

Plant Health Care Report

Scouting Report of The Morton Arboretum

May 6, 2011

Issue 2011.03

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 the next 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.](#)

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Accumulated Growing Degree Days (Base 50): 78

Accumulated Growing Degree Days (Base 30): 843.5

Weather update

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Diseases

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This week's indicator plant: Redbud (*Cercis canadensis*)

Weather update

As of May 5, 2011, we are at 78 base-50 growing degree days (GDD₅₀), which is 168 GDD₅₀ (30 calendar days) behind 2010, and behind the historical average (1937-2010) by 105.4 GDD₅₀ (17 calendar days). April saw 3.63 in. of precipitation, and so far May hasn't had any rain. This brings us to 10.27 in. of precipitation for the year, which is 2.61 in. more than 2010.

| Location | B50 Growing Degree Days through May 5, 2011 | Precipitation (in.) April 22 - May 5, 2011 |
|-----------------------------|------------------------------------------------|-----------------------------------------------|
| Aurora, IL* | 78 | |
| Carbondale, IL* | 492 | |
| Chicago Botanical Gardens** | 59.5 | 0.07 |
| Chicago Midway* | 67 | |
| Chicago O'hare** | 73.5 | 0.32 |
| Crystal Lake, IL* | 71 | |
| Harvard, IL* | 65 | |
| Kankakee, IL* | 136 | |
| The Morton Arboretum | 78 | 1.45 |
| Peoria, IL* | 203 | |
| Quincy, IL* | 270 | |
| Rockford IL* | 74 | |
| Springfield, IL* | 291 | |
| Waukegan, IL* | 44 | |

**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>

Juniper webworm

The overwintering juniper webworm (*Dichomeris marginella*) larvae have begun feeding on golden common juniper (*Juniperus communis* 'Aurea') in The Arboretum's Pinatum. Infestation is evident by brown needles bound together with silk, primarily in the thick, inner foliage of the tree. The larvae are small, light brown caterpillars, with dark reddish-brown stripes and dark brown heads. They reach 3/4 inch (20 mm) in length at maturity. The adult moths will emerge in June and lay eggs on current year's growth. Young larvae feed as needleminers and often build silken tubes around their feeding sites. Juniper webworm prefers *Juniperus communis* var. *depressa*, and many of the Chinese junipers.

Management: Prune out and discard webbed needle masses now and whenever you see them. Pfitzer juniper (*Juniperus chinensis* var. *pfitzeriana*) and Savin juniper (*J. sabina*) are reportedly immune. Insecticides are most effective against young larvae in June and July but can be applied in April and early May.

Suggested reading: <http://www.ces.ncsu.edu/depts/ent/notes/O&T/shrubs/note14/note14.html>



Juniper webworm (*Dichomeris marginella*) larvae



Juniper webworm damage

Larch casebearer

Larch casebearer (*Coleophora laricella*) larvae are just starting to feed on the emerging needles of Tamarack (*Larix laricina*) near the Children's Garden at The Arboretum. The larvae hollow out needles causing them to first wilt and then bleach to a light off-yellow color. The needles will soon turn reddish-brown and drop prematurely within a few weeks.

The caterpillars of this species are very small and overwinter as larvae within tiny tan-colored cases made of hollowed out needles lined with silk. Larvae emerge and begin feeding in early spring as needle growth begins. They feed for several weeks, pupate on the twigs, and emerge as adult moths in late May and early June. The adults lay eggs on needles and in a few weeks, eggs hatch (late June and July) and larvae begin to mine inside the needles. They do so for about two months before making their cases from hollowed-out needles. These cases will be carried around on their backs (like a backpack) for the remainder of their larval period.



Larch casebearer (*Coleophora laricella*)

Management: Unlike most other conifers, larches can develop a second set of leaves; however, repeated defoliation can weaken trees and make them more susceptible to attack by other insects and pathogens. There are various natural controls, such as weather, predators and parasites, and needle diseases that usually keep populations in check. For severe or repeated infestations, insecticides should be applied now. According to the USDA Forest Service, malathion is effective.

Suggested reading: http://www.umassgreeninfo.org/fact_sheets/defoliators/larch_casebearer.html <http://www.na.fs.fed.us/spfo/pubs/fids/larch/larch.htm>

