Wisconsin Horticulture Update Summary, June 26, 2015

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WI WEATHER REVIEW

Showers and thunderstorms swept across the state during the early morning hours of June 22. The severe storms produced heavy downpours, damaging straight-line winds and flooding, with the greatest damage occurring in southwest Wisconsin. Rain diminished by Tuesday and conditions were mostly sunny and pleasant during the latter half of the week. Afternoon highs ranged from the mid- 70s to upper 80s and were at or above-normal for this time of year. Low temperatures were in the low 50s in the far northwest to mid-60s in the southeast. Crop development continued to progress rapidly across the state, despite surplus soil moisture and weed pressure. Overall, 84% of the corn crop was reported in good to excellent condition at the start of the week, equivalent to last week and five points higher than the same time last year. Consistent heat and less rain will be needed as crops enter the critical reproductive stages next month. (Issue No.10 of Wisconsin Pest Bulletin)

Average soil temperatures at 2" as of June 26, 2015: Hancock 72.4, Arlington 70.8 (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 588 to 1110. Following is a list of DD as of June 27, 2015 for the following cities: Appleton-859; Bayfield-588; Beloit-1110; Big Flats-970; Crandon-679; Crivitz-701; Cumberland-835; Eau Claire-963; Fond du Lac-857; Green Bay-770; Hancock-970; Hartford-832; Juneau-935; LaCrosse-1104; Lone Rock-1060; Madison-1036; Medford-766; Milwaukee-765; Port Edward-936; Racine-752; Sullivan-832; Waukesha-832; Wausau-797. 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 events occur (Ohio State BYGL and http://www.entomology.umn.edu/cues/Web/049DegreeDays.pdf): **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**; Washington hawthorn, full bloom, 731; **calico scale, egg hatch, 748**; **greater peach tree borer, adult emergence, 775**; **rhododendron borer, adult emergence, 815**; northern catalpa, full bloom, 816; mountain laurel, full bloom, 822; **dogwood borer, adult emergence, 830**; oakleaf hydrangea, first bloom, 835; **cottony maple scale, egg hatch, 851**; panicle hydrangea, first bloom, 856; **fall webworm, egg hatch (first generation), 867**; **mimosa webworm, egg hatch (first generation), 874**; fuzzy deutzia, full bloom, 884; **winged euonymus scale, egg hatch, 892**; **spruce budscale, egg hatch, 894**; winterberry holly, full bloom, 897; **squash vine borer adult emergence, 900;** panicled goldenraintree, first bloom, 924; June bride littleleaf linden, first bloom, 953; azalea bark scale, egg hatch, 957; **Japanese beetle, adult emergence, 970**; rosebay rhododendron, first bloom, 1,010; June bride littleleaf linden, full bloom, 1,115; bottlebrush buckeye, first bloom, 1,158.

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_28_15.pdf

INTRODUCTION

The host for today's WHU was Vijai Pandian from Brown County; PDDC Director Brian Hudelson and PJ Leisch, Manager of the Insect Diagnostic Lab, were the specialist participants. PJ Leisch, was the special guest giving a presentation on "Beneficial Insects". Participants in today's discussions were representatives from the following

counties: Brown (Vijai Pandian), Columbia (George Koepp), Eau Claire (Erin LaFaive), Jackson (Trisha Wagner), Kenosha (Barb Larson), Marquette (Lyssa Seefeldt), Milwaukee (Sharon Morissey), Outagamie (Ann Donnellan), Pierce (Diana Alfuth), Racine (Patti Nagai), Rock (Christy Marsden), Walworth (Chrissy Wen), Washburn/Sawyer/Burnett/ (Kevin Schoessow), Winnebago (Kimberly Miller), Wood (Peter Manley).

HORTS' SHORTS

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

Brown County: Japanese beetles, cucumber beetles and 4-lined plant bug are now active. Septoria on tomato, as well as early blight have been reported. Issues of concern are tree collapse especially on ash trees, Dutch elm disease, gypsy moths and ants in the landscape.

