

Plant Health Care Report

Scouting Report of The Morton Arboretum

July 2, 2010

Issue 2010.12

Our report includes up-to-date disease and insect pest reports, as well as color images, for northeastern Illinois. You'll also find a table of accumulated growing degree days throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence.

What indicator plant is in bloom at The Arboretum?

Chicory (*Cichorium intybus*) (Figure 1)

Quick View

Accumulated Growing Degree Days (Base 50): 1127

Accumulated Growing Degree Days (Base 30): 3209

Weekly reminder

What to look for in the next week

This week's sightings:

Insects

- Magnolia scale
- Leafminers on maple

Diseases

- Phyllosticta leaf spot
- Measles on peony
- Pine needle rust on goldenrod
- Rust on mayapple
- Black knot

Woody of the week: Common persimmon (*Diospyros virginiana*)

Fungus of the week: *Daldinia concentrica*

Article: Mycological common names



Figure 1 Chicory (*Cichorium intybus*)

Degree Days and Weather Information

As of June 30, 2010, we are at 1127 base-50 growing degree days (GDD), which is approximately 8 calendar days (206 GDD) ahead of 2009 at this time, and ahead of the historical average (1937-2009) by 51 GDD (three calendar days). As you read the table below, note that Waukegan is 873.2 GDD behind Carbondale, which is incredible. Sometimes seeing numbers like this reminds me how long and diverse Illinois is.

In the past week it has rained 6.7 cm (2.64 in), 23.3 cm (9.18 in) precipitation in June, and 48.9 cm (19.27 in) for the year. So far we have gotten nearly half of this year's precipitation in the month of June alone. In 2009, June had only gotten 8.9 cm (3.51 in) of rain, and for the year there was 61.9 cm (24.4 in).

Location	Growing Degree Days through June 23	Precipitation (in) Between June 17 – 23
Aurora, IL**	1198.5	
Cahokia, IL**	1736.4	
Carbondale, IL **	1845.8	
Champaign, IL**	1501.9	
Chicago Botanic Garden (Glencoe, IL)*	1131.5	1.13
Chicago Midway	1288.4	
Chicago O'Hare*	1200.0	2.26
Decatur, IL**	1567.2	
DuPage County Airport (West Chicago, IL)**	1192.5	
Lawrenceville, IL**	1841.6	
Mattoon, IL**	1581.5	
Moline, IL**	1407.6	
The Morton Arboretum (Lisle, IL)	1127.0	2.64
Peoria, IL**	1481.0	
Quincy, IL**	1513.9	
Rockford, IL**	1192.5	
Springfield, IL**	1630.9	
Sterling, IL**	1293.6	
Waukegan, IL**	972.6	
Wheeling, IL**	1119.0	

*Thank you to Mike Brouillard, Northbrook Park District, and 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/?zip=60185&model=2&state=IL>

Weekly Reminder:

Many species of trees, especially those that naturally grow in swampy lowlands, develop large, woody surface roots as they mature. Some of these trees include willows (*Salix* sp.), silver maple (*Acer saccharinum*), which are commonly grown. Although these surface roots are a hassle to mow around, do not cut and remove them. Doing so will jeopardize the health and stability of the tree. Large surface roots are responsible for anchoring the tree to the ground and by removing them makes them more susceptible to windthrow. If they get in the way, merely apply mulch over them and around the tree and improve its overall health.

What to look for in the next week:

Rust On Bee Balm, *Entomosporium* Leaf Spot, Sooty Mold, Virus on Ash, Potato Leafhopper, Black Banded Woolly Bear

This Week's Sightings...

Magnolia scale



Figure 2 Magnolia scale (*Neolecanium cornuparvum*)

Magnolia scale (*Neolecanium cornuparvum*) (Figure 2) on star magnolia (*Magnolia stellata*) has been found on our grounds this week. Magnolia scales have sucking mouthparts and extract sap from the host plant's branches and twigs. Badly infested branches and twigs are weakened and plant growth is slowed. When infestations are severe, branch dieback can result, and with repeated severe attacks, trees may be killed. As with most soft scale infestations, plant leaves are often covered with sooty mold, a black fungus that grows on the honeydew (sugary insect excrement) excreted by the scales. Sooty mold cuts down on photosynthesis because it blocks sunlight from the leaf.

