

Walnut Council

Maryland Chapter Newsletter

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President's Message: Thousand Cankers Disease - Is It Time To Start Worrying?

David Robbins

On September 8th the Maryland Chapter held its annual Fall Workshop, during which we traveled on a coach bus to the Richmond, Virginia area, to view some of the most recent outbreak sites of Thousand Cankers Disease (TCD). Everyone in attendance said that they enjoyed the trip and learned a lot. But the real question is – what did we learn? And more importantly – should it change how we manage our Walnut trees?

There's an old saying: The more you know, the more you realize you don't know. Never before has this saying been truer than with TCD. What we learned on the bus tour, first and foremost, is that there is a lot we don't know about this disease. The fact of the matter is that this disease is new enough that we are still waiting for the science to catch up. We know very little about how the Walnut Twig Beetles spread, the virulence of the *Geosmithia morbida* fungus, and most important of all, how to stop them.

Despite being very knowledgeable on the subject of TCD, our tour guide, Norm Dart, quite often had to answer our questions with, "we just don't know". And that is the truth. Nobody knows

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the answers to many of the most important questions – at least not yet. Given a few years, the scientific research should catch up and give us some of the answers we are looking for. But do we have that amount of time?

Our Thousand Cankers Disease tour was a bittersweet day, full of information that was both optimistic and foreboding. We received both good news and bad news that day – so let's start with the bad news.

TCD was first positively identified in Virginia in 2011. However, based on the progression of the disease, Norm Dart estimates that it has been present at those sites for at least 5-10 years. TCD has been discovered in Fairfax County, Virginia,

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The Use of CoreTect formulation of Imidicloprid Pesticide for the Control of Hemlock Woolly Adelgid

Larry Maxim

Editors Note: CoreTect tablets are the easiest and least expensive way to treat a tree with Imidicloprid—requiring no pesticide applicators license, and costing only \$1 per inch DBH of the tree.

Imidicloprid is a systemic insecticide that is absorbed by a tree and translocated throughout the vascular system. This insecticide is effective on most pests that feed on the leaves or in the cambium of the tree; including Hemlock Woolly Adelgid, Emerald Ash Borer, and many more. However, Imidicloprid does not initially appear to be an effective treatment for Walnut Twig Beetle and Thousand Cankers Disease.

The Eastern Hemlock (*Tsuga canadensis*) plays a vital role in the riparian zone “web of life”. It provides habitat for hundreds of other life forms including insects, mammals, and birds and provides shade and streamside stability. For more than a decade Maryland’s Hemlock forests have been under attack by the Hemlock Woolly Adelgid (HWA – *Adelges tsugae*). This microscopic Asian pest attacks en mass and kills Hemlocks within a few years if site conditions are optimal. Because of the difficulty of controlling adelgid-type pests with topical treatments, systemic pesticides have gained favor, with Imidicloprid being the insecticide of choice.

Imidicloprid is a systemic insecticide which acts as an insect neurotoxin and belongs to a class of

chemicals called neonicotinoids – a lot to swallow. The bottom line is that Imidicloprid is the most widely used insecticide in the world today, largely owing to its excellent control of a wide range of pests and its favorable toxicological and environmental profiles. It has been very effective in the control of Hemlock Woolly Adelgid (HWA) and is even a component of a popular flea control treatment you may apply monthly to the nape of your family pet.

For years the Bayer Corporation marketed two Imidicloprid formulations for professional applicators to use in the control of HWA. These were several wettable powders primarily used for soil injection, and a ready-to-use formulation for use in trunk injection. Both treatments are very effective in controlling HWA and preventing tree mortality. However, the key words here are “professional applicators” as these treatments require specialized and expensive equipment as well as advanced registration/licensing. For example, tree injection

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Figure 1: A typical bottle of CoreTect tablets. “CoreTect” is a trademark of the Bayer Corporation.

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involves drilling a precise number of holes into the base of a Hemlock to be treated, inserting permanent injection ports, inserting needles into the ports to “pressure inject” a metered amount of Imidicloprid via very specialized and expensive equipment. Clearly, these treatments are beyond the scope and expertise of most landowners, but help was on the way.

In December of 2008, Bayer marketed its CoreTect formulation of Imidicloprid, intending it for use in the Turf and Ornamentals sectors. At 2.5 grams, these brownish round tablets are about the size of marbles and contain 20% Imidicloprid plus a 12-9-4 NPK fertilizer component. They quickly gained popular application in treating Hemlocks for HWA at the rate of two tablets per inch of tree dbh, which are inserted in the drip line zone about four inches into the soil. Aside from basic safety precautions (read the label), the tablets are lightweight, inexpensive (about \$.50 each), and easy to transport into remote locations. As for effectiveness, one land manager stated that CoreTect Tablets are like a “silver bullet against HWA”, but some questions remained as their application in reestablishment plantings in areas already ravaged by HWA.

