UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **April 1, 2022**

In This Issue...

IPMnet
Integrated Pest Management for Commercial Horticulture

extension.umd.edu/ipm

If you work for a commercial horticultural business in the area, you can report insect, disease, weed or cultural plant problems **(include location and insect stage)** found in the landscape or nursery to sgill@umd.edu

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Disease Information: Karen Rane (Plant Pathologist) and David Clement (Extension Specialist)
Weed of the Week: Chuck Schuster (Retired Extension Educator)
Cultural Information: Ginny Rosenkranz (Extension Educator, Wicomico/Worcester/Somerset Counties)
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Well, it is April Fool's Day

By: Stanton Gill

Trichonephila clavata, also known as the Jorō spider was found recently in Bethesda/Chevy Chase, Maryland. The spider had webbed a chipmunk, two squirrels, a stuffed toy pig, and a small Chihuahua into a massive web on a deck railing in Bethesda, Maryland. Firefighters were able, using the jaws of life, to cut through the webbing and rescue the animals. Sadly, the stuffed toy pig did not survive. Just joking - Happy April Fool's Day.

Ambrosia Beetles

By: Stanton Gill

Since last Friday's IPM Report, we went to much, much colder weather, which completely flattened any flight activity of *Xylosandrus* and *Cnestus mutilatus* (camphor shot borer) ambrosia beetles. We checked our traps at CMEC, Westminster, Brookville, Darnestown (Marie Rojas), Federalsburg (Richard Uva), and all were empty.

Next week after a cold front on Monday and Tuesday, it begins to warm up. We will keep you posted when we get ambrosia beetle activity.

Low Temperatures and Damage to Ornamentals and Fruit

By: Stanton Gill

On March 27, 28 and 29, 2022, temperatures reached lows of 20 °F during the nighttime. In many of the urban areas of Maryland, ornamental plants were in either in flower or putting out new growth. Marie Rojas, IPM Scout, found a lot of winter injury on *Osmanthus* 'Gulftide' as well as some Holly 'Nellie R Stevens'.

Many fruit plantings were in either partial bloom or full bloom during this 3-day period. The aftereffect from this cold front will be seen over the next couple of weeks. Flowers were damaged and will brown up quickly. New emerging growth is going to go necrotic and turn brown to black. **Many fruit plantings are going to have greatly reduced fruit set for this season**. You will want to note this last bolded section because your customers are going to ask you what happened to their fruit trees with the lack of fruit set. This will be a frequent question in May and June when normally fruit is swelling in size and customers are going to note the lack of fruit forming.

A star magnolia after the recent freezing temperatures
Photo: Steve Clancy, Town Creek Landscaping

Cold damage to *Osmanthus*
Photo: Marie Rojas, IPM Scout

First Detection of Apple Scab Spores for 2022

Dr. Kari Peter, tree fruit pathologist at Penn State University, reported on March 30 that the first 2022 apple scab spores have been detected from overwintering leaves, corresponding with the green tip stage of plant development in some areas. For more information and Dr. Peter's management suggestions, go to the Penn State Tree Fruit page: https://extension.psu.edu/2022-disease-update-first-apple-scab-spores-detected

Eastern Tent Caterpillars

Ginny Rosenkranz, UME, sent in photos of eastern tent caterpillars already forming tents in Salisbury on March 28. Look for webbing (tents) in the branch forks of host plants.
Control: Mechanical control works well. Reach into the tent, tear it open, pull out the caterpillars, and toss them in a bag and dispose of them. If necessary, you can also spray foliage with Bt or Conserve which gives good control with minimal impact on beneficials.

Early instar eastern tent caterpillars formed a tent in the crotch angle of a tree on the Eastern Shore this week
Photo: Ginny Rosenkranz, UME

Rust on Juniper

By: David Clement and Karen Rane

A containerized *Juniperus scopulorum* (Rocky Mountain Juniper) was dropped off at CMREC this week, and inspection of the trunk and twigs of this nursery plant showed the tell-tale signs of a Gymnosporangium rust, most likely cedar-quince rust. The orange powdery spores were visible in slightly swollen sections of trunk tissue (see photo) – this material will become gelatinous in wet weather and the spores dispersed through wind-driven rain to the alternate broadleaf hosts (rosaceous plants like crabapple, hawthorn and Amelanchier). The fungus causes significant damage to Amelanchier in particular – causing fruit infection as well as swollen cankers on twigs and subsequent twig dieback.

