Wisconsin Horticulture Update Summary, August 28, 2015

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WI WEATHER REVIEW

Dry, breezy and cool conditions prevailed during the last days of August. Daytime high temperatures were 10-15°F below normal at the start of the week and ranged from the upper 50s to lower 70s. Record low maximum temperatures were set on August 24 at numerous locations, including Stevens Point, which reported a daily high of only 57°F, breaking the previous record of 62°F set in 1940. Other cities establishing new records were Appleton (61°F), Manitowoc (63°F), Sturgeon Bay (61°F), and Wisconsin Rapids (61°F). Normal high temperatures at this time of year are around 80°F. Alfalfa, apple, small grain and potato harvesting advanced under a mild, mostly dry weather pattern, although drought conditions persisted in the southwestern and central areas where the lack of moisture has increased crop quality concerns. The forecast calls for a return to summertime temperatures next week, which should help push crops toward maturity. (Issue No.19 of Wisconsin Pest Bulletin, last regularly scheduled bulletin for 2015)

Average soil temperatures at 2" as of August 28, 2015: Hancock 66.6, Arlington 66.8 (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 1540 to 2334. Following is a list of DD as of Aug 28, 2015 for the following cities: Appleton-1964 Bayfield-1540; Beloit-2334; Big Flats-2088; Crandon-1594; Crivitz-1743; Cumberland-1856; Eau Claire-2099; Green Bay-1858; Hancock-2088; Hartford-1905; Juneau-2038; LaCrosse-2327; Lone Rock-2236; Madison-2207; Medford-1711; Milwaukee-1862; Port Edwards-2009; Racine-1860; Sullivan-1905; Waukesha-1905; Wausau-1792. 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 (http://www.entomology.umn.edu/cues/Web/049DegreeDays.pdf): Pine needle scale-2nd generation-hyaline stage (control target)-1500; Cooley spruce gall adelgid-2nd adults active (control target)-1500; Eastern spruce gall adelgid-2nd adults active (control target)-1500; Walnut caterpillar egg hatch, caterpillars-1600; Zimmerman pine moth-adult flight1700; Arborvitae leafminer-3rd generation-1700; Banded ash clearwing borer-adult emergence-1800-2200;Fall webworm-tents become apparent-1850; Euonymus scale-egg hatch - 2nd generation-1900; Magnolia scale egg hatch-1925.

WI CROP PROGRESS AND CONDITION

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

http://www.nass.usda.gov/Statistics_by_State/Wisconsin/Publications/Crop_Progress_&_Condition/2015/WI_08_30_15.pdf

INTRODUCTION

The host for today's WHU was Jane Anklam from Douglas County; PDDC Director Brian Hudelson and Insect Diagnostic Lab Director PJ Leisch were the specialist participants. Julie Dawson, of the UW-Extension, gave a presentation on Breeding Tasty Vegetables. Participants in today's discussions were representatives from the following counties: Milwaukee (Sharon Morissey), Kenosha (Barb Larson), Outagamie (Anne Donellan), Portage (Walt Rasmussen), Walworth (Chrissy Wen), Washburn/Sawyer/Burnett (Kevin Schoessow), Winnebago (Kimberly Miller).

HORTS' SHORTS

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

Douglas County: We are finally picking red tomatoes and peppers, which is a big deal for us up here. SWD has not been confirmed here yet but it is here. We have had no questions on EAB, but the city is removing all of the ash trees. Some vendors are doing a good business marketing treatments. We have had some Septoria and early blight as well as slugs. We don't have leaf hoppers like in years past. This has been a very nice, successful gardening summer.

Kenosha County: We have seen similar issues to Walworth and Milwaukee Counties, except for a confirmed case of late blight on tomato. This case was a good example of why it is challenging to diagnose disease from the internet. The client had accessed a fact sheet from the Extension, but originally misdiagnosed the symptoms as verticillium wilt because of the sudden collapse of the tissue. When we examined the plant we saw both late blight and septoria sporulation, and Brian confirmed the late blight pathogen.

