UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Special Report
for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **June 21, 2024**

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

Coordinator Weekly IPM Report:
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Regular Contributors:
Pest and Beneficial Insect Information: Stanton Gill and Paula Shrewsbury (Extension Specialists) and Nancy Harding, Faculty Research Assistant
Disease Information: Karen Rane (Plant Pathologist), David Clement (Extension Specialist) and Fereshteh Shahoveisi (Turf Pathologist)
Weed of the Week: Chuck Schuster (Retired Extension Educator), Kelly Nichols, Nathan Glenn, and Mark Townsend (UME Extension Educators)
Cultural Information: Ginny Rosenkranz (Extension Educator, Wicomico/Worcester/ Somerset Counties)
Fertility Management: Andrew Ristvey (Extension Specialist, Wye Research & Education Center)
Design, Layout and Editing: Suzanne Klick (Technician, CMREC)

Heat Wave Moves East

By: Stanton Gill

Last week NOAA got it slightly wrong, since the week's temperatures really did not soar, as predicted. It is a different story this week with 90 °F plus weather most of the week. Look at our degree days at the end of this report and you will see a rapid increase in degree days. The high temperatures will stress plant material, and the damage will show up over the next couple of weeks.

When working outside, be sure to stay hydrated and take breaks to cool off. Watch closely for signs of heat stress and heat stroke.

Evening Diagnostic Plant Clinic

Sponsored by Maryland Arborist Assocation and University of Maryland Extension

Come join us on June 27 at Carroll Community College for an evening filled with plant disease and pest advice. Experts from the University of Maryland will update attendees on relevant insect and disease issues. Afterwards, Stanton Gill and David Clement will lead attendees on a walk of the campus to identify problems in the landscape. Bring samples. Steve Dubik will help to identify plant material on the campus. Dinner is included.

Agenda:

5:00 -5:30	Registration
5:30-6:00	Insect & Disease Update
6:00-6:30	Dinner
6:30-7:30	Diagnostic Walk
7:30-8:00	Wrap-Up, CEU Sheets

The following continuing education credits have been approved for full attendance of this program: Maryland Pesticide - 6 credits in Categories 2*, 3A, 3C, 6*, 10*, DC Pesticide - 4 credits in Categories 3A, 3B, 3C. Other credits requested, pending approval:Maryland Licensed Tree Expert, International Society of Arboriculture

Come attend an evening program on diagnosing plant problems.
Photo: Suzanne Klick, UME

A few spaces remain. Contact Danielle Bauer Farace, MAA, to register. danielle.rrconsulting@gmail.com

Lightning Bugs

By: Stanton Gill

Ross Fornaro, Naturalawn of America, sent the following question: "Is there a reason there's a higher population of lightning bugs this year or just a normal cycle?" Sheena O'Donnell, UME, also noted seeing higher numbers of lightning bugs this year than the previous couple of years in Olney and Gaithersburg.

Great question! I saw actively in Westminster much earlier this season but about the same - large numbers. Is anyone else seeing this in Maryland?

Black firefly found in McLean Virginia
Photo: Dave Freeman, Oaktree Property Care

Crapemyrtle Bark Scale Heavily Preyed Upon, Parasitized

By: Sheena O'Donnell, UME

Our IPM team at Central Maryland Research & Education Center were doing life cycle studies on CMBS at our research center but our population that we had established from last year seems to have been taken out by naturally occurring predators & parasitoids. Other infestations that we had to fall back on have also been heavily diminished. Be aware of this when addressing CMBS problems in your operation.

As a side note, if anyone has access to heavily infested branches in central Maryland, and if you are okay with donating some branches, please email me at sodonne5@umd.edu. Thank you!

