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TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **March 18, 2011**

In This Issue...

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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Disease Information: Karen Rane (Plant Pathologist) and David Clement (Extension Specialist)
Weed of the Week: Chuck Schuster (Extension Educator, Montgomery County)
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First Report Of The season

We will start the 2011 season with this IPM Alert report then skip a week. We are on furlough and spring break next week, so we will follow with the second report on April 1 (April Fool's Day).

Winter of 2010/2011- Stanton Gill

I thought we would start with a look back at this last winter since it will impact plant material in the spring and summer of 2011. November of 2010 was warm and relatively dry, so a lot of nurseries were digging plants and the landscape business was humming along. Then December came with bitter cold weather and light, frequent snows. Not huge snow accumulations, just light ones that required a lot of applications of salt. Many landscape management companies made good money putting down salt on sidewalks and parking lots to deal with potential ice problems.

NOAA reported that it was one of the coldest December periods on record in over 40 years. The ground was frozen for the upper 2 - 3 inches by the first week in December. Landscape installations came to a screeching halt for many companies. January was mainly just plain cold and windy for the first half of the month. Not much snow accumulation but windy and cold.

On January 21 - 24 the temperatures really dipped down and it stayed in the 20 °F range during the day for the 4 day period. On three of these nights the temperature went down to 7 - 9 °F. On January 25, the temperature was

6 °F at 6:30 in the morning in Brookeville, MD. Jerry Faulring from Adamstown told me it was 5 °F in the Frederick area on this same day. These cold temperatures caused some damage on plums and peach branches that I examined a week later.

As we arrived at the last week of January, NOAA was reporting a record level of snow for the northeast for January. A really big storm (12 - 14" of snow) hit Maryland on January 27 with wet snow that froze over night bending trees over and snapping branches. We observed many Leyland cypress being bent to the ground and other evergreens being twisted into unnatural forms for 5 - 7 days in a row. Blue spruce had the tops broken off in many landscapes. White pines dropped branches throughout Maryland.

This storm was good news for arborists with bucket trucks and you could see them driving all over the metro area removing branches so wires for phones and electric could be repaired. BGE and Pepco came under a lot of public criticism and they hired many outside arborist contractors to have branches removed. January was a good time to be an arborist.

During this January 27 winter storm we even had rumbles of thunder and strikes of lightening that are more common with summer squalls. The sky lit up with blues, greens and orange from 6:00 – 8:00 p.m. with quite the winter display. Another snow followed this one on February 2 with additional snow and more cold weather.

The first 10 days of February were bitter cold with nighttime temperatures hovering in the teens and daytime temperatures in the twenties. The cold, dry wind seemed to blow steadily for most of the days. On February 12 it started to warm up with steadly increasing temperatures for each day until it reach 60 °F by February 18.

Ambrosia Beetles

On January 20, 2011, after giving a presentation at the arborist conference at Turf Valley, an arborist brought me (Stanton Gill) a small vial with 3 beetles in it. He said he had been taking down a Bradford pear tree for a customer and found the three beetles in the base of the tree. I brought the beetles back to CMREC for examination under a dissecting microscope. They were *Xylosandrus crassusiculus*, granulate ambrosia beetles. In the literature, it has been reported that they overwinter in leaf litter, but this year is the first time a person has brought me a sample in winter that were found at the base of a tree.

We placed out alcohol traps at 5 locations (so far) this season in the first week of March. We have had no flight activity of ambroisa beetles in the traps at this point. It has been a rather cool spring other than this warming trend this Friday (March 18th).

Euonymus Leaf-notcher Caterpillar (*Pryeria sinica*)

Dick Bean, MDA, is reporting that Rose Buckner, MDA Ag Inspector and survey specialist, collected plant samples on March 16 from infested sites in Hillsmere and Severna Park in Anne Arundel County and found only egg masses. He mentioned that he would not be surprised if the eggs began hatching in protected locations by this weekend. He noted that it is interesting that the numbers of egg masses at these sites are at the lowest levels seen in several years and that maybe we are seeing a natural decline in the epicenter of the population. MDA has been monitoring populations in Anne Arundel County for several years. If you see this caterpillar in other areas, please let Dick Bean know at BeanRA@mda.state.md.us.