Columbia County: We have had some nice rain and lawns are doing very well. Ants and rabbits are out in force. George asked if it would be possible for the manager of PlantDoc to add PJ Leisch as an expert choice in the menu and he also reported that he was unable to load a bitmap image and wondered why. *Comment from Brian: Joe Lauer manages the site and should be contacted with issues.*

Eau Claire County: It has been wet here. Ash trees are looking terrible and we are seeing ash plant bug. Questions have been about plant and insect ID, and mosquitos are out.

Kenosha County: We are seeing quite a bit of fireblight, especially on crabapple and iris leaf spot was reported. Questions have been about plant and weed ID and care of perennials. We also had a question about a peach tree that has had no flowers two years in a row (weather is the suspected culprit), as well as peach leaf curl. Lots of rabbits are out.

Marquette County: It has been pretty quiet here. We had rain here yesterday. Questions have been about plant ID.

Milwaukee County: Not too much different than others around the state. We are seeing thrip damage, extensive spittle bug damage on asters and on hydrangea, apple scab and peach leaf curl, and lots of rabbits, but no reports of Japanese beetles yet. The issue of most concern is the viburnum leaf beetle found in our county. We are working on delimiting the infestation with the area nursery inspector; the area of infestation is much larger than we first thought.

Outagamie County: We have had good rain here. We are getting questions on EAB regarding symptoms and management. We are trying to ID a looper that defoliating a mountain ash. We are trying to find the best way to share information from Amanda Gevens about early blight on potatoes and tomatoes.

Pierce County: We are still getting plenty of rain which is keeping fungi happy. Early blight, apple scab and slugs are around now. Questions have been on weed and plant ID, tree collapse and EAB, which has not yet been detected in our county. People are getting some misinformation from the industry, so we will have to do lots of education. It is a good year for rabbits.

Racine: We are seeing very lush growth and we have been very busy but with similar issues to everyone else. Questions have been about dead spots and fairy rings in lawns, but mostly plant and weed ID. Ants are everywhere, we have reports of 4-lined plant bug and June bugs are dying down. People are asking how to be proactive in managing tomato diseases, especially applications for late blight.

Rock County: We are similar to others. Wild parsnip is everywhere, and there are lots of ants and bunnies. Some questions have been about weeds, but 80% of the calls are about EAB.

Walworth County: Wild parsnip is everywhere and we are putting together a press release to educate people about it (and I would welcome help getting the word out to spread awareness to the public).Chicory is in bloom which means Japanese beetles will be coming on. We had calls on iris leaf spot, gypsy moth, EAB, and tree dieback. We have had a lot of insect questions so thanks to PJ for all of the help with identification. I also had a call about a carpenter bee and they wanted to know how to move it without injuring the bee.

Washburn/Sawyer/Burnett County (Spooner Ag Station): We have had more moisture this year which is good for lush growth. Questions have mostly been about weed and insect ID, and tree questions. Some people are bringing in wildflowers which have shown up this year with the moisture. Wild parsnip is blooming in Burnett County

and we have diplodia shoot blight on pines in Hayward. We also got some questions on wildlife food plots and how to manage weeds in those plots. Ticks are not as bad now, but mosquitos are out in force.

Winnebago County: We have had lots of rain, and we are seeing similar things to everyone else. Wild parsnip is flowering here too. We have had calls about bats in buildings.

Wood County: Mostly the same as everyone else, with ants, mosquitos, and slug inquiries the most common.

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

All over the state, the rain has caused the mosquitos to increase. Slug reports are starting to come in. I have also heard reports that the beneficial fungus which kills flies (turns them into zombies) is popping up due to the moisture. This fungal infection causes the fly to climb somewhere high and stick its posterior in the air to release the spores. It can look like the fly is feeding on whatever it climbed up on, but it is not feeding. We have had calls about indoor and outdoor ants. Gypsy moth caterpillars are pretty large now and will stop feeding and begin pupating, especially in the southern part of the state. Japanese beetles are starting to emerge and we can expect larger numbers over the next couple of weeks; this week Chris Williamson saw his first adult and so did PJ. Striped cucumber beetles are out. Based on the growing degree days, squash vine borer is imminent in the southern part of the state. Those closer to the lake may have more time.