Milwaukee County: There is not too much to report. Magnolia scale has been very bad this year, but powdery mildew and apple scab is really down.

Portage County: Ash trees are beginning to decline and Stevens Point is starting to treat trees for EAB. Homeowners are calling in to learn about treatment options to save their trees. We had a case of peony mildew and a serviceberry with cedar-apple rust. Late blight has been busy in our county with two confirmed cases. SWD is quieting down or at least we aren't getting too many reports about it. I measured 3 inches of rain last week. *Comment from Kim in Winnebago: Has EAB been confirmed in your county? Walt's answer: It hasn't been confirmed here, but it is in Wood County and Adams County.*

Outagamie County: We had 1 inch of rain. We are getting a lot of critter calls; about woodchucks, snakes and birds. People are also calling about lawn grubs and slugs. We had a case of tomato mosaic virus and the grower was really dismayed about the impact that would have on his growing operation. We had a first report in the county for strawberry clover. The seed head looks like a little soccer ball with tufts coming out of each pentagon. It looks a lot like white clover until it develops the seed head. Our herbarium specialist was happy to get a sample for her collection.

Walworth County: There is not too much to report, although we do expect rain. Grass is still green from our last rain. We are seeing leaf scorch, anthracnose and tar spot on maples and EAB questions are continuing. We had an organic grower ask about heirloom garlic varieties, and we would welcome input from anyone that knows of some varieties. Next week is the Walworth County Fair and the MGVs and I will be answering questions. We also had a late blight confirmation. *Comment from Jane: What are some examples of questions you are getting about EAB. Chrissy's answer: We had two questions last week. One client had an ash tree on a beach that was in decline and wanted to know about treatment options. I asked him what percent of the canopy was affected and he said 40% so I recommended spending any dollars on replacing the tree instead of treatment. Another caller wanted someone to come out and look at a tree, but I wouldn't do it because I have not seen a healthy tree all year.*

Winnebago County: We have had fruit tree and tomato questions. People are also asking about bees and wasps and if someone can come and move them. We have had rain the last two weeks.

SPECIALIST REPORT: Insect Diagnostic Lab Update

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

Insect activity is slowing down.

- Japanese beetles weren't too active this year, but they really trail off in late August and early September.
- Late season yellowjackets and bald-faced hornets are at the peak colony size. I have received 12-15 calls this week. Jeff Hahn in Minnesota, Laura Jesse from Iowa, and I have worked on revising a multi-state wasp and bee control fact sheet. We updated a few things and added pictures. http://www.extension.umn.edu/garden/insects/find/wasp-and-bee-control/

- Orb weaver spiders are visible in the garden now, including the Cross Orb Weaver. These are large bulbous spiders and are good beneficial animals. http://labs.russell.wisc.edu/insectid/2014/05/20/orb-weavers/
- Magnolia scale crawlers are out right now and vulnerable to contact insecticides. Use a piece of clear tape to pick them off of the tree to confirm activity. You can use pyrethroids, insecticidal soap, Sevin, or a dormant oil. You can do one treatment then hit them again 10-14 days later.
- Katydids, large neon green grasshoppers and tree crickets are out now. These insects make noise during the night, while cicadas make noise during the day. http://www.biokids.umich.edu/critters/Tettigoniidae/
- Goldenrod Soldier Beetles look like fireflies, but they are yellow with black stripes. They feed on pollen and nectar and are common this time of year. http://labs.russell.wisc.edu/insectid/2014/05/08/soldier-beetle/

Questions/Comments

Dormant Oil Treatment for Magnolia Scale

Is dormant oil for magnolia scale done in the spring?

You can do it in the spring or you can hit the crawlers now. If there are a lot of them, hit with dormant oil in the spring.

Orb Weaver Spiders

Are orb spiders the common garden variety spider?

There are some of the big ones people call garden spiders that are in the orb weaver family. They have banded, colored legs, usually whitish or yellowish bodies but sometimes black.

