

Plant Health Care Report

Scouting Report of The Morton Arboretum

June 19 – 25, 2009

Issue 2009.11

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.

It seems summer has finally come with a vengeance!

Quick View

What Indicator Plants are in Bloom at the Arboretum?

Hills of Snow hydrangea (*Hydrangea arborescens* 'Grandiflora') is beginning to bloom.

Accumulated Growing Degree Days (Base 50): 804.5

Insects

- Bagworm
- Viburnum crown borer
- Pear leaf blister mite damage
- Hedgehog gall
- Six-spotted tiger beetle
- Fireflies

Diseases

- Dutch elm disease
- Oak wilt
- Diplodia tip blight

Miscellaneous

- Chlorosis



Weed Note

- Wild carrot
- Pennycress

Degree Days and Weather Information

As of June 25, 2009, we are at 804.5 growing degree days which are five days behind the historical average (1937-2007) and one day behind last year.

Location	Growing Degree Days through June 25	Precipitation between June 19 to 25 in inches
The Morton Arboretum (Lisle, IL)	804.5	.58
Chicago Botanic Garden (Glencoe, IL)*	580	4.48
Chicago O'Hare Airport*	724	4.19
Aurora, IL**	762.3	
Champaign, IL**	1116.1	
DuPage County Airport (West Chicago, IL)**	870.9	
Decatur, IL**	1142.7	
Moline, IL**	969.4	
Peoria, IL**	1058.4	
Quincy, IL**	1160.7	
Rockford, IL**	794.0	
Waukegan, IL**	545.9	
Wheeling, IL**	686.5	

*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 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

Bagworm



The first bagworm larvae (*Thyridopteryx ephemeraeformis*) have been spotted in Naperville. Bagworm populations are expected to be very low because of the past cold weather. They overwinter as eggs inside the female bag. Each bag contains between 300 and 1,000 eggs. The eggs hatch in early summer and the young larvae suspend from a silk string and are often “ballooned” by wind to nearby plants. When a suitable host plant is found, larvae begin to form bags over their bodies. By mid-August the larvae have matured and are one to one and one-half inches in length and their completed bags are one and one-half to two and one-half inches long. They move to a sturdy branch, attach the bag with a strong band of silk, and then pupate. About four weeks later, adults emerge and mate. The sedentary female, which has no eyes, wings, legs, antennae, or functional mouthparts, lays eggs and is then mummified around the egg mass within the bag (what a life).

The tiny cone-shaped brownish bags are constructed from silk and camouflaged with bits of twigs and foliage. Larvae stick their heads and front legs out of the top of the bags to feed and move. The feeding by young larvae results in brown spots and holes in the foliage. As the larvae grow, they enlarge their bags and feed on the entire leaf leaving only veins. Bagworm populations can build

rapidly and quickly defoliate their hosts. Healthy deciduous trees can usually tolerate three consecutive years of severe defoliation before they are killed. Evergreen trees, on the other hand, are frequently killed by only one severe defoliation. Bagworm larvae feed on over 120 species of trees and shrubs. Their bags are made of the foliage they're feeding on, so a bagworm feeding on pine will have pine needles in its bag while a bagworm feeding on a crabapple will have pieces of crabapple leaves decorating its bag. Once a plant is infested, populations can grow quickly on that plant.

Control: Bagworms can be a serious problem. *Bacillus thuringiensis* var. 'Kurstaki' (BT) and insecticidal sprays are effective but need to be used on young larvae. It is best to wait until they have stopped ballooning before applying insecticide. Handpicking bags in winter and early spring will also help control populations. For further information about chemical control, refer to the *Commercial Landscape and Turfgrass Pest Management Handbook* (CPM) for commercial applicators or the *Home Yard and Garden Pest Guide* (HYG) for homeowners.

Good web sites:

<http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2149.html>

<http://www.uky.edu/Agriculture/Entomology/entfacts/trees/ef440.htm>

Viburnum crown borer

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 three-quarters of an inch 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.

