

Plant Health Care Report

Scouting Report of The Morton Arboretum

April 22, 2016

Issue 2016.2

Welcome to the Plant Health Care Report (PHCR) for 2016. My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic and I will be responsible for compiling the newsletter again this year. Send comments regarding the Plant Health Care Report to me 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

Quick View

What indicator plant is in bloom at the Arboretum?

Eastern redbud (*Cercis canadensis*) (Figure 1)

Accumulated Growing Degree Days (Base 50): 91 (as of April 21)

Accumulated Growing Degree Days (Base 30): 892.5 (as of April 21)

Miscellaneous

- ISAM (Invasive Species Awareness Month) workshop
- Crabgrass preventer

Insects

- European pine sawfly
- European elm flea weevil
- Woolly alder aphid
- Pine bark adelgid
- Rose root gall
- Spruce spider mite
- Spruce needleminer
- Hemlock needleminer
- Boxwood psyllid update
- Tuliptree scale

Diseases

- Wetwood and slime flux
- Volutella blight

Weeds

- Nimblewill



Figure 1 Redbud (*Cercis canadensis*) (photo: John Hagstrom)

Happy Earth Day!

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 April 21, we are at 91 base-50 growing degree days (GDD). The historical average (1937-2013) for this date is 13.5 GDD₅₀. Since January 1, we have had 7.72 inches of precipitation.

Location	B ₅₀ Growing Degree Days Through April 21, 2016	Precipitation (in) April 15-21, 2016
Carbondale, IL*	344	
Champaign, IL*	207	
Chicago Botanic Garden**	51 (as of 4/20)	0.6 (4/14-20)
Chicago O'Hare*	132	
Kankakee, IL*	168	
Lisle, IL*	148	
The Morton Arboretum	91	.52
Northbrook, IL**	79 (as of 4/20)	
Quincy, IL*	263	
Rockford, IL*	91	
Springfield, IL*	221	
Waukegan, IL*	79	

**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.

Miscellaneous:

ISAM (Invasive Species Awareness Month) workshop

Species on the Move: Updates on Invasive Threats to Urban and Natural Areas

Our workshop will feature experts from the U.S. Department of Agriculture, the University of Illinois Forestry Extension and The Morton Arboretum, to discuss new invasive pests such as jumping worms, wood boring insects, oak problems, updates to the Illinois Exotic Weed Act, and diseases on the move.

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Crabgrass preventer

Crabgrass seed will begin to germinate when SOIL temperatures are greater than 55 degrees F for 5-7 consecutive days. We are now getting into that temperature range, so it is time to get crabgrass preventers applied.

Pest Updates: Insects

European pine sawfly (minor)

Our scouts found eggs of European pine sawfly (*Neodiprion sertifer*) embedded in the needles of *Pinus resinosa* (red pine) last week. With the heat we have had recently, it is likely that they have begun to hatch out (they emerge between 100 and 200 GDD). This insect can cause heavy defoliation on red, Scots, mugo, Japanese red, and jack pines. European pine sawflies are interesting to watch. Groups of sawfly larvae rear up their heads simultaneously when disturbed, making the group appear to be one much larger organism. This is a great defense mechanism. When fully grown, the sawflies will be about $\frac{3}{4}$ - 1 inch long and will have several light and dark green stripes on each side of their bodies. Their heads and the three pairs of legs are black (fig. 2). Their mouths are so small after hatching that they can only eat one side of each needle, and therefore the chewed-on needles look like straw. Eventually as the insects mature, they are able to eat entire needles. The larvae feed for weeks on old conifer needles but are finished feeding before current year's needles emerge. Then they drop down into the ground to pupate, emerging in September as adults to mate and lay eggs in the current year's needles. The eggs look like small gold dots along the needles (fig.3). In an extremely heavy infestation, trees could be entirely defoliated or stunted. But because new growth is rarely attacked, the trees survive.



Figure 2 European pine sawfly larvae

Management: Birds feed on the larvae and rodents eat the pupae in the soil, but these predators are usually inadequate to control the larvae. If you can find the needles before the larvae hatch, remove the needles. Larvae can be removed by hand or washed off with a strong stream of water from the garden hose. They have no hooks on their feet like caterpillars do, so they can't hang on very well. Since European pine sawfly larvae are not caterpillars, *Bacillus thuringiensis* (Bt) does not control them.