Life Cycle of Yellowjackets and Bald-faced Hornets

Could you refresh us on the life cycle of yellowjackets and bald-faced hornets?

Life cycle knowledge is important for management. Nests and colonies are started from scratch each year. If you remove the nest early you can keep the populations down. Hard frosts in late summer and early fall will kill the colonies. If the nest is in an unaccessible place where kids or people won't come in contact with it, you don't have to do anything since the cold weather kills the inhabitants. All colony workers die except for a few fertilized females who become the queens and start new colonies the next year. They will leave the nest and look for a sheltered location where they can overwinter.

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 had a lot of vegetable diseases and herbaceous pathogens. Beebalm with powdery mildew, black-eyed susan with septoria, a coleus with downy mildew, root and crown rot on sedum and moss with rhizome and crown rot. In vegetable samples, we had a celery sample with CMV, a most disgusting potato with bacterial soft rot, and a squash from Dane County with powdery and downy mildew. Late blight was diagnosed on tomato samples from Wood and Kenosha Counties and we diagnosed tomatoes with septoria, Tobacco Mosaic Virus and Cucumber Mosaic Virus

Septoria on Black-eyed Susan

The cultivar 'Goldsturm' is very susceptible to this disease which causes the leaves to turn brown.

Downy Mildew on Coleus

We received this coleus from the trials at the West Ag Station in Madison. The variety was a maroon-leaved cultivar, but the disease had caused a color break so that the leaf tips were green and stunted. We saw lots of sporulation of Peronospora.

Root and Crown Rot on Sedum

Sedum is a susceptible host for Phytophthora.

Rhizome and Crown Rot on Moss

This moss was being grown as an ornamental and mosses don't really have true roots, but we found a mish-mash of root rot organisms in the rhizomes and crown.

CMV on Celery

We received celery that had what looked like chlorosis, with very light green, almos twhite, leaves with dark green veins and decided to test for viruses because they sometimes have the same symptoms. The sample tested positive for Cucumber Mosaic Virus.

Questions

Late Blight Submission to PDDC from Walt

Brian asked Walt when he sent in the sample for late blight confirmation.

I think it went in Tuesday or Wednesday.

We may not have received that sample yet, so we will watch for it in the mail.

Use of Essential Oil Fungicide (Sporan® or Final Stop®)

We have one of Erin Silva's national organic trials up here. A student intern found out about an essential oil fungicide treatment. It has clove oil, and I don't know what else is in the formulation, but Sporan and Final Stop are the names mentioned. Do you have any opinion on the use of this product?

I do not have any information or experience with those products. You might want to contact Amanda Gevens or Erin Silva for further information.

Comment from Julie Dawson: We are using EF400, a botanical on tomatoes. Doug Rouse has been doing some trials in Michigan and it has been shown fairly effective. It appears to be a much better alternative to copper, but more expensive at $200/gallon. These contain clove, rosemary, and peppermint oil as well as some other inactive ingredients that are Generally Recognized As Safe (GRAS). I don't know of too many growers who are using these because of cost, but there is a lot of interest because there is less risk than copper.

Best Practice for Managing Water Molds in Organic Production

In organic production, what is the best practice for managing water molds? Is solarization or rotation better, especially in limited space production?

Rotate as much as possible because water molds have very long lived resting spores that take a while to decline. Non-oomycetes(non-water molds) will decline faster with rotation and good debris management, and sometimes the best option is to stop growing a crop for a while. There is some research being done using cover crops, specifically brassicas or mustards, with incorporation as green manure to get rid of water molds. Solarization could be effective if you can get the temperature up, but that is hard to do.

In small space gardening, like in containers, can the spent soil be put into the garden or the compost pile to extend the life of that soil? I suspect that neither of those are good options if those organisms are present.

