Vegetable Crop Update

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

No. 17 – August 20, 2013

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Calendar of Events

Aug 22 – UWEX-Langlade County Airport Research Station 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. Vegetable Path Webpage: http://www.plantpath.wisc.edu/wivegdis/

Late blight status in WI and the U.S.: **We had a few new late blight samples this past week – however – none from new counties.** Table 1 includes further details. **In the past week, KY, MA, ME, NY, OH, PA, and Ontario Canada reported late blight on potato and/or tomato.** To date this production year, late blight has been reported in in FL, KY, LA, MA, MD, ME, MI, NJ, NY, OH, OR, PA, TN, WI, WV, and Ontario Canada. The website: http://www.usablight.org/ indicates location of positive reports of late blight in the U.S. and provides further information on disease characteristics and management.

Table 1. Characterization of late blight from Wisconsin in 2013.

County	Host	Genotype	Date of Confirmation
Adams	potato	US-23	28 Jun
Juneau	potato	US-23	29 Jun
Sauk	tomato	US-23	2 Jul
Dunn	potato	US-23	29 Jul
Portage	potato	US-8/US-23	29 Jul/6 Aug
Brown	potato+tomato	US-23	6 Aug
Langlade	potato	US-23	6 Aug
Racine	tomato	US-23	8 Aug
Waushara	potato	US-23	8 Aug

As a reminder, US-8 is resistant to mefenoxam/metalaxyl fungicides and is an A2 mating type; US-23 is sensitive to mefenoxam/metalaxyl fungicides and is an A1 mating type.

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations

P-Day of ≥ 300 indicates threshold for early blight risk and triggers preventative application of fungicide. DSV of ≥ 18 indicates threshold for late blight risk and triggers preventative application of fungicide. Red text in table below indicates threshold has been met. NA indicates that information is not yet available as emergence has yet to occur. **http://www.plantpath.wisc.edu/wivegdis/contents_pages/pday_sevval_2013.html**

Location	Planted	50% Emergence	P-Day Cumulative (increase from 8/12)	DSV Cumulative (increase from 8/12)	Calculation Date
Antigo Area	Early 5/13	6/4	547 (40)	50 (0)	8/19/13
	Mid 5/22	6/17	470 (40)	42 (0)	8/19/13
	Late 6/7	6/29	372 (40)	26 (6)	8/19/13
Grand Marsh Area	Early 4/15	5/10	674 (46)	270 (18)	8/19/13
	Mid 5/1	5/21	639 (45)	270 (18)	8/19/13
	Late 5/15	6/5	548 (45)	243 (18)	8/19/13
Hancock Area	Early 4/20	5/15	749 (53)	86 (0)	8/19/13
	Mid 5/5	5/23	688 (53)	84 (0)	8/19/13
	Late 5/15	6/5	606 (53)	62 (0)	8/19/13
Plover Area	Early 4/22	5/17	705 (88)	196 (27)	8/19/13
	Mid 5/7	5/30	625 (88)	172 (27)	8/19/13
	Late 5/24	6/5	583 (88)	163 (27)	8/19/13

DSVs and Late Blight: From in-potato-field weather stations here in Wisconsin, we have exceeded initial threshold for Blitecast in all monitored locations. Accumulations of DSVs were moderate to low in most sites. A 5 to 7-day fungicide program is appropriate at this time given presence of pathogen in state. There is a chance of rain (~40%) for many areas of the state tomorrow and later this week, with nights in the 50s (F) –weather which may promote late blight.

In order to help better understand the epidemic at hand, **please submit samples to my lab** or work through your county agent and request that they send to me for genotyping. *Even if a sample has already been submitted from your county and determined to be US-23.* All we need to know is the county of sample origin. Identification of genotype at the county level would be very helpful in improving our understanding of this epidemic and potential future risks. Lab address is: Amanda Gevens, 1630 Linden Dr, Room 689, Plant Pathology Dept., University of Wisconsin, Madison, WI 53706. Please send infected leaves in a slightly inflated ziplock bag with no paper towel. Overnight shipping is best.

PDays and Early blight: P-Days have reached/surpassed the threshold of 300 in all plantings of potato in WI. Fungicide applications for the management of early blight are recommended at this time. Because of the dual risk of late and early blight, consider management options that control against both diseases. Symptoms of early blight are advancing in lower and mid-plant canopies throughout most of Wisconsin. In our early blight untreated control potato plots at the Hancock Agricultural Research Station, we have roughly 60% disease severity at this time on Russet Burbanks.

