

Wisconsin Horticulture Update Summary, May 29, 2015

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WI WEATHER REVIEW

Intermittent rain during the week disrupted alfalfa harvesting and left planting of the final corn, oats and potato acres incomplete. Several rounds of showers and thunderstorms soaked much of Wisconsin from May 24-27, with daily precipitation amounts of 1 to 2 inches common statewide. Totals in excess of 2.5 inches were reported on May 26 from a few northern Wisconsin locations and a record rainfall of 1.84 inches occurred at Wausau, surpassing the previous record of 1.64 inches set in 1921. The additional timely rain alleviated soil moisture deficits and above-average temperatures helped maintain very favorable early-season crop prospects. At the end of May, the outlook for the state's field crops is promising, particularly after an early and rapid start to the planting season. Condition ratings for corn, alfalfa and oats range from 80-85% good to excellent and development of all three remains well ahead of last year and the five-year averages. (Issue No.6 of Wisconsin Pest Bulletin)

Average soil temperatures at 2" as of May 27, 2015: Hancock 65.7, Arlington 67.8
(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 282 to 556. Following is a list of DD as of May 27, 2015 for the following cities: Appleton-410; Bayfield-282; Beloit-556; Big Flats-493; Cumberland-398; Crandon-339; Crivitz-325; Eau Claire-463; Fond du Lac-399; Green Bay-344; Hancock-493; Hartford-391; Juneau-452; LaCrosse-552; Lone Rock-537; Madison-519; Medford-376; Milwaukee-348; Port Edwards-468; Racine-344; Sullivan-391; Waukesha-391; Wausau-392. 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): Blackhaw viburnum, first bloom, 269; **imported willow leaf beetle, adult emergence, 274**; Sargent crabapple, full bloom, 298; red horsechestnut, first bloom, 304; **pine needle scale, egg hatch - 1st generation, 305**; **cooley spruce gall adelgid, egg hatch, 308**; **eastern spruce gall adelgid, egg hatch, 308**; 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;.

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_05_31_15.pdf

INTRODUCTION

The host for today's WHU was Kimberly Miller from Winnebago County, PDDC Director Brian Hudelson and PJ Leisch, Manager of the Insect Diagnostic Lab, were the specialist participants. Amy Charkowski, UW Madison Department of Plant Pathology was the special guest giving a hydroponics presentation. Participants in today's discussions were representatives from the following counties: Brown (Vijai Pandian), Eau Claire (Erin LaFaive), Marquette (Lyssa Seefeldt), Milwaukee (Sharon Morissey), Rock (Christy Marsden), Portage (Walt), Racine (Patti Nagai), St. Croix (Heidi Doering), Walworth (Chrissy Wen), 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: We had 2 inches of rain with more in the forecast. We are seeing ash leaf drop, anthracnose, powdery mildew, maple bladder gall and European pine sawfly. People are noticing that young trees or those that are marginally hardy did not leaf out. Questions were about plant ID, weed control, and lawns.

Eau Claire County: We are seeing large ants with wings-maybe carpenter ants? I would like to know why they are on the move. We are also seeing ash leaf drop and getting samples and pictures of galls on trees. We have had lots of rain and the gnats are out.

Marquette County: I don't have too much to add to what everyone else has said. Black locust are blooming here and we have just had a couple of plant ID questions this week.

Milwaukee County: We have not had as much rain as the northern part of the state-only 0.5 inch this past week. Black locusts and late lilacs are blooming. We are not seeing anything unusual for diseases or insects.

Portage County: We had 2.5 inches of rain between Sunday and Wednesday. I had one report of an unseen biting insect which may have been a no-see-um. People have been bringing in samples of damaged plants and trees, which may have been frost damage. I am going to bring in one sample to Brian.

Winnebago County: Not much to add, but the rain is wonderful. We are seeing a lot of trees, both fruit and shade, that are leafing out weakly or not at all. Questions have been about ID, lawns, etc.

Wood County: We have the lush life here; everything is green. Things are gearing with questions about anthracnose, moles, voles, and slugs.

