Plant Health Care Report

Scouting Report of The Morton Arboretum

Sept 10, 2021 **Issue 2021.12**

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. Plant Clinic staff and volunteers are now back to working onsite, with the Plant Clinic open to walk-in visitors. Questions can also be answered by email at plantclinic@mortonarb.org. or by phone at 630-719-2424 (Monday thru Friday, 10 am to 4 pm).

Our season is winding down. We have extended our season into September this year, so look for one more full issue on Sept. 24.

Quick View

What indicator plant is in bloom at the Arboretum?

Seven-sons flower (*Heptacodium miconioides*) is beginning to flower (fig. 1).

Accumulated Growing Degree Days (Base 50): 2717.5 (as of Sept 8)

Insects/other pests

- **Two-lined chestnut borer**
- **Two-marked treehopper**
- **Home invaders**
- **Brown marmorated stink bug**
- **Galls, really cool ones**

Diseases

- **Brown rot of stone fruit**

Miscellaneous

- **Seasonal needle drop**
- **Watering into autumn**

Figure 1 Seven-Sons flower

Soil temperatures around Illinois (from Illinois State Water Survey)

For more data go to https://www.isws.illinois.edu/warm/soil/

Max. Soil temps For Sept 9, 2021*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	92.3	80.4	90.6
4-inch, bare soil	85.7	83.7	82
4-inch, under sod	74.1	78.1	77.8
8-inch, under sod	70.7	74.8	73.3

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

Degree Days (current) and rainfall

As of Sept 8, we have 2717.5 base-50 growing degree days (GDD). The historical average (1937-2020) for this date is 2567 GDD_{50}. There is no comparison to other years as, we did not publish issues this late.

Location	GDD as of 9/9/21
Carbondale, IL*	3446
Champaign, IL*	3032
Chicago Botanic Garden**	No report
Glencoe*	2386
Chicago O'Hare*	2984
Kankakee, IL*	2855
Lisle, IL*	2980
The Morton Arboretum	2717.5 (9/8)
Quincy, IL*	3205
Rockford, IL*	2750
Springfield, IL*	3142
Waukegan, IL* (60087)	2718
Waukegan, IL (60085)	2840

**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 (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	6.57	4.91	4.190
July	2.04	2.87	3.893
Aug	2.12	1.1	3.802
Sept	.14 (as of 9/8)	3.55	3.309
Year to date	19.83 (as of 9/8)	28.63 (as of 8/31)	26.03 (as of 8/31)

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

Two-lined chestnut borer

We are getting a number of reports of two-lined chestnut borer (*Agrilus bilineatus*). At this point, we have not been able to confirm any of them, but this insect is worth discussing. You may have noticed that I did not rate this pest in terms of severity. Here's why. This borer attacks weakened oaks. Notice that I underlined the word weakened. This is a key thing to know. This borer is not usually the primary cause of decline of an oak. It is an opportunistic pest that takes advantage of an oak that is already under stress from some other problem or problems. On healthy oaks, the borer's activity is usually restricted to branches that died from some other cause.

Why is this worth noting? If we treat for the borer and do nothing else, we really have not solved the problem. We need to look to see if there is another insect or disease affecting the tree. We need to know if the tree has been affected by storm damage or nearby construction. We also need to consider the weather. For the last ten years or so, our weather has been less than good (several droughts, flooding spring rains, a couple of harsh winters, widely fluctuating temperatures). In short, we need to identify other stressors and see if we can do anything to mitigate them.

Larvae of this native borer feed in the tissues under the bark, like many other borers do, making galleries in the tissue. The larvae overwinter under the bark. They pupate in spring and begin to emerge as adults in late May. The emergence hole of the adult is similar to that of other borers in the genus *Agrilus* (bronze birch borer and emerald ash borer). It is shaped like a capital 'D' and is about the size of half a pencil eraser. The adults mate and lay eggs over the next few weeks. The eggs hatch, and the new larvae enter the bark to feed.

