UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **September 1, 2023**

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:
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)

Drought Weather is Stressing Trees

By: Stanton Gill

As I travel around the state of Maryland, I am seeing many trees showing major stress from the extended drought conditions. The ground in many areas is powder dry. Foliage on sycamore, red oaks, London plane, birch, redbud, and cherry are all showing major leaf scorching with the extended dry weather. In many places, foliage is littering the ground with leaves.

When we visited the Capital grounds this week in D.C., we saw squirrels clipping foliage from oak trees and many of the clipped small branches were littering the ground. The squirrels are building their overwintering nests at this time of year.

Cluster of oak leaves littering the ground after being clipped by squirrels.

Drought Practices

By: David Clement, UME

With our extended fall drought this year be prepared to add supplemental irrigation to nursery plants as well as your customers landscapes. Although established plants will be better adapted to dry conditions, prolonged drought may cause irreversible damage or mortality to plants, including our native vegetation. Trees and shrubs growing in parking lots or next to large buildings with reflective surfaces are at much greater risk for heat stress than trees surrounded by other landscape plants or even bare soil.

Preferring moist areas, sycamores show discoloration due to water stress early. Photo: Suzanne Klick, UME

Plants avoid drought by closing their stomata to prevent water loss once a certain threshold level of stress is reached. This protects the plant from further water loss and dehydration damage. The disadvantage of this response is that when stomata are closed their photosynthesis and carbohydrate production will stop. Plant utilize carbohydrate reserves for respiration to maintain their metabolism and growth. If drought conditions persist plants may die of starvation since their energy use will exceed the energy produced by drought reduced photosynthetic activity.

Under high temperatures, water loss from plants and soil is accelerated due to higher rates of evapotranspiration. Leaves and branches can be scorched, die and fall off, and eventually the entire plant will die. Tolerance to extreme high temperatures differs between plants and depends on many factors including species, cultivar, plant health status, and weather conditions before the heat stress event. If roots have shrunk from the surrounding soil, then moisture uptake may be slow until the root zone is fully recharged again with water.

Typical signs of drought and heat stress include wilting leaves, leaf scorch, leaf yellowing and leaf drop, branch dieback, reduced new growth, and potential plant death. While some tree and shrub symptoms will be apparent during or soon after extended drought, prolonged drought conditions in trees can cause reduced growth or mortality in subsequent years.

Trees and shrubs are the largest and most expensive plants to replace in a landscape. They provide important functions such as shading, and screening. Watering of trees and shrubs should be prioritized since they take many years to reach mature size. The amount of water from a single rain event can vary dramatically between sites. Testing the moisture available in the root zone of trees is the best way to decide when the next irrigation is necessary. This can be determined by using a soil probe to extract soil or a screwdriver pushed into the soil. Testing the soil moisture under the canopy is especially important for species with dense canopies such as conifers, oaks, tulip poplars, and maples. Dense leaf canopies may deflect rain and exclude it from the root zone.

Slow, deep irrigation to wet the root zone to the proper depth is vital in keeping trees and shrubs healthy during dry, hot conditions. Pay close attention to trees and shrubs planted within the last three years. Do not heavily prune trees and shrubs in hot dry weather. Excessive pruning will cause additional stress by removing foliage needed for recovery. Add mulch over bare soil. Avoid fertilizing since adding fertilizer salts will desiccate roots and promote growth that the plant cannot support. Delay transplanting to a cooler part of the year if irrigation is limited.

Diagnostic Sessions Coming Up in September

By: Stanton Gill

MNLGA is holding a field day at Abby Farms in Waldorf, MD on Sept 13, 2023. We will have a diagnostic outdoor session for disease management with David Clement and Karen Rane running this one. Brian Kunkel, University of Delaware and I will run the insect and mite diagnostic session. Andrew Ristvey will run the water and nutrient management session.

Register for the field day through the MNLGA website.

See the conference section at the end of the report for more program listings.