Walworth County: We are still having tick issues. European sawflies are feeding heavily and we have received some pictures of them. Mosquitos are out. Gypsy moth caterpillars are about an inch long. Black locust, Miss Kim lilac Iris, daylilies, peonies, and horsechestnuts are blooming. Pictures of cedar apple rust continue to come in.

Racine County: We are getting tree questions and have been having ant issues. We did get some good rain which made everything look good.

Waukesha County: We are similar to Walworth. Apparently, I am now the number one tick identifier in the county and some of those have gone to PJ when they were too small. We are seeing a lot of browning on junipers or dead junipers that is defying explanation.

St. Croix: We got some good rain. We have had a few bug and weed questions. The main complaint up here is that the hail storm we had a couple of weeks ago caused a lot of damage to leafing out trees and people are wondering if things will recover. Otherwise, it has been quiet here.

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

Ticks are still active, although quieting down now. There is a lot of caterpillar activity. Gypsy moth is not as bad this year, although there are a few pockets in the state where it is worse. 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 are getting reports of the speckled green fruitworm and the green humped fruitworm, which despite their names, feed on a fair number of trees (hackberries, ash, and euonymus). The green humped fruitworm metamorphoses into the copper underwing moth which PJ mentioned last year. We are getting reports of sawflies, gnats, and galls. It is difficult to know what kind of gnats they are, but they could be fungus gnats which hang out in decaying organic matter or lake flies. We have had no reports of black fly activity although it is the time of year for blackflies, especially around bodies of water. This is the time of year to find winged carpenter ants, especially at night around lights.

Fruitworm caterpillars

Other caterpillars active now are the speckled green fruitworm and the green humped fruitworm. Despite their names, they feed on a fair number of woody species (hackberries, ash, and euonymus). The green humped fruitworm metamorphoses into the copper underwing moth which PJ mentioned last year.

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

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

Sawflies

This week we also had reports of European pine sawfly, rose slug sawfly, and columbine sawfly. The rose slug sawfly may cause skeletonization of leaves, but does not eat through the entire leaf, leaving cellophane like windows in the leaf. The columbine sawfly eats the entire leaf, leaving just the stem.

<http://www.extension.umn.edu/garden/insects/find/sawflies/>

<http://www.extension.umn.edu/garden/insects/find/be-on-the-watch-for-columbine-sawfly/>

Questions

Green humped fruitworm

Does the green humped fruitworm feed on oaks?

Potentially; I would have to consult a host list. It wouldn't surprise me if it did since it does have wide host range.

Treehopper?

I sent you a picture of a treehopper, but the person who sent that in had some serious chewing on elms and oaks. Do you have any idea what would feed on both of those?

It could be either the speckled green fruitworm or the green humped fruitworm that were mentioned because both have a wide host range.

Green worm

I have been noticing a green caterpillar that dangles from a thread. He is eating something because he is getting bigger.

Many caterpillar species will hang from a silken thread. Again, it could be one of the two mentioned above. We are seeing a lot of cases of both of those.

Columbine sawfly control

This sawfly is really going to town on my columbines this year. I normally just let them go, but is there an easy control?

Treating them is a preference. If you have so many you can't get to them you could treat. You could just leave them or use a contact insecticide like permethrin or an insecticidal soap. Bt doesn't work because sawflies are not

true caterpillars. You can also handpick them or knock them into a bucket of soapy water if you don't have too many columbine plants.

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 a lot of cases dieback on woody ornamentals probably due to winter or cold injury over the last couple of years. The dieback has likely led to a number of fungal canker species like necrotia canker, cytospora and phomopsis. We have had some needle cast evergreen diseases such as Swiss needle cast on Douglas fir, a variety of issues with juniper, diplodia on pine (from Heidi's client), phomopsis on a variety of evergreens, and rhizosphaera needle cast. We continue to see volutella blight on pachysandra. With the rain we have been having we will probably be seeing anthracnose and apple scab and other foliar diseases. Tar spot is likely getting established now so we will see that later in the season.

