

Plant Health Care Report



THE
CHAMPION
of TREES

Scouting Report of The Morton Arboretum

April 5, 2019

Issue 2019.1

Welcome to the first issue of the Plant Health Care Report (PHCR) for 2019. My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic, and I will be responsible for compiling the newsletter again this year. Comments or concerns regarding PHCR should be sent to syiesla@mortonarb.org.

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. Arboretum staff and volunteers will be scouting for insects and diseases throughout the season. We will also be including information about other pest and disease problems based on samples brought into The Arboretum's Plant Clinic.

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

Quick View

What indicator plant is in bloom at the Arboretum?

Vernal witch-hazel (*Hamamelis vernalis*) is in full flower (Figure 1)

Accumulated Growing Degree Days (Base 50): .5 (as of April 4)

Accumulated Growing Degree Days (Base 30): 333 (as of April 4)

Miscellaneous

- Winter weather
- Using growing degree days
- Timing use of fungicides
- Crabgrass preventer
- Animal damage
- Winter damage

Insects/other pests

- Viburnum leaf beetle
- Egg masses and more

Diseases

- Cankers



Figure 1 Vernal witch-hazel (*Hamamelis vernalis*)

Oak and Elm Pruning Advisory

Just a reminder - **stop pruning oaks and elms by April 15!** Sap and bark beetles, the insects that spread the pathogens that cause the diseases oak wilt and Dutch elm disease, will soon be active. The beetles are attracted to pruning wounds. Pathologists differ in their opinions on when to resume pruning. To err on the side of safety don't prune oaks and elms between April 15 and October 15, when the beetles are active. If you must prune close to or after that deadline, seal the pruning cuts immediately. Wisconsin DNR offers this guideline about the emergence of the vectors: As a rule of thumb, "temperatures above 60 degrees for 7 consecutive days" is considered to be warm enough for the emergence of *C[olophterus] truncates* [sap beetles]. These are the beetles that can carry oak wilt.

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 4, we are at .5 base-50 growing degree days (GDD). The historical average (1937-2018) for this date is zero GDD₅₀. Since January 1, we have had 7.76 inches of precipitation. Historical average (1937-2018) for precipitation Jan-March is 6.23 inches.

Location	B ₅₀ Growing Degree Days Through April 4, 2019	Precipitation (in) March 29-April 4, 2019
Carbondale, IL*	60	
Champaign, IL*	18	
Chicago Botanic Garden**	4.5 (April 3)	.32 inch (April 3)
Chicago O'Hare*	6	
Kankakee, IL*	9	
Lisle, IL*	6	
The Morton Arboretum	.5	.71 inch
Quincy, IL*	21	
Rockford, IL*	4	
Springfield, IL*	22	
Waukegan, IL*	1	

