Plant Health Care Report

Scouting Report of The Morton Arboretum

June 24, 2022 **Issue 2022.7**

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

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. This year we resume our on-grounds scouting program. Plant Clinic staff and volunteers are back working on-site this year. Contact us via email at plantclinic@mortonarb.org. or by phone at 630-719-2424 (Monday thru Friday, 10 am to 4 pm). The Plant Clinic is also open to walk-ins, but a timed entry for the Arboretum is required and non-members need to pay the entry fee.

Quick View

What indicator plant is in bloom at the Arboretum?

Elderberry (*Sambucus canadensis*) is in flower (fig. 1)

Accumulated Growing Degree Days (Base 50): 985.5 (as of June 23)

Insects

- **Bagworm**
- **Azalea lace bug**
- **European elm scale**
- **Sumac flea beetle**
- **Galls part 2**

Diseases

- **Cedar quince rust on serviceberry**
- **Mushrooms on trees**

Weeds

- **Helleborine**

Miscellaneous

- **Sunburned plants**
- **Blossom-end rot**

Figure 1 Elderberry (photo: John Hagstrom)

Soil temperatures around Illinois (from Illinois State Water Survey)

This information will be provided all season. For data from other reporting stations, go to https://www.isws.illinois.edu/warm/soil/ (you will need to set up an account to access data.)

Max. Soil temps For 6/23/2022*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	98.3	106.4	103.4
4-inch, bare soil	98.8	100.1	90.2
4-inch, under sod	82.3	87.5	89.4
8-inch, under sod	75.1	81	82.3

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

Degree Days (current and compared to past years)

As of June 23, we have 985.5 base-50 growing degree days (GDD) at The Morton Arboretum. The historical average (1937-2021) for this date is 789 GDD_{50}. 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 2021, 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 6/23/22	GDD as of 6/24/21	GDD as of 6/25/15	GDD as of 6/26/14
Carbondale, IL*	1543	1391	1559	1516
Champaign, IL*	1234	1157	1320	1281
Chicago Botanic Garden**	928	660	735 (6/24)	740.5 (6/25)
Glencoe*	599	No report	No report	No report
Chicago O'Hare*	1054	1115	1031	1043
Kankakee, IL*	1051	1049	1098	1094
Lisle, IL*	1072	1103	No report	No report
The Morton Arboretum	985.5	954.5	870.5	882.5
Quincy, IL*	1298	1252	1387	1327
Rockford, IL*	924	1004	875	903
Springfield, IL*	1270	1216	1381	1316
Waukegan, IL* (60087)	870	963	798	843
Waukegan, IL (60085)	939	1030	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://gddtracker.msu.edu/

Seasonal precipitation

Seasonal precipitation (rain and melted snow) in inches.			
	2022	2021	Historical average (1937-2021)
Jan	1	1.5	1.946
Feb	2.61	1.49	1.765
Mar	3.88	1.24	2.520
April	3.88	1.39	3.665
May	6.10	3.34	4.18
June	2.09 (as of 6/23)	6.57 (whole month)	4.2 (whole month)
July			
Aug			
Sept			
Year to date	19.56 (as of 6/23)	15.53 (Jan thru June)	18.3 (Jan thru June)

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
900-1200	Japanese beetle	adults	Chewing foliage; mating and laying eggs
900-1200	Cottony maple scale	Crawlers beginning to emerge	Feeding on sap
1200-1800	Fall webworm	Caterpillars feeding, but webbing not seen yet	Chewing on leaves

Bagworm (potentially serious)

We had a report of bagworm (*Thyridopteryx ephemeraeformis*) about ten days ago. At that point, it was very, very small. They have likely grown a bit since and may be easier to find. We need to catch them in the early stage of life, if insecticides are to be used. Now is the time to

be scouting. Last year, we did have some reports of heavy populations of bagworm devastating arborvitae. This pest is often on evergreen trees and shrubs, but does not feed on them exclusively. They are also known to attack a variety of deciduous trees. The population that was reported to the Plant Clinic at The Morton Arboretum was found on maple.