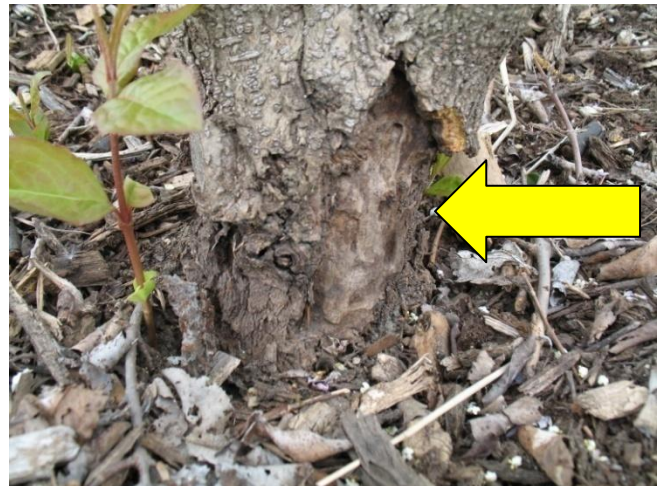


Young plants are especially susceptible. Sometimes plants are able to survive attack as they age. In a study done by the University of Wisconsin, American cranberry-bush (*Viburnum trilobum*), Wayfaringtree (*V. lantana*) and European cranberry-bush (*V. opulus*) were preferred hosts, while Nannyberry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



Viburnum crown borer damage

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>

Pear leaf blister mite damage



Pear leaf blister mite damage on Callery pear (*Pyrus calleryana*) has been found on our grounds. The blistering is caused by the pear leaf blister mite (*Phytoptus pyri*), an eriophyid mite that is a pest of pear, apple (*Malus*) and European mountain-ash (*Sorbus aucuparia*). Blisters begin as small greenish to pale yellowish bumps that eventually turn brown and reach an eighth of an inch in diameter. Heavily infested leaves become distorted and drop prematurely. Mites also feed on developing fruit, causing depressed brown spots surrounded by a halo of clear tissue. Often, fruit becomes deformed and misshapen. The adult mites overwinter in bud scales.

They become active in spring as buds swell and migrate to emerging leaves, burrowing beneath the epidermis of the leaf underside. Their feeding induces blister formation. The eggs are laid in the fall, and the young remain in the gall until they mature. They then migrate to new leaves. There are two to three generations per year.

Control: This is only a cosmetic problem so controls are not warranted. However, if you grow edible pears, you might want to contact your County University of Illinois cooperative extension office for chemical recommendations.

Good web site:

<http://www.canr.msu.edu/vanburen/fplbm.htm>

Hedgehog gall

Oaks are more prone to insect galls than any other tree. One of my favorites is the hedgehog gall (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. Hedgehog galls are produced by the cynipid wasp, *Acraspis erinacei*, and are usually attached to the leaf midvein. They range in size from one-quarter to one-half of an inch in diameter and are yellow with red and pink 'bristles'. They are absolutely adorable and quite soft. 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.



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

Six-spotted tiger beetle

An Emerald Ash Borer look-alike, the six-spotted tiger beetle (*Cicindela sexguttata*) was brought into the Plant Clinic. This beetle has large bulging eyes, is about one-half inch long, with beautiful bright metallic green legs, antennae, and body. Each of their outer wings has three to five white spots. The adult beetles emerge and mate in spring. The female lays eggs in the ground in June or July. When the eggs hatch, the grub-like larva tunnels further down into the soil where it will remain until the following year. It pupates in July and adults emerge in August. The adult beetles will over winter in their tunnels and emerge again in the spring when they mate. This beetle completes its life cycle in two years. They can be found living in open wooded areas, along paths, near streams, and occasionally urban yards. Tiger beetles feed on ants, spiders, sawflies, and other small insects. This eye-catching beetle is also known to be one of the fastest runners in the insect world.

