

Plant Health Care Report

Scouting Report of The Morton Arboretum

July 15, 2011

Issue 2011.13

Our report includes up-to-date disease and insect pest and abiotic problem information 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. The Report is published bi-weekly on Friday in April and August, and weekly May-July.

Arboretum employees and volunteers will be scouting our grounds for insects and diseases throughout the season. Information about other pest and disease problems based on samples brought into the Arboretum's Plant Clinic from homeowners and professionals will also be included.

Over the course of this year the Plant Health Care Report (PHCR) will be undergoing some format changes, but will still be offering the same content. [If you prefer a PDF version of the PHCR, please click here to download and print.](#)

If you would like to receive a notification email when the PHC Report is available on-line, send me an email (sadams@mortonarb.org) with 'subscribe to PHCR notification' in the subject. The emails on the notification list are only used for the notification and nothing else.

Accumulated Growing Degree Days (Base₅₀): 1212
Accumulated Growing Degree Days (Base₃₀): 3300
This week's Indicator Plant: Queen anne's lace (*Daucus carota*)

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- Mosaic virus on hackberry
- Dutch elm disease
- Measles on peon

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- Fuligo septic (i.e. dog vomit slime mold)

Weather update

As of July 1, 2011, we are at 1212 base-50 growing degree days (GDD₅₀), which is 299 GDD₅₀ (11 calendar days) behind 2010, and behind the historical average (1937-2010) by 217 GDD₅₀ (9 calendar days). July has received 0.84" of precipitation, which brings 2011 to 21.68" total.

	B₅₀ Growing Degree Days through July 15	Precipitation (inches)
Aurora, IL*	1337	
Carbondale, IL*	2245	
Chicago Midway*	1260	
Chicago Botanic Gardens**	1157 (7/14)	0.15 (7/9-7/14)
Chicago O'hare**	1252 (7/13)	0.53 (7/6-7/12)
Crystal Lake, IL*	1304	
Harvard, IL*	1242	
Kankakee, IL*	1532	
The Morton Arboretum	1212	0.70
Peoria, IL*	1712	
Quincy, IL*	1819	
Rockford, IL*	1348	
Springfield, IL*	1856	
Waukegan, IL*	1106	
Champaign, IL*	1714	

**Thank you to Mike Brouillard, Northbrook Park District, and Chris Henning, Chicago Botanic Gardens, 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>

Pest Update: Insects

Pipevine swallowtail caterpillar

Pipevine swallowtail (*Battus philenor*) larvae have been found feeding 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. Soon it'll turn into a gorgeous black butterfly with blue-green metallic hind wings and a wingspan of about four inches.

Management: Handpicking severe infestations works well 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. Refer to the 2010 Commercial Landscape & Turfgrass Pest and Management Handbook (CPM) for commercial applicators or the Home, Yard & Garden Pest Guide (HYG) for homeowners for chemical control recommendations.



Black vine weevil

Black vine weevil (*Otiorhynchus sulcatus*) damage has been seen on the leaves of catawba rhododendron (*Rhododendron catawbiense*). Adult black vine weevils are nocturnal creatures that feed along leaf margins producing crescent-shaped notches. Moderate feeding is not damaging to plant health. The more serious damage is done by the larvae which consume tender feeder roots, causing foliage of infested plants to turn yellow or brown. When young roots become scarce or the soil becomes excessively moist, the larvae will move to larger roots at the base of the plant. Severe larval infestations can ultimately kill the host plant.

Adult female weevils emerge from the soil in late May through early July and feed for three to four weeks at night before laying eggs in the soil beneath the host plant. Eggs hatch in two to three weeks and the larvae feed on roots until late fall. With the onset of colder temperatures, larvae burrow deeper in the ground to overwinter. Black vine weevils feed on a wide range of herbaceous and woody ornamentals. Preferred hosts are yew,



hemlock, and various rhododendrons.

Management: If you place boards down in infested areas, the weevils will hide under the boards during the day. You can then pick them up and destroy them. Insecticidal sprays are effective in controlling adult weevils. Insecticides should be applied now before egg laying occurs and repeated twice at 2-week intervals. Parasitic nematodes, *Steinernema feltiae* and *Heterorhabditis bacteriophora*, have been found to be effective in controlling larvae. They should be applied when larvae are present (in about five to seven weeks). Moderate to high soil moisture in July and August will help egg and larva survival. Remove excessive mulch layers to reduce soil moisture levels and do not water plants unless necessary. Excessively damp soils in the fall also force larvae to move up the base of the plant where girdling can occur. For specific chemical recommendations, refer to the CPM or HYG for homeowners.

