Wisconsin Horticulture Update Summary June 21, 2013

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WI WEATHER REVIEW

For the week ending June 17, 2013, temperatures were warmer and sunshine prevailed, although storms brought more rain to much of the state. Development of all crops was lagging, with growing-degree-days measures ranging from 22 GDD behind in Green Bay to 100 GDD behind in Eau Claire. Fruit and vegetable crops were reported to be developing more slowly than normal, but quality was good.

Across the reporting stations, average temperatures last week were 1° to 2° above normal. Average high temperatures ranged from 72° to 80°, while average low temperatures ranged from 55° to 60°. Precipitation totals ranged from 0.64" in La Crosse to 2.62" in Madison. (WI Crop Report)

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 360.4 to 891.9. Following is a list of GDD as of June 21, 2013 for the following cities: Bayfield 360.4, Beloit 891.9, Crandon 510.2, Cumberland 555.1, Dubuque 819.1, Eau Claire 641.0, Fond du Lac 637.3, Green Bay 558.0, La Crosse 712.6, Madison 772.0, Milwaukee 608.2, Wausau 562.4. To determine the GDD of any location in Wisconsin, use the degree day calculator at the UW Extension Ag Weather webpage http://www.soils.wisc.edu/uwex_agwx/thermal_models/degree_days

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. Common lilac first bloom 207; common flowering quince full bloom 208; Sargent crabapple first bloom 213; wafaring tree viburnum first bloom 227; **elm leafminer adult emergence 228**; Koreanspice viburnum full bloom 33; eastern redbud full bloom 254; common horsechestnut first bloom 260; **pine needle scale egg hatch 1st generation 277**; Sargent crab full bloom 282; **eastern spruce aldegid egg hatch 283**; wayfaringtree viburnum full bloom 287; blackhaw viburnum first bloom 301; redosier dogwood first bloom 311; common lilac full bloom 323; **lilac borer adult emergence 324**; Vanhoutte spirea first bloom 329; common horsechestnut full bloom 344; **lesser peach tree borer adult emergence 362**; **oystershell scale egg hatch 363**; blackhaw viburnum full bloom 370 pagoda dogwood first bloom 376; redosier dogwood full bloom 408; Vanhoutte spirea full bloom 429; black locust first bloom 455; pagoda dogwood full bloom 486; smokebush, first bloom 501; common ninebark first bloom 507; arrowwood viburnum first bloom 534; **bronze birch borer adult emergence 547;** black locust full bloom 548; **potato leafhopper adult arrival 568; juniper scale egg hatch 571;** common ninebark full bloom 596**;** 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**; northern catalpa full bloom 816; **cottony maple scale egg hatch 851**; panicle hydrangea first bloom 856; **fall webworm egg hatch, first generation 867**; **winged euonymus scale egg hatch 892; spruce budscale egg hatch 894**; winterberry holly full bloom 897; European pine shoot moth adult emergence 900; Fletcher scale crawlers 900; littleleaf linden first bloom 953; **Japanese beetle adult emergence 970**; littleleaf linden full bloom 1115; bottlebrush buckeye first bloom 1158; Ural false spirea first bloom 1170.

INTRODUCTION

The host for today's WHU was Waukesha horticulture educator Ann Weid. PDDC Director Brian Hudelson, Insect Lab Director Phil Pellitteri, turf diagnostician and senior researcher Paul Koch, and Portage Co. agriculture educator Ken Schroeder were special guests. Participants in today's discussions were representatives from the following counties: Brown (Vijai Pandian), Columbia (George Koepp), Kenosha (Barb Larsen), Outagamie (Jill Botvinik), Portage (Sophie Demchik), Waukesha (Kristin Krokowski, Ann Weid).

HORTS' SHORTS

Agents reported the following issues to be of interest this week: Cool temperatures and precipitation continued this week, encouraging turf growth and flowering and fruiting of ornamental trees. Not surprising, due to the moist weather conditions, leaf diseases such as anthracnose, penstemon rust and basil downy mildew have been observed. Oak tatters was diagnosed in Waukesha, another malady blamed on weather. Peach leaf curl, maple bladder gall, blister mites and aphids were reported, but, finally, the good guys rebounded this week with observations of ladybug larvae coming to the rescue.

