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**Integrated Pest
Management for
Commercial Horticulture**

www.ipmnet.umd.edu

If you work for a commercial horticultural business in the area, you can report insect, disease, weed or cultural plant problems found in the landscape or nursery to sklick@umd.edu

Coordinator Weekly IPM report:

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Regular Contributors:

Pest and Beneficial Insect Information: Stanton Gill and Paula Shrewsbury (Extension Specialists) and Brian Clark (Extension Educator, Prince George's County)

Disease Information: Karen Rane (Plant Pathologist) and David Clement (Extension Specialist)

Weed of the Week: Chuck Schuster (Extension Educator, Montgomery County)

Cultural Information: Ginny Rosenkranz (Extension Educator, Wicomico/Worcester/Somerset Counties)

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Heat, Lack of Rain and Drought Injury

We were working on a Japanese maple scale project this week in College Park. The maples in our trial are growing in typical backfill, poor quality soils. The interesting thing is that when shooting pictures of our trial we noted that the area looked like a picture from August, not mid-June. The soil is powder dry and the grass is brown. This extremely dry weather is stressing plant material. Some of the maples were already showing fall color. Remember this time of the year because your customers are going to see dieback on plants as we progress through the season and it will be tied into this stressful period. All you can do is mulch well and keep plants watered through this tough time.



Grass is very dry for June, looks more like August for this area

The predicted rain last week did not happen for most areas, with a few exceptions.

Charles County received 1.5 inches, but areas like Frederick, Montgomery, Howard, Carroll, and Baltimore counties got a sprinkle or two but that was it. Steve Black called in to report that the Frederick area received 2/10 of an inch with the storm last weekend. Ginny Rosenkranz reports that the Eastern Shore is

still very dry as well and is more than 6 inches below 'normal' rainfall. The ground is becoming bone dry and plants are showing stress symptoms. Plant material that was transplanted in the last 3 years should be watered regularly with trickle irrigation to reduce stress on plant material.

Emerald Ash Borer in Howard County

We are receiving a lot of inquiries on what the EAB quarantine means since it went into effect on June 10, 2011. I (Stanton) asked Dick Bean, MDA, to clarify how ash tree logs, firewood and chips should be handled now that Howard County is under quarantine. The following is his response:

The revised EAB quarantine was signed June 10, 2011 (Quarantine Order #11-01) and will be up on the MDA website. Anyone who works in the wood products industry needs to get a copy of this document and understand it.

The core of the quarantine order is what is regulated.

- (j) "Regulated articles" means:
- (i) The emerald ash borer; firewood of all hardwood (non-coniferous) species, including any piece thereof; nursery stock, green lumber, and other material living, dead, cut, or fallen, (e.g. logs, stumps, roots, branches) of the genus *Fraxinus*, including any piece thereof.
 - (ii) Uncomposted ash chips and uncomposted ash bark chips larger than 1 inch in diameter in two dimensions.
 - (iii) Any other article, product, or means of conveyance not listed in paragraph (i) or (ii) of this section may be designated as a regulated article if an inspector determines that it presents a risk of spreading emerald ash borer and notifies the person in possession of the article, product, or means of conveyance that it is subject to the restrictions of the regulations.

If it is ash, it is regulated. If it is not ash, it is not regulated **UNLESS** it is firewood.

Any equipment capable of providing ash chips less than 1 inch in diameter in two dimensions is OK. If the ground product meets the dimensional requirements then they are not regulated. Composting would also meet the requirement for deregulation.

Movement of regulated articles are covered in section 4 of the order. Regulated articles cannot leave the quarantined area (with exceptions) and regulated material originating outside the quarantine area and brought into the quarantine area cannot leave the quarantine area (with exceptions). What's in stays in and what comes in stays in.

Again, I would advise anyone who works in the wood products industry to get a copy of this document and understand it.

FOR IMMEDIATE RELEASE - Emerald Ash Borer

CONTACT: Julie Oberg, 410-841-5888 or Vanessa Orlando, 410-841-5889

Emerald Ash Borer Found in Howard County for the First Time New Quarantine Expands Restrictions on Ash Wood and Hardwood Firewood, Citizens Asked to Help Stop the Beetle

ANNAPOLIS, MD (June 14, 2011) – The Maryland Department of Agriculture (MDA) has confirmed the presence of the emerald ash borer (EAB) in Howard County. This is the first time since 2008 that EAB has been found outside of the quarantine area. The Howard County detection, made by an arborist who participated in the

University of Maryland Extension Invasive Species training program, was discovered on June 6 and confirmed by the U.S. Department of Agriculture on June 8.