Figure 2 Bagworm bag

Bagworms overwinter as eggs inside the female bag (fig. 2). The bag can contain between 300 and 1,000 eggs. The eggs hatch in early summer, and the young larvae suspend from a silk string and are often "ballooned" by wind to nearby plants. When a suitable host plant is found, larvae begin to form bags over their bodies. The tiny cone-shaped bags are constructed from silk and camouflaged with bits of twigs and foliage from the host plant. Larvae stick their heads and front legs out of the top of the bags to feed and move (fig. 3). The feeding by young larvae results in holes in the foliage of deciduous plants (this is the stage we saw ten days ago) and loss of needles on evergreens. As the larvae grow, they enlarge their bags and feed on the entire leaf, leaving only veins. They move to a sturdy branch, attach the bag with a strong band of silk, and then pupate. By August the larvae have matured and are 1 to 1-1/2 inches in length, and their completed bags are 1-1/2 to 2-1/2 inches long. About four weeks later, adult males emerge and mate with the sedentary females. The female, which has no eyes, wings, legs, antennae, or functional mouthparts, lays eggs and is then mummified around the egg mass within the bag.

Figure 3 Bagworm larva peeking out of the bag

Bagworm populations can build rapidly and quickly defoliate their hosts. Healthy deciduous trees can usually tolerate consecutive years of severe defoliation before they are killed. Evergreen trees, on the other hand, can be killed by just one year of severe defoliation. Bagworm larvae feed on over 120 species of trees and shrubs. Their bags are made of the foliage they're feeding on, so a bagworm feeding on pine will have pine needles in its bag, while a bagworm feeding on an oak tree will have pieces of oak leaves decorating its bag.

Management: We are in the early stage of development and insecticides may be very effective at this time. Once the larvae stop moving around and attach the bag to the stem,

they are safe from insecticides. Handpicking bags from that time until early spring will help control populations for next year. If they can't hatch, they can't feed, so this is more effective than people think. Remove as many of the bags as possible later in the season

Good websites:
https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/bagworms/#overview

Azalea lace bug (minor to potentially serious)

We don't see azalea lace bug (*Stephanitis pyrioides*) very often, but azaleas are being used more in the landscape, and our changing climate may be more favorable to this pest. While we usually think of lace bugs as a minor pest, this particular species can be serious when the populations are high. The sample we saw had extensive damage, and the leaves were already very pale green.

Figure 4 Adult azalea lace bug

This pest overwinters as eggs on evergreen azaleas. The nymphs hatch in spring. More than one generation will occur over the growing season. It is not unusual to find more than one stage infesting a plant at one time. Our sample was limited, but we were able to find nymphs present (about 10 days ago). The insect feeds in both the nymph and adult stages. The adult has very lacy wings, thus the name (fig. 4). Azalea lace bug has piercing/sucking mouth parts, and sucks sap from leaves, resulting in stippling (fig. 5). A serious infestation will cause leaves to appear white, dry up, and fall off the plant. The damage can be confused with mite damage, but looking at the underside of the leaves reveal clues that point to the azalea lace bug. Lace bugs leave behind shiny black spots of excrement. Nymphs, adults and cast-off skins can also be found on the undersides of the leaves.

Figure 5 Azalea lace bug damage

Management: Avoid planting azaleas and rhododendrons in sunny sites. This stresses the plant and can lead to larger populations of the pest. Insecticide sprays can be used and will be most effective when nymphs are present. Timely treatment can prevent heavy damage to leaves.

European elm scale (potentially serious)

A report of European elm scale (*Eriococcus spurius*, formerly *Gossyparia spuria*) on elm came into the Plant Clinic at The Morton Arboretum this week. These are soft scales, and since they feed in the phloem, they produce honeydew, which supports the growth of sooty mold. This scale can produce honeydew in large quantities, so look for sticky plants and obvious growth of sooty mold. Very heavy infestations can cause leaf and twig dieback.