Camphor Beetle Activity

By: Stanton Gill

Steve Nagy, Mead Tree Experts, sent photos of crape myrtle with round holes in the main stems. The manager had cut the stem open to reveal a black colored beetle that was the camphor beetle, *Cnestus mutilates.*

Camphor beetle found in crape myrtle.
Photo: Steve Nagy, Mead Tree Experts

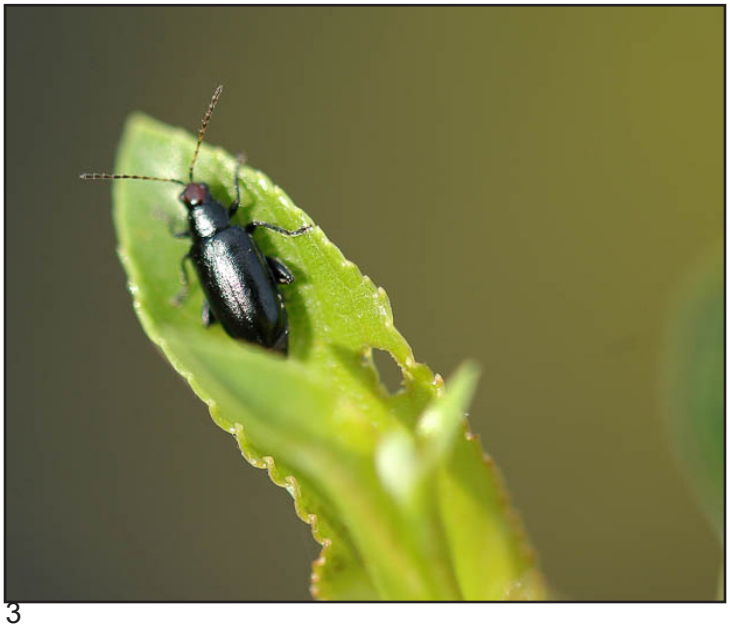
Also, we received notice that camphor beetles were found in Downtown Washington, D.C. attacking trees. They were identified by the U.S. Forest Service entomologist.

Please let us know if you are finding camphor beetles. Contact Stanton at sgill@umd.edu.

Red-headed Flea Beetle

By: Stanton Gill

One of the most frustrating insects for nursery owners who growing in containers is the red-headed flea beetle. Since the larvae feed in the rootball it makes detection very difficult. Damage to foliage is very evident at this time of year from feeding by adults.



Red-headed flea beetle adults are feeding now.
Photo: Brian Kunkel, University of Delaware Extension

One of the materials that is working very well for adult flea beetle control is Mainspring. For the larvae feeding in the root zone, try *Heterorhabditis* beneficial nematodes.

Slugs Mating

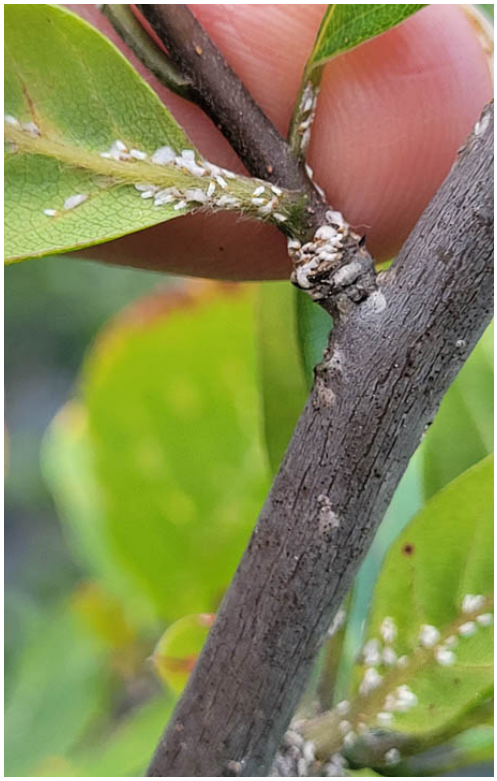
Marie Rojas, IPM Scout, sent in a photo from her brother-in-law, Bill Winder, who said he was "wondering what the heck was happening on the side of his trash receptacle". It was a pair of slugs, mating!! Slugs are hermaphroditic, but they cannot self fertilizer. UME-HGIC has article on-line about slugs.