***Hyperaspis* lady beetle larvae feeding on crapemyrtle bark scale.**
Photo: Bernie Mihm, Fine Earth Landscape

Second Generation White Prunicola Scale Active Soon

Marie Rojas, IPM Scout, found white prunicola scale. She noted that they are in high numbers on various *Prunus* species. Marie reported seeing a lot of of lady beetle larvae feeding on them too. We also recently received a sample of white prunicola scale covers from southern Pennsylvania. This scale insect has a wide host range including many popular landscape plants such as lilacs, euonymus, cherry laurel, and *Prunus* spp. Heavy 'flocking' is a buildup of covers from this year's first generation (1st gen crawlers at 513 DD) and previous years' generations. Last week, most areas of Maryland were in the low 1000's, but the heat wave this week will have caused degree days to accumulate much quicker than we have seen so far this year. Since second generation crawlers for white prunicola scale typically emerge at 1637 DD it may be time to start scouting for them this week, particularly in southern areas of Maryland. If the population is not yet in active crawler stage it would be a good time to apply a systemic soil drench of flupyradifurone or an IGR such as Distance or Talus. It is important to control this insect early in the season because 2nd and 3rd generations can build up very quickly if you don't get it under control before then.

Twice-stabbled lady beetles are feeding among this white prunicola scale population.
Photo: Marie Rojas, IPM Scout

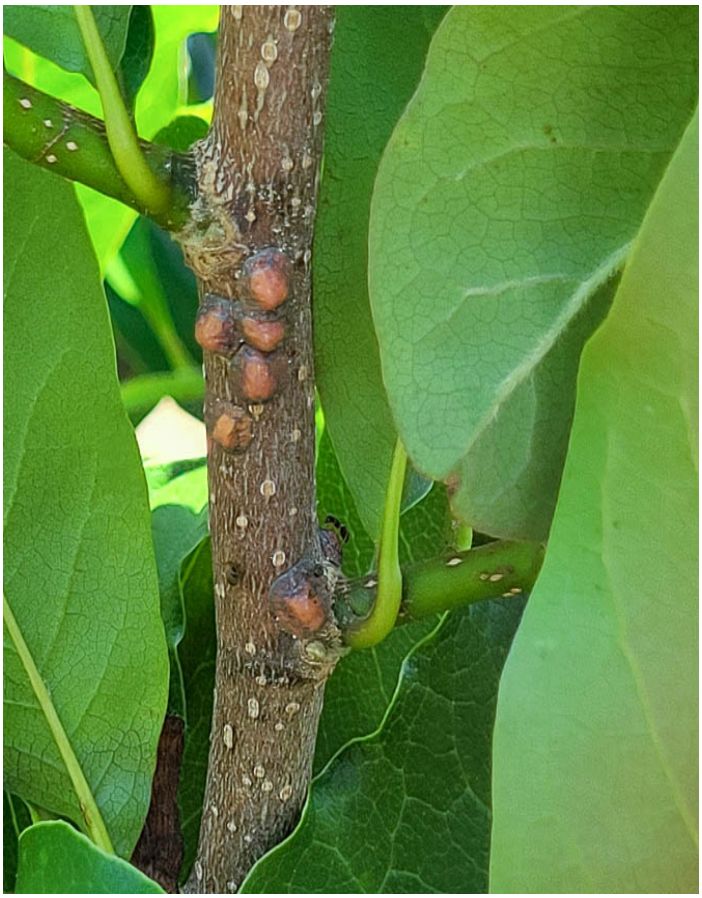
European Elm Scale

Marie Rojas, IPM Scout, reports that she continues to find European elm scale on *Ulmus* 'Valley Forge'. Look for beneficial insects to help determine if a treatment of Talus or Distance is necessary. This scale has only one generation per season, but it is active into September. During the summer, look for scale nymphs on the undersides of leaves.

Look for crawlers of European elm scale through July.
Photo: Marie Rojas, IPM Scout

Tuliptree Scale

Marie Rojas, IPM Scout, is finding female tuliptree scale on Magnolia 'Ann'. This scale scale has one generation and produces crawlers later in the season. When you see a lot of honeydew, these females are laying eggs.