Figure 6 European elm scale

The photos we received showed mature females, which are dark in color and surrounded by a fringe of white (fig 6). This insect produces one generation per year. It overwinters as half-grown nymphs and matures into adults in early summer. Eggs are laid around the end of June into July. The eggs hatch within a few hours into bright yellow crawlers. Crawlers migrate to feeding sites along the midrib of the underside of leaves, where they will remain until the end of summer. In fall, crawlers return to limb or bark crevices to overwinter as immature females.

Management: Insecticides that target crawlers can be used, but may also do harm to populations of beneficial insects that feed on this pest. Systemic insecticides will also be useful in control of this species. As with other scale insects, this species can cause stress to the host tree. Watering trees during dry weather can help boost the vigor of the tree. Applications of nitrogen fertilizers should be avoided. Excess nitrogen helps the plant produce more amino acids, and these serve as a food source for the scale. This could actually increase the population of this pest.

Good website: https://bygl.osu.edu/node/1974

Sumac flea beetle (minor to potentially serious)

This seems to be the year for unusual pests. A couple of weeks ago, we noted the larvae of the sumac flea weevil (*Blepharida rhois*) feeding on smooth sumac (*Rhus glabra*) foliage. Then last week, some of the horticulture staff brought in the same pest, but it was feeding on smoke bush (*Cotinus coggygria*). This is not that surprising. Sumac and smoke bush are in the same plant family, and insects often feed on related plants. On the smoke bush, we found both larvae and pupae.

This insect overwinters as an adult beetle. They become active in spring, feeding on leaves and laying eggs. The larva is about a quarter of an inch with a yellowish body, a small black head, and six black legs. As the larvae mature, some light-colored stripes develop along the length of the body (fig. 7). These larvae have a rather nasty habit. They disguise themselves by covering their bodies with their own excrement. This fecal 'shield' is used as a protective device against predators. The insect is able to take up chemical compounds from the host plant and excrete them in their fecal matter

Figure 7 Sumac flea beetle without its fecal shield

The larvae are voracious feeders, and high populations can cause severe defoliation. Defoliation weakens plants, making them more susceptible to attack by other pests and pathogens. Repeated defoliation may reduce plant growth and ultimately kill the plant. The larvae will go to the ground to pupate and emerge as adults in about two weeks. The front of the beetle's body is orange and the wings are a mottled mix of red and white (fig 8). The adult stage is far less destructive, only chewing tiny holes in leaves.

Figure 8 adult sumac flea weevil

Management: In many cases, populations are low enough that insecticides are not needed. When populations warrant treatment, it is best done when young larvae are present.

Good website: https://extension.usu.edu/pests/ipm/ornamental-pest-guide/arthopods/leaf-beetles-weevils/sumac-flea-beetle

Galls part 2

This has been a gall-filled summer, and here are a few of the common ones that we have been seeing. We present these here just so you know what these weird things are. They are very minor and generally don't need to be managed.

Figure 9 Witch-hazel cone gall

Witch-hazel cone gall is showing up on witch-hazel (thus the name!) Witch-hazel cone gall is caused by an aphid.

The gall does indeed look like a pointy little cone (fig. 9) emerging from the upper surface of the leaf.

Figure 10 Maple bladder gall

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. 10) 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 11 Elm cockscomb gall

Elm cockscomb gall is showing up on elms. This is another gall caused by an aphid. The tissue of the leaf takes on an almost corrugated appearance and forms a ridge that looks like the comb on a rooster's head (fig. 11). The gall starts out green, but will develop a reddish color and then turn to brown.