Figure 3 European pine sawfly eggs in needles

Good websites:

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

European elm flea weevil (minor)

European elm flea weevil (*Orchestes alni*) adults (fig. 4) are already feeding on the newly emerging leaves of elms. This pest first appeared in Northern Illinois in 2003 and has regularly caused foliage damage to elms during the past few years.

Adult-feeding results in tiny shot holes in the leaves, and heavy feeding can cause newly expanding leaves to wither and turn brown. After feeding, the female weevil cuts a cavity into the leaf mid-vein and inserts an egg. The hatching larvae create blotch mines at the leaf tips. Larvae feed for about 2-3 weeks, and then pupate within the mined leaf. Very heavy feeding can reduce photosynthetic capacity of the tree, thereby impacting overall tree vitality.



Figure 4 European elm flea weevil adult

Management: Insecticides are effective in controlling adults and could be applied now. Depending on how long the insecticide is effective, several applications may be needed. However, spraying a large elm may not be practical.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/european-elm-flea-weevil>

Woolly alder aphid (minor)

Woolly alder aphids (*Prociphilus tessellates*, formerly *Paraprociophilus tessellates*), have been found on alders on the Arboretum grounds. These are sap-feeding insects. Two hosts are needed to complete their life cycle: alders and silver maples. The eggs are usually laid in fall in the bark of the maples. When the young hatch in spring, they collect on leaves and reproduce. Their offspring fly to alders and collect on the twigs where new generations develop. They are small and covered with white waxy filaments, which makes them easy to see (right now we are seeing them only partially covered with the waxy filaments) (fig. 5). The presence of honeydew and sooty mold will also make them easy to find. In fall, they will fly back to the silver maples to lay eggs. They do little damage.



Figure 5 Woolly alder aphids

Management: Aphids can be dislodged from plants using a strong jet of water from the hose. Doing this periodically will keep the aphid populations low and allow the parasites and predators to build up to effective control levels.

Good websites:

<http://www.ipm.iastate.edu/ipm/hortnews/2000/7-21-2000/woollyaphid.html>

Pine bark adelgid (minor to potentially serious)

Our scouts are reporting pine bark adelgid eggs on white pine (*Pinus strobus*) this week. Pine bark adelgid (*Pineus strobi*) adult females secrete a protective white, woolly mass, which covers the light-yellow eggs and can be found at the base of needles (fig. 6) and on the bark of limbs and trunks. This pest has five generations per year. The adelgid prefers white pine but also attacks Scots and Austrian pines. Healthy trees are not usually harmed by this adelgid, but high populations may require treatment.



Figure 6 Pine bark adelgid eggs at base of needles

Management: In mild cases, eggs and crawlers can be washed off now with a high-pressure water spray. In severe or repeated infestations, an insecticidal spray can be applied when the crawlers are out. Lady beetles, hover flies, and lacewings feed on adelgids, so if these predators are present, it is best to use an insecticidal soap or high pressure water spray.

Rose root gall (minor)

Here's a good reason not to jump to conclusions: the rose root gall. Arboretum staff brought in a sample of *Rosa pendulina* with a gall at the base of the stem. We immediately thought of crown gall which can be a major disease on roses. On closer inspection, while it did resemble crown gall (fig. 7), there were some differences in color and general appearance. We cut the gall open and discovered that there were insect larvae inside! So definitely not crown gall. The gall contained several chambers (fig. 8), each with a fairly mature larvae inside (how nice that everyone gets their own room).



Figure 7 Exterior of the rose root gall

A little research turned up the culprit's true identity, the rose root gall caused by *Diplolepis radicum*, a cynipid wasp. Roses are the only hosts for this gall-maker. Despite the name, these insects are not attacking the root. Instead they are attacking adventitious shoots at the base of the stem, leading to gall formation at the very base of the stem (similar to crown gall).



Figure 8 Interior of the rose root gall showing individual chambers

Management: Very little management may be needed with this insect. There are several species of parasitoid insects that attack them, leading to a high mortality rate. While our sample was sitting in a plastic bag, an adult insect emerged. It was not the adult of the gall-maker, but the adult of one of the parasitoids! So the good guys were already at work. One or two galls per plant usually will do little damage.

