

Plant Health Care Report

Scouting Report of The Morton Arboretum

June 25, 2021

Issue 2021.7

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).

There will be no GDD/weather issue published next Friday, due to the upcoming holiday weekend. The next issue will be a full issue published on July 9.

Quick View

What indicator plant is in bloom at the Arboretum?

Elderberry (*Sambucus canadensis*) is flowering (fig. 1). It can serve as an indicator for a variety of pests, including Japanese beetle (GDD= 900-1200) and Cottony maple scale (GDD=900-1200).

Accumulated Growing Degree Days (Base 50): 954.5 (as of June 24)

Insects/other pests

- Japanese beetles and white grubs
- Gypsy moth update
- Mites on spruce
- Cottony maple scale
- Galls, part 3
- Good guys

Diseases

- Hosta virus X

Weeds

- Wild parsnip



Figure 1 elderberry (photo: John Hagstrom)

Alert: Dr. Miller reports viburnum leaf beetle adults in northern Will County

Soil temperatures around Illinois (from Illinois State Water Survey)

For more data go to <https://www.isws.illinois.edu/warm/soil/> (you will need to set up an account to access data.)

Max. Soil temps For June 24, 2021*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	74.9	81.5	91.3
4-inch, bare soil	75.3	78.9	83.8
4-inch, under sod	72	76.6	80.2
8-inch, under sod	69.7	75	75.9

* 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 24, we have 954.5 base-50 growing degree days (GDD). The historical average (1937-2020) for this date is 857 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 6/24/21	GDD as of 6/25/20	GDD as of 6/25/15	GDD as of 6/26/14
Carbondale, IL*	1391	1344	1559	1516
Champaign, IL*	1157	1070	1320	1281
Chicago Botanic Garden**	660	829	735 (6/24)	740.5 (6/25)
Glencoe*	No report	547	No report	No report
Chicago O'Hare*	1115	924	1031	1043
Kankakee, IL*	1049	976	1098	1094
Lisle, IL*	1103	958	No report	No report
The Morton Arboretum	954.5	909 (6/24)	870.5	882.5
Quincy, IL*	1252	1141	1387	1327
Rockford, IL*	1004	880	875	903
Springfield, IL*	1216	1133	1381	1316
Waukegan, IL* (60087)	963	753	798	843
Waukegan, IL (60085)	1030	799	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 (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	3.4 (6/24)	4.91	4.190
July		2.87	3.893
Aug		1.1	3.802
Year to date	12.36 (as of 6/24)	24.66 (as of 6/30)	18.33 (as of 6/30)
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
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

Japanese beetles and white grubs (Potentially serious)

That special time of year has arrived. It’s Japanese beetle time. As of June 16, we have had two reports of adult Japanese beetle (*Popillia japonica*), one in Dupage County and one in Lake County. Japanese beetles are up to 1/2 inch-long, and have oval, metallic green bodies with coppery brown wing covers. They have five white spots along each side and two additional white spots behind their wing covers (fig. 2). Upon examination under a hand lens, the spots are actually tufts of hair.

Adult beetles feed on about 300 different species of ornamental plants with about 50 species being preferred. Highly preferred hosts include rose, crabapple, cherry, grape, and linden. The

adults feed on leaf tissue between veins, resulting in skeletonized leaves (fig. 3). Severely infested plants may be almost completely defoliated. Early infestations of Japanese beetle may be missed since the insects start feeding in the tops of trees.



Figure 2 Adult Japanese beetle

Japanese beetles overwinter as larvae (grubs) about four to eight inches beneath the soil surface. In spring, as the soil temperatures warm to about 55° F, the grubs move upward through the soil to pupate. Adults normally emerge from late June through July. Within a few days after emergence, the females mate and burrow into the soil to lay eggs. Nearly all eggs are laid by mid-August. In sufficiently warm and moist soil, eggs will hatch in about ten days. Grubs feed on plant roots until cold weather forces them to greater depths in the soil for the winter. There is one generation of this beetle per year.

How do you know if your lawn needs grub control? Grubs eat grass roots, and this will lead to brown areas in the lawn. Unfortunately, other causes can lead to a brown lawn. If your lawn has grubs, you will be able to pull the lawn up like a carpet since the roots are gone. Homeowners who are irrigating the lawn should be watchful. The beetles have to bury their eggs in the soil. They are more likely to do this in soils that are moist and easy to dig. So, those who water lawns may be more likely to deal with grubs.



Figure 3 Skeletonized leaves

Is grub control a good idea for everyone? Not necessarily. If your lawn has never had grubs before and you are not irrigating, it would be best to skip the grub control. Usually control is not warranted unless 10-12 grubs are present per square foot.