Late instar caterpillar of *Pryeria sinica*

Deer Damage In 2011

Deer populations in Maryland, especially in urban counties, continue to grow to extremely high levels. The number of deer lying next to the road injured and killed by cars is evidence of the problem in urban counties. A resident of Columbia, Maryland told me the deer were walking up to his house each morning this winter to browse on plant material. One morning he opened the door to scare off the deer and most of the herd moved away. A male stood his ground and started stomping the ground, challenging him to do something. It ended in a stand-off.

We have received reports of very heavy deer browsing plants in landscapes in Frederick, Carroll, Anne Arundel, Howard, Montgomery and Prince George's counties this winter. The extremely cold weather and frequent snow fall in January seems to have increased the deer's appetite for landscape plant material. The best solution you can provide for your customers is to cover the valuable plant material with bird netting in the late fall, removing it in spring when other food sources become available for the deer. Repellants can help to a certain degree and scented soap placed near valuable plants may help divert the deer.

Remember Last Year – 2010 In Early April?

*Incredibly Nice Weather This Week **(2010)***
After the two days of 90 °F last week everyone is looking for a normal spring and the NOAA weather forecast shows we should be seeing normal temperatures for the near future. The incredibly hot weather of April 7-9 forced lilac, crabapples and redbud into bloom which resulted in some unusual flower combinations with forsythia in bloom while redbud was also in bloom. Tell your customers to enjoy the interesting flowering time combination this spring. We are seeing the pollinators busy in the landscape working overtime this year with all of the bloom choices out there. Pollen counts reached over the 2000 level last Thursday thru Saturday and an incredible number of people were complaining about the impact of all of this pollen in the air on their respiratory systems. A couple of good rain storms will help this situation, knocking the pollen out the air.

The Facts About Systemic Insecticides And Their Impact On The Environment And Bee Pollinators

By: Richard S. Cowles, Ph.D., Connecticut Agric. Exp., Valley Lab, Windsor, CT, Richard.Cowles@ct.gov

Is imidacloprid safe to use for controlling insect pests feeding on urban trees? Are insecticides like imidacloprid responsible for Colony Collapse Disorder of honey bees? This article will try to provide some guidance and respond to these questions.

Neonicotinoid insecticides and arboriculture

Imidacloprid is one of a growing class of insecticides (neonicotinoids) that have, since the announcement of their discovery in 1989, become mainstays in agricultural, pest control, and landscape pest management. Two active ingredients of this class are commonly used in arboriculture: imidacloprid (CoreTect, Merit, or Xytect) and dinotefuran (Safari and Transtect). One of the reasons this class of insecticides has become so important is its selective mode of action: neonicotinoids target the same acetylcholine receptor on the insect nerve cell as nicotine (the active ingredient of tobacco), but unlike nicotine, do not bind well to the nerve cells of humans. Therefore, it is toxic to insects and relatively nontoxic to humans and animals, including birds. Other favorable environmental characteristics are that neonicotinoids are readily excreted by vertebrates, that they break down quickly upon exposure to sunlight, and that they bind tightly to organic matter in soil. Another, and probably their most important practical feature, is that they are systemic (move throughout the plant). Systemic neonicotinoids can be applied to trees using three different application methods; these include soil applications, systemic basal bark sprays and trunk injections. Each of these methods have their pros and cons, however, soil and basal bark sprays are commonly used because of they are non-invasive to the tree, quick, and operational predictable.

