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**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 sklick@umd.edu

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Disease Information: David Clement (Extension Specialist) and Ana Cristina Fulladolsa (Plant Pathologist and Director, UMD Diagnostic Lab)

Weed of the Week: Kelly Nichols and Nathan Glenn, (UME Extension Educators) and Dan Buonaiuto, (Assistant Professor), Dept. of Plant Sciences and Architecture

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Scale Management Heading into Winter

By: Laura Nixon

As the weather starts to cool, we will see scale insects heading into their overwintering stage. However, there are still a few species that have crawlers out and about this October. Crape myrtle bark scale are currently at a stage where the small pink crawlers are active and beginning to develop into the darker, sedentary late stage nymphs. They will overwinter in this settled form. Tuliptree scale (*Toumeyella liriodendri*) are also at the crawler stage, and will darken and settle to overwinter as late stage nymphs.

If you have trees infested with either of these species, now is a good time to hit those populations with an insect growth regulator (IGR) such as pyriproxyfen (Distance) or buprofezin (Talus), which can be mixed with 0.5-1% horticultural oil to maximize efficacy.

Most scale species overwinter in a sedentary and protected state, ranging from late instar nymphs to mature females. The protection may be gained from an armored exterior (e.g. Japanese maple scale), a thick waxy covering (waxy scales), and/or settling into protected nooks (e.g. under loose bark, in branch crotches). Heading into and throughout the early winter, it is a good idea to inspect your plants for these overwintering populations. Later in the winter and early spring is the best time to treat infested plants with dormant oil sprays, and repeat applications are recommended so it is important to plan ahead.

These oils function by blocking the spiracles of insects to suffocate them and also breaking down the fatty acids in scale cell membranes. Oil sprays only function when in contact with the insect, so be sure to be spraying directly onto the infested parts of your plants.

Here is a really great article on the “Do's and Don'ts of Dormant Oils” from Montana State University. Although their winter climate and some pests of concern differ from ours in Maryland, this is a good guide on dormant oil usage: https://www.montana.edu/extension/lila_extn/dosandontsofdormant oils.html

Digging Damage in Turf

By: Laura Nixon

This week, Nathan Brandt (Virginia Tech) found that a large patch of turf had been dug up adjacent to his tree fruit blocks. The grass had been dug into and peeled back by raccoons digging for beetle grubs. You might start to see this as we head towards winter. Other small mammals, such as skunks and opossum, will also exhibit this behavior, but raccoons' unusually dexterous front paws make them particularly good at pulling up the turf layer.



Large patch of damaged grass.
Photo: Nathan Brandt, Virginia Tech



The layer of turf has been peeled back (likely by raccoons) in search of beetle grubs.
Photo: Nathan Brandt, Virginia Tech

A New Fact Sheet On Drones

The new Fact Sheet, '[FAA Part 107 Certification and Drone Registration](#)' is now available to guide you in obtaining your FAA Part 107 certificate. This certificate "provides rules for remote pilots who operate drones for purposes other than for recreation, such as photography, inspections, or agricultural work."

There's Still Time to Treat for Box Tree Moth

By: Laura Nixon

This week, about half of the box tree moth caterpillars we are seeing have formed hibernacula (overwintering structures) and the others are still out and feeding. All of the caterpillars are around 3rd instar, which is a good size for effective treatments. If your boxwoods have these caterpillars, you can treat now with a Bt or Spinosad spray. This is the last chance to be treating with systemics such as chlorantraniliprole (Acelepryn) and cyantraniliprole (Mainspring), as those chemicals require the pest to ingest them to be effective.



Photo 1 Third instar caterpillars feeding this week.
Photo: Laura Nixon, UME



Photo 2 A hibernaculum formed by BTM caterpillars to overwinter.
Photo: Laura Nixon, UME



Photo 3 Open up the hibernaculum to find a small caterpillar within. This caterpillar may still feed over the next couple of weeks.
Photo: Laura Nixon, UME

Fall Mushrooms

By: D.L. Clement

Fall is the season for mushrooms, and if we receive adequate rainfall, many types may become visible. These macrofungi may be pathogens and others are mycorrhizal, while others may just be decomposing organic matter. Fungi in a landscape or woodland are the principal decomposers of wood which release nutrients back into the soil. The one thing they have in common is that they live most of their lives in anonymity as mycelium hidden from view, for example inside a tree or in the soil until they produce their reproductive structures that we call mushrooms, shelf fungi, toadstools etc. Another interesting characteristic of some of these mushrooms is faint green bioluminescence in fresh specimens. As always, don't eat wild mushrooms and just enjoy them in nature.



