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Nightcrawler Activity

Kevin Nickle, ProLawn Plus, Inc., has seen two lawns this week with holes throughout that are caused by nightcrawlers (an earthworm). Kevin noted that both lawns were extremely wet. The rain is causing an increase in nightcrawler activity causing them to make make air holes to the surface.

Earthworms are a sign of a healthy soil. They help decompose thatch and grass clippings as well as increase air and water movement in the soil.
Mosquitoes and Concern About the Zika Virus
By: Stanton Gill

Last week I sent out a request to other entomologists for comments on how effective Bti tablets are in controlling the larval stage of mosquitoes and how long they have an impact when placed in aquatic pools. We asked this question since we received so many emails saying your customers are concerned with the Zika Virus spread by mosquitoes.

It is also important to remember that emptying standing water (where possible) such as bird baths, flower pot drainage dishes, etc on a weekly basis disrupts the mosquito life cycle.

Below are two responses:

**From: Whitney Cranshaw, Colorado State University**

The Bti products (Mosquito Bits, Mosquito Dunks, Aquabac, Microbe-Lift, etc.) apparently have very little persistence (a couple of days) in aquatic systems, as best I can suss out. The slow release formulations will extend the control a bit. But as these have little residual activity I would guess they need to be applied whenever a new, unexposed cohort of mosquitoes is expected to have laid eggs, probably every couple of weeks if conditions exist that allow sustained breeding.

Methoprene (Altosid) has quite a bit longer persistence. There is a 1991 study that suggest suppression for several months after application (attachment).

Not to be alarmist, just to provide context, I would suggest that folks sometimes read the book America Plague. It is a summary of Aedes aegypti-borne yellow fever outbreaks, focusing on those in the US. Most of it gives attention to the 1793 outbreak in Philadelphia that killed about 10% of the population – leading to the “Founding Fathers” to consider Philadelphia such a pestilential hole that they decided to move the nation’s Capitol to Washington D.C (right onto a swamp!) Then through the Memphis-area yellow fever outbreak in 1878 that killed 20,000. This is all happening in the US before we even get to the history of yellow fever and the Panama Canal – a great story in itself. (These outbreaks racked up human deaths that exceed by at least an order of magnitude everything done by West Nile virus, Zika, SARS, and Ebola combined.)

**From: Mike Merchant, Texas A&M AgriLife Extension Service**

The Bti briquettes or dunks are advertised to slowly dissolve over a period of up to 30 days. Once released from its protective formulation into the water, or if applied as a liquid, the effective life of Bti in water exposed to sun is relatively short, a day or two.
Eastern Tent Caterpillars
Now is the time of year when Eastern tent caterpillars are on the move looking for a place to pupate. There is nothing to do a this time. Moths will be out in late June to early July.

Red Thread in Turf
Adam Colgan, On The Green, Inc., reported red thread infection in turf in Davidsonville on May 13. Brian Scheck reported infected turf in Greenspring Valley on May 11. Cool (65 - 70 °F), wet weather provides optimum conditions for the development of red thread disease in the spring and fall. Red thread disease is caused by the fungal pathogen, *Laetisaria fuciformis*. Red thread can reduce turf density and lead to invasion by crabgrass and other weeds. In a few weeks as the weather warms up, it should not be much of a problem.

**Management:** Red thread tends to cause more damage to poorly nourished lawns. Maintaining adequate nitrogen levels will often reduce the problem. However, high nitrogen levels can create problems with other turf diseases. If the infection warrants treatment, fungicides include Bayleton, Banner MAXX, Chipco 26GT, Compass, Curalan, Daconil Ultres, Headway, Heritage and Insignia.

Shot Hole Disease on Cherry
By: David Clement

Jessica Frakes, Thrive, Inc., reported early symptoms of shot hole disease on ornamental cherries in D.C. on May 10. Flowering cherry trees have various problems with severe leaf spots, yellowing leaves and early defoliation. These very common foliar diseases are collectively called “Shot-Hole diseases” because of the “holes” left behind after the infected spots fall out. This is a catch-all symptomatic phrase and the two pathogens that commonly cause these symptoms are bacterial leaf spot caused by the bacterium, *Xanthomonas pruni*, and cherry leaf spot caused by the fungus, *Blumeriella jaapii*.