MDA has updated the quarantine to 1) include Howard County, 2) drop the Infested Area in Charles and Prince George's Counties, and 3) remove the Eradication Zone. The revised quarantine order now covers all of Charles, Howard, and Prince George's counties. The new quarantine prohibits anyone from moving ash trees or any hardwood firewood out of Prince George's, Charles and Howard counties until further notice.

"MDA revised the emerald ash borer quarantine to secure Howard County and help us to conduct activities there to assess the situation," said Agriculture Secretary Buddy Hance. "It is early in the emerald ash borer season. Given the high prevalence of ash trees in Maryland, we may discover additional infested areas outside the quarantine areas and will update the quarantine as necessary."

This year, MDA deployed nearly 2,600 purple triangular insect traps in trees statewide to determine the presence of EAB. Two of these traps in Howard County have also turned up adult EAB. Targeted delimiting surveys in Howard County will start officially the week of June 23. Property owners in the affected area are being notified by mail that survey teams will be working in their area.

"The existence of the EAB in central Maryland was not entirely unexpected, given the high prevalence of ash trees in Howard County," said MDA Plant Protection and Weed Management Program Manager, Carol Holko. "We are continuing to assess the situation, and assembling a team to work with the USDA Emerald Ash Borer Science Panel and Management Team to determine the best course of action."

Isolated incidents of EAB are not necessarily indicative of an outbreak or cause for drastic measures. MDA and other agencies will be monitoring the situation carefully and determining the proper response in cooperation with USDA, DNR, Maryland Extension, Howard County officials, and others.

EAB was detected in Prince George's County in 2003 and in Charles County in 2008. The EAB is an invasive pest from Asia that feeds on and kills ash trees within three years after infestation. Ash trees are one of the most common and important landscaping trees used in Maryland and are common in western Maryland forests. Ash wood is used for all traditional applications of hardwood from flooring and cabinets to baseball bats.

Presence of the emerald ash borer typically goes undetected until trees show symptoms of being infested – usually the upper third of a tree will thin and then die back. This is usually followed by a large number of shoots or branches arising below the dead portions of the trunk. Other symptoms of infestation include: small D-shaped exit holes in the bark where adults have emerged, vertical splits in the bark, and distinct serpentine-shaped tunnels beneath the bark in the cambium, where larvae effectively stop food and water movement in the tree, starving it to death.

"We are grateful for the cooperation of homeowners and citizens in Prince George's and Charles counties as well as campers and anglers around the state to help us contain this destructive pest," said Agriculture Secretary Buddy Hance. "We are working together with our federal, state, and local partners, but we rely upon cooperation from the community to follow the quarantine restrictions, and to report signs of possible infestation. We call upon the residents of Howard County to do the same."

To help stop this damaging beetle, homeowners and citizens who live in and travel through Prince George's, Charles, and Howard counties can help:

- Don't move firewood – buy it where you burn it. Hauling firewood is the most common way for damaging plant pests to be moved from one area to another. In addition, the state quarantine prohibits anyone

from moving hardwood firewood or any other ash tree materials out of Prince George's, Charles, or Howard counties.

- Don't plant ash trees. As the EAB is expanding its range in Maryland, diversified plantings of alternative tree species are recommended for residential landscaping.
- Report any signs of the emerald ash borer to the University of Maryland Home and Garden Information Center at 1-800-342-2507 or the Maryland Department of Agriculture at 410-841-5920.

Maryland's nursery and greenhouse industry – the industry most threatened by the EAB – accounts for \$217 million of the state's \$1.6 billion agriculture industry. Ash is the most common tree in Baltimore City with approximately 293,000 trees and accounts for about six million trees in Baltimore and surrounding counties. USDA has estimated that losses could exceed \$227.5 million in the Baltimore area alone if the emerald ash borer were to become established.

For information about the emerald ash borer, please visit www.mda.state.md.us/plants-pests/eab/current.php or call 410-841-5920. Additional information is also available online at: www.stopthebeetle.info/

Treatments For Emerald Ash Borer

Since the discovery of emerald ash borer in Howard County in early June we have been receiving calls and e-mails asking what can be done to protect valuable ash trees in the landscape. Generally, my feeling is if the ash tree is in an open area or in a wood lot I would just let the pest alone; it will take out the tree and then the tree can be taken down when its time comes. That said, we have many people with big ash trees located close to their houses and if it is infested with EAB it will cost a fair amount of money to remove the tree.

