

Plant Health Care Report

Scouting Report of The Morton Arboretum

July 11 - 17, 2009

Issue 2009.14

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.

Quick View

What Indicator Plants are in Bloom at the Arboretum?

Chicory (*Cichorium intybus*) is in full bloom.

**Accumulated Growing Degree Days (Base 50)
as of July 15: 1162.0**

Insects

- Cypress twig galls
- Two-marked tree hoppers
- Boxwood mites
- Boxwood leafminer damage

Diseases

- Volutella leaf and stem blight on boxwood
- Purple eye leaf spot
- Goldenrod rust

Miscellaneous

- Remontant flowers

Feature article:

- Top Ten Ways to Kill Your Trees
By Stephanie Adams, M.S.

Weed Note

- Pokeweed (*Phytolacca americana*)



Degree Days and Weather Information

As of July 15, 2009, we are at 1162.0 growing degree days which are approximately eleven calendar days behind the historical average (1937-2008) and two calendar days behind last year.

Location	Growing Degree Days through July 15	Precipitation between June 8 to 14 in inches
The Morton Arboretum (Lisle, IL)	1162.0	1.11
Chicago Botanic Garden (Glencoe, IL)*	1001.0	0.09
Chicago O-Hare Airport*	1168.5	0.39
Aurora, IL**	1128.1	
Champaign, IL**	1531.3	
DuPage County Airport (West Chicago, IL)**	1289.1	
Decatur, IL**	1599.7	
Moline, IL**	1398.9	
Peoria, IL**	1506.5	
Quincy, IL**	1638.0	
Rockford, IL**	1158.5	
Waukegan, IL**	879.4	
Wheeling, IL**	1073.9	

*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>

This Week's Sightings

Insect Pest Update

We're guessing it's because of the cold winter weather, but bagworm populations are way down, as were gypsy moth caterpillars earlier in the season. Since we had a wet spring, the Entomophaga fungus also took out some gypsy moth caterpillars. In a few more weeks, we'll determine how the Japanese beetles fared the winter. They're still emerging.

Cypress twig galls

We are seeing cypress twig galls on bald-cypress (*Taxodium distichum*). When you first see the trees, they seem to have white cones hanging on the leaves. The cypress twig gall midge (*Taxodiomyia cupressiananassa* – that's a mouthful) causes the heavy, spongy galls to form on leaf bud tissue. When numerous, the galls may cause branches to droop under their weight. Galls are oval, light green to whitish in color, about 3/4 inch long, and located at the tips of new growth. Needles (leaves) grow out of the galls. We sliced one in half and found really tiny maggots inside.



The larvae overwinter in the gall and emerge as flies beginning in mid-May. Females lay eggs on newly developing leaves, and the

midge larvae induce the gall formation by the leaflets. At the end of the growing season, galls turn brown, and, in autumn, they drop to the ground with the leaves.

Control: Some people find the galls aesthetically displeasing (we don't), but the galls do not affect tree health. Control may be obtained by raking and destroying fallen galls in autumn and pruning out galls in early spring before the midges become active and lay eggs. Damage is minimal.

Two-marked tree hoppers



Two-marked treehopper (*Enchenopa binotata*) nymphs were found on redbud (*Cercis canadensis*) tree shoots. For some reason, we've always been fond of these little guys. They're about 1/8 inch long, dark gray to brown, and have spines sticking out of their abdomens. The nymphs look quite different from the adults. Adults are dusky brown with two yellow spots on their backs (thus the name), have high, curved horns that point forward coming out of their thorax, and are less than 1/2 inch long. Both stages can, as you may imagine by their name, jump! Everyone should see two marked tree hoppers at least once in their lives, because they're so amusing the way they march along on twigs. Nymphs and adults suck plant juices, but don't do much damage. The damage

appears as pale yellow stippling on the leaves. Tree hoppers do, however, produce honeydew which encourages sooty mold. Female adults can injure twigs by laying eggs in slits made in the bark. Black locust, bittersweet, wafer-ash, black walnut, and viburnum are also hosts for this insect.

Control: Control is usually not necessary.