When applied to the soil around the root system of a plant, the insecticide is absorbed by the roots and transported in sap, where the insecticide can then reach every part of the plant. This is useful both for targeting sap feeders (both xylem feeders like sharpshooters, and phloem feeders like aphids) and insects that feed in the interior trunk and leaf tissues of trees, such as newly hatched emerald ash borer larvae or various leaf miners. In contrast to broad spectrum foliar spray insecticides, systemic applications of neonicotinoids, either as soil applications or basal bark sprays, are contained within the plant. This allows targeted control of the pest insects rather than killing all insects, which could including beneficial predators or non-target insect species. Trials with the neonicotinoid dinotefuran have shown that a systemic basal bark spray will provide control of armored scale pests on Christmas trees while not impacting beneficial scale-consuming predatory beetles and parasitic wasps.

Systemic insecticides have proven their usefulness in arboriculture. Trees that would otherwise be impossible to spray because of their great height, extremely dense foliage, or location near sensitive ecological or human activities can be protected with systemic insecticides. For example, hemlock woolly adelgid has been controlled in hemlocks as tall as 140-feet on trees in the Great Smoky Mountains National Park. It would be extremely difficult to achieve this level of control with non systemic products. Furthermore, imidacloprid was found at nearly uniform concentrations in branch samples from all levels of the crown in these large trees. Sadly, these trees were only treated once (in 2002), and recently died because the treatment was not continued. Research has shown that the effective dosage rates for imidacloprid are exponentially related to the diameter of the tree trunk. As trees increase in size they require higher insecticide dosage rates to fully protect the tree. This has been demonstrated in research trials using soil applied imidacloprid on hemlocks for control of hemlock wooly adelgid and (Cowles, 2009) and on ash trees for control of emerald ash borer (Herms et al., 2009). Exploring the relationship between minimum effective dosage and the size of trees for various insect pests should be a fertile subject for further study. A deep understanding of the dose/tree size/pest relationships can lead to optimized use of these insecticides in the environment and therefore reduce the risk of non-target impacts.

Some target pests (aphids, true bugs, and adelgids) are extremely sensitive and require very low dosages. Soil applications of imidacloprid result in more than one year of control, and low dosages are effective. Since the peak concentration following a soil application can be as long as 18 months later,2 it is unlikely that a tree would need to be retreated to manage these pests for at least 2 years. Because imidacloprid and its olefin metabolite continue to be mobilized to new growth in successive years, you may observe the population continuing to decrease over time, to the point where the population is locally exterminated. I treated tulip poplars at my workplace in 1995 with imidacloprid, and they have not required subsequent treatment. The rule of thumb for these sensitive pests is to not retreat until the pest population is observed to be increasing again. Unfortunately, borers require a much higher dosage in tissues to be effective, and any borers living in a tree jeopardizes the long-term health of the tree. Therefore, protection from tough-to-control borers warrants annual insecticide applications and higher treatment dosages.

Non-target effects and Colony Collapse Disorder

Probably the first non-target impact observed with imidacloprid was spider mite outbreaks in treated crops (a phenomenon repeatedly observed in trees). Three hypotheses may explain this phenomenon; each explanation has some supporting data. The insecticide is not poisonous to the mite, but causes secondary poisoning of predators that feed on the mites, the insecticide acts as a “fertility drug” to the mites, and the plant is so much healthier, that the mites can develop much better. From my own research on eastern hemlocks, I have observed a transient outbreak in spruce spider mites that affect foliage for one year, which is more than compensated by the improved growth of the trees when no longer weakened by adelgids. These effects may be more pronounced when excessive dosages of imidacloprid are used relative to the size of the tree. Ecological studies of forest hemlocks treated with imidacloprid demonstrate that it can affect many components of the insect fauna associated with these trees.3 Such an outcome should not be surprising – after all, these systemic insecticides

are used precisely because they are potent insecticides. Hemipteran predators (such as minute pirate bugs) are certainly eliminated with the use of systemic neonicotinoid insecticides. These and other predatory bugs commonly feed on the sap of their target prey's host plant, and so are subjected to direct poisoning.

