

Plant Health Care Report

Scouting Report of The Morton Arboretum

June 28-July 3, 2008

Issue 2008. 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.

Quick View

What Plants are in Bloom at the Arboretum?

Smoketree (*Cotinus coggygria*) is blooming.

Accumulated Growing Degree Days (Base 50): 896.0

Insects

- Japanese beetle
- Viburnum crown borer
- Magnolia scale
- Aesculus leafminer
- Azalea bark scale
- Pipevine swallowtail caterpillar
- Pine false webworm
- Hedgehog gall

Diseases

- Maple anthracnose
- Guignardia leaf blotch



Degree Days and Weather Information

As of July 3, 2008, we are at 896.0 growing degree days which is eleven days behind the historical average (1937-2007) and seventeen growing degree days behind last year.

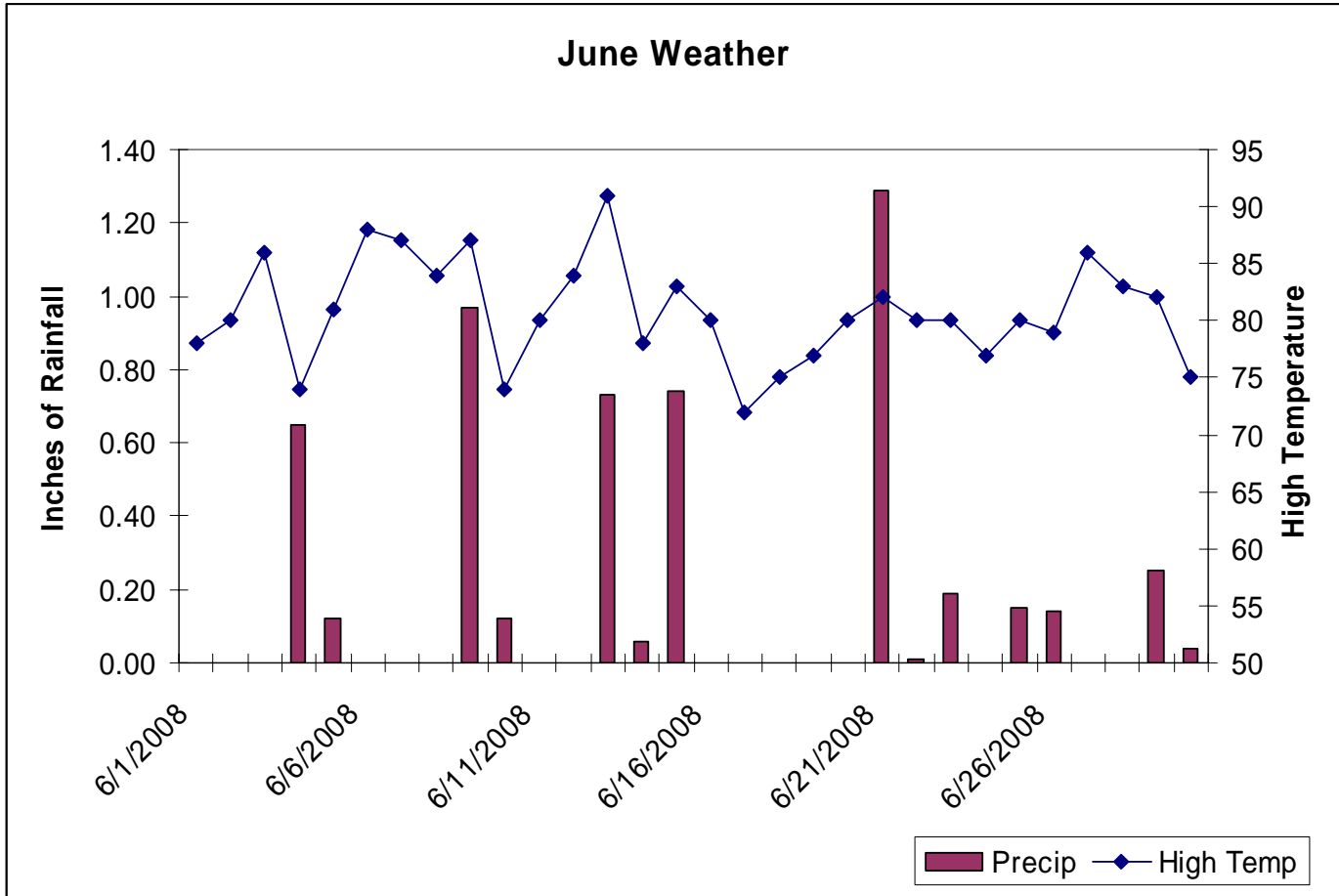
Location	Growing Degree Days through July 3	Precipitation between June 28 – July 3 in inches
The Morton Arboretum (Lisle, IL)	896.0	0.29
Chicago Botanic Garden (Glencoe, IL)*	852.0	0.22
Chicago O-Hare Airport*	943.5	0.99
Aurora, IL	952.0	
Bloomington, IL	1086.5	
Champaign, IL	1167.5	
DuPage County Airport (West Chicago, IL)	981.0	
Midway Airport	1045.5	
Danville, IL	1272.0	
Decatur, IL	1239.0	
DeKalb, IL	955.0	
Moline, IL	1111.5	
Palwaukee Airport (Wheeling, IL)	927.5	
Peoria, IL	1184.5	
Peru, IL	1213.5	
Pontiac, IL	1079.0	
Rantoul, IL	1294.0	
Rockford, IL	996.5	
Romeoville, IL	968.5	
Springfield, IL	1247.5	
Waukegan, IL	776.0	
Madison, WI	822.0	
Milwaukee, WI	722.0	

