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. 14 – July 10, 2021

In This Issue:

Calendar of Events:

July 15, 2021 – UW-Lelah Starks Elite Foundation Seed Potato Farm Tour (10:30AM-2PM)
July 21, 2021 – UW-Hancock Ag Research Station Field Day (1-4:30PM)
July 22, 2021 – UW-Extension Langlade Co. Airport Ag Research Station Field Day
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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At this point, all potato plants in the Central Sands area have reached flowering stage. Some early season reds and russets will be vine killed starting from next week. The rainfall event that took place early this week had varied amounts in different locations, but could cause some concerns of leaching, as petiole nitrate-N numbers from many fields plummeted. At Hancock, soil moisture was at field capacity after the rainfall, and we are planning to fertigate over the weekend.

Figure 1. Knobby tubers of Soraya after heat stress. Photo courtesy of my Ph.D. student Trevor Crosby.

Figure 2. Tuber size looked smaller on Russet Burbank plants in our research plots at Hancock.

The two-week of heat with no or little rain in June was observed to cause some quality issues like growth cracks, scabs, and knobby tubers (Figure 1).

Some growers showed me their yield check results and the numbers looked ok. What I noticed interesting at Hancock was that our Russet Burbank plants showed vigorous/healthy canopies and ok

tuber set (Figure 2), but had smaller tuber size compared to samples collected at the same time in previous years. One hypothesis was that the heat delayed plant growth by at least a week. If weather stays decent in the next month then tuber bulking might be able to catch up.

Figure 3. Colomba plants under 40 units of N treatment

We also dug some Colomba tubers, both tuber set and tuber size looked good (Figure 3). Largest tuber weighed more than 5 oz. Colomba is featured by smaller canopy size, high tuber set and yield potential, and high nitrogen use efficiency. We found those to be true so far under our control treatment, which was only 40 units of N applied at planting. We are collecting weekly petioles samples from Colomba so we can establish nitrate-N sufficiency ranges for this new variety.

This year we also planted Soraya in our research plots. My team started to identify blackleg problems on some Soraya plants (Figure 4a, b). Soraya is also featured by efficient nitrogen use, but it is highly susceptible to blackleg. We will keep an eye on the incidence and severity of the disease on this variety for the rest of the growing season.

Figure 4a and b. Blackleg on Soraya plants found in our research plots. Photos courtesy of Trevor Crosby

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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) 7/9	Potato Physiological Days (P-Days) 7/9
Grand Marsh	**Early**	April 2	May 10	**40**	**412**
	Mid	April 10	May 15	**40**	**402**
	Late	May 1	May 23	**34**	**341**
Hancock	**Early**	April 5	May 12	**24**	**409**
	Mid	April 15	May 15	**24**	**401**
	Late	May 5	May 23	**18**	**338**
Plover	**Early**	April 7	May 12	**38**	**394**
	Mid	April 20	May 20	**35**	**351**
	Late	May 7	May 30	**30**	289
Antigo	**Early**	April 26	May 28	**18**	**318**
	Mid	May 10	June 5	**18**	279
	Late	May 20	June 13	**18**	210

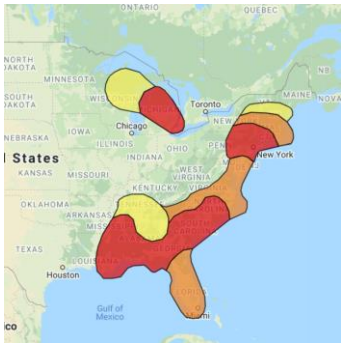
All potato fields have reached/surpasesed the threshold for Disease Severity Values (18) and should be preventatively treated for late blight management. **Late blight** continues to emerge sporadically in Wisconsin with annual occurrence. The disease hasn't yet appeared in the US this season (usablight.org), however, when environmental conditions are favorable the pathogen can become active and quickly cause crop destruction. For more information on this disease: https://vegpath.plantpath.wisc.edu/resources/potato-late-blight/

The **early blight** P-Day threshold of 300 has been met/exceeded in all plantings for Grand Marsh, Hancock, and early and mid-planted Plover areas. The earliest plantings in Antigo are now above threshold at 318. Early blight is active in central Wisconsin in the lower and middle canopies. 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

Performance of newer fungicides in our Hancock trials from recent years is provided at our website: https://vegpath.plantpath.wisc.edu/field-trials/

Cucurbit Downy Mildew Update: Cucurbit downy mildew was reported in NC (cucumber, cantaloupe), NJ (cucumber), DE (cucumber), and AL (cucumber) this past week. This season, so far, the disease has been documented in AL, DE, FL, GA, LA, MD, MS, NC, NJ, Ontario Canada, PA, SC.

