

# Plant Health Care Report



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Scouting Report of The Morton Arboretum

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**March 30, 2018**

**Issue 2018.1**

Welcome to the first issue of the Plant Health Care Report (PHCR) for 2018. 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. 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. Due to conflicts in my schedule, the first issue is coming out a week earlier than usual and the GDD issues will not start until April 20. 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): 0 (as of March 29)**

**Accumulated Growing Degree Days (Base 30): 361.5 (as of March 29)**

### Miscellaneous

- Winter weather
- Using growing degree days
- Timing use of fungicides
- Crabgrass preventer
- Animal damage to trees and shrubs

### Insects/other pests

- Viburnum leaf beetle
- Egg masses and more

### Diseases

- Boxwood blight
- Cankers
- Volutella blight on pachysandra



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].

### 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 March 29, we are at zero base-50 growing degree days (GDD). The historical average (1937-2016) for this date is zero GDD<sub>50</sub>. Since January 1, we have had 8.2 inches of precipitation. Historical average (1937-2016) for precipitation Jan-March is 6.34 inches.

Location	B <sub>50</sub> Growing Degree Days Through March 29, 2018	Precipitation (in) March 23-29, 2018
Carbondale, IL*	63	
Champaign, IL*	11	
Chicago Botanic Garden**	1	
Chicago O'Hare*	2	
Kankakee, IL*	1	
Lisle, IL*	1	
The Morton Arboretum	0	
Northbrook, IL**	0	
Quincy, IL*	17	
Rockford, IL*	0	
Springfield, IL*	16	
Waukegan, IL*	0	

\*\*Thank you to Mike Brouillard, Northbrook Park District and Chris Beiser, 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/>

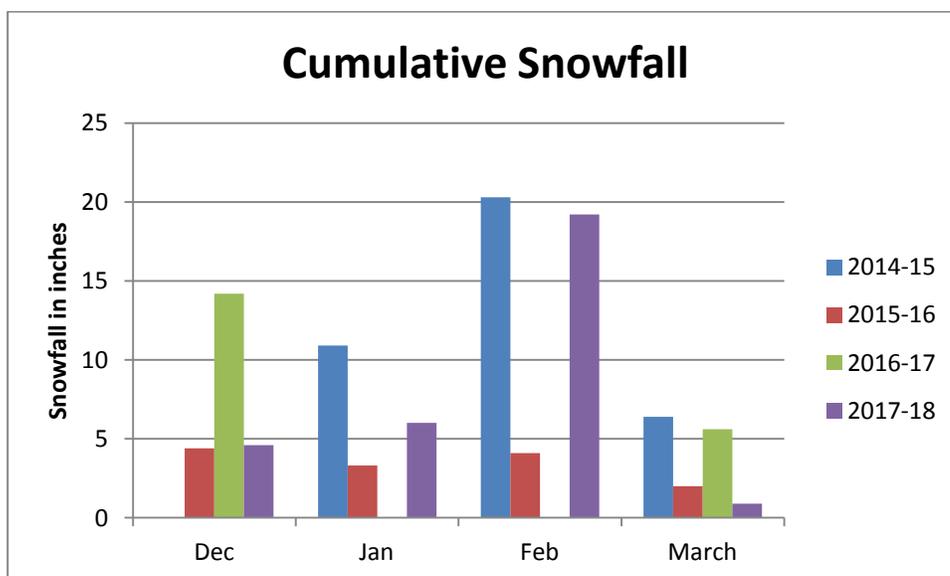
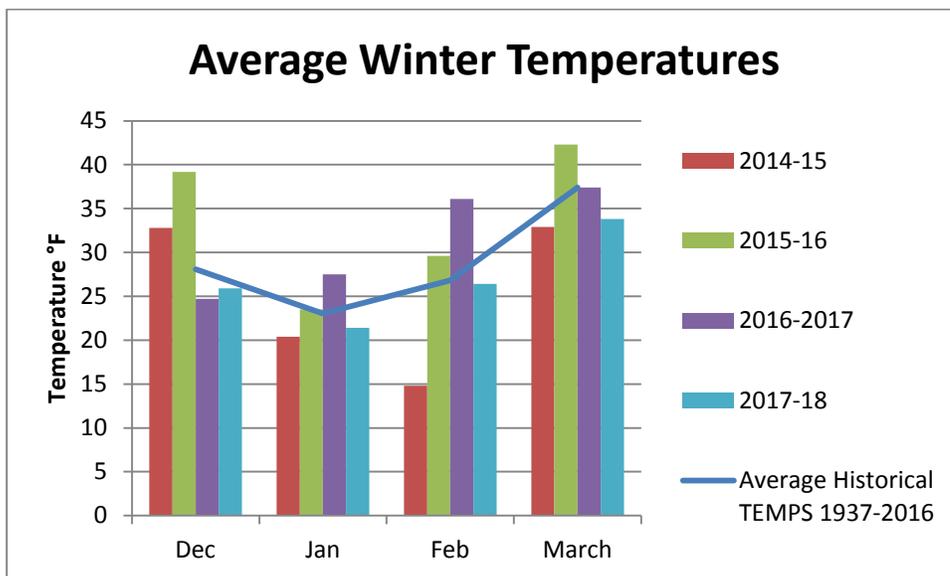
## How serious is it?

