Vegetable Crop Update

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

Extension
UNIVERSITY OF WISCONSIN-MADISON

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- Snap bean production updates
- Potato and tomato early blight and late blight disease updates
- Cucurbit downy mildew updates

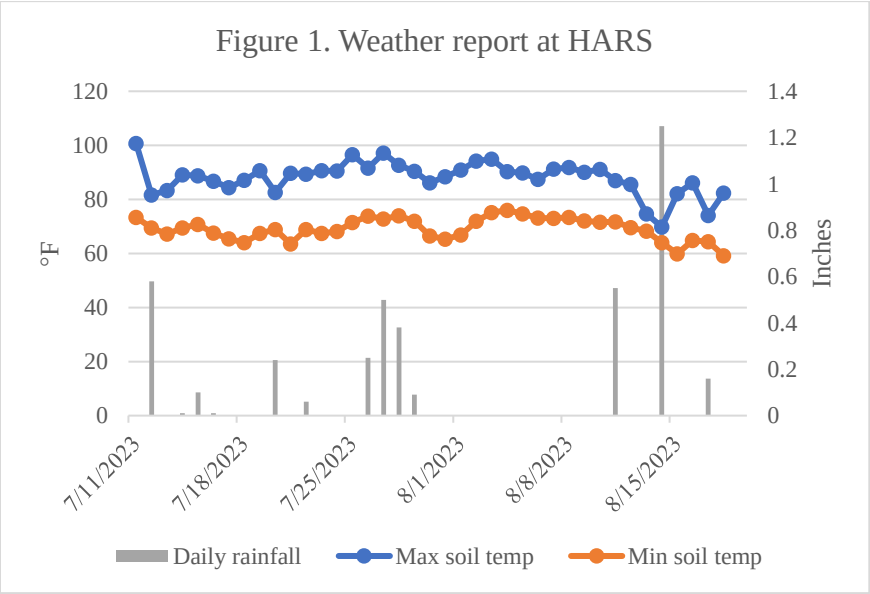
Calendar of Events:

November 28-30, 2023 – Midwest Food Producers Assoc. Processing Crops Conference, Kalahari Convention Center
January 9-11, 2024 – Wisconsin Agribusiness Classic, Alliant Energy Center, Madison, WI
January 21-23, 2024 – Wisconsin Fresh Fruit and Vegetable Growers Conference, Kalahari Resort, Wisconsin Dells, WI
January 25-26, 2024 – Organic Vegetable Production Conference, UW Madison Division of Extension (Online)
February 2-3, 2024 – Organic Vegetable Production Conference, UW Madison Division of Extension, Alliant Energy Center, Madison, WI
February 6-8, 2024 – UW-Madison Div. of Extension & WPVGA Grower Education Conference & Industry Show, Stevens Point, WI

Yi Wang, Associate Professor & Extension Potato and Vegetable Production Specialist, UW-Madison, Dept. of Horticulture, 608-265-4781, Email: wang52@wisc.edu.

Despite the dry conditions, so far, we have had a good growing season with warm days and cool nights (Figure 1), resulting in higher than average (even close to record-breaking) yield and really good quality as reported by several folks. And this has been noted not only in Wisconsin but also in other neighboring Upper Midwestern States like Minnesota. Harvested varieties such as Colomba, Plover Russet and Caribou Russet have shown very little hollow heart and not-too-bad scab issues. The 1.25'' of rainfall occurring on August 14th made it unneeded to irrigate for about a week.

Figure 1. Weather report at HARS



At the Hancock Ag Research Station, we have irrigated our full-season potatoes with 16.85'' of water in the C field (Figure 2) and 17.35'' of water in the K field (Figure 3). Therefore, as of August 19th, we have received about 40 lb/acre of extra nitrogen from the irrigation water in the C field (10 ppm of nitrate-N), and about 100 lb/acre of extra nitrogen from the groundwater in the K field (25 ppm of nitrate-N). Even with the additional nitrogen from the irrigation water, we can still see apparent canopy color difference between the control treatment (only 40 lb/acre of starter, highlighted plots in the figures) and the higher N rates (250 and 350 lb/acre of seasonal total N, the rest of the plots).