Initially, magnolia scales are shiny, flesh-colored to pinkish brown, and smooth, but they become covered with a white mealy wax over time. This wax is lost at the time crawlers emerge. Right now we're seeing white, waxy female adults that are about 1/2 inch in diameter. Crawlers, which begin to hatch around Labor Day, are very tiny, flattened, and vary in color from yellow to reddish-brown. The crawlers settle on one- to two-year-old twigs to feed and remain there through the winter.

Star and saucer magnolias are the preferred hosts, although magnolia scale will also attack cultivars, although usually less frequently. According to The Ohio State University, magnolia species native to the U.S. are much more resistant than exotic species. Native species include cucumbertree, southern, sweetbay, bigleaf, and umbrella magnolia.

Control: Before you buy a plant, check it carefully for scale. Beneficial insects, such as ladybird beetles, are frequently seen eating crawlers. Fall and spring insecticide applications to control crawlers are suggested. To check for crawlers at the end of summer, put double-sided tape on each side of a scale colony. The crawlers will become stuck on the tape. This would not be used for control, just to check for crawler hatch. For chemical control, refer to the *Commercial Landscape and Turfgrass Pest Management Handbook 2010* (CPM) or *Home, Yard and Garden Pest Guide* (HYG).

Suggested reading: <http://ohioline.ag.ohio-state.edu/hyg-fact/2000/2003.html>

Leafminers on maple

Maple leafblotch miners (*Cameraria aceriella*) (Figure 3) have been found mining the leaves of sugar maple (Figure 4) at The Arboretum. These moths belong to the Gracillariidae family, which include 275 other leaf-mining species (Triplehorn and Johnson, 2005). These miners are usually only problems on red and sugar maples (*A. rubrum* and *A. saccharum*, respectively). The blotchy tan leaf mines are first spotted in late July to early August, but aren't very large. Towards the end of summer the mines become much larger and entwined with silk. The larvae produce the silk to pupate. *Cameraria*



Figure 3 Maple leafblotch miners (*Cameraria aceriella*)

aceriella may over winter as larvae in the silk-covered leaves on the ground, or as pupae.

Control: Although the large late-season mines are unsightly, they cause very little damage to the trees. The best way to manage the insects is to remove the infested leaves from the property in the fall.

Phyllosticta leaf spot

Phyllosticta leaf spot, caused by *Phyllosticta minima*, was diagnosed on sugar maple (*Acer saccharum*). The leaves had tan spots on the upper surface (Figure 4), and when turned over, the tan spots had pycnidia (black flask-shaped fruiting bodies) in the center (Figure 5). The asexual spores, conidia, were found emerging from black pycnidia when examined under the microscope (Figure 6).

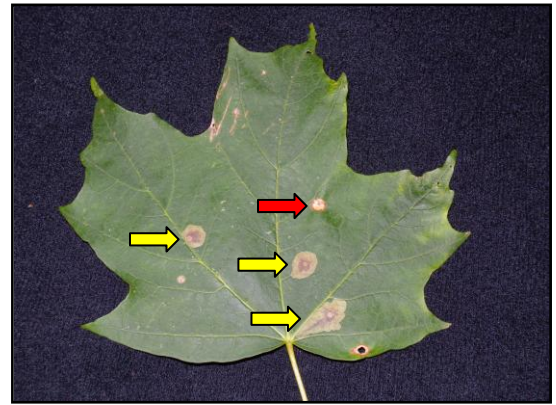


Figure 4 Sugar maple with both Maple leafblotch miners (three yellow arrows) and Phyllosticta leaf spot (one red arrow)

