Wisconsin Horticulture Update August 23, 2013

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WI WEATHER REVIEW

For the week ending Aug. 18, 2013, farm crops and gardens were in need of rain after a fourth week of below average temperatures and very little precipitation. On average, soil moistures were 59% short to very short this past week, compared to 44% last week and 62% on Aug. 18, 2012. A few reporters in north central Wisconsin

noted spotty frost midweek. Late planted crops reportedly continued to lag behind normal development, as heat was still needed for the plants to pollinate successfully.

Across the reporting stations, average temperatures last week were 4° to 5° below normal. Average high temperatures ranged from 74° to 80°, while average low temperatures ranged from 50° to 58°. Precipitation totals ranged from 0.01" in Green Bay to 1.15" in Milwaukee. (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 1252.6 to 2214.0. Following is a list of GDD as of Aug. 23, 2013 for the following cities: Bayfield 1252.6, Beloit 2214.0, Crandon 1464.6, Cumberland 1658.7, Dubuque 2087.6, Eau Claire 1868.8, Fond du Lac 1789.7, Green Bay 1695.4, La Crosse 1995.9, Madison 2030.4, Milwaukee 1763.5, Wausau 1597.8. 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 233; 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 867;** fuzzy deutzia full bloom 884**; winged euonymus scale egg hatch 892;** chickory full bloom**, squash vine borer adult emergence 900; Japanese beetle first emergence 970;** littleleaf linden full bloom 1117; Rose-of-Sharon first bloom 1347**; pine needle scale egg hatch, 2nd gen. 1923; magnolia scale egg hatch 1938; banded ash clearwing borer adult emergence 2195.**

INTRODUCTION

The host for today's WHU was Walworth Co. Horticulture Educator Chrissy Wen. PDDC Director Brian Hudelson, Insect Diagnostic Lab Director Phil Pellitteri and Agronomy Scientist Erin Silva were special guests. Participants in today's discussions were representatives from the following counties: Brown (Vijai Pandian), Douglas (Jane Anklam), Kenosha (Barb Larsen), La Crosse (Steve Huntzinger), Milwaukee (Sharon Morrisey), Portage (Sophie Demchik), Racine (Patti Nagai), St. Croix (Heidi Doering), Walworth (Chrissy Wen), and Winnebago (Kim Miller).

HORTS' SHORTS

Agents report the following issues to be of interest this week. Precipitation was scattered this week, providing some areas with welcome showers but leaving some areas very dry. Cool temperatures still prevailed in much of the state, keeping growing degree-days behind normal, but the few warm days this week brought a blush to green tomatoes. Erratic environmental conditions had caused some tomatoes to catface. Late blight on tomato was reported in Racine and suspected in Milwaukee Counties. Trees, especially ash and oak, were beginning to show signs of drought stress with premature fall color. Emerald ash borer was confirmed at the DNR exhibit of State Fair

Park in Milwaukee and also in Douglas Co., home of the largest county forest in the state. Douglas Co. is now under quarantine. Insects of note this week were earwigs, slugs, soldier beetles, hornets and wasps.

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.

Weekly Disease Report

Vascular wilts were the most common issue seen on clinic samples this week. **Verticillium wilt** was found on Catalpa, Japanese Tree Lilac and snowbush.

Oak wilt was detected in Marathon, Richland, Dane and Rock Counties, bringing the total positive finds to thirty this year.

Fungal leaf spots were seen on many hosts. One sample had two fungal delights, a classic case of **powdery mildew**, and **cherry leaf spot**. Both versions of **tar spot** were seen, the native type on silver maple, and the introduced type on Norway maple.

Downy mildew of impatiens was on an upsurge, with cases found in Dane and Oneida Counties this week. Tests for this disease continue to be done free of charge.

Late blight on tomato was confirmed in Oneida County.

Verticillium Wilt (UWEX):
http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Verticillium_Wilt_of_Trees_and_Shrubs.pdf
Oak Wilt (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Oak_Wilt.pdf
Powdery Mildew (UWEX):
http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Powdery_Mildew_Woody_Ornamentals.pdf
Cherry Leaf Spot (OSU): http://ohioline.osu.edu/hyg-fact/3000/pdf/HYG_3021_08.pdf
Tar Spot (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Tar_Spot.pdf
Impatiens Downy Mildew (UWEX):
http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Impatiens_Downy_Mildew.pdf
Late Blight (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Late_Blight.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

Weekly Insect Report

Yellowjackets have been making their presence noticed, typical for this time of year, but their numbers have been low.

