

Wisconsin Horticulture Update Summary, June 5, 2015

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WI WEATHER REVIEW

Mild, mostly dry weather allowed for continued soybean planting and harvesting of the spring alfalfa crop. High temperatures were seasonable for early June and ranged from the 60s to upper 70s, except along the Great Lakes, where highs in the 50s to low 60s prevailed. Nightly lows were in the 30s to mid-50s and an early-week frost developed over parts of northern Wisconsin. Light to moderate rain fell across the western counties on June 3, but conditions across much of the state were generally dry and sunny. Planting of corn, oats and potatoes neared completion and more than 86% of the corn crop has emerged, with 84% of planted acres in good or excellent condition. At this point last year, only 48% of corn acres had emerged. Meanwhile, the rainfall of late May eliminated residual soil moisture deficits and led to additional reductions in drought coverage in Wisconsin. During the week ending June 1, topsoil moisture rated very short to short declined from 20 to 8% statewide. (Issue No.7 of Wisconsin Pest Bulletin)

Average soil temperatures at 2" as of June 06, 2015: Hancock 68.3, Arlington 69.3
(http://agwx.soils.wisc.edu/uwex_agwx/awon/awon_seven_day)

Growing degree days (GDD)

Growing degree days is an accumulation of maximum and minimum temperature averages as related directly to plant and insect development. This week, the GDD_{mod50} in Wisconsin ranged from 328 to 649. Following is a list of DD as of June 3, 2015 for the following cities: Appleton-488; Bayfield-328; Beloit-649; Big Flats-578; Cumberland-472; Crandon-406; Crivitz-394; Eau Claire-545; Fond du Lac-475; Green Bay-415; Hancock-578; Hartfield-466; Juneau-533; LaCrosse-646; Lone Rock-627; Madison-607; Medford-444; Milwaukee-416; Port Edward-550; Racine-411; Sullivan-466; Waukesha-466; Wausau-467. To determine the GDD of any location in Wisconsin, use the degree day calculator at the UW Extension Ag Weather webpage:

http://agwx.soils.wisc.edu/uwex_agwx/thermal_models/many_degree_days_for_date

To put it in perspective, following is an abbreviated list of plant and insect phenological stages in relation to GDD accumulations at which the events occur (Ohio State BYGL): common lilac, full bloom, 315; 'Pink Princess' weigela, first bloom, 316; blackhaw viburnum, full bloom, 322; redosier dogwood, first bloom, 323; dwarf fothergilla, full bloom, 325; 'Winter King' hawthorn, first bloom, 328; **lilac borer, adult emergence, 330**; slender deutzia, first bloom, 338; Japanese kerria, full bloom, 342; common horsechestnut, full bloom, 344; red chokeberry, full bloom, 351; doublefile viburnum, first bloom, 353; Pagoda dogwood, first bloom, 363; red Java weigela, first bloom, 365; black cherry, first bloom, 368; common sweetshrub, first bloom, 371; **lesser peach tree borer, adult emergence, 372**; Ohio buckeye, full bloom, 374; **holly leafminer, adult emergence, 375**; Vanhoutte spirea, full bloom, 406; **euonymus scale (first generation), egg hatch, 406**; black cherry, full bloom, 419; Miss Kim Manchurian lilac, first bloom, 422; **locust leafminer, adult emergence, 437**; doublefile viburnum, full bloom, 444; black locust, first bloom, 467; common ninebark, first bloom, 478; **oystershell scale, egg hatch, 497**; and smokebush, first bloom, 501; catawba rhododendron, full bloom, 503; white fringe tree, full bloom, 517; arrowwood viburnum, first bloom, 534; American yellowwood, first bloom, 546; **bronze birch borer, adult emergence, 547**; multiflora rose, first bloom, 548; black locust, full bloom, 548; and **emerald ash borer, adult emergence, 550**. American yellowwood, full bloom, 599; arrowwood viburnum, full bloom, 621; multiflora rose, full bloom, 643; northern catalpa, first bloom, 675; black vine weevil, first leaf notching due to adult feeding, 677.

