

Plant Health Care Report



THE
CHAMPION
of TREES

Scouting Report of The Morton Arboretum

July 14, 2017

Issue 2017.8

Welcome to the Plant Health Care Report (PHCR). My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic, and I am responsible for compiling the newsletter. Comments or concerns regarding PHCR should be sent to syiesla@mortonarb.org. To be added to the email list, please contact me at that email address.

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.

This newsletter is available online at

<http://www.mortonarb.org/news-publication/plant-healthcare-report?tid=259>

Quick View

What indicator plant is in bloom at the Arboretum?

Queen Anne's lace (*Daucus carota*) is in flower (Figure 1)

Accumulated Growing Degree Days (Base 50): 1315 (as of July 13)

Accumulated Growing Degree Days (Base 30): 3851 (as of July 13)

Insects/other pests

- Viburnum leaf beetle update
- Head-clipping weevil
- Foliar nematodes
- Redbud leaf folder
- Galls, chapter 4

Diseases

- Tar spot of maple
- Island chlorosis
- Black spot on elm

Miscellaneous

- Chlorosis



Figure 1 Queen Anne's lace

Degree Days and Weather Information

We are once again offering Lisle readings right above the Arboretum readings. The spread between these two sites shows that temperatures can vary over a short distance, which means growing degree days can be quite variable as well.

As of July 13, we are at 1315 base-50 growing degree days (GDD). The historical average (1937-2016) for this date is 1258 GDD₅₀. Since January 1, we have had 24.34 inches of precipitation. Historical average (1937-2016) for precipitation Jan-July is 21.89 inches.

Location	B ₅₀ Growing Degree Days Through July 13, 2017	Precipitation (in) July 7-13, 2017
Carbondale, IL*	2205	
Champaign, IL*	1843	
Chicago Botanic Garden**	1247 (as of 7/12)	3.47 inches (7/12)
Chicago O'Hare*	1465	
Kankakee, IL*	1593	
Lisle, IL*	1512	
The Morton Arboretum	1315	1.35 inches
Northbrook, IL**	No report	
Quincy, IL*	1933	
Rockford, IL*	1349	
Springfield, IL*	1913	
Waukegan, IL*	1188	

**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 and insect relatives

Viburnum leaf beetle update (serious)

Viburnum leaf beetle adults have emerged and are feeding on leaves. The beetles are small (1/3 inch) and brown to golden brown (fig. 2). They are not easily noticed, but their feeding is. They will pick up where the larvae left off last month, and the larvae did a lot of damage.

Management: Adults can be treated with one of the following insecticides: carbaryl, cyfluthrin, permethrin, malathion or acephate. Insecticidal soap is **not** effective on the adults. Do not **spray** for the adults until they are present. These insecticides are not preventative.

Cornell recommends a single soil drench of imidacloprid by early July to manage adults (to protect pollinators it is best to do it after the flowering has ended).

In fall, look for egg-laying sites. The actual eggs are not visible. The eggs are laid in small holes on the ends of twigs and then the holes are capped. The caps stand out against the bark of the twig, making them easy to see (fig. 3). Cut out the twigs that have the eggs in them, and get them out of the garden completely. This will greatly reduce the number of insects you have next year. If you have a number of shrubs, remember that you have all fall and winter to remove these twigs. Getting them in the egg stage greatly reduces the need to spray next year. We can't stress enough the importance of this technique.

Head-clipping weevil (minor)

Where have all the flowers gone? If you are noticing flowers missing from some of your perennials, you may have the head-clipping weevil (*Haplorhynchites aeneus*) in your yard. For the last few years, on The Morton Arboretum's Schulenberg Prairie, we have found several members of the Aster family (*Helianthus*, *Silphium* and *Ratibida*) with their heads clipped. This year, we are seeing a number of flowers cut while they are still in the bud stage.

The adult is a dark-colored weevil (a beetle with a snout). The insect is about ¼ inch long, and the snout is long and curved. The female uses her mouthparts, located at the end of the snout, to cut the flower stalk about 1 inch to 1 ½ inches below the flower head. The flower stalk is not



Figure 2 adult viburnum leaf beetle



Figure 3 Egg-laying sites

cut all the way through, so the flower head dangles on a thin piece of stem tissue (fig 4). The dangling flower head is used by the adults for mating and egg-laying.

Once the flower head finally breaks off and falls to the ground, the larvae hatch and use the flower head for food. Mature larvae will move into the soil to overwinter, with pupation occurring in late spring.

Management: Good sanitation is the key in managing this pest. Timely removal of hanging flower heads and recently fallen flower heads will reduce the population for next year.



