

Plant Health Care Report

Scouting Report of The Morton Arboretum

May 1, 2020

Issue 2020.3

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. You'll also find a table of accumulated growing degree days (GDD) throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. Due to the current COVID-19 situation, we will not be scouting in the early part of the season. Once the situation improves, Arboretum staff and volunteers will be scouting for insects and diseases. We will also be including information about pest and disease problems based on questions emailed to The Arboretum's Plant Clinic. We are working remotely, but still able to answer questions via email at plantclinic@mortonarb.org

We are continuing to use last year's format: full issues alternating with growing degree day (GDD) issues; focus on more serious pests; minor pests covered in shorter articles; alerts issued for new major pests. Readers who receive our email blasts that announce the newsletter is posted online will continue to receive them this year. To be added to the email list, please contact me at syiesla@mortonarb.org. Comments or concerns regarding PHCR should be sent to the same email.

Quick View

What indicator plant is in bloom in Dupage County? I have 3 separate reports of this flowering in Dupage and Cook Counties.

Korean spice viburnum (*Viburnum carlesii*) is in flower (Figure 1)

Accumulated Growing Degree Days (Base 50): 65 (as of April 30)

Accumulated Growing Degree Days (Base 30): 947 (as of April 30)

Insects/other pests

- Spring is weird (again)
- Eastern tent caterpillar
- European pine sawfly
- Gypsy moth
- Viburnum leaf beetle

Diseases

- Cedar apple rust
- Cytospora canker
- Rhizosphaera needle cast

Weeds

- Creeping bellflower

Miscellaneous

- Wise use of pesticides



Figure 1 Korean spice viburnum in flower

Adapting to the situation

The Arboretum grounds have been closed to the public for a while and staff have been working remotely from home for an even longer time. So, you may be asking, how can they still write this newsletter? There are actually a lot of resources on which I can draw. Plant Clinic is still answering questions via email and many of these questions are accompanied by pictures that verify for us what problems are occurring out in the region. Also, the scouts that are usually out on the grounds are now looking around their own neighborhoods and reporting what they see there. Casual observations from staff members have inadvertently provided me with information. A little drive around the area has yielded information about indicator plants in flower as well as problems. Also, it doesn't hurt that as a long-time horticulturist, I have a feel for what problems come when and which things can be discussed every year. All in all, it gives me enough to put together a newsletter that I hope you find useful. Thanks for reading.

Degree Days and Weather Information

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

As of April 30, we have 65 base-50 growing degree days (GDD). The historical average (1937-2019) for this date is 48 GDD₅₀. Since January 1, we have had 11.51 inches of precipitation. Historical average (1937-2019) for precipitation Jan-April is 10.3 inches.

Location	B ₅₀ Growing Degree Days Through April 30, 2020	Precipitation (in) April 24-30, 2020
Carbondale, IL*	279	
Champaign, IL*	136	
Glencoe*	7	
Chicago Botanic Garden**	58	1.95"
Chicago O'Hare*	76	
Kankakee, IL*	94	
Lisle, IL*	83	
The Morton Arboretum	65	3.07"
Quincy, IL*	185	
Rockford, IL*	58	
Springfield, IL*	171	
Waukegan, IL* (60087)	29	
Waukegan, IL* (60085)	40	

**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 <http://www.gddtracker.net/>

How serious is it?

This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked “serious”. Problems that have the potential to be serious and which may warrant chemical control measures will be marked “potentially serious”. Problems that are seldom serious enough for pesticide treatment will be marked “minor”. Articles that discuss a problem that is seen now, but would be treated with a pesticide at a later date, will be marked “treat later”. Since we will cover weeds from time to time, we’ll make some categories for them as well. “Aggressive” will be used for weeds that spread quickly and become a problem and “dangerous” for weeds that might pose a risk to humans.