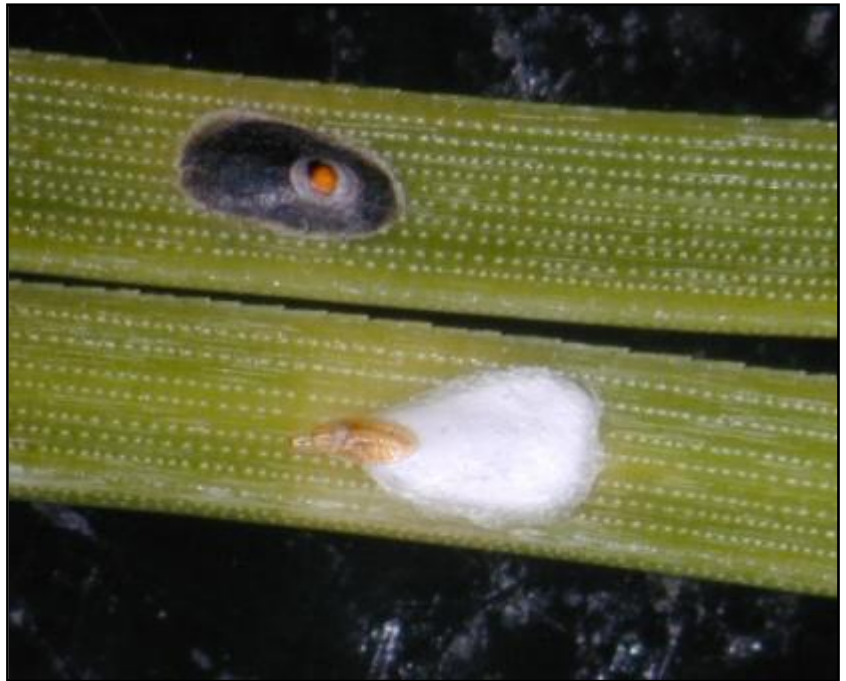


Larch casebearer damage

Pine needle scale

The overwintering female black pineleaf scale (*Nuclaspis californica*) and pine needle scale (*Chionaspis pinifoliae*) (white scale) have been reported on red and Austrian pine.

By the end of May to early June the eggs of the pine needle scale (*Chionaspis pinifoliae*) (white scale), which are under the female's shell, will hatch and the crawlers will begin feeding on the needles. The scales overwinter as eggs beneath a waxy, white female scale covers that look like, tear-drop shaped flecks on a needle. The white adult female scales have a tan dot on their backs. The feeding damage from the reddish crawlers will be seen in a few weeks. They suck juice from needles. As the crawlers develop, they secrete a white, waxy covering over their bodies. By late June or early July, they reach maturity and second generation eggs are laid. Second generation crawlers begin to appear in late July to early August. A heavy infestation will cause needles to turn yellowish brown.



Black pineleaf scale (*Nuculaspis californica*) (top) and pine needle scale (*Chionaspis pinifoliae*) (bottom)

The black pineleaf scale (*Nuculaspis californica*) crawlers will be active later in May-June. In our region, there is one generation per year. The scale overwinters as a eggs beneath the black female scale cover. The eggs hatch in May and tiny amber-colored nymphs, less than one mm long, crawl about the needles for a few days, then they settle on a needle to feed by sucking the sap out of the needle cells. The male scales are winged and able to fly and in June they mate with the sessile females. A few weeks later the females lay eggs.



Black pineleaf scale (*Nuculaspis californica*) on Jack pine

The scale cover is visible all year and in heavy infestations may give the tree the appearance of being flocked. Needles yellow and, after multiple years of infestations, twigs and branches may die. Pine needle scale attacks Scots, Austrian, red, and mugo pines in addition to white pines.

One easy way to find scale crawlers is to put double-sided tape on each side of colonies of adult scales before egg hatch. When the crawlers hatch, you can see them stuck on the tape. Heavy infestations can give trees a flocked appearance. After multiple years of severe infestation, branches, and sometimes trees, can be killed.

Pine needle scale prefers Scots and mugo pines and occasionally infests Austrian, white, and red pines.

Management: Several species of ladybird beetles and parasitic wasps are important natural predators of this scale. Insecticidal sprays and soaps are effective only when crawlers are active. Use insecticidal soap instead of a chemical spray as the latter will more readily kill natural predators and beneficial insects. For specific chemical recommendations, refer to the *2010 Commercial Landscape and Turfgrass Pest Management Handbook (CPM)* or the *2008 Home, Yard, and Garden pest Guide (HYG)*, which is for homeowners.

Suggested reading: <http://ohioline.osu.edu/hyg-fact/2000/2553.html>

Pine bark adelgid

Pine bark adelgids (*Pineus strobi*) just laid their eggs on dwarf Eastern white pine (*Pinus strobus* 'Nana'). Adult females secrete a protective white, woolly mass, which covers the light-yellow eggs and can be found at the bases of needles and on the bark of limbs and trunks. Crawlers should begin to emerge within the next two weeks. The adelgid prefers white pine but also attacks Scots and Austrian pines. Healthy trees are not usually harmed by this adelgid

Management: Eggs should be washed off now with a high-pressure water spray. Do the same to the crawlers if you see them. In severe or repeated infestations, an insecticidal spray can be applied when the crawlers are out. Lady beetles, hover flies, and lacewings feed on adelgids, so if these predators are present, it is best to use an insecticidal soap or high pressure water spray.