Unless you are doing hot composting, it is difficult to get rid of those tough resting spores and there is a possibility of contamination of the soil or the compost. Even with hot composting, you may have survival of some spores. If there is any indication of Pythium or Phytophthora or verticillium, it is recommended that the soil be discarded in the land fill or put in an area that is not used to grow things. There are not enough hot sunny days in Wisconsin to get high enough temperatures for long enough to kill things. Using a combination of strategies gives a better chance at control. Water molds can be very stable in soil so they are a challenge to manage.

SPECIAL TOPIC: Breeding Tasty Vegetables

Presented by Julie Dawson, UW-Madison/Extension (Dept. of Horticulture)

Brian sent slides from Julie to accompany her presentation. Julie has been in her position as the Urban and Regional Food Systems specialist for two years. Her stakeholders are urban and peri-urban growers who may sell wholesale to co-ops or directly to restaurants or consumers. The project she is presenting here is the collaboration between farmers, growers, chefs, and plant breeders in the private and public sector to develop crop varieties that meet the needs of all of the aforementioned stakeholders.

Background Information on the Collaboration to Breed Vegetables

The growers are mainly small urban and peri-urban producers who market directly to their consumers on a local level. Their operations fall somewhere between large scale producers and home gardeners, but this work is also pertinent to home gardeners. The farms are small scale and tend to have a diversified mix of crops that focus on food quality and flavor.

One of the challenges in implementing this effort was that these small growers do not come to the UW as a first source of information. There have been individual efforts to reach out to the growers but we are still trying to build trust and increase the relevance of university research to this group of growers. Fortunately, good food unites people across income levels whether the food is grown in urban or rural CSAs or on market farms.

A common criticism of urban agriculture is that it can't feed the city, but that may not be the priority for urban agriculture. The priority may be to provide high quality vegetables and products rather than a large volume of calories.

There has been increased interest in the last decade in growing varieties for market gardeners using low inputs. Small seed companies have developed varieties that are regionally adapted and work well with low input systems. Some of this development has been a response to seed company mergers where varieties were dropped or where breeding focus shifted to the needs of the Florida or California production market. The small seed companies as well as public sector breeders have stepped in to fill the vacuum left by the mergers. Some people working on regional varieties are:

- Public Sector: University of Wisconsin, Oregon State University, Cornell, University of Florida. Slide 4 shows some of the crops and the associated breeder.
- Small Seed Companies: Johnny's, High Mowing, Wild Garden Seeds, Adaptive Seed, Ball Seed, Hudson Valley Seeds
- Large Seed Producer: Vitalis Seed

Many farmers choose which varieties to grow by doing their own trials. In a survey done by Erin Silva, Alex Lyon, and Julie of all Wisconsin organic growers, 72% do their own trials to decide which varieties to grow. The reasons may be that they are worried a variety will be dropped or they are looking for something new or interesting to market.

Objectives of Seed Trials

The objectives of our seed trials were:

- To find varieties that work very well in Wisconsin for direct market gardening and are high quality.
- To create a network of growers that encompasses gardeners, large scale farms, county farms (we are collaborating with a Rock County farm), and research stations.
- To share quantitative information between the farmers. Self-trial results are usually not quantitative and are shared word of mouth at conferences and by eMail listservs.
- To identify varieties based on what other farmers' experience is.

- To share information in a more structured fashion. This would be helpful in identifying good regional varieties. If a variety works for multiple farmers in a region but not in another region, we can provide that information.

Seed Trial Set-Up

Trial Model

Our seed trials used a regional satellite model. All of the crops trialed were grown at the West Ag Station. Slide 7 lists the crops being tested. Participating farmers could then choose which crops they wanted to trial. There was a core subset that everyone grew; then an individual farmer could add other varieties based on their market or their interest. We had 15 farms and a few gardens.

Chefs and consumers could participate by helping to prioritize which crops to test. For instance, this year, cabbage was dropped in favor of kale.

The crop grown was dependent on the trial site. For example, more melons were grown at the research station because they are harder to grow. Farmers wanted the data but not the risk of growing them in the first year.

Data Collection

Each variety has a series of questions to be answered. Some varieties were new and some were already on the market. A sample data collection form, shown on Slide 9, was designed to be easy to complete and to share.

