

# Plant Health Care Report

Scouting Report of The Morton Arboretum

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April 3, 2020

Issue 2020.1

Welcome to the first issue of the Plant Health Care Report (PHCR) for 2020. 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](mailto: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. 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](mailto: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](mailto: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): 6 (as of April 2)**

**Accumulated Growing Degree Days (Base 30): 453.5 (as of April 2)**

### Miscellaneous

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

### Insects/other pests

- Viburnum leaf beetle
- Egg masses and more
- Magnolia scale

### 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 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[olopterus] 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 2, we have 6 base-50 growing degree days (GDD). The historical average (1937-2019) for this date is zero GDD<sub>50</sub>. Since January 1, we have had 5.14 inches of precipitation. Historical average (1937-2019) for precipitation Jan-March is 6.24 inches.

| Location              | B <sub>50</sub> Growing Degree Days Through April 2, 2020 | Precipitation (in) March 27-April 2, 2020 |
|-----------------------|---|---|
| Carbondale, IL*       | 113   |   |
| Champaign, IL*        | 31  |   |
| Glencoe*              | 0   |   |
| Chicago O'Hare*       | 12  |   |
| Kankakee, IL*         | 18  |   |
| Lisle, IL*            | 14  |   |
| The Morton Arboretum  | 6   | none                                      |
| Quincy, IL*           | 52  |   |
| Rockford, IL*         | 6   |   |
| Springfield, IL*      | 44  |   |
| Waukegan, IL* (60087) | 4   |   |
| Waukegan, IL* (60085) | 7   |   |

\*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/>

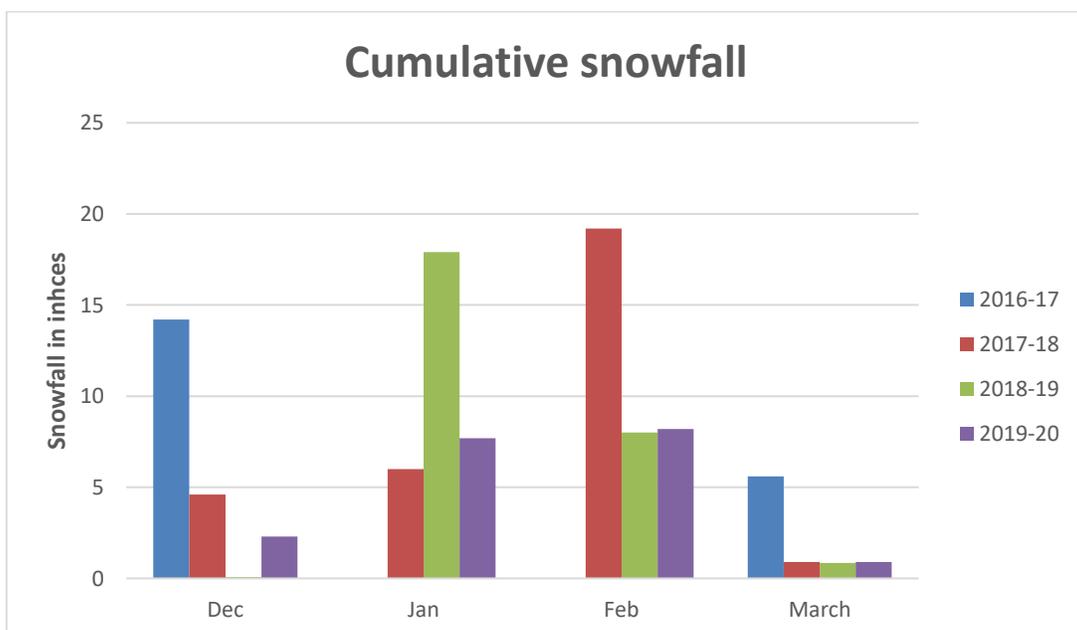
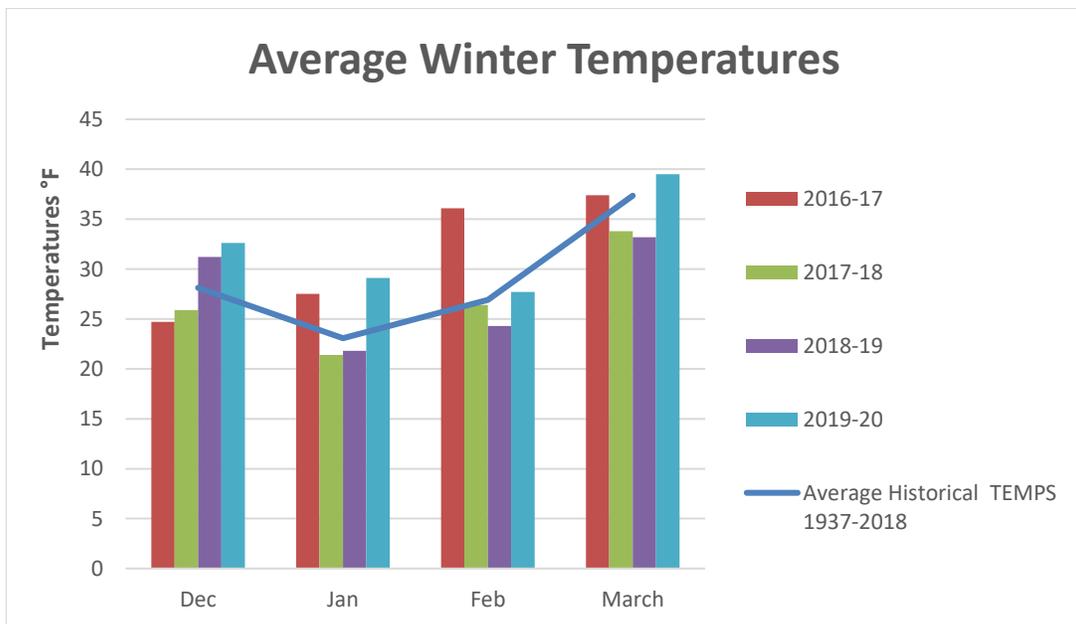
## How serious is it?