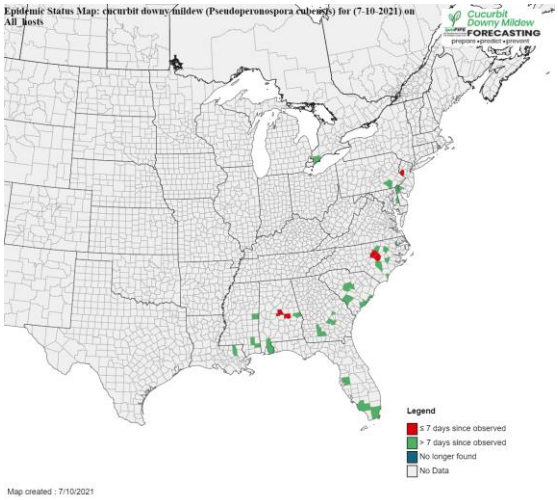
No additional reports in our growing region of MI, OH, or Ontario Canada at this time – as reflected in today's forecast depicted below for the Sunday July 11 2021 forecast from https://cdm.ipmpipe.org/



HIGH Risk for cucurbits in southeast LA, MS< southern and western AL, the FL panhandle, southern and eastern GA, SC, east-central and southeast NC, eastern PA, central and northern NJ, south-central and southeast NY, Long Island, CT, southwest MA, far southern ON, and eastern and northern lower MI. Moderate Risk in east-central NY, southern VT and NH, RI, MA except the southwest, southern N J, DE, the eastern half of MD, central and eastern VA, northeast / west-central / western NC, and the FL peninsula. Low Risk for cucurbits in west-central and northern GA, east-central and northern AL, TN except the northeast, southwest ME, central VT and NH, northern NY, the UP of MI, and northeast WI. Minimal risk otherwise.

Cucurbit Downy Mildew ipmPIPE FORECASTING prepare • predict • prevent

The cucurbit downy mildew disease forecast for Sunday July 11, 2021 is depicted above. No risk to our region. Management recommendations: https://vegpath.plantpath.wisc.edu/2021/06/20/update-11-june-20-2021/



Vegetable Insect Update – Russell L. Groves, Professor and Department Chair, UW-Madison, Department of Entomology, 608-262-3229 (office), (608) 698-2434 (cell), e-mail: rgroves@wisc.edu

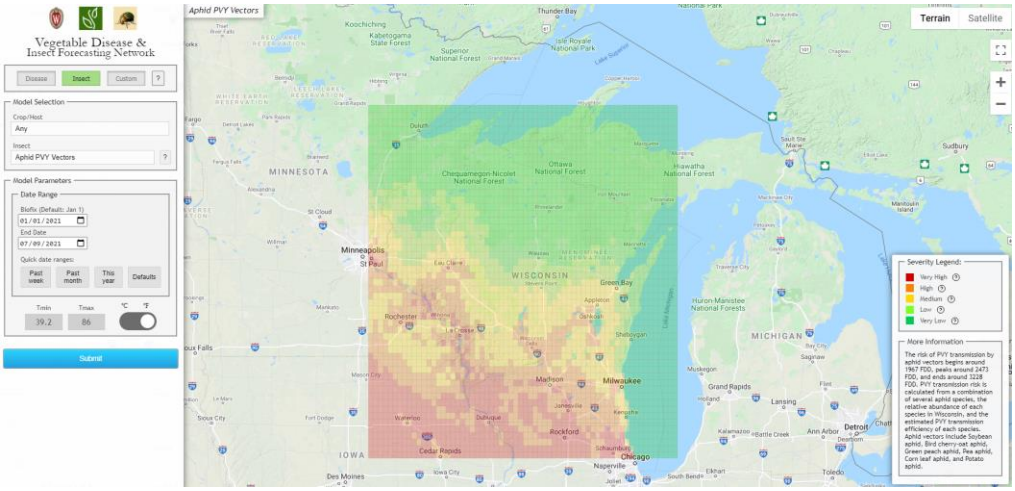
Vegetable Entomology Webpage: https://vegento.russell.wisc.edu/

