Plant Health Care Report

Scouting Report of The Morton Arboretum

May 17, 2019 **Issue 2019.4**

Comments or concerns regarding PHCR should be sent to 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.

We are continuing to use last year's format: full issues alternating with growing degree day (GDD) issues; focus on more serious pests; minor pests covered in shorter articles; alerts issued for new major pests. Readers who receive our email blasts that announce the newsletter is posted online will continue to receive them this year. To be added, please contact me at syiesla@mortonarb.org

Quick View

What indicator plant is in bloom at the Arboretum?
Korean spice viburnum (*Viburnum carlesii*) is in full flower (Figure 1)

Accumulated Growing Degree Days (Base 50): 134.5 (as of May 16)
Accumulated Growing Degree Days (Base 30): 1193 (as of May 16)

Insects/other pests

- **Viburnum leaf beetle**
- **Euonymus webworm**
- **Eastern tent caterpillar update**
- **European pine sawfly update**
- **Galls, part one**
- **Pine needle scale**
- **Spruce spider mites**

Diseases

- **Viruses**
- **Wetwood and slime flux**

Miscellaneous

- **It was a hard winter, but…**

Figure 1 Korean spice viburnum

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 May 16, we have 134.5 base-50 growing degree days (GDD). The historical average (1937-2018) for this date is 177 GDD_{50}. Since January 1, we have had 17.15 inches of precipitation. Historical average (1937-2018) for precipitation Jan-May is 15.6 inches.

Location	B_{50} Growing Degree Days Through May 16 , 2019	Precipitation (in) May 10-16, 2019
Carbondale, IL*	527	
Champaign, IL*	315	
Chicago Botanic Garden**	99 (5/15)	.16”
Chicago O'Hare*	191	
Kankakee, IL*	221	
Lisle, IL*	203	
The Morton Arboretum	134.5	.61
Quincy, IL*	368	
Rockford, IL*	150	
Springfield, IL*	350	
Waukegan, IL*	120	

**Thank you to 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

On May 6, our scouts found very recently hatched larvae of Viburnum leaf beetle (*Pyrrhalta viburni*) already feeding on partially opened leaves of arrowwood viburnum (*Viburnum dentatum*). You will want to look closely as the insect is VERY small at this time. The larvae were tucked in between the veins on the lower side of the leaf and fairly well hidden. If you don't see the larvae, start looking for small holes in the leaves. By now the larvae may be bigger than they are in the photo (fig. 2). In the past 4 or 5 years, this pest has been found feeding mostly on arrowwood viburnum (*Viburnum dentatum*) and the American cranberrybush viburnum (*Viburnum opulus* var. *americanum*, formerly *V. trilobum*).

Figure 2 Young viburnum leaf beetle larvae (below penny)

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. 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.

Even at the late stages of their development, the larvae are small (less than 1/2 inch). They can 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 (fig. 3). The larvae feed mostly on the undersides of the foliage.

Figure 3 Viburnum leaf beetle larvae

When mature, the larvae crawl to the ground, usually in mid-June (possibly late June, with this cooler year), and pupate in the soil for about 3 weeks. Adults emerge from the soil (early-, possibly mid-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. To treat larvae present now, some university websites are suggesting spinosad or insecticidal soap (this product must be sprayed directly on the larvae, so the lower sides of the leaves will need to be sprayed). Reducing larval populations now will help reduce both the damage done and the need for stronger insecticides when the beetles emerge. Cornell University suggests a single soil application of imidacloprid in spring to control adults this summer. Remember that imidacloprid is systemic in the plant and can go into flowers, possibly endangering pollinators.

If you plan to add new viburnums to the landscape, don't plant big groups (remember diversity is the way to go). Plant one or two, and this pest will be easier to manage.
Good websites:
http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/viburnum-leaf-beetle
http://www.hort.cornell.edu/vlb/

Euonymus webworm (severity is determined by the amount of defoliation)

Euonymus caterpillars (*Yponomeuta cagnagella*), also known as euonymus webworms for the webbing they make, are feeding on running strawberry-bush euonymus (*Euonymus obovatus*). Inspect your plants carefully. The sample that our scouts brought in was of very small larvae, so the webbing was not well developed yet and the markings on the larvae were not as distinct as those seen in our photo (fig. 4).