**Thank you to Mike Brouillard, Green Living, Inc. and Chris Yooning, Chicago Botanic Garden, for supplying us with this information.*

We obtain most of our degree day information from the Virtual Arborist web site. For additional locations and daily degree days, go to <http://virtualarborist.com/>.

June Weather

The average temperature was the same as our historical average (1937-2007). It was a wetter with almost 1 ½ inches more rainfall than in the average June. The chart below provides daily precipitation and temperature highs for June.



Summary of June Temperature and Precipitation Data

	June 2008
Average Daily Temperature	69° F
Historical Avg. Daily Temp.	69° F
High Temperature	91° F
Low Temperature	48° F
Total Precipitation	5.46 in.
Historical Precipitation	3.98 in.
Total Days with Precipitation	14

This Week's Sightings

Japanese beetle



They're baaa-ck! We found the first Japanese beetle (*Popillia japonica*) adults of the season. Japanese beetles are up to 1/2 inch long, and have oval, metallic green bodies with coppery brown wing covers. They appear to have five white spots along each side and two additional white spots behind their wing covers. Upon examination under a hand lens (which we know you carry around faithfully), the spots are actually tufts of white hair.

Adult beetles feed on nearly 400 different species of ornamental plants with about 50 species being preferred. Highly preferred hosts include rose, crabapple, Norway maple,

apple, cherry, grape, and linden. The adults feed on leaf tissue between veins, resulting in skeletonized leaves that soon wither and die. Severely infested plants may be almost completely defoliated.

Japanese beetles overwinter as larvae (grubs) about four to eight inches beneath the soil surface. In spring, as the soil temperatures warm to about 55° F (usually mid-April), the grubs move upward and feed on plant roots. Adults emerge in late June through July. Within a few days after emergence, females mate and burrow into the soil to lay eggs at a depth of two to four inches. Nearly all eggs are laid by mid-August. In sufficiently warm and moist soil, eggs will hatch in about ten days. Larvae feed on plant roots until cold weather forces them to greater depths in the soil for the winter. Thank goodness there is only one generation of this beetle per year. Sometimes it seems like the adult stage lasts forever, especially if they attack your roses.

Control:

Adults

Adult Japanese beetles can be handpicked. This is the control we use here at the Arboretum. It is easiest to catch them by placing a container directly under the leaf that they are chewing on and then shaking the leaf. For reasons known only to Japanese beetles, they nearly always fly straight down, right into the "collecting container." Be careful that you aren't trying to collect bees which are also found on roses this time of year.