WI CROP PROGRESS AND CONDITION

Copy and paste the following link into your browser to find weather review and reports from around the state.

http://www.nass.usda.gov/Statistics_by_State/Wisconsin/Publications/Crop_Progress_&_Condition/2015/WI_06_09_15.pdf

INTRODUCTION

The host for today's WHU was Kristin Krokowski from Waukesha County, PDDC Director Brian Hudelson and PJ Leisch, Manager of the Insect Diagnostic Lab, were the specialist participants. Erin Silva, UW Madison Department of Plant Pathology was the special guest giving a Compost Tea presentation. Participants in today's discussions were representatives from the following counties: Brown (Vijai Pandian), Columbia (George Koepp), Eau Claire (Erin LaFaive), Kenosha (Barb Larson), Milwaukee (Sharon Morissey), Portage (Walt), Racine (Patti Nagai), St. Croix (Heidi Doering), Waukesha (Kristin Krokowski), Winnebago (Kimberly Miller), and Wood (Peter Manley).

HORTS' SHORTS

Agents report the following issues to be of interest this week:

Brown County: Nothing much new to report. We are hearing about maple bladder galls, aphids, and ant. We had cases of linden trees that were healthy last year, but this year they are either dead or only partially leafing out. We even had an urban forester contact us on that issue.

Columbia County: We have had an interesting week. We have reports of EAB in the county so we are putting together informational meetings for the public. We are seeing issues with cuques which may be bacterial wilt affecting both set out plants and seeded plants. Folks are having problems with peppers in a hoop house and onions are looking bad in the field. I will be putting some pictures up on Plant Doc and perhaps visiting Brian today.

Eau Claire County: Peonies are just starting to bloom. We are seeing aphids-woolly and other species. Ash leaf drop is calming down, but we are still getting questions about tree dieback. We need some heat to jump start growth on sun-loving plants.

Kenosha County: EAB is everywhere! As the first county to report this pest, we are seeing widespread ash death and getting lots of calls about the dying or dead trees and what to do with the trees and the wood and who will take the trees down. We have also had gypsy moth on oak and lots of ID questions. We have had poor quality lilacs this year with poor leafing out or very small leaves or even whole dead sections. We are seeing scale insects. I did a site visit to assess hawthorn ("Winter King"). It was so infested that the trunk just covered with sooty mold. The less infested ones had both lecanium and oystershell.

Milwaukee County: We are seeing lots of cold damage on vegetables. Flea beetles are out (even in my own garden where I never see them) and we have seen lots of spittle bugs, leaf miner on spinach and Swiss chard and 4-lined plant bug on pepper. Master gardeners brought in quite a few things.

Portage County: There seems to be excessive sap dripping from maples and oaks. Many people bringing in branches that are very late budding out or have died back, with some so dry that the tips looked burned. We are seeing fruitworm activity. We had a question about whether a certain fruit was susceptible to spotted wing drosophila. We would appreciate if anyone has a good used microscope available that will take pictures for sending to Brian and PJ for diagnosis.

Winnebago County: We had a good rain. Questions have been about aphids, fruitworms, trees, and weed ID. Iris is nearly done blooming, peonies are coming on. Silver maples, especially older trees, seem to be slow leafing out with sporadic growth. Colleagues in Outagamie have noticed the same patterns in the silver maples.

Wood County: We have had a cool week here so growth is in a holding pattern. We are getting tent caterpillar questions.

Waukesha County: We are similar to Kenosha. The only thing I want to add is that we are seeing an increasing number of cucumber beetles and peonies are in bloom.

St. Croix: Regular rain is stimulating good growth. We have been busy with calls and samples. Leafhoppers and green worms are active. We are seeing unexplained dieback on evergreens and poor leaf out on oaks with the whole upper canopy not leafing out but the lower canopy growing normally. We were attributing those issues to the hail storm we had a couple of weeks ago, but maybe it is something else because even areas that didn't get the hail are having the same problems. Red aphids are showing up and I hoped PJ would comment on them. The small fruit field day yesterday was well attended and went very well. We were able to see some insects and diseases in the field and had 4 fruit specialists on hand.