Good web site:

http://www.na.fs.fed.us/spfo/pubs/howtos/ht_walnut/treehop2.htm

Boxwood issues

Boxwoods have taken a huge hit this year. If we had a dollar for every boxwood question we've had this year, we'd be rich! According to Kris Bachtell, our Director of Collections and Facilities, many boxwoods, especially the ones with some genetic material from *Buxus sempervirens*, are marginally hardy in this area. Now that it's barbecue season, many people forgot that the temperature dipped to -21 degrees in January! Boxwoods also must have well-drained soil. Much of the soil in this area is heavy clay, adding to plant stress. Nancy Pataky of the University of Illinois discusses the boxwood conundrum in the May 1, 2009, issue of the Home, Yard, and Garden Pest Newsletter:

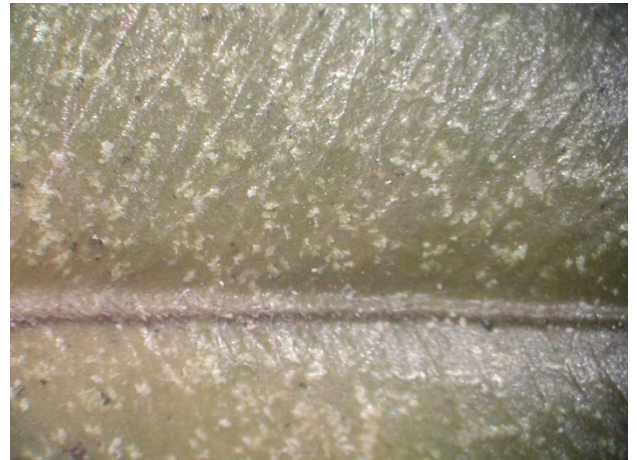
<http://hyg.ipm.illinois.edu/article.php?id=14>. Incidentally, now that this newsletter is free, you have no excuse not to read that newsletter as well as ours.

Recently one of our volunteers (who shall remain nameless) brought in the perfect boxwood (*Buxus* 'Green Mountain') if you like diseases and insects. It had mites, leafminers, and Volutella leaf blight – how great is that?

Boxwood mites

This boxwood has mite damage caused by the boxwood spider mite, *Eurytetranychus buxi*. The tiny mites feed on both the upper and lower surface of the leaf, causing stippled leaves which first turn yellow and sometimes brown. Severe damage can cause leaf drop. The mites themselves are tannish in color and have long front legs. The mites overwinter as eggs on the leaves (remember that boxwood are evergreen) and hatch in spring. They may have at least eight generations annually, but damage is usually worse in spring and early summer.

Control: Horticultural or insecticidal soap can be effective on spider mites. Do not use sprays when the temperature is above 85 degrees. For information about chemical control, refer to the *Commercial Landscape Turfgrass Pest and Management Handbook 2007* (CPM) if you are a commercial applicator or the *Home, Yard and Garden Pest Guide* (HYG) if you are a homeowner.



Stippling damage caused by boxwood mites

Good web site: <http://www.entomology.umn.edu/cues/Web/080BoxwoodSpiderMite.pdf>



Boxwood leafminer damage

We've received several samples of boxwood leafmining fly, *Monarthropalpus buxi*, in the Plant Clinic this year. The damage looks like discolored blisters that are more apparent on the underside of the leaves. The adult flies emerge and mate about the time Weigela blooms. The mama flies lay eggs in the leaves. The larvae hatch about three weeks later. The larvae eat the tissue between the upper and lower epidermis, causing the discolored blisters. Most leaves have more than one leafminer. The larvae overwinter in the leaves.

Control: Insecticides are best used when the adults are laying eggs. Systemic insecticides that penetrate the leaf surface can control larvae. For specific chemical information, refer to the CPM or HYG.

