

# Plant Health Care Report



THE  
CHAMPION  
of TREES

Scouting Report of The Morton Arboretum

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Welcome to the Plant Health Care Report (PHCR). My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic, and I will be responsible for compiling the newsletter again this year. Comments or concerns regarding PHCR should be sent to [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

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.

To be added to the email list, please contact me at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org)

**The newsletter season is almost over. This is the next to last full issue. There will be a growing degree day issue on Aug. 10, and the last full issue will come out on Aug. 17.**

## Quick View

### What indicator plant is in bloom at the Arboretum?

Rose of Sharon (*Hibiscus syriacus*) is in full flower (fig 1)

**Accumulated Growing Degree Days (Base 50): 1939.5 (as of Aug 2)**

**Accumulated Growing Degree Days (Base 30): 4473.5 (as of Aug 2)**

### Insects/other pests

- Two-spotted spider mites
- Bagworm
- Milkweed bugs and beetles
- Gypsy moth update
- Fall webworm

### Diseases

- Aster yellows (or not?)
- Bur oak blight



Figure 1 Rose of Sharon (Photo: John Hagstrom)

## Degree Days and Weather Information

We are once again offering Lisle readings right above the Arboretum readings. The spread between these two sites shows that temperatures can vary over a short distance, which means growing degree days can be quite variable as well.

As of Aug 2, we are at 1939.5 base-50 growing degree days (GDD). The historical average (1937-2016) for this date is 1745 GDD<sub>50</sub>. Since January 1, we have had 26.45 inches of precipitation. Historical average (1937-2016) for precipitation Jan-July is 21.89 inches

Location	B <sub>50</sub> Growing Degree Days Through Aug 2, 2018
Carbondale, IL*	2702
Champaign, IL*	2343
Chicago Botanic Garden**	1674 (8/1)
Chicago O'Hare*	2007
Kankakee, IL*	2110
Lisle, IL*	2042
The Morton Arboretum	1939.5
Northbrook, IL**	1880 (8/1)
Quincy, IL*	2561
Rockford, IL*	1881
Springfield, IL*	2479
Waukegan, IL*	1654

\*\*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/>

### 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/other pests**

### **Two-spotted spider mites (potentially serious)**

We have been seeing small populations of two-spotted spider mites this summer. Recently, however, we have had several reports of very large populations on burning bush (*Euonymus alataus*). Two-spotted spider mites (*Tetranychus urticae*) are very small, about 1/60 of an inch long. You need a hand lens to see them clearly. Mites are not insects but insect relatives. Mites have eight legs and two body regions, while insects have six legs and three body regions. The two-spotted variety has two spots on their backs (fig. 2). Leaves attacked by spider mites show stippling or tiny, chlorotic flecks. If enough damage is done to a leaf, it begins to look bronzed and may drop prematurely. We have seen several cases that has developed this symptom.



Figure 2 Two-spotted spider mite

**Management:** First, you may want to determine what kind of mites are on your plant by holding a white sheet of paper under a branch and shaking the branch firmly. If you have mites, tiny specks will start crawling on the paper. Squish some of the moving specks. If the resulting streaks are green, you are seeing mites that feed on plants. If you see red or brown streaks, you probably have predatory mites that are the natural predators of spider mites (a good thing). Beneficial mites move faster than the pest mites. Pest mites don't have to move fast to catch their food; plants don't run too fast. But the beneficials have to move faster in order to catch their prey. Anyway, if you see lots of green spider mites, you may want to treat the plant.

There are several options. A forceful stream of water may knock mites off the plant. This should be repeated for three days. Predatory mites can also be purchased and released on the plants. Insecticidal soaps and other insecticides can be sprayed to control mites.

Good website: <http://www.mortonarb.org/trees-plants/plant-clinic/help-pests/mites>

### **Bagworm (potentially serious)**

Earlier this season, we were having very few reports of bagworms (*Thyridopteryx ephemeraeformis*), so we thought that the populations were low. We are now getting reports of large populations now showing up. Bagworms overwinter as eggs inside the female bag. The bag can contain 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. They move to a sturdy branch, attach the bag with a strong band of silk, and then pupate. By mid-August the larvae have matured and are 1 to 1-1/2 inches in length, and their completed bags are 1-1/2 to 2-1/2 inches long (fig. 2). 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.