Pest Updates: Insects

Spring is weird (again)

This spring has been another weird one. The weather has been all over the place; measurable snow a couple of times (after we had a day or two near 80 degrees!!): high temperatures ranging from 40 to 79, and those temperatures not gradually rising, but interspersed, with a few warm days in between a few cold ones. The warmth and the growing degree days have been creeping along. That can change pretty quickly. The forecast for the next 10 days is for more consistent temps, and the growing degree days could begin to add up very quickly. In anticipation of that happening, the next three articles are about some of the common pests we see when we get to 100 growing degree days. By the time the next full issue comes out, the whole Chicago region could be at 100 GDD.

Eastern tent caterpillar (minor to potentially serious, depending on population)

Eastern tent caterpillar (*Malacosoma americanum*) has not been spotted yet, but it is a pest that often starts to show up at GDD 100-200. When they start to emerge, look for small tents beginning to form. The larvae gather at a fork in a tree and build a web or “tent” (fig. 2), but at this point you may need to look carefully to spot it. The caterpillars will ultimately grow to two inches long and are hairy with white stripes down their backs and blue spots between longitudinal yellow lines (fig. 3) (these markings will not be as distinct on the young caterpillars). They leave the web to feed during the day, but return at night. Severe defoliation only occurs when populations are high.



Figure 2 Tent of Eastern tent caterpillar

Eastern tent caterpillars prefer trees in the rose family, such as wild black cherry, apple and crabapple, plum, and peach, but occasionally will feed on ash, birch, willow, maple, oak, and poplar.

Management: The safest way to control the caterpillar is pruning out the webs. This should be done on cloudy or rainy days or at night when the caterpillars are in the nest and not out feeding.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/tent-or-web-making-caterpillars>



Figure 3 Eastern tent caterpillar

European pine sawfly (minor to potentially serious, depending on population)

Another pest to expect around GDD 100-200 is the European pine sawfly (*Neodiprion sertifer*). When the larvae come out, they will be very small at first. Look at the ends of branches, as the eggs were laid in last year's needles. If you can't find any larvae, check the needles for unopened eggs. This insect can cause heavy defoliation on red, Scots, mugo, Japanese red, and jack pines. European pine sawflies are interesting to watch. Groups of sawfly larvae rear up their heads simultaneously when disturbed, making the group appear to be one much larger organism. This is a great defense mechanism. When fully grown, the sawflies will be about $\frac{3}{4}$ - 1 inch long and will have several light and dark green stripes on each side of their bodies (fig. 4). Their heads and the three pairs of legs are black. Their mouths are so small after hatching that they can only eat one side of each needle, and therefore the chewed-on needles look like straw.



Figure 4 European pine sawfly larvae

Eventually as the insects mature, they are able to eat entire needles. The larvae feed for weeks on old conifer needles but are finished feeding before current year's needles emerge. They then drop down into the ground to pupate, emerging in September as adults to mate and lay eggs in the current year's needles.

Management: Birds feed on the larvae, and rodents eat the pupae in the soil, but these predators are usually inadequate to control the larvae. Larvae can be removed by hand or washed off with a strong stream of water from the garden hose. They have no hooks on their feet like caterpillars do, so they can't hang on very well. Since European pine sawfly larvae are not caterpillars, *Bacillus thuringiensis* var. *kurstaki* (Btk) does not control them.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/pine-sawflies>

Gypsy moth (serious)

Gypsy moth (*Lymantria dispar*) caterpillars are serious defoliators that feed on over 450 species of trees and shrubs. This is another pest that comes out at GDD 100-200. We have not found them yet this year, but it is wise to be scouting and catch them early as Gypsy moth populations have been rising in the last couple of years. Note that very early instar caterpillars (fig. 5) 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. 6). 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. Needle-bearing conifers, including spruces and pines, cannot re-foliate and therefore may die after one season of attack.

Once active, the caterpillars will be actively feeding for a few weeks. 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.

Management: *Bacillus thuringiensis* var. *kurstaki* (*Btk*) can control young larvae but is not as effective against mature larvae. Treat while larvae are still relatively small. The first three instars remain in the tops of trees, so detection may be difficult. Mature larvae (fourth instar and later) feed at night and crawl down from tree tops to hide during the day in protected spots.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/gypsy-moth>

Viburnum leaf beetle (update)

We don't have reports to indicate that the beetle larvae are active at this time. Last year, however, we did find larvae emerging between 100 and 150 GDD, base 50. Be checking viburnums now. We often see the larvae feeding on leaves that are only half open.