The other insects for which there is great concern regarding the potential for poisoning are pollinators. While any insect feeding on pollen or nectar could be exposed to the systemic insecticide, Colony Collapse Disorder (CCD) has focused concern on risk to honey bees. Although the symptoms of bee poisoning with this class of insecticides eerily resembles CCD (foraging bees become disoriented and do not return to the colony), a review of the incidence of CCD around the world points to three or four other factors being more likely explanations. (1) CCD has not diminished in countries where neonicotinoid insecticide use was curtailed, CCD is not found in Australia, where neonicotinoid insecticides are used, but where Varroa mite (a parasite and vector of bee viruses) are absent, 96% of colonies with CCD have been found to harbor a complex of viruses, for which Israeli Acute Paralysis Virus is most strongly implicated; and hive equipment from CCD colonies can be disinfected through irradiation, which implicates involvement of a pathogen. For tree species such as Fraxinus (ash trees) which are not pollinated by bees or that are not visited by pollinators, systemic treatments will have little to no impact on pollinator species.

The evidence pointing to other factors as likely causes for CCD does not leave neonicotinoid insecticides off the hook for their potential to poison bees. The facts below are things that practitioners should consider:

- Neonicotinoid insecticides used in arboriculture are highly toxic to bees when exposed to a direct spray application. For example, imidacloprid and dinotefuran have acute LD50s for bees of 18 and 75 ng per bee, respectively.
- Exposure of insects to low neonicotinoid concentrations (well below their acute LD50) can cause mal adaptive and ultimately lethal behaviors.
- Imidacloprid is readily metabolized in trees to imidacloprid olefin,2 which is 10 – 16 times more toxic to insects than the parent compound.
- Peak concentrations of imidacloprid are not reached in some trees until about 18 months after a soil application, which means that trees treated every year could accumulate concentrations toxic to bees over several years.
- Arboricultural use concentrates these insecticides compared with agricultural uses. For example, the maximum dosage for treating two 32-inch dbh trees with some imidacloprid products is equivalent to treating one acre of agricultural crops.
- Higher concentration in plant tissues may increase risk to pollinators.

Little is known about the actual concentrations of these insecticides in nectar or pollen from treated landscape trees. At this point, arborists should mitigate these concerns by adjusting how they treat trees, how often trees are treated, and by choosing the most appropriate product. Risk of bee poisoning integrates components of intrinsic toxicity (just how much of the insecticide is required to cause adverse effects in bees), and their degree of exposure to that poison.

Arborists can avoid exposing pollinators by avoiding treating tree species that are highly attractive to pollinators (linden, tulip poplar, Korean Evodia and catalpa, for example) with systemic insecticides. If trees attractive to pollinators do require treating with a systemic insecticide, dinotefuran applied immediately after bloom may be safer to use than imidacloprid products. Whereas imidacloprid can be detected in hemlock foliage for about 8 years after soil injection, preliminary data from various tree species suggest that dinotefuran breaks down over the course of one growing season. Therefore, if the pest actively feeds following bloom of a tree species, then a dinotefuran application after bloom can quickly target that pest, and then residues should dissipate so that it is not present in pollen or nectar at biologically relevant concentrations the next time that plant blooms.