Gymnosporangium rust gall on Rocky Mountain juniper
Photo: K. Rane, UMD

Dropping off this plant at CMREC was a good management practice for the nursery – removal of infected junipers will help reduce infection on the rosaceous hosts. Protectant fungicides should be applied to the rosaceous hosts before the spores become gelatinous on the juniper host. Spray applications rotated with Azoxystrobin products and Mancozeb products should give good management of foliar symptoms. Targeting the rosaceous hosts can help reduce infection, but timing can be a problem as spores from the juniper can be released throughout the spring and early summer. If rust infections are problematic in your area, selection of resistant junipers, crabapples, hawthorns, and serviceberry can significantly reduce disease damage. See the following link with suggestions for resistant plants: https://apples.extension.org/table-of-juniper-hawthorn-and-crab-apple-resistant-to-rust-diseases/

Hemlock Woolly Adelgids

Marie Rojas, IPM Scout, found hemlock wooly adelgids on hemlocks on March 25 in Montgomery County. Marie noted that there were eggs and hatched immatures with lady beetles feeding on them. Elaine Menegon, Good's Tree and Lawn Care, is also reporting that the adelgids are active in Hershey, PA.The cottony masses cover the adult female body and her eggs. Newly hatched nymphs are reddish-brown with a white fringe near the front; and settled crawlers are black with a white fringe around the body and down the back. There are two generations a year.

Control: Spray trees with 2-3% horticultural oil to target just hatched or newly settled crawlers.

Monitor hemlock woolly adelgids for egg hatch
Photo: Elaine Menegon, Good's Tree and Lawn Care

Hemlock woolly adelgids are hatching in some areas this week
Photo: Marie Rojas, IPM Scout

Multi-colored Asian lady beetle feeding on hemlock woolly adelgids
Photo: Marie Rojas, IPM Scout

Tea Scale

By: Stanton Gill

We have seen an increase in tea scale, *Fiorinia thea*, showing up on camellias, as this plant is being used more and more in Maryland landscapes. Paul Wolfe, Integrated Plant Care, sent in holly leaves with a fairly heavy population of tea scale this week. It was on an *Ilex X* 'Mary Nell'. This armored scale has been reported on Chinese holly, boxwood, camellia, and even euonymus. If you find this armored scale on a Chinese holly, hybrid holly, boxwood, camellia, or euonymus, please send in a sample to us at CMREC at 11975 Homewood Road, Ellicott City, MD, 21042.

Close-up of tea scale on camellia leaf

Crapemyrtle Bark Scale

By: Stanton Gill

On a Sunny March 20th afternoon, I was enjoying lunch at a restaurant in Takoma Park, Maryland on Cedar Drive. When I finished lunch, I noticed that a crape myrtle trunk and branches were covered in sooty mold. On closer examination, it was covered with crapemyrtle bark scale. I walked down the street and found several more crape myrtles that were heavily infested with this felted scale insect. I walked down several other streets with crape myrtle, but the scale had not spread yet to these other trees. It appears there is an epicenter of infested crape myrtles on Cedar Ave. If you find an infestation, please send in samples to CMREC so we can see when crawlers are emerging in 2022. Send to CMREC, University of Maryland 11975 Homewood Road, Ellicott City, Maryland 21042.

Crapemyrtle bark scale has managed to show up in more and more city landscapes over the last several years. If your customers have crape myrtles, check the plants to make sure the scale does not kill their plantings.
Control: Dinotefuran works on this scale. Talus or Distance also works if timed to crawler emergence.

Infestaton of crapemyrtle bark scale in Takoma Park in March 2022.

Monitor crape myrtles closely throughout the season for crapemyrtle bark scale. This scale population was found on August 24, 2020.

More Scale Reports

Marie Rojas, IPM Scout, is finding the following in Montgomery County:

- Overwintering cottony camellia scale on *Ilex* 'Dragon Lady' and 'Nellie R Stevens'.
- Japanese maple scale on a variety of plant material.
- Twice-stabbed lady beetles were also active.

