

Plant Health Care Report

Scouting Report of The Morton Arboretum

June 11, 2021

Issue 2021.6

For comments regarding PHCR, or to subscribe to email alerts regarding posting of new issues, contact Sharon Yiesla at syiesla@mortonarb.org.

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. Due to the ongoing COVID-19 situation, volunteers will not be scouting in the early part of the season. Once the situation improves, both Arboretum staff and volunteers will be scouting for insects and diseases. Plant Clinic staff are working remotely, but still able to answer questions via email at plantclinic@mortonarb.org. or by phone at 630-719-2424 (Monday thru Friday, 11 am to 3pm).

Quick View

What indicator plant is in bloom at the Arboretum?

Japanese tree lilac (*Syringa reticulata*) is flowering (fig. 1). It can serve as an indicator for a variety of pests. In early to full flower (500-700 GDD), it can indicate hatching of euonymus scale crawlers. In full to late flower (700-800 GDD), it can indicate time for bagworm caterpillars to hatch out and begin to feed.

Accumulated Growing Degree Days (Base 50): 665.5 (as of June 10)

Insects/other pests

- Viburnum leaf beetle update
- Columbine leafminer
- Kermes scale
- Galls, part 2

Diseases

- Eastern filbert blight

Weeds

- Bishop's weed

Miscellaneous

- Chlorosis
- Spring is dry!



Figure 1 Japanese tree lilac

Soil temperatures around Illinois (from Illinois State Water Survey)

This information will be provided in spring and fall issues only. For more data go to <https://www.isws.illinois.edu/warm/soil/> (you will need to set up an account to access data.) Root growth on trees/shrubs occurs when soil temps are above 45 degrees (use deeper depth).

Max. Soil temps For June 10, 2021*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	98.5	98.9	93.4
4-inch, bare soil	95.8	94.4	83.7
4-inch, under sod	83	85.2	81.5
8-inch, under sod	74.6	77.6	76

* This is the maximum soil temperature recorded the day prior to publication of PHCR.

Degree Days (current and compared to past years) and rainfall

As of June 10, we have 665.5 base-50 growing degree days (GDD). The historical average (1937-2020) for this date is 547 GDD₅₀. The table below shows a comparison of GDD in different years. We are comparing the GDD reported in this issue with the GDD reported in the first issue of 2020, 2015 and 2014. These years were selected since publication dates of the first issue were within a day or two of each other. Glencoe, Lisle and Waukegan (60085) were not used in 2015 and 2014, so there is 'no report' from those stations.

Location	GDD as of 6/10/21	GDD as of 6/11/20	GDD as of 6/11/15	GDD as of 6/12/14
Carbondale, IL*	1013	1003	1136	1120
Champaign, IL*	823	760	960	919
Chicago Botanic Garden**	726	583	494 (6/10)	488.5 (6/11)
Glencoe*	417	345	No report	No report
Chicago O'Hare*	789	644	730	709
Kankakee, IL*	733	680	783	762
Lisle, IL*	778	670	No report	No report
The Morton Arboretum	665.5	652.5	599.5	571
Quincy, IL*	886	824	1030	960
Rockford, IL*	691	609	607	599
Springfield, IL*	865	816	1020	953
Waukegan, IL* (60087)	679	511	542	560
Waukegan, IL (60085)	728	548	No report	No report

**Thank you to Chris Henning, 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 <https://gdctracker.msu.edu/>

Seasonal precipitation (rain and melted snow) in inches.			
	2021	2020	average
Jan	1.5	2.14	1.952
Feb	1.49	.85	1.769
Mar	1.24	4.15	2.536
April	1.39	4.37	3.692
May	3.34	8.24	4.194
June	.06	4.91	4.190
July		2.87	3.893
Aug		1.1	3.802
Year to date	9.02 (as of 6/10)	19.75 (as of 5/31)	14.143 (as of 5/31)
Total (Jan-Sept)		32.18 (Jan-Sept)	29.33 (Jan-Sept)

How serious is it?