Sometimes pheromone traps are used to collect Japanese beetles. This is a bad idea - you will be attracting even more beetles to your property. In severe infestations, insecticides can be used. Applications should be made when adults are most active—mid-July through early August. 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.

When choosing new plants, select resistant species. For a list of susceptible and resistant plants see: <http://msucare.com/pubs/publications/p2333.pdf>

Larvae (Grubs)

If areas of turfgrass are dying, peel the turfgrass back and look underneath the sod to assess the population. Treatment for grub infestations in turfgrass is not considered necessary unless the population exceeds 10 to 12 grubs per square foot. Eggs and first instar larvae require moisture to survive; therefore, the easiest way to reduce grub populations is to limit turfgrass irrigation during the egg-laying period when beetle populations peak (mid-July through early August). We've always found turfgrass to be boring anyway. After all, we're the Arboretum; we think the world should be full of trees and shrubs! Japanese beetles also avoid laying eggs in shade, which is another great reason to plant more trees and shrubs. But if you insist on growing turfgrass and have a bad grub infestation, insecticide applications are effective in controlling young larvae. To achieve the most effective control, insecticides should be applied when grubs are small and feeding near the soil surface. Insecticide applications in spring are often ineffective since the grubs are quite large or, in late spring, they could be pupating. Refer to the CPM and HYG for specific chemical recommendations.

Although not too effective in colder climates, the most commonly used biological control is milky spore disease (*Bacillus popilliae*). This is a bacteria that is specifically toxic to the grub stage of the Japanese beetle and is applied to the soil. However, if you are using this to kill white grubs in your lawn, the first step is to be positive that the problem is caused by Japanese beetle grubs. In this area, more lawn damage is caused by southern masked chafer grubs (also known as annual white grubs) than by Japanese beetle grubs, so you want to know who you're dealing with. There is a pretty simple way to distinguish between the two. And this could be another neat party trick that will astound your friends. "Wanna know what kind of grubs these are?" Most people will run in fright from you, but if you have the right kind of friends, they'll be amazed and impressed with your vast knowledge.

Anyway, don't get squeamish on me here. You need to look at the underside of the back end of the grubs. (Good manners prevents us from using the term "butt".) Grubs have a pattern of hairs on the last abdominal segment called rasters. You need at least a 10X lens to see the hairs. The rasters on the Japanese beetle grubs are in a distinct inverted "V" shape, while the raster pattern on the southern masked chafer grubs is random. Ohio State University has a really neat web site that shows the different common grubs and their "raster patterns":

<http://ohioline.osu.edu/hyg-fact/2000/2510.html>

Beneficial nematodes are now available that can be watered into turf where they infest and kill grubs. Products containing *Heterorhabditis* spp. appear to be more effective than those containing *Steinernema carpocapsae*. Beneficial nematodes are not available in stores; they are only available through mail order sources. Ohio State University keeps a web site listing good mail order sources of beneficial nematodes at: http://www.oardc.ohio-state.edu/nematodes/nematode_suppliers.htm

Good web sites:

<http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2504.html>

<http://ohioline.osu.edu/hyg-fact/2000/2001.html>

<http://www.uwex.edu/ces/wihort/gardenfacts/X1062.pdf>

Viburnum crown borer

The viburnum crown borer moths have emerged. We found several males stuck on our pheromone traps. Viburnum borers (*Synanthedon* sp.) are clearwing moths that lay eggs on the bark or in wounds of viburnums near the soil line. The larvae hatch and tunnel into the cambium from several inches below the soil line to about 18 inches above. Larvae are white and legless with brown heads and eventually grow to ¾ in long. Damage looks like gnarled and scarred stems and eventually there is dieback of stems and the plant. The

insects overwinter as larvae and pupate in spring. The moths usually emerge from infested viburnums in June to lay eggs near wound sites on other viburnums.

Young plants are especially susceptible. Sometimes plants are able to survive attack as they age. In a study done by the University of Wisconsin, American cranberry-bush (*Viburnum trilobum*), Wayfaringtree (*V. lantana*) and European cranberry-bush (*V. opulus*) were preferred hosts, while Nannyberry (*V. lentago*) was the least preferred host.