Before producing eggs, female tuliptree scale will feed more heavily and produce large amounts of honeydew.
Photo: Marie Rojas, IPM Scout

Tea Scale and Camellias

By: Sheena O'Donnell, UME

With a growing interest in camellias, we expect to see more tea scale which prefers this plant. This insect has multiple overlapping generations per year (first generation crawler hatch at 195 DD) and will continue to reproduce during the growing season. If anyone has any suspected infestations of tea scale on their camellias, we are interested in getting a sample. Please contact Sheena O'Donnell at sodonne5@umd.edu if you are willing to part with some tea scale.

Tea scale on camellia.
Photo: Suzanne Klick, UME

Main Peachtree Borer Adults Active This Week

By: Stanton Gill

We are picking up adult peachtree borers in our baited pheromone traps this week. These are males, of course, but they will be mating with females, and the females will start laying eggs within the next 2 weeks.Ornamental tree and cherry laurel shrubs can be protected with an application of one of the following: permethrin, bifenthrin, or Mainspring (applied as trunk spray) directly sprays onto main trunks. Altacor for fruit trees does list clearwing borer on its label.

Oriental Fruit Moth Adults

By: Stanton Gill

We are picking up adult oriental fruit moths in our baited pheromone traps this week in central Maryland. Apply either Altacor (Chlorantraniliprole), Class 28 or Avaunt eVo (Indoxacarb). Altacor fits into an IPM program since the Active ingredient from a novel chemical group, with no cross-resistance to other chemistries. It has a consistent residual activity as an ovicide, ovi-larvicide, and larvacide through to adult stages. The use rate is very low and it has Low impact on many important beneficials. Avaunt eVo insect control provides rapid insect control activity and residual control of Lepidoptera, as well as several species of weevils, beetles and leafhoppers in a wide range of specialty crops. Its unique mode of action has a minimal impact on beneficial insects with no cross-resistance to other insecticides, making it an excellent rotational tool with products like Altacor. Avaunt has minimal impact on parasitoids and predators, making it an excellent fit in integrated pest management (IPM) programs. Avaunt won't flare mites, aphids or scales when used in accordance with the label.

Brown Marmorated Stink Bugs

Marie Rojas, IPM Scout, found first instar brown marmorated stink bugs still around empty egg cases in Montgomery County this week. We still see populations of this bug in the area, but don't receive reports of it in really high numbers like we did when it was first active in Maryland.

First instar brown marmorated stink bugs.
Photo: Marie Rojas, IPM Scout

Japanese Beetles

David Lantz, found Japanese beetles in Boonsboro this week. David noted that there are higher populations than last year. Control options include Mainspring and Acelepyrn.

Japanese beetle adults will be active into early August.
Photo: David Lantz

Powdery Mildew

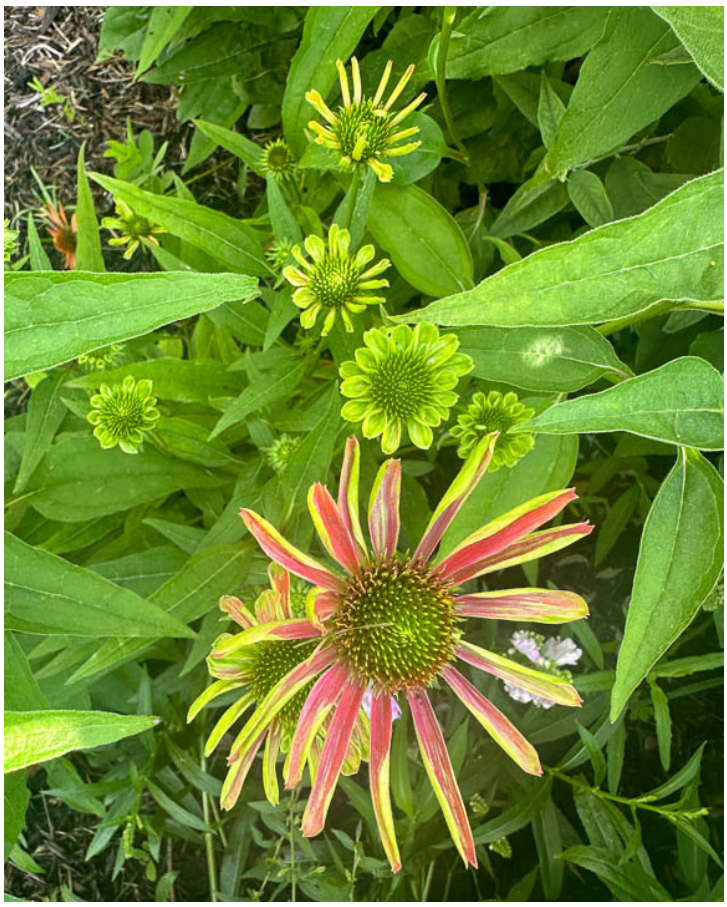
Marie Rojas, IPM Scout, is finding powdery mildew on Aesculus and Magnolia species. This disease will be seen on a wide variety of plants throughout the season. If necessary, use a labelled fungicide for control.