Jack o' Lantern mushrooms are one of the pathogenic fungi.

Photo: Laura Nixon, UME



You can also find mushrooms like these that are decomposers.

Photo: Emily Clark-Watson

Ganoderma lucidum Root Rot

Photos: David Clement, UME



Jack O'Lantern Bioluminescent Mushrooms



Inonotus dryadeus, Wood Decay on Oak



Beneficial of the Week

By: Paula Shrewsbury, UMD

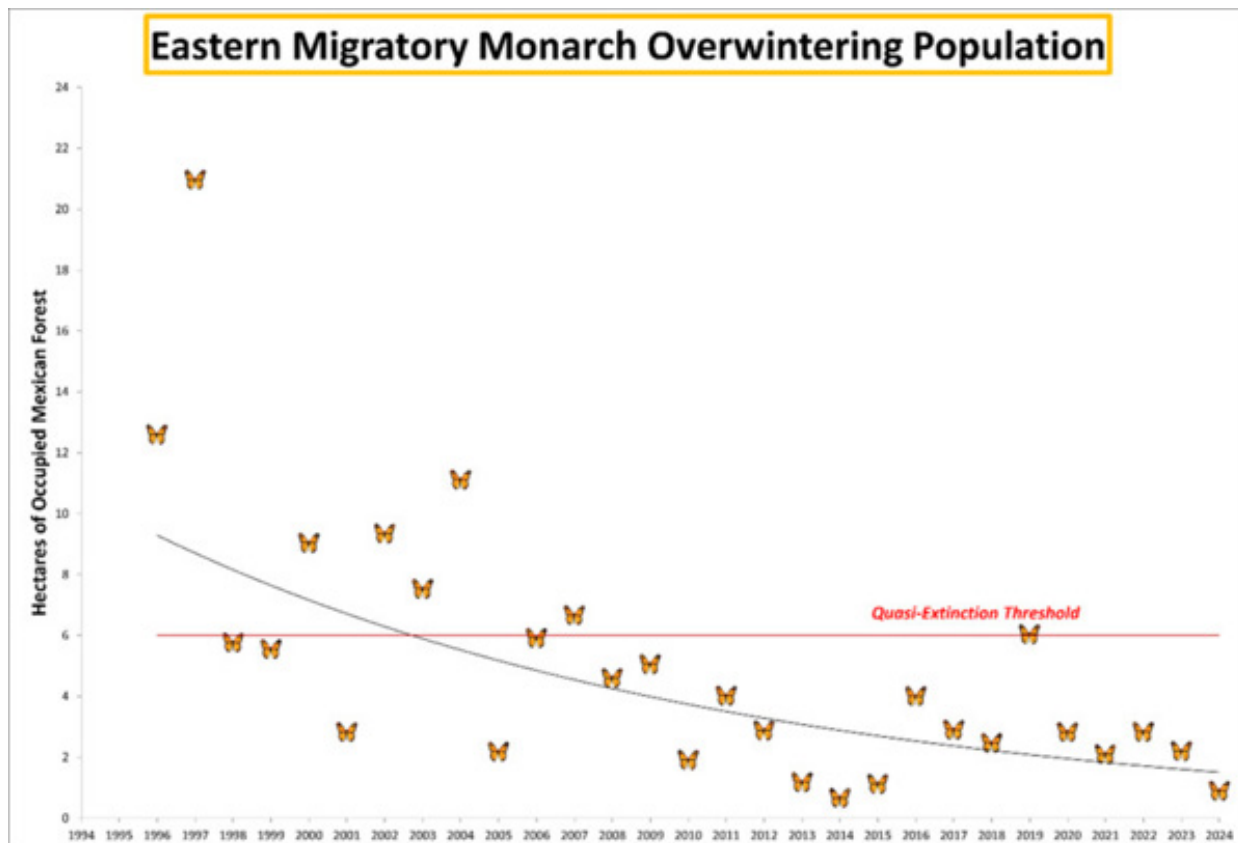
What is the status of Monarch butterfly populations?

A [few weeks ago](#) (9/25/2026), Dave Freeman, Oaktree Property Care, shared images of a late instar Monarch, *Danaus plexippus* (family: Nymphalidae), caterpillar and pupa. According to the [Farmer's Almanac \(The Great Monarch Butterfly Migration\)](#), the fall migration of eastern Monarch butterflies from Canada back to central Mexico occurs through September and October. The peak northern migration in the mid-Atlantic area should occur mid to late September. Dave was catching the near end of the Monarch butterflies moving through MD towards their overwintering location. I thought this would be a good time to catch up on the status of Monarch butterflies.