Control: Beneficial nematodes (*Heterorhabditis bacteriophora* or *Steinernema feltiae*) can be sprayed on the base of the plant or in the soil in late August when larvae are present. Be sure to keep the soil moist so the nematodes don't dry out. They are living organisms. The optimum temperature for spraying is between 60 and 85 degrees. Chemical control can also be applied when adults are laying eggs – refer to the CPM for further information.



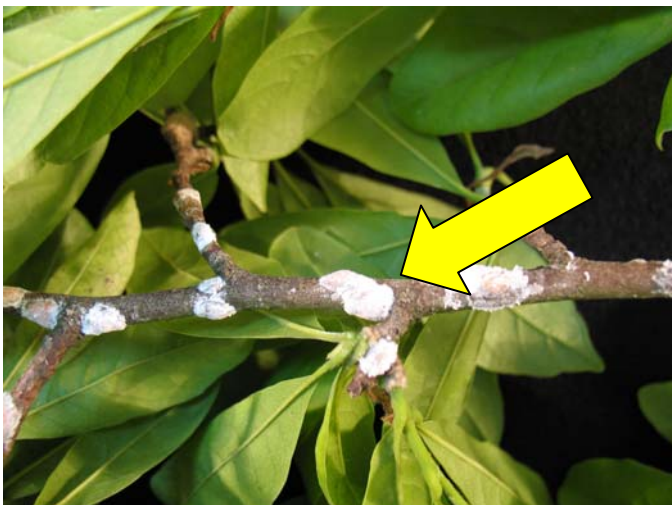
A few sources for the beneficial nematodes are:

Rincon-Vitova Insectaries, Inc.
PO Box 1555, Ventura, CA 93002-1555
3891 North Ventura Avenue (rear), Ventura, CA 93001-1243
800-248-2847 Fax 805-643-6267
E-mail bugnet@rinconvitova.com
Web <http://rinconvitova.com/>

Gardens Alive!
5100 Schenley Place
Lawrenceburg, IN 47025
Telephone: 812/537-8650 (orders); 812/537-8651 (product information); FAX: 812/537-5108
Web site:
<http://www.gardensalive.com/Default.asp?bhcd2=1215093338>

Good web site:
<http://www.uwex.edu/ces/wihort/gardenfacts/X1046.pdf>

Magnolia scale



Magnolia scale on star magnolia (*Magnolia stellata*) has been found on our grounds this week. This is our favorite scale insect because they're so big and easy to see! This has been a problem in the northern suburbs for a while, but we've been seeing more of these in the western suburbs. 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 (liquid insect poop) 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 gobbling up 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 recommendations, refer to the CPM and the HYG.

Good web sites:

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

Aesculus leafminer



There are numerous species of minute insects known as leafminers that live and feed inside leaves of many different plant species. Leafminer larvae eat leaf tissue between the upper and lower epidermis leaving the leaf intact. Leafminers and their black frass can be seen within the mined leaf by holding a damaged leaf up to sunlight. This week we found the serpentine mines on Ohio buckeye (*Aesculus glabra*) caused by the aesculus leafminer.

Control: Leafminer injury is generally an aesthetic problem so control is rarely justified. The occasional severe infestation can be controlled with systemic insecticides and should be applied when mines first appear. Refer to the CPM and HYG for timing and chemical recommendations.

Good web site:

<http://www.forestry.gov.uk/fr/INFD-6Q3AS5>

Azalea bark scale



Adults of azalea bark scale (*Erlococcus azaleae*) were found on hellikki rhododendron (*Rhododendron* 'Hellikki'). The adult females are approximately 1/8 inch long and covered with a white waxy protective coating. They resemble small mealybugs but are nearly always found at branch crotches. If you squash them, you can see that they are actually red. Females feed on twigs and stems. The feeding sometimes causes chlorosis (yellowing) of the leaves. Branch dieback may occur in heavy infestations. This scale creates honeydew (I don't think I need to mention what that is again). Leaves and twigs are often covered with sooty mold, which is a dark saprophytic fungus (fungi that live on dead stuff, not on living organisms) that grows on the honeydew.