Potato virus Y (PVY) – (https://vegento.russell.wisc.edu/pests/plant-pathogens/). Potato Virus Y is a potyvirus that primarily infects plants in the Solenacea family. Present globally, this semi-persistant virus is transmitted by aphids. Once PVY is inside a host plant it replicates by manipulating the potato cells into producing more virus. The effect of this is malformed plant tissues (leaf mottling, streaking, mosaic), reduced production of tubers, and plant tissue damage (necrosis, potato tuber necrotic ringspot disease). PVY infection also reduces storage quality of the tubers by decreasing the percent solids and increasing shrinkage.

PVY is spread by infected tubers. Infected plants will generate infected tubers. Depending on the cultivar and the virus strain, up to 100% of the tubers on a plant can be infected. Plants developing from infected tubers are almost always infected. Infected seed is the most important source of virus inoculum in the field. PVY is spread by many species of aphids including those that do not feed long term or colonize potato. The infected plants that develop from infected seed serve as sources of virus transmitted by aphids within and between fields during the growing season. Acquisition and transmission of the virus occurs very quickly, within seconds. It's unlikely you will see aphid vectors on your potato plants because most

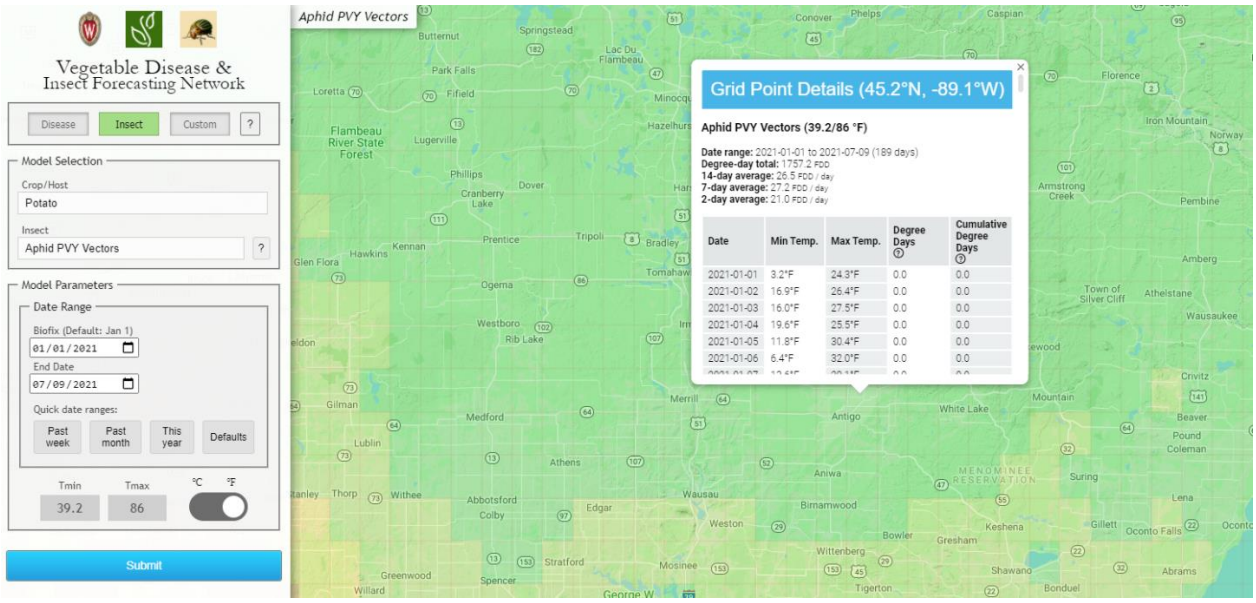
of them only alight to taste test the potato plant and then move on. But, during that brief visit, PVY can be acquired and transmitted. While insecticide treatments will prevent aphids from colonizing potatoes, they have little effect at preventing transmission simply because they do not act fast enough to prevent an aphid from taste-testing a plant. Information can be found here describing PVY aphid vectors.

