Vegetable Crop Update

A newsletter for commercial potato and vegetable growers prepared by the University of Wisconsin-Madison vegetable research and extension specialists

No. 12 – July 5, 2014

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Calendar of Events

July 15 – Crops Diagnostic Workshop, Arlington Ag Research Station, Arlington, WI
July 18 – UW Potato Breeding Station Tour, Rhinelander Ag Research Station
July 22– UW-Hancock Agricultural Research Station Field Day, Hancock, WI
August 5 – Crops Diagnostic Workshop, Arlington Ag Research Station, Arlington, WI
August 12-14 – Farm Technology Days, Stevens Point, WI
August 21 – 1:00PM Antigo Field Day, Antigo, WI

Vegetable Disease Update – Amanda J. Gevens, Assistant Professor & Extension Vegetable Plant Pathologist, UW-Madison, Dept. of Plant Pathology, 608-890-3072 (office), Email: gevens@wisc.edu. Veg Pathology Webpage: http://www.plantpath.wisc.edu/wivegdis/

Late blight updates: No late blight has been detected in Wisconsin at this time. Nationally, in the past week, there was one new late blight report in Lancaster Co. PA (indicated on map to the left in red, from usablight.org). All P. infestans that has been genotyped from field samples in 2014 has been of the US-23 genotype/strain (mefenoxam/metalaxyl sensitive). Reports from greater than one week ago are colored blue on the map, and include PA, NC, NY, and FL. Details can be found at http://www.usablight.org/. The website provides location (by county) of positive reports of late blight in the U.S. and further information on disease characteristics and management.

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations (R.V. James, UW-Plant Pathology/R.V. James Designs): A P-Day value of ≥ 300 indicates the threshold for early blight risk and triggers preventative fungicide application. A DSV of ≥ 18 indicates the threshold for late blight risk and triggers preventative fungicide application. Red text in table below indicates threshold has been met/surpassed. NA indicates that information is not yet available as emergence has yet to occur. Blitecast and P-Day values for actual potato field weather from Grand Marsh, Hancock, Plover, and Antigo are now posted at the UW Veg Path website at the tab "P-Days and Severity Values."
http://www.plantpath.wisc.edu/wivegdis/contents_pages/pday_sevval_2014.html

Location	Planting Date	50% Emergence	P-Day Cumulative	Disease Severity Value	Date of DSV Generation
Antigo	Early 5/20	6/9	209	**31***	7/5
	Mid 5/27	6/16	162	**31***	7/5
	Late 6/6	7/2	NA	NA	NA
Grand Marsh	Early 4/20	5/19	**367**	**62***	7/5
	Mid 5/4	6/1	279	**57***	7/5
	Late 6/3	6/23	103	**19***	7/5
Hancock	Early 4/24	5/20	**385**	**31***	7/5
	Mid 5/8	6/2	287	**27***	7/5
	Late 6/3	6/24	97	9	7/5
Plover	Early 4/21	5/20	**348**	**54**	7/5
	Mid 5/5	6/1	264	**51**	7/5
	Late 6/5	6/24	87	**21**	7/5

Please note that we have surpassed the threshold for DSVs (18) in all monitored areas for early and mid-planted potatoes, and in Grand Marsh and Plover for late planted potatoes. This indicates that temperature and humidity have been favorable for the promotion of late blight. Please note: asterisks on the DSVs indicate that I have revised the value as displayed in the SureHarvest Blitecast daily output that is found at the UW-Vegetable Pathology website. In some cases, the number of hours of relative humidity above 90% was being issued as a value greater than 24 - giving unusually high DSVs for the individual day. I assigned a maximum DSV of 4 to such dates. Early preventive fungicide application for late blight control may include base protectants such as chlorothalonil or mancozeb, or include a base protectant tank-mixed with one of the reduced risk fungicides with specific activity in controlling late blight. For further information on specific fungicide rates and activities, please find the 2014 updated list of potato fungicides for WI at the link below.
http://www.plantpath.wisc.edu/wivegdis/pdf/2014/June%206%202014.pdf

Further details on registered fungicides for WI vegetables can be found in the Univ. of WI Commercial Vegetable Production in WI Guide A3422, http://learningstore.uwex.edu/assets/pdfs/A3422.PDF.