For specific chemical recommendations, refer to the *CPM* and the following websites:

<http://bugs.osu.edu/~bugdoc/Sheklar/factsheet/christmas-tree/pine-bark-adelgid.htm>

<http://www.entomology.umn.edu/cues/Web/178PineBarkAdelgid.pdf>



Pine bark adelgids (*Pineus strobe*)

Phytophthora root rot

There are many different microbes that can cause root rot problems. Many of them are fungal and some are bacterial. *Phytophthora* species, which are fungus-like microbes, are common culprits for landscape problems. Depending on the plant host and the *Phytophthora* sp., the infections can result in root rots, stem rots, and

foliar blighting. Some of the infamous *Phytophthora* species include *P. infestans*, which causes 'late blight' of potato and tomato. Late blight was the cause of the Irish potato famine in the late 1800s. Currently, *P. ramorum*, the causal pathogen of 'sudden oak death', is causing extensive dieback of dozens of plant species in California and Oregon.

Symptoms of any root rot infection include wilting, dieback, and blighting over the entire canopy. This is most easily recognized by standing back and looking at the entire plant. Wilting symptoms are usually expressed by foliar dieback on the outer tips of the branches, while the other leaves wilt. If there are only a few branches showing symptoms of a problem, it is unlikely to be a root rot, but should probably be examined anyway.

Next, grab a shovel and begin to carefully dig near the stem of the tree. This can be tricky because you don't want to damage the large-woody structural roots. Find the fine roots that form a fine-webbed network in the upper few inches of the soil. Cut a few off and take a knife or fingernail and scrape away the outer surface of the root. If the inside of the root is white or creamy white, the root is healthy. If the outer surface sloughs off in your hand, or the inside of the root is tan, brown, or red, there is a problem.

If there is excess water in the area, and the roots and soil smell acrid like the soil has become anaerobic, try to dry up the area. If it's a bacterial problem this should solve the problem. If you dry up the area and the plant continues to decline, it's likely a fungal problem. Positive identification of which fungus is causing the problem is difficult and can only be done by looking at the roots under a microscope, or by culturing the fungus out of the roots. For this, contact the University of Illinois Extension plant clinic (<http://plantclinic.cropsci.illinois.edu/fee.html>) for help. There are commercial labs that diagnose samples for homeowners and some tree care companies that diagnose these problems.

Knowing which fungus is causing the problem is important when it's time to treat the problem, because there is no universal fungicide. Most fungicides used to treat root rots are regulated and require a Pesticide Applicator's License.

Once a root rot fungus has been introduced into the landscape, eradicating it is nearly impossible. The best cultural way to manage root rots is to prevent them. Purchase healthy and disease free plants. Carefully check the roots while at the garden center by pulling them out of the containers. Also, prevent excess problems by planting the correct plant in the location.



Caliciopsis pinea

The lesser known fungus *Caliciopsis pinea* is a weak pathogen which causes perennial cankers on Eastern and Western white pines (*Pinus strobus* and *Pinus monticola*) and some fir species (*Abies*). This pathogen has been reported more often in the eastern United States (New York and New Hampshire) and Canada (Ontario and Quebec). It was recently found on a white pine (*P. strobus*) at The Morton Arboretum. Since not much is known about the pathogen, management should be implemented in the same fashion as other canker-causing fungi by pruning the infected areas and removing the infected tissue from the property.

McCormack, H.W. 1936. The Morphology and Development of *Caliciopsis pinea*. Mycologia. Vol. 28, No. 2, pp. 188-196. Mycological Society of America

Lombard, Kyle. 2003. Caliciopsis Canker (pine canker) *Caliciopsis pinea*. http://extension.unh.edu/resources/files/Resource000999_Rep1148.pdf



Caliciopsis pinea on white pine

Fireblight

Fresh ooze due to fire blight has been found on an infected sand pear (*Pyrus pyrifolia*) on our grounds. Fire blight is a serious disease of all plants in the rose family and is caused by the bacterium *Erwinia amylovora*. Common symptoms are blossom and shoot blight. Branches are described as looking as though they were burned, thus the name fire blight. Blossoms, leaves, and shoots wilt, turn dark brown, and look water-soaked. Leaves usually persist and succulent shoots that become infected frequently form what looks like a "shepherd's crook." Fire blight infections move rapidly from the blossoms into branches and trunks, causing cankers. The cankers enlarge and may girdle a tree during the



Fireblight symptoms on pear

growing season. Clear, or sometimes milky, ooze often exudes from fissures on infected shoots and canker margins. The presence of ooze seems to depend on weather conditions. Fire blight bacteria overwinter in canker margins and buds. In spring, bacteria resume division when temperatures rise above 65 degrees. Rain, heavy dews, high humidity, and vigorous tree growth favor the disease. Frequently trees that are heavily pruned and have a lot of subsequent succulent new growth become infested. The bacteria are spread in droplets of ooze carried by pollinating insects, rain, and pruning tools.

