UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **July 26, 2024**

In This Issue...

Beneficial of the Week: Eastern cucurbit bees
Weed of the Week: Black medic (*Medicago luupulina*)
Plant of the Week: *Ulmus parviflora* (lace bark elm)

Pest Predictive Calendar

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:
Stanton Gill, Extension Specialist, IPM and Entomology for Nursery, Greenhouse and Managed Landscapes, sgill@umd.edu. 410-868-9400 (cell)

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)

Aerial and Land Drone Short Course in Early August

By: Stanton Gill, David Clement, Andrew Ristvey and Hemendra Kumar

If you are in the commercial horticulture world you need to investigate how aerial and land drones can make your nursery or greenhouse operation more efficient. Come learn what are newest drones types out there and how can you work these into your business. Go to our conference page for the schedule and links to register.

August 13, 2024 (afternoon)

IPM Diagnostic Session
Location: CMREC, 4240 Folly Quarter Road, Ellicott City, MD

Box Tree Moth

From: Jaime Tsambikos, Maryland Department of Agriculture:

To Maryland boxwood growers and dealers: **Box tree moth (BTM) has NOT been found in Maryland, but it was just found in Delaware a few weeks ago.** BTM is under federal quarantine and suspected finds should be reported to the Maryland Department of Agriculture at 410-841-5920 or ppwm.mda@maryland.gov. Businesses in a county with a confirmed positive are expected to enter into a compliance agreement as part of the federal quarantine. It is never too early to start implementing the steps needed to continue with your business, if you wish to ship/move/transfer boxwood away from your location. As stated in a previous report, trapping is key and is necessary. You may go here https://ag.umass.edu/landscape/fact-sheets/box-tree-moth-monitoring-trapping to find a list of possible trap, lure, and other parts providers.

Some training materials can be found at APHIS BTM website. SAFARIS BTM adult phenology model should be used to determine flight periods.

Spotted Lanternfly Update – Start of adult activity

By: Paula Shrewsbury

As Stanton Gill reported last week, we continue to get numerous reports of spotted lanternfly (SLF) as both 4th instar nymphs and adults. SLF adult activity has increased in the last week or so. We are getting more reports of large numbers of SLF adults aggregating on tree trunks, often on tree of heaven (*Ailanthus altissima*). Some of the places reporting adult SLF this week have been Crownsville, Silver Spring, Sykesville, Westminster, Sharpsburg, Linthicum Heights, and Essex MD, in addition to others.

As you likely know, SLF are sucking insects that feed on phloem sap from their host trees. This results in the excretion of honeydew by SLF. All life stages of SLF excrete honeydew. When the insects are smaller (nymphal stages) you see honeydew on foliage of trees and plants below trees but usually not significant amounts. However, when SLF are adults (and larger) they produce copious amounts of honeydew. This week we have reports of large aggregations of adults on tree trunks, which are producing abundant honeydew that drips down the tree trunks and onto plants, objects or structures below the infested trees. This results in two major issues. One is the aesthetic damage from the honeydew and sooty mold that grows on the honeydew and from the masses of honeydew that build up at the base of trees which sometimes begins to ferment (see image). For more information on the effects of SLF honeydew / sooty mold click here (go to the feeding damage section). The other issue is the attraction of stinging insects that feed on the abundant sugar rich honeydew resource. I have had numerous reports of more stinging insects and more stings. In my SLF research sites, I have also seen increased activity and nests of stinging insects over the last few years (fortunately only one sting).

Please let Stanton (sgill@umd.edu) and me (pshrewsbury@umd.edu) know if you find sites with large numbers of SLF.

Large numbers of adult spotted lanternfly on trees produce copious amounts of honeydew. In this photo you can see the mass of fermenting honey dew collected at the base of the tree.
Photo from UME Ask Extension

Mites Rule This Week

By: Stanton Gill

We had 15 weeks of drought in 2023 with just the Eastern Shore of Maryland receiving rain. This summer is completely different with ridiculously hot weather and high humidity, but spotty at best, rain showers. This weather is perfect for Tetranychid mites to thrive, and thrive they are doing, in large numbers. Mark Schlossberg, ProLawn Plus, Inc., found heavy spider mite damage on burning bush euonymus in Pikesville this week. Elaine Menegon, Good's Tree and Lawn Care, also found damage on burning bush euonymus in Lancaster, PA.