Figure 4 Damage of head-clipping weevil

Good websites: <http://bygl.osu.edu/node/394>
<http://entomology.k-state.edu/extension/insect-information/crop-pests/sunflowers/sunflower-headclipping-weevil.html>

Foliar nematodes (potentially serious)

Nematodes are not pathogens. They are microscopic roundworms, but they do cause disease-like symptoms. We have seen these affecting hostas, Siberian bugloss (*Brunnera*) and anemones this season. On bugloss and anemone, the symptoms are angular dark spots, cut off by the veins (fig. 5). On hosta, the symptoms are elongated areas of yellow or lighter green. These areas run parallel to the veins. Eventually the yellow areas turn brown and may become tattered.



Figure 5 Damage from foliar nematodes

Foliar nematodes (*Aphelenchoides* species) move on the plant in a film of water. They can enter through the breathing pores (stomates) of the leaves. The damaged areas are often defined by the veins of the leaves as the nematodes cannot cross the veins.

Management: Since the nematodes move in water, it is important to avoid overhead watering. Soaker hoses should be used. Remove infested plants. Clean-up of plant debris is also important since the nematodes reproduce in plant tissues (leaves and buds, but not roots). It is also thought that they may survive in soil. There are no chemical controls at this time.

Redbud leaf folder (minor)

Just when we think we have seen it all, our scouts bring us something we have not seen before. This week it is the redbud leaf folder (*Fascista cercerisella*). These little zebra-striped caterpillars had neatly folded the leaf in half and were busy inside feeding on the leaf and building some webbing. On our sample, the leaf was folded in half (fig. 6), but apparently the insect may just fold over a portion of the leaf and fasten it with strands of webbing. In some cases, two leaves get webbed together.



Figure 6 Damage of redbud leaf folder

Our sample had both early instars and late instars. The early instar caterpillars are light green with very little marking. The late stage instars take on a zebra-striped look (fig. 7), although if you look very closely, the pattern is really black and light green, not black and white. The caterpillars make little tubes to live in, and they feed on the upper surface of the leaves. Feeding will cause the leaf to turn brown and some may fall off. Despite this, the damage is relatively minor.



Figure 7 Larva of redbud leaf folder

Management: Since the damage is minor, no insecticides should be needed. Clean-up of fallen leaves should reduce populations for next year.

Good website: <http://bygl.osu.edu/node/592>

Galls, chapter 4 (minor)

As summer moves on, the galls continue to show up like clockwork. These are harmless, but we put them in so you know what they are when you see them. This week we have had visits from some old favorites, as well as a couple of less common visitors.

Oak trees are sporting a couple of different galls this week. The hedgehog gall was found on bur oak (*Quercus macrocarpa*). Hedgehog galls (fig. 8) are produced by the cynipid wasp *Acraspis erinacei*. They range in size from (1/4 to 1/2 inch) in diameter and are a yellow and red color. They are actually attractive little guys!



Figure 8 Hedgehog gall

Jumping oak gall was found on white oak (*Quercus alba*). Jumping oak gall is caused by a gall wasp *Neuroterus saltatorius*. Right now this looks like small beads on the back of oak leaves (Fig.9). Soon the galls will pop off and fall to the ground. The activity of the larvae inside will cause the galls to jump around. This is free entertainment from the insect world. (If you have never seen this, go to <http://www.arkive.org/california-jumping-gall-wasp/neuroterus-saltatorius/video-00.html> for a great video).



Figure 9 Jumping oak gall

A small brown spot remains on the leaf where the gall was once attached. Since no evidence of the gall remains, people assume that the tree has a fungus.

It seems too early in the season to talk about goldenrod, but the goldenrods are developing galls already. The goldenrod gall fly (*Eurosta solidaginis*) makes those interesting ball shapes in the goldenrod stem. The gall maker lives inside that round gall and will pupate there in spring.

On black maple (*Acer saccharum* subsp. *nigrum*) our scouts discovered the gouty vein gall. This gall is caused by a midge that only attacks sugar maple and black maple. Sometimes if the gall maker moves in early on young leaves, it can cause a very deformed leaf. A later infestation causes only pouch-like growths along the veins (fig. 10).



Figure 10 Gouty vein gall

Our scouts also found an interesting gall on hackberry. We are all used to seeing hackberry nipple gall which is so common on this species. But the gall we received this week was a bit different. They look a bit like little cones or similar to the thorns (fig. 11) you might see on a rose stem. It turns out to be the hackberry thorn gall, caused by the midge *Celticecis spiniformis*. It is always nice to have a new entry in our little parade of galls.



Figure 11 Hackberry thorn gall

Pest Updates: Diseases

Tar spot of maple (minor)

Tar spot of maple is showing up early this year (probably due to that rainy spring we had). We have seen it on Norway maple (*Acer platanoides*), and right now it is in the early stage. In the

early stage, the spots are yellowish with black specks in them (fig 12) that may go unnoticed. As the disease develops, the spots will look just like shiny black spots of tar flung about on the upper surface of maple leaves. Several different fungi in the genus *Rhytisma* infect the leaves of maples and cause the spots. The spots range from 1/5 to 4/5 inch in diameter. In some cases, a red ring surrounds the spot. *Rhytisma* spp. most commonly infect leaves of silver and Norway maples, although red and sugar maples are also susceptible. It does little harm to the trees, but is unsightly.