Pest Updates: Diseases

Cedar-quince rust on serviceberry (minor)

Figure 12 Cedar quince rust on serviceberry

It's that time again. The sputniks have arrived. (For those of you too young to remember sputnik, Google it.) Fruit infected by cedar-quince rust are developing those tubular horns that give them that sputnik look (fig. 12). These horns produce the spores that will go back to the juniper host and re-infect it (these spores will not re-infect the deciduous host). The appearance of these horns on hawthorn fruit is a fairly common occurrence. In the past, this was relatively uncommon on serviceberry, but now we see it quite regularly. This ruins the fruit for us, but does not do much damage to the serviceberry plant. It is too late to treat.

Mushrooms on trees (serious)

Mushrooms can be interesting to look at, and some are even very pretty. We need to remember, however, that there are fungal organisms that cause wood decay in trees and they eventually produce mushrooms. These fungal organisms may enter a tree through a wound or through a crack in the bark that allows water to enter. The mushrooms produced by these

decay organisms can take on a lot of different appearances. Sometimes it will be a group of mushrooms growing at the base of the trunk or out of the root system. We may see a typical-looking mushroom growing out of the trunk (fig. 13) of the tree or a shelf-like structure referred to as a shelf fungus. These all tend to look fairly minor, but we should pay close attention.

Figure 13 Mushrooms growing out of a tree trunk (photo: S. Yiesla)

Any mushroom-like structure growing out of a tree is a sign that there is decay inside the tree. We often refer to this under the general term 'wood rot'. The mushroom growing out of the trunk or stems is the tip of the ice berg. With wood rot, there is a fungal organism inside the wood causing it to decay. This decay process may continue, undetected, for years. At some point, in the life cycle of the fungal organism causing the decay, the reproductive structure (the mushroom) is produced and can be seen on the outside of the tree.

Even though these appear minor, and many people just knock them off when they see them, we really should pay attention to this sign and call in a professional, certified arborist to examine the tree. When the wood inside a tree decays, that tree starts to lose stability. It may be one branch that is rotting and we can easily remedy that by removing that branch. If the rot is inside the main trunk, the whole tree may need to be removed. Any fungal structure growing on a tree should be taken seriously. Trees with rot inside may still leaf out fully and look great. The wood rot is often in the heartwood of the tree. Water is moved up through the sapwood, and when that wood is undamaged, the tree gets the water it needs and will still leaf out even if the core is rotting. To find a certified arborist go to www.illinoisarborist.org

Pest Updates: Weeds

Helleborine (aggressive)

When is an orchid a bad thing? When it is helleborine (*Epipactus helleborine*), a non-native orchid. The Plant Clinic at The Morton Arboretum has received emails again this season regarding this orchid turned weed. Why is it a weed? It spreads underground very aggressively via fleshy rhizomes. Large patches can develop quickly. (Wisconsin lists this as a restricted invasive plant.) Helleborine grows up to three feet tall and has a thick stem with dark green

leaves that clasp the stem (fig. 14). The leaves are lance-shaped and up to six inches long. The flowers do look like orchids and vary in color, with a mix of green, pink and purple. Numerous flowers are produced on a spike.

Figure 14 Flowers of helleborine (photo: Rob Routledge, Sault College,

Management: Individual plants may be dug up, but you must be careful to get all of the underground structures or the plant will re-sprout. Various University websites indicate that glyphosate may not be successful when used as a single treatment. Re-application will most likely be needed. To get the best results from glyphosate, cut the plant down and wait until new shoots begin to emerge. Actively growing new foliage absorbs the product most effectively.

Good websites: https://www.minnesotawildflowers.info/flower/helleborine msue.anr.msu.edu/news/homeowners_battling_a_weedy_orchid_invading_lawns_and_flower beds

Miscellaneous

Sunburned plants

It has been another weird spring. We had lots of rain and cool weather. In early June, the TV weather people were remarking on the unusual cool June we were having. Now, the temperatures have been near 100 for several days over the last two weeks, and the discussion is about how unusual it is to have this type of heat in June.