Look on the underside of leaves with stippling damage for stages of spider mites.
Photo: Stanton Gill, UME

Examine foliage for Tetranychid mites such as two-spotted spider mite and southern red mite on the undersides of foliage. Look for the characteristic leaf stippling on the upper surface of the leaves.

Here is the problem, it is difficult to find a day when it is cool enough to apply a miticide without causing phytotoxicity. It can be done, but this means you will be applying a miticide early in the morning when temperatures are below 90 °F. Try to use wettable power formulations for the least chance of phytotoxicity.

Spider mite damage on burning bush euonymus.
Photo: Elaine Menegon, Good's Tree and Lawn Care

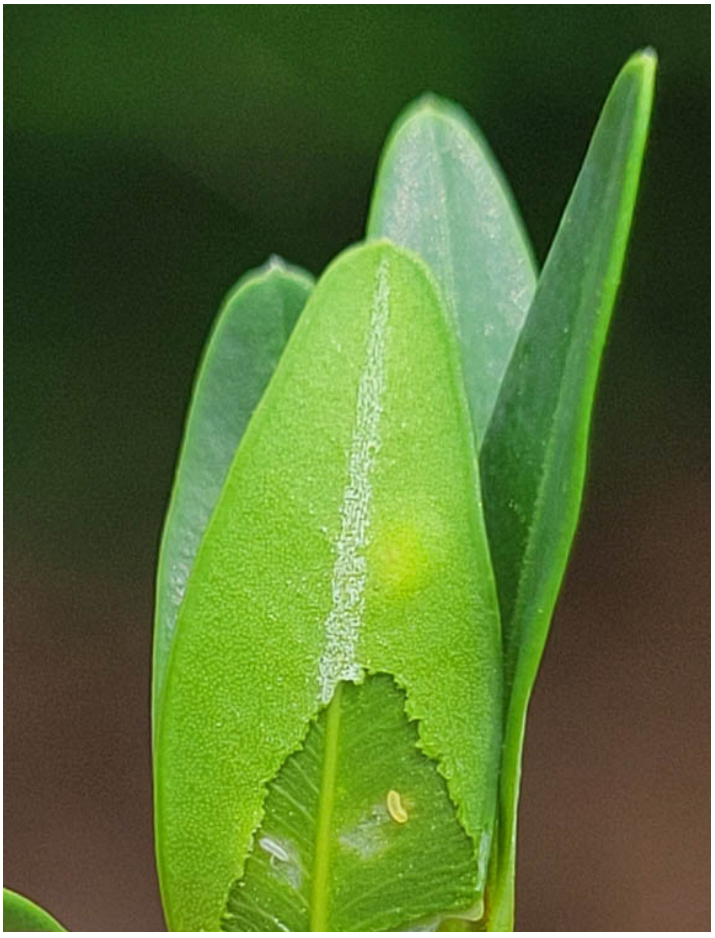
Look closely at foliage with yellowing foliage for spider mites.
Photos: Mark Schlossberg, ProLawn Plus, Inc.

Boxwood Insects

Marie Rojas, IPM Scout, found spider mite activity on *Buxus* 'DeeRunk' in Montgomery County. Look for the typical yellow stippling damage caused by mites. Boxwood spider mites prefer European, common, and English boxwoods. Avoid applying miticides when temperatures are above 90 °F. Control options include insecticidal soap or horticultural oil, Floramite, Kontos, Sanmite, Hexygon, and Forbid.

Another insect problem on boxwood that Marie found are tiny boxwood leafminer larvae on several boxwood varieties. When boxwood leafminers are out of their summer diapause stage, you can use systemic or translaminar insecticides for control. Cut a leaf open to check if the larvae is actually moving around to show that it is out of summer diapause.

A lot of stippling from boxwood spider mite feeding.
Photo: Marie Rojas, IPM Scout



When you see light green spots on the top of boxwood foliage, check inside for small larvae of boxwood leafminers.
Photos: Marie Rojas, IPM Scout

The Weather is Impacting Plants

Marie Rojas, IPM Scout, reported that "The continuing drought is starting to affect older plants not on irrigation. I saw flagging *Styrax obassia*, as well as *Stewartia* with scattered wilting/browned branches." Mark Schlossberg, ProLawn Plus, Inc., reported that *Acer palmatum* var *dissectum* in hot areas is showing leaf scorch.