Good web site: http://woodypests.cas.psu.edu/factsheets/InsectFactSheets/html/Boxwood_Leafminer.html

Volutella leaf and stem blight on boxwood

Our volunteer's boxwood also had volutella leaf and stem blight. The volutella fungus often infects wounds caused by winter injury and frequently follows winter and frost injury. As Nancy Pataky writes, the connection between the fungus and winter injury is unclear. Infected leaves will turn orange to bronze and then straw-colored in the middle or top part of the plant. Cankers may form on branches. In moist weather (like we've had earlier in the season), clusters of tiny salmon pink masses of conidia (fungal spores) appear on stems and leaves.



Control: Prune out infected branches to healthy tissue and discard. *Volutella* usually does not kill boxwoods, but can disfigure them. Refer to the HYG for a fungicide spray schedule.

Good web sites:

<http://hgic.clemson.edu/factsheets/hgic2052.htm>



Purple eye leaf spot

Purple eye leaf spots, caused by a species of the fungus *Phyllosticta*, were found on black maple (*Acer nigrum*). The spots are irregularly round, less than ¼ inch diameter, and are usually found on lower leaves. They are brown at first, then develop a tan center and a dark purple border. Small black fruiting bodies are often visible in lesions on the upper side of the leaf. In severe infections, lesions may grow together forming large, irregularly shaped areas of diseased tissues. Amur, hedge, Japanese, mountain, red, silver, sugar, sycamore, and, Tatarian maples are also susceptible. Damage is mostly aesthetic and is usually a concern only in nurseries.

Control: Rake and destroy fallen leaves to reduce the source of inoculum.

Goldenrod rust

Rust has been found on the underside of the lower leaves of goldenrod (*Solidago* spp.). This is likely pine needle rust, although we haven't found the rust on any of our pines. However, goldenrod and asters are the alternate host for pine needle rust. Pine needle rust is caused by the fungus *Coleosporium asterum*. 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.

Remontant flowers

We're seeing a few magnolias with flowers in full bloom such as Ann magnolia (*Magnolia* 'Ann'). Since magnolias are spring-flowering trees, what's going on? Actually, it is not unusual for magnolias to do this. Sometimes a few flowers on magnolias get tricked into blooming at the wrong time. Since only a few flowers on each tree are blooming, the remaining flower buds will remain dormant and should bloom at the normal time next spring.



Welcome!

We'd like to introduce Stephanie Adams, Research Assistant, our diagnostician for the rest of the growing season. Stephanie has a bachelors' degree in Botany from Western Illinois University and an M.S. in Plant Pathology from the University of Georgia. She will also be writing feature articles for us each week. Here's her first one....

Feature article:

Top Ten Ways to Kill Your Trees **By Stephanie Adams, M.S.** **Research Assistant**

There are so many benefits of having trees in the landscape. They provide shade, reduce your energy bills, increase your property value, bear fruit and can be used as recreation. When people plant trees, they are planting for future generations and want their trees to be as low maintenance as possible. Unfortunately, humans sometimes do things to trees that adversely affect their health and beauty. Avoiding doing any of these top ten items will guarantee that your tree will be easier and less expensive to maintain, and that it will live for many years to come.

10.) Things to consider before digging

When you've decided to beautify your landscape by adding another tree, there are a few things to consider before selecting a species. First, you have to remember that not all trees are created equally; there is no universal plant that you can put everywhere. Make note of how much sunlight the site gets during the day. Putting a shade-tolerant tree in a full sun location will result in years of looking at scorch symptoms. Make note of the soil since the tree will be living there for the rest of its life. Check the pH, drainage and clay content. Also make sure the site is big enough for the tree. Planting a species that is supposed to grow more than 18 feet tall under utility lines will only result in continuous pruning or the unthinkable: topping.

9.) Planting an apple next to a juniper is a bad idea, unless you like the color orange

The pathogens that cause disease on your plants can be transported many different ways. One way to make it very convenient for the pathogen to get to your tree is to have its alternate host nearby. Some plant diseases require two hosts in order to complete their lifecycles, particularly rust diseases. A few examples are stem rust of wheat, caused by *Puccinia graminis*, which has the alternate host of barberry. *Ribes* is the alternate host of white pine blister rust, caused by *Cronartium ribicola*. And there is cedar rust, caused by three different *Gymnosporangium* species depending on the alternate hosts of apple, hawthorn or quince. When choosing your next tree, take a look around to make sure there isn't an alternate host around or try to select a resistant cultivar.