A pair of slugs are mating.
Photo: Bill Winder

Armored Scale on Native Black Tupelo

By: Stanton Gill

Marie Rojas, IPM Scout, noticed an armored scale on potted black tupelo this summer. Lydia Testerman, Montgomery County Parks, has also been monitoring for this scale. The scale had a 3-week crawler period that ended recently. We sent the scale to Dr. Scott Schneider, USDA, for identification. It is black gum scale, *Chionaspis nyssae* Comstock. It has many synonyms including sour gum Chionaspis, sour gum scurfy scale, sourghum scale, tupelo gum scale.



Sourgum scale on *Nyssa sylvatica*.
Photos: Marie Rojas, IPM Scout

John Davidson, UMD-Retired, published reports of this scale in Montgomery County and Prince George's County way back in the 1980s.

Marie noted that she " first reported it in egg stage on 7/10/23. The sample I sent to you that you forwarded to USDA was collected on 7/31. That one had both eggs and crawlers. The next visit on 8/22 indicated that all eggs had hatched out. So, my best guess would be eggs started hatching around 7/24 - 8/14."

Talus or Distance can be applied during the crawler period.

Orange-striped Oakworms and Fall Webworms

Caterpillars continue to be active. Bill Miller, The Azalea Works, found orange-striped oakworms in signficant numbers crossing a parking lot in Great Falls, MD on August 28. It's fairly common to find these caterpillars walking across paved areas looking for a place to pupate. They overwinter in the soil.

Ginny Rosenkranz, UME, is finding fall webworms caterpillars active on viburnum on the Eastern Shore. The webbing from the second generation of these caterpillars has become more visible in areas around the research center in recent weeks.

Late instar orange-striped oakworm crossing a parking lot.
Photo: Bill Miller, The Azalea Works

Fall webworm continue to feed on woody plants, such as this viburnum.
Photo: Ginny Rosenkranz, UME

Spider Mites

Todd Armstrong, The Davey Tree Expert Company, found spider mites infesting a hedge of burning bush euonymus in Towson this week. Spider mites do well in the hot, dry weather. Registered miticides such as Avid can be used for control. If you are using horticultural oil at 0.5 % rate, be careful to not apply it to drought stressed plants. Hort oil will temporarily clog the stomatas and cause phytotoxicity on drought stressed plants.

If you see yellow stippling on foliage, look closely at the undersides of the foliage for spider mites.
Photo: Todd Armstrong, The Davey Tree Expert Co.

Late Ambrosia Beetle Activity

Luke Gustafson, The Davey Tree Expert Company, found a young red maple in Baltimore City with a lot of very recently made frass tubes. Luke reported that when he knocked off the sawdust on each of them, he could see the back end of each beetle. When tapped, they would retreat a few millimeters into the trunk. Elaine Menegon, Good's Tree and Lawn Care, found active ambrosia beetles on a declining Tree-of-Heaven in Palmyra, PA on August 30. Please let me know at sgill@umd.edu if you are seeing ambrosia beetle activity late in the season.

What looks like a black plug is the rear end of an adult ambrosia beetle.
Photo: Luke Gustafson, The Davey Tree Expert Company

Frass tubes produced by ambrosia beetles are covering this tree-of-heaven trunk. A few adult spotted lanternflies are also present.
Photo: Elaine Menegon, Good's Tree and Lawn Care

Spindle Galls

Kevin Nickle, Scientific Plant Service, found spindle galls this week. There are a wide variety of galls that can be found on woody plants, from spindle galls to bullet to blister galls. Causes include small wasps, psyllids, mites, and midges.

Look for various galls, including spindle galls, on woody plant foliage.
Photo: Suzanne Klick, UME

Spotted Lanternfly Adults

David Lantz found spotted lanternfly adults active on *Ailanthus* in Clear Spring. We were at a site in Baltimore County that had a large population on several mature *Ailanthus* trees.