Phlox Plant Bug

Barbara Katz, London Landscapes, LLC, reported that phlox plant bug is very active on phlox in various landscapes this week. These bugs use their stylets to pierce plant tissue and extract plant juices. Look for the yellow stippling and distorted foliage caused by this feeding. The feeding by this plant bug can stunt plants.

For control of this plant bug in the landscape, options include horticultural oil, insecticidal soap, azadirachtin, and Altus. Avoid applications during periods of high temperatures. The eggs are inserted into the plant tissue by the fall so cutting and removing dead plant stalks helps reduce the population for the following season. To reduce impact on beneficials, make pesticidie applications early on late in the day when pollinators are not active. Eggs overwinter in the stems, so removing plants stems in the fall removes a sources of infestation the following year.

Phlox plant bug nymphs (above) and adults (right) can cause significant damage to foliage.
Photos: Suzanne Klick, UME

Volutella on Pachysandra

By: Stanton Gill

Paul Wolfe, Integrated Plant Care, reported Volutella infection on pachysandra this week in Bethesda. Light rain and high temperatures provide optimal conditions for this disease. There is not much to do at this point. Use a mower to remove infected leaves. The mower should have a bag to collect the foliage and stems to remove the inoculum from the area. Plants generally recoup later.

Volutella infection in pachysandra.
Photo: Stanton Gill, UME

Yellownecked Caterpillars

Kyle Ewing, Bartlett Tree Experts, found a cluster of yellownecked caterpillars on a large red oak at a client's property in Royal Oak on the Eastern Shore. Kyle noted that the caterpillars had defoliated one low branch, but he didn't see any damage anywhere else on the tree or property.

Most often control of these caterpillars is not necessary. Look for beneficial insect activity to help determine if any treatments are necessary. Control is best when caterpillars are in the early instar stages. Bt and Spinosad work very well. Acelepryn or Mainspring will also work well.

Look for yellownecked caterpillars into the fall.
Photo: Kyle Ewing, Bartlett Tree Experts

Caterpillars Attacking Chrysanthemums

By: David Phan, UME Intern

We're heading toward the beginning of August, so expect to see a variety of caterpillars feeding on tree foliage. The trees will not die, but expect defoliation on them. Beware of caterpillars on chrysanthemums as they are highly attracted to caterpillars. Some caterpillars to watch out for are corn earworm (*Helicoverpa zea*), corn borer (*Ostrinia nubilalis*), saltmarsh caterpillar (*Estigmene acrea*), yellow striped armyworm (*Spodoptera ornithogalli*) and a variety of other moth caterpillars that will be attracted to chrysanthemums. Control: Spinosad applications work well on caterpillars. Mainspring and Acelpyrn continue to be strong materials for control options.

Yellowstriped armyworm (left) and corn earworm (right) are several caterpillars that feed on mums. Photos: Suzanne Klick, UME

Dogwood Sawfly

Steve Horn, Gardens Remembered, LLC, found dogwood sawfly larvae on the underside of leaves of yellow twig dogwood. These sawfly damage native dogwoods in July each year. It is very cool when early instars produce white wax. There is only one generation per year. Control options include Conserve and synthetic pyrethroids. For early instar larvae, horticultural oil and insecticidal soap can be effective.

Several clusters of dogwood sawfly larvae are feeding on yellow twig dogwood. Photo: Steve Horn, Gardens Remembered, LLC.

Yucca Plant Bugs

Dave Freeman, Oaktree Property Care, found a lot of stippling on foliage of yucca plants in McLean, VA. There were a lot of yucca plant bugs (*Halticotoma valida*) on the plants. This native plant bug can cause serious harm to yucca plants by using their piercing-sucking mouthparts to feed on yucca. Systemic insecticides such as Altus and dinotefuran control this bug. Since the nymphs are on open foliage, low risk materials such as insecticidal soap can make contact and provide good control.

