Vegetable Crop Update

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

No. 18– June 26, 2015

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Calendar of Events

July 15 – UW-Hancock ARS Field Day, 12:30PM, Hancock, WI
July 17 – Rhinelander State Farm Field Day, Lelah Starks Elite Found. Seed Farm, Rhinelander, WI
August 19 – UW-Arlington ARS Agronomy/Soils Field Day, 8AM, Arlington, WI
August 20 – UWEX Langlade County Airport Field Day, Antigo, WI
August 25-27 – Wisconsin Farm Technology Days, Statz Bros., Inc. Farm, Sun Prairie, WI
September 1 – UW-Arlington ARS Organic Agriculture Field Day, Arlington, WI

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Veg Pathology Webpage: http://www.plantpath.wisc.edu/wivegdis/.

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 available. 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_2015.html

Location	Planting Date	50% Emergence	P-Day Cumulative	Disease Severity Value	Date of DSV Generation	Increase in DSV from 6/23
Antigo	Early 4/25	5/25	**189**	**40**	6/26	1
	Mid 5/5	6/1	**189**	**40**	6/26	1
	Late 5/15	6/15	**92**	**14**	6/26	1
Grand Marsh	Early 4/5	5/10	**327**	**54**	6/26	2
	Mid 4/15	5/15	**316**	**53**	6/26	2
	Late 5/1	5/21	**283**	**51**	6/26	2
Hancock	Early 4/10	5/15	**316**	**50**	6/26	3
	Mid 4/20	5/18	**291**	**47**	6/26	3
	Late 5/5	5/25	**258**	**42**	6/26	3
Plover	Early 4/15	5/20	**318**	**58**	6/26	3
	Mid 4/25	5/22	**278**	**55**	6/26	3
	Late 5/10	5/30	**216**	**39**	6/26	3

Potato Early Blight Preventive Management: P-Days have surpassed threshold of 300 in early plantings in the Grand Marsh, Hancock, and Plover areas, as well as the mid-planted in the Grand Marsh location. All other locations have not yet reached threshold. We are beginning to see early blight in lower potato plant canopies in commercial production fields of southern and central Wisconsin. In many cases, fungicides have already been going out in prevention of late blight. However, it is time to consider fungicide selection to best target and manage the pathogens causing early blight and brown spot in potatoes. On May 8th, I provided a summary of fungicides for control of early blight in conventional potato in this newsletter, please find the link to this information below.
http://www.plantpath.wisc.edu/wivegdis/pdf/2015/May%208,%202015.pdf

Late Blight Updates: The DSV 18 threshold has been met/surpassed for all plantings and locations with the exception of late-planted potatoes in the Antigo area. This threshold indicates that environmental conditions have been met to promote late blight disease activity. At 18 DSVs, preventive applications of effective late blight fungicides is recommended. Accumulation of DSVs over the last three days has been low, however, cloudy days, heavy dews, and in some areas, sporadic showers are creating site specific conditions which do favor late blight. At this time, late blight has been detected in a commercial potato field in northern Adams County Wisconsin. The field is being intensively managed with base protectant and late blight- specific fungicides with antisporulant activity. Two sounding fields also showed symptoms and were either vine killed or placed on an intensive fungicide program to limit new infections and limit sporulation. My program, in partnership with Dr. Bill Fry at Cornell University, is working on genotyping the samples. I will report this information as soon as we learn of the results. No new detections were made outside of WI in this past week to the www.usablight.org website. To date, nationally, there have been confirmations of late blight (US-23) in FL, CA (US-11), NC (strain not yet determined), TX (not reported on usablight.org/strain not yet identified), and WI (strain not yet identified).

Fungicides are critical for protection of potato and tomato crops at this time.
There is not one recommended fungicide program for all late blight susceptible potato (and tomato) fields in Wisconsin. Fungicide selections may vary based on type of inoculum introduction, proximity to infected fields, crop stage, late blight strain, and other diseases that may be in need of management. Please see UWEX Veg Crop Updates article on fungicide selections from June 5 at link below.
http://www.plantpath.wisc.edu/wivegdis/pdf/2015/June%205,%202015.pdf or a listing of 2015 WI potato late blight fungicides:
http://www.plantpath.wisc.edu/wivegdis/pdf/2015/Potato%20Late%20Blight%20Fungicides%202015.pdf

If you suspect/detect late blight, have the disease confirmed (free diagnostics through my lab and the UWEX Plant Disease Diagnostic Clinic) and we can genotype for further information on the nature of the pathogen.

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.

Potato blackleg: Blackleg is promoted by cool, wet conditions at planting and high temperatures after emergence. The blackleg pathogen can be spread in infested seed, soil, irrigation water, and by insects. Levels of infection are dependent upon seed-handling/cutting techniques, soil moisture and temperature at planting and emergence, cultivar susceptibility, severity of infection of seed, and potentially, amount of bacteria in irrigation water, cull piles, or other external sources. Sanitation and disinfesting of potato cutting equipment and proper handling reduces spread and aids in control of the pathogen. Treating seed to prevent seed piece decay by fungi can also contribute to blackleg control. Since the pathogen does well in cool, wet soils, avoid planting in overly wet soil. Crop rotation away from potato for 2-3 years will help control this disease as the bacterium causing blackleg does not survive well outside of the potato.

Potato blackleg: is caused by *Pectobacterium carotovorum*, formerly *Erwinia carotovora.* Symptoms of blackleg were observed on several potato varieties throughout the state this past week. Infection of seed with blackleg can result in various symptoms including poor emergence, chlorosis, wilting, tuber and stem rot, and darkened or black stems which are characteristically slimy, and death.

Cucurbit downy mildew updates: We have had no reports of downy mildew on cucurbits here in WI at this time. Downy mildew has been confirmed on cucumbers in Monroe County, Michigan, Ontario, Canada, NC, and SC in the past week.