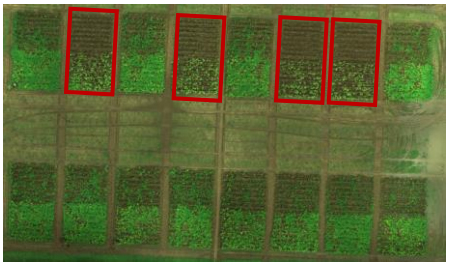


Figure 2. C field (left)

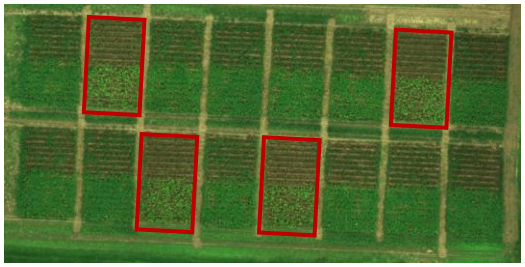


Figure 3. K field (right)

I dug some Snowden (left) and Plover Russet (right) tubers under 360 lb N/acre on August 19th, and their size profiles are shown below. Definitely more yield potential could be achieved before vine kill in early September.

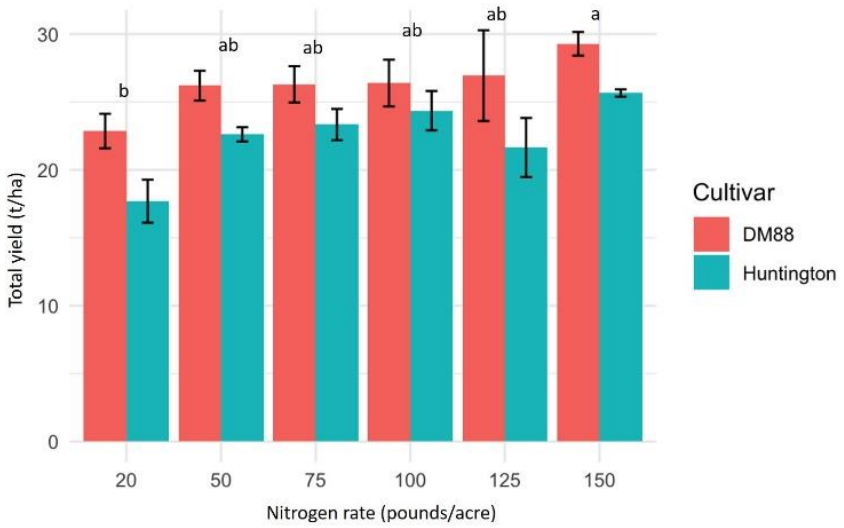
Snowden under 360 lb N/acre

Plover Russet under 360 lb N/acre

Also I dug some Dark Red Norland (DRN) tubers under two different N rates on August 19th. It is very interesting to observe that tubers under 150 lb N/acre have way more uniform size profile than those under the high N program at 300 lb N/acre. This could suggest that unnecessary N fertilization could lead to not ideal tuber sizes. In general, very minimum scab problems were noticed on the red potatoes.

DRN under 150 lb N/acre

DRN under 300 lb N/acre



On July 28th we harvested our snap bean nitrogen trial at HARS, and the yield data is reported in the figure on the left here. We only got significant yield difference between the control treatment (20 of starter N/acre) and the highest N rate (150 lb/acre) for both DM88 and Huntington. Overall, the yield was very good this year, even the plots under the control treatment. One thing to point out is that we irrigated 13.2'' of water to the snap beans this season, and thus we have received about 76 lb/acre of extra N from the irrigation water.

Amanda Gevens, Chair, Professor & Extension Vegetable Pathologist, UW-Madison, Dept. of Plant Pathology, 608-575-3029, Email: gevens@wisc.edu, Lab Website: https://vegpath.plantpath.wisc.edu/

Early blight of potato/tomato. Accumulations of P-days this past week were between 39-50 across the state of Wisconsin. In all locations and all planting dates, potato fields have surpassed the threshold and should receive (and continue to receive) preventative fungicide applications for early blight management. Hotter days generate roughly 10 P-days per day if you are looking ahead to likely accumulations and preventative fungicides. Early blight in our UW Hancock ARS plots has looked a bit different this year, with fewer smaller, newer lesions overall making for less early blight. Because of the hotter, dryer weather, Potato Early Dying seems more visually pronounced in our Russet Burbank plots. We're anxious to have a look at our yields in these plots which have remained quite healthy and green for a longer duration than typical.