Powdery mildew infectionon Aesuclus foliage.
Photo: Marie Rojas, IPM Scout

Aster Yellows in Echinacea

By: David Clement and Karen Rane (retired)

Dave Freeman, Oaktree Property Care, sent in photos of Echinacea with abnormal flower development and color. Flowers symptoms include stunted greenish-white ray flower petals, and often green leafy growths protruding from the blossom centers. This problem is caused by aster yellows which belongs to a group of plant pathogens that are called phytoplasmas. This group is related to bacterial pathogens however; their cells have flexible membranes and have no cell walls making them pleomorphic in shape. They are single celled and reproduce by fission like bacteria. They are intracellular parasites and are non-motile. They are spread through the plant inside the phloem. The aster yellows pathogen is spread to ornamentals by phloem-feeding leafhoppers, primarily the aster leafhopper, *Macrosteles quadrilineatus* formerly *fascifrons*. Aster yellows can infect over 300 species of woody and herbaceous ornamentals, vegetables and weeds in 38 plant families as well as a number of grain crops. This phytoplasma is transmitted when infected leafhoppers feed on the phloem of an infected plant such as a weed host. Leafhoppers acquire the pathogen, but there is an incubation period, sometimes referred to as a latent period, which may take 2-3 weeks, where the pathogen multiplies within the leafhopper, and then moves to the salivary glands. Only then is the leafhopper capable of transmitting the pathogen to another plant. After feeding, it can take 10 days to 3 weeks, depending on temperature and plant species for the appearance of plant symptoms.



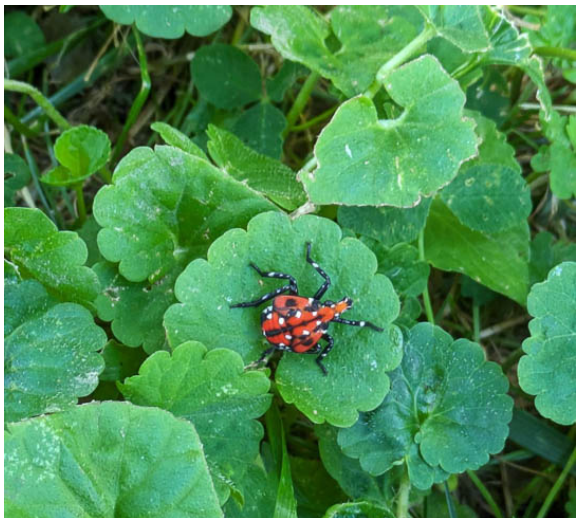
Echinacea flowers infected with aster yellows are deformed and have abnormal flower color (greenish-white).
Photo: Dave Freeman, Oaktree Property Care

The aster leafhopper can overwinter in the egg stage in Maryland that can result in mid to late season infections. Frequently, however this insect also begins developing down south early in the spring where they build up large populations. These southern adults will then migrate on the prevailing winds and jet streams that frequently move northward in the spring. Depending on weather and wind patterns these insects may arrive earlier in the season ready to transmit the disease.

Management: Infections are systemic throughout the plant and therefore plants are not “cured” by removing symptomatic flowers. Promptly remove infected plants when symptoms are first noticed to prevent spread throughout the rest of the planting. Weed hosts such as wild carrot, field daisy, dandelion, thistles, ragweed, marestail, and pineappleweed which are often symptomless should also be removed where possible since they can serve as symptomless reservoirs for future infections. Monitor susceptible plants frequently for symptoms and destroy any that appear to be diseased. Early detection and prompt removal of infected plants may help reduce the spread of the disease.