SPECIALIST REPORT: Insect Diagnostic Lab Update

Presented by P. J. Liesch, Assistant Faculty Associate, UW-Madison Department of Entomology, and Manager of the UW-Extension Insect Diagnostic Lab pliesch@wisc.edu

There is a lot of caterpillar activity. Eastern tent and forest tent caterpillars are fairly mature (larger than 1 inch long) and may be done feeding for the year and getting ready to pupate. We have heard about a few cases of gypsy moth. We are still getting reports of the speckled green fruitworm and the green humped fruitworm. We are getting reports of flies killed off by a fungus. The fungus infects the fly and causes it to climb to a high perch and die so the spores can be released. The flies are not feeding on or damaging the plants. Other species reported this week are spittle bug, 4-lined plant bug and leaf miners on spinach and swiss chard. There haven't been too many reports of slugs.

Dripping sap on trees may be due to populations of aphids or other sucking insects.. As a personal story, PJ's windshield was completely covered with sap after parking under a tree. The red aphids, comprising about 100 species, normally feeds on aster family species and is common.

Fruitworm Caterpillars

Other caterpillars active now are the speckled green fruitworm and the green humped fruitworm. Both of these caterpillars have one generation per year. They are reaching about 1.0 inches in length with a maximum of about 1.5 inches, so they are getting ready to stop feeding and pupate here in the southern part of the state. Despite their names, they feed on a fair number of woody species (hackberries, ash, and euonymus). The speckled green fruitworm has white dots on it with lighter stripes down the sides. The green humped fruitworm looks similar to the speckled green fruitworm but has a yellow stripe and a hump at the end.

Speckled green fruitworm: <http://bugguide.net/node/view/4865>

Green humped fruitworm: <http://bugguide.net/node/view/13299>

Linden Looper

This week we also had reports of linden looper, which also feeds on many species. This inchworm type caterpillar has a bright orange head, with black stripes on a yellow green underbelly.

<http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/agroforestry/diseases-and-pests/linden-looper/?id=1367261514967>

Euonymus Caterpillar

Although this species is not that common, it can completely cover a bush with silk and defoliate the bush. It is quite a sight to see a completely cocooned bush. Healthy shrubs can usually recover by leafing out again.

<http://learningstore.uwex.edu/Assets/pdfs/A3633.pdf>

Spinach and Swiss Chard Leaf Miner

<http://www.extension.umn.edu/garden/insects/find/leafminers-in-home-vegetable-gardens/>

Questions

Aphid Control

How can we control aphids?

You might just have to sit this out until biocontrols like disease, parasitic wasps or ladybugs kick in to reduce the populations.

Unidentified caterpillar?

Have you been able to ID that caterpillar that has blue stripes on the side, with black dots down the center on a light background?

I looked in my caterpillar books but don't know what it is. It would be good to get a picture, but I am still scratching my head about that one.

SPECIALIST REPORT: Plant Diagnostic Disease Clinic

Presented by Brian Hudelson, Sr. Outreach Specialist, UW-Plant Pathology, and Director of the UW-Extension Plant Disease Diagnostics Clinic (PDDC) bdh@plantpath.wisc.edu

We didn't have a busy week. This week we have seen our first case this year of oak wilt on red oak. We are still seeing winter injury issues. We had a second case of white mold on hoophouse grown tomato with a lovely lesion on the stem with the "mouse droppings" black sclerotia. This disease occurs in high humidity in greenhouses and is somewhat opportunistic, attacking stressed plants. It also occurs on flowering ornamentals, infecting petals which senesce and using that as a food base to reinfect other tissue.

We had a tomato sample that exhibited distorted, unthrifty growth and had peaked color which we diagnosed with tomato spotted wilt virus. We are seeing a lot of powdery mildew, with one a case of note on ninebark.

Tomato Spotted Wilt Virus on Tomato

This sample came from a homeowner who brought in the tomato with distorted growth and poor color and grown by local high schoolers in a greenhouse. We diagnosed tomato spotted wilt virus, which is related to impatiens necrotic spot virus. Both of these diseases are thrips transmitted and we tend to see one or both of them in greenhouse settings where populations of thrips may be high.