Late blight of potato/tomato. Accumulations of Blitecast DSVs were low this past week in the 7 sites detailed in our table, below, ranging from 3 to 4. The usablight.org website (https://usablight.org/map/) indicates no new late blight reports in the past week. The most recent was a report of tomato late blight from Henderson County North Carolina on 8/9/23 (genotype not yet known). No new reports from NY or Canada. So far, all characterizations of the late blight pathogen identified in North America this growing season have resulted in the US-23 type. Fungicides for the management of late blight in tomato and potato crops are provided: https://learningstore.extension.wisc.edu/products/commercial-vegetable-production-in-wisconsin. A specific list of fungicides for potato late blight in Wisconsin was also offered in a special report shared via email on July 28. https://vegpath.plantpath.wisc.edu/wp-content/uploads/sites/210/2023/08/2023-Potato-Late-Blight-Fungicides.pdf

Current P-Day (Early Blight) and Disease Severity Value (Late Blight) Accumulations. Many thanks to Ben Bradford, UW-Madison Entomology; Stephen Jordan, UW-Madison Plant Pathology; and our grower collaborator weather station hosts for supporting this disease management effort again in 2023. A Potato Physiological Day or P-Day value of ≥300 indicates the threshold for early blight risk and triggers preventative fungicide application. A Disease Severity Value or DSV of ≥18 indicates the threshold for late blight risk and triggers preventative fungicide application. Red text in table indicates threshold has been met or surpassed. TBD indicates that data are To Be Determined as time progresses. Weather data used in these calculations is from weather stations that are placed in potato fields in each of the four locations, as available. Data from an alternative modeling source: https://agweather.cals.wisc.edu/vdifn will be used to supplement as needed for missing data points and for

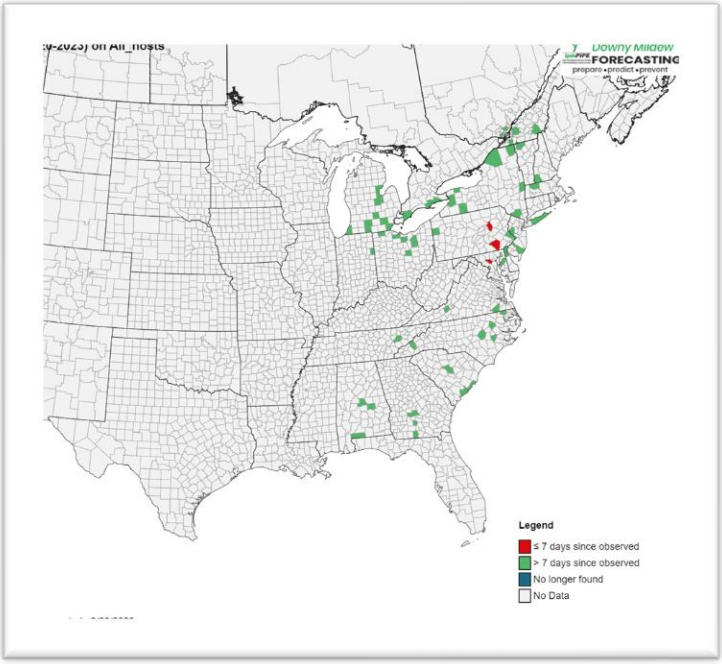
additional locations (indicated with *). Data are available in graphical and raw formats for multiple locations at: https://vegpath.plantpath.wisc.edu/dsv/.