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”. “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

Examples of insects that may emerge soon in northern Illinois (based on growing degree days)			
GDD (base 50)	insect	Life stage present at this GDD	Type of damage
400-600 (start) 1000-1200 (peak)	Emerald ash borer	Adults beginning to emerge	Mating and laying eggs
700-800	Bagworm	Caterpillars emerging	Chewing foliage
900-1200	Japanese beetle	adults	Chewing foliage; mating and laying eggs

Viburnum leaf beetle update

Until recently, viburnum leaf beetle larvae have been feeding heavily on viburnum leaves. The larvae are now going into the ground to pupate and become adults. While they are in the soil, they can't be treated with insecticides. Insecticides generally do not harm insects in the pupal stage. A soil drench of imidacloprid can be done now, but that will be taken up by the plant and will target the adults when they emerge to feed. It will not kill the pupae in the soil. In early July, the small brown beetles (fig. 2) will emerge and again feed on leaves. They can be treated with one of the following insecticides: carbaryl, cyfluthrin, permethrin or malathion. Insecticidal soap that worked on the larvae will not treat the adults, due to their hard bodies.

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 with a mixture of chewed wood and excrement. The caps are dark and stand out against the bark of the twig, making them easy to see. From October through March, cut out the twig tips that have the eggs in them and get them out of the garden completely. This is the most effective and least toxic means of control. It will greatly reduce the number of insects you have next year. If the eggs can't hatch, they can't eat.



Figure 2 Viburnum leaf beetle adult

Columbine leafminer (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 leafminer (*Phytomyza aquilegiovora*). Luckily the damage is not fatal to the plants. Damage is serpentine or snake-like white mines (fig. 3) in leaves, 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 3 Columbine leafminer damage

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

Good web site:

<https://wimastergardener.org/article/common-columbine-pests-columbine-leafminer-and-columbine-sawfly/>

Kermes scale (potentially serious)

Scale insects are sap feeders, and heavy populations can, over time, lead to branch dieback and even decline of the tree. Some scale insects produce a sticky substance called honeydew, while other species do not. Those that do produce honeydew are often easy to spot since the plant is sticky to the touch.

A couple of years ago, we had an infestation of kermes scale on oak, most commonly on bur oak. There are a couple of species of kermes, and they vary in color. Some species are dark and some are more mottled. We have received a report of Kermes scale on bur oak this season. This species of scale tends to congregate at the ends of the twigs, weakening them. Often the ends of twigs will break off and fall to the ground. The appearance of several twig ends on the ground tends to get the attention of the owner of the tree. (In the case reported to us this year, the scales are actually on the petioles (fig.4), so individual leaves, not twig ends, are falling to the ground). Luckily there is little long-term damage from the dropping of the twigs. This scale does produce honeydew.



Figure 4 Kermes scale (photo: T. Bethke)

Management: Hand removal is possible on small trees. Heavily infested branches may be pruned out to reduce infestations. Kermes scale is often controlled by natural predators. 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. The crawlers of the Kermes scale found on bur oak with emerge in June. Systemic insecticides may be used on some species of scale, but planning is required as these products are often applied a few months ahead of time to give them time to move through the plant. Before using any insecticide, check for the presence of beneficial insects.

Good website: [Kansas State](#)

Galls, part 2 (minor)

It is turning out to be a busy year for galls. We are featuring a nice selection of them for you this week. We write about these just so you know what you are looking at. Most galls are very minor and we don't need to treat for them.

Our native buttonbush (*Cephalanthus occidentalis*) is showing a weird gall that we have seen in previous years. Buttonbush galls, caused by a mite, are small, bumpy galls (fig. 5). They sometimes show up in large numbers, giving the whole shrub an unattractive look, but doing very little real damage.



Figure 5 Galls on buttonbush

Maple bladder gall is a common problem on red maple (*Acer rubrum*), silver maple (*Acer saccharinum*) and the hybrid between the two, Freeman maple (*Acer x freemannii*). We see this gall almost every year. It starts out as a small green bead and then changes to red (fig. 6) and later in the season almost black. We are seeing it in the red stage already. They are caused by eriophyid mites that overwinter in bark crevices and around callous growth of wounds, scars, and pruned branches



Figure 6 Maple bladder gall

Oaks are showing off the wool sower gall (fig. 7) this year. This one is eye-catching because it is white (with some small, pink or tan spots) and fairly large (often around an inch or so in diameter). This one is caused by a teeny-tiny, non-stinging wasp. The gall is really a group of small galls together, each one with a developing wasp inside, like a wasp apartment house.