**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/>

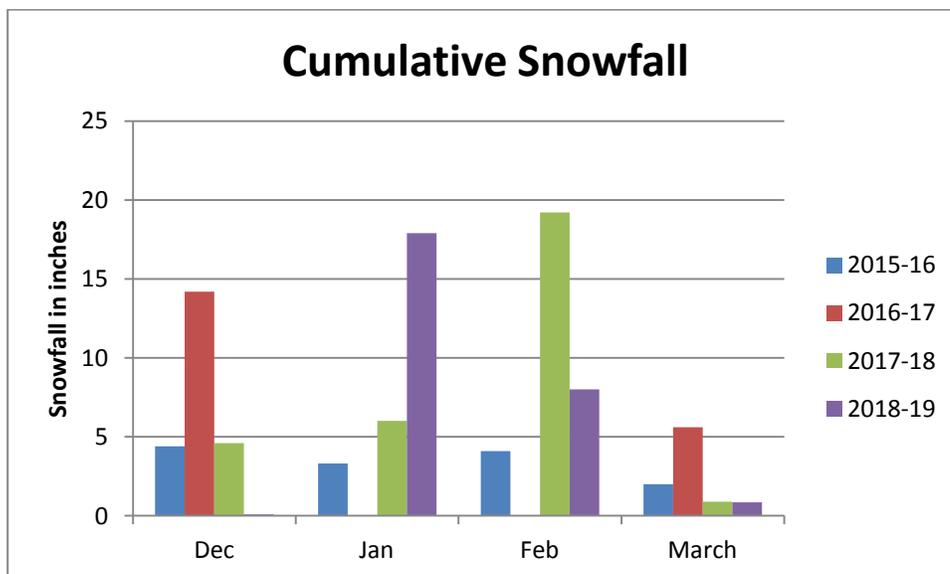
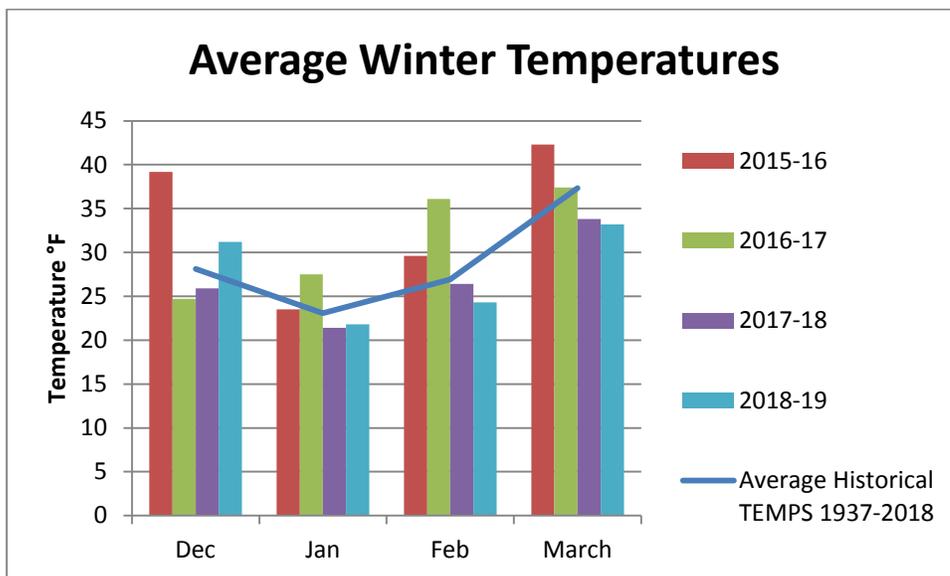
How serious is it?

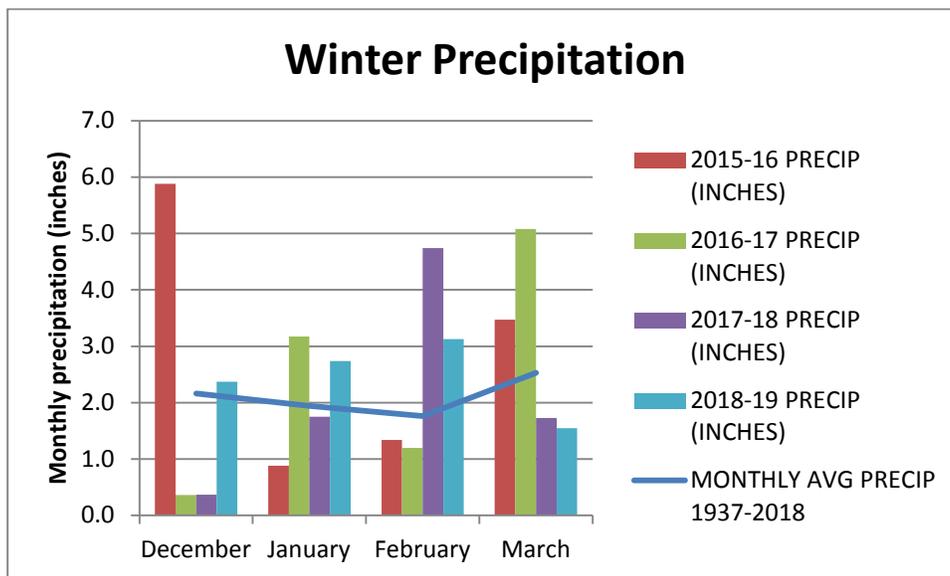
This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked “serious”. Problems that have the potential to be serious and which may warrant chemical control measures will be marked “potentially 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.

Miscellaneous:

Winter weather

The following charts show 2018-19 winter weather and compares it to previous years.





Using growing degree days

In every issue of the Plant Health Care Report we list growing degree days (GDD) accumulated at The Morton Arboretum and other sites throughout Illinois. This article will explain what they are and how we can use them.