Adult spotted lanternflies are active at this time of year.
Photo: David Lantz

Rust in Turf

Mark Schlossberg, Pro Lawn Plus, Inc., is finding very bad cases of rust in turf this week. He noted, "There is some perennial rye in these lawns. That's what is mostly getting hit." For more information on rust in turf, go to the Purdue University fact sheet.

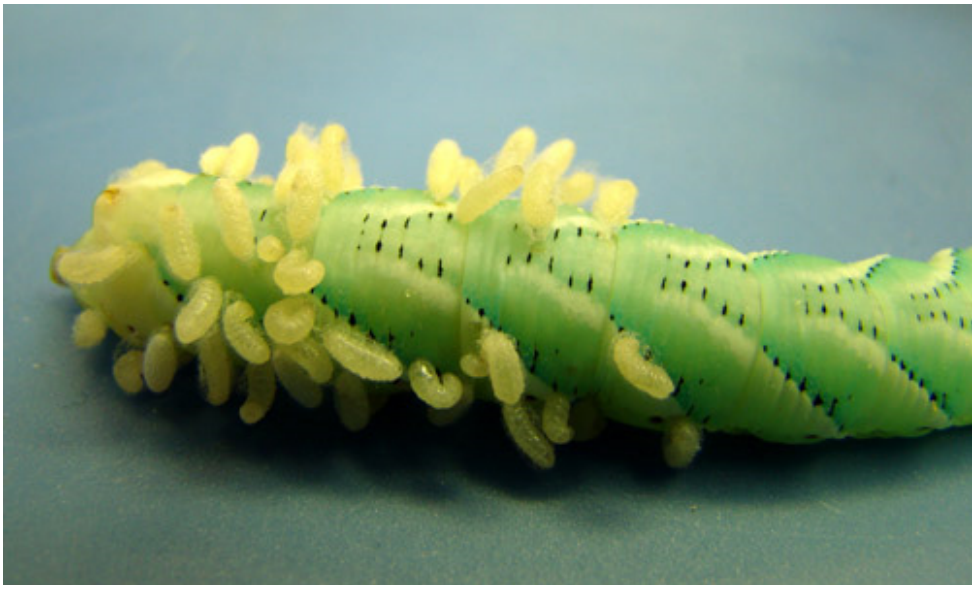
Rust infection is active in turf areas this week.
Photo: Mark Schlossberg, ProLawn Plus, Inc.

Beneficial of the Week

By: Paula Shrewsbury

Lots of caterpillars, lots of parasitoids attacking caterpillars!

As mentioned in last week's IPM Newsletter, it is the time of year again when we see a diversity of caterpillars. In some cases, the caterpillars may have numerous "rice-like" structures (wasp pupae) sticking out of their bodies. There is a family of parasitoid wasps, Braconidae (the 2nd largest family in the order Hymenoptera with over 17,000 named species), of which some species parasitize caterpillars. A few years ago, while hiking on the Appalachian Trail I noticed an unhappy saddleback caterpillar on a leaf. Upon closer inspection I could see it was covered with 30-40 legless larvae that were protruding from its body. Some of the larvae had started to make little white cocoons that attached to the caterpillar. Similar to an Alien movie, these larvae (immature wasps) had recently emerged out of the caterpillar, where they had previously been feeding on the insides of the caterpillar, to form their little white cocoons so they could complete their development.



***Cotesia congregata* (Say) (Braconidae) larvae recently emerged from their tobacco hornworm host, but before spinning individual cocoons. Photograph by Justin Bredlau, Virginia Commonwealth University.**

A saddleback caterpillar with cocoons of the parasitic braconid wasp, Cotesia empretiae (Braconidae), attached to its body. Photo by Richard Orr, marylandbiodiversity.com