Aphid flight models have been developed and are available at the Vegetable Disease and Insect Forecasting Network (https://agweather.cals.wisc.edu/vdifn?panel=insect&model=pvy-vectors). A screen shot from VDIFN (July 10, 2021) illustrates the risk of aphid activity across a range of colors (high to low, red to green). To develop this model, we examined historical aphid captures and modeled these against cumulative Fahrenheit Degree Days (FDD) to forecast aphid activity and the associated risk of PVY transmission.



To access this daily map, simply visit VDIFN (https://agweather.cals.wisc.edu/vdifn), and select 'Insect' in the upper left tab, followed by 'Potato' in the crop tab, and finally 'Aphid PVY Vectors' in the insect tab – then click the blue 'Submit' button.

Once at the correct map, you are able to 'zoom in' on the image and click on any cell to obtain location specific estimates of the accumulated FDD and the associated with risk. The risk of PVY transmission by aphid vectors begins around 1967 FDD, peaks around 2473 FDD, and ends around 3228 FDD. PVY transmission risk is calculated from a combination of several aphid species, the relative abundance of each species in Wisconsin, and the estimated PVY transmission efficiency of each species. Aphid vectors include Soybean aphid, Bird cherry-oat aphid, Green peach aphid, Pea aphid, Corn leaf aphid, and Potato aphid.



As you can see from the map, we are getting very close to the beginning of the 1967 FDD in the Antigo area, where aphid activity begins to increase substantially. It is at this point in the season we suggest beginning weekly applications of paraffinic oils to the crop canopy (Aphoil, JMS Stylet Oil, PureSpray Green) through the entire season, and even through vine killing. Use these oils at their respective higher labeled rates. In varieties that are hard to keep clean, you could consider re-application every 5 days to ensure very good coverage.

The addition of foliar insecticides that control aphids do not always seem to add much value, but some seed producers add them to ensure no colonizing species of aphids (green peach aphids, potato aphids) ever get established. These products include such materials as: Movento HL, Fulfill, Beleaf, Sivanto, Transform. If chosen, products should only be applied weekly and most are limited to 2 successive sprays.

This year's open house will be different than previous year so keep groups smaller and social distance. We will be doing a walking tour which will include three stops. You can choice to go to Learn about our greenhouses, Listen to UW Speakers or Tour our field production. Please plan to join us at the Lelah Starks Foundation Seed Potato Farm 7749 CTH K, Rhinelander, WI (about 7 miles west of town on County Highway K) to have a look around and see what's new. After the tour is complete, we will be serving lunch and beverage along with recognizing Keith Heinzen for his year of service since he has retired.

SCHEDULE OF EVENTS

10:30 am Welcome and Orientation of Events Alex Crockford – Program Director

10:40 am Dr. Gevens Vegetable Pathology Update and Dr. Rioux Update by Students

11:00am Dr. Groves Vegetable Entomology Update

11:15am Dr. Endelman Potato Breeding Update

11:30 am Walking Tour - Three Options.

Every stop will be done three times so all guests can see each presentation.

- Speakers Under Tent.
- Greenhouse
- Field Tour

12:30 pm Gather Under Tent for Lunch and Refreshments

Special Thanks: We extend a special "Thank you" to Case IH and Beaver Machine for supplying several tractors and implements over the past years. Additionally, we would like to thank New Holland and Swiderski Equipment Inc. for suppling a tractor for the past years.

As of May 27, UW-Madison COVID-19 policies for outdoor events do not require face coverings for fully vaccinated individuals; unvaccinated individuals are encouraged to maintain six feet of physical distance or wear a face covering (https://news.wisc.edu/ covid-19-policy-changes-events-face-coverings-outdoor-physical-distancing/).