Wait to treat when crawlers are active.

Monitor trees closely for Japanese maple scale infestations (left). Twice-stabbed lady beetle is often found feeding on this scale.
Photos: Marie Rojas, IPM Scout

Overwintering females of cottony camellia/Taxus scale on holly
Photo: Marie Rojas, IPM Scout

Spotted Lanternfly

By: Stanton Gill

Since the spotted lanternfly has spread rapidly in central Maryland, Paula Shrewsbury and I met this winter to come up with an information strategy to help you deal with this pest. Last week, we had Kenton Sumptor, MDA, address several of your questions concerning how to comply with the new quarantine restrictions. **Please send in your additional questions to me at CMREC, Sgill@umd.edu and Kenton will answer these in upcoming IPM alerts.**

Brian Kunkel, Extension Specialist with the University of Delaware, and I will be setting up trials in two nurseries in the quarantine areas of Maryland to evaluate a couple of new methods of dealing with spotted lanternfly. We are working closely with Bayer Company and BioWorks to evaluate a couple of newer products. Meanwhile, at this time of year, you will want to examine plant material, containers, and materials that you receive from any quarantine areas in MD, DE, and VA. We visited a nursery with egg masses on the trunk of a tree and must comment that the eggs masses really do blend in on the trunks. You really have to concentrate to see them. Once you train your eye to recognize the egg masses, it gets easier.

Spotted lanternfly egg masses on the trunk of a tree. Some have already hatched.
Photo: Richard Gardner, Bugwood.org

Egg masses that have already hatched lose the mud-like covering and look more like seeds. These masses were still on trees in early March.

Boxwood Leafminers

Marie Rojas, IPM Scout, is still finding boxwood leafminer larvae. Look for them to pupate and for the adults to emerge later in April.

Boxwood leafminer larvae in *Buxus* 'Green Mountain' leaf
Photo: Marie Rojas, IPM Scout

Jumping Worms

At the arborist conference on March 23rd, I was asked about possible biological control of jumping worms. Here is an abstract that was published in April of 2021:

Biocontrol of invasive pheretimoid earthworms using *Beauveria bassiana*
Maryam Nouri-Aiin, Josef H. Görres; Published April 7, 2021; PubMed 33868811

Abstract

Background: Invasive species cause enormous costs of over $120 billion to the U.S. economy. Among biological invasions, the invasion by pheretimoid earthworms has gone relatively unnoticed and their invasion imposes yet unknown damage on USA agriculture and horticulture. The main dispersal is with horticultural goods such as plant material and composts. Pheretimoids affect commercially important hardwood forest. With no chemical agents currently certified for earthworm control nor any best horticultural practices, slowing the invasion is difficult.

Methods: In this study we measured the efficacy of a commercial entomopathogenic fungal isolate of *B. bassiana* (BotaniGard®) to kill pheretimoid earthworms under greenhouse conditions. Four treatments of *B. bassiana* were applied: The commercial product as per label, re-cultured commercial *B. bassiana*, 15 g and 25 g millet grains mycotized with recultured product. In all, three bioassays were conducted in 2 consecutive years with two batches of BotaniGard®.

Results: With fresh batches, all *B. bassiana* treatments with re-cultured product resulted in greater than 70% mortality within 4 weeks. Mortality was less than 60% when BotaniGard® was used as prescribed by the label. When using 1-year old spores (refrigerated at 4 °C), mortality rates for *B. bassiana* treatments were less than 20% and not significantly different from the controls. However, *B. bassiana* still affected the earthworms by slowing their development from juvenile to adult stage.

Conclusion: *B. bassiana* was effective against pheretimoid earthworms. Overall, mycotized millet grains did not significantly increase mortality over the re-cultured, directly applied B. bassiana spores. More experimentation is needed to find the mode of action of the re-cultured B. bassiana before investigating ways to improve the efficacy of B. bassiana when applied as prescribed on the label.

