Vegetable Crop Update

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

No. 11 – June 16, 2018

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Calendar of Events

July 10-12, 2018 – Farm Technology Days, Sternweis & Weber's Farms, Marshfield, WI
July 19, 2018 – UW-Hancock Agricultural Research Station Field Day, Hancock, WI
July 26, 2018 – UWEX Langlade County Field Day & Potato Virus Y Detection Training Workshop, Antigo, WI
August 2, 2018 – UW-Rhinelander Field Day, Rhinelander Agricultural Research Station, WI
November 27-29, 2018 – Processing Crops Conference & MWFPA Annual Convention, Wisconsin Dells, WI
January 15-17, 2019 – Wisconsin Agribusiness Classic, Alliant Energy Center, Madison, WI
January 27-29, 2019 – Wisconsin Fresh Fruit & Vegetable Conference, Kalahari Conference Center, Wisconsin Dells, WI
February 5-7, 2019 – UWEX & WPVGA Grower Education Conference, Stevens Point, WI

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Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations (with assistance from R.V. James, UW-Plant Pathology/R.V. James Designs, S.A. Jordan, & J. Hammel, UW-Plant Pathology): 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 yet 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." www.plantpath.wisc.edu/wivegdis/contents_pages/pday_sevval_2018.html Asterisks indicate values generated from weather data sourced from NOAA (link below to interactive tool for accessing site specific DSVs). https://agweather.cals.wisc.edu/vdifn/maps

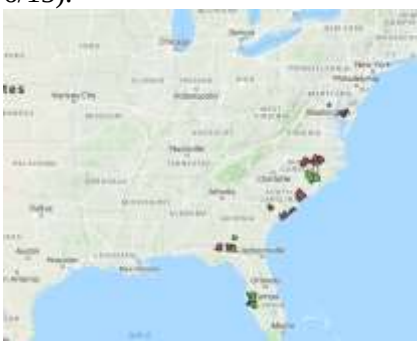
Location	Planting Date	50% Emergence	Disease Severity Value	P-Day	Date of DSV/P-Day Generation
Antigo	Early 5/12	5/28	12*	-	6/16
	Mid 5/25	6/7	3*	-	6/16
	Late 6/9	-	-	-	-
Grand Marsh	Early 5/1	5/15	30	228	6/16
	Mid 5/15	5/28	23	150	6/16
	Late 6/1	6/12	-	-	-
Hancock	Early 5/2	5/16	12*	-	6/16
	Mid 5/17	5/30	10*	-	6/16
	Late 6/1	6/14	1	-	6/16
Plover	Early 5/7	5/18	15	222	6/16
	Mid 5/20	6/1	4	129	6/16
	Late 6/2	6/15	-	-	-

National Late Blight Updates: http://usablight.org Late blight was confirmed on tomato transplants in Onondaga County NY yesterday (June 14, 2018). After some work in multiple Cornell University labs, it was reported that the genotype/strain is one that has not previously been observed. Dr. Bill Fry's lab at Cornell is working on further investigating fungicide sensitivity and host preference at this time. Information will be provided as researchers learn more. Prior to this detection in NY, most cases reported to the usablight website in 2018 have been the US-23 pathogen genotype. US-23 has been the predominant genotype in Wisconsin, and across the U.S., in recent years. US-23 can still generally be managed well with use of phenylamide fungicides such as mefenoxam and metalaxyl (ie: Ridomil). However, a potato sample from northeastern FL was sent to my lab earlier this spring and was the US-8 genotype. This information does pose some additional concern for management as US-8 cannot be managed with phenylamide fungicides as isolates are resistant to the fungicide.

A **list of registered fungicides for late blight in potato for Wisconsin** can be found in past Vegetable Crop Updates Newsletter #6 (May 20, 2018) and at link below:
http://www.plantpath.wisc.edu/wivegdis/pdf/2018/2018%20Potato%20Late%20Blight%20Fungicides.pdf

Further **information on fungicides** and other vegetable crop management inputs in the 2018 Commercial Vegetable Production in Wisconsin guide (A3422): http://learningstore.uwex.edu/Assets/pdfs/A3422.pdf

Cucurbit downy mildew reporting and forecasting site http://cdm.ipmpipe.org/ is again providing information to growers interested in tracking this potentially crop-devastating disease. In recent years, we have seen few cucumber fields with downy mildew, but when the pathogen comes to the state, the disease can reduce yield and quality substantially. The site documented confirmations of downy mildew in GA, MD, NC, and SC on primarily cucumber, acorn squash, and cantaloupe this past week (map below from 6/15).