The emerald ash borer adult beetle on the other hand, is slender, green, and roughly one-third to one-half of an inch long. Adults are active in May through July, though mostly in June. Eggs are laid in bark crevices. Eggs hatch into larvae, which tunnel into the tree.



Emerald ash borer



Six-spotted tiger beetle

Fireflies

Nothing says summer more than the sight of fireflies! We've started to see adult fireflies or lightning bugs flying around the yard at night. They are medium-sized beetles with light producing organs on their abdomens. Unlike some other insects that are glowing continuously, fireflies flash their lights on and off periodically. There are many species, each with a different flashing rhythm. Flashing is apparently a recognition signal so the insects can find each other to mate. Fireflies are inactive during the day. The adults lay eggs on the ground. When the larvae hatch, they live on the ground, under bark and in moist, swampy places, eating small insects and snails. The larvae are beneficial as predators on insect pests, and just as much fun to catch.

A fun web site:

<http://www.dnr.state.wi.us/org/caer/ce/eeek/critter/insect/firefly.htm>

Dutch elm disease

Many people think there are no American elms left, but many of the older suburbs such as Evanston, Elmhurst, and Hinsdale still have quite a few. Numbers lessen each year, thanks to Dutch elm disease, which is again rearing its ugly head on our grounds, as well. This week Dutch elm disease (DED) infections on some of our American elm trees (*Ulmus americana*) were found on our grounds, which probably spread via root grafts from a tree infected by DED last year. DED is caused by two closely related species of fungi: *Ophiostoma ulmi* (formerly known as *Ceratocystis ulmi*) and *O. novo-ulmi*. The American elm is extremely susceptible and the disease has killed hundreds of thousands of them across the U.S. All native elms are susceptible, Asian elms are resistant, and European elms are more or less in between.

Symptoms of new DED infections are yellowing, curling, and wilting leaves on outer branches in the canopy. This is called “flagging.” When the bark is removed, brown streaks can be found in the outer wood. The fungus grows beyond the visible streaks and can rapidly spread to the trunk and kill the entire tree.

There are two insect vectors responsible for transmitting DED: the native elm bark beetle (*Hylurgopinus rufipes*) and the European elm bark beetle (*Scolytus multistriatus*). The beetles carry the fungus to healthy trees as they feed on twigs and upper branches. Spores can enter the tree through the feeding wounds. The fungus causes the xylem to plug up and the tree to wilt and die. Beetles eventually lay their eggs in the bark of infected trees and tunneling larvae become coated with the fungus. The larvae continue the cycle by emerging as adults to feed on the healthy elms with the fungus on their bodies. The beetles typically have multiple generations per year in the Midwest and are present from late April through at least September.

DED can also be transmitted through root grafts. A network of roots allows the disease to move freely from one elm tree to the next and can result in a whole stand or parkway of elms becoming infected. Root grafts between trees are especially prevalent in cramped urban and suburban parkways.

Control: Monitoring and sanitation are crucial to controlling DED. Elms should be inspected for flags weekly from now through July and every few weeks through September. If a tree is newly infected, pruning may successfully eradicate the disease if no more than five to ten percent of the tree shows symptoms or at least seven to ten feet of clear wood occurs between the streaking and the main trunk. A final pruning cut, seven to ten feet beyond the streaks, is necessary to ensure the fungus is removed. Sterilize pruning tools between cuts with 70% alcohol or a similar disinfectant. If a tree shows many flags or completely wilts, it must be removed quickly so that beetles and root grafts do not transmit the disease further. Root grafts should be severed before removal of a diseased tree. Girdling the tree by removing the bark/cambium in a strip near the base of the tree can be done temporarily before removal. Potential elm bark breeding material, such as elm logs and stumps with intact bark, should be chipped and destroyed or, at the very least, stripped of bark.

There are several options for preventing Dutch elm disease. Valuable elms can be injected with a fungicide. A new biocontrol tool, Dutch Trig™, is also available. Neither Dutch Trig nor fungicides are 100% effective. For further information about systemic fungicides, refer to the CPM.