Chemical Treatment

We look to the mid-west states, where they have been treating ash for the last couple of years, for answers to effective control. Dr. Deborah McCullough, MSU, and Philip Lewis (USDA), have done a fair amount of research on using emamectin benzoate (Sold as Tree-Age – available only to certified pesticide applicators) for control of emerald ash borers. In a trial conducted in 2007 she and her staff treated ash on May 22. The trees they treated had EAB present, but the trees had no more than 1% - 30% dieback. The trees were felled in September and the number of larvae in treated and untreated control blocks were recorded. The results were excellent. They found that the trees treated with emamectin benzoate were protected from EAB for up to three years.

Emamectin benzoate is injected into the tree's vascular system. It is not sprayed on the bark or leaves. Applications must be made by a certified pesticide applicator and trees that are treated in Maryland must be made by a Maryland certified tree expert.

Other Options

Work conducted in the Mid-west has found that soil drench or trunk injections of imidacloprid can provide fairly effective control of damage from EAB (if branch damage is under 30% on the tree) for up to two years.

If you have additional questions on control options contact me at Sgill@umd.edu.



Japanese Beetles

We have started to receive steady reports of Japanese beetle activity. Adults have been seen in Talbot County on June 13 by Andrew Ristvey, in Carroll County last weekend by Steve Sullivan, in Queen Anne's County on June 14 by John Speaker, and in numerous amounts in Potomac by David Kinderdine. We have also seen our first few beetles here at the research center this week. Please let us know where you are seeing Japanese beetles and at what level so we can track the populations throughout the summer.



One of the early Japanese beetles found at the research center this season (June 17)

Fire Blight

We are still getting reports of dieback of crabapples, apples, pears, cotoneaster, and shadbush from fire blight. The infection occurred back in April and May during the wet weather. Prune out damaged wood at this time of year.

Spider Mites

David Kinderdine, Velvet Touch Rose Care, is finding heavy spider mite infestations on roses in Potomac. David found an infestation so large it completely encapsulated the bud and flower with mites and webbing. He noted that normally he sees webbing and bronze leaves, but nothing this severe or this early in the season. He mentioned that the hot dry weather is forcing spider mite into early activity. David visited this property last Wednesday and today (5 days later) it's totally infested. He also noted that he is continuing to see a lot of rose rosette disease on Knock out roses throughout the state.



Heavy damage on rose by spider mites
Photo: David Kinderdine, Velvet Touch Rose Care

Brown Patch in Turf

Mark Schlossberg, ProLawn Plus, Inc., sent in photos last week of brown patch (caused by the pathogen, *Rhizoctonia solani*) infecting turf. The pathogen attacks nearly all grasses used as turf, but is most damaging to tall fescue, perennial ryegrass, creeping bentgrass and annual bluegrass. Kentucky bluegrass, zoysiagrass and other species are occasionally injured by *R. solani*. Daytime temperatures above 85°F and high humidity are conditions that favor brown patch development in cool-season grasses.

For control information and more details on this disease, go to <http://www.hgic.umd.edu/content/documents/TT-15.pdf>



Brown patch in turf
Photo: Mark Schlossberg, ProLawn Plus, Inc.

Leaf Scorch and Potato Leafhoppers on Maples

Ben Hall, Mainscapes, Inc., brought in a maple sample from Columbia with leaf scorch and a little bit of tip damage from a small infestation of potato leafhopper. We are also seeing early signs of potato leafhopper activity on maple here at the research center in Ellicott City. Leafhoppers cause tip growth to pucker and harden as the insects feed on the foliage. Leafhoppers have multiple generations a year in Maryland and will continue to damage new growth that flushes out.



Potato leafhopper damage on maple (left) and scorch due to drought (right)

Control: Applications as soil drenches include Thiamethoxam (Flagship),

Imidacloprid (Marathon and other trade names now that the patent has expired), Dinotefuran (Safari) or Imidacloprid and Cyfluthrin (Discus). You can also make foliar applications of Acephate (Orthene) but this would have to be repeated for the multiple generations that occur over the summer. Acetamiprid (Tristar), Discus and Kontos can also be applied as a foliar spray in nursery beds. In trials we have conducted, we obtained excellent control with Flagship applied through the drip irrigation system.