Foliar symptoms begin as brown or reddish-brown leaf spots. Both diseases are favored by wet weather, and infected leaves will turn yellow and drop from the trees in mid-summer if infection is severe. These diseases will also continue to infect leaves throughout the growing season if rainy weather persists.
Management of these “Shot-Hole” diseases in the landscape is difficult because landscape managers can’t get around to all of their clients properties on a regular schedule in time to spray preventative fungicide sprays. There are some cultural methods to help reduced disease inoculum. Remove older heavily damaged or poorly growing trees. Try to adjust tree spacing and use proper pruning to allow better air circulation to promote faster leaf drying and remove fallen leaves in the fall to reduce overwintering pathogens.

On high value trees or with a history of severe fungal leaf spot the use of fungicides may help. These treatments will only provide preventative disease management or slow down the rate of disease development and will not cure already infected leaves. Therefore early sprays have to start as the new leaves are expanding and continue while rainy periods persist. A practical approach might be to apply two sprays, just as leaves are expanding and again when new leaves have reached full size. This approach will reduce the amount of disease and could give extended control in typical years.

Three fungicides for landscapes include Eagle (myclobutanil), Protect DF (mancozeb) and Cleary’s 3336 (thiophanate methyl). Be Sure to Check all Label Instructions. Also, note that commercial orchards have different fungicide labels for edible cherries and these are not interchangeable with landscape usages.

**Powdery Mildew**

Jessica Frakes, Thrive, Inc., found spirea foliage infected with powdery mildew in D.C. on May 10. She noted that is was a very moist and humid microclimate in shade. Over the next few weeks, look for powdery mildew infection on other plants, especially dogwoods.

**Ambrosia Beetle Activity**

By: Stanton Gill

We continue to see low numbers of *Xylosandrus germanus* and *X. crassiusculus* in the alcohol baited traps from James Becker and Tony Murdock in the Frederick area. We are seeing the same thing in alcohol traps from Gaithersburg. We also have low counts from Ginny Rosenkranz in Salisbury. Ginny reports that a Zelkova tree was attacked by ambrosia beetle last week.

On Tuesday we visited a nursery that had a row of *Stryax japonica* and 35% of the trees had frass tubes sticking out of the trunk. The manger had not applied any protective sprays since the trees were lower quality. The damage occurred last week when we had a day of warm weather and high humidity. There has been little activity this week since it has remained cool and wet. This rain and cool weather is keeping flight activity of the ambrosia beetle low.
Aphids and Predators
We are receiving multiple reports of aphid activity this week. Brian Scheck, Maxalea Inc., found them on hellebores in Stevenson on May 9. Craig Greco, Yardbirds, Inc., found them on beech on May 7. John Speaker found the woolly witchhazel aphid on birch in Gaithersburg on May 12. John also found many lady bird beetles around the aphids. Jessica Frakes, Thrive, Inc., found aphids and syrphid fly larvae on crape myrtle in D.C. on May 10. Jessica noted that the aphid population was small, but increasing. Crape myrtle aphids have been increasing as a problem over the last several years. If aphid populations are high enough to warrant treatment, consider horticultural oil or Endeavor which have minimal impact on beneficials.

Andromeda Lace Bugs on Pieris
Jessica Frakes, Thrive, Inc., found adult andromeda lace bugs on pieris in D.C. on May 11. Lace bugs have multiple generations per year in Maryland. Eggs overwinter inserted in plant tissue. Monitoring: Look for yellow stippling of new growth. Look on the underside of foliage for nymphs, adults, and black fecal spots. Damage on new growth indicates eggs have hatched and the new generation has started to feed. Control: Get good coverage of horticultural oil on the underside of foliage to reduce populations. Many products are labeled for lace bugs.

down. I know everyone is sick of all of the seemingly constant rain and cloud cover, but it is working for us in keeping ambrosia beetle activity to much lower activity levels than we saw in 2014 and 2015.