Management: Adult Japanese beetles can be handpicked. It is easiest to catch them by placing a soapy-water filled container directly under the leaf that they are chewing on and then shaking the leaf. The soapy water ensures that the beetles die while you're collecting them. The beetles generally fly straight down into the collecting container. Sometimes Japanese beetle pheromone traps are used to trap them. We don't recommend these, as they will attract even more beetles to your property (more than the trap can collect). Insecticides can be used in the case of valuable plants, but even insecticides do not guarantee control. A soil

drench of systemic insecticide in spring is sometimes recommended for control of Japanese beetles. **It should be noted that imidacloprid and dinotefuran labels indicate that this product can no longer be used on lindens (*Tilia* species). That means it is illegal to use it on those trees. Some other systemic products have the same labeling. Be sure to check the label of any systemic product concerning its use on lindens.**

Managing the Japanese beetle grubs that will hatch out around late July may help to reduce populations of adult beetles for next year. Eggs and first instar larvae require moisture to survive; therefore, the easiest way to reduce grub populations is to limit lawn irrigation during the egg-laying period when beetle populations peak (mid-July through early August). Japanese beetles also avoid laying eggs in shade, which is another great reason to plant more trees and shrubs. Insecticide applications are effective in controlling young grubs.

If you plan to manage grubs with insecticides, know that the timing of application depends on the product selected. There are now many insecticides available to treat grubs, and they have different application times. Traditional insecticides like trichlorfon are applied to the lawn when young grubs are active (August and September). Imidacloprid can be applied once in mid-July in areas where adult beetles were numerous. Chlorantraniliprole is applied in spring to kill new grubs that hatch out in late July. It will not kill grubs present in spring. (Insecticide information from University of Illinois and Michigan State University). The bottom line is to read the product label carefully and use it at the appropriate time. The information given here is very general. The product label will give specific information.

We receive a lot of questions about the use of the biological control milky spore disease. This is a bacterium that is specifically toxic to the grub stage of the Japanese beetle and is applied to the soil. This is a slow method at best in the warmer southern states (may take 3-5 years to build up in soil enough to be effective) and is often not very effective at all in colder, northern states. Also, if you have grubs that come from another type of beetle, it won't work on them at all. This product is really not recommended for our area.

Beneficial nematodes can be watered into turf, again in late July, where they infest and kill grubs. Products containing *Heterorhabditis bacteriophora* nematodes are recommended by the University of Illinois. Beneficial nematodes are not always available in stores; they are available through mail order/internet sources.

Good websites:

<https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/japanese-beetles/>

https://www.canr.msu.edu/news/how_to_choose_and_when_to_apply_grub_control_products_for_your_lawn

Gypsy moth update (serious)

Gypsy moth (*Lymantria dispar*) caterpillars are serious defoliators that feed on over 450 species of trees and shrubs. This is a pest that started emerging at GDD 100-450. In the last week we have found both early and late-stage instars. Note that very early instar caterpillars will not look the same as older caterpillars. As the caterpillars mature, they will develop 5 pairs of blue bumps, followed by 6 pairs of red bumps (fig. 4). They pupate around the end of June, generally emerging as adults in mid-July through mid-August. The adults will mate and lay eggs, then die.

Their favorite trees are oak, crabapple, birch, linden, willow, and hawthorn. Although deciduous trees that are defoliated can put out a new set of leaves, the trees use a lot of resources to do so. Trees that suffer a lot of defoliation (greater than 50%) several years in a row may die. Severe defoliation also makes trees more susceptible to other problems.

Management: At this point it may be too late to treat the caterpillars. They are best treated while still relatively small. Start looking for egg masses (fig. 5) in late summer and fall. The more that we destroy now, the smaller the population for next year.

Good website: <https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/gypsy-moth/>

Mites on spruce (potentially serious)

The Plant Clinic at The Morton Arboretum has received numerous reports on dwarf Alberta spruces turning brown quickly (fig. 6). In some cases, we have been able to confirm the presence of mites, but have not confirmed the species. 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 (*Oligonychus ununguis*) prefer cool



Figure 4 Late instar gypsy moth caterpillar



Figure 5 Gypsy moth egg masses

temperatures in the 60s to low 70s °F and become inactive during the hot summer months. This is unlike two-spotted spider mites (*Tetranychus urticae*) that prefer hot weather.

Management: A strong spray of water can be used to blast spider mites off the tree and greatly reduce populations. Insecticides may be needed for severe outbreaks. The concern at this time is that the dwarf Alberta spruces are sustaining a lot of damage. This is a slow growing plant and it may not be able to recover even with treatment. With the activity we are seeing on this species, it would be worthwhile checking other spruces for mites.