Good website: <https://ohioline.osu.edu/factsheet/ENT-60>



Figure 7 Wool sower gall

Pest Updates: Diseases

Eastern filbert blight (serious)

Eastern filbert blight, caused by the fungus *Anisogramma anomala*, has been reported to The Morton Arboretum Plant Clinic a couple of times this month on Harry Lauder's walking stick (*Corylus avellana* 'Contorta'). This disease has largely been studied in Oregon, where they have cool wet winters, so the lifecycle may be different in other parts of North America (Sinclair and Lyon). The pathogen requires 2-3 years to complete its life cycle, the length depending on the host's susceptibility. The symptoms include football-shaped pustule-like bumps (Fig. 8) in single or multiple rows. The infected branches may have dead leaves attached. The plant will decline, but may not die for several years.



Figure 8 Fruiting bodies of Eastern Filbert blight

The pathogen's life cycle begins in the fall during rainy periods. Spores are moved in water and

wind to surrounding plants. Once the spores adhere to a branch, they germinate and infect the plant. The pustules form and produce spores that overwinter and infect new tissue next year.

Management: The most common management practice is planting resistant varieties of *Corylus*. The cankers can be pruned out of the tree successfully so long as all the infected tissue is removed. It may be moved around within an infected tree on pruning tools, so disinfecting pruning tools between cuts is imperative.

Good websites: <http://oregonstate.edu/dept/botany/epp/EFB/index.htm>

Pest Updates: Weeds

Bishop's weed (aggressive)

For many years, Bishop's weed (*Aegopodium podagraria*) was sold as a ground cover and some garden centers still sell it. The variegated cultivar (Fig. 9) was especially popular. But times change, and the biggest question that the Plant Clinic gets regarding this plant is "How do I get rid of this?" Why the change? Bishop's weed is a strong grower and is very aggressive, often covering a lot more territory than is desirable. This plant spreads easily underground and can be difficult to control.

Wisconsin law designates this as a "restricted invasive plant". (For more on invasive species laws in Midwestern states visit www.mipn.org)



Figure 9 Variegated Bishop's weed

The leaves are compound with up to 9 leaflets. The arrangement of the leaves often leads people to mistake it for poison ivy. Leaves of the species are green, but the variegated cultivar has green leaves with creamy margins. The plants will produce clusters of white flowers that resemble Queen Anne's lace, followed by lots of seeds!

Management: Bishop's weed can be difficult to control. Remove flowers before they go to seed to minimize spread through that method. Control of existing plants is difficult without herbicides because digging the plant seldom removes all the underground stolons. Glyphosate can be used to control this plant, but multiple applications may be needed. It is best to treat the plant when it is small, either at the time it is emerging from the soil or resprouting after being cut down. Glyphosate will be absorbed by the young leaves and transported down to the root system to kill out the entire plant. Glyphosate is a non-selective herbicide and can kill or damage any plant so care must be used to avoid getting it on desirable plants.

Miscellaneous

Chlorosis (potentially serious)

Chlorosis (yellowing of leaves) is showing up on a number of plants including river birch (*Betula nigra*) and hickory (*Carya* spp.) 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 10) 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 10 Chlorosis on tuliptree leaf

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.

There may be more than one possible cause of yellow leaves. 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). That commonly happens in mid-summer, but we are already seeing some of this due to the unusually dry spring. 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: <https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/chlorosis/>

Spring is dry

As mentioned in the last article, this spring has been dry. I hardly ever get the chance to say the words dry and spring in the same sentence. A dry spring is a rare thing in northern Illinois. In the last few years, we have had very wet springs. Just looking at rainfall at The Morton Arboretum for April and May, we see this: 2020 gave us 12.61 inches, 2019 gave us 15.17 inches and 2018 gave us 7.89 (which is also the average rainfall). The same time period in 2021 gave us only 4.43 inches. This is a significant difference.

What does this mean for our plants? It is likely that we will see less fungal disease this year. Fungi need water, and rainfall has not only been low, but very sporadic. By the time we did get some rain, the leaves of many plants were maturing and less susceptible to fungal infection. That does not mean we will see no fungal diseases, just less of them. Some fungal diseases may still crop up because we tend to wet the leaves of our plants when we water them, and that can start a fungal infection. Also, we did have some rain, and it may have come at the right time and kept the plant wet enough to get fungal problems started.

So, that brings us to the topic of watering. We do need to consider watering our trees, shrubs and gardens. The Plant Clinic at The Morton Arboretum has already received numerous emails and calls about plants with yellow leaves. That can be caused by a nutrient deficiency (see Chlorosis article above). But with the dry weather we are having, the first thing I ask is “Have you watered the plant?”. If the answer is yes, then I ask “How often and how much”?