Azalea bark scale overwinters as immature females. As the females mature in spring, they secrete white, waxy

threads which become matted into a thick covering over their entire body. The crawlers, which are reddish-pink and extremely tiny, emerge predictably at approximately 850 to 1,100 GDD and tend to settle in bark crevices and branch crotches, using their piercing, sucking mouthparts to feed on plant sap.

There is probably only one generation a year in this area. Common hosts are rhododendron, hawthorn, poplar, and willow.

Control: Prune out dead or dying infested plant parts. The "pick and squish" method can be applied to adult scales before the crawlers hatch. Severely infested branches and twigs can be pruned out. Apply dormant oil during winter or use an insecticidal crawler spray in summer after all the crawlers have hatched. Beneficial insects (e.g., ladybird beetles and parasitic wasps) help control these pests, so use insecticides sparingly and only if less toxic means seem to be ineffective. Note that some summer and dormant oils may be toxic to azaleas. Also, oils should not be used on plants under drought stress or during excessive heat and humidity conditions. For further information about chemical control and timing, refer to the CPM and HYG. Always follow label directions.

Good web sites:

http://ipm.ncsu.edu/AG189/html/azalea_bark_scale.HTML

<http://www.hort.uconn.edu/Ipm/homegrnd/htms/43rhodo.htm>

Pipevine swallowtail caterpillar

Another one of our favorite insects has just been discovered. Pipevine swallowtail (*Battus philenor*) larvae have just hatched on the leaves of woolly Dutchmen's pipe (*Aristolochia tomentosa*). Pipevine swallowtail larvae feed only on plants in the pipevine family.

These fascinating insects grow to two inches long, are black, and have dark outgrowths protruding from each segment. Each larva has long filaments coming out of its first segment which it uses to



explore its path. It also has four longitudinal rows of bright orange projections along its body. The larvae are toxic and distasteful to animals. So you don't consider the guy pictured on the right to be a beautiful creature? Just wait a bit and you'll soon see a gorgeous black butterfly with blue-green metallic hind wings and a wingspan of about four inches.

Control: We handpick severe infestations at the Arboretum, but *Bacillus thuringiensis var. kurstaki* (Btk) could also be used to control young larvae. Btk is not as effective on mature larvae.

Good web site:

<http://www.uky.edu/Ag/CritterFiles/casefile/insects/butterflies/swallowtail/swallowtail.htm>

Pine false webworm

A sample of the pine false webworm (*Acantholyda erythrocephala*) nest was brought into the plant clinic this week. This sawfly belongs to a group of insects in the order Hymenoptera (sounds like the name of a group of dinosaurs), which includes wasps, bees, hornets, etc. The adults are present from May to early June. The wasp-like adults have a shiny blue-black body. Females have a small area of yellow to yellow-orange on the front of their head. Females are 7/16 to 1/2 inches long and males are slightly smaller at 3/8 inches long. After mating, the females lay groups of 2-6 eggs side by side on pine needles. When the larvae hatch, they move to the base of last year's needles. Larvae then construct loose webbing and feed on needles. They



Pine false webworm nest only

prefer to feed on old foliage of pines; they will consume needles of the current year's growth only when high infestations occur. The larvae are green with two small antennae-like projections that stick out of the tip of their abdomen. Feeding lasts for 18-20 days. Then the mature larvae drop to the ground, burrow into the soil and remain dormant until the next spring when they emerge as an adult. Only one generation per year occurs.

The false pine webworm differs from the true pine webworm by having no silken tunnels present; they have smaller nests and contain fewer larvae per nest. But the most important distinction is that the true pine webworm belongs to the moth and butterfly order Lepidoptera.

Control: Small numbers of nests can be pruned out and destroyed. Refer to the CPM and HYG for chemical control.