As a result of this early, extreme heat we are starting to see plants that are sunburned. We often talk about scorch which is browning around the edge of the leaf due to a combination of heat and dry soils over a period of time. Sunburn often occurs when we have short, sudden periods of extreme heat. It often presents as patches of faded or bleached tissue (fig. 15). These may be out at the end of the leaf or even right in the middle.

Figure 15 Sunburned hosta

Some fungal problems can resemble sunburn. If your plant suddenly showed these bleached areas of tissue after a period of very hot days, it is likely sunburn. If it occurred before the heat, it may be fungal.

Management: Prior to periods of extreme heat, be sure to water plants thoroughly to minimize the chances of both sunburn and scorch. Remove sunburned leaves, as the damaged tissue can be an entryway for fungal problems.

Blossom-end rot

You planted and tended your tomato plants. You are rewarded with flowers. The pollinators visit your flowers and before you know it there are tiny tomatoes forming. Then one day, you discover that the bottom of the tomato is turning black and sometimes almost leathery (fig. 16). This is blossom-end rot. The bottom of the tomato is called the blossom end, because that is where the flower or blossom was connected. That little dark dot on the bottom of the tomato marks the spot where the flower was.

Figure 16 Blossom End Rot damage. Photo: Larry Williams, Okaloosa County Extension.

This type of 'rot' is not a disease. It is caused by a calcium deficiency. Calcium is an important building block of the cell walls within every plant. When it is deficient, the cell walls don't form properly and the cells collapse. Blossom-end rot does not always mean that there is not enough calcium in the soil. It means that the calcium is not making it all the way to the bottom of your tomato. Our soils are generally not deficient in calcium.

Improper watering or very dry weather are often the reasons we don't get the calcium out to the bottom of the tomatoes. The water carries the calcium from the soil into the plant. If water is lacking, the calcium can't be delivered. Even though we had a lot of rain in spring, that supply has tapered off, and now it is up to us to give our plants what they need in terms of water. Often, gardeners are watering frequently, but not deeply. Watering every day is not needed for in-ground gardens. Water those plants when the top inch or so of soil is drying, and when you water be sure to water thoroughly. If you have to water every day or every other day, you are not watering thoroughly. Depending on weather, you should be watering every 4 to 7 days.

Container-grown tomatoes are the exception. They most likely will need to be watered every day due to the small volume of the container. Water containers enough so that some water comes out the drainage holes in the bottom of the container. Container-grown tomatoes often get blossom-end rot because it can be difficult to maintain adequate water in containers. Also, unlike our garden soils, potting mixes for containers may need to have calcium added.

Blossom-end rot is not only seen on tomatoes. It can be on other vegetables as well, including peppers and watermelons.

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. I would like to thank all the staff and volunteers that report disease and pest problems when they find them. Our scouts this year are Deb Link, Maureen Livingston, Loraine Miranda, and Molly Neustadt.

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 as a PDF at The Morton Arboretum website at https://mortonarb.org/about-arboretum/plant-health-care-report/

For pest and disease questions, please contact the Plant Clinic. You can contact the Plant Clinic via email at plantclinic@mortonarb.org . Emails will be answered during business hours Monday through Friday. You can call the Plant Clinic by phone (630-719-2424) or visit in person, Monday thru Friday 10 am to 4 pm. Arboretum members need a timed entry ticket to enter the Arboretum and visit Plant Clinic in person. Non-members need a timed ticket and must pay the Arboretum entry fee. Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org .

2022 Plant Health Care Report Index

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, Cicadas…..1 means that it was discussed in the PHCR 2022.01 or the newsletter dated April 1, 2022. The index is updated with the publication of each full issue and is included at the end of each full issue.

2022.1	April 1	2022.8	July 8
2022.2	April 15	2022.9	July 22
2022.3	April 29	2022.10	August 5
2022.4	May 13	2022.11	August 19
2022.5	May 27	2022.12	September 9
2022.6	June 10	2022.13	September 23
2022.7	June 24		