Two insects continuing to be a nuisance in homes were the **strawberry root weevil** and **bird mite**. Strawberry root weevil, reportedly entering homes in large numbers in scattered locations, do not cause damage and do not breed indoors. Remove them with a broom or vacuum; no insecticides are necessary. Bird mites, a problem for the past few weeks, have been a painful pest when they bite inhabitants. They can be controlled by removing bird nests on, or near residences.

Defoliating insect numbers were on the decline.

Boxelder bugs, preferring the recent drier conditions, may see a increase in their population.

Nuisance Wasp and Bees (Colorado State): http://www.ext.colostate.edu/pubs/insect/05525.html
Strawberry Root Weevil (UMN): http://www.entomology.umn.edu/cues/Web/206StrawberryRootWeevil.pdf
Bird Mites (PSU): http://ento.psu.edu/extension/factsheets/bird-mites
Boxelder Bugs (UWEX): http://labs.russell.wisc.edu/pddc/files/Fact_Sheets/FC_PDF/Boxelder_Bugs.pdf

Insect Questions

Shot holes in Hosta

Clients have been reporting splatters of tiny shot holes in Hosta leaves. The holes, tiny, round, with no halos, appear similar to flea beetle damage. What could be causing this?

On that host, earwigs, slugs and possibly variegated cutworm cause the most problems, but none of them cause small holes as described. Flea beetles do not bother hosta. It would be recommended to monitor what is happening at night.

Diseases that might cause such damage would be Alternaria leaf spot or bacterial disease. *Alternaria* may cause necrotic spots that could dry out, leaving shot holes. Bacterial diseases that could leave symptoms like shot holes are not common on Hosta. Photos may be helpful in determining whether insects or disease may be causing the problem.

SPECIAL TOPIC: Vegetable Harvest and Post-harvest Storage

Presented by Erin Silva, Organic Production Scientist, Associate Director Center for Integrated Agricultural Systems.
emsilva@wisc.edu

Smaller market growers, CSAs and homeowners are showing an increased interest in growing storage crops. To extend availability of storage crops for three to six months, harvest management and post-harvest handling are very important.

General guidelines for successful storage

Choose the right varieties for a storage crop. Often there are varieties that are bred for better storage conditions.

Practice good field management. Fertility and irrigation can impact post-harvest quality and the amount of time produce can be stored. Insect and disease management are of vital importance. Disease, if already present on one piece of vegetable or fruit, can spread to the entire lot it is stored with. Insects can pierce the flesh of produce, causing entry points for pathogens, and increasing the probability of disease spreading through the lot.

Harvesting at optimal maturity, particularly with cabbage, root crops and winter squash, makes a difference in the quality, but also can impact the post harvest life. Maturation and curing of potatoes, winter squash and onion optimizes the length of time they can stay in storage.

Careful handling of crops, in the field during harvest, and also post-harvest, is an important management strategy for any crop, but particularly for storage crops that will be marketed for three to six months. Bruises from hard handling increase the probability of disease that may not be seen until they are stored for some time. “Produce should be seen and not heard.”

Crop Specific Harvest Conditions and Storage

Carrots

Growers harvest carrots over a wide variety of time. This may be fine for immediate or fresh market use, but when considering storage, they need to be harvested at maturity. Carrots typically mature 100-110 days after planting. The extended harvest date not only allows carrots to reach maturity, but also increases the amount of time they can stay in storage. When carrots are harvested for storage, they should be rinsed in water with a sanitizer, for example 100ppm chlorine, to minimize pathogen load going into storage. They should be allowed to drip dry, and then placed in plastic-lined boxes. Store at 34° and 98% humidity. They can last for several months in storage.

Carrots need to be stored away from exposure to ethylene. Storage with ethylene producing crops such as apples will make carrots bitter.

Parsnips

Parsnip storage is similar to carrots, but the former are susceptible to surface browning due to bruising during harvest. Bruises from rough handling may not show up immediately after harvest, but the impact will show up

during storage. Some cultivars have browning resistance, so with this crop choosing a variety thoughtfully with its impact to storage capability is important.

Parsnips have a sweeter taste with later harvest. To time the harvest for optimal quality and storage, it is best to wait until after the first frost, when starch turns to sugars. Keeping them in cold storage for two weeks can also change the transition from starch to sugar. Although it is best to wait until first frost to harvest, freezing of this root crop will cause browning of the core, something not evident at harvest but during the post-harvest period.

Similarly to carrots, parsnips can be stored for 4-6 months at 34°F and 98% relative humidity.

Rutabagas

Rutabagas are treated similarly to parsnips. Harvest after first frost to maximize the sugar content. Trim tops to 1". Store at 34°F and 98% relative humidity.