Spruce Spider Mite

We are receiving pictures and emails of heavy damage from spruce spider mite this June. Populations of spruce spider mite have heavily damaged spruce, junipers and Leyland cypress (mainly on the Eastern Shore). Place a piece of white paper on a clip board and tap branches over the paper. Examine the paper surface using a 10-20X hand lens to see the mites

Control: Two mite growth regulators that can be used are TetraSan or Hexygon. Both materials kill immature stages, providing several weeks of control and are very soft on beneficial organisms. Other choices for control include Avid, Floramite, Akari, and horticultural oil.



Close-up of spruce spider mite adult (top photo)
Photo: Sarah Kenney
Heavy damage on hemlock (bottom photo)

MNLA Nursery Field Day

The MNLA is working jointly with the University of Maryland Extension in conducting the June 23, 2011 Nursery Field day at Priapi Nursery in Cecilton, MD.
For more information, go to mnlaonline.org or call 410-823-8684.

More on Imprelis

We continue to receive emails this week about possible Imprelis damage on landscape trees. So far we have mostly seen damage on pines and conifers. We have had a report from one Maryland landscape company who is seeing some damage on deciduous trees as shown in the photo to the right.



We have not seen photos of any of the damage listed below, but here is a report from Tom Ford, Extension Director in Blair County, PA:

In our area we are witnessing injury from root uptake and possibly drift onto the trunks of young trees. The label requires a 5 foot buffer around ornamentals during turf applications, but we doubt that this is being followed by the applicators.

We are seeing injury on the following specimens: Norway Spruce, Redbud, Forsythia, Honey Locust, Red oak, Pin Oak, Silver Maple, Sugar Maple, Bloodgood Japanese maple, Lilac, purple coneflower, Vinca minor (periwinkle), Douglas Fir, Dogwood, PJM rhododendron, Delphinium, Black eye Susan (Rudbeckia sp.)

I contacted DuPont when I first observed the symptoms on 6/2/11. DuPont's Dr. Charles Silcox indicated that fertilization may enhance uptake of Imprelis, he indicated that leaching would not help reduce the concentration in the soil, and that judicious watering during periods of drought would be advisable to alleviate stress. In our area the high temperatures of the last week seemed to increase the expression of symptoms. Most applications were made by applicators in late April to early May with the first symptoms showing up on 6/2/11 outside of Altoona, PA.

The turf at this site was only treated with Imprelis and Dimension. No other broadleaf herbicides were used on this site so we are sure that we are only looking at Imprelis injury to the ornamentals. We have reports in PA from the following PA counties: Westmoreland, Blair, Lebanon, Berks, and the Philadelphia area so far. Master Gardeners are beginning to see specimens coming into the office for diagnosis.

Damage on Taxus

Chuck Whealton, Ruppert Landscape, Inc., sent a few more photos (**as shown to the right**) showing the progression of herbicide damage on taxus hedges bordering turf treated with Imprelis 4 job sites in Columbia, all of which have experienced Imprelis damage on spruce trees. He noted that he has been seeing the progressions as follows:

1. The damage starts as a yellowing of new growth.
2. Followed by classic curling of needles
3. Followed by death of new growth
4. Last stage appears to be a browning of all needles and complete needle drop.



Leaf Beetles on Willow

Karen Bernstein, Arbormasters, Inc., sent in a photo of willow leaf beetles skeletonizing willow foliage. Karen noted that some marched in groups straight down the leaves. Initially, these beetles feed in groups on the undersides of leaves before separating after a few days.

Control: Labeled synthetic pyrethroids work well on leaf beetles.



Willow leaf beetles

Photo: Karen Bernstein, Arbormasters, Inc.

Turpentine Beetles

Marty Adams, Bartlett Tree Experts, sent in a photo of the pitch produced by turpentine beetles. Healthy trees fend off these beetles by producing large amounts of sap (pitch) to drown the beetles. Stressed trees usually are not able to produce enough pitch. These beetles are usually found on the lower portion of the trunk.



Pitch from turpentine beetle on trunk

Photo: Marty Adams, Bartlett Tree Experts

Beneficials in the Landscape

Judi Moline, Master Gardener, sent in a photo of an assassin bug that just hatched. Karen Bernstein is also finding small assassin bug nymphs.

Here at the research center, we are seeing different stages of lady bird beetles, a few praying mantids, a lacewing larva, and syrphid fly adults.