Management: Treating this borer with systemic insecticides can be useful, if the decline of the tree has not gone beyond 40% loss of the canopy. As noted above, this is only part of the solution. New oaks need to be planted and cared for properly. This means planting at the right depth, using best practices, such as regular watering, mulching and pruning out dead limbs (in the dormant season only). All oaks should be protected from compaction and construction damage. Fertilizer should be considered carefully. It is a source of nutrients, not a magic elixir to fix all problems. Young trees that are putting on a lot of growth may need to fertilized annually. Older, established trees may need it less frequently (maybe every 3 to 5 years). Trees under stress may not need it at all. Fertilizer applied to dry or damaged roots may do more damage. Fertilizer can push growth in a tree and lead to increased water needs. In a drought, this may also add stress.

Good websites: https://extension.umn.edu/tree-and-shrub-insects/metallic-wood-boring-beetles
https://www.fs.fed.us/nrs/pubs/jrnl/2020/nrs_2020_haack_001.pdf

Two-marked treehopper (minor)

Figure 2 Adult two-marked tree hopper

Evidence of the two-marked treehopper (*Enchenopa* species) has been found on redbud (*Cercis canadensis*). Adults are dusky brown with two yellow spots on their backs (fig. 2), thus the name. They have a high, curved horn that points forward coming out of their thorax. The adults are less than ½ inch long. The nymphs look quite different from the adults. They're about 1/8 inch long, dark gray to brown, and have spines sticking out of their abdomens (fig. 3).

Figure 3 Two-marked tree hopper nymphs

In late summer, adult females cut slits in bark to lay their eggs, then cover the area with small, white egg-plugs (fig. 4) that can be mistaken for mealybugs or scale insects. We have seen some samples of this recently. The insect overwinters in the egg stage. The young nymphs hatch out in spring and feed on shoots of the host tree. Nymphs, and later adults, suck plant

juices, but don't do much damage. The damage appears as pale-yellow stippling on the leaves. Female adults can injure twigs by laying eggs in slits made in the bark, but even this is fairly minor.

Management: Control is generally not necessary**.**

Good website: https://bygl.osu.edu/node/1388

Figure 4 Adult with egg plugs

Home invaders (minor)

When the weather finally turns cold, some pests will become home invaders. Boxelder bugs (*Boisea trivittata*) are usually the number one complaint for home invaders (although the brown marmorated stink bug, see article below, is vying for the title). The Plant Clinic has not yet received any reports of this nuisance pest, but it is almost certain to show up when the weather cools down. These insects feed on sap of seeds, flowers, and leaves of boxelders (*Acer negundo*). Their feeding causes little damage to the tree. They are considered to be a nuisance when large numbers of them appear in homes, especially in fall and spring. Nymphs are bright red when they first hatch, developing black wing pads over time. Adults are about ½ inch long, have three red or orange lines in back of their heads, and have black wings with red lines, and a red abdomen (fig. 5). Boxelder bugs overwinter as adults in protected sites. Since they consider your house to be a protected site, if you have cracks in your foundation or around your windows, they will enter your house through those cracks in fall. They do no harm in the house but are very annoying.

Figure 5 Boxelder bug nymph (above) and adult (below)

While boxelder bugs show up like clockwork every year, some home invaders are occasional guests. These include the multi-colored Asian lady beetle, the leaf-footed beetle and squash bugs. The multi-colored Asian lady beetles are beneficial insects that eat pests like aphids. In fall, they can become an annoyance when they enter the home, sometimes in large numbers. They are not only annoying, they can bite! They can be yellow, red or orange in color and may have no spots or as many as 19. The front of the body is cream-colored with a black 'M' (perhaps a monogram for 'multi-colored'?). Go to http://bugguide.net/index.php?q=search&keys=Harmonia&search=Search for photos.