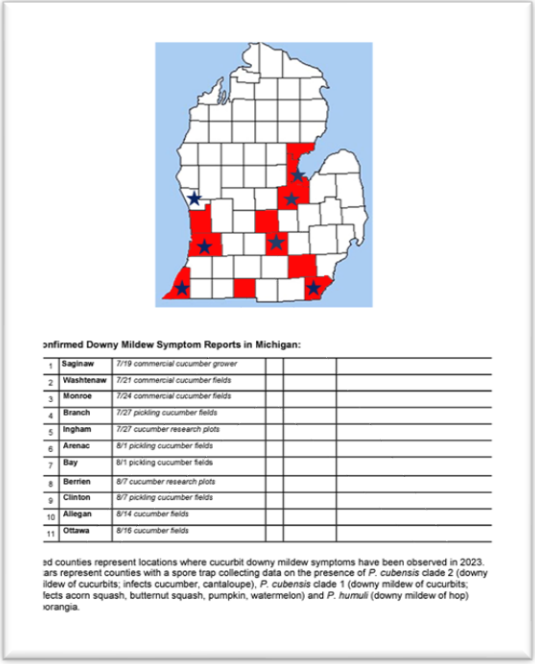
	Planting Date		50% Emergence Date	Disease Severity Values (DSVs) *through 8/19/2023*	Potato Physiological Days (P-Days) *through 8/19/2023*
Spring Green*	**Early**	Apr 3	May 9	12	**802**
	Mid	Apr 17	May 12	12	**780**
	Late	May 10	May 23	12	**711**
Arlington*	**Early**	Apr 5	May 10	11	**811**
	Mid	Apr 20	May 15	11	**773**
	Late	May12	May 25	11	**713**
Grand Marsh	**Early**	Apr 5	May 10	10	**769**
	Mid	Apr 20	May 15	10	**735**
	Late	May 12	May 25	10	**683**
Hancock	**Early**	Apr 10	May 17	11	**736**
	Mid	Apr 22	May 19	11	**730**
	Late	May 14	May 28	11	**681**
Plover	**Early**	Apr 14	May 19	15	**723**
	Mid	Apr 24	May 20	15	**717**
	Late	May 19	May 29	15	**668**
Antigo	**Early**	May 1	May 28	11	**635**
	Mid	May 15	June 3	10	**590**
	Late	June 7	June 23	10	**454**
Rhinelander*	**Early**	May 7	June 1	7	**603**
	Mid	May 18	June 5	7	**568**
	Late	June 9	June 24	7	**445**

In addition to the potato field weather stations, we have the UW Vegetable Disease and Insect Forecasting Network tool to explore P-Days and DSVs across the state (https://agweather.cals.wisc.edu/vdifn). This tool utilizes NOAA weather data. In using this tool, be sure to enter your model selections and parameters, then hit the blue submit button at the bottom of the parameter boxes. Once thresholds are met for risk of early blight and/or late blight, fungicides are recommended for optimum disease control. Fungicide details can be found in the 2023 Commercial Vegetable Production in Wisconsin Guide, Extension Document A3422. https://learningstore.extension.wisc.edu/products/commercial-vegetable-production-in-wisconsin

Cucurbit Downy Mildew. The Cucurbit Downy Mildew forecasting webpage (https://cdm.ipmpipe.org/) is not forecasting the movement of the pathogen, but the group is offering reporting of findings of cucurbit downy mildew from the US (see current map below showing red counties with new reports from PA and MD). Dr. Mary Hausbeck reported cucumber downy mildew in commercial fields in 11 Michigan Counties as of 8/16/2023**. To date, there have been no reports of downy mildew here in WI**. We should be considering preventative treatment of cucumber and melon crops here due to the likelihood of the disease resulting from clade 2 downy mildew. A list of best-performing conventional fungicides is provided below.

- Elumin + chlorothalonil or mancozeb
- Omega (Orbus) + chlorothalonil or mancozeb
- Orondis Opti (Chlorothalonil is part of the premix, additional chlorothalonil is suggested. See label for maximum chlorothalonil rates.)
- Previcur Flex + chlorothalonil or mancozeb
- Ranman + chlorothalonil or mancozeb
- Zampro + chlorothalonil or mancozeb





onfirmed Downy Mildew Symptom Reports in Michigan:

1	Saginaw	7/19 commercial cucumber grower			
2	Washtenaw	7/21 commercial cucumber fields			
3	Monroe	7/24 commercial cucumber fields			
4	Branch	7/27 pickling cucumber fields			
5	Ingham	7/27 cucumber research plots			
6	Arenac	8/1 pickling cucumber fields			
7	Bay	8/1 pickling cucumber fields			
8	Berrien	8/7 cucumber research plots			
9	Clinton	8/7 pickling cucumber fields			
10	Allegan	8/14 cucumber fields			
11	Ottawa	8/16 cucumber fields			

d counties represent locations where cucurbit downy mildew symptoms have been observed in 2023.
ars represent counties with a spore trap collecting data on the presence of *P. cubensis* clade 2 (downy
ildew of cucurbits; infects cucumber, cantaloupe), *P. cubensis* clade 1 (downy mildew of cucurbits;
fects acorn squash, butternut squash, pumpkin, watermelon) and *P. humuli* (downy mildew of hop)
orangia.