Vegetable Crop Update

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

No. 16 – July 1, 2016

In This Issue

Calendar of Events

July 14, 2016 – UW-Rhinelander Agricultural Research Station Field Day
July 21, 2016 – UWEX Langlade County –Antigo Research Station Field Day
July 28, 2016 – UW-Hancock Agricultural Research Station Field Day
February 7-9, 2017 – UWEX/WPVGA Grower Ed. Conf., Stevens Point, 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. "-" 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_2016.html

Location	Planting Date	50% Emergence	P-Day Cumulative	Disease Severity Value	Date of DSV Generation	Increase in DSV from 6/24
Antigo	Early 5/1	6/2	**220**	**27**	7/1	2
	Mid 5/18	6/7	**186**	**17**	7/1	2
	Late 6/3	6/21	**83**	**2**	7/1	2
Grand Marsh	Early 4/15	5/22	**321**	**36**	7/1	1
	Mid 5/1	5/27	**284**	**30**	7/1	1
	Late 5/15	6/3	**225**	**19**	7/1	1
Hancock	Early 4/18	5/24	**297**	**38**	7/1	3
	Mid 5/3	5/29	**256**	**25**	7/1	3
	Late 5/20	6/5	**199**	**16**	7/1	3
Plover	Early 4/20	5/25	**290**	**39**	7/1	5
	Mid 5/5	5/30	**247**	**24**	7/1	5
	Late 5/20	6/6	**191**	**15**	7/1	5

Summary: Disease Severity Values (DSVs) and Late Blight Blitecast: We now have all potatoes in WI at 50% emergence or greater and are generating forecast values for all potatoes. Generally, conditions were not promotive for late blight in this past week with 7 day

accumulations of just 0-5 Disease Severity Values. Recall the maximum number of DSVs that one day can accumulate is 4. Where thresholds of 18 DSVs have been met, routine, protection of susceptible tomato and potato crops is recommended.

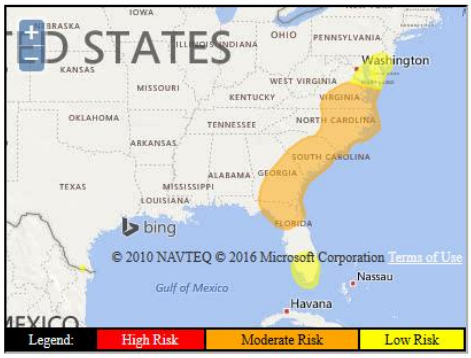
Wisconsin commercial conventional fungicides for late blight control can be found at: http://www.plantpath.wisc.edu/wivegdis/pdf/2016/Potato%20Late%20Blight%20Fungicides%202016.pdf

P-Days indicating early blight risk are still below threshold for most locations monitored, with the exception of early planted potatoes in the Grand Marsh area, but it won't be long until the 300 value is met. Lesions are being observed in the lower canopies of potato crops in central and southern WI. In looking at some of the earliest planted potatoes in the Hancock area this week ('Russet Burban'), I was surprised at how few early blight and/or black spot lesions I was finding. We seem to be about one week behind where we were with P-Days and early blight symptoms compared with last year.

National Late Blight Updates (www.usablight.org). There were no new late blight confirmations in this past week (6/24-7/1). The early June Washington (Walla Walla Co.) report of late blight on potato was confirmed to be of the US-8 strain/genotype. Also from early June, there was a confirmation from VA (potato, US-23). Earlier reports have come from MD (tomato US-23), CA (potato, types US-8 and US-11), and FL (potato and tomato US-23). **US-11** can infect both tomato and potato, is of the A1 mating type, and is resistant to Ridomil. **US-8** can infect both potato and tomato, but favors potato, is of the A2 mating type and is also resistant to Ridomil. **US-23** is a genotype that can be controlled with mefenoxam/metalaxyl fungicides (ie: Ridomil Gold SL) and can infect both tomato and potato. It should be noted, however, that some US-23 isolates can be intermediately or fully resistant to mefenoxam. As such, ongoing tests/screens should be conducted to best prescribe appropriate treatment responses.

Cucurbit Downy Mildew Updates (http://cdm.ipmpipe.org/). In the past week there were 3 counties reporting new confirmations of cucurbit downy mildew in 3 states: AL, MD, and NC. Previous confirmations were made in FL, GA, NC, SC, and TX. No risk of movement of the pathogen to the Midwestern U.S. production region at this time (figure below from http://cdm.ipmpipe.org/current-forecast).

Risk prediction map for Day 2: Thursday, June 30



Moderate Risk in northern FL, southern and eastern GA, central and eastern SC, east-central and eastern NC, and south-central and southeast VA. Low risk for cucurbits in southern and eastern MD, DE, southern NJ, and southern FL. Minimal Risk to cucurbits elsewhere.