Good web site:

http://bugs.osu.edu/~bugdoc/Shetlar/factsheet/christmasree/pine_false_webworm.htm

Hedgehog gall



Oaks are more prone to insect galls than any other tree. One of our favorites is hedgehog galls (definitely not aesthetic eyesores like the other galls are). We're seeing them on white oak (*Quercus alba*). There are numerous galls of oaks, and many are named according to the way they look. So, with a stretch of the imagination, this one looks a bit like a hedgehog. Some of the other oak galls include spiny, fuzzy, wooly, horned, gouty, button, cola nut, wool sower, apple, bullet, pea, potato, and the jumping oak gall (yes it does jump). When this gall falls from its host, the larvae inside causes the gall to jump up to several inches off the ground. Hedgehog galls are produced by the cynipid wasp, *Acraspis erinacei*, and are usually attached to the leaf midvein. They range in size from 1/4 to 1/2 inch in diameter and are yellow with red and pink 'bristles'. They are absolutely adorable and quite soft.

Control: The galls, like most leaf galls of oaks, cause no significant harm to the tree. Therefore, no controls are recommended

Good web site:

http://www.ipm.uiuc.edu/landturf/insects/plant_galls/index.html

Maple Anthracnose

Maple anthracnose has been found on sugar maple (*Acer saccharum*). There are three types of foliar symptoms that are caused by two or more different fungi: (1) elongate lesions that form initially along the vein and extend into interveinal areas; (2) irregularly shaped necrotic spots that are often centered on veins; and (3) necrotic blotches that cover large areas of the leaf. We are seeing both necrotic spots and elongated lesions. The disease is typically more severe during cool, wet weather (like we have had this spring), sometimes even causing defoliation.

Anthracnose necrotic spots can be mistaken for early leaf spots caused by *Phyllosticta minima*, a fungus that causes leaf spots on several species of maples. *Phyllosticta* lesions are initially brown; however, as they age, they develop tan centers and usually form distinct red to purple borders. Unlike anthracnose, black pycnidia (fruiting bodies) are produced in the *Phyllosticta* lesions.



Control: Maple anthracnose is primarily an aesthetic problem. Proper fertilization and irrigation of trees that have considerable disease may help trees re-foliate and maintain their vigor. Remove fallen leaves to reduce the source of overwintering inoculum.

Good websites:

<http://www.ag.uiuc.edu/~vista/abstracts/a621.html>

<http://ohioline.osu.edu/hyg-fact/3000/3048.html>

Guignardia leaf blotch

The initial stages of Guignardia leaf blotch were found on horsechestnut (*Aesculus hippocastanum*). Right now we're seeing reddish brown to brown lesions with a yellow border that blends into the normal green leaf tissue. Upon closer inspection with a hand lens (which you should never leave home without), you will soon be able to see the dark pycnidia (fungal fruiting bodies), which look like black pepper on the lesions on the upper surface of the leaf. The blotches will enlarge, coalesce, and may cover the entire leaf by the end of summer. Premature defoliation may follow on the most susceptible hosts. This disease eventually decreases a tree's ability to photosynthesize, but generally the disease doesn't become severe until the tree's annual growth has slowed or is complete. Therefore it does not do much harm to trees in the landscape, but it does make them unsightly. It can be a major problem in nurseries. This is so common, that we've starting thinking that the fall color of the horsechestnut is brown. A few years ago, we rated our aesculus trees for susceptibility to *Guignardia*. We found that in addition to bottlebrush buckeye (*A. parviflora*) being resistant, Japanese horsechestnut (*A. turbinata*) and some Ohio buckeyes (*A. glabra*) show tolerance.



Control: Removing fallen leaves may help to destroy the overwintering inoculum. Pruning trees to improve air flow may also help, since the spores are spread and germinate under moist to wet conditions.

Good web site:

www.umassgreeninfo.org/fact_sheets/diseases/guignardia_leaf_blotch.pdf

What to Look for Next Week

Next week we will be looking for basswood lacebug, kermes scale and cottony maple scale.

Quote of the week: "The future belongs to those who believe in the beauty of their dreams."
Eleanor Roosevelt

Have A Safe And Happy 4th Of July!!!



The Plant Health Care Report is prepared by Trica Barron, Plant Health Care Technician, and edited by Donna Danielson, Plant Clinic Assistant; 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 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.mortonarboretumphc.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 Trica Barron at tbarron@mortonarb.org.

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