Citation: Nouri-Aiin M, Görres JH. 2021. Biocontrol of invasive pheretimoid earthworms using *Beauveria bassiana*. PeerJ 9:e11101 https://doi.org/10.7717/peerj.11101

Interesting Idea for Confined Spaces for a Water Loving Plant

By: Stanton Gill

Last fall, I was visiting Brookside Gardens in Wheaton, Maryland. They had an a highly confined area against a building. Water from the roof was directed onto the area. Scouring rush was planted and grew in so thick it crowded out any weeds. It thrives in this wet environment. Before you start sending in emails saying scouring rush will spread. Yes, we know thi, but using it in a confined area such as this area bordered by concrete walk ways appears to be working well. It also looks great. Equisetum is a perennial herbaceous vascular plant in the horsetail family Equisetaceae. What is really interesting is this plant evolved over three hundred million years ago. Equisetums were part of an extensive phylum of plants (Calamophyta) containing many genera.

I planted it near the drained spots from our barn roof at the orchard. It handles the water that runs off the roof of the barn. We keep it confined by mowing three times a year. We have been growing it in this situation for the last 18 years, and it is great for handling excessive run off water from the down spouts. On the IPM side of things, I have yet to see any insect problems on this ancient plant.

I would not suggest this plant unless you have a highly confined space like the one seen at Brookside Gardens. It will spread and the casual gardeners will find it popping up in areas where they do not want it.

Scouring rush planted in a contained area to collect water running off of the roof
Photo: Stanton Gill

Beneficial of the Week

By: Paula Shrewsbury

Do we need to worry about an invasion by the jorō spider in our region?

The non-native jorō Spider, *Trichonephila clavata*, is a large, orb-weaving spider that is native to Japan and eastern Asia. It was first detected in the U.S. in 2014 in Georgia, and has since spread across Georgia and into South and North Carolina, Tennessee, and parts of Oklahoma. Several orb-weaving spiders are known for their relatively huge size and the large webs that they build. For example, in this region we commonly see the black and yellow garden spider, *Argiope aurantia*, and its web.

Note the impressive yellow, red and blue colors of this female jorō spider. (image from https://commons.wikimedia.org/wiki/File:Joro_Spider_-_Trichonephila_clavata_(50564813031).jpg#/media/)

The jorō spider is a beautiful spider, with females about 3-4" in size (bodies ~1", legs about 3") (males are much smaller) and amazing body colors of bright yellow, red, and blue with black and yellow legs (see images). It builds large, flat webs that are a diameter of ~ 1 meter (3') or more, often stretched between tree and/or shrub branches in urban landscapes, parks, and natural areas. The silk is yellow in color and described as having a gold sheen when the sunlight hits it. In the area of Georgia where the jorō spider is most abundant, webs are reported to be 1 web every 5 meters (~16') on some wooded trails. The University of Georgia Extension has noted a steady increase in the population of the jorō spider based on the number of questions they have received since 2014. Interestingly, in 2021 they had a major increase in the number of jorō spider questions from August to December. They report the reason for this is unknown at this time.

A female jorō spider in her web with two males. Females are much larger than males. (image from https://commons.wikimedia.org/wiki/File:Nephila-clavata-f-eating-and-2-m.jpg#/media/)

Recent research out of University of Georgia (by A. Davis and B. Frick, 2022) has brought a lot of media attention to the jorō spider. Researchers compared the joro spider to a related species in the same genus, the golden silk spider, *T. clavipes*. The golden silk spider is another non-native, large orb-weaving spider, but it has been in the U.S. for 160+ years and is now naturalized throughout much of the southern U.S. It is believed that the golden silk has not spread from the southern areas due to temperature limitations (ex. freezing). The golden silk spider is a tropical spider native to Central and South America. Given that these two related species overlap in their U.S. range, and they have been here for very different lengths of time, it was a great system for the researchers to compare the biology and physiology of the two spiders to predict the range potential of the jorō spider. If their physiologies were similar (they compared females), then the jorō spider would likely be limited

to the south like the golden silk spider. The research found that compared to the golden silk spider, the jorō spider completes its life cycle faster; its metabolism was twice as high, it has a 77% higher heart rate when exposed to low temperatures, and when placed in freezing temperatures for 2 minutes, the jorō spider survival was higher. In addition, the jorō spider can mate and reproduce more quickly than the golden silk spider.