P-Days and early blight management: P-Days are over the 300 threshold for early planted potatoes in the Grand Marsh, Hancock, and Plover areas. Recall, the P-Day 300 threshold is an indicator for timing the initial fungicide application for management of early blight. Early blight lesions are developing now in lower canopies of earliest and some mid-planted potatoes in southern Wisconsin.

Bacterial diseases in vegetable crops (A.J. Gevens): Some of the most challenging diseases in vegetable crops are those that are caused by bacterial pathogens. ***Black Rot in Cabbage and Kale:*** Black rot disease, caused by the bacterium *Xanthomonas campestris*, is problematic in some growing regions of Wisconsin at this time. Black rot can cause significant crop losses in cabbage and kale when weather conditions are wet and warm. Symptoms of black rot are most

easily recognized by the presence of yellow to brown V-shaped areas extending inward from the leaf margins on outer leaves closes to the ground. Veins in affected areas of leaves are usually black in color. If infection occurred in a young seedling, the disease is usually much more severe since the main stem becomes infected and the disease becomes systemic in the plant. These plants remain stunted and the veins in the stems are black. The heads from these plants deteriorate rapidly after harvest.

Although the distribution of diseased plants in the field may be quite uniform, the disease may be more common and severe in low-lying, wet, and shaded areas. If few infected seedlings were planted in the field, scattered diseased plants will appear early in the season. Diseased plants often appear in a single row of a field as a result of spread during cultivation or other field activities. Seedling infection is often hard to detect with symptoms of stunting and one-sided growth. The leaves may be light green, and lower leaves may drop prematurely and the vasculature may be black. The bacteria spread and cause most damage in wet, warm weather. The black rot pathogen does not typically spread in dry weather and is limited by temperatures below 50°F. The bacteria can survive in the soil for a year and may be spread in surface water or through irrigation. Black rot can affect most members of the crucifer family, such as mustard, collards, wild mustard, cauliflower, Brussels sprouts, kohlrabi, rutabaga, kale, rape, and Chinese cabbage.

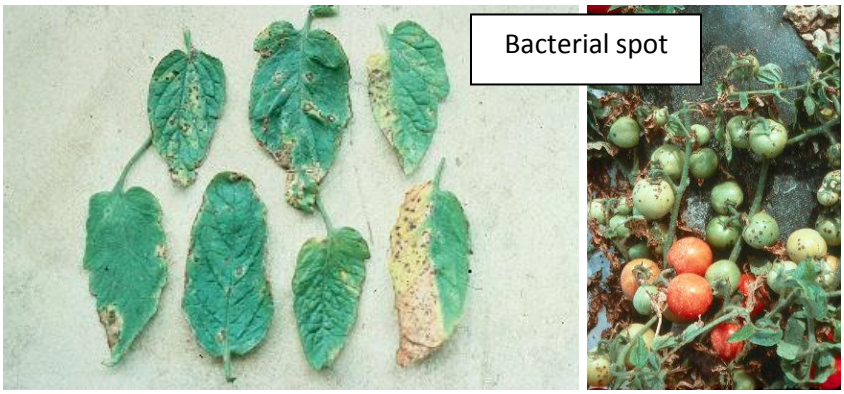
Commercial cabbage varieties do not have appreciable black rot resistance. The application of copper containing fungicides can limit the spread of black rot from head to head in the field. The following management measures can help in limiting losses to black rot in cabbage:

1) Use disease free seed and transplants
2) Practice crop rotation (out of crucifers for 2 years) and avoid replanting in fields known to be heavily infested with the black rot pathogen
3) Limit spread of bacterium on equipment by cleaning and sanitizing equipment and tools between fields
4) Manage irrigation water and limit the occurrence of standing water in fields
5) Avoid activities in a black rot infected field as bacteria can be moved on clothing and equipment from affected to healthy areas of the field
6) When/where appropriate, copper application can limit spread from plant to plant in field

Cabbage black rot symptoms. Note V-shaped brown/necrotic lesions along leaf edges. For more information: http://learningstore.uwex.edu/assets/pdfs/A3181.PDF

Tomato bacterial diseases: Bacterial spot (causal agent*: Xanthomonas campestris* pv. *vesicatoria*), bacterial speck (*Pseudomonas syringae* pv. *tomato*), and bacterial canker (*Clavibacter michiganensis* subsp. *michiganensis*) tomato diseases have been seen in some fields (tomato and pepper). These bacterial pathogens are favored by moist conditions. Bacterial spot

and canker are also favored by warm conditions (75-85°F), whereas bacterial speck is favored by cool conditions (65-75°F). Bacterial spot can cause moderate to severe defoliation, blossom blight, and lesions on developing fruit. Bacterial speck also causes these symptoms. Bacterial canker causes wilt, vascular discoloration, scorching of leaf margins, and lesions on fruit.