Potatoes

Immature crops, especially potatoes, will have thinner skins, or periderms, and are easily bruised and subject to decay. Mature crops have thicker skins. Curing additionally helps to thicken the skin that helps them to hold up during harvesting and creates a barrier that prevents decay.

To initiate the maturation process and skin set for commercial scale potato harvest, slow irrigation and vine kill through chemical or mechanical methods 14-21 days before harvest. Optimally it is beneficial to begin a curing stage immediately after harvesting, where tubers are stored at a higher temperature and relatively high humidity for 10-14 days to allow for the waxy suberin material to set the periderm and seal up any potential wounds that may have occurred during harvest and storage. Higher relative humidity is key to this: keep at 50-60°F at 95% relative humidity for 10 to 14 days, before moving to temperatures for table stock, 40-42°F, 95% relative humidity. Starch turns to sugars in potatoes when stored at 38°F or less, but unlike root crops it is not desired in potatoes; it can negatively impact the quality and health of the tubers.

Winter squash

This year the growing season is progressing so slowly because of cool temperatures that there is a concern that winter squash will not mature. This crop requires the entire growing season to reach maturity, and maturity is necessary to maximize storage. As winter squash mature, they take on a dull appearance and some undergo a color change. Butternut squash turns from light beige to deeper tan. Acorn squash has a yellow spot facing the ground that turns orange when it matures. Spaghetti squash turns from a creamy white to a bright yellow. Delicata squash, a shorter season squash, have a green streak across a white background that takes on a beige-orange blush at maturity. Another indicator of optimal maturity is to press a fingernail against the rind and as the rind begins to get hard it takes quite a bit of pressure to push it in. One more indicator of maturity is that healthy vines begin to die back. It is important to differentiate dieback from maturity and dieback from disease, drought, frost or other environmental conditions that will impact storage. Winter squash foliage are very cold sensitive, and must come off the field before a hard frost.

Stems should be cut to 1 inch and it is best if they are cut flat. Stems cut at an angle may puncture or bruise other fruit during handling, potentially causing pathogens to enter damaged fruit. They can be just dusted off before being put into storage.

Winter squash, except for acorn squash, benefit from a two-week curing period at 70° to 80°F at 80% relative humidity. A hoophouse or greenhouse can help to achieve these requirements.

Store at 50°F and 50-70% relative humidity. Winter squash are ethylene sensitive, having issues with color change when stored with ethylene producing fruit such as apples.

Onions

Optimal maturity for onion is indicated when 80% of the tops have fallen over. Curing onions optimizes storage life by allowing for the thick outer scales to develop and necks to dry down and close tight, preventing pathogens from reaching the scales. Cure at 68-86°F and 70% relative humidity for 2-3 days. If conditions are right, field curing can be done. In the fall, lift the bulbs out of the ground, leave them on the surface, and let leaves cover the bulbs to prevent sunburn. They should not get wet with rain or dew that potentially can cause issues; growers tend to take

advantage of hoophouses or greenhouses for this. After curing, cut the tops to 2". Store at 32°F and 60% relative humidity.

Looking at post-harvest life as well as sprout inhibition in storage, it is important to choose the right varieties. 'Copra' is the gold standard of an onion that lasts a long time in storage and does not tend to sprout easily.

Questions

Uncured root crops

If root crops are not cured, how long do you expect them to last in storage?

Problems can start showing up with root crops within three weeks. The curing process seals up the skin by various mechanisms, preventing entry passages for pathogens. It will vary by the type of pathogen available and how the crop had been handled. Field curing is possible, but rain, frost or freeze can impact the storage.

Spaghetti squash harvest indicators

We are growing Primavera spaghetti squash in one of our demo gardens. The skin color is pale yellow and the fruit full sized. There is no spot on the bottom to indicate a color change. If spaghetti squash is treated as a summer squash, it would be harvested with a softer rind rather than a hard rind, Is that true? Does the drying of tendrils indicate maturity squash? Could the cooler weather be holding back maturity so none of the indicators are working?

I'm not that familiar with spaghetti squash but have seen it classified as winter squash. Spaghetti squash have thinner skins and can store for about one month because of the thinner skin. It is possible with the cool weather this year that vegetables will be maturing later.