Suggested reading: <http://ohioline.ag.ohio-state.edu/hyg-fact/2000/2016.html>
<http://www.uwex.edu/ces/wihort/gardenfacts/X1065.pdf>

Earwigs

Earwigs have been found on the Arboretum grounds this week. Earwigs generally feed on dead insects and rotting plant material; however, they are also known to feed on flowers, fruit, and foliage of vegetable, fruit, ornamental, and field plants when populations are numerous. Their feeding causes small, irregular holes, and can give foliage a ragged appearance in severe infestations. This insect, which is about an inch long, is easily identifiable by the prominent pair of pincers on the tip of the abdomen. Earwigs are nocturnal creatures and hide in dark, moist places under stones and in debris or sometimes in bark during the day. They may find their way into houses and garages—particularly during periods of prolonged warm, dry weather and in fall. Inside they seek out moist areas such as basements, crawl spaces, and kitchens where they feed on sweet, oily or greasy foods, in addition to houseplants.



Since they feed on insect larvae, they are considered beneficial, but they are not beneficial to humans if you sit on one and get pinched. The difference between male and females are that the pinchers of females are nearly straight; on males they are caliper-like.

Management: Removing plant debris from your garden will remove some of their hiding places. Place rolled up newspapers on the ground near problem areas. Check the “newspaper traps” in the morning for earwigs. Shake the earwigs into a pail of soapy water. For indoor control, eliminate damp conditions in crawl spaces, near faucets, around air-conditioning units, and along house foundations. Keep moist mulches three feet away from the house foundation, window wells, and doorways, if you have a serious earwig problem. Trim back vegetation and remove ground covers near foundations that contribute to moisture retention. Move log piles away from the house. For chemical control, refer to the CPM or HYG.

Suggested reading: <http://learningstore.uwex.edu/pdf/A3640.pdf>
<http://ipm.illinois.edu/hyg/insects/earwig/index.html>

Elm leafminer

First instar elm leaf miner (*Fenusa ulmi*) larvae are forming mines on weeping American elm (*Ulmus americana* f. *pendula*) and small fruited elm (*U. microcarpa*). The adults emerge in spring to lay eggs in elm leaf tissues. After about a week, the eggs hatch and young larvae begin to make mines in the leaves. The sawfly larvae are feeding on the leaf tissue between the upper and lower epidermis of the leaves. The mines at first look like U-shaped brown spots between veins in the leaf. Eventually the insects will eat a hole through the leaf epidermis, fall to the ground, and excavate a hole in the soil to overwinter. Severe damage can result in defoliation. To test a leaf for miners, hold the leaf up to the light. If the insect is still in the leaf, you can see it. You will also be able to see frass (insect feces) which looks like pencil shavings within the mined area. Other susceptible elms include the American elm (*U. americana*), English elm (*U. procera*), and Armenian elm (*U. elliptica*). They spend most of their life cycle burrowed about an inch in the ground.



Management: We are unaware of any nonchemical control. There is only one generation per year, and the leaves that emerge later will not be infested.

Suggested reading: <http://www.ext.colostate.edu/pubs/insect/05548.html>



Red milkweed beetle

Red milkweed beetles (*Tetraopes tetraophthalmus*) were found on common milkweed (*Asclepias syriaca*). They are 1/2 to 3/4 inch long and red with black spots and long black antennae. Adults feed on milkweed leaves. While in the larval stage they bore into and feed on milkweed stems and roots.

Management: They usually do not cause enough damage to require control.

Bagworm

The bagworm larvae (*Thyridopteryx ephemeraeformis*) have been spotted at The Arboretum. 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.



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.

Management: 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 CPM for commercial applicators or the HYG for homeowners.

Suggested reading: <http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2149.html>
<http://www.uky.edu/Agriculture/Entomology/entfacts/trees/ef440.htm>



Annual cicada

The songs of the annual dog day cicadas (*Tibicen linnei*) are frequently being heard now. These are the insects that make the sound “weeeeeeeeeeeee”, “weeeeeeeeeeeee” high in trees during the warm, dog-days of summer. This is the mating call of the male. They are about 1.75 inches long and are green to brown with black markings. The distinguishing factor between the annual and periodic cicada is the eye color. The periodic cicada has red eyes and

the annual has black.

