

Plant Health Care Report

Scouting Report of The Morton Arboretum



May 29, 2015

Issue 2015.5

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. You'll also find a table of accumulated growing degree days (GDD) throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. Arboretum staff and volunteers will be scouting for insects and diseases throughout the season. We will also be including information about other pest and disease problems based on samples brought into The Arboretum's Plant Clinic.

New this year: We are on an every other week schedule this year. Our focus will be on pests that are more serious. Should we encounter some new major pest, we will issue an alert. If this occurs during a week when we are not publishing the newsletter, our regular readers will receive a timely email alert, and the information will be published in the next scheduled newsletter. On weeks when we do not publish a full newsletter, we will still make growing degree day information available since many of our readers use this information. Readers who receive our email blasts will receive one weekly, either to announce that the newsletter is available or that the growing degree day information is available. To be added to the email list, please contact me at syiesla@mortonarb.org

Quick View

What indicator plant is in bloom at the Arboretum?

Black Locust (*Robinia pseudoacacia*) is in full bloom (fig 1)

Accumulated Growing Degree Days (Base 50): 377.5 (as of May 28)

Accumulated Growing Degree Days (Base 30): 1633.5 (as of May 28)

Insects and insect relatives

- Viburnum leaf beetle
- Scale
- Elm leafminer
- Rose pests
- Spittlebug on pine
- Hawthorn leaf miner
- Four-lined plant bugs
- Galls (part 2)

Diseases

- Dothistroma
- Rust on rose
- Rust on buckthorn
- Anthracnose

Weeds

- Nimblewill



Figure 1 Black locust in flower (photo credit: John Hagstrom)

Degree Days and Weather Information

As of May 28, we are at 377.5 base-50 growing degree days (GDD). The historical average (1937-2013) for this date is 316.5 GDD₅₀.

Location	B ₅₀ Growing Degree Days Through May 28, 2015	Precipitation (in) May 22-28, 2015
Carbondale, IL*	826	
Champaign, IL*	678	
Chicago Botanic Garden**	305 (as of 5/26)	.38ø(5/20-26)
Chicago O'Hare*	483	
Kankakee, IL*	540	
The Morton Arboretum	377.5	1.04ö
Northbrook, IL**	316.5 (as of 5/27)	.95ö (5/20-26)
Quincy, IL*	733	
Rockford, IL*	382	
Springfield, IL*	734	
Waukegan, IL*	345	

**Thank you to Mike Brouillard, Northbrook Park District and Chris Beiser, 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/>

How serious is it?

This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked "serious". Problems that have the potential to be serious and which may warrant chemical control measures will be marked "potentially serious". Problems that are seldom serious enough for pesticide treatment will be marked "minor". Articles that discuss a problem that is seen now, but would be treated with a pesticide at a later date, will be marked "treat later". Since we will cover weeds from time to time, we'll make some categories for them as well. "Aggressive" will be used for weeds that spread quickly and become a problem and "dangerous" for weeds that might pose a risk to humans.

Pest Updates: Insects and insect relatives

Viburnum leaf beetle (potentially serious)

The viburnum leaf beetle (*Pyrrhalta viburni*) is native to Europe. In the United States it has been found in only a few states, including New York, Ohio, Pennsylvania, Maine, Vermont and Massachusetts. The first confirmed occurrence of the beetle in Illinois was documented in 2009 in Cook County. The beetle was confirmed in two locations in the Chicago region in 2014. This year we are seeing the insect in several locations, including Downers Grove, Naperville, Clarendon Hills, Hinsdale and here at the Morton Arboretum. Plants currently being infested are arrowwood viburnum (*Viburnum dentatum*) and American cranberrybush viburnum (*V. opulus* var. *americanum*, formerly *V. trilobum*).

This is a pest of concern because it has the potential to be a serious defoliator of viburnums. Both the larvae and the adult beetle will feed on leaves, so we can see damage all season. The beetle overwinters as eggs in the tips of stems (fig. 2). The egg-laying damage usually occurs in rows. The eggs are laid in holes chewed by the adult. The holes are then covered by a cap of chewed bark. These caps are fairly easy to see as they are darker than the stem.