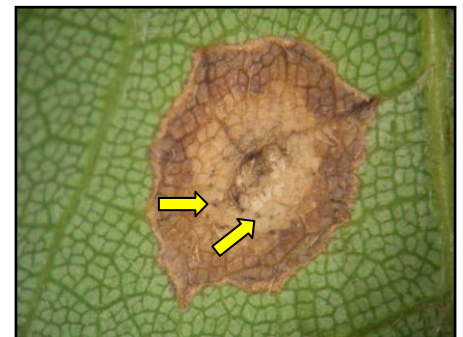


Figure 5 Phyllosticta leaf spot, caused by *Phyllosticta minima*, showing pycnidia on the bottom of the infected leaf



Figure 6 Conidia of *Phyllosticta minima*

Control: The disease overwinters in leaves and infected stems, so it is important to prune out infected plant parts in order to reduce inoculum for next year. Remember to discard, compost, or otherwise remove infected plant tissues from the ground near susceptible plants.



Figure 7 Measles on peony

Measles on peony

Cladosporium leaf blotch has been found on a few of our peonies. This disease is also known as red blotch or measles (Figure 7) and is caused by the species *C. paeoniae* (Figure 8). Symptoms are large, circular, dark purple spots on the upper surface of the leaves and corresponding light brown spots on the lower surface of the leaves. We placed the leaves overnight in a humidity chamber (or plastic bag with a moist paper towel in it), to encourage sporulation. Under the microscope, we found the brown, asexual spores of *C. paeoniae*.

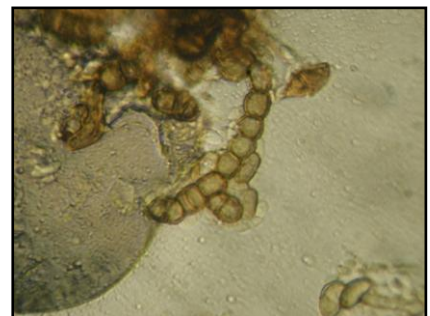


Figure 8 Conidia of *Cladosporium paeoniae*

Control: Sanitation is important. Dispose of diseased plant parts at the end of the growing season to reduce inoculum. For chemical recommendations, refer to the CPM or HYG.

Suggested reading: http://www.ag.uiuc.edu/~vista/pdf_pubs/631.pdf

Pine needle rust on goldenrod

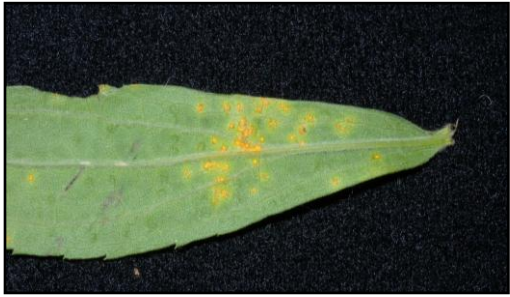


Figure 9 Signs of rust on the underside of a goldenrod leaf



Figure 10 Spores of *Coleosporium asterum*

Pine needle rust has been found on the underside of the lower leaves of goldenrod (*Solidago spp.*) (Figure 9). This rust has two hosts, pines and goldenrod or asters. Pine needle rust is caused by the fungus *Coleosporium asterum* (Figure 10). It seldom causes serious damage on either plant. The rust on pine kills older needles on young trees, primarily on red, Scots, and jack pine.

Needles on the bottoms of the trees turn brown in spring. Then orange droplets appear on infected foliage. Later, orange blisters appear. Spores are blown from the orange blisters to infect the leaves of asters and goldenrod in early summer. By late summer, orange spores have formed on the undersides of the lower leaves. This is what we're seeing now on the goldenrod leaves. Spores from the goldenrods are carried by winds to pine needles, where they cause new infections.

Control: Asters and goldenrod should not be planted in the immediate vicinity of susceptible pines. It causes little damage to either host, but needle loss on lower branches may disfigure and retard growth of young pines.