Spotted Lanternfly Update

Scott Bowen, Howard County Recreation and Parks, found fourth instar spotted lanternfly nymphs in Baltimore County on June 19. Jean Tansey reported: "Although last year we saw no SLFs around our neighborhood, this spring I have seen many nymphs at our house in Foxhall Farm development in Catonsville which is directly adjacent to Patapsco State Park."



Fourth instar spotted lanternfly nymphs are active in Baltimore County.
Photo: Scott Bowen, Howard County Recreation and Parks

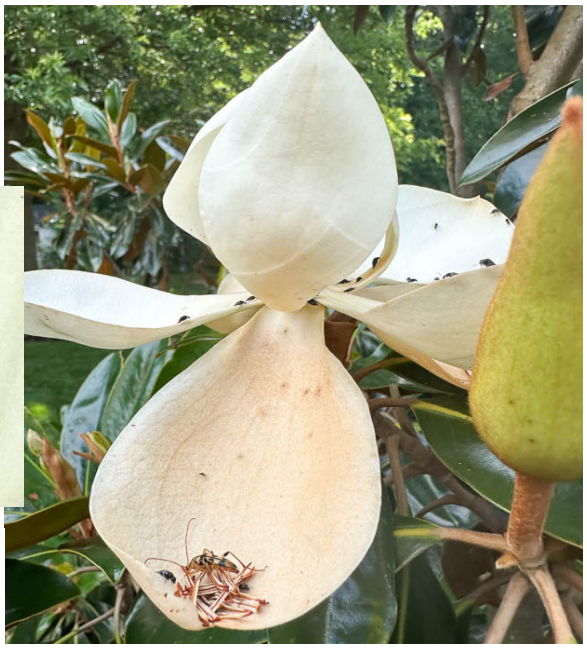
Bagworms

Jeffrey Lavrusky, Brightview, found early instar bagworms in New Market on June 18. Now is the best time control them with Bt or Conserve.

Early instar bagworm larvae are active in New Market this week.
Photo: Jeffrey Lavrusky, Brightview

Tumbling Flower Beetles

Dave Freeman, Oaktree Property Care, found tumbling flower beetles and a longhorned beetle on *Magnolia* 'Little Gem' flowers. Tumbling flower beetles feed on pollen and nectar and chew on flowers. They do not cause significant damage to warrant control. These beetles are also pollinators.



Tumbling flower beetles and a longhorned beetle (lower part of bottom petal) are infesting a magnolia flower.
Photos: Dave Freeman, Oaktree Property Care

Gymnosporangium Rusts

Gymnosporangium rust infections are still evident on rosaceous plants this week. Elaine Menegon Good's Tree and Lawn Care, found rust on the fruit of an untreated serviceberry in Hershey, PA this week. Marie Rojas, IPM Scout, also continues to see rust on *Amelanchier* and hawthorn. It's too late to make any treatments now. Be prepared to treat rosaceous plants next year early in the season at bud break.

Fletcher Scale

Fletcher scale was found on *Thuja* 'Green Giant' this week. Crawlers are active from mid June into mid July. This soft scale is commonly found on arborvitae and yews. We are seeing more often now on 'Green Giant' arborvitaein landscapes and nurseries. If you are seeing it in the landscape on arborvitaes, please let us know (sgill@umd.edu). This scale produces a lot of honeydew and causes yellowing on plant foliage. Use Talus or Distance for crawlers.

Fletcher scale is producing crawlers now. Look for crawlers into July.
Photo: Suzanne Klick, UME

Milkweed Tussock Moth Caterpillar

Elaine Menegon, Good's Tree and Lawn Care, found a milkweed tussock moth on milkweed on June 15 in Brownstown, PA. This caterpillar is one of many insects that feed on species of milkweed. Dogbane is another plant host for this species.