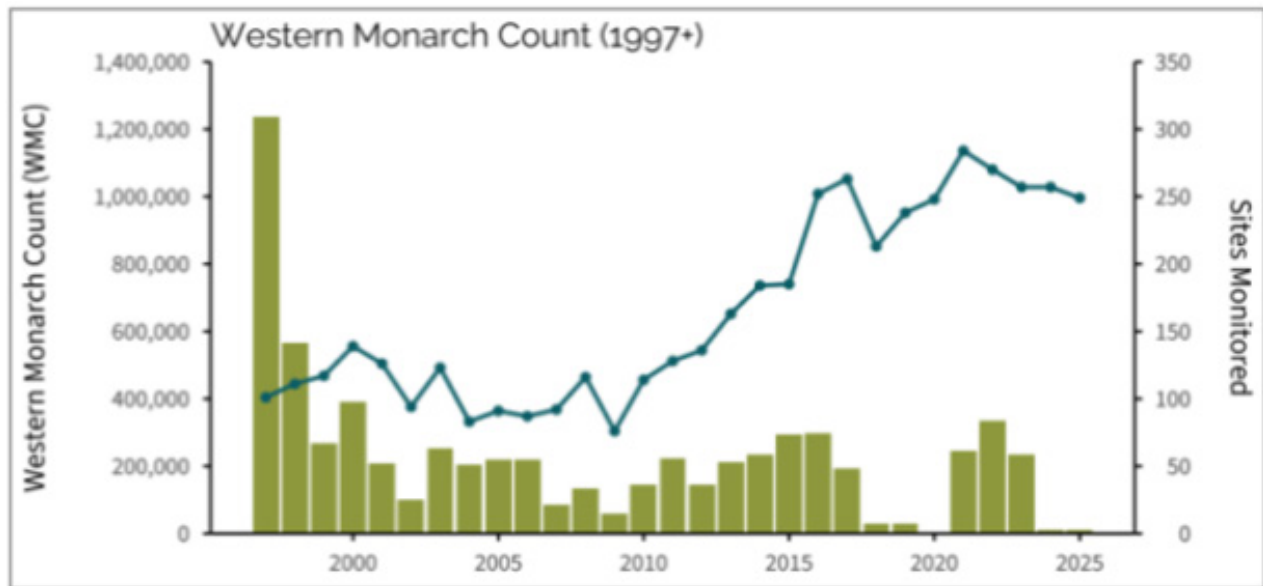


Monarch butterfly feeding on floral resources.
Photo: Paula Shrewsbury, UMD

The iconic Monarch butterfly is one of, if not, the most well-known butterflies in North America. Everyone loves monarchs and rightly so. They have one of the most fascinating lifecycles and migratory behaviors of all insects. In addition, monarch adults provide pollination services, and the caterpillars are food for other organisms. Given all of this, I think they qualify as a “beneficial” even if the caterpillars make milkweed plants look a little ratty.



The eastern monarch butterfly population in 2024 was only 1/6 of the size needed to be out of the danger zone of migratory collapse.
(image from BiologicalDiversity.org)



Graph of the total abundance estimates of western monarch butterflies with number of sites monitored from 1997-2025 by the Western Monarch Thanksgiving Count.
(image from Xerces Society)

Monarchs have an amazing lifecycle that involves multiple generations and migration across miles. In North America (NA), in general, there are three populations. There is the **eastern NA Monarch population** that overwinters in Mexico, and in the spring, around mid-March, begins its seasonal migration to the north toward southeastern Canada traveling a few thousand miles. Monarchs undergo multiple generations during this long journey to Canada. In the late summer–fall months monarchs begin their migration back to their overwintering habitat in the oyamel fir forests in central Mexico.