Suggested reading:

<http://na.fs.fed.us/spfo/pubs/misc/red%20pine%20pocket%20guide/pnr4.htm>

<http://www.forestpests.org/southern/pineneedlerust.html>

Rust on mayapple

This disease infected the plants a few weeks ago, but we just noticed the rust on mayapple (*Podophyllum peltatum*), caused by the rust fungus *Puccinia podophylli* (Figure 11). Yellow orange spots form on the leaves (Figure 12), and the leaves eventually turn brown and die. This is an autoecious rust, which means it only needs one host to complete its life cycle (many rusts are heteroecious, which means they need two unrelated hosts to complete their life cycle, such as pine needle rust described above). Mayapples grow in clumps, so the disease spreads easily to nearby mayapples unless infected leaves are removed.

Control: Dig up and destroy infected plants as soon as the rust becomes visible.



Figure 11 Telial spore of *Puccinia podophylli*



Figure 12 Symptoms of mayapple rust

Black knot

Black knot (*Dibotryon morbosum*) has been found on last year's growth on black cherry (*Prunus serotina*) at The Arboretum (Figure 13). This is a serious and widespread problem of trees in the genus *Prunus*, especially plums and cherry trees.

Dibotryon morbosum is a fungus that overwinters in the hard, brittle, rough, black "knots" on twigs and branches of infected trees such as wild black cherries in the woods or abandoned cherry orchards. These knots look like burnt marshmallows wrapped around branches and twigs. In the spring, the fungus produces spores within tiny fruiting bodies on the surface of these knots. The spores are ejected into the air after rainy periods and infect succulent green twigs of the current season's growth. The newly infected twigs and branches swell.

The hypertrophied growth (the plant's overgrowth) of bark and wood is a response to hormones and produces the swellings that we are now seeing. Frequently these swellings are not noticed the first year. The swellings become dormant in winter. But the following spring, velvety, green fungal growth will appear on the swelling. The swellings darken and elongate during summer and, by fall, turn hard, brittle, rough, and black. The black knots enlarge and can girdle the twig or branch, eventually killing it.



Figure 13 Black knot on black cherry

Control: This is a difficult disease to control. Prune and discard, burn, or chip and compost all infected wood during late winter or early spring before growth starts and when new swellings appear. Pruning cuts should be made at least four to eight inches below any swellings or knots. Some recommend painting wounds greater than two inches in diameter with shellac and covering with wound dressing. This may prevent infections but may also impede wound healing. It is better to prevent larger limbs from developing knots. Chemical recommendations include a dormant fungicide spray. Perhaps consider this next year if you can't get the disease under control through sanitation. For chemical recommendations, refer to the CPM or HYG.

Suggested reading:

http://plantclinic.cornell.edu/FactSheets/black_knot/blacknot.htm
<http://www.mobot.org/gardeninghelp/plantfinder/ipm.asp?code=12>

Woody of the Week

by Jaime Horn

The Woody of the Week is written to aid in basic botanical identification of the featured plant, while adding to the reader's knowledge bank of woody plants. Many of the terms used are standard for describing plant morphology and may require definitions for complete understanding. There are several publications on botanical terminology. Two of these publications are *Plant Identification Terminology: An Illustrated Glossary* by J.G. Harris and M. Woolf Harris and the Plant Morphology section in Michael Dirr's *Manual of Woody Landscape Plants* (page xiv) for pictures and descriptions.



Figure 14 Common Persimmon (*Diospyros virginiana*)

Common Persimmon (*Diospyros virginiana*) (Figure 14)

Family: Ebenaceae

Native: Connecticut to Florida, west to Kansas and Texas. Introduced 1629.

Mature Size: 35-60' tall x 20-35' wide, oval-rounded habit

Hardiness: Zones 5-9

Foliage: Alternate, lustrous dark green, 2-5" long and up to 2" wide, ovate/elliptic, round base, entire, pale underside, pubescent petiole. Fall color ranges from a decent yellow to poor yellow-green.

Bud/Stem: Reddish-black, 2 overlapping scales, 1/4", terminal lacking; stems are slender, dotted with orange lenticels, glabrous or pubescent. Male trees display ¼" long branched flower pedicels. Females have thicker, unbranched pedicels; calyx may persist, aiding in identification.