Figure 3 Bagworm

The tiny cone-shaped brownish bags are constructed from silk and camouflaged with bits of twigs and foliage from the host plant (fig. 3). 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 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 consecutive years of severe defoliation before they are killed. Evergreen trees, on the other hand, can be killed by just one year of 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.

**Management:** It is really a little late in the season to consider using insecticides. Handpicking bags from now until early spring will help control populations for next year.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/bagworms>

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

<http://ento.psu.edu/extension/factsheets/bagworm>

### Milkweed bugs and beetles (minor)

Milkweed has become a popular plant to grow in home gardens as well as native areas. Many are hoping to attract monarch butterflies. Sometimes uninvited guests show up, too. We are starting to see some of these uninvited guests already. Red milkweed beetles (*Tetraopes tetropthalmus*) are 1/2 to 3/4 inch long and red with black spots and long black antennae (fig. 4). Adults feed on milkweed leaves; while in the



Figure 4 Red milkweed beetle

larval stage they bore into and feed on milkweed stems and roots. Milkweed bugs also attack milkweed. There are two species of milkweed bug, the large milkweed bug (*Oncopeltus fasciatus*) and the small milkweed bug (*Lygaeus kalmia*). These two insects look very much alike, both sporting bright orange-red and black colors (fig.5). Young bugs (nymphs) also have these colors, but lack fully developed wings. Both the adults and the nymphs will feed on the milkweed seeds, and it is not uncommon to see groups of them huddled together on the milkweed fruits. These insects are often mistaken for boxelder bugs which are similar in color.



Figure 5 Milkweed bug

**Management:** None usually needed as very little damage is done.

Good websites:

<http://bugguide.net/node/view/504>

<http://bugguide.net/node/view/460>

### **Gypsy moth update (serious)**

Our traps here at the Arboretum are catching large populations of gypsy moth. The population was up last year as well. It would be wise to scout for and destroy gypsy moth eggs in the coming months. Gypsy moth egg masses are buff colored, covered with hairs, and about 1 1/2 inches long (fig. 6). Each female usually lays one egg mass, which could contain as many as 1,000 eggs. Egg masses can be carefully scraped off bark and destroyed before they hatch.



Figure 6 Gypsy moth egg masses

### **Fall webworm (minor)**

We are just starting to receive reports of fall webworm (*Hyphantria cunea*). This caterpillar is known to feed on more than 100 species of deciduous trees. Preferred hosts include hickory, ash, birch, black walnut, crabapple, elm, maple, oak, and pecan. The caterpillars are pale green to yellow, with black spots, and covered with long, silky white hairs (fig. 7). There are two races, black-headed and red-headed. The black-headed webworms are supposed to appear about a month earlier than the red-headed race. Full-grown caterpillars reach about one inch in length.

Fall webworms overwinter in the pupal stage in the ground, under loose bark, and in leaf litter. Adult moths appear from late May through August, and females deposit eggs in hair-covered masses on the underside of host leaves. In about one week, eggs hatch into caterpillars that

begin to spin a messy web over the foliage on which they feed. The webs increase in size as caterpillars continue to feed. In about six weeks caterpillars will drop to the ground and pupate. Damage is generally aesthetic since this pest usually eats leaves late in the season, and webs are found in limited areas.

Some people confuse fall webworm and eastern tent caterpillar. How can you tell the difference? Eastern tent caterpillars are spring caterpillars and form thick, neat tents in the angles of branches. Fall webworm caterpillars are active much later in the season and make a messy web at the ends of the branches (fig. 8).

Eastern tent caterpillars go outside the tent to feed and return to the tent at night. Fall webworm caterpillars feed in the nest and expand the nest to enclose more leaves to feed on.

**Management:** Insecticides generally are not warranted. The unsightly webs can be pruned out of small trees. Since these caterpillars stay in the web while feeding, pruning the webs at any time of day will eliminate the caterpillars. Webworms also have many natural enemies including birds, predaceous bugs, and parasitic wasps.

Good website:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/tent-or-web-making-caterpillars>

## **Pest Updates: Diseases**

### **Aster yellows (or not?) (Potentially serious)**

Do your coneflowers suddenly seem deformed into weird shapes? It may be aster yellows. This disease was once thought to be caused by a virus, but the causal organism has been reclassified as a phytoplasma. It can affect a wide range of flowers and vegetables, around 300 species. It is common in members of the aster (daisy) family, like marigolds, zinnias and mums.