Forecaster: TK at NCSU for the Cucurbit *ipm*PIPE - 2016

Stemphylium on Onions: This disease has become more common and problematic in commercial onion fields of Ontario, Michigan, and now Wisconsin in recent years. Stemphylium infections were significant in several commercial onion fields in 2015. Already in 2016, we have had at least 3 fields with confirmed Stemphylium leaf blight. This disease is caused by the fungus *Stemphylium vesicarium*. Symptoms begin as small yellow-tan, water-soaked lesions that elongate into lesions that turn dark olive brown to black due to spore production. Leaves can become completely diseased and necrotic when lesions coalesce. See pictures, below, of symptoms of Stemphylium. Symptoms are not easily distinguished until the spore production phase occurs. Stemphylium, as well as purple blotch and Alternaria, can prematurely defoliate the crop causing reduced bulb quality and increased susceptibility to secondary bacterial diseases that may cause storage rots.

Stemphylium most often infects dead/dying onion leaves when temps are warm (64 – 77°F) and humid, with periods of leaf wetness (16+ hours). Since the pathogen infects onions that have been physically damaged or infected by other diseases, it is important to maintain healthy plant stands and control other common foliar diseases such as purple blotch, downy mildew and Botrytis. Herbicide, hail, and blowing sand damage seem to be the primary initial causes for onion foliar damage which then leads to Stemphylium infection; without the damage, infection is much less likely.

The same cultural methods of control that are used to manage other foliar onion disease should be employed for Stemphylium. Fungicides registered for the control of purple blotch can be effective on Stemphylium leaf blight; however, it seems to be harder to control Stemphylium with fungicides that are highly effective on purple blotch. In our trials on onions in Wisconsin in 2015, most programs looked similar in disease control performance with the exception of programs with Quadris Top and Luna Tranquility (now currently registered for onions in WI and nationally, with exception in CA as I understand). Note that Luna Tranquility contains two active ingredients. One is Scala and the second is a fungicide in FRAC group 7. Endura is also a group 7 fungicide with registration on onion in WI. Please see results of our fungicide trial from 2015, below (Program #6 with Luna Tranquility provided best Stemphylium control).

ONION, YELLOW (*Allium cepa* 'Safrane')
Stemphylium Leaf Blight; *Stemphylium vesicarium*
Purple Blotch; *Alternaria porri*
Botrytis Leaf Blight; *Botrytis squamosa*

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Evaluation of fungicide treatments for control of foliar diseases in onion in Wisconsin, 2015: An onion fungicide efficacy trial was established in a commercial field on muck soil in Markesan, Wisconsin on 25 May with 'Safrane' onion using a standard commercial planter. The experimental design consisted of 4 replicates arranged in a randomized complete block design. Each treatment plot consisted of 5-ft-wide beds with four 10-ft-long rows spaced 15 in. apart with 2-ft non-sprayed buffer alleys between plots in the same row. Insect, weed, and fertility management was carried out as per commercial standards for the production region and were applied by the grower cooperator. Naturally occurring inocula of all three pathogens were present from nearby agricultural production fields. The first fungicide application was applied by the grower-cooperator on 18 June and consisted of 1.5 lb/A of Echo 90DF to all trial plots using a commercial fungicide applicator. Subsequent fungicide treatments were applied on 1 Jul, 8 Jul, 15 Jul, 22 Jul, 29 Jul, 5 Aug, and 12 Aug using a CO2 backpack sprayer equipped with four TeeJet 8002VS nozzles spaced 19-in. apart and calibrated to deliver 35 gal/A at a boom pressure of 40 psi. The severity of total, combined foliar disease of the two center rows was rated on 28 Jul, 12 Aug, and 25 Aug using the Horsfall-Barratt rating scale (0-11 rating with 0=no disease, 11=100% disease severity). The Area Under the Disease Progress Curve (AUDPC) was determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC), i.e. percentage of the maximum possible AUDPC for the whole period of the experiment. On 31 Aug, onions in the center five feet of the two center rows were pulled, hand-topped, weighed, and graded. Data were analyzed using ANOVA (α=0.05) and Fisher's LSD at α=0.05. The experimental plots relied exclusively upon natural precipitation for water, with 10.2 in total during the production season. Disease pressure was very high in this trial. There were significant differences among treatments in grade (data not shown) and yield. All fungicide treatments significantly reduced foliar disease compared to treatment 1, which was a single application of Echo 90DF. Numerically, the treatment that included Luna Tranquility (treatment 6) provided the greatest disease control compared to all other fungicide treatments.