Milkweed tussock moth caterpillars feed in groups in the early instar stages.
Photo; Suzanne Klick, UME

Changes to the Invasive Plant Law in Maryland

Yesterday at the MNGLA and UME Tech Field Day at Ruppert Nurseries, Kim Rice, MDA, mentioned the changes (effective June 1, 2024) to the invasive species law in Maryland. Maryland is no longer using the Tier 1 and Tier 2 designations. There is now a Prohibited Plants List and a Watch List. All former Tier 1 plants are now on the Prohibited list. MDA will be updating their invasive plants website as more plants are added to these lists.

A Few Predators

Marie Rojas, IPM Scout, found a lady beetle larva, freshly hatched out, preying on its siblings. Dave Freeman, Oaktree Property Care, sent in a photo of syrphid fly adult. Adult syrphid flies feed on nectar and pollen. Syrphid fly larvae feed on aphids and other small insects.

A lady beetle larva is feeding on a cluster of eggs before they hatch.
Photo: Marie Rojas, IPM Scout

The larvae of syrphid flies feed on small insects.
Photo: Dave Freeman, Oaktree Property Care

Beneficial of the Week

By: Paula Shrewsbury

Caterpillars beware: Mason wasps are on the hunt

This week I want to talk about a mason wasp, *Monobia quadridens* (also known as the four-toothed mason wasp; Vespidae) that was recently seen attacking a caterpillar of the Raspberry pyrausta, *Pyrausta signatalis* (Crambidae). This act of biological control was especially exciting because it hits close to home. Every year, as the buds of the various species of *Monarda* (also known as bee balm) in my flower beds are forming, the Raspberry pyrausta caterpillar starts feeding in the buds resulting in deformation of, and in most cases no flowers emerge from, the flower buds. Monarda flowers provide excellent nectar and pollen resources to a number of pollinators, predators, and parasitoids. Therefore, protecting the flowers of Monarda not only adds beauty to the landscape, it helps provide important resources to beneficial organisms. To learn more about the pretty, but pesty, Raspberry pyrausta's biology, damage, and management, see Mike Raupp's *Bug of the Week* article.

Last week while observing the flowers and buds of Monarda in the garden, I saw the beautiful four-toothed mason wasp, *M. quadridens*, searching the not yet expanded buds of the Monarda. It flew from one bud to another, spending just a few seconds at each bud, until it found a caterpillar of the Raspberry pyrausta. Mike Raupp (UMD, author of Bug of the Week) has shared an early preview of a video that shows the four-toothed mason wasp attacking the Raspberry pryausta caterpillar. Note the four-toothed mason wasp search for and find the caterpillar in a tight bud of the Monarda plant. The four-toothed mason wasp finds a suitable gallery to raise her young, usually an unused gallery of a mason or carpenter bee or a small drain hole in a window frame. The wasp lays an egg in the gallery and then goes out to hunt small caterpillars. Once a caterpillar is found, the wasp stings and paralyzes the caterpillar. The paralyzed, but not yet dead, caterpillar is carried to the wasp's solitary nest, where it is deposited by the wasp near the egg. Numerous (sometimes as many as 19) caterpillars are placed near the egg and then the wasp seals off that section of the gallery (cell) with mud. It then starts all over to create the next cell. When the wasp egg hatches, it begins feeding on its hoard of caterpillars.

The four-toothed mason wasps provide dual ecosystem services. In addition to providing biological control of caterpillars, the four-toothed mason wasps are also great pollinators as they seek out nectar to power their hunt for prey, and pollen as a protein source needed to make eggs. While foraging in the flowers, they end up being good pollinators.