Plant resistant elm varieties: the Asian elms, lace bark elm (*U. parvifolia*), and Siberian elm (*U. pumila*) are highly resistant to the disease, though Siberian elm is considered to be a weedy, weak-branched tree. The Morton Arboretum has



Flagging on an elm tree

bred several excellent elms named ‘Triumph’, ‘Accolade’, and ‘Commendation’, available through Chicagoland Grows. Since they are hybrids of resistant Asian elms, they are also resistant to DED.

Good web sites:

http://na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm

<http://www.ag.uiuc.edu/~vista/abstracts/a647.html>

Oak wilt

We have found oak wilt (*Ceratocystis fagacearum*), a very serious fungal disease, on one of our northern red oaks (*Quercus rubra*) on our grounds. Symptoms on red oaks include leaf wilting and bronzing, and premature leaf drop. Both the red and white oak groups are susceptible to oak wilt; however, the former is most susceptible. Symptoms between the two groups are different. In red oaks, death is rapid with wilt symptoms starting at the top of the tree and progressing inward and downward on the lateral branches within a few weeks. Leaves wilt from the leaf tip and margins to the bases and typically turn an off-green before showing bronze coloration. Near-complete leaf drop usually occurs by the middle of summer, making infected trees stand out. Fallen leaves are often green at the base. There can be profuse suckering at the base of the tree. When an infected branch is cut in cross section, or bark peeled back, very light brown streaking or speckling can sometimes be seen in the outer ring of sapwood. Symptoms of the disease on white oaks are similar, but infected white oaks die slowly, a branch at a time, over a period of one to many years. Leaf discoloration of affected white oaks usually resembles autumn colors (but appears much earlier than autumn), and brown streaking in the outer growth ring of sapwood is often apparent.



The fungus invades the xylem and induces the tree to clog its own water-conducting vessels. Water flow is stopped and cells begin dying. Oak wilt can spread from infected trees to healthy trees through root grafts and by sap-feeding beetles that carry spores of the fungus from one tree to another as they feed and visit wounds.

Control: Monitoring and rapid removal (sanitation) is the key to controlling oak wilt. Remove infected oaks as soon as you confirm the disease. Vector insects feed on fresh pruning wounds; therefore, oaks should not be pruned during the growing season when the nitidulid beetles are active. This disease can spread to other healthy oaks about 25 to 50 feet away (depending on tree size) via root grafts. To help halt the spread, dig a trench to a depth of approximately three feet between infected and healthy trees to break root grafting. Some systemic fungicides are labeled for preventing this disease. Refer to the CPM from the University of Illinois for chemical recommendations. The fungicides must be injected into the tree by someone trained in tree injections.

Good web sites:

http://na.fs.fed.us/spfo/pubs/howtos/ht_oaklab/toc.htm

<http://www.ag.uiuc.edu/~vista/abstracts/a618.html>

Diplodia tip blight

We have found symptoms of Diplodia tip blight (*Diplodia pinea*) on current year needles of mugo pine (*Pinus mugo*). This is a disease named in a similar fashion to the singer Prince who then became the Artist Formerly Known as Prince who then became Prince again. This disease was Diplodia, then became Sphaeropsis, and is called Diplodia once again. We prefer to call it tip blight. It is a common disease of two- and three-needle pines in our region. Austrian (*Pinus*

nigra), mugo, and scots (*P. sylvestris*) pines seem to be a magnet for this disease, especially if they are stressed by insufficient water. The fungus infects needles as they are expanding, thus causing stunting and turning the needles straw-colored or brown. Some “bleeding” or resin may appear dripping from infected needles.



The disease frequently starts on lower branches and moves upward as spores are spread by splashing rain and wind. The fungus can also invade woody tissue and cause branches to die. Dead shoot tips and needles from previous years are often found throughout the canopy of larger trees. Black pepper-like fruiting bodies form at the base of the needles (look underneath the needle sheath) soon after the needles die.

