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

No. 19 – August 15, 2021

In This Issue:

Calendar of Events:

November 30-December 2, 2021 – Midwest Food Producers Assoc. Processing Crops Conference, Kalahari Convention Center
February 8-10, 2022 – UW-Madison Div. of Extension & WPVGA Grower Education Conference, Holiday Inn, Stevens Point, WI

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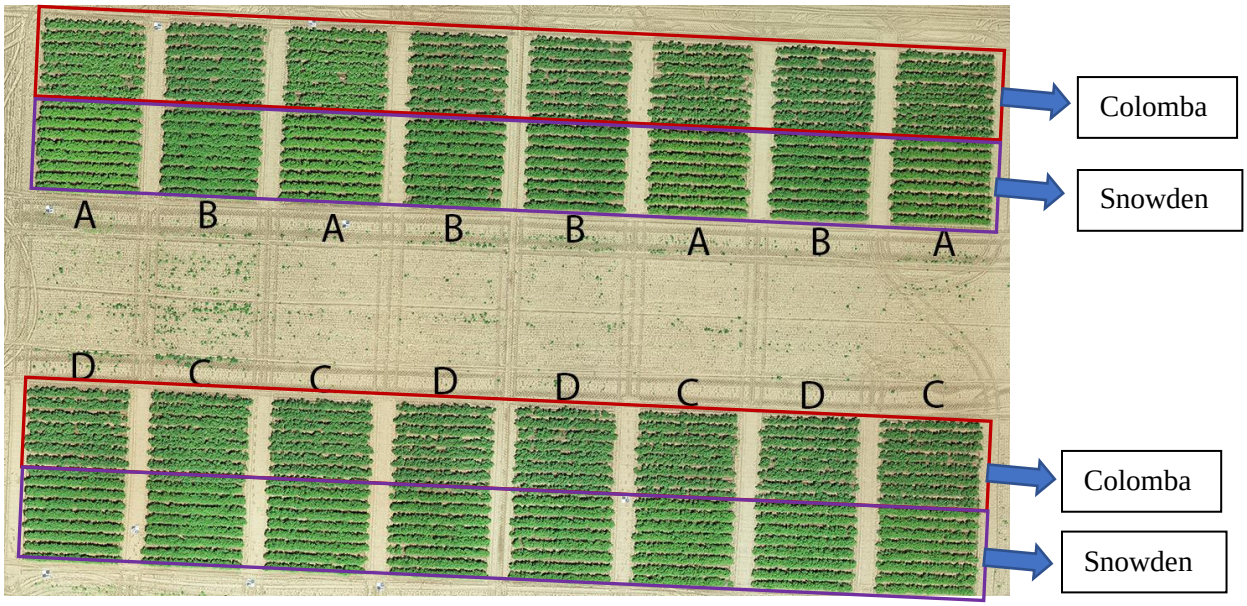
This week I am showing some aerial images that were taken from our fertigation trial. The objective of the trial was to evaluate effects of nitrogen credits in groundwater on growth of two potato varieties Snowden and Colomba. We have four treatments in this trial. Treatment A is a control. Treatment B and C had the same total seasonal N rate, with B having N applied up until tuber initiation, and C having N split between tuber initiation (small amount), and four fertigation events. Treatment D is an over-application rate. Below are the N application schemes of the four N rates.

Treatment ID	Planting (6-30-22-4S)	Emergence (21-0-0-24S Ammonium Sulfate)	Tuber Initiation (34-0-0 Ammonium Sulfate)	Fertigation (32-0-0 UAN)				Seasonal Total	Notes
	4/23	5/12	6/4	6/30	7/10	7/20	7/30		
	------ lb N acre^{-1} ------								
A	40	-	-	-	-	-	-	40	Control
B	40	70	150	-	-	-	-	260	No fertigation
C	40	70	30	30	30	30	30	260	With fertigation
D	40	70	120	30	30	30	30	350	Over-application

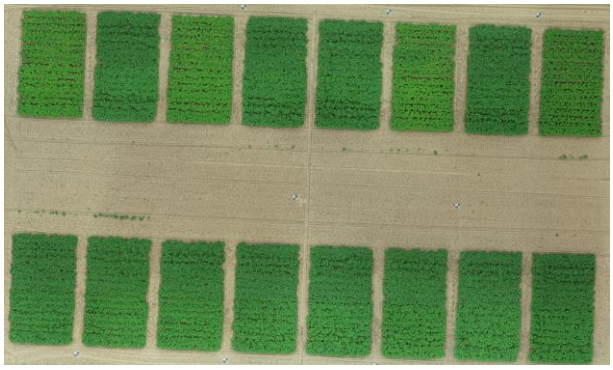
We can tell from the image that each treatment was replicated four times. The strip on the top of the image did not receive any fertigation, and the strip on the lower part of the image had four fertigation events. Within each strip, we had eight rows of Colomba and eight rows of Snowden.

6/21/2021: BEFORE CANOPY CLOSURE



From the images taken on July 13th, plots under the control treatment started to be clearly yellow, whereas plots under the other three treatments had darker green colors. Colomba plants under the control treatment started to senesce on July 20th, and we can see that Colomba were almost 100% senescent on July 29th. Snowden progressed at a slower pace compared to Colomba, under each N rate. It is also noticed that Snowden plants under the control started to go down on August 3rd, while plants under other three treatments were still vigorous and healthy. From the aerial images, we cannot simply eyeball difference between treatment B, which had a large amount of N applied at tuber initiation, and no fertigation; treatment C that had a small N application at tuber initiation, but received four fertigation events during tuber bulking; and treatment D, which is a combination of treatments B and C. We are testing the groundwater nitrate-N level in the field and will be able to calculate how many N credits we get from irrigation water. We are also testing petiole nitrate-N for all treatments during the period that we collected aerial images.