Fireflies

This has been a good year for fireflies because of the damp spring or because there has been a lot of slugs. The larvae of this insect are predators of slugs.

http://bugguide.net/node/view/85

Viburnum Leaf Beetle

We have had another report of this invasive pest this year, this time in Ozaukee County. We have prepared a fact sheet for this insect and it will be up on the web this afternoon.

http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Viburnum_Leaf_Beetle.pdf

Emerald Ash Borer

For those who were looking for additional information on EAB, Chris Williamson and PJ have a page on their website which addresses EAB. There is also a national website for EAB.

http://labs.russell.wisc.edu/eab/

www.emeraldashborer.info

Questions

Looper on Mountain Ash

Do you know what looper is eating Mountain Ash?

I know of 3-5 species that will feed on mountain ash. It will be helpful for identification if you can send a photo or a sample.

Carpenter Bees

How can I remove a carpenter bee nest without harming the bee?

I have been getting calls about carpenter bees, mainly from the southeast part of the state. Not much can be done to save them. Carpenter bees prefer unfinished softwoods like pine and cedar. You can use an insecticide to get rid of them. To deter them, it is helpful to paint the wood.

Blueberry Leaf Roller

We had an inquiry from an organic blueberry grower about some leaf rollers on blueberries in Pierce County. They are concerned there may be more than one generation and want to know what to do about it. Do you know anything about them or who I could contact?

I will do some research on this and let you know. I don't know if there is more than one generation or what the organic control options are.

Rose Slug Sawfly Damage

We are seeing quite a bit of damage from these. Do you have any comments?

I did get quite a few reports about this species this year. They can cause a lot of damage, but they should be done feeding soon. There is only one generation a year, but healthy plants should recover.

Comment from Kevin: We also noted a lot of damage in our teaching and display garden. Amelanchier was also damaged by sawflies.

Gypsy Moth Cycle in Brown County

We haven't had a lot of questions about gypsy moth the last few years and thought the populations had crashed. This year we are starting to see a rise in population. Is this a cyclical pest?

Yes, Gypsy Moth is on a long cycle of 7-10 years and they may be on the upswing. There are a virus and a fungus which affect them and I would have expected those to be more of a factor with the wet spring we had.

Do you think the mild winter preserved the eggs?

Exposed Gypsy Moth eggs can be killed by the cold, but last winter was not cold enough to kill them. If the egg masses are laid lower down and insulated by the cold, they survive better

Forest Tent Caterpillar Cycle

What is the forest tent caterpillar cycle? We are seeing them in places we don't usually see them. There was abig outbreak about 10 years ago.

There was a slight increase in activity this year over last year. We typically see outbreaks every 5-10 years, so the population could be on an upswing.

Pachysandra Leaf Eating Bug

Some insect completely decimated some pachysandra and we got a cocoon which has now hatched and we found a bell shaped moth. You said it may be a leaf tier moth, in the Tortricidae family. Is this a one-time thing or how we can manage it?

Unless I can ID the insect, I don't know. Keep an eye out next spring. Leaf tier moths are a diverse family with a lot of species and the family has a bell-shaped appearance. I need to know the species before I can tell you if there is more than one generation.

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 saw a lot of anthracnose this week on many species of trees-ash, oak, elm, and willow. We are also seeing canker diseases; Cytospora on willow (usually a canker magnet) and Nectria canker on Japanese maple, which infects through physical injuries.

Cedar apple rust is in the pycnidial stage or sexual reproduction stage on the apple family. We should soon see the tendrils on the underside of the leaves which will reinfect junipers. We have also seen several viruses in the clinic this week, including Impatiens Necrotic Spot Virus (INSV), Cucumber Mosaic Virus (aphids transmitted) and Tobacco Mosaic Virus (touch transmitted).

INSV on Celosia, Coleus, and Zinnia

A greenhouse grower provided us with samples of celosia, coleus, and zinnia, which all tested positive for INSV. The symptoms of this thrips-transmitted virus are concentric rings around the original thrip feeding spot where the virus gets deposited. Early in the infection it looks a little like early blight, but develops into leaf distortion. It is easily tested for with a virus dipstick test from AGDIA (Elkhart, Indiana).