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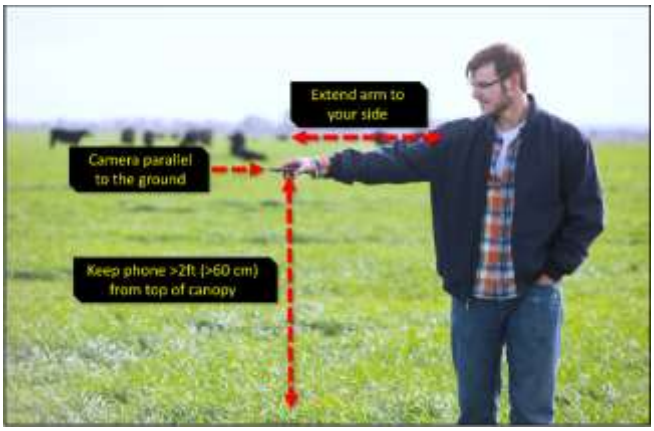
First of all, I would like to correct a mistake in last week's updates. For my protocol to use the "CANOPEO" app to measure canopy cover, there are three simple steps.

Step 1: Take the photo. For potatoes, keep your phone 1 yard from top of the hill (not canopy). Apologize for the mistake!



Step 2: Review the black and white pixels on the processed photo.

Step 3: Enter your crop information (canopy height, planting date) with the processed photo.

So far on our research plots, we have seen uneven and delayed emergence and poor plant stands of Russet Burbank and Lamoka (the worst, no more than 60% emergence, Figure 1). Emergence of Russet Norkotah, Snowden and Silverton are normal. We used cut seeds for all of those varieties except Silverton. I have also seen spotty poor emergence and stands on the commercial Russet Burbank fields (Figure 2). It is suspected that the heat between 5/26 and 5/29 with daytime temperature higher than 94°F in Central Wisconsin was a strong hit for some potato plants. Previous study has shown that warmer soil temperature does have a significant impact on mother tuber decaying. It is also suspected that tuber set of those plants will be significantly affected. I will keep an eye on that and report it in my later updates.

Figure 1

Figure 2

On June 15th I dug a couple of normal Russet Burbank that were planted on May 1st. The biggest tuber is about 0.7'' in diameter (Figure 3).

Figure 3

Additionally, we collected the stem count per plant data on our research plots this week, below is a list of our stem count numbers of different varieties:

Variety	Average stem count per plant (data collected from 20 replications of 25 plants with 12'' spacing)
Russet Burbank	3.5
Russet Norkotah	2.5
Silverton	2
Snowden	5
Lamoka	2.5
Hodag	2

Stem number per plant is an important indicator of potato production and profitability. With fewer stems there are fewer tubers, larger tuber sizes, and increased total and marketable yield. The main factor affecting stem number is the physiological age of the seed. Below is a table showing the major difference between young seeds and old seeds:

Young seed	**Old seed**
Slow emergence	Rapid emergence
Fewer stems per plant	More stems per plant
Low tuber set	Higher tuber set
Longer tuber bulking period	Shorter tuber bulking period
Larger tubers at harvest	Smaller tubers at harvest

(Source: Iritani and Thornton, 1984)

Average stem number of Russet Burbank seed pieces and effect on yield.

	Avg. stem count per plant	
	3.2	**5.4**
<4 oz (cwt/a)	67	106
4-6 oz (cwt/a)	108	134
6-10 oz (cwt/a)	203	189
10-14 oz (cwt/a)	127	86
>14 oz (cwt/a)	113	60
Total yield (cwt/a)	618	574
Marketable yield (cwt/a)	576	544
% >6 oz	72	58
% >10 oz	39	25

(Source: Knowles and Knowles, 2006)

Depending upon the market, finding the best number of stems for different varieties is essential to a profitable potato operation. At this point of the season, there isn't much that can be done to change stem

number or tuber set. But keep in mind that fields with high stem numbers will tend to have slower growth rates of individual tubers, and may take longer to reach the desired tuber size. Management practices for fields with high stem populations include: maximize the length of tuber bulking with fertility, irrigation and disease control practices, and consider pushing back vine kill to allow more time for tubers to size.

On the other hand, fields with low stem numbers will have fewer tubers per plant, leading to fast bulking that can results in brown center, hollow heart, and sugar ends if environmental stresses occur. Managing these fields to provide uniform growth conditions is needed.