So basically, the adults that return to the overwintering roost in Mexico at the end of the season are several generations later than those that began the journey. There is also a **western NA Monarch population** (west of the Rockies) that similarly migrates between sites in California



Western monarch butterflies cluster on a Eucalyptus tree in Pismo State Beach Monarch Butterfly Grove, California.
(image by Lisa Damarel, from Xerces.org)

and Canada. They [overwinter or roost in forested groves in coastal regions of California](#), migrate to Canada, and back again to California to overwinter. Several winters ago, in December, I was fortunate enough to visit one of the overwintering roosts of monarch adults in Monterey, CA. A truly amazing site that I recommend you all put on your bucket list to experience. A third, more recently founded **population is in Florida and Georgia.**

You have likely heard discussion regarding monarch butterfly decline – in both the Eastern and Western monarch populations. Scientists studying monarch butterflies implicate several factors that come together to threaten populations of monarchs. Illegal logging of the forests in Mexico has reduced optimal overwintering habitat for monarchs. Weather events associated with climate change also threaten monarchs. Within the U.S., Eastern monarchs have lost an estimated 165 million acres of breeding habitat along their migration route northward. Although monarch butterflies feed on nectar from a diversity of flowering plants, monarch caterpillars only eat milkweed foliage. Scientists believe that critical milkweed resources used by caterpillars

have been dramatically reduced due to the use of herbicides and genetically modified crops that tolerate direct spraying of herbicides and kill milkweed. Other threats to their populations include habitat fragmentation and destruction, urban development, and pesticides, along with other climate change related phenomena.

What is the status of Monarch butterfly populations now? Eastern migratory Monarchs have survived the 2025/26 winter and have made their journey northward for another year and are now returning to Mexico to overwinter. But how are these peripatetic marvels doing in general? Two years ago, we learned that populations of both [eastern and western migratory Monarchs](#) had declined dramatically from levels recorded in the 80's and 90's. According to data reported by the Xerces Society, overwintering populations of [eastern migratory monarchs](#) in the mountains of Mexico expanded from 4.42 acres in 2025 to 7.24 acres in 2026. Some good news there but scientists noted that these population levels are still [“well below historic norms.”](#) Some additional good news recently reported by the Xerces Society reveals that some [Monarchs overwintering in northern Florida](#), rather than in Mexico, may migrate northward thereby bolstering migrations of their endangered Mexican-based kin. These bits of hope do not extend to all migratory North American Monarchs. Sadly, populations of [western migratory Monarchs](#) continue to flirt with collapse. The January 2025 overwintering counts of western Monarchs were the third lowest since records have been kept. Their populations hover around and often sink below a hypothetical extinction level. Scientists say that monarchs are at risk of extinction in North America. Help is needed!



Research indicated that milkweed planted along the perimeter of butterfly gardens had 2.5-4 times more monarch eggs and larvae (research and photo by D. Potter and A. Baker, UKY)

What can be done to help monarchs? Globally, efforts to slow (and hopefully stop) climate change, conservation of food resources for adult and larval monarchs, and improvement of habitats for monarchs will help. Actions to influence policy on climate change, pesticide use, and the placement of monarchs on the Endangered Species Act list will also assist monarchs. At a local level, providing habitat with native milkweeds for caterpillars and nectar resources for adults should improve monarch reproduction and survival. There are 73 species of milkweed in the U.S., monarch caterpillars use about 30 of these as hosts. Be sure to consult references to learn what milkweed species work well in your geographic region. Here in Maryland, species including common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), butterfly weed (*Asclepias tuberosa*), whorled milkweed (*Asclepias verticillata*), and poke milkweed (*Asclepias exaltata*) are good choices. Research has determined that tropical milkweed, *Aesclepias curassavica*, (commonly planted in FL) is not a good choice and can be detrimental to monarchs. Adult monarchs feed on nectar from a diversity of plants, but not all nectar is created equal. Consult references to learn what plants provide the best nectar for monarch butterflies and their bloom times. Regional references for milkweed plants can be found at this link <https://xerces.org/milkweed> and references for monarch nectar plants can be found at this link <https://xerces.org/monarchs/monarch-nectar-plant-guides>.

Research from the lab of Dan Potter (with student Adam Baker, UKY) shows that garden design is important and suggests [how to build more effective monarch butterfly gardens](#). For example, monarch eggs and larvae were 2.5 to 4 times more abundant in gardens with milkweed planted around the perimeter as opposed to gardens in which milkweed were surrounded by or intermixed with the other non-milkweed plants. Although planting any milkweed and nectar hosts for monarchs will be helpful, these studies provide guidelines to design gardens that are more effective. Start planning for how to include milkweed and monarch nectar plants in your perennial gardens next spring. We have a critical role to play in conserving these extraordinary travelers.

Weed of the Week

By: Dr. Dan Buonaiuto

This week's weed of the week is another relatively new invasive plant to the region. Chaff flower (*Achyranthes japonica*) is an herbaceous perennial from East Asia in the Amaranthaceae family that was discovered in Kentucky in the 1980s. In 2022 it was first reported in the DMV, and there has been a significant increase in reports since 2024.