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

The PDDC update is attached to the end of this summary.

Leaf Diseases

Leaf diseases have been expected due to the cool moist spring weather. Anthracnose, one of the fungal leaf diseases, has been diagnosed on hickory, honeylocust, oak, maple and ash. Necrotic spots observed on maple may also be due to anthracnose or one of many other leaf diseases, although probably not yet due to tar spot, a disease expected later in the season.

Anthracnose (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Anthracnose.pdf

Tar Spot (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Tar_Spot.pdf

Herbicide Damage

Herbicide drift damage has been seen on a variety plants, in particular a sample of dawn redwood that exhibited twisted needles indicative of growth regulator damage.

Herbicide Damage (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Herbicide_Damage.pdf

Diplodia Tip Blight

The first case of Diplodia tip blight was submitted, with the potential of many more to come. The *Diplodia* fungus tends to be more aggressive when plants are under water stress, and following last year's drought, many conifers will be suffering carryover effects from lack of water.

Diplodia shoot blight (UWEX):
http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Diplodia_Shoot_Blight_and_Canker.pdf

Plum Pockets

Plum pockets, a *Taphrina* disease related to peach leaf curl, was diagnosed on a plum tree where a majority of the fruits were hollow and spongy, typical symptoms for that disease. Peach leaf curl affects leaves, while the variation of the *Taphrina* fungus in plum pockets affects fruit.

Peach Leaf Curl and Plum Pockets (UKY): http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-FR-T-1.pdf

SPECIALIST REPORT: Insect Diagnostic Lab Update

Presented by Phil Pellitteri, Distinguished Faculty Associate, UW-Madison Department of Entomology and Director, UW-Extension Insect Diagnostic Lab pellitte@entomology.wisc.edu

Ants and Ticks

The dominant topics of the week were ticks and ants. Carpenter ants were swarming, field ant nests were abundant, and ants were invading homes.

Have you mentioned anything that could be sprayed in yards to deter ticks?

Ticks typically are not problems in mowed lawns, those are like deserts for them. They could come in from areas of higher vegetation and thick woods. Research from the east coast on lyme disease-carrying wood ticks, where ticks are more prevalent on lawns in a moist environment, has defined strategies that work. Sevin, permethrin and other products are effective, but need to be applied on the litter before vegetation starts growing. The best time to treat an area would be with a single application in late April; one application is sufficient because ticks are slow to breed. If someone insisted on treating now, encourage them to spray the edges of the areas near tall growth, and not the mowed lawn. For folks taking walks in long grass, recommend wearing long pants and spraying clothing with a tick repellent.

Do ticks hang out in trees?

No, their prey, such as deer and rabbit, are closer to the ground, and since they can only sense them from a few inches, it would not be efficient for them climb up trees. They tend to be on ground vegetation and shrubs.

Insect ID Ants (UWEX): http://www.entomology.wisc.edu/insectid/ant.php

Controlling Carpenter Ants (UW): http://www.entomology.wisc.edu/diaglab/pdfs/homepests/ControllingCarpenter%20ants.pdf

Wisconsin Ticks (UW): http://labs.russell.wisc.edu/wisconsin-ticks/wisconsin-ticks/

Deer tick control (UWEX): http://www.entomology.wisc.edu/diaglab/pdfs/homepests/ticks.pdf

Weather Woes

While walking through the woods, all the spring defoliator caterpillars encountered seemed to be sick or dying. This year's weather patterns were keeping their damage to a minimum.

The weather probably is the cause for declining insect populations such as bees and butterflies. Last year's drought impacted many of their plant resources, reducing populations that came into this spring. The cool weather this year added additional stress to already lightened populations.

Monarch population decline (Purdue): http://www.entomology.wisc.edu/diaglab/pdfs/homepests/ticks.pdf

Questions

A client has two purple white ash trees. One is riddled with randomly-placed dime-sized holes in the trunk starting from 3 feet above ground to the first set of branches. What can be doing that and how should she deal with it?