Flower: Dioecious, urn-shaped whitish green flowers, 4-lobed corolla, nicely fragrant, May-June, very small, not very noticeable.

Fruit: Edible berry (Figure 15), borne on females, yellow to orange, up to 2" long, 4 persistent calyx lobes present, ripens after frost from September to October and persisting to winter, ripe when skin becomes wrinkled, delicious to wildlife and humans, very fibrous, do not eat an unripe fruit as they are very astringent.

Bark: Beautiful, blocky, thick, dark gray-black, distinctive square pattern (Figure 16).

Culture/Usage: Best in full sun, Persimmons should be transplanted in spring into well-drained soil. *Diospyros* is pH adaptable and generally pest-free, although leaf spot and fall webworm may be problems. This is a great native tree that may be used in parks and large yards; it's good for naturalizing urban areas. It has a tendency to sucker from the roots, so removal of suckers is a maintenance issue. Fruit will only be produced on females if a male pollinator is present. Fruit can be used to make jelly and ice cream or eaten raw. An unusual tree providing a nice, uniform habit, fragrant flowers, and interesting fruits.

GET AN UP-CLOSE VIEW! You don't have to go far to see this week's WOW. Simply walk to see three mature trees near West Pavilion near the Visitor Center with their beautiful bark, and notice the small specimen on the corner, which is a sucker from one of the mature specimens. Grid Location: L-44/10-55

Interesting fact of the week: The wood of *Diospyros* is used to make golf club heads and pool cues, as well as wood flooring. Common Persimmon is related to ebony (*Diospyros ebenum*). The botanic name is derived from the Greek words for divine (*-dios*) and wheat (*pyros*), given to Persimmon for its edible fruits. *Virginiana* is a hint at its native habitat.



Figure 15 Ripe berries of the Common Persimmon (*Diospyros virginiana*). Photo by John Hagstrom



Figure 16 Characteristic blocky bark of Common Persimmon (*Diospyros virginiana*)

Literature used to write the Woody of the Week:

Michael Dirr. 1998. *Manual of Woody Landscape Plants*. ISBN-10: 0-87563-800-7.

Harris, J.G. and M. Woolf Harris. 2001. *Plant Identification Terminology: An Illustrated Glossary*. ISBN-13: 978-0964022164.

Fungus of the week: *Daldinia concentrica*

This week's Fungus of the week is closely related to one of the past Fungus of the week, *Xylaria polymorpha*. The two species are both ascomycetes. On the surface of both species there are small pore openings, these are the openings to the perithecia. The perithecia are vase-shaped structures that hold the asci (a sac-like structure), which hold the sexual ascospores. When the spores have matured, they are ejected from the surface of the fungus by built-up pressure inside the perithecia. Every year *D. concentrica* undergoes this sporulation process, and it develops a new layer. This process gives it its characteristic concentric rings, which are seen when they are cut in half (Figure 17).

Daldinia concentrica overwinters on its substrate, which are usually dead branches, stumps of deciduous trees, or on wounds of deciduous trees (Figure 18). As the fungus matures, the thallus changes colors from whitish-grey to reddish-brown, then it finally turns black and hard. The new fungi are seen growing from June to September, and then they begin to harden-off. Once mature, they resemble small bits of coal.

This relatively small (2-4 cm/0.75-1.6in) fungus is a common wood decay fungus on hardwood trees. It creates a soft-rot inside the tree by degrading cellulose in the tree.