8.) Not doing the extra steps when planting

After deciding on the correct species for the site and purchasing the perfect tree, you have the responsibility to ensure that it's planted correctly. One of the most common mistakes made when planting is that the tree is planted at the wrong depth (see #2). Also, during planting you should remove the plant from its container and remove as much soil as possible to check for girdling roots. Any roots that are not in a radial pattern (like spokes on a bike) from the main stem, especially girdling roots, roots that turn and grow along the stem, should be removed (see #3). If you purchased a balled-and-burlap (B&B) tree, all of the burlap, rope and metal basket should be removed. Many places will tell you that the metal basket will disintegrate over time, but this is not correct. Over time, the tree will grow into the basket and potentially girdle the stem and kill the tree.

7.) Physical damage to the tree stem and roots

A common sight on un-mulched trees is lawnmower damage to the stem, root flare or surface roots. If this type of damage happens continuously the tree may become girdled and die. An easy way to prevent this type of damage is to mulch the area, at least three foot radius out from the stem, preferably mulching out to the canopy's dripline. Other damage may include vehicles hitting low-hanging branches over streets or pedestrians breaking branches that hang in the sidewalk. This can be prevented by pruning the street-side up to thirteen feet and the sidewalk-side up eight feet.

6.) Water Water Water

Once you have the ideal plant selected for your site, you go out to the nursery and purchase the plant, take it home and plant it- then what? Assuming that you have planted it at the correct depth (see #2) and removed any girdling roots (see #3) you've got one other important thing to do and that is to water your tree. This doesn't mean just watering your tree at the time of planting. This means that the root ball remains damp throughout the growing season and into the fall. This usually is accomplished by making sure your tree gets about an inch of water a week. If it hasn't been raining much you might want to invest in a soaker hose, which can be easily hidden under mulch for easy watering.

5.) Rock "mulch"

Putting rock "mulch" underneath a tree could be one of the worst things you could ever do. Not only does the addition of rocks compact the soil, they girdle the stem and ensure temperature extremes for the root system. Compacting the soil (see #4) minimizes the air and water pore sizes that the roots need in order to grow and absorb water and nutrients. As the tree grows and the stem becomes bigger in diameter, the rock mulch does not move with the tree. Instead, the rock mulch often embeds itself into the stem and gradually girdle the tree. Rock mulches also ensure the temperature extremes for roots. In the summer they get hotter faster than hardwood mulch and in the winter they stay colder for longer; both of these extremes can result in fine-root death.

4.) Not preparing your trees for construction

Construction damage is largely preventable before work even begins. The best thing to do is to hire an ISA Certified Arborist to meet with you and your building contractor to ensure that your trees will not be damaged while the construction is underway. Your arborist will likely suggest that fences be put up along the canopy's dripline to ensure no traffic or storage takes place on the major parts of the tree's roots. This will prevent compaction or any sort of physical damage to the stem (see #7). It's also a good idea to water your trees regularly during construction to minimize the tree's stress. A paclobutrazol treatment may also be suggested to slow your tree's canopy growth while allowing the roots to proliferate, which will also minimize your tree's stress.

3.) Self-strangling roots

A nearly fail-safe way to kill your tree 10-15 years after planting is not checking for or preventing stem-girdling roots (SGR) at planting time. Some trees, such as maples and lindens, are especially prone to SGR, but all species are capable of them if grown in the right conditions. Stem girdling roots are roots that grow along the side of the stem. When planting a tree, remove the plant from the container and tap the soil from the root ball exposing the root system. There's a good possibility that there will be circling roots, which all need to be straightened or pruned off before planting. The roots should have a radial pattern out from the stem, like spokes on a bicycle. If you're planting in dense clay soil dig the hole three to five times as wide as the root ball and only as deep as the root ball so that the root flare is at the soil line (see #2). Digging the hole wider than the ball allows the roots to grow out from the ball before encountering the clay. If the hole is not bigger than the ball the roots will be prone to grown along the clay in a circular pattern creating stem girdling roots.