These are the larvae or cocoons of small parasitic braconid wasps in the genus *Cotesia*. *Cotesia* adults are only a few mm in length (*see image*). Female *Cotesia* wasps hunt saddlebacks, hornworms, and other caterpillars on the foliage of plants. Many species of braconids specialize on certain groups of caterpillars (ex. mainly hornworms). Individual species of braconids recognize chemical cues given off by plants being fed on by the species of caterpillar it attacks. This allow the braconid wasp to locate plants that have their host caterpillar. Once on the plant the wasp engages in host searching behavior by moving their antennae back and forth quickly to sense additional cues (semiochemicals) from the caterpillar. Upon encountering a suitable host, the wasps jump onto the host and rapidly deliver many "stings" to the caterpillar using an appendage called the ovipositor. Each sting inserts a wasp egg into the caterpillar. So one female wasp can lay many (average 65) eggs in a single caterpillar. Once inside the caterpillar, eggs develop

and hatch, and then the wasp larvae feed on the tissues of its host. However, to survive successfully, the tiny wasp larvae must avoid death by the caterpillar's vigilant immune system. This is where a little help from their wasp mother comes along. In addition to depositing eggs, mother *Cotesia* injected a special virus known as a polydnavirus into the caterpillar. The polydnavirus disables the caterpillar's immune system, allowing her young to develop without interference. Once development is complete, wasp larvae move near the surface of the caterpillar, chew through its skin using its strong mandibles, protruding out while still attached to the caterpillar body. The larvae spin a cocoon on the exterior of their host. With numerous cocoons sticking out of its body, the caterpillar looks like grains of rice have been stuck into it. After a bit of time wasp adults emerge from the white rice like pupa and go on to mate and then lay eggs in other caterpillars. Ultimately, the wasps kill the caterpillar. The circle of life continues.

***Cotesia congregata* (Braconidae) adults (<2mm) aggregating on the surface of a leaf that will follow chemical cues (semiochemicals) to locate their host caterpillar.**
Photograph by Justin Bredlau, Virginia Commonwealth University.

Click here to see a video of wasp larvae emerging from a saddleback, and if you look closely, you can see the larvae making their silken cocoons.

Click here to see a video of a *Cotesia* adult "stinging" or ovipositing an egg into a saddleback caterpillar.

Weed of the Week

By: Mark Townsend, UME-Frederick County

With summer winding to a close and our typically warm Maryland Septembers, the ivyleaf morningglory (*Ipomoea hederacea (L.) Jacq.)* is thriving! This creeping, pesky, yet surprisingly beautiful weed is common to our region this time of year and much of the Southeastern United States. With its partial sun preference, ivyleaf morningglory can be found across the US from the Corn belt, to the Central Plains as well as even into the desert Southwest.

Ivyleaf morningglory is a member of the *Convolvulaceae* family that also includes bindweed plants that are notoriously difficult to manage in many crop and ornamental settings. Unlike bindweed, ivyleaf morningglory is an annual, yet its rapid growth and effective seeding play a trick to almost appear as a perennial given its repeated appearance each year.

Its leaves alternate with hairs on both upper and lower surfaces and emerge from a hairy vine which extends from the base of the plant. Vines climb, wrap, and meander up to 6-feet ensnaring the unlucky plant or foot that trods through the web-like vine. Anecdotally, growers of pick-your-own pumpkins struggle to control this weed as its development almost perfectly coincides with harvest, such that the unaware pumpkin picker may find themselves stumbling across the patch.

Ivyleaf morningglory produces an undoubtedly beautiful blueish, purple cone-shaped flower tapering to a white inner funnel containing the reproductive portion of the plant. Fruits are egg-like and contain small, black,

brown, or gray seeds. Adding to the complexity of the plant, its seeds may germinate up to 8” deep in the soil. Though pretty and desirable in some settings, ivyleaf morningglory in the wrong plot can be a formidable foe.