Control: Other than proper siting, there is little you can do to prevent the disease. Managing the disease is possible through sanitation, cultural, and chemical control practices. Rake up and discard infected cones and needles to remove inoculum sources. Also, keep trees mulched (do not use diseased pine needles as mulch) and watered during dry periods. Avoid overhead irrigation which helps spread spores, and do not prune susceptible trees in wet weather. As soon as tip blight is noticed, prune out and destroy diseased tissue. Sterilize tools between pruning cuts with 70% alcohol or dilute Pinesol or a similar disinfectant. Protectant chemicals are effective if applied when needles are first emerging. Chemicals are used commonly in nurseries and plantations, but should be a last resort in landscapes. Refer to the CPM or HYG for specific chemical recommendations. In the future, plant disease-tolerant species or alternative species in your landscape.

Good web sites:

<http://www.ag.uiuc.edu/~vista/abstracts/aSPHAERO.HTML>

<http://na.fs.fed.us/spfo/pubs/factsheets/sphaeropsis/shootblight.htm>

Miscellaneous

Chlorosis

We are starting to see chlorosis on white oak (*Quercus alba*). Chlorosis is a yellowing of the leaf due to low levels of chlorophyll. In mild cases, leaf tissue appears pale green but the veins remain green. Leaf tissue becomes progressively yellow, and may turn white in advanced cases. Leaf margins may become scorched or develop symmetrical brown spots between veins. Trees that commonly show chlorosis include pin oak (*Quercus palustris*), red oak (*Q. rubra*), red maple (*Acer rubrum*), river birch (*Betula nigra*), tulip-tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), bald cypress (*Taxodium distichum*), magnolia (*Magnolia officinalis*), and white pine (*Pinus strobus*).



There are many causes of chlorosis including compacted soils, poor drainage, root damage, alkaline soils, and

macro- and micro-nutrient imbalances. The most common chlorosis in our area is due to iron and manganese deficiencies resulting from alkaline soils. High pH causes iron and manganese that is present to become unavailable.

Control: The best control is to avoid planting trees that do not tolerate alkaline soils. If leaves do become chlorotic, first determine the pH of the soil by doing a soil test or sending a sample of soil to a laboratory. Some regional university Cooperative Extension Service offices can determine basic soil properties such as soil pH. Regional laboratories include:

- A & L Great Lakes Laboratories in Fort Wayne, Indiana (260-483-4759)
- Alvey Laboratories in Belleville, Illinois (618-233-0445)
- Kane County Farm Bureau in St. Charles, Illinois (630-584-8660)
- University of Wisconsin Cooperative Extension Service in Madison, Wisconsin (608-262-4364)

Take the necessary steps to remedy the situation based on the results of the test.

Both short and long term solutions are available. Short term solutions treat the symptoms, but not the underlying causes of chlorosis. These include:

- Fertilizing soil with a nitrogen- and sulfur-based fertilizer in early spring through mid-May.
- Spraying micronutrients such as iron chelate or iron sulfate on leaves.
- Injecting trunks with iron or manganese-containing compounds (this should be done by a certified arborist).

Long term solutions include:

- Acidifying the soil by removing grass from under the tree and applying a one to two inch layer of organic compost such as acidic leaf mold with a three to four inch deep layer of organic mulch on top of the compost (such as composted woodchips).
- Applying granular sulfur or ammonium sulfate (three pounds per 100 square feet) to the soil beneath the crown of the tree out to the drip line in early spring. If possible, apply 1.5 pounds per 100 square feet beyond the drip line. Water thoroughly after application since sulfur can cause a chemical burn to grass.
- Alternately, in fall, applying granular sulfur at a rate of three pounds per 100 square feet beneath the crown of the trees out to the drip line. This should be watered in or applied immediately before a rainfall.
- Avoiding fertilizers that contain nitrates, limestone or material that contain lime and will raise the pH.
- Avoiding fertilizing chlorotic plants with potassium and phosphorus unless a soil test indicates a deficiency.
- Watering during dry periods.