Management: It is critical to respond quickly to this disease by removing infected limbs or the entire tree as the disease rapidly spreads. Prune blighted stems during dry weather as soon as they are spotted. You may have to remove the entire tree. Make pruning cuts at least six inches below infected areas and sterilize pruning tools with 70% alcohol, or a similar disinfectant, between cuts. Longer term management requires avoiding crowded plantings, heavy pruning, and high nitrogen fertilizers that can increase succulent growth. Copper-containing chemicals are effective protectants against fire blight. There are other systemic options. Refer to the *CPM* if you are a commercial applicator or the *HYG* if you are a homeowner. Trees planted in soils with poor drainage have greater susceptibility to fire blight. Choose well-drained planting sites, and plant resistant varieties of Rosaceous plants.

Brown rot of stone fruit

The first symptoms of brown rot, branch wilting and oozing, have been reported on north star sour cherry (*Prunus cerasus* 'North Star'). Brown rot is caused by the fungus *Monilinia fructicola* that infects peaches, plums, cherries, apricots, and other *Prunus* species. The disease is first seen as blossom blight – the browning and sudden collapse of blossoms. Leaves are not directly infected. The infection spreads into shoots and twigs during the next several weeks resulting in shoot and twig blight. Cankers, which may be accompanied by a gummy exudate at their margins, form on twigs often causing twig dieback. Powdery-gray masses of spores (conidia) may be observed under wet, humid conditions. The conidia are responsible for fruit infections later in the summer. Infections of fruit start as brown spots that rapidly consume the entire fruit. Infected fruits (mummies) decay and shrivel and generally remain attached to the tree throughout the winter, providing inoculum for the following spring.

Management: Sanitation is crucial to control of brown rot. Prune out active infections immediately during dry weather! Don't forget to disinfect pruning tools with 70% alcohol or a similar disinfectant. Rake and clean up debris under the tree during the summer to remove fallen leaves and fruit. Prune to promote good air circulation through the tree canopy. Wild or neglected



Gelatinous mass oozing from the stem of an infected peach due to a *Monilinia* infection

stone fruit trees (e.g., wild plum and cherry) in the area are likely to have the disease and be sources of inoculum that should be removed.

Later in the year remove rotted fruits (mummies) that are persistent, prune out cankers and infected twigs, and rake and clean up infected fallen leaves and fruit. If damage is severe, fungicides need to be applied when blossoms first open in early spring. Refer to the CPM or HYG for fungicide recommendations.



Fruit symptoms of a *Monilinia* infection

Suggested reading: http://ohioline.osu.edu/hyg-fact/3000/pdf/HYG_3009_08.pdf
<http://www.ag.uiuc.edu/~vista/abstracts/a804.html>

Cedar quince rust

Cedar-quince rust telial horns are beginning to emerge from the branches of goldtip eastern red-cedar (*Juniperus virginiana* 'Elegantissima'). Cedar-quince rust is caused by the fungal pathogen, *Gymnosporangium clavipes*, that is closely related to cedar-apple and cedar-hawthorn rusts, which are not yet active. The causal fungus of cedar-quince rust infects foliage and new shoots of junipers and red cedars causing perennial orange branch swellings. Young branches may sometimes be killed; however, the juniper host is not usually harmed. The swellings we see now are difficult to detect unless the telia, which harbor spores that infect plants in the rose family, swell and become gelatinous and bright orange. As in cedar-apple rust, the swelling occurs with wet-dry cycles of spring weather.

Cedar-quince rust is the most damaging of these three rust diseases to hawthorn and other rosaceous hosts. It kills fruit, twigs, and thorns of the alternate host. We will discuss symptoms and controls of the alternate hosts in a later issue.

Juniper and Rosaceae host management: Begin spraying susceptible junipers in early



Orange cedar quince telial horns emerging from a juniper branch

July and continue, at labeled intervals, through August. For specific chemical recommendations see the *CPM* or *HYG*. Protecting the rosaceous host requires fungicide treatments in the early spring when the leaves have emerged (now).

What to look for in the next week: spruce spider mites, hemlock rust mite, magnolia scale crawlers, elm flea weevils, slugs

Thank you...I would like to thank the volunteers that scouted this past week and found most of the insects and diseases that are in this report. The Scouting Volunteers include: Mary Carter Beary, Davida Kalina, Fritz Porter, Bill Sheahan, LeeAnn Cospers, and Loraine Miranda. Your hard work is appreciated.

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