



Vegetable Crop Update

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

No. 22 – September 12, 2014

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Calendar of Events

October 29-30 – Hancock Ag Research Station Fresh Market Potato Variety Trial Open House (Jeff Endelman), Hancock, WI

December 2-3 – Midwest Food Processing Crops Conference, Kalahari Resort, Wisconsin Dells, WI

January 13-15 – Wisconsin Crop Management Conference, Madison, WI

January 26-28 – Wisconsin Fresh Fruit & Vegetable Growers Conference, Wisconsin Dells, WI

February 3-5 – UWEX & WPVGA Grower Education Conference, Stevens Point, 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/>



Nationally: In the past week, there have been several new late blight reports from NY, WA, NC, and OH. Recent reports are indicated on map above in dark red. Most (~92%) of the *P. infestans* isolates that have been genotyped from U.S. field and garden samples in 2014, thus far, have been of the US-23 genotype/strain, with the exception of US-8 in a few WI counties, a New Type B 2014 from NY, and US-24 from OR. Reports from >one week ago include CT, DE, FL, IN, MA, MD, ME, MI, MN, NC, NH, NJ, NY, OH, ON Canada, OR, PA, VA, VT, WI, and WV. Details can be found at <http://www.usablight.org/>. The website provides location of positive reports of late blight in the U.S. and further information on the disease. If you would like further information regarding late blight pathogen character, oospore risk and impact, or management, please see presentation linked below.

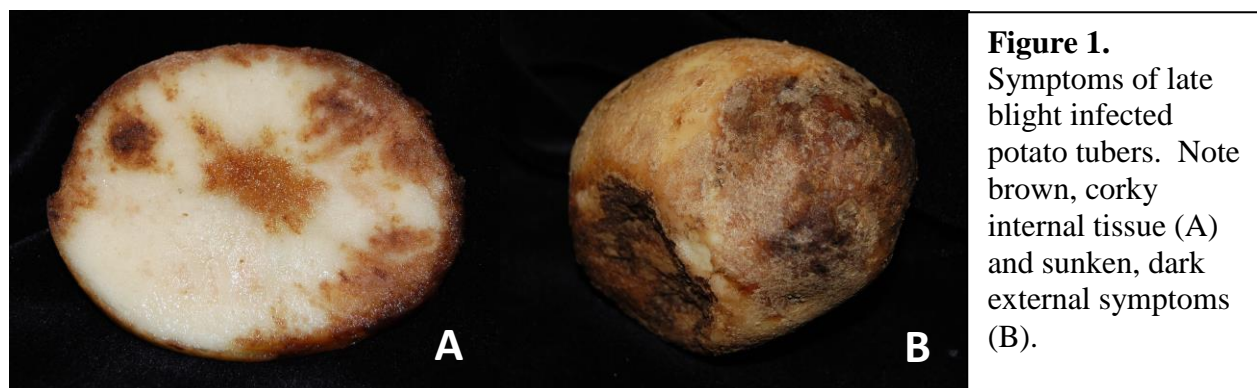
<http://www.plantpath.wisc.edu/wivegdis/pdf/2014/Gevens%20LB%20Presentation%20HARS%202014%20-%20Copy.pdf>

Late blight updates: Wisconsin: While no new counties reported late blight this past week, a few additional fields were found to have late blight in Portage (US-8) and Racine (US-23) Counties. Updates on genotypes: Oconto Co. on potato and tomato (US-23), Portage on potato (US-8 & 23), and Marinette Co. on tomato (US-23). Earlier reports included Portage, Milwaukee, Adams, Waushara, and Racine Counties. US-23 is an A1 mating type strain with sensitivity to mefenoxam/metalaxyl. US-8 is an A2 mating type strain with resistance to mefenoxam/metalaxyl fungicides. Map above was generated from usablight.org website data at 10:40PM Sep 12, 2014.