Risk of soil applied neonicotinoids leaching into groundwater

Another concern with soil applied systemic insecticides is that they may pose a risk of leaching to groundwater or to nearby ponds and streams. This is really a non-issue when using these products in most urban landscape soils. Both imidacloprid and dinotefuran do bind to organic matter in the soil and most urban landscape soils with mature trees have higher than 3% organic matter. Therefore, there will be little risk of leaching as long as there is a fair degree of organic matter in the soil (2% or greater), the insecticide is not placed below the organic horizon of soil (as might happen with a deep root feeder probe), and the insecticide is not applied in such concentrated "spots" that the active ingredient will exceed the binding capacity of the soil. Therefore, I suggest that practitioners use very shallow subsurface (2-4 inches) application of systemic insecticides, dispersed near the trunk of the tree. For high dose applications, expanding the area of soil treated near the base of the trunk of the tree may be important to guarantee that the binding capacity of the organic matter is not exceeded. A novel application technique to consider for high volume treatments is to use a hose-end sprayer to disperse the active ingredient around the base of the tree, which should then be incorporated with an additional light watering to wash the residues from the soil surface. In all of my experiments, I was unable to cause imidacloprid to leach more than a few inches through an organic soil layer found under forest hemlocks, even with a one inch per day irrigation protocol adding water to soil columns. Dinotefuran has much lower organic matter binding than imidacloprid, and so it does pose a greater risk for leaching (though this risk may not be great). However, dinotefuran can be successfully applied as a basal bark spray. It is surprising how quickly this active ingredient is absorbed through the bark and is then transported to the foliage. My trials in eastern hemlocks have demonstrated this approach to be equivalent to soil injection of the same quantity of product, and in conditions where the soil is dry, compacted, or excessively wet, a trunk spray could be more effective than soil injection. While neonicotinoids should not be applied to trees growing directly in water or to areas where surface water is present there is little risk of these products leaching into groundwater when applied correctly to the majority of soil types across the United States.

Imidacloprid and dinotefuran are very effective tools for managing many insect pests of landscape and forest trees. Choosing the right product for the job and applying the product carefully can protect both the trees that your customers value and the environment.

Thousand Cankers Disease

Information from: Rebecca A. Bech, Deputy Administrator, Plant Protection and Quarantine

Over the past few years, an important disease of walnut called thousand cankers disease (TCD) has been detected in eight western States and several counties in Tennessee. These infestations are thought to have been present for some 10 to 20 years. Concerned parties approached the Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) to raise our awareness of TCD and asked us to establish a Federal quarantine to protect walnut tree resources from TCD in the United States. APHIS shares these concerns regarding the threat that TCD poses to the Nation's walnut resources.

Currently, APHIS has regulations in place that address some of the known TCD pathways, including requirements for the importation of solid wood packaging and propagative material. APHIS also has other ongoing efforts to mitigate forest pest threats from the interstate movement of firewood, which is another pathway for the spread of TCD.

To determine whether a Federal regulatory framework for TCD would be effective, APHIS reviewed the geographic distribution of the known TCD-affected areas, considered its potential to become established throughout the United States, and assessed the effectiveness of available regulatory tools. We concluded that such a regulatory framework would have little long-term impact on TCD spread. This is due to the challenges of regulating the long-distance movement of an array of products and shippers, poor detection capability, and the apparent broad geographic distribution of TCD in the United States.

APHIS plans to support State TCD programs by making investments towards developing improved survey, detection, and mitigation methods (e.g., traps and lures, treatments, etc.). In fiscal year 2010, APHIS provided, through Farm Bill funding, about $160,000 for trap and lure development and $6,250 for TCD surveys. APHIS continues to work closely with the U.S. Forest Service to coordinate survey, detection, and reporting guidance for our respective State counterparts. We hope to provide support for methods development and assistance to States for survey this fiscal year.

APHIS recognizes the importance of America's forests and will continue to identify ways to enhance their protection. Our partnership with States, Federal agencies, tribes, and affected stakeholders will enhance our understanding of TCD, and we hope that our efforts will result in limiting losses to America's walnut resources due to TCD.

Black Knot on Cherry

Black knot on cherry is very easy to spot at this time of year before the trees leaf out for the season. Black knot is caused by a fungus. The galls can be unsightly, but unless in very high numbers, usually do not kill the tree. The best thing to do is to prune out the galls before the trees leaf out to remove future inoculum.

It is easy to see the galls before the trees leaf out in the spring

A few insects and diseases to look for in the next few weeks...

Eastern tent caterpillar. Look for the egg masses to see if there is first instar larvae present. First hatch coincides with the blooming of forsythia. For control, remove and destroy the tents. *Bacillus thuringiensis* (Bt) can be used on young caterpillars. Other options include ConfiRm, Conserve and Acelepryn.