Figure 2 Viburnum leaf beetle eggs in stem (photo credit (U of I))

The eggs have hatched for this year, and we are seeing small (1/4 inch last week) larvae feeding on leaves (fig. 3 and 4). These larvae vary in color. They may be pale green, pale orange or yellow. They do have a distinctive pattern of black spots along their sides and a row of black dashes running down their backs. At maturity, the larvae are a little less than half an inch long. The larvae chew on the undersides of new foliage.



Figure 3 larva feeding on leaf

When mature, the larvae crawl to the ground, usually in mid-June, and pupate in the soil. Adults emerge from the soil (early July) and also chew on the leaves. Their feeding damage forms irregular round holes in the leaves. The beetles are about ¼ inch long and generally brown in color. On close inspection golden hairs can be seen on the wing covers of the adult beetle. The adult beetles will be mating and laying eggs from summer into fall. There is one generation of the beetle each year. Heavy and repeated defoliation by the viburnum leaf beetle can lead to death of the shrubs.

Management: From October through April twigs with eggs in them can be pruned out and destroyed. Insecticides can be used on the larvae in May/June when they are feeding, and on the adults in summer when they are feeding. Some university websites are suggesting these insecticides: spinosad, insecticidal soap (for larvae), acephate, carbaryl, cyfluthrin or malathion.



Figure 4 close up of larva

For more information and photos of beetle:

<http://hyg.ipm.illinois.edu/article.php?id=486>

<http://www.hort.cornell.edu/vlb/>

<http://idl.entomology.cornell.edu/files/2013/11/Viburnum-Leaf-Beetle-12g0ctu.pdf>

<http://ohioline.osu.edu/sc195/013.html>

Scale (potentially serious)

There are a number of species of scale insects that can attack a variety of plants. Often we most easily see the adults, but we generally don't target the adults with pesticide treatments. Pesticides are most effective against the young crawlers that hatch out of the eggs that are under the body of the female scale. The Plant Clinic at The Morton Arboretum has received samples of two scale insects whose crawlers should be out now or in the near future. Scale are sap-feeding insects and can lead to decline of the host plant. The two scale reported below, do NOT produce honeydew.

Pine needle scale (*Chionaspis pinifoliae*) prefers Scots and mugo pines and occasionally infests Austrian, white, and red pines. The scale eggs overwinter beneath a waxy, white female adult that looks like a white, tear-drop shaped fleck on an infested pine needle (fig.5). Heavy infestations can give trees a flocked appearance. After multiple years of severe infestation, branches, and sometimes trees, can be killed. First generation crawlers emerge between 200-350 growing degree days (base 50) and the second generation crawlers will be emerging at 1600-1700 GDD.

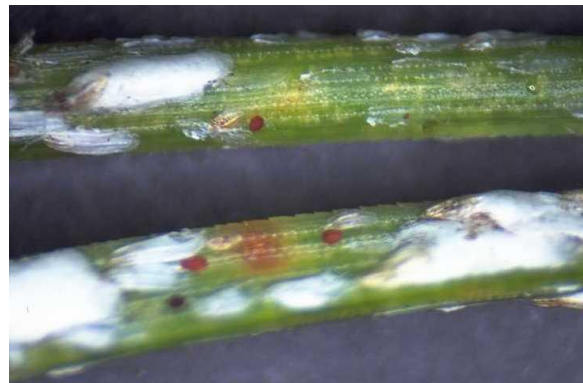


Figure 5 Pine needle scale

Oystershell scale (*Lepidosaphes ulmi*) attacks over 130 trees and shrubs including lilac, beech, and viburnum. The scale overwinters on twigs and branches as eggs under the females' waxy scale cover, which closely resembles one-half of an oystershell (fig. 6). Minute pale-yellow crawlers emerge (400-500 GDD base 50) and attach themselves to the bark of twigs and branches to feed. As crawlers mature, they develop their scale cover. The fully developed scale cover is elongated, curved, and is about one eighth of an inch long with brown or gray concentric bands. Adults cluster together and in severe infestations may cover the bark of branches completely. Oystershell scale feeding causes cracked bark and chlorotic, stunted foliage. Twig and branch dieback occurs in heavy infestations. Occasionally, a plant will die from an infestation.