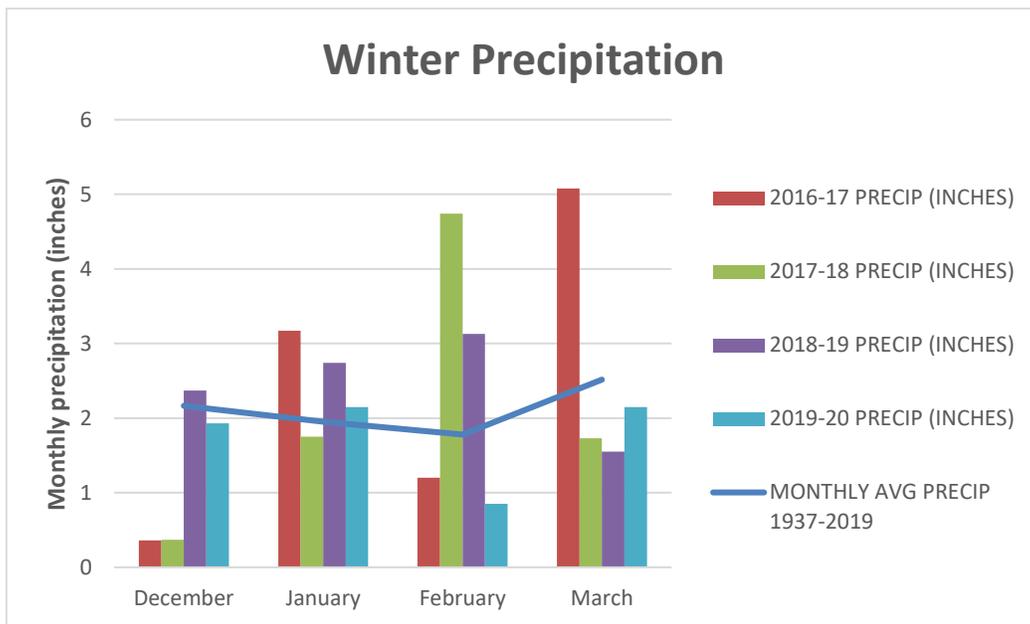
This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked “serious”. Problems that have the potential to be serious and which may warrant chemical control measures will be marked “potentially 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 2019-20 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 (units of heat, not actual 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 (again, think of them as units of heat 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://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)