Spruce spider mite (potentially serious)

Spruce spider mites (*Oligonychus ununguis*) are causing stippling (fig. 9) on the needles of black spruce (*Picea mariana*). 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 sap, leading to stippling of needles. 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.

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.



Figure 9 Stippling due to spruce spider mites

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. Insecticides may be needed for severe outbreaks.

Good website: <http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/mites>

Spruce needleminer (minor)

Overwintering spruce needleminer (*Endothenia albolineana*) larvae are active and are feeding on spruce (*Picea* sp.). Larvae overwinter in nests formed from silk, dead mined needles and frass (fig. 10). In early spring, they emerge and begin mining needles until pupation in mid-May. Adult moths emerge in June, and the females lay pale green eggs at the base of needles. Typically in July, larvae hatch and begin mining and hollowing out needles; this feeding continues until frost. Each larva is capable of eating the insides of up to ten needles. Needleminers usually attack Norway, white, and Colorado spruces growing under adverse conditions in the upper Midwest. Infestations and damage are usually minor.



Figure 10 damage from spruce needleminer

Management: To reduce the current year's infestation, wash away the nests with a forceful stream of water now. Gather and discard the resulting debris.

Hemlock needleminer (minor)

Hemlock needleminers (*Coleotechnites macleodi*) were found on Eastern hemlock (*Tsuga canadensis*). These tiny caterpillars hatch in July, enter leaves near the base and feed on green tissue inside the needle, leaving the epidermis of the needle intact. They bind needles together with webs, so you see clusters of brown, mined needles throughout the tree. The insect overwinters as a larva (fig. 11) and resumes feeding in the spring.



Figure 11 Hemlock needleminer larva

Management: Hemlock needleminer is considered a minor pest, and control is usually not necessary.

Boxwood psyllid update

In the April 8 issue of the Plant Health Care Report we mentioned various pests of boxwood to look for. Our scouts have confirmed that the larvae of boxwood psyllids are now active.

Elm bark beetle update

Our scouts report that elm bark beetles are starting to show up in our traps

Tulip tree scale (potentially serious)

If it's not one thing, it's another. Last year many magnolias were heavily infested with magnolia scale. Just this week we have found a magnolia that appears to have tulip tree scale (*Toumeyella liriodendri*). A couple of old adults (fig. 12), as well as some nymphs were found. The adults were a bit weathered, but we believe they are tulip tree scale. Magnolia scale and tulip tree scale are similar in appearance. This native, soft scale preys upon tulip tree, yellow poplar, magnolias, and sometimes linden. During its feeding stage it produces an abundance of honeydew, which eventually becomes black when sooty mold begins to grow. The females mature in late summer and begin laying eggs that hatch in August. They only have one generation per year and overwinter as nymphs.



Figure 12 Tulip tree scale adult

Management: These scales are found usually on stressed trees, so encouraging health and vigor is the best defense. Luckily the treatments that manage magnolia scale will also

manage this pest. So if you have been treating for magnolia scale, you have also been treating for tulip tree scale.

Good website: <http://ento.psu.edu/extension/factsheets/tuliptree-scale>

Pest Updates: Diseases

Wetwood and slime flux (minor)

The Morton Arboretum Plant Clinic is receiving reports of wetwood and slime flux on a variety of trees this spring. This bacterial disease is usually associated with elms and poplars, but can affect other tree species. The bark or trunk of the tree appears to be water-soaked (fig. 13). The causal organisms of wetwood are several different bacteria in the inner sapwood and heartwood. Gas produced by bacterial fermentation creates pressure that forces the wetwood-ooze liquid waste products through openings and weak points in the tree. When wetwood ooze becomes a chronic problem, the resulting flow of ooze is called slime flux. If this toxic liquid is transported internally to branches, wilting and/or defoliation may occur. Wilting is rarely seen, but areas of dead bark are common. On the plant surface, this liquid supports the growth of many other kinds of bacteria and fungi that sometimes results in 'slime' being produced on the surface of the bark. The slime can be various colors (fig. 14).