Feeding by yucca plant bugs causes yellow spots on foliage that will eventually coalesce and turn brown. Photos: Dave Freeman, Oaktree Property Care

Ant Gets Bee-slapped, and Other Strange Bug Moments

Some honey bees in parts of Asia have an effective way of keeping intruders out of their hives. They slap them– with lightning speed. Video included in a study published July 10 in the journal Ecology shows how they send ants tumbling away.

Read in Popular Science: https://apple.news/Ah9y4lIVCSRyBjlxXVpqytg

Heat and Electronics

By: Stanton Gill

An increasing number of electric devices are being used in the horticulture business including electric hedge trimmers, electric chain saws, electric leaf blowers, and even electric mowers. It goes without saying, most horticulturist carry around smart phones run off batteries. **The heat is impacting this equipment during the heat of the day, keep electric batteries and devices using electric batteries in spots where they are not exposed to the strong, July sunlight with these brutal July temperatures.** The batteries operate best between 50 – 100 °F. When temperatures soar above 100 °F, as they have been for the last 3 weeks, any electric device that is held out in the sun or parked in a non-shaded area can easily exceed the temperatures for the batteries that run the device. A device left out in the strong summer sun will easily reach 110- 120 °F in a very short time of exposure.

Lithium batteries are likely to suffer noticeable damage if stored in enclosed trailers or truck cabs where temperatures can reach extreme temperatures. Your smart phone usually gives you a warning if you leave it in a hot vehicle for a short time and temperatures exceed battery safety levels. The rest of the devices using lithium batteries really do not give you a warning, they just fail to give you the expected run time. If left in the sun for too long, they can be severely damaged and even explode.

We are seeing the drones we operate in July giving about half the normal time before the battery need charging. I use a lot of electric equipment on my farm and I am seeing trimmers and electric carts have dramatically shorter times of operation before they need to recharged during these hot periods of the summer.

Ailanthus Webworm Moths

Ailanthus webworm moths become more common on flowers as we move through later summer. Barbara Mugaas, Virginia Master Gardener, found them at *Clethra* flowers this week. Adults are pollinators. In this area, the caterpillars feed on *Ailanthus*.

Adults of Ailanthus webworm are moths that you will see on flowers in the daytime.
Photo: Barbara Mugaas, Virginia Master Gardener

For Beekeepers

By: Stanton Gill

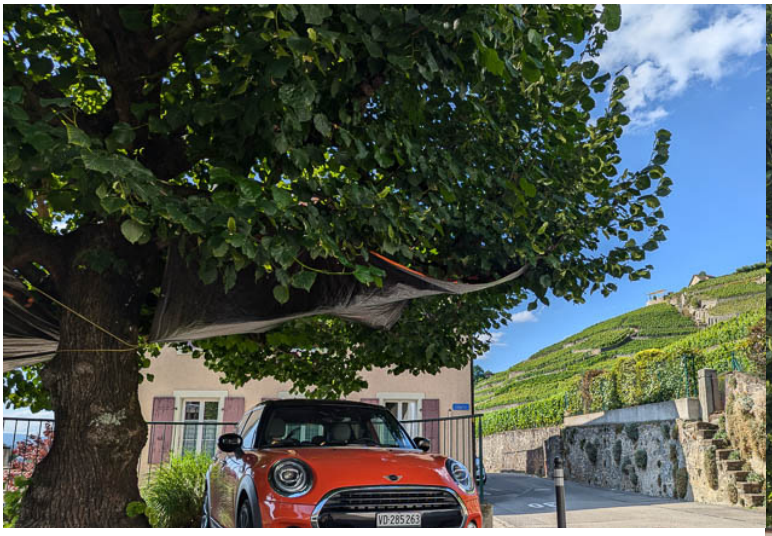
As we move toward August, the number of flower sources start to dry up. Here is some good news. As we move into August, spotted lanternflies will start to produce copious amounts of honeydew. Good news? Yes, honey bees will harvest this honeydew and carry it back to their hives. It will provide a honey with a distinct flavor. We sold this spotted lanternfly honey bee honey last fall, and it was a big hit at our Olney market.