Figure 6 Mite damage on dwarf Alberta spruce

Good website: <https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/mites/>
<https://hort.extension.wisc.edu/articles/twospotted-spider-mite-tetranychus-urticae/>

Cottony Maple Scale (minor to potentially serious)

We are getting unconfirmed reports of cottony maple scale (*Pulvinaria innumerabilis*) and possibly cottony maple leaf scale (*Pulvinaria acericola*). These two insects are similar in appearance but show up on different parts of the tree. Cottony maple scale settles down on branches; cottony maple leaf scale settles on leaves.



Figure 7 Cottony maple scale egg sac

The adult scales are ¼ to 3/8 inch long and are oval and dark in color. They are easily spotted by the white, cottony egg masses (ovisacs) protruding from the rear (fig. 7). The "cotton" is actually waxy threads and the ovisac may contain over 1,500 eggs. Their preferred hosts are red and silver maple. These two scales have a similar life cycle, but crawlers hatch out at slightly different times. Cottony maple scale crawlers come out at about 900 GDD (we are already there) and the cottony maple leaf crawlers come out a little later around 1215 GDD.

Management: Management may not be needed as a number of predators and parasitoids often keep this pest in check. Heavy populations may need to be controlled with insecticides.

Good websites: <https://bygl.osu.edu/node/1625>
<https://ohioline.osu.edu/factsheet/ENT-62>

Galls, part 3 (minor)

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.

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. 8) emerging from the upper surface of the leaf.



Figure 8 Witch-hazel cone gall

Every year, the oaks have more than their fair share of galls and this year is no different. We have two oak galls to feature in this issue. Jumping oak gall is very prevalent this year. Jumping oak gall is caused by the gall wasp *Neuroterus saltatorius*. They start out looking like small beads (fig. 9) on the back of oak leaves. Later, 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. 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.



Figure 9 Jumping oak gall

Oak spangles are in the early stage of development. They are also caused by a tiny gall wasp (*Neuroterus* species), and when the gall is fully developed, it looks like a little disk (fig. 10) stuck on the lower side of the leaf.



Figure 10 Oak spangle

Good guys

Every once in a while, it pays to stop and think for a minute. It is human nature to see an insect and want to get rid of it. We should rethink that. There are a lot of insects that are harmless. More importantly there are some that help us. A sample of oak came into Plant Clinic week with Kermes scale on it. There was also a lady bug munching away on the recently hatched crawlers. The client took the lady bug back home to put it back on the tree. Hopefully there

are some others on the tree as well. We have friends among the insect world. These insects feed on other insects. Sometimes they do wander into our homes and become a nuisance, but when they are outside, they are beneficial to the gardener.

The bottom line is to take a minute to think before you squash or spray an insect. Sometimes they are the good guys. They appreciate it when we temper our use of insecticides. Insecticides can be good tools, but their use can be harmful to our friends, the beneficial insects.

Pest Updates: Diseases

Hosta virus X (serious) by Dr. Stephanie Adams

Recently, symptoms of the disease, Hosta Virus X (HVX) (caused by the virus by the same name) was found on Hosta cultivar ‘Sum and Substance’ at the arboretum.

Symptoms of this disease can include unusual color patterns of light and green tissue (called mottling) on various leaves usually following the veins of the leaf blades. The infected leaves may also be smaller than healthy leaves and have unusual puckering and twisting. Symptoms usually begin on individual leaves and become uniform across the clump as the infection progresses across individual plants (leaves) in the clump.



Figure 11 Virus X on Sum and Substance hosta (photo: Dr. Stephanie Adams)

One surprising fact about HVX is that plants can be infected but not show any symptoms of the infection for years. At the same time, before the disease was well understood, several infected cultivars of Hosta were sold due to the “interesting foliage.” This allowed it to be easily and quickly spread in the Hosta trade, domestically and internationally. Fortunately, the trade has been able to sanitize collections fairly well since it was first diagnosed in 1996 and it's much less common than it once was.

While the disease does not usually kill the plant, it can reduce its overall health and vigor, which may make it more susceptible to secondary pests and diseases. This virus easily spreads to several Hosta cultivars through contact and movement of sap from diseased plants often on gardening tools such as shovels and hand pruners. It can also be moved when the plants are divided (vegetative propagation).

Management: There are no curative treatments for HVX. The only management strategies available are preventing the introduction into your garden and destruction of symptomatic plants. It is not recommended to compost infected plants, as the virus will survive the composting process and still potentially infect plants.

