Vegetable Crop Updates

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

Extension
UNIVERSITY OF WISCONSIN-MADISON

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In This Issue:

- Disease forecasting updates for potato early blight and late blight
- Cucurbit downy mildew updates
- Post-harvest diseases of potato and their management

Calendar of Events:

December 2-4, 2025 – Midwest Food Producers Assoc. Processing Crops Conference, Kalahari Convention Center
January 12-13, 2026 – Wisconsin Agribusiness Classic, Kalahari Convention Center
February 3-5, 2026 – UW-Madison Div. of Extension & WPVGA Grower Education Conference & Industry Show, Stevens Point, WI

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Current P-Day (Early Blight) and Disease Severity Value (Late Blight) Accumulations will be posted at our website and available in the weekly newsletters. Thanks to Ben Bradford, UW-Madison Entomology for supporting this effort and providing a summary reference table: https://agweather.cals.wisc.edu/thermal-models/potato. 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. Data from the modeling source: https://agweather.cals.wisc.edu/vdifn are used to generate these risk values in the table below. I've estimated early, mid-, and late planting dates by region based on communications with stakeholders. These are intended to help in determining optimum times for preventative fungicide applications to limit early and late blight in Wisconsin.

	Planting Date		**50% Emergence Date**	**Disease Severity Values (DSVs)** *through 9/13/2025*	**Potato Physiological Days (P-Days)** *through 9/13/2025*
Spring Green	**Early**	Apr 5	May 10	64	988
	Mid	Apr 18	May 14	64	960
	Late	May 12	May 26	61	903
Arlington	**Early**	Apr 5	May 10	46	987
	Mid	Apr 20	May 15	46	950
	Late	May 10	May 24	43	913
Grand Marsh	**Early**	Apr 7	May 11	71	957
	Mid	Apr 17	May 14	71	937
	Late	May 12	May 27	71	883
Hancock	**Early**	Apr 10	May 15	71	921
	Mid	Apr 22	May 21	71	894
	Late	May 14	June 2	71	840
Plover	**Early**	Apr 14	May 18	55	891
	Mid	Apr 24	May 22	55	886

	Late	May 19	June 7	**55**	**794**
Antigo	**Early**	May 1	May 24	**57**	**837**
	Mid	May 15	June 1	**57**	**800**
	Late	June 1	June 15	**52**	**713**
Rhinelander	**Early**	May 7	May 25	**45**	**808**
	Mid	May 18	June 8	**45**	**730**
	Late	June 2	June 16	**41**	**690**

Late blight of potato/tomato. I'm aware of no new reports of late blight in the US this past week. Findings thus far in potato and tomato have been confirmed as US-23 *Phytophthora infestans* (still sensitive to mefenoxam/metalaxyl (ie: Ridomil) in western NY and Ontario Canada. Here in Wisconsin, we saw limited accumulations of 0-7 DSVs across WI this past week. All plantings of potatoes in Wisconsin have surpassed the Blitecast threshold of 18 DSVs and should receive preventative fungicides for the management of late blight. *Please find a fungicide listing for Wisconsin potato late blight management:* https://vegpath.plantpath.wisc.edu/documents/potato-late-blight-fungicides/

Early blight of potato. Accumulations of P-Days were 41-51 over the past week, with P-Day 300 thresholds met for preventative fungicide treatment in potatoes across all of Wisconsin. Some fields are moving through the harvest process at this point. Remaining fields are showing a big transition in overall foliar quality this past week. In the final day/weeks of the crop it becomes difficult to discern advanced early blight from other diseases including potato early dying, brown spot, and/or blackleg/aerial stem blight. https://vegpath.plantpath.wisc.edu/diseases/potato-early-blight/. For Wisconsin-specific fungicide information, please refer to the Commercial Vegetable Production in Wisconsin (A3422), a guide available here: https://cropsandsoils.extension.wisc.edu/articles/2025-commercial-vegetable-production-in-wisconsin-a3422/

For custom values, please explore the UW Vegetable Disease and Insect Forecasting Network tool for P-Days and DSVs across the state (https://agweather.cals.wisc.edu/vdifn). This tool utilizes NOAA weather data. Be sure to enter your model selections and parameters, then hit the blue submit button at the bottom of the parameter boxes. Once thresholds are met for risk of early blight and/or late blight, fungicides are recommended for optimum disease control. Fungicide details can be found in the 2025 Commercial Veg. Production in WI Extension Document A3422: https://cropsandsoils.extension.wisc.edu/articles/2025-commercial-vegetable-production-in-wisconsin-a3422/

Cucurbit Downy Mildew: No downy mildew was seen on cucurbits this past week at HARS, and none reported through our UW Plant Disease Diagnostic Clinic. There were no new reports of downy mildew on cucurbits through the Cucurbit Downy Mildew ipm PIPE website: https://cdm.ipmpipe.org/.