Chaff flower Identification:

- Habit: This herbaceous perennial grows about 3-5 feet tall on a squarish stem.
- Leaves: Leaf arrangement is opposite, with entire (smooth) edges and distinctive arching veins. The plant often has a reddish purple color at the leaf nodes (Figure 1).
- Flowers: Distinctive bottlebrush shaped flower appears from late July through mid-September (Figure 2).
- Fruit: After flowering, the reproductive stem elongates, housing seeds covered by papery chaff (Figure 3). Though the leaves die back in the winter, the stems and seed can remain, turning light brown in color.

Chaff flower Look-alikes:

There are a few native species that might be confused for chaff flower.

- American lopseed (*Phryma leptostachya*): Like chaff flower, American lopseed has small oval fruits with a pair of bracts. However, chaff flower leaf edges are mostly smooth (entire), while American lopseed leaves have coarsely dentate margins (Figure 4).
- Dogwoods (*Cornus* sp.): Chaff flower could be confused for young dogwood seedlings because of its opposite, simple leaves and prominent arching veins. A key difference is that chaff flower has a soft herbaceous and squarish stems, while dogwoods are woody.

Chaff flower Ecology:

Chaff flower is an ecological generalist—while it seems to be spreading most rapidly along stream systems it can also be found in roadsides, ditches, pasture edge, and garden garden habitats. It thrives in partial sun and moist soils, but can grow in shade and under dry conditions as well. Chaff flower forms dense thickets, outcompeting desirable vegetation. A single chaff flower plant can produce up to 2,000 seeds in one season. Seeds have two hair-like bracts at their base that can cling to fur, feathers or clothing.

Chaff flower Control:

Prevention: As a relatively new invader to our region, prevention is a key step to managing this species on the landscape scale. Be wary of



Figure 1: Chaff flower leaves and stems.
Photo: Chris Evans / University of Illinois



Figure 2: Chaff flower inflorescence.
Photo: Alex Abair / iNaturalist CC.BY 4.0

working in, walking through, or driving vehicles through areas with lots of chaff flower in the fall while seeds are present, and be sure to clean off shoes, clothes, equipment, and animals.

Mechanical: Young plants can be hand-pulled, but this isn't recommended for larger plants due to chaff flower's robust root system. Mowing before seed production can be an important step to mitigate spread from existing populations. Please note it is already too late in the year for this, and mowing chaff flower now would be likely to spread the seeds rather than contain them.

Chemical: Several systemic herbicides are reported effective for controlling chaff flower including 2,4-D ester, triclopyr amine, glyphosate, aminopyralid, triclopyr and fluroxypyr mix, and aminopyralid and metsulfuron mix. The optimum time for chemical control is late summer before seed production. As for mechanical control, attempts to chemically control chaff flower at this point in the season would likely result in additional spread as seeds cling to clothing and equipment.



Figure 3: Chaff flower with seed heads.
Photo: Jesse J. Smith / iNaturalist CC.NC 4.0



Figure 4: Leaves of American lopseed, a native plant that could be confused with chaff flower. Note the dentate leaf margins here.
Photo: Peter Friedman

Plant of the Week

By: Ginny Rosenkranz

Muhlenbergia capillaris or pink muhlygrass is a native warm season clump forming ornamental grass that thrives in full sun and sandy or well drained soils. It is very tolerant of poor soil, urban conditions, heat, humidity, drought and very salt tolerant. Unlike many grasses, Pink muhlygrass doesn't spread by rhizomes but can spread by seeds. It emerges from the soil in spring with deep green, glossy alternately placed, wiry thread like leaves that grow 2-3 feet tall and wide. In the autumn the airy open loosely branched flower inflorescence grows 3-4 feet tall and displays delicate pink, reddish-pink or purple-pink airy flowers that mature into tiny purple seeds that later fade to soft tan that provides interest through the winter. The foliage provides year-round cover, and the seeds are enjoyed by both songbirds and small mammals. Plants are cold tolerant from USDA zones 6-10 and should not be cut down until early spring when the new foliage emerges. There are several cultivars that provide earlier blooming like 'Fast Forward' which blooms in late summer, Regal Mist® which has more billowing flowers and 'White Cloud' which has a more upright habit, grows a bit taller but is only cold tolerant in USDA zones 6-10. These beautiful, graceful plants make a wonderful display plant but look amazing when planted in mass plantings or borders, meadows, native and cottage gardens. They have no serious insects or disease pests!