Like the periodical cicadas, females lay eggs by sawing a slit in the bark of twigs and placing the eggs in the twig. Egg-laying injury can cause some minor twig dieback. After the eggs hatch, the young nymphs drop down into the ground to feed on plant roots. They have large front legs used for digging in the soil. They live on tree roots as nymphs for two to five years with some adults emerging in late summer every year. The feeding on the roots doesn't cause much damage. As the insects grow larger, they break out of their old exoskeletons or skins.

Management: Control is not necessary since annual cicadas cause minimal damage to trees.

Suggested reading: <http://www.ag.ohio-state.edu/~ohioline/hyg-fact/2000/2137.html>

Pest update: Diseases

Mosaic virus on hackberry

Mosaic virus symptoms have been seen on hackberry (*Celtis occidentalis*) at The Arboretum. The symptoms of the viral infection are patchy spots of light green or tan tissue between veins and some marginal necrosis. Viral diseases are studied and well understood in agricultural crops, but have not yet been extensively studied in ornamental or shade trees. The interesting thing about viral infections is that the virus does not "want" to kill the host, because it needs the host in order to reproduce, but it does make the host weaker and more susceptible to other infections. Since viruses are unable to move on their own, they rely on vectors to move them around. The vectors may be insects, humans, or anything else that can carry the viral particle and create a piercing wound into the host. The only way to prevent a viral disease is to control the vector. Once the tree has a viral disease, it will have it for life.



Management: The best way to manage a viral disease is to improve the health and vigor of the host. Running a soil test and adding the needed nutrients to the soil, mulching, and watering during dry periods are the best ways to manage.

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 (DED), which has been recently spotted in The Arboretum. The trees that are showing DED symptoms now were likely infected 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. since its introduction. 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 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.

Management: 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 5%–10% 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, 7–10 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.

Also, plant resistant elm varieties which include the Asian elms, lace bark elm (*U. parvifolia*), and Siberian elm (*U. pumila*). These varieties are highly resistant to the

disease, though Siberian elm is considered to be a weedy, weak-branched tree. The Morton Arboretum has 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.

Suggested reading: http://na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm
<http://www.apsnet.org/education/LessonsPlantPath/DutchElm/>

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 and is caused by the species *C. paeoniae*. 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*.

Management: 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

Pest update: Fungi

Fuligo septic (i.e. dog vomit slime mold)

Fuligo septic is a plasmodial slime mold that is commonly seen on decaying wood material (mulch, fallen logs) during periods of cooler weather in the spring and fall. After rain events, *F. septic* is bright yellow and slimy in appearance. As the mold dries, it becomes off-white and finally becomes a tan-brown crust. Its pinkish-brown spores are dispersed by air movement when the dried mass is disturbed. The mass may get as large as 2.5 – 20 cm (1 – 8 in) long and wide, but is relatively thin (1.27 – 3.8 cm (0.5 – 1.5 inches)).

The group of fungi that make up the plasmodial slime molds received their name because they are a multinucleate (many celled) mass of undifferentiated cells in an amoeba-like (think of *The Blob*, 1958) fashion. If this fungus is found in the landscape, it's working on decomposing your mulch, so leave it be.



What to look for in the next week: mosaic virus on katsura, gypsy moth adults, azalea bark scale, two spotted spider mites, yellow necked caterpillars, sycamore tussock moth, oak wilt

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 for this Report include: Mary Carter Beary, Davida Kalina, Fritz Porter, Ann Klinge, Loraine Miranda, LeeAnn Cospers, and Jack Leider. Your hard work is appreciated.

The Plant Health Care Report is prepared by Stephanie Adams, M.S., Plant Health Care Technician, and edited by Fredric Miller, Ph.D., research entomologist at The Morton Arboretum and professor at Joliet Junior College; Sharon Yiesla, Plant Clinic Assistant; 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.

Literature recommendation:

Indicator plants are chosen because of work done by Donald A. Orton, which is published in the book *Coincide, The Orton System of Pest and Disease Management*. This book may be purchased through the publisher at: <http://www.laborofloveconservatory.com/>

The *2010 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).

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 .