Data collection was geared toward improving informal interaction between chefs, consumers, growers and breeders so breeders can prioritize varieties with better flavor and marketability while delivering agronomic traits such as resistance to diseases present on growing sites.

Chef Involvement

We worked with chefs who care about the economic survival of small scale farms to identify varieties that have great flavor, but also good growing characteristics. The benefit of involving chefs is that they are able to articulate why the flavor is good. They have sophisticated palates and they are able to communicate with the breeders those flavor characteristics.

Varieties were first tested by UW and favorites were identified and passed onto the chefs for their input. We also invited the public for taste testing during Farm Tech Days, Urban Horticulture Day and the Organic Vegetable Field Day (held on September 8).

Overarching Goal of Seed Trials

The main goal of these trials is to involve the consumers in the breeding programs to develop the best varieties for them. 'Best' can mean different things to different stakeholders. It can mean best flavor, best quality, best appearance, best performance in diverse systems, long shelf life or good shipping characteristics. As long as there is genetic diversity, breeders can select any of these desirable traits for their breeding lines.

Slide 11 depicts a quote by Dan Barber, chef at Stone Barns Center and one of the people who kicked off these efforts at conference in New York City. It articulates the goal of consumer involvement in breeding programs.

Heirloom varieties were selected by growers and farmers for flavor and performance. They were never meant to be museum pieces, but rather continually evolving. We want to bring back the involvement of growers, farmers, chefs, and consumers so that once a variety is on the market it does well enough to become a workhorse for local systems.

Presentation Wrap-Up

Slide 12 gave information on the UW Organic Vegetable Field Day and Slide 13 acknowledged the contributors to the project including the research group, staff, students, farmers, and breeders. Julie then opened it up for discussion and questions regarding the vegetables being trialed, production methods such as tomatoes in hoophouses or field grown or using season extenders.

Questions/Comments

Agronomic Scale of Trial

At what scale is the breeding program agronomic?

We are working on small bed production, typically 3-5 acres. Some farms are bigger, some are smaller. They may have 5-6 beds which are 4 x 100 ft. At the research station we are working on smaller plots, like you might see in garden production. We are looking for varieties for commercial production, but not necessarily on the wholesale level of production.

Number of Trial Sites Needed

How many trial sites are needed? Is it useful to have a farmer trial just one variety?

Yes, if someone could work the trial into their normal production, make the data observations a couple of times during the season and manage the trial just as they would their other varieties. As the program builds over time, we'd like to expand to more farms and eventually develop a network in different regions that cover the state. That way we can recommend varieties when people call asking for information.

Fundraising Stability

What is the fundraising stability?

Most farmers do it as part of their operations but we are trying to get grants for offer stipends to farmers that are doing more work than normal. We were able to secure a SARE grant to fund some farmers who are doing hoophouse vs. field grown tomato trials because those trials require more measurements. For the variety trials at the research station, we are charging a service fee to the seed companies. We are not charging for public sector lines yet, but we may have to in the future. Some of this is currently being funded by my start-up package and I don't want to or actually can't continue that. There is enough interest by seed companies to a have Midwest trial site, especially since many of the seed companies are on the coast. I am interested in collaborating with a new seed company in Madison. There may be some funding from that. For MG networks, it may be a fun citizen science program that won't require a lot of funding. I am writing a lot of grants and trying to keep this going with grants.

Factors to Consider When Moving Trials to Northern Wisconsin

The simple evaluation sheet is good for sustaining participation. Your map with the growing sites centered around Madison is a common sight. As you consider moving north and involving other sites, one of the factors is our short growing season. Selecting appropriate varieties that ripen before a killing frost or including season extenders is something that has to be worked in.