Management of water molds and bacterial diseases of potato tubers in the post-harvest space. While every growing season typically offers a few weather hiccups, some years offer a few more extreme disruptions than typical. Extreme temperatures, in concert with moisture stress, exacerbate disease risk at the time of harvest and beyond. If test digs indicate pink eye (abiotic condition often resulting from high heat and moisture in the field), enlarged lenticels, or other physiological abnormalities, it's important to be watchful for disease. The disease descriptions detailed below may help you identify disease conditions of the crop for prescriptive decision-making at harvest and beyond.

Some of the most common and problematic potato tuber diseases in storages include diseases caused by fungi such as silver scurf and Fusarium dry rot, and diseases caused by fungus-like or “water mold” pathogens such as pink rot, late blight, and Pythium leak. Bacterial soft rot should not go without mention. Each disease is promoted by slightly different environmental conditions, and each has key diagnostic features on tubers. **Highlighted in this article are the water molds and bacterial diseases of tubers.**

Pink rot symptoms on potato tubers

Phytophthora erythroseptica, (or sometimes *Phytophthora nicotianae*) the fungal-like pathogen causing pink rot, often causes tuber symptoms initiating from the stolon end which appear rubbery, yet firm. The infected areas of tubers are often delimited by a dark line visible through the skin. Buds, lenticels, and underlying tissue are black and usually exude a clear liquid. When cut and exposed to air, pink rot infections turn pink-salmon in color after about 30 minutes. Pink rot is favored by high soil moisture which promote open lenticels and temperatures around 77°F.

Planting in well-drained fields with no history of pink rot, avoiding wounding at harvest and bin filling, and lowering temperature and humidity in storage can aid in management. Post-harvest treatment with phosphorous acid fungicides (such as Phostrol) can help limit the development of pink rot.

Phytophthora nicotianae was documented in commercial potatoes in several fields of Wisconsin, as well as other North American growing regions in 2018. While we have not yet detected this pathogen on tubers during test digs or post-harvest, it can cause tuber symptoms very similar to pink rot.

Potato tuber symptoms caused by late blight

Late blight, caused by another fungal-like pathogen *Phytophthora infestans*, produces tuber symptoms that can be both superficial and visible externally as dark brown to purple lesions and present in the interior as brown, dry, and granular lesions.

This disease is favored by temperatures from 64 to 75°F and high relative humidity. Use of protectant fungicides in the production field while foliage is still viable is recommended. The use of fungicides with some systemic activity can aid in management.

Pythium leak on potato tubers

Pythium leak, caused by the fungal-like pathogen *Pythium ultimum* (now called *Globisporangium ultimum*) produces tuber symptoms that begin as light tan, water-soaked areas around a wound. As disease progresses, tissues can swell and periderm discolors with a dark line separating diseased tissue from healthy. Internally, the tissue is spongy and wet and may contain cavities.

When squeezed, tubers infected by *Pythium ultimum* exude a watery liquid. Over time, affected tubers in storage appear as empty, papery skins. This disease is favored by high temperatures, 77-86°F. Avoiding harvesting in hot, dry weather and enhancing post-harvest conditions to promote wound healing can help manage Pythium leak.

Potato tuber bacterial soft rot

Bacterial tuber soft rot can be caused by *Pectobacterium spp.*, and more recently in the U.S., *Dickeya spp. Dickeya dianthicola* was confirmed in the eastern U.S. in just 2015. Seed infection can lead to blackleg symptoms including poor emergence, chlorosis, wilting, stem rot, and darkened slimy, black stems. Tuber infection can occur from movement of the bacterial pathogen within a plant infected from seed, or it can occur from late-season infection following wounding or damage at- or post-harvest.

Although disease symptoms are often indistinguishable between *Pectobacterium* and *Dickeya spp*., *Dickeya spp.* appear to require lower inoculum levels in order to start disease, have ability to spread through the plant's vascular tissue better than *Pectobacterium*, are more aggressive, and require higher optimal temperatures for disease. Symptoms caused by *Dickeya spp.* tend to develop when temperatures exceed 25ºC (77ºF), while *Pectobacterium* predominate below 25ºC.

Tuber soft rot ranges from a slight vascular discoloration to complete decay. Affected tuber tissue is cream to tan in color and is soft and granular. Brown to black pigments often develop at the margins of decayed tissue.

Lesions usually first develop in lenticels, at the site of stolon attachment or in wounds. *Dickeya spp*., particularly at temperatures of >27ºC (80ºF), cause more severe rots than *P. atrosepticum* and are more likely to produce a creamier, cheesy rot.

To best manage bacterial soft rot of potato tubers, consider the following:

- Delay harvest up to 21 days post vine-kill to ensure complete skin set.

- Avoid wet soil conditions at harvest to prevent soil from sticking to tuber skin.