Potato late blight symptoms are harder to identify in the field at this time given the senescence of the foliage and possibly advanced early blight infection. While it is hard to remove the ‘background noise’ of late season vine conditions to visualize late blight, the disease should continue to be scouted for as long as there is some green tissue remaining in the field. Identification of late blight in the crop at this stage is useful in considering your harvest and post-harvest management options. Pre-harvest checks for late blight in shallow tubers can further inform your management of a field. Wash tubers prior to checking for symptoms as early infections may be hard to see through even a thin layer of soil. (Tuber blight pics in Fig. 1)

Late season and post-harvest management of late blight: While most vines will die following the first kill treatment, lower stems may remain green especially in instances where potato vines were very hearty and green at time of vine kill. It is still important to continue to scout fields of this status and maintain fungicide programs on a 5 to 7-day schedule.

If late blight has been present in a field, be sure that vines are killed well prior to digging (waiting 2-3 weeks after last vine kill treatment). This will limit potential risk of active late blight pathogen coming in contact with tubers. Take care to limit damage to tubers through the harvest and post-harvest processes. While the late blight pathogen does not need wound sites, they are an easy and ready entry point for late blight and other pathogens.



Recommendations for late-season potato late blight disease management should include the following:

- 1) Continue to scout fields regularly. Scouting should be concentrated in low-lying areas, field edges along creeks or ponds, near the center of center-pivot irrigation structures, and in areas that are shaded and protected from wind. Any areas where it is difficult to apply fungicides should be carefully scouted.
- 2) Avoid excess irrigation and nitrogen. If foliage is infected with late blight, spores can be washed down through the soil and infect tubers. Green vines can continue to be infected and

produce spores even at harvest. Additionally, green and vigorous vines are hard to kill and skin may not be well-set at digging resulting in higher risk of post-harvest infection by late blight and other diseases.

3) Allow 2-3 weeks between complete vine kill and harvest. Fungicide applications should be continued until harvest. When foliage dies, spores of the late blight pathogen that remain on the foliage also die. This practice will prevent infection of tubers during harvest and development of late blight in storage. In many WI fields, even 3 desiccation treatments have not completely killed vines. As such, the continuation of fungicide use to protect tubers is critical.

4) Do not produce cull piles of late blight infected tubers. Such piles are a significant source of spores and centers of large piles may not experience freezing/killing winter temperatures which serve to kill tuber tissue and the pathogen. Culls should be spread on fields not intended for potato production the following year in time that they will freeze completely and be destroyed during the winter. Potato culls can also be destroyed in some other way such as chopping, burial, burning or feeding to livestock.

5) Keep tubers dry in storage. Air temperature and humidity should be managed so as to avoid producing condensation on tubers. Avoid or limit long term storage of tubers from fields in which late blight was detected. Temperatures $\leq 45^{\circ}\text{F}$ limit activity of the late blight pathogen, but are not ideal for curing during pre-conditioning. Condensation and warmer temperatures can promote spore production of the late blight pathogen in storage. Application of fungicides such as phosphorous acids (ie: Phostrol) on tubers entering storage can limit progress and spread of late blight. Carrier volume of fungicides should be no more than 0.5 gal water/ton of tubers.

The decision to make fungicide applications to potato tubers post-harvest is not trivial. The addition of water to the pile, even in small volumes necessary for effectively carrying fungicides, may create an environmental favorable to disease under certain conditions. Typically, post-harvest fungicides are applied in ≤ 0.5 gal water/ton (2000 lb) of potatoes. At this spray volume, an evenly emitted liquid will leave tubers appearing slightly dampened. If tubers appear slick or shiny with wetness, the spray volume is likely greater than 0.5 gal/ton or the emitter may not be properly functioning.

Under some circumstances, for instance when tubers come out of the field in excellent condition and field history includes little to no disease concern, additional tuber dampness may be unacceptable and seen as a bin risk that outweighs any fungicidal benefit. In other circumstances, tubers may come out looking rough or with harvest damage, and field history includes pink rot or late blight. A scenario such as this may benefit from a post-harvest fungicide and resulting dampness should be mitigated by appropriate ventilation and temperature control.