Leaf-footed bugs and squash bugs often enter homes one at a time and so are easy to manage. Go to http://bugguide.net/node/view/16073/bgimage and http://bugguide.net/index.php?q=search&keys=squash+bug&search=Search

Management: Do not use insecticides inside the home. Caulk around doors and windows to minimize entry by the insects. Keep screens in good repair. Insects that do enter the home can be removed with a vacuum or manually. Do not crush boxelder bugs or ladybugs as they can leave a stain. The leaf-footed bug is related to stink bugs and will make a stink when handled. Squash bugs can make a stink and a stain when crushed. If boxelder bugs are accumulating on the outside of the house, they can be doused with soapy water.

Good website: https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/boxelder-bugs/

Brown marmorated stink bug (minor indoors, potentially serious outdoors)

Speaking of home invaders: brown marmorated stink bugs (BMSB) are showing up more often now in the Chicago area. These insects overwinter in houses and become active again in spring. BMSB will feed on a variety of hosts including many fruit, vegetable and field crops, reducing yield on those crops. They have become a serious pest on crops in some states. There are other insects that resemble the BMSB, so check the websites listed below to see more pictures of this insect. The insect is similar in shape to other stink bugs (a somewhat 'shield-shaped' body), but the edge of the body has alternating black and white bands (fig. 6). The antennae will have light-colored bands on them. Overall, the body has a mottled appearance. When the weather cools off, adults will look to overwinter in homes, much like boxelder bugs.

Figure 6 Adult brown marmorated stink bug

Management: Managing this pest in the home is similar to managing boxelder bugs in the home. Caulk cracks, and keep screens in good repair. Physically remove the insects in the home with a vacuum cleaner. These are stink bugs, and they do create a stink when threatened so removal by hand could be tricky. After removal by vacuum, the vacuum cleaner may have a smell for a while. They can be knocked into a bucket of soapy water and left to drown.

Good websites with photos for identification:
http://njaes.rutgers.edu/stinkbug/identify.asp
http://www.stopbmsb.org/stink-bug-basics/look-alike-insects/

Galls, really cool ones (minor)

Figure 7 Oak lobed gall

We have seen a lot of galls this summer, and most of them are the ones we see year after year. This year, one of my favorites has shown up in the Plant Clinic email. It is the oak lobed gall, sometimes called the pine cone oak gall (fig. 7). It shows up on oaks and looks a bit like a pine cone. It is often 2 to 3 inches across and goes through some interesting color changes (pinks, reds and browns). This gall is caused by a wasp, *Andricus quercusstrobilanus* (a cool name for a cool gall). The gall is composed of several wedge-shaped sections.

Another cool gall, new to me, was reported by one of our scouts last year. I happened upon it myself this year while out photographing prairie plants. It was found on *Rudbeckia*. The gall produces an amazing distortion of parts of the flowering head, in one case, to the point of rendering the flower nearly unrecognizable. It is caused by a midge, *Asphondylia rudbeckiaeconspicua.*

Figure 8 Gall on Rudbeckia (photo: L. Miranda)

Good websites:
https://bugguide.net/node/view/569331/bgimage
https://bugguide.net/node/view/225386

Pest Updates: Diseases

Brown rot of stone fruit (serious)

The dry weather this year has kept many fungal diseases from showing up this year. The Plant Clinic at The Morton Arboretum did recently receive photos of brown rot on plums. Brown rot is caused by the fungus *Monilinia fructicola* which can infect peaches, plums, cherries, apricots, and other *Prunus* species. The disease is sometimes seen as blossom blight – the browning and sudden collapse of blossoms. The infection can spread into shoots and twigs during the next several weeks resulting in shoot and twig blight. Cankers, which may be accompanied by a gummy ooze at their margins, form on twigs often causing twig dieback. Infections of fruit start as brown spots that rapidly infect the entire fruit, completely covering it with spores and giving it a

Figure 9 Brown rot on a peach fruit

fuzzy look (fig. 9). The photos we received showed the fruit completely brown and spores just starting to develop. Infected fruits decay and shrivel; some will stay attached to the tree throughout winter while others will fall to the ground. These 'mummies' provide inoculum for the following spring.