We received a photo from our research center in Keedsville where the Maryland Chapter of the American Chestnut Foundation has a large planting of hybrid chestnuts. There was a lot of activity this week in the chestnuts from *Xylosandrus* species. They are sending in samples for identification. The warm and humid weather appears to be resulting in adult beetle activity this week. It is supposed to be warm and humid today, so expect more activity. By Sunday, it cools down again so activity should drop down again. It is a bit of a rollercoaster ride with ambrosia beetles this season.

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Adult lace bugs and black fecal spots are present on this pieris foliage; also look on plants for nymphs and eggs since there are multiple overlapping generations
Photo: Jessica Frakes, Thrive, Inc.

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Prey for this lady bird beetle nymph includes aphids; adults lady bird beetles are also predators

Look for syrphid fly larvae where you find aphids; adults feed on pollen and nectar
Photo: Jessica Frakes, Thrive, Inc.
Fruit Disease Time
By: Stanton Gill

May 2 to May 7 was a period of rain storm after rain storm. This week we are experiencing cloudy and periodic rain – perfect for mosquito larvae and plant disease infection of newly emerged growth. Pathologists appear to be holding secret meetings to keep the disease pressure up last week and this week. We will see rust and leaf spots showing up in June when the rains finally let up. If you are trying to protect your customers’ apples, pears and peach trees, you better have protectant sprays on the foliage and newly forming fruit.

Fruit Pests Active This Week
By: Stanton Gill

I am seeing the first plum cucurlio active on apples and pear on Friday (May13) in Westminster. Also, my baited pheromone traps for Oriental fruit moth is pulling in adult males. Protective sprays should go on now. Avaunt is effective on both of these pest. Imidan will also give a fairly good level of control.

Weekly Bug Bytes
From: Norma Young, Penn State Extension

On apples, the after petal fall insecticide application was probably the best timing to control plum curculio (PC) and European apple sawfly (EAS), although due to the prolonged season, we can expect a much longer infestation period. This is especially true with PC which may last for another 3 to 4 weeks as the adults continue their movement into orchards. The EAS eggs are already deposited at the base of petals and will (or already did) hatch at the end of bloom with larvae immediately entering fruit. The petal fall timing on apples was also a good time to control Oriental fruit moth (OFM), obliquebanded leafroller (OBLR), mites and aphids. Appropriate, effective insecticides should be applied based on orchard monitoring and documented pest control needs.

Beneficial of the Week
By: Paula Shrewsbury

Rain, fungus, and gypsy moth… the makings for good biological control

Usually when we hear about a fungus, our minds think of plant diseases. Fortunately, there are fungi that also cause insect diseases. These are known as entomopathogenic fungi. There are many known species of entomopathogenic fungi which may be specific for certain groups of insects (ex. caterpillars or a family of caterpillars) or they may be more generalist and attack a wider range of insect groups. These fungi occur naturally in nature and some are produced commercially to be used in pest management. As with many fungi, moist damp conditions favor the development and dispersal of entomopathogenic fungi. In general, the spores of these fungi come in contact with an insect, and the spore produces enzymes that help to break down or weaken the exoskeleton of insects. This contact allows the hyphae produced by the spore to “push” its way into the insect’s body where it grows and produces mycelium that fills the body cavity of the insect while producing toxins that work toward killing the insect. The fungus then produces reproductive spores that exit the dead insect and go on to attack other insect individuals. The higher the population of insects (lots of insects in close proximity to each other) the more rapidly the fungus or disease spreads and suppresses the insect population. Rapid spread of a pathogen resulting in suppression of an organism is referred to as an epizootic. Counter to this situation, when populations crash, the pathogen cannot spread as quickly and its insect resources are reduced, so pathogen abundance is reduced. Pathogen abundance is also reduced when we have dry or drought conditions. Ultimately, the insect population then has the “opportunity” to outbreak again. When conditions become favorable again for the pathogen, insect populations crash again. This is one of the reasons we observe “cycles” in insect populations (ex. a few to several years of high populations, and then a crash in the population for a few to several years, and so on).
Since the eggs masses of gypsy moth are just starting to hatch in MD and we have had LOTS of rain, it seems appropriate to discuss *Entomophaga maimaiga*. Gypsy moth was introduced into Massachusetts in 1869 and since has spread throughout the northeast and mid-Atlantic region defoliating millions of trees. Various biological control efforts have been implemented to slow the spread and suppress the damage caused by gypsy moth. One of which was the importation and release of an entomopathogenic fungus that is native to Asia, *Entomophaga maimaiga*. “Maimaiga” is the Japanese word for gypsy moth. Classical biological control attempts of gypsy moth with *E. maimaiga* have an interesting history. The first release of the fungus was in 1908. Follow up sampling in 1912 indicated that the fungus did not establish. In the early and mid-1980’s releases of the same fungus were made again. In 1989, dead gypsy moth caterpillars infected with *E. maimaiga* were found and the fungus has since spread throughout much of the gypsy moth range. The fungus spreads via aerial dispersion when spores are actively ejected from cadavers of gypsy moth larvae. The fungal spores persist in the upper layer of the soil as “resting” spores for about 11-12 years. When conditions are favorable (wet damp conditions with high gypsy moth populations) the spores that are picked up on the caterpillars begin their infection process. *E. maimaiga* resulted in epizootics, and suppression of gypsy moth populations, throughout much of the northeastern U.S. in the late 1980’s and 1990’s. Unfortunately, much of the eastern region has suffered from drought conditions. As droughty conditions persisted, we have seen increases in gypsy moth in our region.