Treatment Number	Fungicide and rate/A	Application Timing[z]	Yield (cwt/A)	RAUDPC[xy]	
1	Echo 90DF 1.5 lb	1	669.8	0.266	c
2	Echo 90DF 1.5 lb	1			
	Endura 70WG 5.0 oz + Dithane 75DF 2.0 lb	2,4			
	Quadris Top 2.71SC 12.0 fl oz + Bravo WS 720SC 1.0 pt	3,5			
	Dithane 75DF 2.0 lb	6,7	673.4	0.169	ab
3	Echo 90DF 1.5 lb	1			
	Scala 606SC 18.0 fl oz + Dithane 75DF 2.0 lb	2,4			
	Quadris Top 2.71SC 12.0 fl oz + Bravo WS 720SC 1.0 pt	3,5			
	Dithane 75DF 2.0 lb	6,7	698.8	0.176	ab
4	Echo 90DF 1.5 lb	1			
	Switch 62.5WG 14.0 oz + Dithane 75DF 2.0 lb	2,4			
	Quadris Top 2.71SC 12.0 fl oz + Bravo WS 720SC 1.0 pt	3,5			
	Dithane 75DF 2.0 lb	6,7	695.6	0.188	ab
5	Echo 90DF 1.5 lb	1			
	Rovral 4F 1.0 pt + Dithane 75DF 2.0 lb	2,4			
	Quadris Top 2.71SC 12.0 fl oz + Bravo WS 720SC 1.0 pt	3,5			
	Dithane 75DF 2.0 lb	6,7	725.6	0.185	ab
6	Echo 90DF 1.5 lb	1			
	Luna Tranquility 500SC 16.4 fl oz + Dithane 75DF 2.0 lb	2,4			
	Quadris Top 2.71SC 12.0 fl oz + Bravo WS 720SC 1.0 pt	3,5			
	Dithane 75DF 2.0 lb	6,7	751.0	0.150	a
7	Echo 90DF 1.5 lb	1			
	Dithane 75DF 2.0 lb	3,7			
	Bravo WS 720SC 2.0 pt	5	720.1	0.203	b

[z]Fungicide application dates: 1=18 Jun, 2 = 8 Jul, 3= 15 Jul, 4 = 22 Jul, 5 = 29 Jul, 6 = 5 Aug, 7 = 12 Aug.
[y]Column numbers followed by the same letter are not significantly different at P=0.05 as determined by Fisher's Least Significant Difference (LSD) test.
[x]RAUDPC= Relative Area Under the Disease Progress Curve.

UW- Rhinelander Agricultural Research Station Field Day

Date & Time: Thursday July 14, 2016 – 10:00AM to 3:30PM
Location: 4181 Camp Bryn Afon Rd., Rhinelander
Contact: Becky Eddy, Associate Researcher, UW-RARS, Office: 715-369-0619, becky.eddy@wisc.edu

Topics/presenters will include:
Update from the potato breeding program - Jeff Endelman, UW-Horticulture
Managing aphids and the viruses they vector - Russ Groves, UW-Entomology
Things aren't always as they appear: How viruses are changing potato breeding and seed certification - Alex Crockford, UW-Seed Potato Certification
Outlook and management for potato early and late blight, and blackleg updates - Amanda Gevens, UW-Plant Pathology

UW- Hancock Agricultural Research Station Centennial Celebration & Field Day

The University of Wisconsin-Madison Hancock Agricultural Research Station will celebrate its 100th anniversary on Thursday, July 28 with an expanded set of events during the station's annual Potato and Vegetable Research Field Day.

The public is invited to attend all—or portions—of the festivities, which include presentations on the station's history, accomplishments and partnerships in the morning and late afternoon, as well as field day research talks during the afternoon. All events are free, and a complimentary lunch meal and dinner meal will be provided. The agenda for July 28 is included below.

9:00 am – 12:00 pm: Centennial celebration, part I. Festivities include time to visit with researchers past and present, view research posters, and hear a number of presentations covering 100 years of accomplishments at the station.

12:00 – 1:00 pm: Lunch. A complimentary lunch meal, featuring burgers and brats, will be provided courtesy of the WPVGA.

1:00 – 4:00 pm: Potato and Vegetables Research Field Day. The field day begins with a look at potato storage research 10 years after the dedication of the Wisconsin Potato and Vegetable Storage Research Facility. Field research topics that afternoon will include weed and disease management, soil nutrients, insects, and potato and vegetable breeding.

4:15 – 5 pm: Centennial celebration, part II. The centennial festivities continue with comments from Justin Isherwood, a fifth-generation farmer with Isherwood Farm and award-winning author; Nick George, president of the Midwest Food Processors Association; Tamas Houlihan, executive director of the Wisconsin Potato and Vegetable Growers Association; and Kate VandenBosch, dean of the UW-Madison College of Agricultural and Life Sciences.

5:00 pm: Dinner. A complimentary dinner meal, featuring chicken and ribs, will be provided courtesy of the WPVGA.

The Hancock Agricultural Research Station is located at N3909 County Road V, Hancock, WI 54943. Directions are available online at https://hancock.ars.wisc.edu/. For more information, contact Felix Navarro at (715) 249-5961 or fmnavarro@wisc.edu.