The development of plants, insects and fungi is dependent on heat. Development speeds up as the temperature rises and slows as temperature decreases. Many plants and insects have been studied in regard to this relationship between heat and development. We can anticipate the flowering of a shrub or the emergence of an insect based on how many growing degree days have accumulated. We can give this information to our scouts and ask them to look for specific problems based on GDD. This helps to refine the process of scouting. Making those GDDs available to our readers helps them plan for pests and disease.

Accumulation of GDD can vary quite a bit from year to year, and by tracking that information we can be more accurate than if we just looked at the calendar. Here is an example: Eastern tent caterpillars hatch out of their eggs when GDD base 50 is between 100 and 200. In 2014 we had accumulated 100 GDD by May 9. We often do expect to see this pest in mid May, so 2014 was fairly 'average'. In 2012, we had accumulated 100 GDD by March 19 (nearly two months earlier than 'normal'). If we had gone with the calendar method and waited to deal with this pest in May, we would have missed it completely.

GDDs days are fairly easy to calculate. We use GDD base 50. Add the maximum temperature to the minimum temperature for a day, divide by two, and subtract 50 (the base number). If the number resulting from this calculation is above zero, then that is the number of degree days for that day. If the result is zero or below, then the number of GDD is zero for that day. These growing degree days (think of them as units if the word "day" confuses you) are

cumulative. When we have accumulated 100 GDD, we expect certain insects to begin emerging (and certain plants to be in flower). When we get to 500 GDD there will be different insects emerging and different plants flowering. We use base 50 because 50 degrees F is the temperature at which most plants and pests begin to grow.

Various sources link insect emergence with certain stages in the life of indicator plants. This is possible because plants also respond to heat. A couple of resources include Don Orton's book Coincide and the following websites:

http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects

http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf

<http://www.ipmofnh.com/wp-content/uploads/2015/02/Insect-Growing-Degree-Days.pdf>

Timing use of fungicides

By the time we write an article on a disease for the Plant Health Care Report, the time to treat has often passed. In the interest of being proactive, let's talk about fungicide applications. Many fungicides are applied as protectants to keep fungi from penetrating into plant tissue. Often this application process needs to start at the time new foliage is emerging and may require 2 to 3 applications as the leaves continue to emerge. The cold weather is keeping leaf buds closed for the most part, but a few days of warm weather could bring about a quick change. Watch the weather and leaf development and be ready to act.

Crabgrass preventer

Crabgrass preventers showed up in the stores in February, and people started asking if it was time to use them. No. March offered us some up and down temperatures, but also some nice days. Again the question came; should we put down the crabgrass preventer? No. April is here and temperatures are still a bit inconsistent. Still we must wait. Hopefully, as we get to mid-April, we may finally be able to apply crabgrass preventers! Why the wait? Crabgrass seed will not germinate until SOIL temperatures are greater than 55 degrees F for 5-7 consecutive days. That still has not happened, and we will need some warm weather to push us to the finish line. In an 'average' year we might be applying crabgrass preventer in mid to late April. Iowa State gives this guideline: "Crabgrass seed germination usually begins ... when redbud trees reach full bloom", and that is often mid to late April. Do NOT use forsythia as an indicator plant. Forsythia is not reliable as it tends to flower whenever it feels like it. Depending on the weather, it can start to flower any time between December and April.

We do want to get the crabgrass preventer down before the germination starts, but these preventers only last about 60 days, so if you apply in February or March you may not get

the most use from it. Crabgrass seed can continue to germinate until soil temps get up to 95 degrees F.

One last thought on crabgrass. We often get reports in early spring of green clumps of crabgrass established in the lawn. Crabgrass is an annual, so it died with the frost last fall. If you see green clumps in your lawn right now, it is most likely tall fescue.

Animal damage

The animals have not been kind to our plants this winter. Rabbits, deer, voles and even squirrels have been busy attacking the plants. Voles, which are small, mouse-like animals, can run under the snow and feed on the bark of shrubs and young trees. If the vole girdles the branch or trunk, that branch will die. Vole damage may also be seen in lawns. Vole damage usually occurs in winter, especially when we have snow cover. Voles will produce shallow runways in the lawn which become obvious when the snow melts (fig. 2). This damage will fill in as the lawn begins to grow.



Figure 2 Vole damage in lawn.