Cunningham Falls State Park was/is the center of the bull's-eye as far as HWA in Maryland is concerned. Barring the handful of trees which were injection treated some years ago, the majority of the Hemlocks along the Falls Trail and Hunting Creek in general died from HWA attack. It was decided that CoreTect Tablets would be tested in a small reestablishment planting at Cunningham Falls.

In October 2010, nineteen potted nursery stock Eastern Hemlocks seedlings were treated with Coretect Tablets and held over winter to allow

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and Bucks County, Pennsylvania. This means that we have TCD very close to Maryland, both to the north and south of us, and that these infestations may have been there for much longer than we realize.

Put all this together, and the logical conclusion is that we probably have Thousand Cankers Disease in Maryland, we just don't know it yet. As you are reading this, someone is probably cutting down an old Walnut tree in their yard that just died for “no apparent reason”. TCD works slowly to kill trees. The trees slowly decline, most of the symptoms are vague and inconclusive, and the beetles (and their entrance/exit holes) are far too small for the average person to notice. And so, this disease continues to spread without our knowledge, or any mitigating action on our part.

The Thousand Cankers Disease complex is also more complex than we originally thought. Along with the *Geosmithia* cankers, experts are finding cankers and infections caused by other

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optimal pesticide uptake. In April 2011, these potted Hemlocks were planted along the Falls Trail along with 75 bare root Hemlock seedlings. Fifty of the bare root seedlings were treated via the placement of one CoreTect Tablet in the dibble bar hole at the time of planting, while 25 were left untreated as a control. The bare root seedlings were placed in twelve groups of six seedlings with a thirteenth group of three. The potted trees were randomly placed throughout the string of seedling groups. The goal here was to test not only effectiveness of the CoreTect Tablets but also to see if placing the one tablet at the time of planting would afford protection. Deer browse protection in the form of tree tubes, Deer-X netting, and steel wire fencing were also tested. Each tree was inspected monthly and data pertaining to HWA absence/presence, evidence of chlorosis, dieback, or needle cast was recorded. The findings show that steel fencing is the best form of deer browse protection (92% of the sheltered trees died and the netting was difficult to work with and entangled some wildlife). Both the bare root as well as the potted seedlings responded very well to the CoreTect treatment, with only slight evidence of HWA (less than 10%) infestation and generally having a more vigorous appearance. Among the untreated trees, anywhere from 50% to 100% exhibited evidence of HWA infestation in any given month, and these trees generally exhibit evidence of decline and overall poor health.

Based on our findings, CoreTect Tablets can be effectively used to combat HWA infestations as well to protect newly established plantings. Monitoring will continue to establish the duration of this time-of-planting control.



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pathogens, such as the *Fusarium* fungus, associated with the beetle galleries. It appears that the beetles open the tree up to a whole score of possible pathogens, and it may not be entirely clear which one is (or ones are) killing the tree.



Figure 2: A canker found associated with a Walnut Twig Beetle gallery, but not a *Geosmithia* canker. This canker is caused by *Fusarium* fungus.

That's enough bad news – let's get on to the good news. Thousand Cankers Disease still has yet to be found outside of the urban or landscape environment. The urban environment is very hard on trees, suggesting that the Walnut Twig Beetles may only attack stressed or weakened trees.

Thousand Cankers Disease is so named because the tree dies from thousands of coalesced cankers. The positive message from this is that the *Geosmithia* fungus does not spread throughout the tree once it is infected. The cankers caused by *Geosmithia* are relatively small. The problem comes when thousands of beetles swarm a tree,

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Figure 3: Maryland Chapter members John Becker and Jan Earle examine the contents of a Lindgren funnel trap collection cup, with Norm Dart (of the VA Department of Agriculture and Commerce). The Walnut Twig Beetles in these traps are tiny, and difficult for the untrained eye to identify.

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chewing thousands of galleries and introducing thousands of small cankers. So, if we can find a way to limit the beetle population on any one tree, we can keep this disease from becoming anything more than a nuisance. We just need to figure out how to limit the beetle population.

Perhaps the best news of all is that Black Walnut may have a certain degree of natural resistance to TCD. This concept is best illustrated by an anecdote that Norm Dart shared with us. A tale of two walnut trees:

Once upon a time, at the first site where TCD was identified in Virginia, there were two Walnut trees. These trees lived only 200 feet apart. One tree stood big and tall, with a lush and healthy green canopy. The other tree began to decline and slowly

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Dogs Learn To Sniff Out Ash Borers

Bill McAuliffe

Reprinted from the Star Tribune

Dogs learning to sniff out emerald ash borers and ash wood are about to wrap up their Minnesota training, but they won't immediately be put to work for lack of funding.

"The training has gone better than we expected," said Liz Erickson, Minnesota Department of Agriculture spokeswoman.