My prediction (and hope) is that the wet spring we are having will provide optimal environmental conditions for *E. maimaiga* allowing the fungus to establish and spread throughout gypsy moth populations, reducing damage to trees caused by gypsy moth. Be on the lookout for signs of gypsy moth caterpillars infected with *E. maimaiga*. Most *E. maimaiga* infected gypsy moth larvae are killed in large numbers during the fourth and fifth life stage and are characteristically found hanging down and clinging to the trunks of trees with their heads pointed downward. If you see dead caterpillars, please send pictures and location information to us (pshrewsbury@umd.edu or sklick@umd.edu).

The Maryland Department of Agriculture has an active monitoring and suppression program for gypsy moth. To learn more about their surveying and suppression activities go to: [http://mda.maryland.gov/plants-pests/Pages/gypsy_moth_program.aspx](http://mda.maryland.gov/plants-pests/Pages/gypsy_moth_program.aspx).

**Weed of the Week**

By: Chuck Schuster

Rain continues to dominate the discussion on what is happening in the world of agriculture and horticulture. Soil temperatures continue to stay cool, but plants and weeds are growing. Turf diseases are being noticed in greater frequency right now as would be expected.

The weed of the week for this week is a commonly found forage plant. Timothy, *Phleum pretense*, has been found several times this week. In the established lawn, it may have been brought in with straw used to cover some bare spots in the lawn when spring or fall seeding was completed. This grass will appear quickly after a
mowing as it grows quickly in the fertile soil of many turf sites. It prefers the damp conditions now being provided by the rain, which may explain why it is showing up this spring more than ever before.

Timothy is a perennial grass, though many farmers raising will not agree. It has become a challenge in recent years to keep it in production for more than several years at a time. This plant is a bunch type grass once established, with a leaf blade that is flat and rolled within the whorl. Timothy has a ligule that is about 1/10 of an inch in height and white in color. It does not have auricles except on rare occasions and these will be small. The leaf blades can be up to .5 inches wide and are hairless. It has the ability to grow to more than twenty-four inches in total height, though this height will not occur in the typical lawn. One of the identifying characteristics of Timothy is the corm at the base of the stems.

Cultural control of Timothy is the only real method available in turfgrass. Regular mowing using a shorter than normal height will cause this plant to fail since it cannot tolerate close mowing. No herbicides will control Timothy in established turf without damage to the desired species of grasses present. In landscapes, mechanical removal works well, or any non-selective grass herbicide will control it. Burn-out will control it with more than one application. Use caution with non-selective herbicides in landscapes to avoid damage desired plant species.