Figure 7 Fall webworm caterpillar



Figure 8 Webworm webbing



Figure 9 Aster yellows (photo: Heather Prince)

We mostly see it on purple coneflower (*Echinacea purpurea*). Aster yellows causes strange, deformed growth of the flowers, foliage, and sometimes roots (seen in carrots). Purple coneflowers are showing deformed flower heads in the form of stunted petals, completely deformed flower heads, green petals or deformed flower heads poking out of other flower heads. The disease organism is transmitted by leafhoppers, which are sap feeding insects. They spread the organism when they feed on the host.

There is also an eriophyid mite that can cause similar symptoms. Do we care about the cause of the damage? Yes. If it is aster yellows, you may have to dig up the plant and destroy it. If you can find the mites in the flower, then removing infested flowers or cutting the plant down to the ground in the fall and getting rid of the debris may be all that is needed. So how can we tell who is who? Ohio State reports that when aster yellows is the culprit, the distorted flower parts tend to be green in color (fig. 9), but when mites are involved, the distorted flower parts maintain their normal color (fig. 10). Mites will affect only the flowers while aster yellows will affect other parts of the plant.



Figure 10 Eriophyid mite damage (photo: Stephanie Adams)

**Management:** There is no cure or treatment for aster yellows. Infected plants should be removed from the garden to prevent spread to other plants by the leafhoppers. Do not compost the plants. Manage the mites by removing infested flowers. Cut down and remove plants in the fall.

### **Bur oak blight (potentially serious)**

Bur oak blight (BOB) is a relatively new disease for our area. A recent survey by Arboretum staff revealed that the majority of counties in northern Illinois have some level of infection. The survey also determined that 7.1% of the bur oaks (*Quercus macrocarpa*) on The Morton Arboretum grounds have BOB.

This disease is caused by the fungal pathogen *Tubakia iowensis*. There are other species of *Tubakia* that cause less serious fungal diseases. BOB infects bur oak (*Quercus macrocarpa*, especially *Q. macrocarpa* variety *oliviformis*), and recent research by Iowa State shows that swamp white oak (*Quercus bicolor*) may be infected, although this is rare.



Figure 11 Vein discoloration due to BOB

Symptoms of BOB are starting to show up at this time. The first symptoms are purplish spots on the veins on the lower side of the leaves. These spots started showing up a few weeks ago. At this time, they are spreading and developing into purple coloration along the veins on both the lower and upper side of the leaves (fig. 11). In August and September, symptoms will worsen, with veins dying and the infection moving to the end of the leaf, leading to a wedge-shaped dead area. While there may be some defoliation, some infected leaves will remain on the leaves, and the fungal spores will overwinter in pustules located on the petioles (fig. 12) of these infected leaves. The presence of these pustules is considered a requirement for the confirmation of BOB. New spores will be released in spring. Repeated years of defoliation may predispose the tree to other problems, such as Armillaria root rot and two-lined chestnut borer. Often, these secondary problems contribute to the death of a tree as much as BOB itself.



Figure 12 Black pustules on petiole

**Management:** First, confirm that the tree actually has bur oak blight. Get a sample tested at the University of Illinois Plant Clinic (<http://web.extension.illinois.edu/plantclinic/>). Keep trees vigorous through proper watering and pruning (during dormant season). Iowa State and University of Minnesota are indicating that injections of propiconazole in spring may be useful in slowing the disease. Injections must be done by a licensed professional.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/bur-oak-blight>

<http://blog-yard-garden-news.extension.umn.edu/2016/08/a-bad-year-for-burr-oak-blight.html>

<http://hyg.ipm.illinois.edu/article.php?id=752>



*[Bartlett Tree Experts, Presenting Sponsor of the Plant Clinic.](#)*

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College 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: Maggie Burnitz, LeeAnn Cospers, Ingrid Giles, Pat Miller, Loraine Miranda, and Mary Noe. Your hard work is appreciated. Thanks also to Donna Danielson who shares her scouting findings.

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://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)  
[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](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](mailto:plantclinic@mortonarb.org). Inquiries or comments about the PHCR should be directed to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

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