When the honeydew accumulates on the trunk of trees it starts a bacterial fermentation. Brian Kunkel, Sheena, Suzanne, and I all saw this sort of bacterial fermentation in Baltimore County in 2023. We also saw honey bees, bumble bees, and European hornets all feeding on this bacterial fermentation. These sugars are converting to alcohol. It is kind of like humans hanging out at a bar. Your customers may be grossed out by this white frothing accumulation, but it will eventually dissolve and nothing needs to be done.

Frothy honeydew at the base of an *Ailanthus* tree.
Photo: Suzanne Klick, UME

Creative Way of Dealing With Honeydew

Luke Gustafson, The Davey Tree Expert Company, reported the following, "I recently got back from a trip visiting a friend in Laussane, Switzerland. While there, I noticed a creative, non-pesticide approach to dealing with aphid honeydew on a linden. To protect the car from getting sticky, they had attached a heavy-duty tarp to the lowest rung of branches over the parking area. It seemed to be effective!"



How someone in Switzerland addressed the issue of honeydew falling from trees onto their car.
Photos: Luke Gustafson, The Davey Tree Expert Company

Beneficial of the Week

By: Paula Shrewsbury and Mike Raupp, UMD

Specialized pollinators provide a particular ecosystem service

This is a time of year when many plants are in flower and require pollination by insects. The ecosystem service of pollination by insects is extremely important for ornamental plants in managed and natural habitats and for food plants grown commercially and in-home gardens. Some insects are generalist pollinators that forage on nectar and pollen from diverse plant groups, where others are specialist pollinators that forage only on plants of a particular group of plants (ex. plant genus or family). Plants pollinated by specialists have co-evolved together to have specialized mutualisms depending on each other.

An eastern cucurbit bee, *Peponapsis pruinose*, foraging inside a pumpkin flower for nectar and pollen.
Photo: by M.J. Raupp, UMD

This week I want to talk about a pollinator of pumpkins and other plants in the family Cucurbitaceae (squash, zucchini, cucumbers, gourds, melons, etc.). Recently Mike Raupp was examining flowers of pumpkins one morning when he observed clusters of solitary bees jockeying for position to gather nectar and pollen from newly opened blossoms of pumpkins.

A male eastern cucurbit bee looks up at the camera while another gathers food in a pumpkin blossom.
Photo: M.J. Raupp, UMD

One of the most entertaining was the eastern cucurbit bee, *Peponapis pruinose* (Hymenoptera: Apidae). The genus name *Peponapis* literally means "pumpkin bee". Sometimes as many as four eastern cucurbit bees with their striped abdomens tussled for access to nectaries deep inside the blossom. These wonderful bees are specialists, collecting pollen only from members of the cucurbit family. Females construct burrows in soil a foot or more in depth and prepare several brood chambers along the gallery. Each chamber is provisioned with pollen and nectar to feed the developing young. Larvae develop through summer and autumn and emerge next spring when squash, pumpkins, and other cucurbits start to bloom. While females labor to build their subterranean nurseries, when blossoms close in the mid-morning heat, males can sometimes be found resting inside closed blossoms. These native bees evolved to pollinate their cucurbit hosts and can be found from Canada to Mexico.

Thanks to Sam Droege (Patuxent Wildlife Research Center) for bee identification.

Weed of the Week

By: Solomon Hutchins, UME 2024 Workforce Development Summer Intern

Black medic (*Medicago lupulina*) is a low growing, prostrate summer annual weed. This weed is primarily found on turfgrass, particularly in nutrient poor and drought prone soils. It can also thrive in disturbed soils and waste areas.

When identifying black medic, the main part of the stem branches from near the base of the plant. The stems of the plant are hairy, growing up to 1-3 feet long. The leaves will have a heart shape with the leaf margins being toothed. Black medic has a long taproot which is able to grow deep into the ground.

Black medic's inflorescence is made up of a cluster of about 10 to 50 yellow flowers arranged in a spherical or short cylindrical fashion. The mature fruit is a kidney-shaped, strongly veined, and black 1-seeded pod.

Despite black medic being mostly categorized as a weed, it has historically been useful in several different ways. It is edible and it was said to have been used by Native Americans as a flour which was made by roasting and grinding the seeds.

In addition, black medic can be useful as a forage or in a cover crop seed mixture–it is a legume, so it can fix its own nitrogen which is beneficial to the next crop.