Figure 13 Wetwood

Management: There is no cure for wetwood. Keep trees watered during dry periods because drought is thought to increase wetwood problems. The practice of boring a hole into the trunk and inserting a pipe to release gas pressure doesn't help much, plus you are creating another open wound for organisms to colonize. Dead and weak branches should be removed. Bacteria are easily transmitted by tools so disinfect tools before pruning another tree.

Good web sites:

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



Figure 14 Wetwood

Cedar-apple rust update

The galls on junipers now have fully expanded telial horns, so the spores will be on the move.

Volutella blight (potentially serious)

The Plant Clinic at The Morton Arboretum has had a few reports of suspected cases of *Volutella* blight on Japanese pachysandra (*Pachysandra terminalis*). We have not had any samples to look at to confirm the problem. *Volutella* blight, caused by the fungus *Volutella pachysandricola*, will cause leaf blight and stem cankers on pachysandra. Symptoms first noticed in early spring as brown to tan leaf spots can be confused with winter desiccation. The spots will enlarge and may eventually cover the entire leaf. Concentric circles form within the spots and are diagnostic for this disease (fig. 15). Leaves eventually turn yellow and fall off the plant. Stems turn dark and die. During extended wet periods, salmon or peach colored fungal spore masses may be visible. Eventually, large patches of the ground cover may become infected and die.



Figure 15 *Volutella*

Volutella is an opportunistic pathogen. Winter damage may allow this disease to get started, as can wet debris that accumulates in plantings of pachysandra. It can infect a plant any time during the growing season but is more common during periods of rainy weather. Infections tend to diminish as the weather becomes drier in the summer, but the high humidity created by densely planted and heavily mulched beds can promote the blight. Stress from overcrowding, too much sun, winter injury, and shearing may increase susceptibility to stem blight. Older and injured plant parts of Japanese pachysandra are more susceptible to the disease than young succulent tissue. Bottom line: consider whether the site is one in which pachysandra can thrive.

Management: Start with healthy plants that are free of disease. Pachysandra prefers filtered sun or full shade more than full sun conditions, and will be stressed by the latter and more susceptible to blight. Plants should be watered during dry periods by using drip irrigation and/or by watering early in the day to allow foliage to dry out. Avoid working with plants when they are wet to prevent the spread of disease. Remove and discard diseased leaves and plants as soon as symptoms are visible to limit spread to healthy plants. Clean up fallen leaves and other debris that may have accumulated on top of ground covers. Thin and divide overcrowded plants in early spring, when weather is dry, to improve air circulation. Avoid over-fertilization, which causes dense foliage that encourages infection. In winter, avoid piling snow on pachysandra beds. Fungicides may be helpful in the early stages of the disease.

Good website:

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

Pest Updates: Weeds

Nimblewill (Aggressive)

Nimblewill (*Muhlenbergia schreberi*) is a grassy weed that has been showing up in a number of lawns again this year. The Plant Clinic at The Morton Arboretum has received several samples of this weed. Nimblewill is a warm-season grass so it greens up later than our bluegrass lawns. That makes it easy to spot in spring. Look for the brown patches in your green lawn (fig. 16). In summer, it differs from our bluegrass in that it has smaller leaves giving it a finer texture. It spreads by thin, wiry stolons which give the plant a looser look. Because of the stolons it can spread fairly aggressively. It can also spread by seed. Nimblewill may be misidentified as bentgrass, but bentgrass is a cool season grass and will be green in spring and fall, when nimblewill is brown.



Figure 16 Patches of nimblewill in the lawn (photo: Richard Jauron, ISU extension)

Management: Nimblewill is hard to control because it is a perennial grass just as your lawn is. Most common lawn herbicides cannot select out one perennial grass and not kill the other. There is an herbicide on the market now that is selective for nimblewill. The product is Tenacity and contains the active ingredient mesotrione. Read the label for instructions on proper usage. We understand that this product is costly and the cost may outweigh the benefits for some homeowners. Small patches of nimblewill can also be killed using glyphosate (RoundUp). Glyphosate is non-selective, so apply it only to the nimblewill. The dead grass will need to be removed and the lawn reseeded in that area.



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://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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