- Minimize cuts and bruises at harvest.

- If soft rot is present in a portion of the field, this part of the field should not be harvested. If infected tubers are stored, store them separately.

- Harvesting equipment should be cleaned and sanitized between lots.

- Provide adequate ventilation to reduce conditions favorable to bacterial infection. Check stored tubers regularly for temperature increase and odors. Spot treat problem areas to minimize spread.

- Reduce bacterial load on tubers as they enter storage and once in storage through use of post-harvest treatments such as chlorine dioxide, hydrogen dioxide, or ozone.

- Dry potatoes before storage or shipping.

Summary of Post-harvest Disease Management Strategies. While nature can be uncooperative in helping to limit post-harvest disease, there are cultural approaches and chemical tools available to mitigate infection and spread. Strong disease control programs during the production season are the best post-harvest storage disease control programs. Harvest temperatures should optimally fall between 12-18ºC (or roughly 54-64ºF) and soil moisture should be adequate to minimize damage. Care should be taken to minimize drops and subsequent bruising, which can become sites for post-harvest infection. Once in storage, maintenance of good air movement, along with temperature and humidity appropriate to the variety, market type, quality status, and disease condition for optimum conditioning are critical.

The decision to make fungicide applications to potato tubers post-harvest is not trivial. The addition of water to the pile, even in small volumes necessary for effectively carrying fungicides may create an environment favorable to disease under certain conditions (limited airflow, field heat interacting with cool storage condition).

Typically, post-harvest fungicides are applied in ≤0.5 gal water/ton (2000 lb) of potatoes. At this spray volume, an evenly emitted liquid will leave tubers appearing slightly dampened. If tubers appear slick or shiny with wetness, the spray volume is likely greater than 0.5 gal/ton or the emitter may not be properly functioning.

Under some circumstances, for instance when tubers come out of the field in excellent condition and field history includes little to no disease concern, additional tuber dampness may be unacceptable and seen as a bin risk that outweighs any fungicidal benefit. In other circumstances, tubers may come out looking rough or with harvest damage, and field history includes pink rot or late blight. A scenario such as this may benefit from a post-harvest fungicide and resulting dampness should be mitigated by appropriate ventilation and temperature control.

The 3 sides of the disease triangle. Inoculum, favorable disease conditions, and susceptible tubers provide the 3 sides of the disease triangle. Avoiding or reducing inoculum on tubers as they enter storage will help considerably in preventing tuber infection in the bin. Free water, high CO2, and warm storage temperatures will promote disease development in storage. However, 2 of these 3 attributes are necessary in wound healing! The condition of the tubers themselves influences their susceptibility to infection by storage pathogens. In summary, management tactics such as segregation of tubers from wet field areas, fungicide application in the field, harvest management (temperature, moisture, handling), post-harvest fungicides, and storage management, are crucial to successful storage of potatoes.

A few fungicide notes to consider. Metalaxyl and mefenoxam resistance in *P. erythroseptica* (pink rot) has been documented in various regions of the U.S. While no late blight was identified in Wisconsin thus far in 2025, management of the predominant strain type of the pathogen in the US at this time (US-23) is generally sensitive to metalaxyl and mefenoxam and can be controlled by this treatment. I evaluated fungicide resistance in *P. erythroseptica* isolated from tubers in storage in Wisconsin roughly 10 years ago and resulted indicated that a portion of the isolates collected (~25%) were resistant to mefenoxam.

Phosphorous acid. Applications of phosphorous acid (H3PO3) on tubers entering storage or applied to foliage (2-3 applications) can significantly limit late blight and/or pink rot. Phosphorous acid treatment cannot reverse the effects of field-infected tubers, but it can limit the spread of disease during handling and storage. Post-harvest treatment can also limit silver scurf.

Field-applied phosphorous acid application has also been shown to provide residual control of pink rot to approximately 90 days after harvest. In our UW inoculated storage trial, phosphorous acid (Phostrol) applied at bin-filling at rates of both 6.4 and 12.8 fl oz/ton significantly limited pink rot incidence and severity at approximately 30 and 60 days post-treatment.

Phostrol at both rates also significantly limited late blight in a separate UW inoculated study. Stadium (Syngenta; active ingredients fludioxonil, difenoconazole, azoxystrobin) has demonstrated excellent control of late blight when applied at bin-filling due to the azoxystrobin component. However, please note that the label indicates use for silver scurf and Fusarium only, and does not indicate the use target of late blight or pink rot.

Hydrogen peroxide. Hydrogen peroxide studies carried out in Idaho showed that application immediately following inoculation provided nearly 30% disease control when compared to untreated controls. However, when tubers were infected in the field and were treated post-harvest, hydrogen peroxide did not provide adequate disease control. Our UW hydrogen peroxide study on pink rot and late blight control resulted in disease incidence and severity results that were not significantly different from our untreated control.