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

<i>Location</i>	Planting Date	50% Emergence	P-Day Cumulative	Disease Severity Value	Date of DSV Generation	Increase in DSV from last week (9/5)
<i>Antigo</i>	Early 5/20	6/9	724	106*	9/12	6
	Mid 5/27	6/16	676	106*	9/12	6
	Late 6/6	7/2	540	75*	9/12	6
<i>Grand Marsh</i>	Early 4/20	5/19	894	166*	9/12	7
	Mid 5/4	6/1	807	160*	9/12	7
	Late 6/3	6/23	630	124*	9/12	7
<i>Hancock</i>	Early 4/24	5/20	944	103*	9/12	3
	Mid 5/8	6/2	845	100*	9/12	3
	Late 6/3	6/24	656	82*	9/12	3
<i>Plover</i>	Early 4/21	5/20	842	166*	9/12	9
	Mid 5/5	6/1	758	163*	9/12	9
	Late 6/5	6/24	581	134*	9/12	9

Please note that we have surpassed the threshold for late blight DSVs (18) in all monitored areas for all plantings of potatoes. 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.

Use of Phostrol as a foliar fungicide application has been shown to create tuber resistance to late blight (and pink rot) in studies from multiple states. Phostrol is at times associated with some phytotoxicity depending upon environmental conditions, spray volume, and rate. However, a little phytotox prior to chemical vine kill is not a bad thing. Mancozeb use late in the spray program can aid in limiting tuber infection by late blight spores. 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 potatoes of all planting dates at all locations. Recall, the P-Day 300 threshold is an indicator for timing the initial fungicide application for management of early blight.

Cucurbit downy mildew updates: No new reports of Downy mildew in WI this past week, as far as I am aware. To date, we've confirmed cucurbit downy mildew in Dane and Green Lake Counties, WI. Pickling cucumber crops are finishing up in Central WI and it is important to pay attention to pre-harvest intervals on fungicide labels to enable timely harvests in a multi-pick

crop. In the past week, IL, NJ, NY, OH, PA, and TN reported cucurbit downy mildew, as depicted in red on the map below. In summary this year, AL, DE, FL, GA, IN, KY, LA, MA, MD, MI, NC, NJ, NY, OH, ON Canada, PA, SC, TN, TX, WI, and WV have reported cucurbit downy mildew across multiple cucurbit hosts.



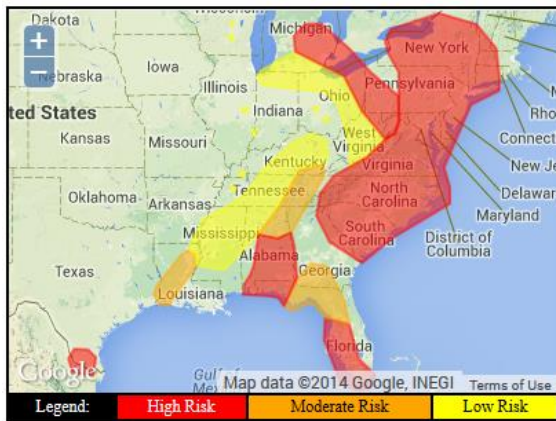
National reports of cucurbit downy mildew

Locations of recent (red) and older (green) reports of cucurbit downy mildew in the U.S. in 2014. Map sourced from <http://cdm.ipmpipe.org/> from 11:33PM Sep 12 2014.

Further information on cucurbit downy mildew:

<http://learningstore.uwex.edu/Assets/pdfs/A3978.pdf>

Risk prediction map for Day 2: Saturday, September 13



Sat Sep 13, 2014 Cucurbit Downy Mildew Forecast

<http://cdm.ipmpipe.org/current-forecast> accessed 9/12/14 at 11:37PM. There is low risk of spore movement from older sites of confirmation in Dane and Green Lake Counties, WI to the rest of WI - see forecast map to the left with low risk area in yellow. Management information for cucurbit downy mildew can be found at:

<http://www.plantpath.wisc.edu/wivegdis/pdf/2014/August%2015%202014.pdf>