Article: Mycological common names

It has been suggested to me that I use a common name when I write the Fungus of the week, and the mycologist in me is resistant to do so. The reason for my apprehension is because, except in a few cases, fungi do not have common names. David Arora in *Mushrooms Demystified* addresses this conundrum:

“Unfortunately, relatively few mushroom have colloquial English names—a tribute, as pointed out previously, to our fungophobic roots. In this book I have used popular names where they exist, and in some cases have capriciously coined common names, but to do so in every case would only create confusion, as there is no assurance they would be accepted. Therefore, if you really want to get to know mushrooms, it is necessary to know their scientific names. People usually groan when they hear this, and to be sure, the long Latin names are intimidating. But so, at first, is a can opener—it's just a question of familiarity. In fact, you may already have mastered some Latin (scientific) names without realizing it—e.g. *Eucalyptus*, *Rhododendron*, *Hippopotamus*. Memorization is made easier by learning the meanings of the names. For instance, *Lactarius rubrilacteus* (*rubric*=red, *lacteus*=milk) exudes a red “milk” when cut. See “What it all Means” on p. 899 for more details. Don't get bogged down in pronunciation. It doesn't really matter *how* you say something as long as you *communicate* it. Even taxonomists don't agree on how some names should be pronounced.

As you begin to use scientific nomenclature, you'll discover its many advantages. Common names do *not* necessarily reflect natural affinities. Hedge nettle is not a nettle, and poison oak is by no means an oak. Likewise, the names meadow mushroom, honey mushroom, matsutake, and horse mushroom provide no clues as to which, if any, have common bonds or similar characteristics. Also, common names are *not* universal. For instance, *Boletus edulis* has dozens of regional names, and memorizing all of them would be almost as difficult as getting everyone to agree on one of them!”

That being said, when I write future Fungus of the week articles I will use the scientific name as well as the common name, when a common name is commonly used, such as *Xylaria polymorpha* is known as Dead Man's Fingers. I hope readers learn to identify, or at least appreciate, the fungi around them after reading about the featured fungi.



Figure 17 *Daldinia concentrica* (left) and the concentric rings of *D. concentrica* (right)



Figure 18 *Daldinia concentrica* growing on a pruning wound of a Miyabe Maple (*Acer miyabei*)

The Plant Health Care Report is prepared by Stephanie Adams, M.S., Plant Health Care Technician, and edited by Donna Danielson, M.S., Plant Clinic Assistant; Fredric Miller, Ph.D., research entomologist at The Morton Arboretum and professor at Joliet Junior College; and Doris Taylor, Plant Information Specialist, and Carol Belshaw, an 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 that scouted this past week and found most of the insects and diseases that are in this report. The Scouting Volunteers include: Pat Miller, Stu Vogel, Jarrett Mickens, and Sara Dreiser. Your hard work is appreciated.

Literature recommendations:

David Arora. 1986. *Mushrooms Demystified 2nd ed.* Ten Speed Press. Berkeley, CA. ISBN-13: 0-89815-169-4.

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Mark L. Gleason, Margery L. Daughtrey, Ann R. Chase, Gary W. Moorman, and Daren S. Mueller. 2009. *Diseases of Herbaceous Perennials.* ISBN: 978-0-89054-374-0

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<http://www.laborofloveconservatory.com/>.

F.W.M.R. Schwarze. 2008. *Diagnosis and Prognosis of the Development of Wood Decay in Urban Trees.* ISBN: 978-0-646-49144-8.

F.W.M.R. Schwarze, J. Engels, and C. Mattheck. 2000. *Fungal Strategies of Wood Decay in Trees.* ISBN: 3-540-6705-2.

Triplehorn, C.A and N.F. Johnson. 2005. *Study of Insects.* 7th ed. Brooks/Cole, Cengage Learning. Pp. 606-7.

William T. Stearn. 2002. *Stearn's Dictionary of Plant Names For Gardeners.* ISBN-10: 088192556X.

University of Illinois. 2010. *The 2010 Commercial Landscape & Turfgrass Pest Management Handbook.*

<https://pubsplus.uiuc.edu/ICLT-10.html>.

University of Illinois. 2008. *Home, Yard & Garden Pest Guide.* <https://pubsplus.uiuc.edu/C1391-08.html>.

UIPlants: The Woody Plant site for the University of Illinois <http://woodyplants.nres.uiuc.edu>.

This report is available on-line at The Morton Arboretum website at <http://www.mortonarb.org/tree-plant-advice.html>

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 PHC reports should be directed to Stephanie Adams at sadams@mortonarb.org.