Powdery Mildew on Ninebark

Powdery mildew is usually a cosmetic disease on woody ornamentals, but can be very damaging to ninebark resulting in severe leaf loss and branch dieback.

Questions

Dappled Willow Problem

A client has reported problems with a dappled willow which he prunes into a puffball shape. It has collapsing foliage on the new growth. Individual branches are dying with the tips curving over and turning brown. He doesn't want to bring in a sample so I just told him to keep pruning out the damage and if that doesn't work he needs to bring in a sample or remove the bush. Could it be fire blight or some sort of crown gall?

Fire blight is not a likely issue on that host, but it could be some sort of fungal canker to which willows are susceptible. Your client can keep pruning out the affected branches making sure to disinfest the pruning shears between cuts. If pruning out the damaged young shoots doesn't work and the problem is affecting the older branches as well it could be that the pathogen is in the crown. In that case, there probably isn't much that can be done to save it and the tree should be removed. I am working on a dappled willow right now with the same symptoms and may have more insight when I have finished my diagnosis.

Dappled willow was my greatest horticultural failure due to gross overwatering.

Comment from Sharon: A neighbor of mine had a dappled willow with crown gall.

Crown gall on willow is unusual, but you can ask your client if he sees any galls or swellings on the crown where he saw the dieback.

Dying Hickories

We have a report of dying hickories, with most of the trees already dead. Is this some sort of fungal pathogen? We don't see any holes on the trunk or any canker symptoms, but there are shoots coming from the base on the trunk. What kind of sample should we send for diagnosis and once the tree is dead, for how long can you recover the pathogen?

There is a hickory decline complex which is due to insects and fungi. It is called 100 Cankers Disease (not to be confused with 1000 Canker Disease) where a fungal pathogen similar to *Ceratocystis* and *Ophiostoma* is

implicated. If the tree is already dead, the chance of us recovering those pathogens is small. You can also tell your client to look for Armillaria by watching for the mushrooms, although I would expect other species in the vicinity to be affected by that fungus as well. If you send in a sample, try to get a shoot that looks like it is dying (but not already dead) as that gives us the best chance of recovering the pathogen. If the shoot is healthy, it may not help us too much. There is some work out of University of Minnesota on this issue as well as a fact sheet from U-Minn that Brian can post on the WHU site.

Comment from Kim: I had contacted Brian a while back with the same issue and I followed up with Brenda Williams of the DNR who told me something similar to what Brian is saying.

Poor Leaf Out on Shrubs

We have had a lot of reports of poor leaf out on shrubs, with lilac being the worst, but also cotoneaster and some other things. Is this due to weather or verticillium or both?

The winter of 2013-2014 was so hard on woody species. In discussing this with Patti McManus, she expected this to continue to be a problem. If the shrubs are still leafing out all over, even if slowly, it probably isn't verticillium. I would need a sample to rule out verticillium though. Fire blight does affect cotoneaster, and it is also susceptible to fungal cankers.

Verticillium Migration

Does verticillium migrate in the soil and how long does it persist in the soil?

Verticillium doesn't migrate too far in the soil as it does not produce motile swimming spores. There is some evidence that it can sporulate in the leaves and spread by microsclerotia in the petioles. It can also be moved around in wood chips or by infected plants or by moving infected soil. It can also use some broadleaf weeds as a host and stay viable that way for years. If anyone has a verticillium problem, I try to steer them away from any susceptible host plants.

SPECIAL TOPIC: Compost Teas

Presented by Erin DaSilva, UW Madison/Extension Department of Plant Pathology

Although Erin agreed to present this topic it was with mixed feelings because there is not a lot of good vetted information about compost teas or the products available to make them. People have a lot of questions about when to apply it and how effective it is. The mechanism of action is not known very well and appears to be complicated.