Some people are not watering at all. Why? Because we are not used to spring being dry and we are not in the habit of thinking about watering until the heat of summer. When we do water, we need to do it right. Here are some things that are done wrong on a regular basis and a way to do them right.

- **Watering plants every day.** Containers may need to be watered every day. Almost nothing else does. Newly planted plants need to be checked every day, but generally don't need to be watered every time they are checked. We check new plants daily to see if the soil is moist or dry so we can decide if we need to water or not. When the soil is drying a bit, then be sure to water thoroughly so we are getting water to the whole root system. Shallow watering leads to weak, shallow root systems.
- **Using the watering device wrong.** There are a lot of good devices for watering, but if they are not used right, they don't give us good results. Know how to use the device you choose for watering.
 - Soaker hoses are great because they keep the leaves dry and deliver water right to the soil. Unfortunately, many people don't run them long enough. Often, they get run for about 15 minutes or so. Soaker hoses deliver water very slowly and they may need to be run for an hour or two to really do the job. Run the

hose for an hour and then dig a little hole. If the soil is not moist 5 to 6 inches deep, you need to run it longer.

- Root feeders, with their long needles are great because you can stick them in the soil and go do something else. You just need to move them around from time to time to get good coverage of the root system. The holes that deliver the water are at the lower end of the needle and often the needle gets inserted into the soil too deep. Even most big trees have their roots in the top 18-24 inches. If you plunge that needle into the soil deeply, you are missing a lot of the root system. Insert it so that the tip of the needle is only 4 to 6 inches deep. That will put it into a very active part of the root zone.
- Lawn sprinklers/in-ground irrigation systems are handy because they cover a large area and you can do other things while they are working. Like soaker hoses, these often get run for only 15 minutes or so and the result is the same. Not watering deeply enough. We would like to apply an inch of water when we do water. We are not getting that after 15 minutes. Next time you turn on the lawn sprinkler put out a soup or tuna can and see how long it takes to get 1 inch. I think you will be surprised.
- Irrigation bags are great for newly planted trees and shrubs. Fill the bag and the water comes out slowly through the bottom of the bag. Also, the water comes out and goes right into the root ball, exactly where we want it. Some people want to fill the bag every day. These bags are not meant to be full all the time. Fill them every 5 to 7 days. I know of one case where the new tree died because the owner filled the bag every day and rotted the tree.
- **Assuming that mature trees don't need water.** Even mature trees can benefit from watering. Lots of people assume that trees have roots that go down several feet. Most trees, even large mature ones, have the majority of their roots in the top 18 to 24 inches. While that is better than the root system under your perennials, the tree roots need to supply water to a very large organism. They have wide-spreading root systems to get enough water to sustain the tree. If some of the roots are in dry soil, they are not contributing to the water supply, and that tree is not going to get as much water as it should. That means the tree is under stress.

Watering can be expensive, but it can also be an investment in the future of your trees and shrubs. Watering a tree not only sustains it for today, it helps it produce a full canopy of leaves next spring. Mid-summer is the time when many of our trees produce buds that will open into leaves in spring. If there is not enough water, the trees may set a smaller number of buds or the buds may not develop as well as they should. That could impact how well the tree leafs out next year.

So, the dry spring may be a benefit in terms of fewer disease problems, but it does bring us water problems. Gardening does have its challenges every year. The key to winning the battle is understanding the challenges of every season so we can overcome them.



Bartlett Tree Experts, Plant Clinic sponsor

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Stephanie Adams, Ph.D., Plant Health Care Leader; Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Julie Janoski, 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 all the staff and volunteers that report disease and pest problems when they find them. Your hard work is appreciated.

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](#).

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

This report is available online at <https://mortonarb.org/about-arboretum/plant-health-care-report/>

For pest and disease questions, please contact the Plant Clinic. At this time due to the COVID-19 situation, the Plant Clinic building is closed. You can still contact the Plant Clinic via email at plantclinic@mortonarb.org. Emails will be answered during business hours Monday through Friday. Plant Clinic can also be reached by phone (630-719-2424), Monday thru Friday 11 am to 3pm. Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org.

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2021 Plant Health Care Report Index



THE
CHAMPION
of TREES

Following is an index of the various subjects in this year's report. The number after each subject is the report number. For example, using the chart below, Cankers..... 1 means that it was discussed in the PHC report 2021.01 or the newsletter dated April 2, 2021. The index is updated with the publication of each full issue and is included at the end of each full issue.

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