Foliar symptoms of bacterial spot and speck include small, water-soaked, greasy spots on infected leaflets. Lesions may be surrounded by yellow halos with brown centers that frequently fall out. Lesions may coalesce to form large, irregular dead spots. Spots may also appear on seedling stems and fruit pedicels. In some cases, blossom blight may occur, causing flower abortion. This is more severe with bacterial spot and may result in a split fruit set which is especially troublesome with determinate cultivars.

Bacterial spot lesions are small, water-soaked spots that become slightly raised and enlarged. The centers of these lesions become irregular, light brown, slightly sunken with a rough, scabby surface. In the early stages of infection, a white halo may surround each lesion, giving it the appearance of bacterial canker fruit spot. Small lesions are often confused with lesions of bacterial speck. Bacterial speck appears on immature fruit as a black, slightly sunken stippling, eventually causing lesions less than 1/16 inch in diameter. Mature fruit become more resistant to infection by bacterial speck.

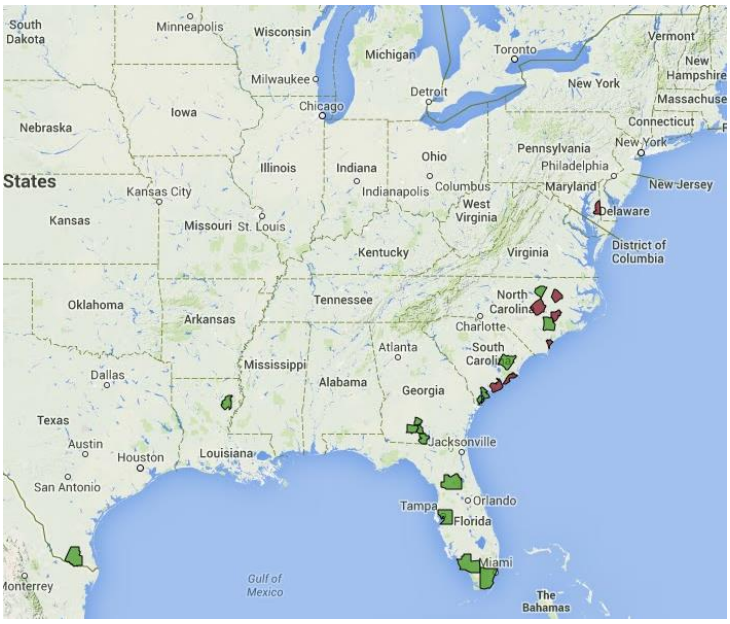
Systemic symptoms of bacterial canker (from infections originating in seeds or young seedlings) include stunting, wilting, and vascular system may exhibit a thin, reddish-brown discoloration of the tissue, especially at the base of the plant. On young seedlings in the greenhouse, lesions may appear as raised pustules on leaves and stems. These plants rarely survive the season in the field. Secondary symptoms in the field include browning of the leaf margins adjacent to a thin band of yellow, and fruit lesions. Spots on fruit are relatively small surrounded by a white halo. Canker bacteria may also invade internal fruit tissues, causing a yellow to brown breakdown. Bacterial canker can infect plants systemically. It is seedborne and can survive on infested plant debris in soil.

Controlling bacterial diseases in tomato includes 1) rotating away from tomatoes and other solanaceous crops for 2-3 years, 2) plant only seed from disease free plants or seed treated to reduce bacteria, 3) good field and greenhouse sanitation, 4) do not handle wet plants to avoid spread, 5) control irrigation to limit leaf wetness. Copper applications can provide some management of bacterial pathogens, but control is limited once there is an established infection.