Figure 12 Early symptoms of tar spot

Management: Fungicides generally are not necessary. To reduce inoculum, rake up and discard the leaves in fall.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/tar-spot-maple-rhytisma-spp>

Island chlorosis (minor)

Usually when we talk about chlorosis we are talking about yellowing of leaves due to nutrient deficiencies. Island chlorosis is caused by a virus and is showing up on hackberry (*Celtis occidentalis*) at The Morton Arboretum. The symptoms of the viral infection are a mosaic pattern of spots of light green or tan tissue between veins (fig. 13). The interesting thing about viral infections is that the virus does not want to kill the host because it needs the host in order to reproduce, but it does make the host weaker and more susceptible to other infections. Since viruses are unable to move on their own, they rely on vectors to move them around. The vectors may be insects, humans, or anything else that can carry the viral particle and create a piercing wound into the host. The only way to prevent a viral disease is to control the vector. Once the tree has a viral disease, it will have it for life. Luckily this one seems to do no real harm to the tree.



Figure 13 Island chlorosis on hackberry

Management: The best way to manage a viral disease is to improve the health and vigor of the host. Running soil and foliar nutrient tests and adding the needed nutrients to the soil, mulching, and watering during dry periods are the best ways to manage.

Black spot of elm (minor)

Black spot of elm, caused by the fungus *Stegophora ulmea* has been found recently. This disease first appears as small black leaf spots (fig. 14). Later, spots may coalesce to form irregular black blotches up to ¼ inch wide. Wet seasons may lead to severe blighting of young leaves and succulent shoots or to complete defoliation by early August. Symptoms normally progress from low branches to high ones. Susceptible elms include American, Chinese, Dutch, Japanese, Scotch, and Siberian.



Figure 14 Black spot of elm

Management: This disease is one of several “anthracnose” diseases we see each year. Dead leaves and shoots should be collected to reduce inoculum. Prune out dead twigs in the dormant season. Chemical controls are not usually necessary.

Good website: <https://ag.umass.edu/landscape/fact-sheets/anthracnose-of-elm>

Miscellaneous

Chlorosis (potentially serious)

Chlorosis (yellowing of leaves) is showing up on a number of plants including river birch (*Betula nigra*), hydrangea (*Hydrangea*), tulip tree (*Liriodendron tulipifera*) and swamp white oak (*Quercus bicolor*).

Chlorosis is a yellowing of the leaf due to low levels of chlorophyll (the green pigment in leaves). In mild cases, leaf tissue appears pale green but the veins remain green (fig. 15). Leaf tissue becomes progressively yellow, and may turn white in advanced cases. Leaf margins may become scorched or develop symmetrical brown spots between veins. Trees that commonly show chlorosis include pin oak, red oak, red maple, white oak, river birch, tulip-tree, sweet gum, bald cypress, magnolia, and white pine.



Figure 15 Chlorosis on tuliptree

There are many causes of chlorosis. The most common cause of chlorosis in our area is due to iron and manganese deficiencies resulting from alkaline soils. High soil pH causes iron and manganese that is present in the soil to become unavailable to the plant. Anything that negatively impacts the root system (physical damage, flooded soils, and dry soils) can also lead to chlorosis. This year the abundant rains of spring, followed by a dry early summer, are starting to impact the ability of roots to take up nutrients, so addition of iron to the soil may not

work in all cases. There may be more than one possible cause. Take river birch, for example. It is fairly common to see chlorosis from lack of iron. In this case, we see the typical yellow leaf with green veins. River birch also suffers when the soil is too dry. Then we tend to see leaves turn all yellow and fall off (sometimes as many as half the leaves may drop). Determining the cause helps us to determine management practices.

Management: In dry seasons, be sure to provide enough moisture to plants. When the season is wet, there is not much we can do but wait for drier weather. Adding fertilizer just won't help in this case. Where soil pH is alkaline (northern Illinois), avoid planting trees that do not tolerate alkaline soils. For existing trees, fertilize soil with a nitrogen- and sulfur-based fertilizer from early spring through mid-May, use chelated iron and manganese, which are not affected by soil pH (best used in spring), or have the tree injected with iron or manganese.

Good website:

<http://www.mortonarb.org/trees-plants/plant-clinic/horticulture-care/chlorosis>



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The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by 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. Frank Balestri M.S., Plant Health Care Technician/Research Assistant is responsible for coordinating the scouts. 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: Maggie Burnitz, LeeAnn Cospers, Ingrid Giles, Emily Hansen, Ann Klingele, Pat Miller, Loraine Miranda, Julie Moore, Mary Noe and Wendy Vichick . 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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