Rabbits often feed higher on the plant as they can run across the surface of the snow. Branches show a distinct 45 degree angle where the rabbit has bitten them off. Rabbits can also chew the bark off of the lower branches (fig. 3). Deer can feed on branches both high and low. Browsing occurs all year but tends to be more noticeable in winter when food supplies dwindle.



Figure 3 Rabbits have chewed the bark off this branch

Many plants may need some pruning this year to get them back into shape or to simply remove damaged parts. Shrubs or young trees that have had bark chewed or stripped near the base of the plant may not survive.

For more information on animal damage, go to The Morton Arboretum website:
<http://www.mortonarb.org/trees-plants/plant-clinic/horticulture-care/animal-damage>

Winter damage

We often have to discuss winter damage in our first issue, and this year is no different. The last couple of years, we have seen less winter damage. This year we not only had the polar vortex, but also a LOT of windy days. Winter damage is primarily a concern on evergreens because they hold their needles or leaves through the winter and drying winds can pull moisture out of those needles and leaves, making them turn brown. Don't be in a hurry to prune out all those brown branches. New growth on many evergreens does not start until sometime in May. Wait for that new growth to see if it fills in some of the damaged areas. By mid- to late May you should have a good idea of what part of the evergreen will fill in and which parts won't. This year we may also see more winter damage on ground covers due to an inconsistent snow cover in some parts of the Chicago region.

Pest Updates: Insects

Viburnum leaf beetle (potentially serious)

Viburnum leaf beetle (*Pyrrhalta viburni*) larvae should be hatching around mid-April. In the past couple of years, this pest has been found feeding mostly on arrowwood viburnum (*Viburnum dentatum*) and the American cranberrybush viburnum (*Viburnum opulus* var. *americanum*, formerly *V. trilobum*). We have noted some minor feeding damage on blackhaw viburnum (*Viburnum prunifolium*).

This is a pest of concern because it has the potential to be a serious defoliator of viburnums. Both the larvae and the adult beetle will feed on leaves, so we can see damage all season. The beetle overwinters as eggs in the tips of stems. The egg-laying damage usually occurs in rows. The eggs are laid in holes chewed by the adult. The holes are then covered by a cap of chewed bark. These caps are fairly easy to see as they are darker than the stem. Figure 4 shows the egg-laying sites in fall when they are new, and figure 5 shows them in spring, about the time the larvae emerge. We may still have time to minimize populations by cutting out and destroying these egg-laying sites. If we can kill them before they hatch, management of this pest will be easier for the rest of the season. To see a video on removing egg-laying sites go to



Figure 4 Egg-laying sites in fall



Figure 5 Egg-laying sites in spring (arrow) on underside of young twigs.

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/viburnum-leaf-beetle>

When the larvae do hatch, they are tiny. In fact, they are so small, that they are easily overlooked. In figure 6, the little spot next to the penny is a very young viburnum leaf beetle larva. Last year, we looked at leaves that were only about half open and determined that there were already larvae feeding between the veins and doing damage before the leaf had completely expanded. Figure 7 shows a leaf that is only partially expanded, but already being fed upon by newly hatched larvae.



Figure 6 Very young viburnum leaf beetle larva (arrow)

The larvae, when larger and easier to see (about 1/3 inch), may be pale green, pale orange or yellow. They do have a distinctive pattern of black spots along their sides and a row of black dashes running down their backs. At maturity, the larvae are a little less than half an inch long. The larvae chew on the undersides of new foliage.

When mature, the larvae crawl to the ground, usually in mid-June, and pupate in the soil. Adults emerge from the soil (early July) and also chew on the leaves. Their feeding damage forms irregular round holes in the leaves. The beetles are about ¼ inch long and generally brown in color. On close inspection, golden hairs can be seen on the wing covers of the adult beetle. The adult beetles will be mating and laying eggs from summer into fall. There is one generation of the beetle each year. Heavy and repeated defoliation by the viburnum leaf beetle can lead to death of the shrubs.