Growing Carrots, Beets, Radishes and other Root Crops in Wisconsin (UWEX): http://learningstore.uwex.edu/assets/pdfs/A3686.PDF
Growing Fresh Market Onions, Garlic and Leeks (UWEX): http://learningstore.uwex.edu/Assets/pdfs/A3904-03.pdf
Tuber Maturation and Potato Storabililty (UWEX): http://learningstore.uwex.edu/Tuber-Maturation-and-Potato-Storability-Optimizing-skin-set-sugars-and-solids-P1350.aspx
Commercial Potato Production (Manitoba): http://www.gov.mb.ca/agriculture/crops/potatoes/bda04s08.html

FINAL NOTES

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

Next week, the Wisconsin Horticulture Update will be hosted by Kim Miller. The special guest will be Mark Dwyer, speaking on perennials for foliage.

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:

Vegetable Crop Update

Newsletter #17 (Aug. 20) is available at http://www.plantpath.wisc.edu/wivegdis/

Topics in this issue include:

- Late blight updates; DSVs/Blitecast for late blight management
- PDays for early blight management
- Cucurbit downy mildew updates
- Onion downy mildew
- Release of nitrogen from ESN during cool, mid-summer conditions
- Organic potato variety trial meetings in ND and MN

Spotted Wing Drosophila Update

On Aug. 22, spotted wing drosophila (SWD) was confirmed in La Crosse and Jackson Counties. It has been already confirmed in the following counties this year: Bayfield, Columbia, Crawford, Dane, Door, Grant, Iowa, Jefferson, Lafayette, Marathon, Monroe, Pierce, Racine, Rock, Sauk, Trempeauleau, Vernon, and Washburn. It is suspected to be present in Buffalo, Kenosha, Sheboygan and Wood Counties.

The SWD occurrence map may be found at http://labs.russell.wisc.edu/swd/latest-news/

New SWD management recommendations for grape growers is now available at http://labs.russell.wisc.edu/swd/files/2013/06/Recommendations-for-SWD-Management-in-Grape.pdf

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 August 17, 2013 through August 23, 2013.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
BROAD-LEAVED WOODY ORNAMENTALS			
Catalpa	Vertcillium Wilt	*Verticillium* sp.	Dane
Elm	Anthracnose	*Gloeosporium* sp.	Dane
Hickory	Hickory Bunch	Hickory Bunch Phytoplasma	Dane
Lilac (Japanese Tree)	Vertcillium Wilt	*Verticillium* sp.	Milwaukee
Lilac (Unidentified)	Root/Crown Rot	*Pythium* sp.	La Crosse
Oak (Bur)	Oak Wilt Tubakia Leaf Spot	*Ceratocystis fagacearum* *Tubakia* sp.	Dane Dane
Oak (Red)	Oak Wilt	*Ceratocystis fagacearum*	Rock
Oak (White)	Tubakia Leaf Spot	*Tubakia* sp.	Rock
Oak (Unidentified)	Anthracnose Chlorosis Oak Wilt Septoria Leaf Spot Tubakia Leaf Spot	*Discula* sp. None *Ceratocystis fagacearum* *Septoria* sp. *Tubakia* sp.	La Crosse Dane Marathon, Richland La Crosse Dane, La Crosse
Pachysandra	Volutella Blight	*Volutella pachysandricola*	Waukesha
Redbud	Xanthomonas Leaf Spot	*Xanthomonas* sp.	Dane
Snowbush	Vertcillium Wilt	*Verticillium* sp.	Walworth
FRUIT CROPS			
Apple	Root/Crown Rot Sphaeropsis Canker	*Fusarium* sp. *Sphaeropsis* sp.	Waukesha Waukesha
Cherry	Cherry Leaf Spot Powdery Mildew	*Blumeriella jaapii* *Podosphaera clandestina*	Shawano Shawano
Raspberry	Root/Crown Rot	*Phytophthora* sp.	Dane
HERBACEOUS ORNAMENTALS			
Bastard Balm	Pseudomonas Leaf Spot	*Pseudomonas* sp.	McHenry (IL)
Impatiens	Downy Mildew	*Plasmopara obducens*	Dane, Oneida
Iris	Heterosporium Leaf Spot Rhizome Rot	*Heterosporium* sp. *Fusarium* sp.	Racine Racine
NEEDLED WOODY ORNAMENTALS			

Spruce (Unidentified)	Cytospora Canker	*Leucocytospora kunzei*	Dane
	Root Rot	*Pythium* sp., *Fusarium* sp., *Cylindrocarpon* sp.	Sheboygan
	Sirococcus Shoot Blight	*Sirococcus* sp.	Sheboygan
	Spruce Needle Drop	*Setomelanomma holmii*	Dane

VEGETABLES			
Sweet Corn	Eyespot	*Aureobasidium zeae*	Green Lake
Tomato	Fusarium Wilt	*Fusarium oxysporum*	Will (IL)
	Late Blight	*Phytophthora infestans*	Sauk

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