7/9/2021 7/13/2021



7/20/2021 7/29/2021

8/3/2021

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

Potato Disease Modelling and Management of Early Blight and Late Blight: 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. 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. Weather data used in these calculations comes from weather stations that are placed in potato fields in each of the four locations (substitute data from https://agweather.cals.wisc.edu/vdifn as needed). Data are available in graphical and raw formats for each weather station at: https://vegpath.plantpath.wisc.edu/dsv/

Location	Planting Date		50% Emergence Date	Disease Severity Values (DSVs) 8/15	Potato Physiological Days (P-Days) 8/15
Grand Marsh	**Early**	April 2	May 10	**88**	**685**
	Mid	April 10	May 15	**88**	**675**
	Late	May 1	May 23	**82**	**613**
Hancock	**Early**	April 5	May 12	**44**	**684**
	Mid	April 15	May 15	**44**	**675**
	Late	May 5	May 23	**40**	**613**
Plover	**Early**	April 7	May 12	**80**	**651**
	Mid	April 20	May 20	**77**	**607**
	Late	May 7	May 30	**72**	**545**
Antigo	**Early**	April 26	May 28	**41**	**622**
	Mid	May 10	June 5	**41**	**584**
	Late	May 20	June 13	**41**	**515**

All potato fields of Wisconsin have reached/surpasesed the threshold for Disease Severity Values (18) and should continue to be preventatively treated for late blight management. Accumulations over the past week ranged from 6-10 DSVs, indicating moderate risk from disease-promoting weather. An additional field in the Plover area (Portage County) of WI was determined to have late blight this past week (Aug 9). The pathogen was of the US-23 clonal lineage – as we determined in the case of the earlier diagnosis near Bancroft on July 28. Outside of Wisconsin, tomato late blight was confirmed in Ontario (Haldimand-Norfolk) Canada (Aug 10), US-23 potato late blight was confirmed in Aroostook County Maine (Aug 9); tomato late blight was also confirmed in northeastern Georgia on July 28, 2021 (Rabun County) (usablight.org). US-23 is typically sensitive to the fungicides in the phenylamide group (including mefenoxam and metalaxyl). For more information on this disease: https://vegpath.plantpath.wisc.edu/resources/potato-late-blight/

To help in selection of fungicides for managing late blight in potato in Wisconsin, I have updated a table which includes modes of action and resistance risk management groups. https://vegpath.plantpath.wisc.edu/wp-content/uploads/sites/210/2021/07/2021-Potato-Late-Blight-Fungicides.pdf

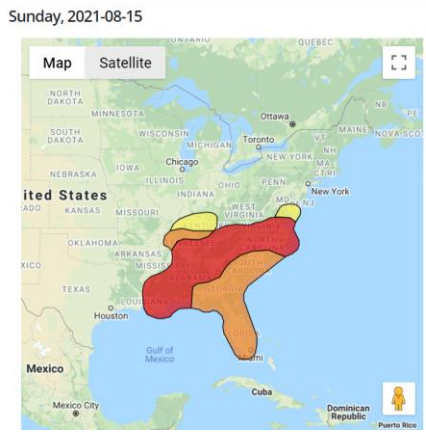
The **early blight** P-Day threshold of 300 has been exceeded in all potato plantings of Wisconsin. A listing of details of currently registered fungicides for early blight management can be found in our 2021 Wisconsin Vegetable Production guide: https://cdn.shopify.com/s/files/1/0145/8808/4272/files/A3422-2021.pdf

Cucurbit Downy Mildew Update: Over the past week, cucurbit downy mildew was confirmed in the following locations: VA (cucumber), MA (cucumber), PA (cucumber), MD (cantaloupe), MI (cucumber), MS (butternut squash), WV (cucumber), OH (cucumber), NY (cucumber, cantaloupe), KY (pumpkin), and AL (cucumber, butternut squash, pumpkin).

This season, so far, the disease has been documented in AL, CT, DE, FL, GA, IN, KY, LA, MA, MD, MI, MS, NC, NH, NJ, NY, OH, Ontario Canada, PA, RI, SC, TN, VA, and WV. There is no predicted movement of the pathogen into Wisconsin at this time– as reflected in the recent forecast (for Sunday August 15 , 2021) depicted below from https:// cdm.ipmpipe.org/

Please contact me or the UW Plant Pathology Diagnostic Clinic for confirmed diagnoses of cucurbit downy mildew. https://pddc.wisc.edu/

Due to the presence of unique pathogen types (Clade 1 and 2 types with unique host ranges among cucurbits), our improved understanding of the cucurbit downy mildew type that may be in our region can aid in recommending the most appropriate prevention of crop disease and resulting loss.



HIGH Risk for cucurbits in southeast LA, central and southern MS, the western panhandle, all but southeast AL, the northern 1/2 o f GA, south-central and eastern TN, western SC, all but southeast NC, and southern VA. Moderate Risk for western and northern TN, the nearby border counties of KY, southeast NC, central and eastern SC, the southern 1/2 of GA, southeast AL, FL except the western panhandle. Low Risk for cucurbits in central and western KY, southern MD, and southern DE. Minimal Risk elsewhere.