The sunlight highlights webs of the jorō spider in a Georgia landscape.
Image from https://news.uga.edu/joro-spiders-likely-to-spread-beyond-georgia/)

Since the jorō spider has the potential to move northward to our region, do we need to be concerned. The short answer is probably not. While these findings support the jorō spider could withstand northern U.S. winters, there are still a lot to learn about how successful it would survive northern winters. Although in the midst of a warming world, other southern species have expanded their range to norther latitudes and higher elevations. Also to date, the jorō spider does not appear to effect local food webs or ecosystems (ex. out competing native spider species), but we will have to wait and see. They may be food for birds or other predators, but at this time, there appears to be no predators or natural enemies keeping the Jorō spider in check, so again we will have to wait and see how large their populations get. On the upside, jorō spiders are predators and consume other insects. They have been observed consuming a brown marmorated stink bug in Georgia. Perhaps other invasive species, such as spotted lanternfly in addition to the brown marmorated stink bug, that the jorō spider co-evolved with back in their native range, will be consumed by the jorō spider.

Some people ask are the jorō spiders poisonous? Can they hurt me or my pets? Even though the female jorō spider is large with startling colors (often an indicator of danger in the insect world), the jorō is harmless to humans and pets. Their fangs are too short to break skin, and like many orb weavers, they are what are referred to as passive hunters. They wait for prey to get caught in their webs and then attack them. However, according to Japanese mythology, if you are a young handsome man you should watch out. In Japanese mythology the jorō spider, known as jorō-gumo, is known as a deceptive shape-shifting spider that changes into a beautiful woman that then then preys on young handsome men.

What can you do about the jorō spider? At this time, there is not a lot you can do. First, they are not in the mid-Atlantic region yet. It will likely be several years before they arrive unless they are assisted by humans unknowingly moving them with materials or vehicles arriving from the south. Second, there is no data to suggest they would cause damage or be threatening, so you do not need to do anything about them. Like with other large web weaving spiders, if their webs are in a location that disrupts your work or recreation, you could remove the web and relocate the spider in a different location. Other than that, we will just learn to live with them like we do other large spiders you encounter.

Click here for a video of the jorō spider in Georgia (by University of Georgia, College of Agriculture)

Weed of the Week
By: Chuck Schuster

Spring is upon us in many ways. Soils have warmed up to the low 50 °F range in most areas. Henbit, *Lamium amplexicaule,* is growing well. Lesser celandine, *Ficaria verna,* is present in many areas. Soil temperatures have been up and down a great deal, and some areas have noted the germination of Japanese stiltgrass. We have had moisture to activate products that have been applied.

Lesser celandine (left) and henbit (right) are showing up in areas in March and into April

While it may be early by the calendar date, the temperatures of late are going to support spring grassy weed emergence. If not already in the areas with more buildings, soon! Crabgrass and Japanese stiltgrass are the weeds of concern now. Weather can still cool off and frost or even a freeze can occur.

Turf sites that have not received the first application of a pre-emergent for crabgrass will need to consider switching to a product that has at least some capacity to provide early post emergent abilities.

Dithiopyr (Dimension) is an early post emergent product that inhibits certain steps in plant cell division. This product can be used on established turf, but not sites that will be seeded with new seed. *Dithiopyr* is **not** the product of choice for Japanese stiltgrass. Barricade (Prodiamine) has provided the highest percentage of control at 86%, with a single treatment in March, on average providing 81% control. Pre-emergent products for crabgrass can still be applied but will not catch those seeds that have already emerged.

Control of crabgrass is not only achieved through herbicide applications. Good soil fertility, proper mowing height, and proper pH are other components in a crabgrass management plan that should not be overlooked. Build a strong turf that is dense. This prevents sunlight from reaching the soil to allow germination of crabgrass. The battle with Japanese stiltgrass is not over either. It though, does not respond to cultural methods of control.