Figure 5 Early instar of gypsy moth caterpillar



Figure 6 Mature gypsy moth caterpillar

Pest Updates: Diseases

Cedar rust (potentially serious, but not life-threatening)

We have received photographic evidence in our Plant Clinic email this week to show that the cedar rust galls are producing their telial spore horns and producing spores. I went to my back window to check my neighbor's poor juniper. On Tuesday morning, I could not see any spore horns, but by Wednesday noon, I did not need the binoculars to confirm the horns are expanded. They are fully expanded due to the rain this week (fig. 7). All three cedar rusts (cedar-apple, cedar-hawthorn and cedar quince) are active now. If you have not started protective sprays on the deciduous host, it is time to get going!



Figure 7 Cedar rust gall with spore horns expanded

***Cytospora* canker (potentially serious)**

We continue to see a lot of dieback on spruces, as we have for the past several years. A common source of this dieback is *Cytospora* canker. This fungal disease is common on stressed spruces. *Cytospora* canker rarely affects trees that are younger than 15 to 20 years old. Because we have been having so much environmental stress (drought, flooding, etc.), this disease has become very prevalent in the landscape. The disease usually starts on the lower branches of the tree and progresses upwards. Needles turn brown and finally drop, leaving dry, brittle twigs and branches. The fungus enters the tree through wounds and creates cankers within the bark. A thin coating of white resin is generally found on infected twigs and trunks (fig. 8).

Management: *Cytospora* canker is a stress-related disease, so, at minimum, trees should be kept mulched and watered well during dry periods. Remove infected branches promptly during dry weather to reduce the spread of the disease. It is imperative to disinfect pruning tools between cuts. Give spruces adequate space when planting as dense planting is another common predisposing stress factor. If it is necessary to remove trees, it would be wise to consider diversifying the planting, rather than replanting with a lot of spruces. Having a lot of the same plant in the landscape can magnify a disease problem. There is no effective chemical control.



Figure 8 Sap flow from *cytospora* canker

Good web site:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/spruce-diseases>

***Rhizosphaera* needle cast (serious)**

Another cause of dieback on spruces is *Rhizosphaera* needle cast. *Rhizosphaera* needle cast is a disease caused by the fungus *Rhizosphaera kalkhoffii*. This disease infects needles on the lower branches first and gradually progresses up the tree. Although needles become infected in May and June (**when new needles are emerging**), symptoms do not usually appear until late fall or the following spring. Infected needles initially yellow, and small dot-like fruiting bodies can be seen (with a hand lens) erupting through the stomates of the needles (fig. 9). Later, the needles turn purple to brown and begin to drop (it may take 12-15 months from the time of infection for all these symptoms to develop). Although trees are not immediately killed by this pathogen, trees which lose needles for 3 to 4 consecutive years may die. If left unchecked, the disease can turn the tree into an undesirable landscape specimen in two to three years. Colorado blue is highly susceptible to *Rhizosphaera* needle cast. White spruce is moderately susceptible and Norway spruce is relatively resistant. Hosts in other genera include true firs, Douglas-fir, and pines.

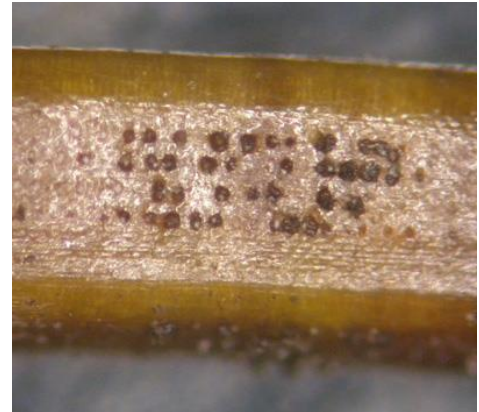


Figure 9 Fruiting bodies of *rhizosphaera* emerging through needle stomates

Management: Rake and dispose of infected needles to reduce the source of inoculum. Prune off lower branches and provide adequate spacing between trees to improve air movement. Chemical controls are most effective if the disease is detected early. Fungicides should be applied when needles are half-grown (as soon as bud caps fall off) and again when fully elongated. Two years of applications are usually required.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/spruce-diseases>