**Plant of the Week**

By: Ginny Rosenkranz

*Iris cristata*, or the American native dwarf crested iris, produces lavender, blue or pure white flowers early in the spring. Like all irises, the flower is divided into 3 standards and 3 falls. For *Iris cristata*, the falls are sepals and colored a blue lavender color with a bright yellow orange crest topped by a white spot and bordered by a dark lavender outline. The standards are small and a paler lavender. One to two flowers are produced on each stem and they grow 6 inches tall. The dark green sword-shaped leaves are connected directly to the woody rhizome and grow 4-6 inches tall and bend at the tips. Unlike most irises, *Iris cristata* is not a full sun lover, rather it prefers to grow in morning sun with afternoon shade or dappled shade. It will tolerate full shade but will flower less. The soils should be organically rich but well drained. Plants thrive in USDA zone 3-9. They are excellent in a woodland garden and will naturalize, creating a colorful carpet. As the flowers only bloom for 2 weeks, they should be planted close to a path or walkway so the flowers can be noticed and admired while they fleetingly bloom. They are said to be deer resistant, but not resistant to slugs, iris borer and bacterial soft rot.
# Plant Phenology Indicators

<table>
<thead>
<tr>
<th>PLANT</th>
<th>PLANT STAGE (Bud with color, First bloom, Full bloom, First leaf)</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Baptisia australis</em> ‘Blue Smoke’</td>
<td>Bud</td>
<td>Ellicott City (May 12)</td>
</tr>
<tr>
<td><em>Iris ensata</em> (Japanese iris)</td>
<td>First bloom</td>
<td>Ellicott City (May 11)</td>
</tr>
<tr>
<td><em>Iris pseudocorus</em> (yellow flag iris)</td>
<td>First bloom</td>
<td>Ellicott City (May 11)</td>
</tr>
<tr>
<td>a MD Tier 1 Invasive Plant</td>
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<tr>
<td><em>Liriodendron tulipifera</em></td>
<td>Full bloom</td>
<td>Ellicott City (May 12)</td>
</tr>
<tr>
<td><em>Penstemon hirsutus</em></td>
<td>First bloom</td>
<td>Ellicott City (May 9)</td>
</tr>
<tr>
<td><em>Tradescantia virginiana</em></td>
<td>First bloom</td>
<td>Ellicott City (May 12)</td>
</tr>
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**Degree Days (As of May 11)**

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<th>GDD</th>
<th>Location</th>
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<td>College Park (KCGS)</td>
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<td>Dulles Airport (KIAD)</td>
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<td>Ellicott City (E3247)</td>
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<td>Fairfax, VA (D4092)</td>
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<td>Greater Cumberland Reg (KCBE)</td>
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<td>Martinsburg, WV (C1672)</td>
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<td>Rockville (C2057)</td>
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<td>Salisbury/Ocean City (KSBY)</td>
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<td>St. Mary’s City (St. Inigoes, MD-KNUI)</td>
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<tr>
<td>Westminster (KDMW)</td>
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</tbody>
</table>

**Important Note:** We are now using the [Online Phenology and Degree-Day Models](https://www.phenology.net/) site.

**Use the following information to calculate GDD for your site at the Online Phenology and Degree-Day Models 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

Once you know the GDD and/or plant phenological indicators (PPI, what plants are blooming) in your location, you can go to the [Pest Predictive Calendar](https://www.phenology.net/) to determine what pests you can expect to be active soon in that location.

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## Commercial Horticulture Conferences

**Pesticide Recertification Conference (Eastern Shore)**

June 3, 2016

[Register on-line](#)

**US DOT Forum**

June 8, 2016: 8:00 a.m. to noon

Location: 6772 Rockawalkin RD, Hebron, MD

Contact Ginny Rosenkranz, Extension Educator, 410-749-6141 to sign up for this free US DOT Forum

**Pesticide Recertification Conference**

June 10, 2016

Location: Montgomery County Extension Office, Derwood, MD

[Brochure is posted online](#)

**Maryland Christmas Tree Association Summer Meeting**

Saturday June 25, 2016 at Thomas Tree Farm, 3501 Hanover Pike, Manchester, MD

For info: [wayne@thomastreefarm.com](mailto:wayne@thomastreefarm.com)
IPMnet Has a New On-line Tool: The Pest Predictive Calendar

This Pest Predictive Calendar is intended to assist landscape managers, growers, IPM professionals and others in predicting the appearance of pest insects and mites in order to make more timely management decisions. By using the Plant Phenology Indicators (PPI) and Growing Degree Days (GDD) on this table you can anticipate when the susceptible life stage(s) (stage you want to target for control measures of pest insects and mites are active.

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