Be sure to following the label directions when applying any fertilizer.

Good web sites:

<http://www.ag.uiuc.edu/~vista/abstracts/aIRONCHL.HTML>

Weed Note

Wild carrot

Wild carrot (*Daucus carota*), also known as Queen Ann's lace, is a biennial weed. During its first year of growth leaves are lacy almost fern-like and form a basal rosette. Stems are hairy with compound leaves in an alternate arrangement.

When crushed, leaves have a strong carrot odor. In its second year of growth, wild carrot blooms from May to October, on flower stalks that are two to four feet tall. White flowers bloom in three to six inch diameter umbels (flower arrangement where the flower stalks originate from one point). It reproduces by seed and has a slender woody tap



Photograph taken by John Hagstrom

root. This weed can be found growing in low-maintenance or abandoned areas in well-drained to dry soils.

Control: Apply a post-emergence herbicide when weeds are in the rosette to flower growth stage. For further information about chemical control and timing, refer to the CPM if you are a commercial applicator in Illinois or the HYG if you are a homeowner.

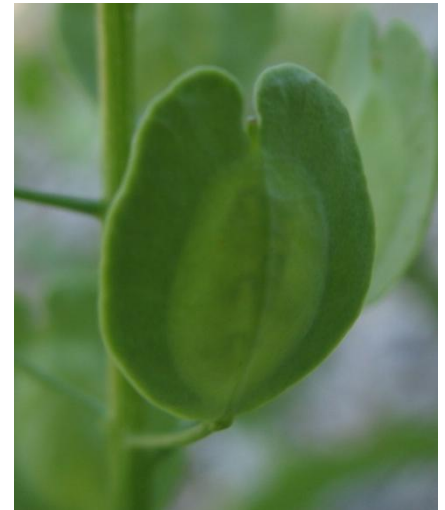
Pennycress



Pennycress (*Thlaspi arvense*), also known as stinkweed, is a broadleaf winter annual/biennial weed that can reach up to 20 inches tall. Stems are erect and smooth. Its initial leaves are oval with a wavy leaf margin and form a basal rosette. They are different from the leaves along the flowering stems, which have lobes at their bases where they clasp the stem. These leaves are one-half to two inches long, lanceolate (narrow leaf, tapering to a point at the apex, and sometimes at the base) with a toothed margin, and are in an alternate arrangement. White, four-petaled flowers bloom in terminal clusters from April to October. Pennycress reproduces by seed. Seed pods are oval, flat and have a notch at the apex. Each

pod is about one-half inch in diameter and contains approximately four to sixteen seeds. When crushed this weed emits a foul odor. This weed can be found growing in disturbed sites, roadsides, and open fields.

Control: Hand pull or apply a post-emergence herbicide with products containing 2,4-D, MCP. For further information on chemical control, refer to the University of Illinois CPM or HYG.



The seed pod of pennycress.

What to Look for Next Week

We will be looking for botryosphaeria canker, basswood lacebug, and magnolia scale.

I would like to announce that this is my last issue of compiling the Plant Health Care Report. I am leaving my position at the Arboretum due to personal issues. I would like to thank the Arboretum grounds crew and arborists, the plant health care volunteers, Donna Danielson, Doris Taylor, Fred Miller, Carol Belshaw, Claudia Parish, Chris Yooning, Michael Brouillard, Kirsten Bronoski, Susan Paris, Wanda Grant, and Maureen Dejonghe for all the help and support you have given me during my time as the Plant Health Care Technician. The Plant Health Care Report will continue to be published through August.

Quote of the week: “You gain strength, courage, and confidence by every experience in which you really stop to look fear in the face. You must do the thing which you think you cannot do.” - Eleanor Roosevelt



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.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 Trica Barron at tbarron@mortonarb.org.

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