Pest Updates: Weeds

Creeping bellflower (aggressive)

For the last few years, we have been receiving reports of an annoying weed making itself known in flower gardens and lawns. Those complaints often come later in the season when this weed starts flowering, but we have already received two emails about creeping bellflowers



Figure 10 Leaves of creeping bellflower

this season. There are actually two plants that are nearly identical, ladybells (*Adenophora* spp.) and creeping bellflower (*Campunula rapunculoides*). The two plants differ only by a small structure within the flower. Ladybells and creeping bellflower are closely related, but on doing a little research, it seems that the creeping bellflower may be the ‘bad seed’ of this family. It is the one that seems to be overly aggressive. Unfortunately, because the plants are so identical, if a friend shared some ladybells with you from her garden, you may actually have creeping bellflower.

Young plants have leaves that are heart-shaped to lance-shaped (fig. 10). This innocent looking plant has fleshy roots growing horizontally under the soil. These fleshy roots help to spread the plant and before you know it you have a healthy patch of them in your flower bed. If the plants are not removed, a flowering stalk with purple, nodding, bell shaped flowers will form.

Management: Plants can be removed manually through digging, but any roots left will continue to produce new plants. As new plants develop and are actively growing, spray them with a weed killer containing glyphosate. Glyphosate will be absorbed by the leaves and taken down to kill out the roots. Do not get the glyphosate on desirable plants as it will kill them.

Miscellaneous

Wise use of pesticides

We get a lot of questions about pesticide use, especially in regard to safety (for humans, pets and bees). “Safe” is a difficult word to use when talking about pesticides (insecticides, fungicides, herbicides). With any chemical, whether it is a pesticide or a household cleaner, there is always some risk. If a pesticide is known to be toxic to bees, fish or birds, EPA mandates that information be noted on the product label in a section called “Environmental Hazards”. There is ongoing research, however, that is indicating that some pesticides might not be toxic to bees, but may be detrimental to them in some way.

Many people are concerned about pesticides and cancer for both humans and pets. Many of these questions don’t yet have an answer. Again, there is a lot of ongoing research about this topic. The purpose of this article is not to offer answers, but to remind people to be careful when using these products. Here are some tips to consider:

- If you are not comfortable using pesticides, don’t use them.
- Evaluate the pest or disease. Is it serious enough to warrant treatment? Many problems are more cosmetic than harmful and don’t really need treatment at all.
- Look for alternatives to pesticides. There are often non-chemical measures that can be used to minimize pests. These include pruning out affected parts, proper watering and

fertilizing, and using traps or barriers. Be wary of 'home remedies' often touted on the internet. Many don't work, some are even dangerous.

- Learn to live with a few weeds/pests. Years ago, we talked about pest control, now we talk about pest management. Complete control of a pest is not always feasible, management is.
- Always have a pest properly identified so that if you chose to use a pesticide, you can select the right one for the purpose.
- Use the pesticide at the right time so it is as effective as possible.
- Don't use more than the label calls for. More is not better.
- Limit exposure for yourself, your family and pets.
- Don't spray pesticides on plants that are in flower as this is when pollinators will be visiting and this may put them at risk.



Bartlett Tree Experts, Presenting Sponsor of the Plant Clinic.

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; 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 the volunteers who will be scouting for us this season. They find most of the insects and diseases reported here. The Scouting Volunteers include: Maggie Burnitz, LeeAnn Cosper, Ingrid Giles, Loraine Miranda, and Emma Visee. Your hard work is appreciated. Thanks also to Donna Danielson who shares her scouting findings.

Literature/website recommendations:

Indicator plants are chosen because of work done by Donald A. Orton, which is published in the book Coincide, The Orton System of Pest and Disease Management.

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

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. Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org.

Copyright © 2020 The Morton Arboretum