A close-up of the raspberry pyrausta caterpillar feeding in a flower bud of *Monarda*. Note the chewing damage to the flower and the black fecal pellets – diagnostic signs of this pest.
Photo by M.J. Raupp, UMD

When not hunting caterpillars, four-toothed mason wasps, *Monobia quadridens*, can be found pollinating a variety of plants like snow-on-the-mountain.
Photo: by M.J. Raupp, UMD

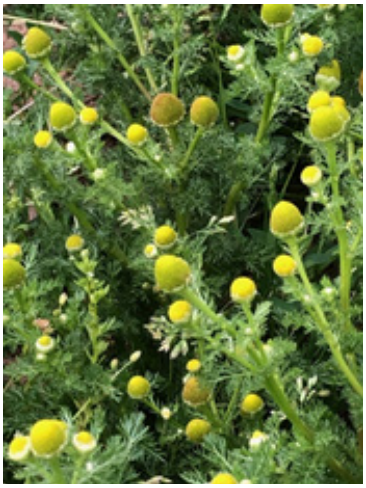
The four-toothed mason wasp, *Monobia quadridens*, covered in pollen as it feeds on nectar and pollen resources from this *Monarda punctata*.
Photo by P. M. Shrewsbury, UMD

Weed of the Week

By: Chuck Schuster, UME-Retired

Temperatures are heating up this week. As we move into summer, we are seeing a heat wave move into our area. Soil temperatures are heating up along with the air temperature. Soil temperatures with lows in the mid 60 °F range are common throughout much of Maryland. Attending a meeting recently I was greeted with a plant sample with the desire to provide identification. It was a familiar plant found in some settings in the region.

Pineapple-weed, *Matricaria discoidea*, is a summer annual that is found in turf, landscape and nursery settings throughout the United States. This weed has leaves without hairs that are finely divided into narrow segments, are alternate, arising from stems attached to the taproot. When crushed the plants emits a pineapple like odor, one of the reasons it has the common name. Yellow to greenish yellow cone shaped flowers will be produced on the ends of short peduncles (flower stems) and are between one quarter and one half inch in diameter. The petals of the flower are very hard to distinguish. Stems will be hairless, and grow up to sixteen inches in total height. Pineapple-weed reproduces through seed. This plant is very similar to Mayweed chamomile or dogfennel, yet neither of these species emits the pineapple like odor when the plant is crushed.



Pineapple weed
Photo: J. G. Warfield

No known cultural controls have been noted for control of this plant. It will tolerate close mowing. It prefers a compacted soil, and seems to thrive when the desired species of turf do not. Improve overall fertility, and soil conditions of the turf setting. Pre-emergent herbicides containing, dithiopyr (Dimension), flumioxazin (Broadstar/SureGuard) and napropamide (Devrinol) work well in turf, and products containing isoxzben work well in the landscape setting; broadleaf post emergent herbicides (2,4-D and dicamba) will control pineapple weed in turf. The addition of MCPP will increase control when coupled with 2,4-D and dicamba. Systemic post emergent products containing glyphosate will control this weed as well as Prizefighter, Pulverize and Burnout without much difficulty when applied to actively growing plants. When plants are not actively growing it is harder to gain control.

Plant of the Week

By: Ginny Rosenkranz

Quercus x *warei* 'Long' Regal Prince® is an upright stately tree with strong, nearly upright, vertical branches. It is a cross between a fastigiated upright English oak (*Quercus robur fastigiata*) and our native swamp white oak (*Quercus bicolor*). It thrives in full sun, growing in various soil conditions and well drained soils, and is slightly tolerant of salt. Regal Prince® grows 40-50 feet tall by 15-20 feet wide and is cold tolerant from USDA zones 4-9 with resistance to powdery mildew, verticillium wilt and bores. This oak is considered to be an improvement on many of the older varieties of columnar oaks, with strong branches that help with its tolerance to strong winds and winter ice. It is often planted in narrow spaces, or to provide wind breaks, a visual screen, or to create a formal look. Although the flowers, which are catkins, look insignificant, they attract many pollinators including many varieties of bees and butterflies. Once the flowers are fertilized, they grow into lime green ornamental oval acorns that mature to brown. The leaves have blunt, rounded lobes and are leathery and glossy, bright green on top and a soft silver green on the underside, very similar to the native swamp white oak. Autumn color is an attractive yellow.