Unidentified Virus on Peony

This sample was negative for all of the viruses we can test for, but the most likely candidate is Tobacco Rattle Virus. The symptoms are line or ring patterns. This virus is common on herbaceous ornamentals such as peonies, bleeding hearts, coral bells, and epimedium.

Downy Mildew on Geum

This sample had angular leaf spots on the older leaves which were a darker color and had sporulation on the underside of the leaf, typical of downy mildew.

Questions

INSV Host

What species did you see INSV on?

We saw it on celosia, coleus, and zinnia. We have never seen this virus on zinnias before and the symptoms were a little different; there were bronzy, diffuse concentric rings. This virus is commonly seen on greenhouse plants, hoophouses or enclosed places where thrip populations may be high.

Impatiens Downy Mildew

Can you give us an update on Impatiens Downy Mildew?

We haven't seen it yet this year, but it usually shows up later. We are monitoring this disease so if you have suspect impatiens samples, we will diagnose them for free. It would be good to document that for this year. Send it in as an educational sample. We will also do basil diagnosis for downy mildew for free.

Our greenhouses have been selling Bounce impatiens, advertised as having Downy Mildew resistance. Do you know anything about that cultivar?

I knew there was a cultivar, but I don't remember if it was that one. Even if they are resistant, I would not use mass plantings. Space them out with other kinds of plants so if do get disease, everything won't be lost. Monocultures look nice, but are conducive to the spread of disease. New Guinea impatiens is also more resistant.

SPECIAL TOPIC: Beneficial Insects

Presented by PJ Leisch, Manager of the Insect Diagnostic Lab

PJ is the manager of the Insect Diagnostic Lab at UW-Madison, Dept. of Entomology. He provided a powerpoint presentation to accompany this talk. In the interest of time, he skipped the section on pollinators (Slides3-8) as it has been covered extensively, and started on Slide 9.

Background on Beneficial Insects

There are approximately 900,000 species of insects globally. Only a very few of that group are considered pests. To qualify as a beneficial insect, the insect must provide an ecosystem service:

- Pollinators
- Biological control, such as predatory insect species
- Decomposition or nutrient recycling

Other non-insect organisms provide ecosystem benefits, including roundworms or nematodes as well as pathogens such as viruses, bacteria and fungi. In the right conditions, the latter three can provide very effective knockdown of pests.

Biological Control

Biological control encompasses predators, parasitoids, and pathogens.

Predators

Predatory beetles (Slide 10) are common in the landscape and either the adults or the larvae or both may be predators.

- Ground beetles (genus Carabidae) are usually roundish or oval and feed on aphids or other soft-bodied organisms like caterpillars ora. The adult fiery searcher is a metallic green species that eats a lot of caterpillars, including gypsy moth caterpillars. They are active at night. There are also species that are all red or all black with polka dots.
- Rove beetles are long and narrow and some are tiny. They are active at night and show up on porch lights. They are predators of nematodes or aphids. Some larger species may feed on caterpillars.
- Firefly adults are not predators, but the larvae are slug predators. They are black and pinkish.
- Lady beetle adults and larvae prey on aphids, thrips, and small beetle larvae. Their eggs look like small yellow footballs (Slide 11) and the larvae are spiky, colored orange and black.

The family Hemiptera, or the true bugs, also boasts some predators (Slide 12).

- Minute pirate bugs are 1/8 in black and white bugs with triangles on their backs, that prey on aphids
- Big-eyed bugs eat small sawfly caterpillars.
- Assassin bugs or ambush bugs are pale colored, either white or yellow to camouflage themselves on flowers.
- Damsel bugs
- Spined-soldier bugs, which are predatory stinkbugs, have a large pronounced spike on their shoulders and may prey on things that are bigger than they are.

Some flies are also predators (Slide 13).

- Robber flies are a large species and can grab bugs out of the air. They eat Japanese beetles, among other things.
- Hover fly adults feed on nectar, but the maggots are aphid predators. You may see greenish or yellowish maggots hanging out on leaves.

Lacewings and Kin (Slide 14):

- Lacewings are ½ in long and can often be seen around porch lights. Both adults and larvae are predators. They have special mandibles that can impale insects and suck out the insides. They are fierce predators.

