



Vegetable Crop Update

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

No. 24 – September 17, 2018

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Calendar of Events

- 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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Late blight risk for Wisconsin, based on accumulation of DSVs for 9/9-9/15/18

Date	Grand Marsh	Hancock	Plover	Antigo
9/9/18	0	0	0	0
9/10/18	1.0	1.0	0	1.0
9/11/18	0	1.0	0	0
9/12/18	1.0	2.0	0	1.0
9/13/18	2.0	2.0	0	1.0
9/14/18	2.0	2.0	1.0	2.0
9/15/18	2.0	2.0	2.0	2.0
Weekly Total	8.0	10.0	3.0	7.0

Severity legend: very high severity risk for late blight indicates a weekly accumulation of ≥ 20 DSVs, high indicates accumulation of 15-20 DSVs, medium indicates 10-15, low indicates 5-10, and very low indicates < 5 DSVs. Values available with select dates/locations at: <https://agweather.cals.wisc.edu/vdifn/maps>

WI Potato Disease Risk Updates: Low risk for late blight development over this past week due to hot and dry weather in most locations. With fields entering into a period of senescence (naturally or with desiccation), it's important to consider continued application of a protectant fungicide for fields with history of late blight (this summer) or fields nearby sites of infection. This continued use of protectants can limit tuber infection in the event that spore dispersal/deposition occurs after green vines have senesced. Protectants Mancozeb and Gavel (zoxamide + mancozeb) are good choices in this late season place; both fungicides have a 3 day pre harvest interval.

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>

No new late blight detections in WI this week. To date, all Midwestern samples (IL, MI, WI) were of the US-23 genotype. The MN tomato late blight report from earlier in summer was not typed. Back in

July, WA confirmed US-8 late blight on potato; and earlier season sample from FL also had a US-8 result. Aside from a recent characterization of the new genotype US-25 from tomato in 2 counties in NY, all other late blight samples from 2018 from NC, NY, and PA were US-23.

No additional reports of cucurbit downy mildew from WI this past week. While cucumbers have wound down, watch is still on for pumpkin and winter squash downy mildew. In past recent years, we've seen significantly less incidence and severity of downy mildew on these cucurbit types. In this past week, reports of detection came in from: LA, MS, NH, OH, and PA. In past months this season, reports have come from AL, CT, DE, FL, GA, IN, KY, MA, MD, MI, NC, NJ, NY, OH, ON Canada, PA, RI, SC, TN, VA, WI, and WV on various cucurbits, as reported at <http://cdm.ipmpipe.org/>. Fungicide information can be found in previous newsletters. For more info on symptoms, disease cycle, and general management, please visit: <http://learningstore.uwex.edu/Assets/pdfs/A3978.pdf>

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After a 10-day quiet period because of the heavy rains, digging of full-season potatoes has been started in Central Wisconsin. Pink eye (Figure 1), caused by excessive soil moisture between tuber maturity and harvest, has been widely observed. Another consequence of big rain events is the enlarged lenticels on tuber surface (Figure 2). Lenticels are special pores that controls gas exchange (O_2 , CO_2) of the tuber with the outside. Enlarged lenticels develop when tissue below the lenticel swell and burst through the protective covering of the lenticel. This forms a corky mass around the lenticel. The disorder is somewhat reversible if the wet period is short. Enlarged lenticels are perfect entry points for pathogens like bacterial soft rot, pink rot, and Pythium leak.



Figure 1. Pink eye



Figure 2. Enlarged lenticels

There is not much to be done to avoid those two issues, which can extend to post-harvest storage and diminish the storage quality, if Mother Nature offers too much rain. Dig the wet/low area of the field as soon as possible is one option. Shipping tubers from the wet area directly to the packing shed or processing plant is another good way to deal with the enlarged lenticel and associated disease issues.

The other critical point to pay attention to at harvest is bruise management. There are two major types of bruising when potatoes hit objects, such as equipment, clods, rocks or other tubers during harvesting and handling operations: blackspot bruise and shatter bruise. **Blackspot** bruise occurs when the impact of a tuber against an object damages cells in the tissue just beneath the skin without actually breaking the skin. Within up to 48 hours the damaged tissue can turn dark gray to black in color, but can be seen only after peeling (Figure 3). **Shatter bruise** happens when impacts cause cracks or splits in the tuber skin (Figure 4). The cracks may extend into the underlying tissue. Diseases such as Fusarium dry rot, early blight, and bacterial soft rot can easily invade tubers that have shatter bruise.

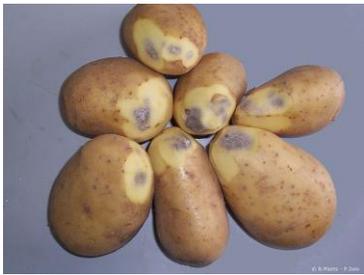


Figure 3. Blackspot bruise



Figure 4. Shatter bruise

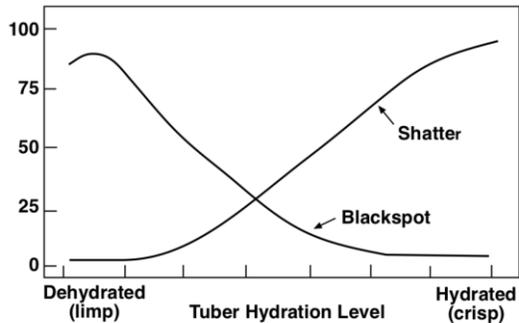


Figure 5. Effect of tuber hydration level on potential blackspot and shatter bruise susceptibility of Russet Burbank potatoes (45° to 50°F). Y-axis is incidence of bruise (%). Source: Thornton, Smittle, and Petterson. 1973.

There is no open wound with blackspot bruise, but comparatively, shatter bruise has breaks in the skin or flesh. Pulp temperatures below 45°F and saturated soil moisture make it very difficult to handle potatoes without causing significant shatter bruise damage. The more hydrated or crisp the potatoes are, the more susceptible to shatter bruise. In contrast, dehydrated potatoes when soil moisture content falls below 50% are susceptible to blackspot bruise (Figure 5). Potatoes sitting in dry soil with dead vine also have higher susceptibility to blackspot bruise.

Some recommended production practices to avoid or reduce potato bruising at harvest include:

- Keep soil moisture content between 60% and 80% of field capacity;
- Dig with pulp temperature between 50°F and 60°F;
- Achieve optimum harvester operation by reducing drops and cushioning impact areas;
- Set chain speeds in relation to ground speed so that harvester chains are filled to capacity and damage due to excess tuber movement, rollback, and drops can all be reduced;
- Optimize trucking and piling operations by minimizing drops, matching conveyor speed to tuber volume, and piling in a progressive, stepwise way to minimize tubers rolling down the face of the pile;
- Educate employees about preventing bruising and being able to identify any drops that may be too high and make adjustments to remedy it.

Reading list:

1. Thornton and Bohl. Preventing potato bruise damage. <http://www.cals.uidaho.edu/edcomm/pdf/bul/bul0725.pdf>
2. University of Idaho. Harvest bruise management. <https://www.uidaho.edu/-/media/UIDaho-Responsive/Files/cals/programs/potatoes/news-pubs/Harvest-bruise-management.pdf>