Fun fact: Black medic's extract has anti bacterialq ualities, but be cautious – if eaten it can be a mild laxative!

Works Cited:

Eat weeds **-** by GREEN DEANE

https://www.eattheweeds.com/black-medic/#:~:text=A%20report%20that%20California%20Indians,was%20used%20as%20a%20potherb.

Winston Horticulture extension
https://hort.extension.wisc.edu/articles/black-medic-medicago-lupulina/#:~:text=Black%20medic%20produces%20viable%20seed,rain%20has%20softened%20the%20soil.

Penn state extension
https://extension.psu.edu/black-medic#:~:text=Black%20medic%20can%20be%20a,can%20fix%20its%20own%20nitrogen.)

Weeds of the Northeast - Book

1. Black Medic Seed - Interestingly this weed produces yellow flowers that coil into black pods, which is how it gets its name. Photo: Bruce Ackley, The Ohio State University, Bugwood.org

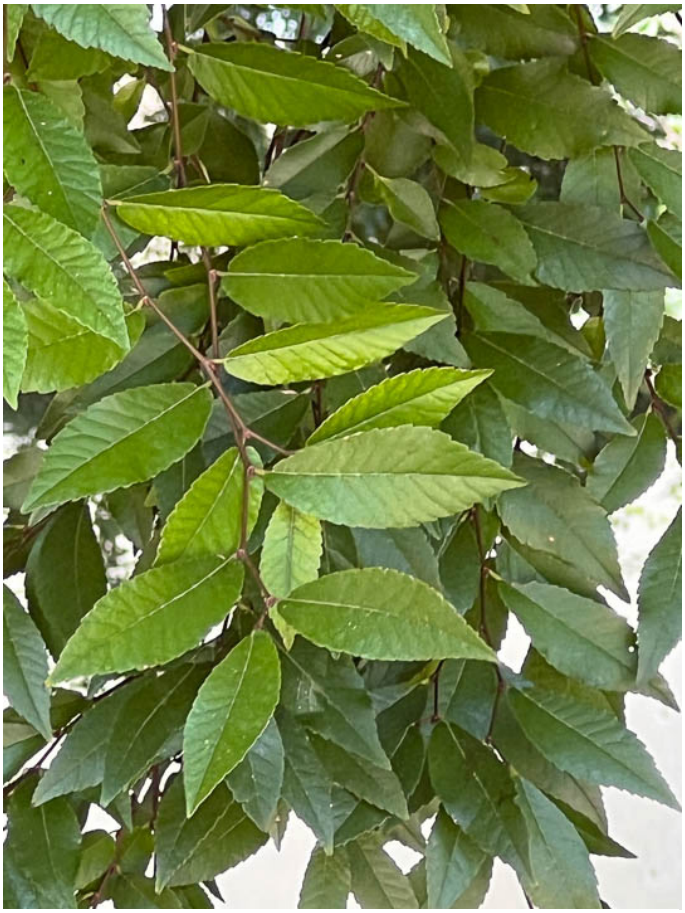
2. Black medic plant
Photo: Karan A. Rawlins, University of Georgia, Bugwood.org

3. Black medic fruit
Photo: Forest and Kim Starr, Starr Environmental, Bugwood.org

Plant of the Week

By: Ginny Rosenkranz

Ulmus parvifolia, allee or lacebark elm or Chinese elm, is a beautiful medium-sized tree that has a vase-shaped growing habit. Trees grow 60-70 feet tall and 35-55 feet wide, thriving in full sun to part shade and rich, moist organic well drained soil, but it can adapt to many different soils and dry or wet sites. Lace bark elm has narrow 3-inch-long dark green shiny leaves with a toothed margin that in the autumn can turn to shades of yellows or purple reds. They also are asymmetrical with parallel veins. The flowers are small, reddish green blooming in late summer that mature into single seed samaras that look like a flattened circular papery wing. The bark is the true beauty of this tree as it exfoliates in lacy flakes to reveal patches of cinnamon, cream, brown, gray, olive and orange. Lacebark elms are resistant to Dutch Elms disease, with moderate to tolerance salt air and air pollution. Although it resists Japanese beetles and elm leaf beetles, and leaf scorch, it is susceptible to borers, caterpillars, leaf miner and scale. The plant also has a very low wind resistance and doesn't do well in very windy areas, and the number of seeds can become problematic weeds.