Figure 6 Group of oystershell scale

Management: Several species of lady bugs and parasitic wasps are important natural predators of pine needle 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 oystershell scale, prune out heavily infested branches to reduce the scale populations. This will allow insecticides to be more effective against crawlers.

Elm leafminer (minor)

Elm leafminer (*Fenusa ulmi*) has been found on Accolade elm. Elm leafminer is a type of sawfly. The adults emerge in spring to lay eggs in elm leaf tissues. A week later, the eggs hatch and young larvae begin to make mines in the leaves. The sawfly larvae will feed on the leaf tissue between the upper and lower epidermis of the leaves (fig. 7). 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. They spend most of their life cycle burrowed about an inch in the ground.



Figure 7 Mines of elm leafminer

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.

Dr. Frederic Miller has supplied us with some research results regarding susceptibility of various elm species to elm leaf miner: “Seventy-six different elm taxa were visually rated for elm leafminer (*Fenusa ulmi* Sundevall) defoliation. European elm taxa were more found to be more susceptible to feeding damage by the elm leafminer compared to Asian and North American elm taxa. European elms *U. glabra*, *U. elliptica*, *U. sukaczewii*, and elms with *U. glabra*-*wallichiana* parentage were highly susceptible to elm leafminer leaf feeding damage. Of the 37 Asian elm taxa evaluated, only *U. laciniata* was highly susceptible to feeding damage. The North American species *U. rubra* was the only North American elm susceptible to elm leafminer feeding. Adult emergence, initial leafmining, and cessation of leafmining were highly correlated with indicator plant full bloom phenology providing an accurate degree-day (DD) model for practitioners in predicting and monitoring for elm leafminer life stage development and related plant damage. Elm leafing out phenology of susceptible European elms was highly correlated with elm leafminer adult emergence and oviposition. Less susceptible European elm taxa, such as *U. procera*, and *U. carpinifolia* and cultivars, consistently leaf out later after peak adult leafminer emergence. Interestingly, the majority of Asian elm taxa such as *U. davidiana*, *U. japonica*, *U. lamellosa*, and *U. pumila* leaf out at the same time as susceptible elm taxa, but experience no or negligible feeding damage. Two Asian species, *U. wilsoniana* and *U. parvifolia*, leaf out later after peak adult emergence and oviposition has passed.”

Good websites: <http://www.ext.colostate.edu/pubs/insect/05548.html>
<http://hyg.ipm.illinois.edu/pastpest/200806f.html>

Rose pests (minor)

There are two pests working on roses now: the rose slug sawfly and the rose plume moth. Rose slug sawfly (*Endelomyia aethiops*) larvae (fig. 8) feed on the upper layers of the leaf, leaving behind the lower epidermal layer and creating a "window pane" effect. The larvae are greenish yellow with orange heads and are about ½ inch long when fully grown. They resemble caterpillars but are not. They are covered in slime that helps protect them from predators. When larvae mature, they lose their slimy coverings. Around mid-June, larvae will drop to the ground to pupate.

The larvae of the rose plume moth is also at work on roses. This larva is a caterpillar and is approximately ½ inch long. It is light green with a reddish stripe running



Figure 8 Rose slug sawfly larva and damage



Figure 9 Larva of rose plume moth

from its head to the middle of its body at one point in its life cycle (fig. 9). The adults are present June through August. New larvae are produced in fall and overwinter inside the stems of the rose. They resume feeding in spring (May).

Plume moth larva has been most commonly found near the tips of rose bushes, damaging the buds and leaves and sometimes creating some webbing. The caterpillar's color blends with the color of new rose growth nearly perfectly, so they may be difficult to find. A lot of frass (insect feces) is also found in these areas.

Management: Minor infestations of rose slug sawfly can be controlled by using a forceful jet of water to dislodge the sawfly larvae or by handpicking. There may be no need of management at all as the larvae will be pupating soon and the damage will end.