Figure 4 Euonymus webworm larva

These caterpillars are leaf-feeding insects that live in colonies within thin webs at branch ends. The web increases with size as the larvae feed on the leaves and continue to grow themselves. Larvae are pale yellow with black spots, eventually reaching an inch at maturity. The larvae will pupate in cocoons that hang on the branches. The adult moth emerges in June. The moth, known as an ermine moth, is white with black spots. Euonymus caterpillar also attacks other species of euonymus including spindle tree (*E. europaeus*) and burning bush (*E. alatus*).

Management: Small populations can be managed by pruning out webs now and destroying them. *Bacillus thuringiensis* var. *kurstaki* (*Btk*) will control young larvae like we are seeing now. This is the value of scouting; find the enemy while he is small. The little guys are always easier to kill. *Btk* is less effective on mature larvae. Thoroughly spray the web and plant with *Btk*, as the insect must eat it in order for it to work.

Good website: http://bugguide.net/node/view/70367

Eastern Tent Caterpillar update

We reported in our May 3 newsletter that it would soon be time for this pest to show up. One of our scouts has reported finding small tents and caterpillars earlier this week.

European pine sawfly update

European pine sawfly, on which we reported in the May 3 issue, has also been confirmed in the field.

Pine needle scale (potentially serious)

Pine needle scale (*Chionaspis pinifoliae*) is showing up on pine. So far, we are only seeing small populations. Pine needle scale overwinters as eggs under a female adult. The female looks like a white, tear-drop shaped fleck on a pine needle (fig. 5). After the eggs hatch (which should be soon), the tiny crawlers move to a new site on the host plant to feed. 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. Pine needle scale does not produce honeydew.

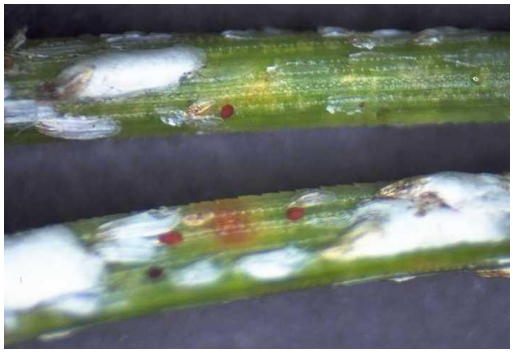

Figure 5 pine needle scale adults and crawlers

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: Insecticide treatments are commonly targeted at the young (crawler stage) of the scale, so knowing which scale you have and when the crawlers are expected helps with the timing of pesticide use. Systemic insecticides may be used on some species of scale, but planning is required as these products are often applied early in the season to give them time to move through the plant. Before using any insecticide, check for the presence of beneficial insects or holes in the adult scale that indicate attack by parasitoids.

Good website:
http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/scale-insects

Spruce spider mites (potentially serious)

We have a report from the field about spruce spider mites (*Oligonychus ununguis*) on black spruce (*Picea mariana*). Spider mites are very tiny (you need a hand lens to see them clearly) and have eight legs. Spider mites have needle-like mouth parts which they use to suck up sap, leading to stippling of needles (fig. 6). Badly infested needles appear bronze and fall off the tree. Spruce spider mites prefer cool temperatures in the 60s to low 70s °F and become inactive during the hot summer months. This is unlike two-spotted spider mites that prefer warm weather. Damage from spruce spider mites often becomes visible later in the season after the mites are gone. In addition to spruce, arborvitae is a frequent host. Juniper, hemlock, pine, Douglas fir, Fraser fir, and larch can also be attacked by this pest.

Figure 6 Stippling caused by spruce spider mites

Remember that not all mites are pests. Some mites are predacious mites, that is, they eat the bad spider mites. So, how can you tell the difference between the pests and the predators? Shake a branch vigorously over a blank, white piece of paper. If the tree has mites, you will see tiny dots running around on the paper. If you crush them with your finger, they will be either green or yellowish-orange. The green ones have been eating plants, but the yellowish-orange ones have been eating other spider mites. Predaceous mites also move faster (they have to catch the bad guys) and generally have longer legs. Having a lot of predaceous mites reduces your need to use chemicals.

Management: There are many predators of spruce spider mites, including lady beetles (ladybugs). Sometimes a strong spray of water can blast spider mites off the tree. Insecticides may be needed for severe outbreaks.