It seems to be the work of the ash borer, a clear-wing moth borer related to the viburnum borer. The trees usually tolerate the damage, showing little sign of stress other than some canopy thinning. The moth lays eggs, typically from head height down in the trunk; the pencil diameter-sized holes are emergence holes. If the tree does not show signs of decline, there is no need to do anything, but if it is stressed, permethrin can be used on it. Dursban previously was the chemical of choice for this problem but is no longer available for sale; if some were sitting on the garage shelf, it could still be used.

The only other pests that could cause such holes to a tree trunk would be some of the horntails. They come and go, but prefer maples not ash.

Ash borer (UMN): http://www.entomology.umn.edu/cues/Web/088ClearwingBorers.pdf

SPECIAL REPORT: Turf Update

Presented by Paul Koch, PhD, Associate Researcher Turfgrass Pathology and former turfgrass diagnostic lab director plkoch@wisc.edu

Red thread, a problem seen on home lawns a few weeks ago, has subsided on its own and is no longer a problem.

A few samples of leaf spot have come into the lab, caused by *Dreshslera* fungi. It is not of significant concern because it does not cause much damage.

The first signs of necrotic ring spot have been seen, a frustrating disease often affecting newer Kentucky bluegrass lawns established within the last five to eight years. The damage is just starting to be observed, but it seems it will be a bad year for this problem because of the extended period of cool weather this spring. Necrotic ring spot fungus affects turf grass roots when soil temperatures are between 55° and 65°; there has been a long period of such conditions this year.

Dandelions are finally coming under control by folks working hard to manage them this year. They were very heavy this spring and required lots of work to keep them at bay.

Another weed that may flourish this summer if the moisture continues is crabgrass.

Bruce Schweiger is the new turfgrass diagnostic lab manager, handling the day-to-day operations in the turf lab. Paul will be around for the time being training Bruce. http://tdl.wisc.edu/BruceSchweiger.php

Red thread (UW): http://tdl.wisc.edu/pinkred.php

Dreshlera leaf spot (UW): http://tdl.wisc.edu/lspot.php

Necrotic ring spot (UW): http://tdl.wisc.edu/nrs.php

Lawn disease quick reference (UWEX):
http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Lawn_Disease_Quick_Reference.pdf

SPECIAL TOPIC: Irrigation

Presented by Paul Koch, and Ken Schroeder, Associate Professor and Agriculture Agent for Portage County. Ken works with commercial and fresh market vegetable growers.

Turfgrass Irrigation

This year, with the abundance of rainfall, lawn irrigation issues have not been as pressing as they were last year during the drought, but the following guidelines apply for most situations.

During most Wisconsin summers, lawn irrigation is not required for turf survival; it is only necessary for lush, green, thriving turf. In general, turf requires about one inch of water per week, but that requirement will vary based on turf grass species, environmental conditions, soil conditions, soil texture, traffic on the lawn and the aesthetic demands of the owner. The required quantity will range from much lower if it is cool, to much higher if it is very warm and windy.

When water deficit occurs below one inch for a several week period there can be some initial drought stress. Drought stress on turf might appear as slightly brownish or silverish turf and there will be foot printing in the lawn. When those symptoms occur, irrigating can relieve the stress, and that is when a deep and infrequent irrigation schedule is recommended. Usually not more than twice per week, one should water for a longer period of time than if watering frequently. When watering for those deep, infrequent periods, aim to put out ¼- to ½-inch of water each time; for most irrigation systems, it may be between 20 and 30 minutes, although it will vary based on the system.

It is recommended to water in the morning to limit evapotranspiration. Night watering will lead to increased diseases.

Problems that may occur with frequent or daily irrigation are unhealthy, shallow-rooted plants that encourage weed encroachment, especially bentgrass, crabgrass and bluegrass. It also may encourage foliar diseases such as leaf spot, red thread and *Rhizoctonia* brown patch. A “smart” irrigation system will sense rain and refrain from turning on when it is not needed, but most irrigation systems are not programmed that way. For traditional irrigation systems, it is best not to run them on a regular interval, but to manually turn them on when it is dry.