For crabgrass, the use of products containing *dithiopyr* (Dimension) *prodiamine* (Barricade) and *pendimethalin* (Pre-M) are shoot and root development inhibitors. All of these products can be used on established turf, but not sites that is or will be seeded with new seed. *Siduro*n (Tupersan) is the only product that can be used in a turf setting when overseeding after application is considered. As stated, *dithiopyr* also provides early post-emergent control of crabgrass and some other annual grasses (not Japanese stiltgrass). Consider utilizing *dithiopyr* (not at full season rate) if no other applications have occurred this year. A follow-up in a second application can then be either another application of *dithiopyr or prodiamine*. Utilizing Prodiamine will catch the Japanese stiltgrass that has yet to germinate. This allows for applications to be done over a longer period of time and keeps crabgrass under control for the better part of the season.

Other options for crabgrass control do include use of Drive (*quinclorac*), Tenacity (*mesotrione*), and SquareOne (*quinclorac + carfentrazone*), and Solitare (*quinclorac + sulfentrazone*). These are post-emergent only products that can be used into late May and June when temperatures are warmer. The benefit with some of these products is that they can be used on a seedling lawn, one that has been seeded and has is becoming established. Check the label carefully.

Other options for Japanese stiltgrass are, Acclaim Extra *(*Fenoxaprop) which has been used successfully as a post emergence herbicide in turf with Envoy being used in turf and selected ornamental beds. When using post emergent products, air temperatures above 65 °F have been found to provide the best environment for success.

Always remember that pre-emergent products will limit root development of the desired species of turf also. Watch the weather for dry spells after application. This will cause a less than desired final result.

Plant of the Week

By: Ginny Rosenkranz

Fothergilla 'Mount Airy' is a native hybrid dwarf that has very fragrant 1-3 inch flowers blooming for 3-4 weeks in April. Many of the early butterflies flock to the fragrant flowers. One of the plant's parent is the native *Fothergilla gardenia*, discovered by Dr. Michael Dirr while visiting the Mt. Airy Arboretum in Cincinnati, Ohio. *Fothergilla* 'Mount Airy' slowly grows in an upright habit to a compact 3-6 feet tall and wide, and like many of our native deciduous shrubs, can spread by suckers. The airy white honey scented flowers shaped like a bottlebrush are held upright like candles, blooming before the foliage emerges. The flowers grow on last year's growth, so delay pruning until the flowers have finished blooming. The 2-4 inch leaves are dark blue-green on top and light green on the underside, strongly veined with toothed margins. In autumn, the foliage glows in golden yellows, bright oranges, and brilliant reds with purple undertones. All of the colors can often appear on one leaf. These lovely shrubs prefer moist, acidic soils and full to part sun. They are cold tolerant from USDA zones 4-9 and are resistant to deer browsing. Another plus, 'Mount Airy' is also the recipient of Award of Garden Merit by the Royal Horticultural Society.

***Fothergilla* 'Mount Airy'**
Photo: Ginny Rosenkranz, UME

Degree Days (as of March 30)

Aberdeen (KAPG)	54	Annapolis Naval Academy (KNAK)	97
Baltimore, MD (KBWI)	108	College Park (KCGS)	85
Dulles Airport (KIAD)	108	Ft. Belvoir, VA (KDA)	132
Frederick (KFDK)	68	Gaithersburg (KGAI)	84
Gambrils (F2488, near Bowie)	100	Greater Cumberland Reg (KCBE)	56
Martinsburg, WV (KMRB)	70	Natl Arboretum/Reagan Natl (KDCA)	158
Salisbury/Ocean City (KSBY)	178	St. Mary's City (Patuxent NRB KNHK)	186
Westminster (KDMW)	101		

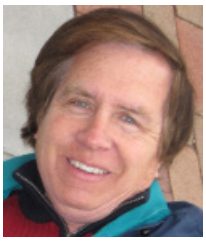
Important Note: We are using the Online Phenology and Degree-Day Models site. Use the following information to calculate GDD for your site: Select your location from the map Model Category: All models Select Degree-day calculatorThresholds in: Fahrenheit °F Lower: 50 Upper: 95 Calculation type: simple average/growing dds Start: Jan 1

Conferences

MAA Pest Walk
May 17, 2022
Details will be available later in the spring

Drone Training Program
July 28, August 4, and August 11, 2022
Details will be provided at a later date

CONTRIBUTORS:



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Photos are by Suzanne Klick or Stanton Gill unless stated otherwise.