeard, forsythia, and sumac. Feeding injury is frequently mistaken for leaf spots. Four-lined plant bugs have a piercing, sucking mouthpart which they use to break plant cells and then flush the feeding wound with digestive juices. Damage appears as dark leaf spots (fig. 6) which subsequently turn translucent. The damage is more serious on herbaceous plants than on woody



Figure 6 Damage caused by four-lined plant bug

plants. Sometimes by the time the damage is noticed, the insect isn't there anymore. Both nymphs and adults feed on leaves, creating the spots.

Nymphs are red and will develop dark wing pads as they mature. The adult stage is 1/4" to 1/3" long and has four longitudinal black lines on its yellow or green back (fig. 7), thus the name. It's quite a shy insect that scurries away when you try to find it. The insect overwinters as eggs laid in slits cut into plant shoots. There is one generation per year.



Figure 7 Four-lined plant bug adult

**Management:** Some people try to hand-pick these insects, but their timidity makes them difficult to catch. Insecticidal soap should take care of larger infestations.

Good websites:

[http://www.clemson.edu/cafls/departments/esps/cuac/miridae/poecilocapsus\\_lineatus.html](http://www.clemson.edu/cafls/departments/esps/cuac/miridae/poecilocapsus_lineatus.html)

### Elm leafminer (minor)

Elm leafminer (*Fenusa ulmi*) has been found on Accolade elm. Elm leafminer is a type of sawfly. The adults emerge in spring to lay eggs in elm leaf tissues. A week later, the eggs hatch and young larvae begin to make mines in the leaves. The sawfly larvae will feed on the leaf tissue between the upper and lower epidermis of the leaves. The mines at first look like U-shaped brown spots between veins in the leaf. Eventually the insects will eat a hole through the leaf epidermis, fall to the ground, and excavate a hole in the soil to overwinter. Severe damage can result in defoliation. To test a leaf for miners, hold the leaf up to the light. If the insect is still in the leaf, you can see it. You will also be able to see frass (insect feces) within the mined area (fig.8). They spend most of their life cycle burrowed about an inch in the ground.



Figure 8 Elm leafminer and frass inside leaf

**Management:** We are unaware of any nonchemical control. Insecticides are targeted at the adults. There is only one generation per year. Leaves that emerge later will not be infested.

Good websites: <http://hyg.ipm.illinois.edu/pastpest/200806f.html>

### Rose plume moth caterpillar (minor)

In the last issue we reported on rose slug sawfly attacking rose leaves. Now another rose pest has shown up. The larvae of the rose plume moth is now at work on roses. This larva is a caterpillar and is approximately ½ inch long. It is light green with a reddish stripe running from its head to the middle of its body (fig. 9) at one point in its life cycle. The adults are present June through August. New larvae are produced in fall and overwinter inside the stems of the rose. They resume feeding in spring (May).



Figure 9 Rose plume moth caterpillar

Plume moth larva has been most commonly found near the tips of rose bushes, damaging the buds and leaves and sometimes creating some webbing (fig. 10). The caterpillar's color blends with the color of new rose growth nearly perfectly, so they may be difficult to find. A lot of frass (insect feces) is also found in these areas.



Figure 10 Damage caused by rose plume moth caterpillar

**Management:** Pruning off infested tips may be the best management advice that can be offered at this time. Since this is a caterpillar, *Bacillus thurengiensis kurstaki* (*Btk*) should be effective, but is best used when the caterpillars are small.

### Galls, episode 2 (minor)

As promised, more galls (interesting, but not injurious).

Vein pocket gall (fig.11) is showing up on the leaves of pin oak (*Quercus palustris*). These galls are hard, light green-colored elongate swellings that occur along mid- and lateral leaf veins of the leaves. Feeding by the larval (maggot) stages of very small flies called midges cause the galls to form.



Figure 11 Vein pocket gall on pin oak

Witch-hazel cone gall (fig. 12), caused by an aphid, is showing up on the leaves of witch-hazel (*Hamamelis* species). The gall does indeed look like a pointy little cone emerging from the upper surface of the leaf.