Ivyleaf morningglory has hairs on the top and underside of leaves. Photo: Ohio State Weed Lab, The Ohio State University, Bugwood.org

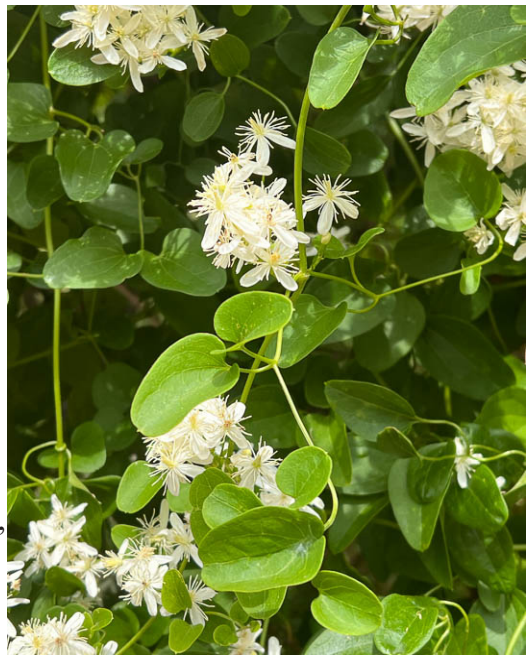
Physically removing ivyleaf morningglory from the soil is both maddening and satisfying. Plants can be rather simple to pull given their slender tap-root and limited root system yielding a satisfying rip as it is torn from the soil. Yet, their rapid growth and reproductive fecundity make it a maddening process as more plants appear seemingly out of nowhere, or from what appears to be exactly where one just pulled a previous plant. In vegetable settings, operators have had success with plastic beds and moderate success with heavy cover crops to suppress germination.

Ivyleaf morningglory is an annual that produces bluish purple flowers. Photo: Charles T. Bryson, USDA Agricultural Research Service, Bugwood.org

As always on the cultural control front, selecting varieties of crops or ornamentals which outcompete ivyleaf morningglory and other weeds for sunlight and nutrients is best practice. Early maturing varieties or other crops that can cover the soil with foliage may create enough of a barrier to suppress ivyleaf morningglory long enough to mitigate potential issues.

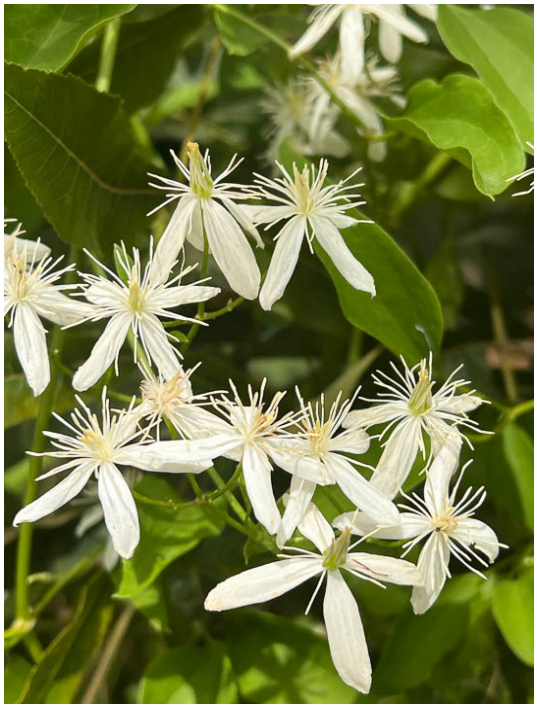
Chemically, there are options to control ivyleaf morningglory. Post-emerge applications of products containing 2,4-D, dicamba, or glyphosate control the weed well when applied before the 5th leaf stage. Pre-emerge products that contain s-metolachlor or pendimethalin have been shown to have significant control of ivyleaf morningglory, however these products, as with all preemerge applications, must be done with care and vary in efficacy with time.

Plant of the Week
By: Ginny Rosenkranz



Clematis terniflora or sweet autumn clematis and virgins bower is an invasive fall blooming clematis that looks very similar to the native *Clematis virginiana*, also known as sweet autumn clematis and virgins bower. I am writing about this invasive herbaceous perennial to bring the differences into focus, so when you see one you think is the native, you can check for sure.