For rose plume moth larvae, pruning off infested tips may be the best management advice that can be offered at this time. Since this is a caterpillar, *Bacillus thuringiensis kurstaki* (*Btk*) should be effective, but is best used when the caterpillars are small.

Good website: <http://hort.uwex.edu/articles/roseslug-sawfly>

Spittlebug on pine (potentially serious)

Spittlebugs are fairly common in our area and most of them are not of much concern.

However, the spittlebugs found on evergreens can do significant damage if the population is high. Our scouts have identified spittlebug on white pine. Spittlebugs can be identified by the frothy white mass they produce on foliage and twigs (fig. 10). The spittle, consisting of plant juices, is made by the immature bug to keep it moist and protect it from its enemies. Spittlebugs suck plant sap but inflict little damage on mature plants. There are a number of species of spittlebugs that feed on a variety of plants in our region.



Figure 10 Spittlebug

Management: On most plants, control of spittlebug is rarely necessary, but hosing the plants down forcefully with water is usually sufficient to remove most of the insects. This may need to be repeated a few times. For evergreens, an insecticide may be needed to prevent damage to the tree.

Good website:

http://entomology.osu.edu/bugdoc/Shetlar/factsheet/christmasstree/pine_spittlebug.htm

Hawthorn leafminer (minor)

Hawthorn leafminers (*Profenusa canadensis*) have been reported locally on hawthorn. The hawthorn leafminer is a native sawfly. The mines (fig. 11) usually appear on the end of the leaf instead of all along the midrib as is common with many other leafminers. When the mines are larger, the leaves will almost look blighted. If you perform the leaf miner test by holding the leaves up to the sun, you will find frass and larvae between the upper and lower epidermis.



Figure 11 Damage by hawthorn leafminer

Management: The effect of the mines is usually just aesthetic. Since the insect overwinters in the ground, destroying fallen leaves does not help control them.

Good website:

<http://www.ipm.iastate.edu/ipm/info/insects/hawthorn-leafminer>

Four-lined plant bugs (minor)

Be looking for the four-lined plant bug (*Poecilocapsus lineatus*). The Plant Clinic has started receiving reports of it this week. This insect feeds on 250 species, including many kinds of perennials, vegetables, and shrubs such as bluebeard, forsythia, and sumac. Feeding injury is frequently mistaken for leaf spots (fig. 12). Four-lined plant bugs have a piercing, sucking mouthpart which they use to break plant cells and then flush the feeding wound with digestive juices. Damage appears as dark leaf spots which subsequently turn translucent. The damage is more serious on herbaceous plants than on woody plants. Sometimes by the time the



Figure 12 feeding damage of four-lined plant bug

damage is noticed, the insect isn't there anymore. Both nymphs and adults feed on leaves, creating the spots.

Nymphs are red and will develop dark wing pads as they mature. The adult stage is 1/4" to 1/3" long and has four longitudinal black lines on its yellow or green back, thus the name (fig. 13). It's quite a shy insect that scurries away when you try to find it. The insect overwinters as



Figure 13 Four-lined plant bug

eggs laid in slits cut into plant shoots. There is one generation per year.

Management: Some people try to hand-pick these insects, but their timidity makes them difficult to catch. Insecticidal soap should take care of larger infestations.

Good websites:

http://www.clemson.edu/cafls/departments/esps/cuac/miridae/poecilocapsus_lineatus.html

Galls (part 2) (minor)

More galls are showing up this week. Galls are minor, but do cause concern to people who do not know what they are. Our scouts have reported vein pocket gall on pin oak. These galls are hard, light green-colored elongate swellings that occur along mid- and lateral leaf veins of pin oaks (fig. 14). Feeding by the larval (maggot) stages of very small flies called midges causes the galls to form. We are also finding spindle galls on the leaves of Accolade elm. The galls generally appear as small spindle-like protrusions (fig. 15) on leaf surfaces and can occur on several different species of trees. They are very interesting to look at. These galls are caused by eriophyid mites that overwinter in bark crevices or wounds, scars, and pruned branches around callous growth. The mites become active in spring and migrate to feed on expanding leaf buds.