Figure 7 Young viburnum leaf beetle larvae seen on a half expanded leaf

Management: From October through April twigs with eggs in them can be pruned out and destroyed. This is the most effective way to reduce populations and minimize damage and is highly recommended. (If the larvae can't hatch, they can't eat). Insecticides can be used on the larvae from late April through June when they are feeding. Some university websites are suggesting treating larvae with either spinosad or insecticidal soap. To be effective, these products must be sprayed on the larvae (usually found on the undersides of the leaves). Cornell University also suggests a single soil application of imidacloprid in spring to control adults this summer. Because imidacloprid is systemic, it can be translocated into the flowers and pose a hazard for pollinators. If previous damage warrants

the use of this product, protect pollinators either by pruning off the flowers this season or applying imidacloprid immediately after flowering ends. Other insecticides can be used in summer when the beetles are out. Insecticidal soap is not effective against the adult beetles.

If you plan to add new viburnums to the landscape, don't plant big groups (remember diversity is the way to go). Plant one or two, and this pest will be easier to manage.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/viburnum-leaf-beetle>

<http://www.hort.cornell.edu/vlb/manage.html>

Egg masses and more

As with viburnum leaf beetle, we may still have some time to look for other insects in their overwintering stage. The best time to look for egg masses like those of Eastern tent caterpillar, gypsy moth and bagworm is before the season gets going. Look for egg masses now and destroy them to reduce the population for the coming season.

Eastern tent caterpillar egg masses are dark gray to black and are wrapped around twigs that are about the diameter of a pencil. Prune out branches with egg masses attached. Gypsy moth egg masses are buff colored (fig. 8), covered with hairs, and about 1 1/2 inches long. Each female usually lays one egg mass, which could contain as many as 1,000 eggs. Egg masses can be carefully scraped off bark and destroyed before they hatch. Bagworm eggs spend the winter in the bag that was made by the caterpillar last season. The bags are made from leaves of the host plant and can be found hanging from branches (fig. 9). Pull the bags off the host plant.

Since we will soon be working on spring clean-up in the garden, this would be a good time to look at groundcover euonymus. If yours is infested with scale insects, prune out heavy infestations now. Reducing the population now will make insecticides more effective when it is time to treat in summer.



Figure 8 gypsy moth egg masses



Figure 9 Bagworm bag constructed from arborvitae foliage

Pest Updates: Diseases

Cankers (serious)

The early part of the season is a good time to scout for cankers, so let's look around to see if any of our trees or shrubs have cankered branches that need to be removed. Cankers are a physical symptom (a wounded or damaged area). Removing these diseased branches can limit the spread of disease. Some cankers can be very obvious, such as golden canker on dogwood (fig.10). The stem will turn yellowish and will stand out against the normal green or red stems. Cytospora canker on spruce can also be easily seen. Look for a thin white flow of sap. It will look a bit like whitewash (fig. 11). That flow will originate from the canker. The canker itself is not very obvious. Other cankers may be difficult to see. Some will be sunken in but others may not be. Some cankers may lead to cracked bark or a sap flow.



Figure 10 Golden canker on dogwood

Cankers are more common on plants that are stressed. We have seen an increase in cankers in the last few years, most likely due to environmental extremes (drought in 2012, flooding in 2013, a wet year in 2014, two hard winters, and 2016, 2017 and 2018 were all over the place with regard to the weather). Cankers are serious because the tissue under the bark is killed. This is the tissue that carries water to the upper part of the tree or shrub. This leads to dieback of branches. If the cankers occur on the main trunk, a large portion of a tree (or even the whole tree) could be lost.



Figure 11 Sap flow from cytospora canker

Management: Avoid wounding trees and shrubs. The pathogens that cause cankers are not very strong and often need a wound to gain entry. Cankered stems should be cut out. When cutting out cankers, go at least 6 inches below the canker to make the cut, as the disease may have spread under the bark, away from the original canker site. Clean your tools between each cut to minimize spread. Keep trees in good health. Watering during dry times is very important.



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 Cospers, Ingrid Giles, Loraine Miranda, Mary Noe 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. This book may be purchased through the publisher at: <http://www.laborofloveconservatory.com/>

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

The Commercial Landscape & Turfgrass Pest Management Handbook (CPM), for commercial applicators, and Pest Management for the Home Landscape (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).

This report is available as a PDF at The Morton Arboretum website at <http://www.mortonarb.org/visit-explore/news-events/arboretum-news?tid=259>

For pest and disease questions, please contact the Plant Clinic at (630) 719-2424 between 10:00 and 4:00 Mondays through Saturdays or email plantclinic@mortonarb.org. Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org.

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