For a list of susceptible plant and plants sold for their decorative symptoms related to their HVX infection can be found in the University of Arkansas Agriculture and Natural Resources publication Hosta Virus X (FSA7548) <https://www.uaex.edu/publications/pdf/FSA-7548.pdf>

If you have sick plants that need complete diagnosis, send samples to your state's Cooperative Extension Plant Clinic for testing. You can find information for all state's labs through the National Plant Diagnostic Network (www.npdn.org)

Good websites: <https://hort.extension.wisc.edu/articles/hosta-virus-x/>
<https://www.purduelandscapereport.org/article/hosta-virus-x/>
<https://www.fdacs.gov/content/download/33301/file/pp410.pdf>

Pest Updates: Weeds

Wild parsnip (aggressive and dangerous)

It is time to talk about another one of those weeds that can hurt us, wild parsnip (*Pastinaca sativa*). This certainly is a plant of concern, because it can spread aggressively and it can impact human health. The concern over this plant is two-fold. It is an aggressive plant that produces large numbers of seed. It is showing up as large colonies along roadsides and in other out-of-the-way places. I have also seen it in State parks and other native areas (wild parsnip is a non-native plant). There is also a human health concern as contact with the sap of this plant can lead to a serious skin reaction. The reaction is called phyto-photo-dermatitis and it occurs when the sap of the plant gets on your skin and then is exposed to sunlight (actually ultra-violet light as this can still happen on a cloudy day). Symptoms usually show up within 24 to 48 hours and can range from something similar to sunburn to blistering.

Learn to recognize this plant. It is in the carrot family and will have a flower cluster (umbel) similar to that of Queen



Figure 12 Wild parsnip flowers



Figure 13 Grooved stem of wild parsnip

Anne's lace, but the flowers will be yellow (fig. 12). Flowering is most prominent in July. Plant size can range from 2 to 5 feet tall, and the main stem is visibly grooved (fig. 13). The leaves are pinnately compound and can have 5 to 15 toothed leaflets (fig. 14). Identification of the plant is important if you are planning to remove it. There is a native wildflower known as Golden Alexanders (*Zizia aurea*) that has a similar appearance. Golden Alexanders will flower earlier and is almost done flowering by the time wild parsnip comes into flower. Golden Alexanders also has umbels of yellow flowers and compound leaves, but generally has only 3 to 5 leaflets (fig. 15). It is also a shorter plant at maturity (2 ½ feet).



Figure 14 Leaves of wild parsnip

Management: When removing this weed be sure to wear long pants, long sleeves and gloves to avoid contact with the sap. Small populations can be cut by hand (best done before seeds are set). Larger areas can be mown by machine, but you must be sure that the mower does not discharge the clippings back onto the operator. Mowers should be cleaned afterwards to remove sap. Young, fast-growing plants can be treated with glyphosate.

Good websites: <http://www.dot.state.mn.us/adopt/documents/wild-parsnips.pdf>
http://www.illinoiswildflowers.info/weeds/plants/wild_parsnip.htm



Figure 15 Leaves of Golden Alexanders



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. The Plant Clinic building is now open to walk-in customers, Monday through Friday 10 am to 4 p.m. 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 10 am to 4 pm. 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



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		

Aphids	4	Gypsy moth.....	2, 7
Bishop's weed	6	Helleborine	4
Black knot.....	2	Hydrangea leaf-tier	3
Boxwood psyllid	5	Japanese beetles.....	7
Butterweed	5	Indicator plants, what they tell us	1
Cankers.....	1	Leafminer, columbine.....	6
Carpenter bees.....	3	Lichens	2
Chlorosis.....	6	Mites on spruce	7
Cicadas	1	Peach leaf curl	4
Crabgrass preventer	1	<i>Phomopsis</i> of spruce.....	5
Creeping bellflower.....	3	Pine bark adelgid	3
<i>Cytospora</i> canker	3	Poison hemlock.....	5
<i>Diplodia</i> tip blight.....	2	Powdery mildew	5
Eastern filbert blight	6	Purple deadnettle.....	4
Eastern tent caterpillar	2, 3	<i>Rhizosphaera</i> needle cast.....	3
Egg masses and more	1	Rose slug sawfly.....	5
Elm flea weevil	5	Rust, cedar	3
European pine sawfly.....	2, 3	Rust on buckthorn	4
<i>Ficaria verna</i>	2	Sawflies	5
Four-lined plantbug	5	Scale, calico.....	4
Fungicides, timing	1	Scale, cottony maple	7
Gall, buttonbush	6	Scale, euonymus.....	2
Gall, hackberry nipple	5	Scale, kermes.....	6
Gall, jumping oak	7	Scale, magnolia	1
Gall, maple bladder.....	6	Scale, oystershell	2
Gall, oak spangles.....	7	Snow mold on lawns	1
Gall, spindle.....	5	Spittlebug.....	5
Gall, witch-hazel cone	7	Spring is dry!	6
Gall, wool sower.....	6	Ticks	4
Golden ragwort.....	5	Viburnum leaf beetle	1, 4, 6
Good guys	7	Virus X, hosta	7

Vole damage to lawns	1
Wetwood, slime flux and <i>Fusicolla</i>	3
Wild parsnip	7