Use lace bark elm in the landscape for its ornamental exfoliating bark, and green summer leaves that turn yellow or purple to red.
Photos: Ginny Rosenkranz, UME

Pest Predictive Calendar "Predictions"

By: Nancy Harding and Paula Shrewsbury, UMD

IIn the Maryland area, the accumulated growing degree days (**DD**) this week range from about **2032 DD** (Martinsburg) to **2772 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.

Fall webworm – egg hatch / early instar (2nd gen) **(1962 DD)**
Maskell scale – egg hatch / crawler (2nd gen) **(2035 DD)**
Euonymus scale – egg hatch / crawler (2nd gen) **(2235 DD)**
Mimosa webworm – larva, early instar (2nd gen) **(2260 DD)**
Japanese maple scale – egg hatch / crawler (2nd gen) **(2508 DD)**
Fern scale – egg hatch / crawler (2nd gen) **(2813 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 July 24)

Annapolis Naval Academy (KNAK)	2459
Baltimore, MD (KBWI)	2460
College Park (KCGS)	2451
Dulles Airport (KIAD)	2497
Ft. Belvoir, VA (KDA)	2475
Frederick (KFDK)	2428
Gaithersburg (KGAI)	2277
Greater Cumberland Reg (KCBE)	2194
Martinsburg, WV (KMRB)	2032
Millersville (MD026)	2340
Natl Arboretum/Reagan Natl (KDCA)	2762
Perry Hall (C0608)	2243
Salisbury/Ocean City (KSBY)	2253
St. Mary's City (Patuxent NRB KNHK)	2772
Susquehanna State Park (SSQM2)	2282
Westminster (KDMW)	2570

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

August 5-8, 2024
Drone School
Location: CMREC, Ellicott City, MD

August 13, 2024
IPM Diagnostic Session
Location: CMREC, Ellicott City, MD

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

September 18, 2024
Urban Tree Summit (Casey Trees and Montgomery Parks)
Location: Silver Spring Civic Center. To register please visit Urban Tree Summit or https://urbantreesummit.org/

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

December 5, 2024
Tech Day: Focus on Solar
Location: CMREC, Ellicott City

December 12, 2024
2024 Cultivating Innovation in Maryland's Agriculture and Technology Conference
Location: Crowne Plaza, Annapolis, MD
Program and registration information

Fall 2024 Environmental Horticulture & Sustainable Agribusiness
Montgomery College - Germantown Campus

HORT 215 Integrated Pest Management and Entomology *, ** 3 semester hours
Hone your pest management skills **with Stanton Gill**. Explore the identification of key pests, their life cycles and control methods, with emphasis on integrated pest management strategies.
Thursday, 6:00 - 9:30 p.m. CRN 22918, CRN 22919 Lab - On-line
Lecture and lab meet on-line, portion of lab instruction will be offered remotely.

Other courses available are:

HORT 100 Intro. to Plant Sciences (4 semester hours), HORT 105 Intro. to Sustainable Landscaping (2 semester hours), HORT 161 Landscape Graphics (3 semester hours). HORT 222 Sustainable Turfgrass Management*, ** (3 semester hours), HORT 253 Plant Materials I* (3 semester hours), HORT 280 Landscape Technology Internship (2 semester hours),

* HORT 215, HORT 253 includes optional Saturday Field trip(s).
**HORT 215 and HORT 222 and other select courses in the Program, have been approved by the Maryland Department of Agriculture to prepare Greens Industry professionals for pesticide application certification in Category III.

For further information about the program or courses, contact Stephen Dubik (240) 567-7803, steve.dubik@montgomerycollege.edu

►In-county tuition rates available for Business/Industry employees
►Tuition waivers available for senior citizens - starts August 28
►Web registration: www.montgomerycollege.edu

Classes start September 3 2024

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

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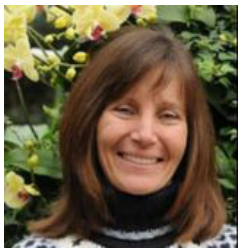

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Photos are by Suzanne Klick or Stanton Gill unless stated otherwise.