There is a link to a publication by Western SARE out of Hawaii called "Tea Time for the Tropics" that has some comprehensive practical information and data in it. It has some case studies and is a good publication.

www.sare.org/content/download/66749/.../Compost_Tea_Manual.pdf

Compost Tea

General Issues

Compost tea can be quite variable depending on what feedstock or process is used. Some sources are vegetable waste compost, yard waste compost and vermicompost. It can also be prepared by either an aerated or non-aerated method. It is difficult to get a standard product to use to make it to do any research on it. Efficacy depends on a complicated interplay of how it is made, what environment it is used in and what plants it is used on.

Mode of Action

Unlike a fertilizer or a pesticide with a single mode of action, there are at least three modes of action are usually ascribed to the benefit of using compost.

1. Fertility impact or a nutrient impact. Making the tea will extract nitrogen, phosphorous, and potassium, calcium and magnesium and using it may be responsible for a fertility boost. There is not a high concentration of micronutrients in it or the jury is still out on this issue. Foliar feeding is one way that farmers do add micronutrients.

2. Beneficial microorganisms. Different microbes are in the compost itself. There is some evidence that when used as a foliar application, the microorganisms in the compost tea can compete with foliar fungal pathogens and have a fungicidal effect. Other microbial products, such as Serenade, have been shown to have efficacy on foliar diseases, whether from competition with the pathogens or by exuding sometimes and compost teas may be similar.
3. Plant hormone analogs. Data from UC-Riverside has determined that auxins extracted from the compost can have some benefit to growth.

Question from Brian: Are there any detrimental effects from the auxins? On the negative side, there is anecdotal evidence that those same auxins in a foliar spray (but I am not sure that it was a compost tea) may have been responsible for symptoms that mimicked herbicide damage. No rigorous replicated studies have been set up.

Using Compost Tea

I did have a session with growers for Organic Valley who do use compost tea. It may have some benefits, but keep in mind that it is not a silver bullet and it should not take the place of sound fertility and disease management. Good spacing, good airflow, and varietal resistance are the prime tools for management. However if no negative effects are seen and farmers are seeing good results, there is no reason to stop it.

If using the compost tea, be cautious about leaf wetting, especially in high tunnels.

Compost tea made for foliar feeding should be made with potable water to minimize the introduction of pathogens. I am cautious about this issues and I don't know how it will play out with food safety regulations.

Questions/Comments

How is Compost Tea Used

Is compost tea used as foliar spray, soil drench or for regular watering?

The most common way is as a soil drench and there is some evidence it is beneficial to soils to reduce soil pathogens. But I wonder why not use just solid compost then and get the organic material? We don't understand whether the aerated compost tea manufacturing process allows greater microbial stimulation or positive plant hormone impact.

Nutrient Value of Compost Tea

It seems like there are some nutrients there, but isn't it rather dilute? Compost is already pretty low in nutrients. How beneficial is it?

There is a very dilute boost of nitrogen, which is only 1-4% N in compost. I am not convinced that compost tea is better than compost. There is very good evidence that compost is very beneficial, but going the extra step of making tea is not as well supported by research. I can't give a firm recommendation for compost tea based on the lack of replicated research.

Food Safety Issues

Is there a concern about food safety when used as a foliar spray?

There is a concern and I would say that once there is developing or harvestable fruit, it should not be used as a foliar spray due to the chance of introducing pathogens. I would not use it at all as a foliar spray on leafy vegetables at all even if prepared with potable water, only ornamentals.

FINAL NOTES and ANNOUNCEMENTS

Next week, the host will be Chrissy Wen from Walworth County and the special topic will be Trees to Use in the Landscape by Laura Jull of UW-Madison/Extension Department of Horticulture.

Lynn Adams: I just want to let you know what us Range Master Gardeners are working on.

The Range Master Gardener Volunteer Association is pleased to have Will Allen of "Growing Power" give a free program at the Ironwood Theatre.

We certainly hope that you will have representatives attend this program and *learn how to grow gardeners and future farmers and fight hunger and obesity in your community.*

Will Allen of "Growing Power" will be speaking at the Historic Ironwood Theatre in Ironwood, MI on Sunday, June 28th From 1-3 p.m. Check-in time starts at 12 noon.