Turfgrass is generally fairly drought tolerant and does not need as much care and water as purported. During last year’s drought, Kentucky bluegrass lawns did quite well, handling six to seven weeks of dormancy if it were healthy, and requiring just a bit of water after that to keep it alive. When rain returned, it greened up again. For a lush green turf carpet, irrigation would have to be more frequent, but for the most part, Kentucky bluegrass handles drought quite well.

There are more drought tolerant grasses species than Kentucky bluegrass, like fine and tall fescues, that require less water to stay green and actively growing, but those turfgrasses do not have the same capacity to go dormant as Kentucky bluegrass does. Last summer, many lawns that went brown and did not recover were fine fescue or perennial ryegrass. Kentucky bluegrass that turned brown mostly came back through simple regeneration from the crown that stayed alive during dormancy; in some cases where the crown died, it re-sprouted from the rhizomes surviving in the soil. Kentucky bluegrass has high recuperative ability even in severe drought.

Tips for Conserving Water

Healthy turfgrass plants in general will withstand stress, including drought. If mowing height is at the proper height of 2 ½ to 3 ½ inches, plants are properly fertilized, and the soil is healthy and not compacted, the turf will be more resistant to drought and other stresses.

Kentucky bluegrass lawns, allowed to go dormant for four- to six-weeks, will bounce back when watered at that point or it rains. There really is no need to water a Kentucky bluegrass lawn unless a green lush lawn is desired for summer.

Drought tolerant grasses such as tall fescue may be considered for lawns, staying green during most of the summer. The downside to many of the fescue lawns is that if they turn brown, they are dead, and they are often susceptible to ice damage in winter.

Watering your lawn (UWEX): http://learningstore.uwex.edu/Assets/pdfs/A3950.pdf

Proper Lawn Irrigation June 21st, 2013

Paul Koch, Ph.D. – Associate Researcher
University of Wisconsin – Madison

General lawn irrigation recommendations

- As a generalization, turfgrass requires approximately 1 inch of water per week to survive. However, this requirement can be significantly increased or decreased based on the environmental conditions, soil characteristics, turfgrass species, and desires of the owner.

- If natural rainfall fails to provide adequate moisture for a several week period, irrigation can be supplemented to reach this generalized 1 inch requirement. Irrigation should be supplemented on one or two occasions per week for longer periods of time (i.e. deep and infrequent) as opposed to a short period of time several times per week (ie shallow and frequent). Deep and infrequent watering will promote deeper rooting and healthier turf more resistant to drought.

- The duration of irrigation will depend on the irrigation system and output, but times of 20-25 minutes can generally provide a ½ inch of water with most in-ground or hose-based sprinkers. Irrigate during the early morning hours to prevent disease development and to limit water loss to evaporation.

Ways to limit water usage

- Keep the turf healthy! Healthy plants that are mowed at the proper height and receive the proper amount of fertilization will naturally have deeper roots and be more resistant to drought.

- Allow the lawn to go dormant! Healthy Kentucky bluegrass can go dormant during drought conditions for 4-6 weeks and still recover once rainfall returns. If you have Kentucky bluegrass and don't mind brown turf, there is no need to irrigate in most summers!

- Plant drought-resistant turfgrass species such as Tall fescue (*Festuca arundinacea*) and fine-leaf fescues (*Fesctuca* spp). Please note, however, that these species do not survive long periods of dormancy the way Kentucky bluegrass does and that once they turn brown they oftentimes do not survive.

For more detailed information on lawn irrigation, please see the UW Extension publication titled 'Watering Your Lawn' (A3950) by Dr. Doug Soldat and Dr. John Stier.

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Vegetable Irrigation

Proper irrigation of vegetable crops improves yields and quality of vegetables, reduces diseases and minimizes crop damage. The summer drought of 2012 exemplified the importance of proper water management. There were deformed fruits, blossom end rots and fruit cracking due to the irregular availability of water. For example, fruit would grow and enlarge to a certain point and set its skin when water was withheld; when water became available again the fruit, unable to expand further, would crack. Another concern with irrigation is how it impacts water quality. In sandy soils, overwatering may cause nitrogen and potash to enter the groundwater. In clay soils, overwatering may create runoff.