2.) Deeper is not better

Planting trees too deep is one of the most common mistakes people make when planting trees. It is also common in nurseries. After you have purchased a tree remove the soil from the top of the root ball to find the root flare. The root

flare is the area where the first major structural roots appear on the stem. The flare is sometimes mistaken for the root graft. The root graft is the point where the tree's stem was grafted onto another tree's root system. The graft often has a knobby or dog-leg appearance. Sometimes trees are planted too deep to alleviate the need to stake the tree, but it is better to plant the tree at the correct depth and stake it for the first few years until it's able to stabilize itself. Planting trees too deep can result in several problems including SGR (see#3) and the excess moisture on the stem can result in stem rot, which can eventually girdle and kill the tree.

1.) Topping

There are many reasons why you should not top trees. Topping does not make trees smaller or reduce the risk of failure. In fact, it increases the chance of stem and branch failure. Topping trees creates large open wounds that the tree cannot heal over and will lead to decay that the tree cannot compartmentalize. The decay can gradually move down the inside of the stem and make the tree structurally unsound. Topping also triggers a survival mechanism that results in the growth of weedy epicormic shoots, called suckers or watersprouts, which have weak branch attachments and have an increased chance of branch failure. Removing the canopy also removes the tree's food. Trees need their leaves to photosynthesize and produce the sugars they need to grow, ward off infections, heal over wounds, flower and produce seeds. Finally, suddenly exposing the large structural branches and the stem to direct sunlight and heat will also result in "sunburn" that results in the bark splitting, canker formation and potentially death.

Weed Note

Pokeweed (*Phytolacca americana*)

This time of year, we begin receiving samples of pokeweed for identification because it's such a large weed and the fruits are so distinctive. All parts of the plant are toxic, so don't even think about eating it. Pokeweed can grow up to nine feet tall. The large, egg-shaped to oblong leaves are alternate and hairless. Leaf margins are smooth or slightly wavy. The stems of the plant are smooth and may be reddish. It has a large, deep taproot which may grow up to a foot deep. Tiny white flowers grow in red-stemmed racemes at the ends of branches and appear all summer long. The distinctive feature is the fruit. The berries are green when immature, eventually turning dark purple and very juicy. Birds adore the fruits and are not poisoned by it, so they are responsible for spreading the plant.



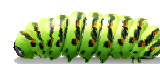
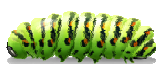
Much to the chagrin of our Plant Information Specialist, one of us always sings the hit song from 1969, "Poke Salad Annie" when customers bring in the weed for identification. Always go with the classics, we say!

Control: Mechanically remove or hand pull pokeweed. Be sure to dig out the entire root. If you are considering a chemical treatment, treat with an herbicide like glyphosate (Roundup®). Use caution when using Roundup® - it is a non-selective herbicide. Wear gloves and use the glyphosate in early morning when it's cool. Always read and follow label directions.

What to Look for Next Week

We will be looking for rust on bee balm and spiny elm caterpillars (future mourning cloak butterflies).

Quote of the week: ""Plant carrots in January and you'll never have to eat carrots." -Author Unknown



The Plant Health Care Report is prepared by Donna Danielson, Plant Clinic Assistant and edited by Fredric Miller, PhD, research entomologist at The Morton Arboretum and professor at Joliet Junior College; Doris Taylor, Plant Information Specialist, and by Carol Belshaw, Plant Clinic volunteer. The quote of the week was provided by Rita Hassert, Technical Services Librarian Extraordinaire at the Sterling Morton Library. 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.

The *2007 Commercial Landscape & Turfgrass Pest Management Handbook* (CPM), for commercial applicators, and the *Home, Yard & Garden Pest Guide* (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087). You may also purchase them online at <https://pubsplus.uiuc.edu/ICLT-07.html> (commercial handbook) and <https://pubsplus.uiuc.edu/C1391.html> (homeowners' guide). One further source is your local county extension office.

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

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 Donna Danielson at ddanielson@mortonarb.org.

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