Rhizoctonia on Dahlia

We isolated rhizoctonia on this dahlia sample from Chrissy last week. It may have contributed to the stem rot we saw.

Grey Mold on Anemone

This anemone sample came from a nursery in northern Illinois. The growers had been seeing water collecting in the leaf axils which set up a conducive environment for the grey mold fungus.

Questions

Arborvitae Dieback

Kristin mentioned that she has been seeing a lot of dieback on arborvitae and we have had reports of that as well. Do you think it is environmental?

Arborvitae rarely has any problems, so it may be an environmental problem. Rarely, there is a needle tip blight on the very end of the branches and occasionally a canker that can kill whole branches. If you are seeing the symptoms all over, it is likely winter burn or an environmental problem. Very dark or black patches on the foliage can be dog urine damage.

SPECIAL TOPIC: Hydroponics

Presented by Amy Charkowski, UW Madison/Extension Department of Plant Pathology

Amy sent out a PDF of the presentation. She currently runs the seed potato certification program and is an administrator for a seed potato farm. We use the farm to produce early generation seed potatoes. Most of what will be discussed pertains to growing potatoes hydroponically.

Features of Hydroponics

General Information

No soil is used, but there may be an inert substrate.

Water delivers the nutrients.

Roots are in water or water flows past the roots.

Water may or may not be recirculated. It is usually recirculated, but it doesn't need to be.

There are lots of homemade systems which can be very inexpensive, but systems are available commercially.

Hydroponic Systems

There are several strategies for using hydroponics.

Aeroponics: Roots are in air.

Aquaponics: This system is used in tandem with fish production. Tilapia may be produced, or a native fish such as perch.

Nutrient Film Technique (NFT): Plants are grown in trays with fabric or gravel and it is the system we use. A nutrient solution is constantly flowing. We are getting 80 potatoes/ft² (although production may reach as high as 120 potatoes/ft²) and we do 3 crops/year. Our production greenhouse in Rhinelander has comparable yield to 30 acres of potatoes. You can see a picture on Slide 1.

Advantages of Hydroponics

1. It can be used if potting soil is expensive or not available.
2. Production/ft² is very high. There is a table on Slide 2 of the presentation which shows production comparisons for six different crops in desert greenhouses vs. open fields.
3. Hydroponics uses much less water than conventional production.
4. Hydroponics requires fewer people for production and they have higher quality jobs. We use 1.5 FTE to come in every 2 days to harvest potatoes. They are responsible for clean-up, and we may use more people at certain times of year.

Challenges of Hydroponics

1. Systems require more attention.
2. It is easy to get nutrient deficiencies. This is a big challenge because the nutrient solution is constantly changing as the plants take up the nutrients and the concentration of one nutrient may affect the uptake of another nutrient. You may also get salt accumulation. The pH must be frequently monitored because it can change nutrient uptake. Symptoms of specific nutrient deficiency are distinctive and can be ascertained by examining the leaves. There are on-line resources to help with diagnosis.
3. Pathogens in hydroponic greenhouses are the same as for greenhouses which use soil.
4. Poor water quality is a common cause of introducing pathogens. Surface water is not recommended due to bacterial contamination and possible food safety issues, but both tap and well water are acceptable. We use well water in Rhinelander. In Madison, our water is very hard which made it very challenging to get the hydroponic system going. We had problems keeping the nutrients in solution and had calcium carbonate build-up. We ended up installing a water softener and a reverse osmosis system to clean up the water before adding the nutrients.
5. Pests are the same in hydroponic greenhouses but it may be more difficult to spray because of the dense production. Tomato hornworms will eat the potatoes in a hydroponic system.

Problems in Hydroponics

Managing Pathogens in Hydroponics

In hydroponics, we are confronted with the same foliar pathogens as soil-based production. The main pathogens we see are early blight, powdery mildew and white mold. It can be more challenging to deal with these because of the density of the foliar canopy which makes it more difficult to see the disease or harder to get good spray coverage. We have actually seen a reduction in white mold because the plants are about 3.5 feet off the ground which is covered with gravel and the spores can't reach and infect them.