The amount of water applied depends on soil type, temperature, humidity, crop and stage of plant maturity; germinating plants, seedlings and plants with full canopies have different moisture needs. As a very general rule of thumb, 1- to 1½- inches of water is needed on sandy soils to keep up with transpiration in midsummer, but varying soil types have different needs. Allowable depletion, a measure of the amount of water that can be taken out of the soil to allow the plant to grow and develop without wilting, is 1½-inch of water per foot of soil in clay; 1- to 1⅓- inch water per foot in silt loam; and ¾ -inch of water per foot in sandy soil. On a hot sunny day with a full canopy of crops, crops can transpire ¼- to ⅓-inch of water in one day, so on sandy soils, water will be required every two to three days just to keep up with transpiration. On clay soils, watering once a week may be adequate.

It takes 2700 gallons of water to irrigate one acre to one-inch of water. On a smaller, garden scale, it takes 60 gallons to make one-inch over 100 square feet. Slow irrigation is best, especially for clay soils. To deliver that amount of water most efficiently, drip irrigation is much better than sprinkler; water is applied more precisely to desired root zones and not surrounding weeds, it reduces soil erosion, controls leaching, and reduces leaf moisture. Wet leaves are more susceptible to leaf diseases, such as late blight in tomatoes and potatoes when the innoculum for the disease is present. Measuring the amount of water output from soaker hoses may be done by running the hose and measuring how deep the water penetrates, or coiling the hose in a large bucket and measuring the quantity collected per period of time. Variables such as water pressure and how wide the faucet is open are factors. Irrigation or drip tape is sold rated by gallons per minute flow per hundred feet of row, commonly found sized from 0.2 gallons to 1 gallon per minute. For vegetables often the standard irrigation rate is ½ gallon per minute per 100-foot.

Questions:

If a tree watering guideline is 1- to 2-inches per week, how many gallons does that translate to?

About 5- to 10- gallons per week to a newly transplanted tree in sandy soils; less for trees planted in clay soil.

In an area with high mineral content in the irrigation water, what is better to irrigate with, soaker hose or drip irrigation?

Both the perforated black hoses and drip tape could clog with time. As part of general maintenance, there are mild chlorine solutions available to dissolve some of the accumulated mineral deposits.

Irrigating your vegetable garden (UNR): http://www.unce.unr.edu/publications/files/ho/2010/fs1016.pdf

Drip irrigation for home gardens (Colostate): http://www.unce.unr.edu/publications/files/ho/2010/fs1016.pdf

Drip irrigation an introduction (Oregonstate): http://extension.oregonstate.edu/catalog/pdf/em/em8782-e.pdf

General Questions

A Master Gardener reported having chlorosis on roses, petunias and junipers. He added iron sulfate to roses and magnesium sulfate to the junipers and petunias. He would like to know how long it takes to see results from the soil additives.

Chlorosis symptoms are yellow leaves with distinctive green veins. Before treating with additives, it is recommended to get a soil test first. The problems may be due to pH rather than nutrient deficiencies. Iron and manganese, not magnesium, could be the issues and if the wrong nutrient is added, the problems could be exacerbated. Rugosa roses, often in the parentage of many shrub roses, are known to have problems with pH. Annuals may have a problem with nitrogen leaching due to too much rain.

Chlorosis (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Chlorosis.pdf

A client has a 50-year old Siberian elm with two trunks forked at the ground. One of the trunks is dead and the other has bacterial wetwood. She wonders if she should remove the dead trunk. Will the wetwood infect other tree species and could woodpeckers transmit it?

Literature suggests wetwood is a bacterial infection through the root. Elms are notorious for having wetwood, although it could be on birches that leak sap and are later colonized with brightly colored pink or orange fungi. Most often, trees develop a tolerance for the problem because the flux draining down the trunk dries up. Bacteria get into the vascular tissue and produces gases, which when built up, cause a rupture for sap and wet material to escape out the trunk. The wet material often stains the bark. It can be a chronic problem, occurring every year on a tree, but it is mostly cosmetic, not causing serious problems. It can move to other species but is most often found on elms.