The 2014 A3422 Commercial Vegetable Production in Wisconsin guide is available for purchase through the UW Extension Learning Store website: http://learningstore.uwex.edu/Commercial-Vegetable-Production-in-Wisconsin2014-P540.aspx

A pdf of the document can be downloaded or is available at the following direct link: http://learningstore.uwex.edu/assets/pdfs/A3422.PDF

Cucurbit downy mildew updates (A.J. Gevens): No downy mildew has been identified on cucurbit crops in Wisconsin, to date. **In the past week, many states reported cucurbit downy mildew including, MI (Monroe Co. in southeast corner), MD, NC, and SC, as depicted in red by county on map, below.** (Please note that MI report is not yet on the map nor does the site appear to be integrated into forecasts). In summary this year, FL, GA, LA, NC, SC, and TX have reported cucurbit downy mildew across multiple cucurbit hosts (as depicted in green, below). I will be keeping tabs on disease reports in the region and will provide updates in this newsletter. Based on the disease forecast system, there is no likelihood of spore movement from current sites of confirmation to WI – but do note that the MI report may not be taken into consideration in this forecast at this time. The website: http://cdm.ipmpipe.org/ offers up to date reports of cucurbit downy mildew and disease forecasting information.



Map sourced from http://cdm.ipmpipe.org/scripts/map.php (from 6:23AM July 5, 2014)

Management information for cucurbit downy mildew can be found in UW Vegetable Crop Updates – Disease Supplemental #8 from 2013: http://www.plantpath.wisc.edu/wivegdis/pdf/2013/Disease%20Supplement%208%20Aug%2013%202013.pdf

UW Hancock Agricultural Research Station (ARS) Field Day – Dr. Felix Navarro, Superintendent of the Hancock ARS, Hancock, WI: You are invited to attend the 2014 Potato Field Day at the Hancock Ag. Research Station, Tuesday July 22, from 12:30-5:00 PM. During the Field Day, University of Wisconsin-Madison potato researchers and guest speakers

will present their most current research results and crop updates. This is a great opportunity for interaction with UW researchers, growers, and industry on their ongoing research. In addition there will be discussion on the innovative topics of potato genomics, remote sensing technology, and unmanned aerial vehicles and their use in agricultural research and precision farming. We will end the day with informal conversations while enjoying some brats, sweet corn and beer.

Even if your work is not specific to potato, you are welcome to attend and participate in the rich conversations pertaining to advances in agricultural production and future research missions!

Please mark your calendars!

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

Hancock Ag. Research Station Annual Potato Field Day

"Progress in Agricultural Research to Improve Potato Production and Storage"

Field Day Agenda
Tuesday July 22, 2014 12:30 – 5:00 PM

Storage Research Facility Portion 12:30 – 1:30pm

12:30 - 12:40 Dwight Mueller & Felix Navarro – 'Welcome and Introductions-HARS Enhancements'

12:40 - 12:50 Amanda Gevens – 'Updates in storage disease control'

12:50 - 1:10 Robin Buell, MSU- 'New technologies to improve the efficiency of potato breeding'

1:10 - 1:30 Phillip Townsend & Michael Coen – 'Remote sensing applications to field research'

Field Research Reports 1:35-4:40pm

1:35 – 1:50 Michael Coen & Phil Townsend (Field E10 North side) – 'UAV and remote sensing applications to field research'

1:50 – 2:05 Shelley Jansky & Paul Bethke (Field E10 North Side) – 'Potential opportunities and challenges to using UAV and remote sensing in potato research'

2:10 - 2:35 Ann MacGuidwin (Field C15 South side) – 'Managing root lesion throughout the rotation'

2:35 - 2:50 Jeff Endelman (Field C14 South side) - 'Potato breeding progress: 'New varieties and future research prospects'

2:55 - 3:10 Russ Groves (Field K9 NE side) – 'IPM & IRM for vegetable insect pests'

3:10 - 3:20 Amy Charkowski (Field K9 SE side) - 'PVY strains and symptoms update'

3:25 - 3:40 Amanda Gevens (Field K9 West side/ by weather station) – 'Disease management'

3:40 - 3:55 Mike Drilias et al. (Field K14 East side) - 'Potato agronomy report'

3:55 – 4:10 Jed Colquhoun (Field R4 North side) – 'Weed management'

4:10 – 4:25 Jiwan Palta (Field S19 North side) – 'Breeding for tuber internal and fry quality'

4:25 - 4:40 Matt Ruark (Field S24 North side) – 'Nitrogen Management'

Field Day Wrap-up and Announcements 4:45 – 5:00 pm

4:45 – 5:00 UW, WPVGA and Associate Division Announcements

Dinner will begin at 5:00 PM

Hancock Agricultural Research Station
N3909 County Road V Hancock, WI 54943-7547
Phone: 715-249-5961 Fax: 715-249-5850 fmnavarro.wisc.edu
College of Agricultural and Life Sciences University of Wisconsin-Madison