She said that trainers didn't know when the training started earlier this year whether the dogs would be able to detect either ash wood or the invasive species that now threatens ash trees across North America.

"We're hopeful these dogs can be used for more than just a pilot program, finding infestations earlier than we're able to visually."

The training, involving dogs from a Reno, Nev., tracker-training program and \$370,000 in federal money, began in the spring. That money has run out, and state officials will have to find more from the Legislature, the federal government or other sources, Erickson said.

The dogs have been trained to detect both infested and clean ash wood as an aid to the state's ash quarantine, affecting Houston, Winona, Hennepin and Ramsey counties, where the borer has been found.

They were expected to be put to work at truck weigh stations, wood processing sites and firewood

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die from TCD. One day, the healthy tree blew over in a big storm. When experts examined the fallen tree, they noticed that the tree was riddled with Walnut Twig Beetle holes. The tree's natural defenses were able to keep the *Geosmithia* cankers small, and the tree remained free of any noticeable symptoms. Nobody lived happily ever after – but sometimes that's just how it goes.

The moral of this story is that the effects of Thousand Cankers Disease appear to be highly dependent on the health and vigor of the host tree. This may be because Walnut Twig Beetles do not aggressively attack healthy trees, or it may be because healthy trees can muster a natural defense against the fungus. Either way, this is promising news.

Is it time to start worrying? I don't think so. It is time; however, to start managing your Walnut trees wisely, as we at the Walnut Council have always taught. If you manage your trees in a way that maximizes the health, vigor, and growth of the tree, Thousand Cankers Disease may not be a significant issue for you. Plant Walnut trees only on good growing sites; with deep, fertile, moist but well-drained soils that have a roughly neutral pH. Prune your trees regularly and lightly, taking off only small limbs that need to be removed (to minimize wound size and number). And finally, control the vegetation competition around your trees, so they receive adequate sunlight and water.

All that being said, the most important first step we all must take is to find Thousand Cankers Disease as soon as it gets to Maryland. We need to be surveying our property, and educating our friends and neighbors. We need to do what we can to make

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Figure 4: This is Wicket—one of the Labrador Retrievers training to find Emerald Ash Borers.

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dealers, including convenience stores, where they would likely detect infested wood much more quickly than human inspectors, Erickson said.

On Thursday, the dogs are scheduled to visit Great River Bluffs State Park near Winona to try their skills at detecting infestations in standing trees, rather than lumber or firewood. The park is known to be infested.

The dogs have been used successfully in other states to detect and track invasive and endangered species, as well as human remains.



Got E-mail?

Occasionally we have timely information to share with you. If you have an e-mail account, but have not received any e-mails from us this summer, that means we don't have your current address. If you would like to be included in the e-mail news list, please send an e-mail to David Robbins at: drobbins@dnr.state.md.us.

We promise not to clutter your inbox!

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sure that people are inspecting those Walnut trees that just died for “no apparent reason”. We need to know exactly where this disease is in Maryland, so we can try to quarantine it and slow the spread until the research catches up with the disease. At that point, I think we stand a good chance of beating this thing.



Figure 5: TCD Bus Tour participants look at samples taken from an infested and dying Walnut tree. This tree was the first tree in Virginia to be positively identified as having Thousand Cankers Disease. Interestingly, this tree did not become noticeably symptomatic until after the stress of an overly aggressive (and incorrectly performed) pruning.

Upcoming Events:

Southern Maryland Urban Pest Conference

November 28, 2012
Location: Baden Fire Hall, Baden, MD
Contact: Brian Clark, 301-868-8780

2012 Pest Management Conference

December 13, 2012
Location: Carroll Community College,
Westminster, MD
Info: <http://www.ipmnet.umd.edu/>

Advanced Landscape Plant Integrated Pest Management & Plant Health Care Short Course

January 7-10, 2013
Location: University of Maryland, College Park, MD
Contact: Avis Koeiman, 301-405-3913
akoeiman@umd.edu

Delaware Horticulture Industry Expo

January 23 & 24, 2013
Location: Modern Maturity Center, Dover, DE
Contact: 888-448-1203

Eastern Shore Pesticide Conference

February 13, 2013
Location: The Fountains, Salisbury, MD
Contact: Ginny Rosenkranz, 410-749-6141

Maryland Christmas Tree Association Winter Meeting

February 23, 2013
Location: Friendly Farms Restaurant, Upperco, MD
Contact: Wilma Muir, 410-452-9793

Invasive Species Program

March 28, 2013
Location: Montgomery County Extension Office
Derwood, MD

Brown Marmorated Stink Bug Update

April 10, 2013
Location: Carroll Community College,
Westminster, MD
Info: <http://www.ipmnet.umd.edu/>

Walnut Council National Meeting

July 21-24, 2013
Location: Morgantown, WV
Info: 765-583-3501

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