Hemlock wooly adelgid. Look for the development of the white, woolly egg masses. Then, monitor regularly for crawler emergence in April.

Spruce spider mite. These mites are a cool season mites so look for activity this spring. Common plant hosts damaged by spruce spider mites are junipers, spruce, arborvitae, cryptomeria, dawn redwood, hemlock and pine. Control measures include orticultural oil, Hexygon, TetraSan, Avid, Floramite and Acari.

Anthracnose on Dogwood (and other woody plants). Anthracnose diseases show up on trees later in the season when it is too late to treat. If anthracnose has been a problem on dogwoods or other trees at sites you monitor, then budbreak is the time to treat to reduce the incidence of disease later in the summer. Control options include Myclobutanil, Banner and Cleary's 3336. Be sure to read labels for appropriate spray intervals.

Anthracnose on oak

Gymnosporangium rusts (Cedar apple rust, Cedar quince rust and Cedar hawthorn rust). As the season progresses, look for orange sporangia on fruits of trees such as hawthorns and orange spots on foliage of plants like crabapples. These rusts need alternate hosts to complete their disease cycle. Grow resistant varieties if possible. Apply protectant fungicides such as Banner or Myclobutanil at budbreak.

Beneficial Insect of the Week, Paula Shrewsbury

What natural enemies are active this early in the season?

One way to figure out what is active at this time of the season is to switch on your porch light on a warm spring evening. Many insects, including natural enemies, are attracted to porch lights. I always find this an entertaining way to spend part of an evening. A common early season natural enemy is the parasitic group of wasps referred to as Ichneumonid wasps (in the family Ichneumonidae). Ichneumonid wasps are characterized by long thin bodies with a very narrow "waist". At this time of year you might see a pale orange ichneumonid wasp (see photo) active around your lights. Many ichneumonids are parasitoids of caterpillars, such as cutworms or armyworms. An intriguing part of the ichneumonid story is that many are koinobionic. This means they are able to oviposit an egg into their prey (ex. caterpillar) and then the wasp egg or larvae delay development until the situation becomes more favorable (ex. the caterpillar grows bigger and therefore provides more food for the parasitoid). Many species of koinobionts synchronize development with that of their host by responding to changing levels of hormones produced by their host during growth and development. As adults, ichneumonid wasps feed on nectar from flowers so be sure to make your landscapes appealing to these beneficial insects.

An adult ichneumonid wasp found around a porch light.
Photo: Mike Raupp, UMD

Weed of the Week, Chuck Schuster

Understanding crabgrass control is an important part of spring weed control. Much effort is spent each year to control this spring germinating weed, and in some cases the efforts do not yield the results that are desired. Understanding how these products work can help determine if the failure is caused by timing or something else.

Products containing dithiopyr (Dimension) prodiamine (Barricade) and pendimethalin (Pre-M) are shoot and root development. Dithiopyr (Dimension) is also an early post emergent product that inhibits certain steps in plant cell division. All of these products can be used on established turf, but not sites that is will be seeded with new seed. Siduron (Tupersan) is the only product that can be used in a turf setting when overseeding is considered. Timing of application, when soil temperatures reach 55-60 °F and moisture to activate will start the process to work. It is important to remember that any soil disturbance after application will decrease the effectiveness as the barrier will be damaged. This includes aeration of the site. If this is desired, do it several weeks prior to the application of the herbicide.

Soil temperatures are in the proper range in some areas this spring. Moisture is available and rainfall has been timely, but be aware of rain events that produce heavy downpours will decrease some of the positive desired results.