Pink muhlygrass provides year round interest in the landscape.

Photos: Ginny Rosenkranz, UME

Pest Predictive Calendar “Predictions”

By: Nancy Harding and Paula Shrewsbury

In the Maryland area, the accumulated growing degree days (DD) this week range from about **3405 DD** (Clarksville) to **4569 DD** (Nat'l Arboretum/Reagan Nat'l). 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.

Tuliptree scale – egg hatch / crawler (**3472 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 October 7, 2026)

Annapolis Naval Academy (KNAK)	4153
Baltimore, MD (KBWI)	4081
Belcamp (FS836)	4030
Clarksville (001MD)	3405
College Park (KCGS)	4200
Dulles Airport (KIAD)	4109
Ft. Belvoir, VA (KDA)	4268
Frederick (KFDK)	3719
Gaithersburg (KGAI)	3900
Greater Cumberland Reg (KCBE)	3655
Martinsburg, WV (KMRB)	3762
Millersville (MD026)	4084
Natl Arboretum/Reagan Natl (KDCA)	4569
Perry Hall (C0608)	3805
Salisbury/Ocean City (KSBY)	4079
St. Mary's City (Patuxent NRB KNHK)	4304
Westminster (KDMW)	4007

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 calculator Thresholds in: Fahrenheit °F Lower: 50 Upper: 95 Calculation type: simple average/growing dds Start: Jan 1

Conferences

[FALCAN Truck & Trailer Safety Seminar](#)

October 14, 2026

Location: Urbana Fire Hall, Urbana, MD

Spanish-Language Pest Control Training

Provided by: Maryland State Pest Control Association

October 15, 2026

9:45 a.m. to 5:00 p.m.

Location: Virtual program.

[Agenda and Registration Information.](#)

Maryland Turfgrass Conference

December 15, 2026

Location: Turf Valley Resort, Ellicott City, MD

December Integrated Pest Management Conference

Date and location will be posted when confirmed.

2027 Advanced Landscape IPM PHC Short Course

This is a recertification short course for arborists, landscapers, IPM consultants, horticulturalists, professional gardeners, and others responsible for urban plant management. The course lectures will be held over four days at the University of Maryland, College Park, MD. In addition, there will be a hands-on lab following lecture (available to a limited number of course attendees). Coordinators: Drs. Paula Shrewsbury and Mike Raupp, Dept. of Entomology, University of Maryland

Lecture dates: Monday, January 4 - Thursday, January 7, 2027 from 8:00 am – 3:00 pm

Lab dates: Monday, January 4 - Thursday, January 7, 2027 from 3:30 pm – 5:30 pm (space limited)

Course information: <https://landscapeipmphc.weebly.com/>

Registration: <https://www.eventbrite.com/e/2027-advanced-landscape-ipm-phc-short-course-tickets-1992372702386?aff=oddtcreator>

Questions contact: Amy Yaich, 301-405-3911, umdentomology@umd.edu

Maryland Arborists' Association Conference

January 12, 2027 (snow date in January 13, 2027)

Location: Howard Community College, Columbia, MD

FALCAN Pest Management Conference

January 22, 2027 (snow date is March 12, 2027)

Location: Frederick Community College, Frederick, MD

LCA Pest Management Conference

January 28, 2027

Location: Turf Valley Resort, Ellicott City, MD

2027 Manor View Farm & Perennial Farm Education Seminar

February 2, 2027. Valley Mansion, Cockeysville MD

Laura Nixon is speaking at this event.

Chesapeake Green Horticultural Conference

February 11 and 12, 2027

Location: Maritime Institute and Conference Center, Linthicum Heights, MD

Eastern Shore Pest Management Conference

February 16, 2027

Location: Wicomico Civic Center, Salisbury, MD

2027 Precision Agriculture Technology Conference

February 25, 2027

Location: Crowne Plaza in Annapolis, Maryland.

This year's theme, Plowing Through the Hype: What Happens When AgTech Meets the Field?, will focus on the practical applications and profitability of agricultural technology. Topics include artificial intelligence, robotic weed management, drones for nutrient management and prescription mapping, and the economics of adopting these tools.

Commercial Ornamental IPM Information

<http://extension.umd.edu/ipm>

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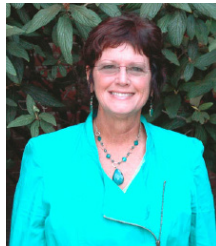
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