Figure 12 Witch-hazel cone gall aphid

## **Pest Updates: Disease**

### **Apple scab (potentially serious)**

Apple scab is showing up already and is progressing rapidly. We are already seeing development of the leaf spots and even some defoliation. This does not bode well. Defoliation early in the season could turn into heavy defoliation as the season progresses. Early lesions look like velvety, olive-green leaf spots and will continue to develop into larger, irregular dark spots (fig. 13). Often lesions develop along the mid-veins of the leaves. Infected leaves eventually turn yellow and drop prematurely on susceptible hosts (this is already happening). This defoliation can stress and weaken the tree, especially if it happens year after year. The fungus which causes scab (*Venturia inaequalis*) overwinters on fallen leaves and on lesions on twigs. Sunken spots may appear later on fruits, and susceptible crabapples can be completely defoliated in severe disease years. Scab severity is a product of a specific temperature range, duration of moisture on leaves and host susceptibility. Scab severity is worse in wet springs, so we can expect to see quite a bit of this on susceptible cultivars.



Figure 13 Apple scab

**Management:** The best way to avoid apple scab is to plant resistant varieties. “Resistant” just means that, in the typical year, a resistant plant won’t suffer as much from the disease as a susceptible plant. However, it may exhibit symptoms in “bad” scab years. When shopping for new crabapples, ask your local nursery which scab-resistant varieties they stock. Caring for your trees, such as watering during summer droughts, may moderate effects of defoliation and reduced photosynthesis in affected trees. As the fungus overwinters on fallen leaves and blighted twigs, collecting and destroying them may help reduce the source of inoculum next year. Spraying for apple scab needs to begin when leaves begin to emerge and should continue (at labeled intervals) until two weeks beyond petal fall.

Good websites: <http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/apple-scab>

### **Witch-hazel leaf spot/blight (potentially serious)**

We are seeing symptoms of leaf spot/blight on witch-hazel (*Hamamelis* spp.), caused by the fungus *Phyllosticta hamamelidis*. This disease appears as brown, irregular leaf blotches with very narrow dark-brown margins (fig. 14). They may coalesce and cover



Figure 14 Witch-hazel blight



the entire leaf. Tiny black fruiting bodies called pycnidia break through both surfaces of the lesion and can be seen with a hand lens or magnifier. The level of disease we are seeing is minor, but since we are seeing it early this year, it may become severe. This disease can defoliate witch-hazels when severe.

**Management:** Prune branches and give plants ample space to improve air circulation. This fungus overwinters in fallen leaves; therefore rake and compost leaves to reduce the source of inoculum. Fungicides can be applied in spring when leaves emerge. Only trees that had severe leaf blight this year should be treated next year.

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

Rust on rose (*Rosa* spp.) leaves and canes is being reported to the Plant Clinic on Knock Out® roses. Bright orange “powder” appears initially as spots on the leaves and later may coalesce as the disease worsens (fig. 15). This powder is actually a cluster of spores 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 15 Rust on rose

**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.

### **Viruses (some minor, some potentially serious)**

Last year we reported on a number of viruses on landscape plants, and we are starting to see some already this year. We have seen a virus on geranium and tobacco rattle virus on bleeding heart. We have also received a report of mosaic virus on rose. Viruses seldom kill their hosts, but the plant will always be infected and many viruses can be spread by insects that feed on a diseased plant and then move to a healthy plant to feed. Virus symptoms can vary by plant and by virus. Common symptoms include mottling, mosaic patterns and excessive growth of plant parts.



Figure 16 Virus on Rozanne geranium (photo: S. Adams)

**Management:** There is no chemical management of viruses. Once the plant is infected, it cannot be 'cured'. There are two options for dealing with viruses. First, you can keep the plant and live with the fact that it has the virus. For some plants this is an acceptable option, especially if it does no serious damage to the plant or there are no other plants of the same species nearby to become infected. The second option is to destroy the plant. This is a good idea with small plants like roses, hostas or raspberries where there are other plants of the same species nearby that might become infected.



Figure 17 Mosaic virus on rose (photo: Nanette Kalscheur, Illinois Dept. of Ag)

## **Pest Updates: Miscellaneous**

### **Cold damage (mostly minor)**

The weird up and down temperatures of May have lead to interesting damage on some of our plants. We are noticing edges and tips of leaves being slightly tattered. On some leaves, the cold damage is expressed as somewhat regular holes, often along the midvein of the leaf. What is happening? When temperatures drop at night to near freezing (as they did in May), the newly emerging leaves suffer tissue damage. As the leaves continue to unfurl, the damaged area often splits and becomes tattered. While unattractive, it seldom causes any real harm to the tree.



***Bartlett Tree Experts, Presenting Sponsor of the Plant Clinic.***

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 Cospers, 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://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)  
[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](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](mailto:plantclinic@mortonarb.org). Inquiries or comments about the PHCR should be directed to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

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