Figure 14 Vein pocket gall



Figure 15 Spindle galls

Pest Updates: Diseases

***Dothistroma* needle blight (potentially serious)**

Dothistroma (*Dothistroma pini*) infections initiated last year have been found on needles of Austrian pine (*Pinus nigra*). Initial infection symptoms, which began last year, are green bands and yellow spots. The spots and bands quickly turn brown to red-brown (fig. 16). Black, elongated, fungal fruiting bodies often begin to form in fall and mature the following spring (fig. 17). Conidia (fungal spores) are released from these structures during wet weather and transported by rain throughout the growing season. Eventually needles will be brown at the tip and



Figure 16 *Dothistroma* needle blight

green at the base. Many needles will fall in late spring and summer.

New infections can occur from May to October as long as there is rainfall. Austrian and ponderosa pines are reported to be the most common hosts of *Dothistroma* in the Midwest.

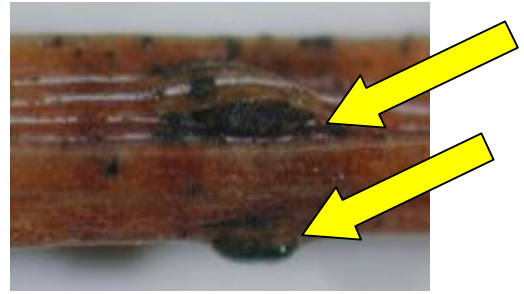


Figure 17 Fruiting bodies of *Dothistroma*

Management: The fungus resides in infected, cast needles, so remove fallen needles as much as possible. Give plants ample spacing and prune to improve air flow and allow for faster needle drying. Once a tree exhibits symptoms throughout the canopy, there is little that can be done except removal. For less severe situations, and to protect nearby healthy trees, one to two applications of a fungicide controls this disease, but timing is critical. Sprays should be applied just before buds begin to elongate/swell (usually early May) and once again when new needles are fully expanded. If wet weather continues late into spring and summer, additional applications may be needed.

Good web site: <http://www.mortonarb.org/trees-plants/plant-clinic/help-diseases/pine-diseases>

Rust on rose (potentially serious)

Rust on rose (*Rosa* spp.) leaves and canes is being reported to the Plant Clinic and seen by out scouts on the grounds of the Arboretum. Our scouts found the disease on Knock Out roses. Bright orange “powder” appears initially as spots on the leaves and later may coalesce as the disease worsens (fig. 18). This powder is actually a cluster of spores of the fungus (*Phragmidium* sp.). These spores re-infect other roses and cause orange- red spots on the leaves and long, narrow lesions on the stems. Leaves may wither and fall off, and shoots may become distorted and reddish. Plants infected by this disease may gradually decline in vigor.



Figure 18 Rust on rose

Management: Infected plant parts should be pruned out and destroyed immediately. Do not work with the plants in wet weather and provide ample air circulation in plantings. When buying new roses, select roses that are resistant to rust. It is too late to use fungicides. They must be applied as new growth emerges in the spring.

Good websites: <http://ohioline.osu.edu/hyg-fact/3000/3063.html>

Rust on buckthorn (minor)

This is a disease we always enjoy reporting, because it attacks an invasive plant. Unfortunately it doesn't really damage the plant. Crown rust on buckthorn (*Rhamnus cathartica*) caused by the fungus *Puccinia coronata* is now showing up (fig. 19). In general, buckthorn is considered an invasive weed. A few years ago, the State of Illinois officially added it to the list of exotic weeds regulated by the Illinois Exotic Weed Act. The act states that "it shall be unlawful for any person . . . to buy, sell, offer for sale, distribute or plant . . . exotic weeds without a permit issued by the Department of Natural Resources". So we can be happy to see that this plant is diseased, even if it is not fatal. Buckthorn is the alternate host for this disease, which is also known as crown rust of oats. It can greatly reduce the yield on a crop of oats.