***Cucurbit Downy Mildew*:** has been identified in Jefferson County Wisconsin in a commercial field on melon and squash. No downy mildew has been observed, to date, on cucumber, or in

home gardens or our sentinel monitoring plots. **In the past week, many states reported cucurbit downy mildew including AL, GA, KY, MA, MI, NC, NJ, NY, PA, and WV.** In summary this year, AL, CT, DE, FL, GA, IN, KY, MD, MI, NC, NJ, NY, OH, PA, SC, TX, VA, WV, and Ontario Canada have reported cucurbit downy mildew across multiple cucurbit hosts. I will be keeping tabs on disease reports in the region and will provide updates in this newsletter. No forecasted risk of movement of spores from states reporting detects to Wisconsin at this time. Forecasts have the pathogen moving to the north and east of active sites at this time and we do not have inoculum sources to our direct south or west. The website: http://cdm.ipmpipe.org/ offers up to date reports of cucurbit downy mildew and disease forecasting information.

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

Onion downy mildew has also been confirmed in a few areas of the state in the past week. Onion Downy mildew can be very problematic in onion fields. This foliar disease is caused by a fungus-like pathogen called *Peronospora destructor*. Infection is favored by temperatures less than 72°F and high humidity and leaf wetness. The pathogen can overwinter in volunteer onion, culls, and wild Allium weed species. Symptoms include pale or white elongated patches on leaves that start off small and can elongate and produce a purple-gray sporulation which appears "downy." Leaves can bend over and eventually die due to severe downy mildew infection. Please refer to picture below. This disease can impact bulb size, quality, and storability. Management recommendations include practicing a 3+ year rotation to non-hosts such as small grains and corn, eliminating culls and volunteers, avoiding dense planting, avoiding excess N and overhead irrigation, and orienting rows parallel to prevailing wind to avoid prolonged leaf wetness. Additionally, there are fungicides that can be effective for the management of onion downy mildew. Effective fungicides for Downy mildew control include mancozeb (ie: Dithane), azoxystrobin (Quadris, Amistar), pyraclostrobin (Cabrio), pyraclostrobin & boscalid (Pristine), dimethomorph (Forum), mandipropamid (Revus), mefenoxam (Ridomil Gold), phosetyl-aluminum (Aliette), fenamidone (Reason), and copper hydroxide (Kocide, Champ). Although labeled for onion downy mildew, coppers and chlorothalonil are not very effective for disease control, and coppers can be phytotoxic to onions. Please see the 2013 Wisconsin Vegetable Production Guide A3422 for further details on application rates and specifications. If you suspect you have Downy mildew in your onions, please get a sample and contact your county agent, our disease diagnostic clinic, or myself for confirmation.


Downy mildew

The 2013 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-Wisconsin2013-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

Soil Science Update – Dr. Matt Ruark, Assistant Professor & Extension Soil Scientist, UW-Madison, Dept. of Soil Science, 608-263-2889 (office), Email: mdruark@wisc.edu. Co-authored by Mack Naber, Research Technician in Soil Science, UW-Madison.

Release of nitrogen from ESN during cool, mid-summer conditions: Questions have been asked regarding if the unseasonably cool weather conditions occurring at the end of July would have caused any issues with the performance of ESN. The release of nitrogen from ESN in Fig. 1 indicates that nitrogen release had stalled between 70 and 84 days after planting, which coincides with a sharp decline in soil temperature. The release of N was determined by adding a known amount of ESN to mesh bags and burying the bags in the potato hill. Every two weeks, a set of mesh bags are collected and soil temperature was measured in the top 15 cm. The peak in the soil temperature curve at day 40 coincided with canopy closure. For potato, it is expected that soil temperatures will decline slightly and then remain steady until the canopy starts to sequence. Total nitrogen release from ESN, based on previous experiments, was expected to have release ~90% of the nitrogen by day 80.

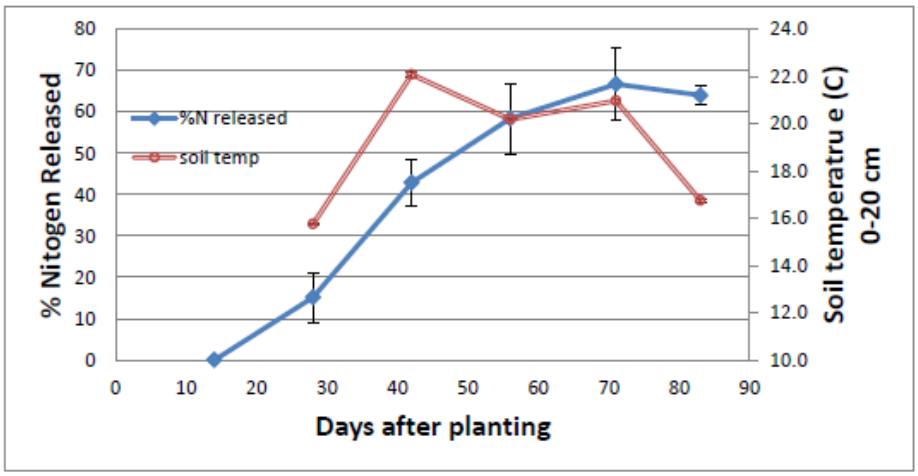

Figure 1. Nitrogen release from ESN and soil temperature in a Russet Burbank Potato field. Error bars represent standard error

Looking at the prills pulled from the day 84 sample offers visual confirmation that some of the nitrogen has not yet released. About a fourth of the day 84 ESN prills were hard and mostly full of urea (Fig. 2). The difference between prills is visually striking. The empties, in the lower half of the dish, are flat and desiccated. The ones at the top of the dish are round and smooth. This would indicate even within the same soil environment, different prills are releasing N faster than others.