The dead trunk should probably be taken down during the dormant season when it is less likely to get any fungi into the cutting wound that may cause other problems.

Bacterial wetwood (UWEX): http://hort.uwex.edu/sites/default/files/Bacterial%20Wetwood.pdf

ANNOUNCEMENTS

Events

WI Farm Technology Days. July 9-11. Breezy Hill Dairy, Barron Co. Master Gardeners are needed to answer questions at the event; contact Mike Maddox or Diana Alfuth. For general information on Farm Days: http://www.wifarmtechnologydays.com

WI Turfgrass Field Days. July 30. AJ Noerr. For general information on Turfgrass Field Days: http://www.wisconsinturfgrassassociation.org/Field_Day.htm

FINAL NOTES

Next Friday's conference will be hosted by Vijai Pandian. New and Exciting Ornamentals will be the topic presented by Laura Jull.

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 Science http://turf.wisc.edu/

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 http://turf.wisc.edu/

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:

New Garden Facts

There are three new fact sheets available in the University of Wisconsin Garden Facts series: Black Rot of Crucifers, Huitlacoche, and Maintaining Lawn and Garden Tools. These are now available at both the PDDC website: http://labs.russell.wisc.edu/pddc/fact-sheet-listing/
and the UW-Extension website:
http://hort.uwex.edu/articles/black-rot-crucifers
http://hort.uwex.edu/articles/huitlacoche
http://hort.uwex.edu/articles/maintaining-lawn-and-garden-tools

In addition, the University of Wisconsin Garden Facts fact sheet "Lawn Disease Quick Reference" is now available on the UW-Extension Horticulture website: http://hort.uwex.edu/articles/lawn-disease-quick-reference

Vegetable Crop Update

Vegetable Crop Update #9 is available at http://www.plantpath.wisc.edu/wivegdis/

Topics covered in this issue are:

- DSVs/Blitecast for late blight management in tomato/potato
- PDays for early blight management in potato
- Blackleg of potato
- Cucurbit downy mildew

PDDC UPDATE

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

Brian Hudelson, Ann Joy, Erin DeWinter and Joyce Wu, Plant Disease Diagnostics Clinic

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 8, 2013 through June 14, 2013.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
BROAD-LEAVED WOODY ORNAMENTALS			
Hickory	Anthracnose	*Colletotrichum* sp.	Dane
Honeylocust	Anthracnose	*Gloeosporium* sp.	Dane
HERBACEOUS ORNAMENTALS			
Delphinium	Bacterial Leaf Spot	*Pseudomonas syringae* pv. *delphinii*	Mchenry (IL)
Stokesia	Cucumber Mosaic	Cucumber Mosaic Virus	Mchenry (IL)
NEEDLED WOODY ORNAMENTALS			
Arborvitae	Phomopsis Canker Phyllosticta Needle Blight Root Rot	*Phomopsis* sp. *Phyllosticta* sp. *Pythium* sp., *Fusarium* sp.	Chippewa Chippewa Chippewa
Dawn Redwood	Growth Regulator Herbicide Damage	None	Dane
Pine (Red)	Diplodia Shoot Blight and Canker	*Diplodia pinea*	Dane
Pine (Scots)	Brown Spot	*Lecanosticta acicula*	Mchenry (IL)
Spruce (Blue)	Rhizosphaera Needle Cast Phomopsis Canker	*Rhizosphaera kalkhoffii* *Phomopsis* sp.	La Crosse La Crosse
Spruce (Unidentified)	Rhizosphaera Needle Cast Phomopsis Canker Spruce Needle Drop Water Stress	*Rhizosphaera kalkhoffii* *Phomopsis* sp. *Setomelanomma holmii* None	Polk Polk Polk Polk
Yew	Phyllosticta Needle/Twig Blight	*Phyllosticta* sp.	Dane
VEGETABLES			
Basil	Sunburn	None	Dane

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