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

Pest Updates: Diseases

Viruses (some minor, some potentially serious)

We are starting to see some plants exhibiting viral symptoms already this year. We have already seen a virus on geranium. Viruses seldom kill their hosts, but the plant will always be infected and many viruses can be spread by insects that feed on a diseased plant and then move to a healthy plant to feed. Virus symptoms can vary by plant and by virus. Common

symptoms include mottling, mosaic patterns and excessive growth of plant parts. This year, we have seen some samples of plants with puckered leaves. This could be viral, but with our up and down temperatures it could also be cold damage to young, expanding foliage.

Management: There is no chemical management of viruses. Once the plant is infected, it cannot be 'cured'. There are two options for dealing with viruses. First, you can keep the plant and live with the fact that it has the virus. For some plants this is an acceptable option, especially if it does no serious damage to the plant or there are no other plants of the same species nearby to become infected. The second option is to destroy the plant. This is a good idea with small plants like roses, hostas or raspberries where there are other plants of the same species nearby that might become infected.

Wetwood and slime flux (minor)

The Morton Arboretum Plant Clinic has received a report of wetwood and slime flux on black walnut. This bacterial disease is usually associated with elms and poplars, but can affect other tree species. The bark or trunk of the tree appears to be water-soaked (fig. 7). The causal organisms of wetwood are several different bacteria in the inner sapwood and heartwood. Gas produced by bacterial fermentation creates pressure that forces the wetwood ooze through openings and weak points in the tree. When wetwood ooze becomes a chronic problem, the resulting flow of ooze is called slime flux. If this toxic liquid is transported internally to branches, wilting and/or defoliation may occur. Wilting is rarely seen, but areas of dead bark are common. On the plant surface, this liquid supports the growth of many other kinds of bacteria and fungi that sometimes results in 'slime' being produced on the surface of the bark. The slime can be various colors.

Figure 7 Wetwood

Management: There is no cure for wetwood. Keep trees watered during dry periods because drought is thought to increase wetwood problems. The practice of boring a hole into the trunk and inserting a pipe to release gas pressure doesn't help much, plus you are creating another open wound for organisms to colonize. Dead and weak branches should be removed. Bacteria are easily transmitted by tools so disinfect tools before pruning another tree.

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

Miscellaneous

It was a hard winter, but…

No one can deny it was a hard winter and the words 'polar vortex' will stay with us for a while. But we really can't blame every landscape problem on the polar vortex. There is no doubt that it is does play a role in some problems, but we have to remember that we have also had several years of stressful weather. We had heat and drought in 2012, followed by serious flooding in 2013 and have we forgotten the polar vortex of 2014? After that it has been a series of too-wet springs alternating with too-dry summers. On top of that, this spring has been a roller coaster, with 70-degree temperatures one week, followed by wet snow and near freezing temperatures the next week.

All of this leads to a lot of stress building up on our plants. When we get this amount of stress in the environment, we tend to see certain problems show up. There has been a big increase in canker diseases (like we are seeing on some of our boxwoods) and wood-boring insects over that last few years.

So, what can we do to make things better for our landscape plants? When buying new plants, make sure to match the plant with a suitable location. A happy plant is a healthy plant. Give new landscape plants proper care. That means regular watering when rainfall is inadequate. It does NOT always mean fertilizer. At the Plant Clinic, we talk to a lot of people who reach for the fertilizer bag every time there is a problem. Fertilizer fixes nutrient deficiencies, it will not fix drought, wet soils, poor planting or improper siting of a plant. We need to determine the source of stress and see if we can do something to remove that stress. Once the problem is corrected, then fertilizer might be beneficial.

For more established plants, water can still be critical as we get into summer and we deal with heat and possibly limited rainfall. Prune plants properly to remove dead branches or other problems, but avoid unnecessary wounding of plants as wounds can give easy entry to the disease organisms that cause cankers.

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; Julie Janoski, Plant Clinic Manager, 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 to the volunteers who will be scouting for us this season. The Scouting Volunteers include: Maggie Burnitz, LeeAnn Cosper, Ingrid Giles, Loraine Miranda, Mary Noe and Emma Visee. 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, published in the book Coincide, The Orton System of Pest and Disease Management (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 .