[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](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. So far, the weather has been cool enough to keep 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**

The Morton Arboretum Plant Clinic has already received an inquiry about crabgrass preventers. Is it time to put them down? No. March offered us some up and down temperatures, as well as some nice days, but the time was not right. Now, 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! 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 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. 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>

## Pest Updates: Insects

### **Viburnum leaf beetle (potentially serious)**

Viburnum leaf beetle (*Pyrrhalta viburni*) has been a common problem in the Chicago region in the past 3 to 4 years. It 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 feeding damage on blackhaw viburnum (*Viburnum prunifolium*) as well.

This is a pest of concern because it is 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 a slightly different color than the stem. Figure 4 shows the egg-laying sites in fall when they are new, and figure 5 shows them in spring, after the larvae have emerged. 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.

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.

The larvae, when larger and easier to see (about 1/3



Figure 4 Egg-laying sites in fall



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



Figure 6 Very young viburnum leaf beetle larva (arrow)

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  $\frac{1}{4}$  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). Trim out only the last few inches of each twig where egg-laying sites are visible. You do not need to cut the whole stem back.

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

## Magnolia scale (potentially serious)

Even though the growing season is just getting started, The Plant Clinic at The Morton Arboretum is already getting emails from homeowners with magnolia scale (*Neolecanium cornuparvum*) on their magnolia trees. Populations of this insect have been high for the last couple of years and people are looking to minimize the problem for 2020. These insects have sucking mouthparts and extract sap from the host plant's branches and twigs. Badly infested trees are weakened and growth is slowed. When infestations are severe, branch dieback can result, and with repeated severe attacks, trees may be killed.

Late last summer into fall, adult females gave birth to live young, called crawlers. The crawlers are tiny, flattened, and vary in color from yellow to reddish-brown (fig. 10). The crawlers settled down on one- to two-year-old twigs to feed and remained there through the winter. They are still there and are most likely ready to become active again (in terms of feeding).



Figure 10 Magnolia scale crawlers (arrow)

**Management:** If you treated your tree last year with a systemic product containing either imidacloprid or dinotefuran, that should be sufficient to kill the crawlers. Those products last for a year. They may have killed many of the crawlers when they emerged last year and the product is still there to continue killing active crawlers. If the tiny crawlers seem

dry and fall off easily when you rub them, they are dead. It should be noted that adult scale will remain in place even when dead. This often gives the impression that the insecticides did not work. Dead adults will be dry and easy to pick off. Live scale will ooze liquid when crushed. At any rate, last year's adults should have died from old age.

If you did not use a systemic product on your tree last year, you can treat the crawlers now with a dormant oil. Use this product before the leaves come out on the tree. Check the label for any temperature restrictions. Note that some oils are sold as "horticultural oil" or "multi-season oil" rather than dormant oil. Products labeled this way often come with two sets of mixing instructions: one for use as a dormant oil and one for use as a summer oil (when foliage is present). Select the right set of mixing instructions for the situation.

Good web site: <http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/magnolia-scale-neolecanium-cornuparvum>

## **Pest Updates: Diseases**

### **Cankers (serious)**

With so much stressful weather over the last 8 to 10 years, we have seen a serious increase in canker diseases. The pathogens that are responsible for cankers are not strong ones. They can only attack stressed or wounded plants. 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.11). 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. 12). 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 11 Golden canker on dogwood

Cankers are very common on plants that are stressed. We have seen an increase in cankers in the last few years, due to environmental extremes (drought in 2012, flooding in 2013, a wet year in 2014, two hard winters, and the last four years have been very up and down 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 12 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 for maintaining good vigor in the tree.



[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, 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://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)

[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](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](mailto: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](mailto:syiesla@mortonarb.org).

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