"Growing Power" is an urban agriculture organization headquartered in Milwaukee, Wisconsin. Growing Power was started by Will Allen who bought the Milwaukee farm in 1993. Allen, a former professional basketball player, grew up on a farm in Maryland. In 2008, he was awarded a MacArthur Foundation "Genius Grant" for his work on urban farming, sustainable food production and with Growing Power. In 2010, Allen, founder of the "Growing Power" farm and training center on Milwaukee's north side, was listed in "Time 100: The World's Most Influential People."

Instead of us charging a fee, please donate three items or a monetary donation to our local food pantries.

For reservations: <https://rangemastergardenvolunteers1.shutterfly.com> and to sign up or U-W Extension Iron County 715-561-2695 or call Lynn Adams 906-932-3509 or email her at xixia@sbcglobal.net or Zona Wick 715-561-3009 or email her at viczona@centurytel.net

The full audio podcast of today's and archived WHU conferences can be found at <http://fyi.uwex.edu/wihortupdate/>

UW LINKS

Wisconsin Horticulture webpage <http://hort.uwex.edu>

UW Plant Disease Diagnostics webpage <http://labs.russell.wisc.edu/pddc/>

UW Insect Diagnostic Lab <http://www.entomology.wisc.edu/diaglab/>

UW Turfgrass Diagnostic Lab <http://labs.russell.wisc.edu/tdl/>

UW Vegetable Pathology Webpage <http://www.plantpath.wisc.edu/wivegdis/>

UW Vegetable Entomology Webpage <http://www.entomology.wisc.edu/vegento/people/groves.html#>

UW-Extension Weed Science <https://fyi.uwex.edu/weedsci/>

UW-Extension Learning Store <http://learningstore.uwex.edu>

UW Garden Facts <http://labs.russell.wisc.edu/pddc/fact-sheet-listing/>

WHU "OFF THE AIR"

During this past week specialists have commented on these issues off the air: None

Vegetable Crop Update

Vegetable Crop Update Newsletters #11 and 12 (two this week!) are available at <http://www.plantpath.wisc.edu/wivegdis/>

Topics in issue #11 (June 01, 2015) include:

Disease forecasting updates

Spotted wing drosophila updates in fruit crops

Irrigation and conservation practices in WI vegetable production – summary

Topics in issue #12 (June 05, 2015) include:

Disease forecasting updates – Blitecast DSVs exceeding threshold of 18 in several locations
 Concerns with potato volunteers
 Building fungicide programs for late blight control in conventional potato

PDDC UPDATE

UW-Madison/Extension Plant Disease Diagnostic Clinic (PDDC) Update

Brian Hudelson, Sean Toporek, Catherine Wendt and Ann Joy

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from May 30, 2015 through June 5, 2015.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
DECIDUOUS WOODY ORNAMENTALS			
Maple ('Autumn Blaze')	Cytospora Canker	<i>Cytospora</i> sp.	Dane
	Sphaeropsis Canker	<i>Sphaeropsis</i> sp.	Dane
Ninebark	Powdery Mildew	<i>Oidium</i> sp.	Dane
Oak (Red)	Oak Wilt	<i>Ceratocystis fagacearum</i>	Dane
Oak (Unspecified)	Phomopsis Gall	<i>Phomopsis</i> sp.	Waushara
	Sphaeropsis Canker	<i>Sphaeropsis</i> sp.	Dane
NEEDED WOODY ORNAMENTALS			
Pine (Red)	Sclerophoma Blight	<i>Sydowia polyspora</i> / <i>Sclerophoma pythiophila</i>	Bayfield
Pine (White)	Winter Burn	None	Dane
Spruce (White)	Phomopsis Canker	<i>Phomopsis</i> sp.	Dane
	Winter Burn	None	Dane
VEGETABLES			
Tomato	Gray Mold (Botrytis Blight)	<i>Botrytis cinerea</i>	Dane
	Tomato Spotted Wilt	<i>Tomato spotted wilt virus</i>	Dane
	White Mold	<i>Sclerotinia sclerotiorum</i>	Dane

For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.