We have learned when and where to expect pathogens and can be more proactive in dealing with them. We do try to even out the airflow, but there may be differences in temperature even with the fans going.

Root pathogens are more problematic for us. Pythium likes the water and can cause non-productive plants with poor root growth. On Slide 5 you can see some affected pepper plants with poor root growth. Sometimes the plants just get yellow and don't produce as much, but it can get really bad and kill the plants. Once pythium is introduced, it can be hard to clean up because the spores survive quite well.

We have had good luck with Zonix for pythium. It is labelled for hydroponic use but can be very foamy. It would be difficult to use in an aeroponic system.

We also use UV light penetration for sanitation. The water constantly flows past the UV light. I don't know if it is actually very effective, but we do use it.

Managing Insects

The most common insects we deal with are aphids, thrips, and mites, with mites being the worst. We also had one unfortunate incident where tobacco hornworms got loose in our greenhouse from another researcher and ate most of the tubers before we knew they were there. To manage insect pests, we use insecticides as you would in any greenhouse situation.

Some farmers use plastic reflective silver mulch to repel insects. Data on the efficacy of that method is hard to find.

Algae

Algae growth is another potential problem because it can clog the lines. Basically, you never want the nutrient solution exposed to light. We try to cover everything carrying the nutrient solution with foil or lightproof plastic.

General Management Tips

The most important thing to remember is to prevent problems from occurring using sanitation, exclusion, and avoidance. These are important in any greenhouse situation, but are critical in hydroponics because you can lose all of your production in a matter of days. Slide 7 describes some things to do.

Questions/Comments

How are plants fed and watered?

In your systems with the roots in the air, are the roots being sprayed or are they floating in the hydroponic solution?

Our system looks like a wide gutter covered with a plastic layer to protect the gutter, and then a felt layer on top of that. The plants are planted through a lightproof plastic with the roots in the felt layer. Nutrient solution constantly flows over the felt layer and the tubers grow under the plastic. We harvest the tubers when they are quarter-sized and we can store them for about 1.5 years. The plants start producing in about 6 weeks and we harvest for 3 months. The aeroponic system you see on Slide 1 is used in tropical countries. They have different potatoes in those places due to day length. We sometimes have problems with electricity in Rhineland and that kind of system is more problematic. We find that if something happens the plants survive for a few hours on the felt which gives us time to fix the generator.

Aquaponics

Do you have experience with aquaponics?

No, although I do have colleagues who work on that. I haven't ventured into production with vertebrate animals, only plants.

Natural light vs supplemental light

Do you use natural light or supplemental lighting? Could you describe the kind of supplemental lighting that you use?

We use natural light in the spring and summer, but do require supplemental light in the fall. We use halogen lights because we have to buy the lights with our own budget and the university pays for the power. LEDs are not cheap and we haven't made that investment. We do use LEDs for some tissue culture. We have found that all of the varieties that we grow do well in the spring but only some do well in the fall, so we divide it up based on that.

LEDs for tissue culture

Could you talk a little about your use of LEDs for tissue culture? People are asking all kinds of questions.

There isn't much to say except that it works. It is a big investment up front, but cheap after that. What do people want to know about LEDs?

They want to know about up-front costs, how long the lights last, what kind of lights to get, if there is an increase in insect or fungal problems, if they're better for growing. Salesmen are pushing it as the next miracle.

I can't really answer those questions either. We talk about doing those experiments in Rhinelander but other things have priority. It does affect how well you can see the disease (it's better under certain wavelengths), but I don't know whether there is more powdery mildew or insect pressure.

Learning curve to do hydroponics

How much experience do people have to have to set up hydroponics? Can tinkerers figure it out?

It was a lot easier than I thought it would be. The people running our greenhouse have experience in building and mechanics not in plants. They understand about mixing the chemicals and how the pumps work. They are both very observant but don't have backgrounds in plants. You need to be a little stubborn and do a lot of reading at first and make sure you pay careful attention at set-up. If you don't get the plants well established at first, it is hard to recover.

Resources for getting started in hydroponics

Do you have any recommendations for resources to get started in hydroponics?