Plant of the Week, Ginny Rosenkranz

Crocus in bloom
Photo: Ginny Rosenkranz

Crocuses are a sign that spring is really on the way despite any snow, sleet, or frigid temperatures. Crocus are corms, a bulb-like structure that allows the plants to survive the summer and winter months underground, then emerge in the early spring with green grass-like foliage and tiny cup-shaped flowers. There are a number of species of crocus, some bloom extremely early and some bloom later in the spring. The earliest blooming crocus is very tiny, only 1 inch tall and wide while the later blooming crocus can be as tall as 3 inches. Crocus emerge in February or March with green and white striped foliage. The flowers have shiny white, yellow, purple or striped variegated petals. They all need extremely well drained soils in the winter and prefer sun gardens, but will thrive in a deciduous woods as the leaves of the trees will not be out until after the crocus have finished their blooming and growing period. They can be planted beside woodland walkways, in lawns, in groundcovers or in herbaceous perennial beds and rock gardens. As an early bloomer, they are a great source of nectar for early pollinators. They are very drought tolerant, needing only the winter snow and spring rains to gather enough energy to emerge again the next spring. *Rhizoctonia*, blue mold (Penicillium) dry rot and basil rot are all diseases caused by planting the corms in soils that stay wet especially in the fall and winter months.

PLANT	PLANT STAGE (Bud with color, First bloom, Full bloom, First leaf)	LOCATION
*Veronica persica (*persian speedwell)	First bloom (March 11)	Ellicott City
Acer rubrum (red maple)	Full bloom (March 16)	Ellicott City
Lamium purpureum (purple deadnettle)	First bloom (March 15)	Ellicott City
Corylus avellana (Harry Lauder's walking stick)	Full bloom (March 13)	Columbia

Degree Days (As of March 17)

Baltimore, MD (BWI)	33	Dulles Airport	31
Frostburg, MD	1	Martinsburg, WV	18
Mechanicsville, MD	24	National Arboretum	36
Reagan National	43	Salisbury	45

Who can you contact for help with plant problems?

Diseases:
Karen Rane: rane@umd.edu, 301-405-1611.
Go to www.plantclinic.umd.edu for information on how and where to submit suspected disease samples to her lab.

Insects:
Stanton Gill: sgill@umd.edu, 410-868-9400 (cell) or 301-596-9413 (office)
Paula Shrewsbury: pshrewsb@umd.edu, 301-405-7664
Brian Clark: bpclark@umd.edu, 301-868-8780 (Brian covers Prince George's County)

Weeds:
Chuck Schuster: cfs@umd.edu, 301-590-2807

Soil Substrates Plant Fertility:
Andrew Ristvey: aristvey@umd.edu, 410-827-8056

Horticulture:
Ginny Rosenkranz: rosnkrnz@umd.edu, 410-749-6141 ext 106 (Wicomico, Worcester and Somerset counties)

Give Us YOUR Stink Bugs
Yes, we want your stink bugs – quantity only (over a hundred). We are conducting trials at CMREC on the brown marmorated stink bugs with light attractants. We need all of the living stink bugs you have to offer. You can drop them by the research center (CMREC) at 11975 Homewood Road, Ellicott City, MD from 8:30 – 4:00, Monday through Friday. Please put them in a box or container. Thanks for your help - Stanton Gill, University of Maryland Extension Specialist.

Upcoming Programs

Tree and Landscaping Seminar
Saturday April 2, 2011, 8.30 a.m. - 11.30 a.m.
Location: Council Chambers, 160 Duke of Gloucester Street, City of Annapolis
Topics will include selection, installation and maintenance of trees and other vegetation as well as best management practices for the landscape such as Integrated Pest Management (IPM). The seminar will be geared to residents, home owner associations, community associations, and so on.

Speakers will include: Dr. Steve Cohan, Professor, University of Maryland
Dr. Paula Shrewsbury, Associate Professor, University of Maryland
Paul Foster, Arborist Representative, Bartlett Tree Experts
Jan van Zutphen, Environmentalist, City of Annapolis.
RSVP appreciated by 03/25/08: 410-263-7946 ext: 7718 or jvzutphen@annapolis.gov

Invasive Species Program
April 12, 2011
Location: Baltimore County Center for Maryland Agriculture, Cockeysville, MD 21030
For a brochure: http://ipmnet.umd.edu/conferences/index.htm

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