If you are thinking about buying predatory insects, lacewing eggs are the best buy because the larvae won't leave the garden. The slide shows the distinctive eggs which are on a stalk.

- The related dustywings are very tiny, 1/8 in long, whitish or grey insects. They eat thrips, aphids, and mites. I tend to see them on conifers.

Wasps and hornets (Slide 15):

- Bald faced hornets eat soft-bodied prey. If the nest is in an out of the way place, these insects can eat a lot of pests. They may be too good of predators as they also eat butterfly larvae.

One last category of predators is mites and spiders (Slide 16). Predatory mites can be purchased for biocontrol in greenhouses, but you need to know which species to buy. Arbico Organics sells them. Some predatory spiders are wolf spiders and grass spiders.

Parasites

Some fly and wasp species are parasites (Slides 17-20). Some may be specialists that only go after one species or a group of related species.

- Parasitic wasps may be specialists that lay eggs in specific caterpillars. The larvae eat the caterpillars and then emerge to spin cocoons. On Slide 18, we see a hornworm (like a tomato or tobacco hornworm) that is covered with cocoons. Some parasitic wasps parasitize aphids by injecting an egg which hatches into larva that eats the aphid from the inside out. These parasitized aphids keep their shape pretty well and are called mummies (Slide 19).
- Tachinid flies will lay eggs right behind the head as seen on Slide 20. The fly larvae tunnel into the host species, kill it by eating it, and the adult fly emerges. You can usually find parasitized caterpillars in the garden if you keep an eye out for them.

In the interest of time, PJ did not cover Slides 21-28 which discussed pathogenic viruses, bacteria and fungi, as well as some of the insects involved in decomposing or nutrient recycling.

Questions/Comments

Encouraging Beneficials

How do we encourage beneficial insects?

Don't use pesticides, especially broad spectrum insecticides. A more diverse landscape also encourages beneficials.

Sources of Beneficial Insects

Where can we buy beneficial insects? Are there any sources in Wisconsin?

There aren't any in Wisconsin. Arbico Organics is one company. Do a Google search on "purchasing beneficials".

Poster of Beneficial Insects

Does anyone have a poster on beneficial insects? We just talked about this at our MGV meeting because we would like to do more about beneficial insects. I know of the Xerces Society.

I am not aware of anything, but I would be happy to assist in making one.

Comment from Vijai: UW-Botany Lab has a poster on pollinators that costs $25.

EAB Wasp Predator

Can you give a follow-up on the EAB wasp predator?

There were a couple of species released for biocontrol. We don't know too much about them but they do seem to sustain themselves in the environment. They were identified in China. They were very carefully screened to make

sure they were highly specialized to EAB and wouldn't go after other species. I have seen some of the data and these species wouldn't even go after closely related species such as bronze birch borer or two-lined chestnut borer.

Ant Control in Sandy Soil

What can be done to control ants in sandy soils, especially around vine crops that have root aphids?

Granular or spray products don't work because they don't reach the below ground nest. You will kill the worker ants at the surface, but not the nest. You need a drench that will infiltrate the soil. Pyrethroids or something like Carbaryl or Sevin are effective. Keep in mind that they are broad spectrum.

FINAL NOTES and ANNOUNCEMENTS

There is no WHU teleconference next week because of the July 4th holiday. On July 10, Heidi Doering from St. Croix County will host and the special topic will be on cold hardy grapes, presented by Amaya Atucha of the UW-Madison/Extension, Department of Horticulture.

Patti asked Christy how the booth for was coming along for the WLNA field day (but Christy had already logged off).

Sharon asked if anyone wanted to work with her on a booth for UW-Extension Day on Aug. 11 at the State Fair. She was contacted by someone who asked if she could have some sort of interactive display on horticulture. Milwaukee County already has a big presence at the State Fair, so she didn't want to do it alone. Patti explained that she did not mean to put that on Sharon's shoulders, but mentioned that she had been contacted about doing a container gardening exhibit. Patti did not intend for Sharon to do something additional, but could help her get stuff things together ahead of time. Brian mentioned that this could not be a Hort Team booth as everyone voted not to do this sort of event. Vijai said he had a free standing vertical banner which promoted the Hort team website for indoor use that he could ship. Brian suggested that the issue be discussed at the Hort Team meeting on July 31.