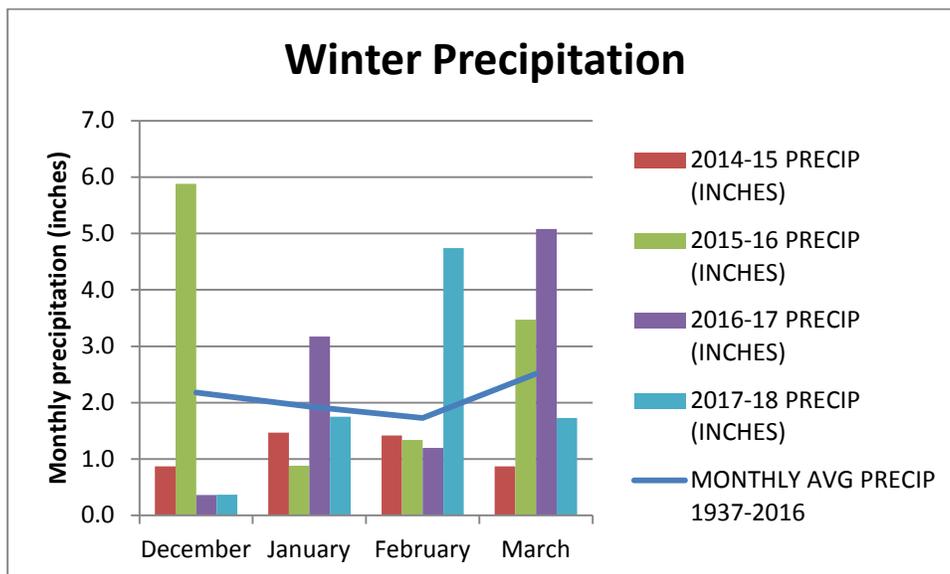
This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked “serious”. Problems that have the potential to be serious and which may warrant chemical control measures will be marked “potentially 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 2017-18 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://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. Some leaf buds are ready to open and a few warm days will further encourage the opening process. So if there are susceptible trees that you treat for common diseases every year, the time to act is in the very near future.

### **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 just around the corner and the forecast for the first few days is a little below normal. 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 to trees and shrubs**

While winter has been a little kinder to our plants this year, the animals have not. 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.



Figure 2 Vole damage in lawn.

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.

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. This year we have been getting reports of squirrels gnawing on branches and also clipping off small twigs and dropping them to the ground. We are not sure what is driving this behavior.



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*) larvae should be hatching around mid-April (earlier if we get some warm weather). 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*).

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



Figure 4 Egg-laying sites in fall



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

When the larvae do hatch, they are small (1/4 inch) and vary in color. They may be pale green, pale orange or yellow (fig. 6). 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.

**Management:** From October through April twigs with eggs in them can be pruned out and destroyed. 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 (not summer) 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.



Figure 6 Viburnum leaf beetle larvae (photo S.Adams)

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.



Figure 7 Eastern tent caterpillar egg mass

Eastern tent caterpillar egg masses (fig. 7) 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. Pull the bags off the host plant.



Figure 8 Gypsy moth egg mass

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.

## **Pest Updates: Diseases**

### **Boxwood blight (serious)**

In January 2017, University of Illinois announced that two samples from Lake and Cook County were confirmed to have boxwood blight. Both plants were recent landscape introductions, and both plants had been purchased from out of state. In February, the disease was confirmed at a nursery in downstate Illinois, and the stock had been obtained from an out-of-state nursery.

At this time, boxwood blight is **not** thought to be established in Illinois, so we need to focus on new plantings of boxwood. If you have older plantings of boxwood, and no new specimens have been added to your landscape, boxwood blight is not likely. Remember that in the last couple of years, we have seen a number of problems on boxwood, including psyllids, leaf miners, canker and *Volutella*. The cankers and *Volutella* often lead to dead branches, and we see dead, brown leaves hanging on. With boxwood blight, we tend to see the branch dying AND quickly defoliating. See the links below for detailed information on boxwood blight symptoms.

Once the plant is diseased, fungicides do not help. You will see in one of the links that Virginia Tech recommends chlorothalonil on healthy plants as a preventative. Again, if you have not added new boxwoods to the landscape recently, the risk is low and you most likely don't need to spray. We are **not** advocating widespread spraying of boxwoods. The focus should be on monitoring new plants entering the landscape. There is scientific evidence that chlorothalonil may be making bees more susceptible to a parasite, so we don't want to use it if not truly

needed (<https://www.ars.usda.gov/news-events/news/research-news/2013/bees-exposed-to-fungicide-more-vulnerable-to-nosema-parasite/>).