I was introduced to Regal Prince® at Ruppert Nurseries during the Maryland Nursery, Landscape and Greenhouse Association and the University of Maryland Extension's Tech Field Day that was held June 20th. There were so many beautiful trees to choose from for the Plant of the Week, but I was enchanted with the

lovely arch created by 2 stunning *Quercus* x *warei* 'Long' Regal Prince®! As much as I loved looking at all the lovely trees, the Tech Field Day introduced me to so many new ideas including drones that can take inventory by accurately counting trees in 50-foot sections, watching a large drone that is capable of carrying up to 200 pounds of liquid and able to pinpoint weeds to spray without damage to the plants beside the weeds, and much more! It is always a good day when you can mix beautiful plants with new technology.

Two *Quercus* x *warei* 'Long' Regal Prince® formed a lovely arch along this walkway at Ruppert Nurseries.
Photo: Ginny Rosenkranz, UME

Pest Predictive Calendar "Predictions"

By: Nancy Harding and Paula Shrewsbury, UMD

In the Maryland area, the accumulated growing degree days (**DD**) this week range from about **1059 DD** (Martinsburg) to **1621 DD** (St. Mary's City). The Pest Predictive Calendar tells us when susceptible stages of pest insects are active based on their DD. Therefore, this week you should be monitoring for the following pests. The estimated start degree days of the targeted life stage are in parentheses.

Azalea bark scale – egg hatch / crawler **(957 DD)**
Hibiscus sawfly – larva (early instar) **(1015 DD)**
Japanese beetle – adult emergence **(1026 DD)**
Fletcher scale – egg hatch / crawler **(1105 DD)**
Spotted lanternfly – adult flight **(1112 DD)**
Fall webworm – egg hatch (1st gen) **(1142 DD)**
Indian wax scale – egg hatch / crawler **(1145 DD)**
Oriental beetle – adult emergence **(1147 DD)**
Peachtree borer – adult emergence **(1181 DD)**
Catalpa sphinx – egg hatch (1st gen) **(1365 DD)**
Green June Bug – adult emergence **(1539 DD)**
Scarlet oak slug sawfly – larva (early instar) **(1544 DD)**
Pine needle scale – egg hatch / crawler (2nd gen) **(1561 DD)**
White prunicola scale – egg hatch / crawler (2nd gen) **(1637 DD)**
Obscure scale – egg hatch / crawler **(1774 DD)**

See the Pest Predictive Calendar for more information on DD and plant phenological indicators (PPI) to help you better monitor and manage these pests.

Degree Days (as of June 19)

Annapolis Naval Academy (KNAK)	1377
Baltimore, MD (KBWI)	1350
College Park (KCGS)	1341
Dulles Airport (KIAD)	1414
Ft. Belvoir, VA (KDA)	1382
Frederick (KFDK)	1352
Gaithersburg (KGAI)	1227
Greater Cumberland Reg (KCBE)	1199
Martinsburg, WV (KMRB)	1059
Millersville (MD026)	1280
Natl Arboretum/Reagan Natl (KDCA)	1594
Perry Hall (C0608)	1215
Salisbury/Ocean City (KSBY)	1242
St. Mary's City (Patuxent NRB KNHK)	1621
Susquehanna State Park (SSQM2)	1248
Westminster (KDMW)	1466

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

June 27, 2024
MAA Pest Walk
Location: Carroll Community College, Westminster, MD
Registration Information

June 28, 2024
Procrastinator's Pesticide Recertification Conference
Location: Montgomery County Extension Office, Derwood, MD
Registration information

September 17 and 18, 2024
Cut Flower Program
Locations: Central Maryland Research and Education
Center, Ellicott City, MD and locations in Howard Co.

October 9, 2024
MNLGA Retail Day
Location: Homestead Gardens, Davidsonville, MD

Go to the IPMnet Conference Page for links and details on these programs.

Commercial Ornamental IPM Information
http://extension.umd.edu/ipm

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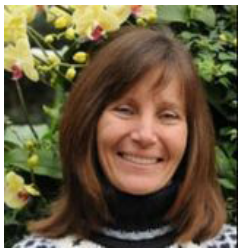

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Photos are by Suzanne Klick or Stanton Gill unless stated otherwise.