For more information on symptoms, disease cycle, and general management, please visit: http://learningstore.uwex.edu/Assets/pdfs/A3978.pdf

Nationally, in the past week, there were several new diagnoses of cucurbit downy mildew from MI, NC, SC, and Ontario Canada reported to http://cdm.ipmpipe.org/ So far in 2015, there have been confirmations of cucurbit downy mildew in LA, NC, FL, GA, SC, TX, MI, and Ontario Canada on various cucurbit types including summer and winter squash, watermelon, cucumber, and pumpkin.

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Summer Hop Update: June 25, 2015: June is rapidly coming to a close and we're well into a challenging growing season for Wisconsin hops. The top wire has been reached by many varieties at several locations around the state. Lateral shoot development is well underway in Nugget, Chinook, Tettnanger, and other fast-developing varieties and the very earliest of burrs are just starting to form. We've also seen quite a lot of expansion and new plantings this year and we're eager to see how some of these new-to-Wisconsin varieties perform here in state. This spring also brought the first planting of "clean" hops generated by the hop propagation project here at the University (in collaboration with several commercial growers, Dr. Ruth Genger, and DATCP-Specialty Crop Block Grant Program). We'll be monitoring these plants closely this season to see how they perform out in the field.

It has been a challenging first half of the season in terms of disease. Long stretches of warm, wet weather in the early season have led to high disease pressure this year, particularly for hop downy mildew. The disease has currently been confirmed by the Vegetable Pathology Lab in Dodge, Dane, Marathon, Sheboygan, and Pepin counties and is likely widespread throughout the state. The first basal spikes were seen in Dodge County on April 21 of this year, compared to mid-May in 2014. In yards where early season fungicide programs were not in place, large

levels of inoculum were able to build quickly and cause widespread infection. However, downy mildew is being successfully managed in yards utilizing a combination of cultural and chemical methods, and several yards have been able to achieve a large reduction in active sporulation.

The thinning and/or removal of basal growth is an excellent way to reduce inoculum levels, as the microenvironment created by this dense layer of foliage at the base of the trained bines is generally very conducive to disease development. In my scouting experience over the last summer and a half, most sporulating pathogen can be found in this ground-level plant tissue. Many growers are achieving this removal with the use of burn-down herbicides, though mechanical removal is another option (albeit much more labor intensive). Some growers are also mechanically stripping the lower 3-4 feet of the bine to further improve air flow and reduce the ability of the pathogen to travel higher up the plant. (See pictures below)

Cultural controls like these should be combined with a fungicide application program that focuses on protecting new growth, especially cone-producing lateral branches and eventually the cones themselves. Under periods of high disease pressure caused by favorable weather conditions, tightening spray intervals to a 5-7 day schedule may be necessary to achieve adequate control. As the summer progresses and drier conditions persist, this schedule may be lengthened to a 14-day program. A list of fungicides currently registered for use in Wisconsin, which includes information on the fungicide activity, can be located on the UW Vegetable Pathology website: http://www.plantpath.wisc.edu/wivegdis/contents_pages/hops.html.

As always, if you observe abnormal plant material and are unsure of the cause, our lab is happy to receive samples for diagnosis. Additionally, the University of Wisconsin Plant Disease Diagnostic Clinic here on campus at the UW-Madison is fully equipped to receive and analyze plant samples of all types for a small fee. Samples can be sent to:

Plant Disease Diagnostics Clinic
Department of Plant Pathology
University of Wisconsin-Madison
1630 Linden Drive
Madison, WI 53706-1598

Left: basal growth removed by burn down herbicides. Right: bines have been manually stripped on the bottom 3-4 feet.

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Spotted Wing Drosophila: The Start of the 2015 Field Season!

The 2015 SWD monitoring project recently confirmed the presence of this invasive pest in Dane County on June 22nd. This is one week earlier than the first detection of SWD in Wisconsin last year. In 2014, we were able to confirm SWD in 33 Wisconsin counties, this early detection data will help us understand how to identify and manage this invasive species. Collaborators all over the state will be trapping with the standard yeast and sugar traps (Figure 1) until SWD is caught for 2 consecutive weeks. We will keep everyone updated with the data as it gets reported.

Figure 1: Trapping supplies sent to collaborators in Wisconsin for first detection study. Photo credit: Katie Hietala-Henschell

We want to remind everyone to start or to continue monitoring for SWD and also to think about different management strategies that will work best for your specific crop and farm. Updated management recommendations for raspberry, strawberry, blueberry, cherry, and grape can be found at the following links:

Raspberry - http://labs.russell.wisc.edu/swd/files/2013/06/Raspberry-SWD-management-recommendations-2015.pdf

Strawberry - http://labs.russell.wisc.edu/swd/files/2013/06/Strawberry-SWD-management-recommendations-2015.pdf

Blueberry - http://labs.russell.wisc.edu/swd/files/2013/06/Blueberry-SWD-management-recommendations-2015.pdf

Cherry - http://labs.russell.wisc.edu/swd/files/2013/06/Cherry-SWD-management-recommendations-2015.pdf

Grape - http://labs.russell.wisc.edu/swd/files/2013/06/Grape-SWD-management-recommendations-2015.pdf

We are also continuing our SWD winter morph monitoring project (Figure 2). This data will provide important information regarding the biology of SWD in Wisconsin and its overwintering strategies. We will have more information and updates as the season progresses. Please check out our SWD website at http://labs.russell.wisc.edu/swd/ for updates.

Figure 2: Sugar and yeast traps set up in a fall bearing and a summer bearing raspberry variety for the winter morph trapping study which will continue through November. Photo credit: Katie Hietala-Henschell