Assassin bug nymph

Photo: Judi Moline

Weed of the Week, Chuck Schuster

Bull thistle, *Cirsium vulgare*, is a biennial thistle found throughout the United States in landscapes and some turf settings. Bull thistle is erect, forms a rosette, and has leaves with hairs on the upper surface. Leaves are arranged alternately on the upright flowering stem, are lanceolate in shape and deeply lobed, and will have coarse hairs on the upper side, and the lower surface will present with white hairs which are not as coarse as those found on the upper surface. The flowering stem can reach five feet in total height with purple veins; is branching and the leaf margins will extend down the stem. Flowers will appear singularly or in clusters at the ends of branches. Each flower reaches two inches in width, is purple to reddish purple in color. The flowers have spiny tipped bracts. Bull thistle has a taproot and forms a rosette, which is one of the identification

characteristics when compared to Canada thistle. Musk thistle can be confused with bull thistle, but musk thistle will usually lack the hairs on the leaves. Seeds will mature and disperse within five to ten days of flowering.

Control of bull thistle starts with seed formation prevention. This may include mowing, but mowing must be done before flower formation. Flowers can occur anytime from mid-May through August. Some control has been gained with the use of the two weevils which have limited bull thistle, but not eliminated it. Chemical control can be difficult as the products can be harmful to desired species. In turn, 2,4-D products will control it especially when combined with dicamba.



Bull thistle in flower
Photo: Steve Dewey, Utah State University, Bugwood.org

Plant of the Week, Ginny Rosenkranz

Dawn redwood, *Metasequoia glyptostroboides*, is a deciduous tree that, like the bald cypress, (*Taxodium distichum*) looks like it should be an evergreen. The easiest way to differentiate between them is that dawn redwood has branches and leaves arranged opposite each other, and bald cypress has their branches and leaves arranged in an alternate pattern. Both grow into a pyramidal shape, growing 50-70 feet tall and 20-30 feet wide. The bark of dawn redwood and bald cypress is reddish brown when young and a darker brown as the tree ages. Another method of seeing the differences between the two trees, dawn redwood bark will exfoliate when older, in long narrow strips, and directly below a branch attachment there are shallow depressions. The leaves of both are short, narrow and look similar to hemlock and spruce, dark green in the summer but turn orange brown to brown in the fall before abscission. Both dawn redwood and bald cypress are very tolerant of wet soils but prefer moist, well drained, slightly acidic soils and full sun locations. They are both hardy from USDA zone 4, but bald cypress is hardy to zone 11 while dawn redwood is only tolerant to zone 8. Dawn redwood has been discovered by the Japanese beetle and is susceptible to canker infestations, while bald cypress has a twig blight caused by *Seiridium*, a cypress moth, leafrollers, gypsy moth, spider mites and a gall forming mite. The most unusual difference between the two trees is that the Dawn Redwood was once a native tree in North America and became extinct for 15 million years before a horticulturist brought it back from the Far East and reintroduced it into the landscape.



Overall view of dawn redwood (left), close-up of dawn redwood foliage (center) and close-up of bald cypress foliage (right)
Photos: Ginny Rosenkranz, UME

PLANT	PLANT STAGE (Bud with color, First bloom, Full bloom, First leaf)	LOCATION
<i>Aesculus parviflora</i>	First Bloom (June 14)	Silver Run
<i>Asclepias tuberosa</i>	First Bloom (June 13)	Ellicott City
<i>Campanula</i> ‘Sarastro’	Full bloom (June 14)	Silver Run
<i>Clethra acuminata</i>	First bloom (June 14)	Silver Run
<i>Marshallia grandiflora</i>	Full bloom (June 14)	Silver Run
<i>Rhododendron</i> ‘Millenium’	Full bloom (June 14)	Silver Run
<i>Spiraea virginiana</i>	Full bloom (June 14)	Silver Run
<i>Stewartia pseudocamelia</i>	Full bloom (June 14)	Silver Run Ellicott City
<i>Yucca filamentosa</i> ‘Color Guard’	Full bloom (June 14)	Ellicott City
<i>Yucca smalliana</i> ‘Bright Edge’	Full bloom (June 14)	Ellicott City

Degree Days (As of June 16)

Baltimore, MD (BWI)	1259
Dulles Airport	1212
Frostburg, MD	715
Martinsburg, WV	1095
National Arboretum	1405
Reagan National	1386
Salisbury	1296

Upcoming Programs:

June 25, 2011 (Saturday)

Summer Maryland Christmas Tree Association Meeting

Location: Sewell's Tree Farm, Taneytown, MD

Contact: 410-452-9793

July 21, 2011

PGMS Field Day and Trade Show

Location: American University, Washington, D.C.

Contact: 703-250-1368

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