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Potato research updates

Disease forecasting and updates for early and late blight in potato, cucurbit downy mildew updates

**Calendar of Events**

**December 1-3, 2020** – Midwest Food Producers Association Annual Convention/Processing Crops Conference, Kalahari, Wisconsin Dells, WI (possible remote options)

**January 24-26, 2021** – WI Fresh Vegetable Growers Association Educational Conference, Kalahari, Wisconsin Dells, WI (possible remote options)

**February 2-4, 2021** – UW-Madison Div. of Extension & WPVGA Grower Education Conference, Holiday Inn, Stevens Point, WI (possible remote options)

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On August 10<sup>th</sup> (82 days after emergence), we conducted our first harvest of an early season fresh market russet variety trial that had two N rates at 150 and 300 lb N/acre. The seeds were planted on May 1<sup>st</sup>, emergence around May 20<sup>th</sup>, canopy closure around June 20<sup>th</sup>.

Since we had poor seed emergence issue in the spring, the total yield data were not meaningful, and we are only reporting the marketable yield % and % of large tubers here. Based on our statistical analysis, there is not any significant difference between the two N rates with regard to their effects on marketable yield percentage (yield of tubers larger than 6oz / total yield) and percentage of tubers that are larger than 10oz. But we did see some significant difference of those traits for different varieties. Tables below show the traits of each variety across the two N rates. Values followed by different letters are significant different at p<0.05.

Marketable yield %		
Caribou R	63	A
W14904-13rus	59	A
W13008-1rus	54	AB
W14002-2rus	51	ABC
GoldRush	50	ABC
Silverton	42	BC
Reveille R	40	BC
W13027-46rus	38	C

% of >10oz tuber yield		
Caribou R	22	A
W13008-1rus	19	AB
W14904-13rus	17	AB
GoldRush	14	ABC
W14002-2rus	12	ABC
Silverton	9	ABC
Reveille R	6	BC
W13027-46rus	4	C

Our results indicated that Caribou Russet had potential of producing large marketable tubers, whereas W13027-46rus, an unnamed cultivar, only produced small size tubers. Reveille Russet also showed poor bulking potential in this study. Performance of the common varieties GoldRush and Silverton were not among the top candidates in the lists.

We will conduct our second harvest of the same varieties on August 25<sup>th</sup> (97 dates after emergence).

Change of topic, table below shows our groundwater testing results. Overall, nitrate-N in the Hancock Ag Research Station well reduced from about 26 ppm in June to around 20 ppm in later July. A nearby potato field had around 14 ppm, and a nearby field corn field had about 16 ppm. Within each irrigation event, there is no variation of nitrate-N level.

Site	Time from start of irrigation (hr)	DATE	Nitrate-N (ppm)
Hancock	0	7/21/20	20.4
	0.5	7/21/20	20.5
	1	7/21/20	20.8
	2	7/21/20	20.8
	0	7/27/20	20.3
	0.5	7/27/20	20.6
	1	7/27/20	20.4
	2	7/27/20	20.2
Commercial potato field	2	7/23/20	14.1
	4	7/23/20	14
	6	7/23/20	14.1
Commercial field corn field	2	7/23/20	16.3
	4	7/23/20	16.4
	6	7/23/20	16
	10	7/23/20	16

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**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). A P-Day value of  $\geq 300$  indicates the threshold for early blight risk and triggers preventative fungicide application. A DSV of  $\geq 18$  indicates the threshold for late blight risk and triggers preventative fungicide application. Red text in table indicates threshold has been met/surpassed. Weather data used in these calculations comes from weather stations that are placed in potato fields in each of the four locations. Data are available in multiple formats for each station at: <https://vegpath.plantpath.wisc.edu/dsv/>

<i>Location</i>	<i>Planting Date</i>	<i>50% Emergence Date</i>	<i>Disease Severity Values 8/22/20</i>	<i>Potato Physiological Days 8/22/20</i>
<i>Grand Marsh</i>	Early Apr 17	May 18	129	745
	Mid Apr 25	May 26	126	689
	Late May 6	June 1	123	649
<i>Hancock</i>	Early Apr 8	May 18	62	734
	Mid Apr 20	May 25	60	683
	Late May 4	May 30	57	645
<i>Plover</i>	Early Apr 10	May 23	105	686
	Mid Apr 20	May 30	99	632
	Late May 5	June 1	99	619
<i>Antigo</i>	Early May 14	June 5	63	612
	Mid May 24	June 10	63	575
	Late Jun 1	June 17	62	527

**Late Blight Management:** Our DSVs are reported here from emergence to August 22. Over the past week, we saw very modest accumulations. Generally, weather has been hot and dry. **Plantings of potatoes in the Grand Marsh, Hancock, Plover, and Antigo areas have exceeded threshold and should receive routine (~weekly) preventative fungicide application for late blight management. For locations near Adams and Pierce Counties, continued 5 to 7-day fungicide schedules are advisable.**

**Early Blight Management:** PDays are exceeding the threshold of 300 for early planted potatoes in Grand Marsh, Hancock, Plover, and Antigo areas. For more information about fungicide selections, please see the Potato section of the A3422 Commercial Vegetable Production Guide for Wisconsin, 2020. <https://cdn.shopify.com/s/files/1/0145/8808/4272/files/A3422-2020.pdf>

**National late blight update:** Late blight was reported in Wisconsin on Aug 20 on tomato in Pierce County. This has been just the second confirmation of late blight in WI this season. The previous confirmation was Aug 10 in Adams County on potato (US-23). Earlier this season, late blight had been reported in the state of Washington, and it was found in British Columbia, western Canada (Delta and Surrey) about a month ago now. The site: <https://usablight.org/map/> includes reports as they are submitted in the US. Previous reports documented the disease in NC, FL and AL. Where the late blight pathogen has been tested in the US so far this year, the clonal lineage has been US-23.

**National cucurbit downy mildew update:** No downy mildew reported from WI at this time. Reports to date, have come from: AL, CT, DE, GA, IN, KS, KY, MA, MD, ME, MI, NC, NH, NJ, NY, OH, Ontario & Quebec Canada, PA, SC, TN, VA, and WV. No forecasted movement of the pathogen in our direction, with prevailing air moving eastward. <https://cdm.ipmpipe.org/forecasting/>