There is a lot of information on line, but a lot of it is directed at a plant we can't grow. We reached out to a couple of experts and set things up on small scale at first. We went through a few cycles for a couple of years to get our feet wet. We did this for potatoes, but it will be different if you are using for strawberries for example. I don't have a specific book to recommend.

Hydroponics for potatoes or seed potatoes?

Are you using this to produce potatoes or seed potatoes?

We use it to grow the first generation of seed potatoes that go into the field. We use tissue culture to start the plants and we need to get tubers for the seed potatoes, but the tissue culture plants are too fragile to plant in the field. We either have to put them in pots or grow them hydroponically. It is more economical to grow the tubers hydroponically. It is a program the University runs for seed potatoes that is self-supporting and the co-ops for the seed farmers.

Supplemental lighting presentation from 2014

Comment from Brian: Joanna Oosterwyk gave a presentation last year (August 1, 2014) on supplemental lighting in the greenhouse and you may be able to glean some information about this topic. If you don't have it, I can send you the podcast.

How common are hydroponic systems?

Are there a lot of hydroponic systems in use throughout the state?

Yes, and it is more common in urban areas. I have seen quite a few people dabbling in aquaponics, although I don't know if they make a living from it. It is more common for tomato production and used a lot in the South and other regions. I haven't really sought them out. As far as potatoes go, this is the way it is done now. Most potatoes you eat start out this way. I may not be the best person to answer that question.

FINAL NOTES and ANNOUNCEMENTS

Next week, the host will be Kristin Krokowski from Waukesha County and the special topic will be Compost Teas by Erin Silva from the UW-Madison/Extension Department of Plant Pathology.

Heidi Doering from St. Croix County: I do have a small fruit and blueberry growing workshop for June 4 in Maiden Rock in Wisconsin. The information is on our St. Croix County Extension website or you can contact me.

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://rangemastergardenervolunteers1.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 xiaxia@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 Newsletter #10 is available at <http://www.plantpath.wisc.edu/wivegdis/>

Topics in this issue include:

Late blight updates

Disease forecasting information (early blight, late blight, cucurbit downy mildew)

We are nearing DSV 18 for early emerging potato fields in southern/central Wisconsin at this time. Weather conditions have been favorable for the development of late blight from time of ~50% potato crop emergence to 5/27 (date of last DSV calculation). I attached an updated document which includes fungicides registered for potato late blight control in Wisconsin as of April 2015.

PDDC UPDATE

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

Brian Hudelson, Sean Toporek, 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 23, 2015 through May 29, 2015.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
FRUIT CROPS			
Apple	Cytospora Canker	<i>Cytospora</i> sp.	Lafayette
	Nectria/Tubercularia Canker	<i>Tubercularia</i> sp.	Lafayette
	Sphaeropsis Canker	<i>Sphaeropsis</i> sp.	Marquette
NEEDED WOODY ORNAMENTALS			
Dogulas-Fir	Swiss Needle Cast	<i>Phaeocryptopus gaeumannii</i>	Ozaukee
Juniper	Kabatina Tip Blight	<i>Kabatina</i> sp.	Ozaukee
	Sphaeropsis Canker	<i>Sphaeropsis</i> sp.	Dane
	Winter Burn	None	Sawyer
Pine (Austrian)	Diplodia Shoot Blight and Canker	<i>Diplodia pinea</i>	St. Croix
Spruce (White)	Phomopsis Canker	<i>Phomopsis</i> sp.	Sheboygan
	Winter Burn	None	Sheboygan
Spruce (Unspecified)	Phomopsis Canker	<i>Phomopsis</i> sp.	Dane
	Rhizosphaera Needle Cast	<i>Rhizosphaera kalkhoffii</i>	Dane
HERBACEOUS ORNAMENTALS			
Anemone	Gray Mold (Botrytis Blight)	<i>Botrytis cinerea</i>	McHenry (IL)
Dahlia	Stem Rot	<i>Rhizoctonia</i> sp.	Walworth
Pachysandra	Volutella Blight	<i>Volutella pachysandricola</i>	Dane

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