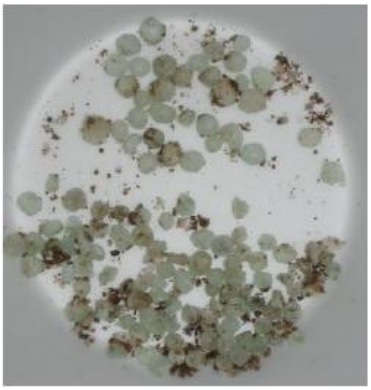

Figure 2. Picture of ESN prills in mesh bag at 84 days after planting. The top half of the circle contains ESN prills full of urea, while the bottom half contains empty ESN coatings.

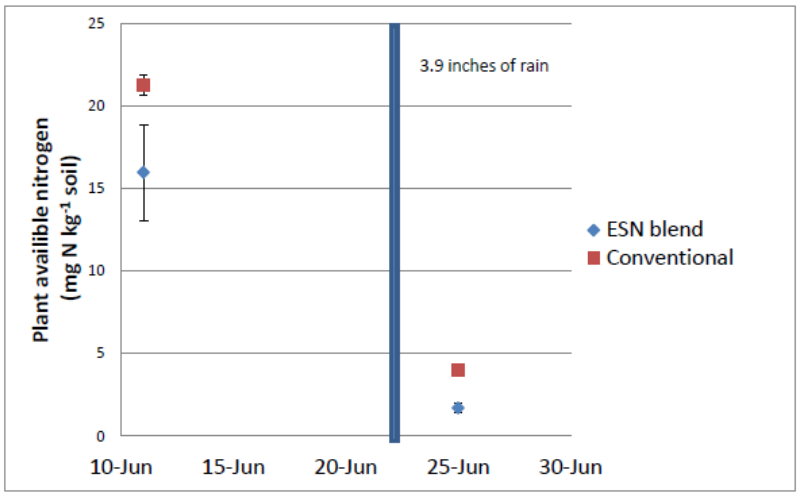

Figure 3. Plant available nitrogen (which includes both ammonium-N and nitrate-N) in the top 6 inches of a Russet Burbank Potato hill before and after a large rain event in fields fertilizer with and without ESN.

In a study tracking plant available nitrogen (PAN) in Russet Burbank Potato fields with and without controlled-release fertilizer, ESN had slightly lower PAN concentrations in early June compared to conventional fertilizer (Fig. 3). This would be expected, as ESN does not release as much N into the soil environment at any one time. Measureable plant available nitrogen decreased sharply following the heavy rainfall event on June 22 for both ESN and conventional fertilizers. However, based on the measured release patterns of N from ESN, 30-40% of the N remains protected in the polymer coating. It is also interesting to note that the conventional managed field received multiple rescue applications of N, while the ESN field did not based on petiole nitrate-N concentrations.

Organic Potato Meeting advertisements from Dr. Ruth Genger, UW-Department of Plant Pathology

Potato variety trial field visits in Minnesota and North Dakota: Selecting varieties that are adapted to your growing region, conditions and preferences can mean the difference between an abundant, satisfying harvest or disappointment after lots of work and sweat! At two field visits in Minnesota and North Dakota, Dr. Ruth Genger, from the University of Wisconsin-Madison, will give an overview of 4 years of participatory variety selection on organic farms in the Upper Midwest. We will view potato plots including varieties from Seed Savers Exchange, and talk about opportunities to participate in potato variety selection in your farm or garden. Come join us, and share your questions, experiences and ideas about potato production and variety selection.

In Minnesota: Wednesday Aug 21, at Paradox Farm, 11643 State Hwy 78, Ashby, MN 56309. Potluck lunch at 1:30 pm; variety trial tour, presentation and discussion from 3-4 pm. Paradox Farm is located right off state highway 78, 10 miles south of Battle Lake and seven miles north of Ashby. For more information: Sue Wika at paradoxhomestead@gmail.com or 218.747.2202

In North Dakota: Friday Aug 23, Dragonfly Garden, United Tribes Technical College, Bismarck, ND. The Dragonfly Garden is located at the end of Burleigh Avenue, adjacent to the airport fence-line. Time: TBA. For more information: Colette Wolf at cwolf@uttc.edu or 701.255.3285 ext. 1426