We are definitely doing row covers and cold tolerance trials on the greens and kale as well as the hoophouses for tomatoes. We are doing winter carrot trials with harvest in the fall and using winter protection to determine how different varieties respond to the cold. I would like to keep pushing that into winter. A lot of the breeders are from the northern tier; Johnny's is in Maine, High Mowing is in Vermont, and they see the same cold we do. Cornell and Wisconsin also see the cold, although some of the breeders are from further south. Oregon State has some coastal protection, but that ends past the Cascade Mountains. Wild Garden Seeds and Adaptive Seeds are out of the Pacific Northwest. We are also trying to incorporate season extenders into our trials.

FINAL NOTES and ANNOUNCEMENTS

- On September 4, Trisha Wagner from Jackson County will host and the special topic will be Straw Bale Gardening (and Other Tight Space Gardening Tips) presented by Sharon Morissey of the Milwaukee County Extension.
- Lisa Johnson from Dane County: On October 4-6, the Cut Flower Growers will hold a conference in Madison at the Sheraton Hotel. Roy Klehm, Brian, and PJ among others, will be on hand. There will also be a tour. You can find out about it at www.ascfg.org/
- Kimberly Miller from Winnebago: As a reminder, our Invasive Species Workshops will begin mid-September at five locations around the state. Early bird deadlines are in early September.

- Kevin Schoessow at Spooner Ag Station: Our final garden seminar will be held September 12 at 10 am at the Teaching and Display Garden. The topics are about putting the garden to bed.
- Our Douglas County MGVs will be doing a garden walk about their project on straw bale gardening.

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 #29 is available at http://www.plantpath.wisc.edu/wivegdis/

Topics in issue #29 (Aug 28, 2015) include:

- Early blight and late blight forecasts
- Late blight updates and management for late season/harvest
- Potato tuber blemish disease management
- Downy mildew updates for cucurbits
- UW West Madison ARS Organic Vegetable Field Day agenda (Dr. Julie Dawson, UW-Hort)

Please continue to communicate new detections of late blight to me or your county agent. My lab (as well as the UWEX clinic) can offer free diagnostics and genotyping. This information is very useful in better understanding the epidemic for best management.

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 August 22, 2015 through August 28, 2015.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
DECIDUOUS WOODY ORNAMENTALS			
Lilac	Phomopsis Canker	Phomopsis sp.	Sawyer
	Sphaeropsis Canker	Sphaeropsis sp.	Sawyer
Oak (White)	Chlorosis	None	Shawano
	Tubakia Leaf Spot	Tubakia sp.	Shawano
Oak (Unspecified)	Oak Wilt	Ceratocystis fagacearum	Monroe
FRUIT CROPS			
Blueberry	Chlorosis	None	Milwaukee
HERBACEOUS ORNAMENTALS			
Bee Balm	Powdery Mildew	Oidium sp.	Waukesha
Black-Eyed Susan	Septoria Leaf Spot	Septoria sp.	Waukesha
Coleus	Downy Mildew	Peronospora sp.	Dane
Moss	Rhizome/Crown Rot	Phytophthora sp., Pythium sp., Rhizoctonia sp.	Rock
Sedum	Root/Crown Rot	Phytophthora sp., Fusarium oxysporum	Columbia
NEEDLED WOODY ORNAMENTALS			
Pine (Scots)	Diplodia Shoot Blight and Canker	Diplodia sp.	Winnebago
Spruce (Unspecified)	Cytospora Canker	Leucocytospora kunzei	Winnebago
VEGETABLES			
Celery	Cucumber Mosaic	Cucumber mosaic virus	Dane
	Tobacco Mosaic	Tobacco mosaic virus	Dane
Potato	Bacterial Soft Rot	Miscellaneous soft rot bacteria	Portage
	Verticillium Wilt	Verticillium sp.	Oneida
Squash (Winter)	Powdery Mildew	Oidium sp.	Dane
	Downy Mildew	Pseudoperonospora cubensis	Dane
Tomato	Cucumber Mosaic	Cucumber mosaic virus	Outagamie
	Late Blight	Phytophthora infestans	Kenosha, Wood
	Septoria Leaf Spot	Septoria lycopersici	Dane
	Tobacco Mosaic	Tobacco mosaic virus	Outagamie

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