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 #16 and #17 are available at http://www.plantpath.wisc.edu/wivegdis/

Topics in issue #16 (June 23, 2015) include:

- Disease forecast updates (early planted/emerged fields in Gr. Marsh now surpassing threshold of 300 P-Days/DSVs surpassing 18 threshold for all but late planted Antigo)
- Late blight updates (no new reports)

- Cucurbit downy mildew (first reports in MI and Ontario Canada today)
- Phytophthora crown and fruit rot
- Aim herbicide 24c special use registration for WI hops
- Hop downy mildew update

Topics in issue #17 (June 24, 2015) include:

Late blight has been confirmed in commercial potatoes in northern Adams County. Please see attached newsletter for further details.

At this time, potato and tomato fields should be treated with protectant fungicides for control of this potential crop-destructive disease. As we always say, this is a community disease and effective management requires vigilance and action from all growers of susceptible crops.

Please contact me with any questionable samples. My lab and the UWEX Plant Disease Diagnostic Clinic are offering free late blight diagnostics as we have in past years. Genotyping of samples is helpful in enhancing our understanding of the pathogen source and nature. Unfortunately, it's a water-mold-favorable kind of a year so far.

PDDC UPDATE

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

Brian Hudelson, Sean Toporek, Catherine Wendt, Claire Wisniewski 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 June 20, 2015 through June 26, 2015.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
DECIDUOUS WOODY ORNAMENTALS			
Ash (Unspecified)	Anthracnose	Discula sp.	Marathon
	Cytospora Canker	Cytospora sp.	Waukesha
	Sphaeropsis Canker	Sphaeropsis sp.	Waukesha
Crabapple	Sphaeropsis Canker	Sphaeropsis sp.	Dane
Elm (Unspecified)	Anthracnose	Asteroma sp.	Dane
	White Rot	Hypsizygus ulmarius	Dane
Maple (Japanese)	Tubercularia/Nectria Canker	Tubercularia sp./Nectria sp.	Dane
Oak (White)	Anthracnose	Discula sp.	Dane
Willow (Unspecified)	Anthracnose	Gloeosporium sp.	Rock
	Cytospora Canker	Cytospora sp.	Rock
FRUIT CROPS			
Apple	Cedar-Apple Rust	Gymnosporangium juniper-virginianae	Iowa
	Frogeye Leaf Spot	Diplodia seriata	Iowa
	Fruit Rot	Gloeosporium sp.	Houston (MN)

Cherry	*Root Rot*	*Pythium sp., Cylindrocarpon sp.*	*Dane, Door*
HERBACEOUS ORNAMENTALS			
Celosia	*Impatiens Necrotic Spot*	*Impatiens necrotic spot virus*	*Sheboygan*
Coleus	*Impatiens Necrotic Spot*	*Impatiens necrotic spot virus*	*Sheboygan*
Geum	*Downy Mildew*	*Peronospora potentillae*	*McHenry (IL)*
Peony	*Unidentified Viral Disease (Probable Tobacco Rattle)*	*Unidentified virus (Probable Tobacco rattle virus)*	*Waukesha*
Russian Sage	*Root Rot*	*Pythium sp., Fusarium sp.*	*Brown*
Zinnia	*Impatiens Necrotic Spot*	*Impatiens necrotic spot virus*	*Sheboygan*
NEEDLED WOODY ORNAMENTALS			
Arborvitae	*Phyllosticta Needle Blight*	*Phyllosticta sp.*	*Waukesha*
	Root Rot	*Pythium sp.*	*Waukesha*
	Sphaeropsis Canker	*Sphaeropsis sp.*	*Waukesha*
Fir (Unspecified)	*Rhizosphaera Needle Cast*	*Rhizosphaera sp.*	*Eau Claire*
VEGETABLES			
Tomato	*Bacterial Canker*	*Clavibacter michiganensis subsp. michiganensis*	*Richland*
	Cucumber Mosaic	*Cucumber mosaic virus*	*Dane*
	Tobacco Mosaic	*Tobacco mosaic virus*	*Dane*
	Walnut Toxicity	*None*	*Richland*

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