**Management:** Isolate new boxwood shrubs for a month before planting them with established plantings. Contact Illinois Department of Agriculture at 815-787-5476 if you feel you might have boxwood blight. Again, once the plant is diseased, fungicides do not help. Consider submitting a sample to the University of Illinois Plant Clinic for laboratory confirmation (<http://web.extension.illinois.edu/plantclinic/>). A sample can be tested for \$15. U of I's lab is the official lab for the state. By submitting a sample there, not only does it get diagnosed, but the occurrence of this disease gets tracked.

**Good websites:**

[http://www.ct.gov/caes/lib/caes/documents/special\\_features/boxwood\\_blight/boxwood\\_blight\\_identification\\_guide\\_11\\_x\\_17\\_final\\_300\\_dpi.jpg](http://www.ct.gov/caes/lib/caes/documents/special_features/boxwood_blight/boxwood_blight_identification_guide_11_x_17_final_300_dpi.jpg)

<https://www2.illinois.gov/sites/agr/Plants/Pages/boxwoodblight.aspx>

[https://www.pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/PPWS/PPWS-29/PPWS-29-pdf.pdf](https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/PPWS/PPWS-29/PPWS-29-pdf.pdf)

[http://www.ct.gov/caes/lib/caes/documents/publications/fact\\_sheets/plant\\_pathology\\_and\\_ecology/boxwood\\_blight-a\\_new\\_disease\\_for\\_connecticut\\_and\\_the\\_u.s.\\_12-08-11.pdf](http://www.ct.gov/caes/lib/caes/documents/publications/fact_sheets/plant_pathology_and_ecology/boxwood_blight-a_new_disease_for_connecticut_and_the_u.s._12-08-11.pdf)

<https://yancey.ces.ncsu.edu/wp-content/uploads/2013/02/Boxwood-Blight-Guide-01.03.13.pdf?fwd=no>

**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 has 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.9). 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. That flow will originate from the canker. The canker itself is not very



Figure 9 Dogwood stem infected with golden canker

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.

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 and 2017 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.

**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.

### ***Volutella* blight on pachysandra (potentially serious)**

*Volutella* blight is starting to show up on Japanese pachysandra (*Pachysandra terminalis*). The infection we are seeing so far seems to be relatively minor, but this can be a serious, destructive stem and leaf blight. *Volutella* blight, caused by the fungus *Volutella pachysandricola*, will cause leaf blight and stem cankers on pachysandra. Symptoms first noticed in early spring as brown to tan leaf spots can be confused with winter desiccation (which may be more common this year due to the lack of snow cover for much of this winter). The spots will enlarge and may eventually cover the entire leaf (fig. 10). Concentric circles form within the spots and are diagnostic for this disease. Leaves eventually turn yellow and fall off the plant. Stems turn dark and die. During extended wet periods, salmon or peach colored fungal spore masses may be visible. Eventually, large patches of the ground cover may become infected and die.



Figure 10 *Volutella* on pachysandra

*Volutella* is an opportunistic pathogen. The winter damage that we are seeing on pachysandra this spring may allow this disease to get started. It can infect a plant any time during the growing season but is more common during periods of rainy weather. Infections tend to diminish as the weather becomes drier in the summer, but the high humidity created by

densely planted and heavily mulched beds can promote the blight. Stress from overcrowding, too much sun, winter injury, and shearing may increase susceptibility to stem blight. Older and injured plant parts of Japanese pachysandra are more susceptible to the disease than young succulent tissue. Bottom line: consider whether the site is one in which pachysandra can thrive.

**Management:** Pachysandra prefers filtered sun or full shade, and will be stressed by too much sun and thus more susceptible to blight. Plants should be watered during dry periods by using drip irrigation and/or by watering early in the day to allow foliage to dry out. Avoid working with plants when they are wet to prevent the spread of disease. Remove and discard diseased leaves and plants as soon as symptoms are visible to limit spread to healthy plants. Clean up fallen leaves and other debris that may have accumulated on top of ground covers. Thin and divide overcrowded plants in early spring, when weather is dry, to improve air circulation. Avoid over-fertilization, which causes dense foliage that encourages infection. Fungicides may be helpful in the early stages of the disease.

Good websites:

<http://www.mortonarb.org/trees-plants/plant-clinic/help-diseases/ground-cover-diseases>

<http://ag.umass.edu/landscape/fact-sheets/volutella-blight>

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***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; Doris Taylor, Plant Clinic Manager, and Carol Belshaw, Arboretum Volunteer. Frank Balestri M.S., Plant Health Care Technician/Research Assistant is responsible for coordinating the scouts. 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, Pat Miller, Loraine Miranda, and Mary Noe . 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://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)

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](mailto:plantclinic@mortonarb.org) . Inquiries or comments about the PHCR should be directed to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org) .

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