Figure 19 Rust on buckthorn

Symptoms of crown rust on buckthorn are bright orange swollen spots (aecia) on leaves and petioles. There are many rust organisms, and this one is not the one that causes cedar apple rust. You may see rust diseases on other plants as well.

Management: None is required as buckthorn is not a desirable plant in the landscape. Removal of buckthorn is recommended since it is an exotic weed.

Good websites:

<http://ipm.illinois.edu/diseases/rpds/109.pdf>

http://archive.hgca.com/minisite_manager.output/3668/3668/Cereal%20Disease%20Encyclopedia/Diseases/Crown%20Rust.msp?minisiteId=26

Anthracnose (minor)

Anthracnose is primarily a foliar disease affecting many deciduous trees including ash, elm, oak (fig. 20), and maple. The disease is caused by several different fungi, including *Apiognomonia errabunda*, *A. veneta*, *Discula fraxinea*, *Glomerella* sp., *Gnomonia* sp., and *Stegophora ulmea*, depending on host species. Symptoms vary with the plant host, weather, and time of year when infection occurs. Infection is more severe when prolonged spring rains occur after new growth is produced. Although the symptoms appear in late spring into the summer, the



Figure 20 Anthracnose on oak

initial infection took place in the early spring at bud break and before the leaves hardened off. Once the symptoms show up, it is too late for any chemical applications to be effective.

Management: Cultural methods are usually sufficient to reduce the severity of anthracnose in our region. These include:

- Pruning trees to open up the canopy for better air circulation.
- Maintaining tree vigor with proper watering and fertilization.
- Mulching around the base of the tree (always keep mulch about 2 to 4 inches from the trunk).
- In the fall, cleaning up and destroying fallen leaves to reduce the source of inoculum.

Good websites:

<http://www.mortonarb.org/trees-plants/plant-clinic/help-diseases/anthracnose-shade-trees>

Pest Updates: Weeds

Nimblewill (Aggressive)

Nimblewill (*Muhlenbergia schreberi*) is a grassy weed that has been showing up in a number of lawns this year. The Plant Clinic at The Morton Arboretum has received several samples of this weed. Nimblewill is a warm-season grass so it greens up later than our bluegrass lawns. That makes it easy to spot in spring. Look for the brown patches in your green lawn. In summer, it differs from our bluegrass in that it has smaller leaves giving it a finer texture (fig. 21). It spreads by thin, wiry stolons which give the plant a looser look. Because of the stolons it can spread fairly aggressively. It can also spread by seed. Nimblewill may be misidentified as bentgrass, but bentgrass is a cool season grass and will be green in spring and fall, when nimblewill is brown.



Figure 21 Nimblewill (photo credit: Tim Murphy, Univ. of Georgia, Bugwood.org)

Management: Nimblewill is hard to control because it is a perennial grass just as your lawn is. Most common lawn herbicides cannot select out one perennial grass and not kill the other. There is an herbicide on the market now that is selective for nimblewill. The product is Tenacity and contains the active ingredient mesotrione. Read the label for instructions on proper usage. Small patches of nimblewill can also be killed using glyphosate (RoundUp). Glyphosate is non-selective, so apply it only to the nimblewill.



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The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Clinic Assistant and edited by Stephanie Adams, M.S. Research Specialist in Plant Health Care; Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Doris Taylor, Plant Information Specialist, and Carol Belshaw, 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.

Thank you...I would like to thank the volunteers who will be scouting for us this season. They find most of the insects and diseases reported here. The Scouting Volunteers include: LeeAnn Cosper, Paul Duke, Deborah Finch-Murphy, Anne Finn, Ann Klingele, Loraine Miranda, and Bill Sheahan. Your hard work is appreciated. Thanks also to Donna Danielson who also provides scouting information to us.

Literature/website recommendations:

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/>

Additional information on growing degree days can be found at:

http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects
http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf

The Commercial Landscape & Turfgrass Pest Management Handbook (CPM), for commercial applicators, and Pest Management for the Home Landscape (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).

This report is available as a PDF at The Morton Arboretum website at

<http://www.mortonarb.org/visit-explore/news-events/arboretum-news?tid=259>

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 PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org.

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