First, what do they have in common? They are both fast-growing woody perennial vines. They will both sprawl along the ground as a dense groundcover, but if given support they will both climb rapidly using their tendrilous leaf petioles. They both thrive in full sun to partial shade, unlike other spring and summer flowering clematis. Both clematis species prefer rich, moist but well drained soils, and are tolerant of dryer soils in the shade. They both have fragrant, pure white, showy flowers with 4 narrow sepals, and both bloom from late summer into the fall, often covering the plants so the foliage is not easily seen. Both native and non-native female plants attract hummingbirds and other pollinators to the fragrant flowers, and will self-seed from their attractive airy seed heads. Both plants are tolerant of deer browsing and can live in the shade of black walnuts without any problems. Both provide habitat for birds and both are susceptible to clematis wilt, leaf spots, powdery mildew, rust and virus diseases and spider mites in the full sun.



Photos are of *Clematis terniflora*. The article discusses the differences and similiarities with the native *Clematis virginiana*.
Photos: Ginny Rosenkranz, UME

So how do you tell one from the other? Our native *C. virginiana* is cold tolerant from USDA zones 3-8, while the non-native *C. terniflora* is cold tolerant from USDA zones 5-9, much more cold hardy and also able to thrive in warmer climates as well. Also, the aromatic flowers of our native vines grow 1.25 inches in diameter while the non-native flowers only expand to 1 inch in diameter. Our beautiful native can grow 12- 20 feet tall and spread 3-6 feet wide, while the non-native will scramble up 15 -30 feet tall and wide. But the easiest way to tell these 2 plants apart is the leaves. *C. virginiana* soft green leaves are compound with 3-5 leaflets with sharply tooted margin similar to a trident maple, while *C. terniflora* has leathery shiny green pinnately compound with 3-5 oval shaped leaflets with an entire margin. Although both clematis species are beautiful, our native *Clematis virginiana* will not be as aggressive in our landscapes and will still provide beautiful upright columns of fragrant white flowers and graceful green foliage.

Degree Days (as of August 30)

Abingdon (C1620)	2945
Annapolis Naval Academy (KNAK)	3187
Baltimore, MD (KBWI)	3244
College Park (KCGS)	3103
Dulles Airport (KIAD)	3152
Ft. Belvoir, VA (KDA)	2990
Frederick (KFDK)	3009
Gaithersburg (KGAI)	2856
Gambrils (F2488, near Bowie)	3042
Greater Cumberland Reg (KCBE)	2695
Perry Hall (C0608)	2848
Martinsburg, WV (KMRB)	2430
Natl Arboretum/Reagan Natl (KDCA)	3536
Salisbury/Ocean City (KSBY)	3178
St. Mary's City (Patuxent NRB KNHK)	3593
Westminster (KDMW)	3261

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

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 **2430 DD** (Martinsburg, WV) to **3593 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.

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)**
White prunicola scale – egg hatch / crawler 3rd gen **(3238 DD)**
Banded Ash clearwing borer – adult emergence **(3357 DD)**
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.

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

September 13, 2023
MAA's Day of Safety and Health
Locatiaon: Howard County Fairgrounds, West Friendship, MD
Registration info: https://safetyandhealth23.eventbrite.com/

September 13, 2023
MNLGA Nursery Field Day
Location: Abby Farms, Waldorf, MD
Registration is now open

October 11, 2023
FALCAN Truck and Trailer Seminar
Location: Urbana Fire Hall, Urbana, MD
Details and Registration Info

2024 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 8 - Thursday, January 11, 2024 from 8:00 am – 3:00 pm
Lab dates: Monday, January 8 - Thursday, January 11, 2024 (space limited) from 3:30 pm – 5:30 pm
Course and registration information: https://landscapeipmphc.weebly.com/
Questions contact: Amy Yaich, 301-405-3911, umdentomology@umd.edu

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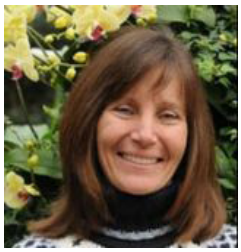

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Photos are by Suzanne Klick or Stanton Gill unless stated otherwise.