Management: Sanitation is crucial to control of brown rot. Prune out active infections immediately during dry weather. Don't forget to disinfect pruning tools. Rake and clean up debris under the tree during the summer to remove fallen leaves and fruit. Prune to promote good air circulation through the tree canopy. Wild or neglected stone fruit trees (e.g., wild plum and cherry) in the area are likely to have the disease and be sources of inoculum that should be removed. Later in the year remove rotted fruit 'mummies' that are persistent, and prune out cankers and infected twigs. If damage is severe, fungicides need to be applied when blossoms first open in early spring.

Good websites: http://ohioline.osu.edu/hyg-fact/3000/pdf/HYG_3009_08.pdf

Miscellaneous

Seasonal needle drop

Another phenomenon of fall is heading our way: seasonal needle drop (also known as normal needle drop). In autumn, many evergreens will drop older needles. This is a normal process. Needles on an evergreen live for a limited number of years. At the end of their lives, these needles will turn yellow or brown and eventually fall off. On some evergreens, such as white pine or arborvitae, this process can be very dramatic, making the evergreen look like it is dying. To determine if your tree has a disease or is going through normal needle drop, check the location of the yellow or brown needles. Trees going through normal needle drop will have a fairly uniform brown or yellow appearance in the interior of the tree since this is where the oldest needles are located (fig. 10). After a few weeks these needles will fall off, leaving the tree looking normal and healthy. Trees with a disease may have brown needles in various areas of the tree, depending on the disease, but the appearance will not be as uniform as that of needle drop. Diseased needles may eventually fall off, but the tree won't look healthy.

Figure 10 Seasonal needle drop on white pine

Good website: https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/seasonal-needle-drop/

Watering into autumn

This has been another difficult year for watering. For the first time in many years, spring was very dry. Summer was not much better. July and August came roaring in with extreme heat and inadequate rainfall in many areas. As autumn comes on and the temperatures cool (we hope), there is often the assumption that the growing season is over and we can put the garden hose away. That really is not the case, even in a 'normal' year.

Should we be watering now? Because the rain has been so inconsistent, we really need to go out and observe the soil in our own yard. One good rain will not get us off the hook. If the soil is dry, we should be watering. Watering is all about what the plant needs now. The weather is our guidepost, not the calendar.

With autumn, we will start to see plants go dormant, and perennials will even start to die back. The root systems of all plants are still quite active, and watering will help to keep them in good health. You can continue to water until the soil freezes. Pay special attention to evergreens. Since they retain their needles year-round, they can continue to lose water through those needles. Make sure that all evergreens go into winter fully hydrated. If you are planting bulbs like tulips or daffodils, they will also need to be watered. When bulbs are planted, they need to grow a root system in the fall. That can be difficult to do if the soil is too dry.

Other areas that would need special attention are newly seeded or sodded lawns and any newly planted trees, shrubs or perennials. All these plants will need a good supply of water to help them become established. Newly planted trees and shrubs do <u>not</u> need to be watered every day. That is good for puppies, but not for trees. Water as needed. Check the soil to see how dry it is. Remember that on a newly planted tree there will be a limited root ball. Apply the water to the root ball area.

We need to modify our watering practices based on the rainfall we get this autumn. Consider purchasing a rain gauge for your yard so you can accurately determine how much rain you are receiving. Storms can be deceiving. A heavy storm may give the impression that a lot of rain fell, but a rain gauge will let you know how much rain really fell. Ideally for most established plants we want to deliver an inch of water per week. If the rain provides half an inch, we need to provide the other half. Try to do the watering all at once so we get a nice deep watering. Sprinkling a little bit everyday does not give the plant the water it needs, and it promotes fungal diseases, not to mention what it does for your water bill.

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/

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2021 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, 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.

2021.1	April 2	2021.8	July 9
2021.2	April 16	2021.9	July 23
2021.3	April 30	2021.10	August 6
2021.4	May 14	2021.11	August 20
2021.5	May 28	2021.12	September 10
2021.6	June 11	2021.13	September 24
2021.7	June 25		