



# Vegetable Crop Updates

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

**September 28, 2025**

## ***In This Issue:***

- Late blight updates for potato/tomato
- Cucurbit downy mildew updates

## ***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

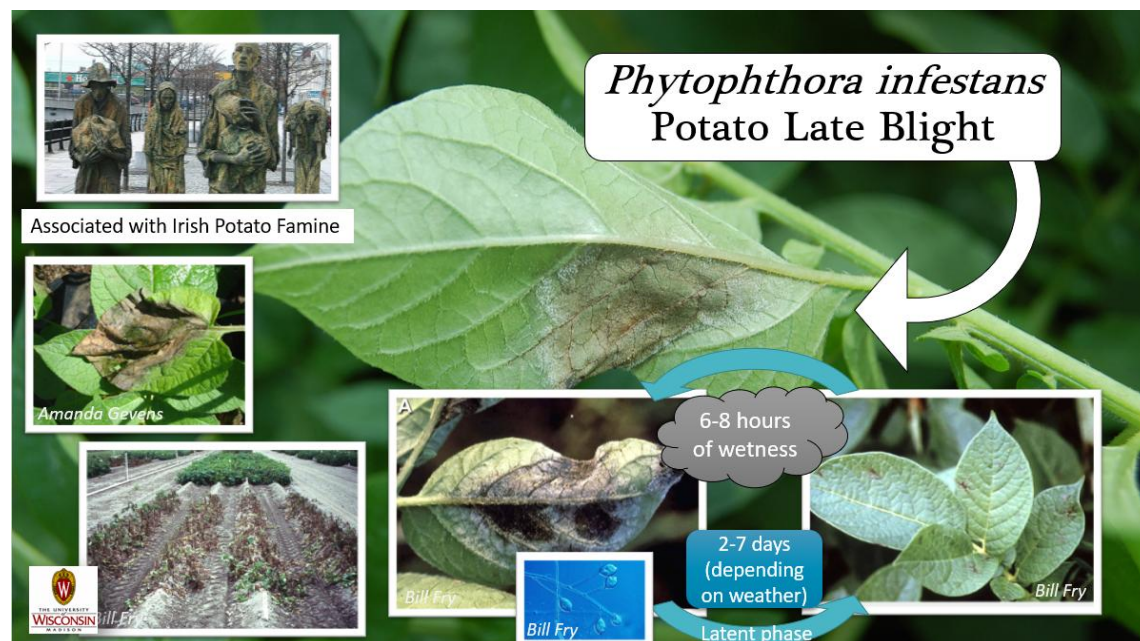
**Amanda Gevens, Professor & Extension Vegetable Pathologist, UW-Madison, Dept. of Plant Pathology, 608-575-3029, [gevens@wisc.edu](mailto:gevens@wisc.edu), Lab Website: <https://vegpath.plantpath.wisc.edu/>.**

**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 5-7 DSVs across WI this past week. <https://agweather.cals.wisc.edu/vdifn?model=late-blight>

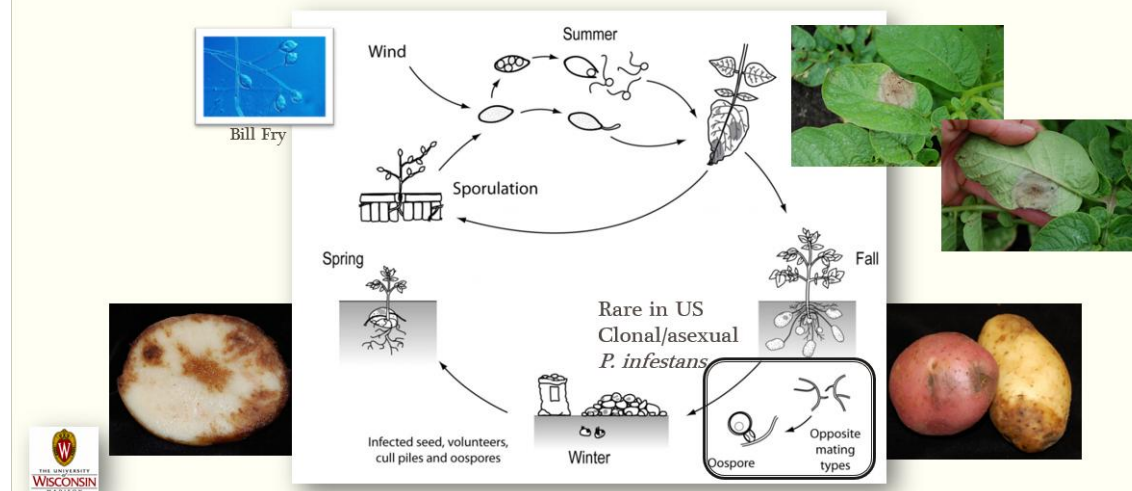
*Please find a fungicide listing for Wisconsin potato late blight management:*

<https://vegpath.plantpath.wisc.edu/documents/potato-late-blight-fungicides/>

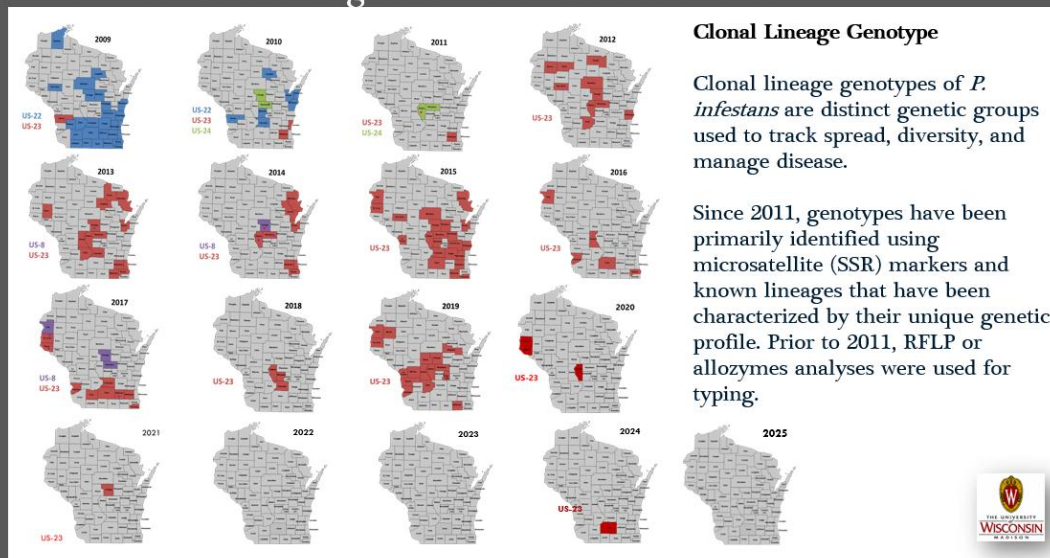
So far, we have not had any reports of late blight in tomato or potato in Wisconsin in 2025! I provide a season summary of late blight for 2025, with a review of the disease and its management in a series of slides to follow this article. Interestingly, there has been recent research indicating that the late blight pathogen can acquire resistance to mefenoxam (or metalaxyl) within a growing season. This further emphasizes the importance of early and thorough management of this disease. I acknowledge Dr. Katie Gold for her work on a few of the slides.



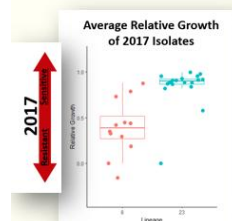
## Potato Late Blight Disease Cycle



## Wisconsin Late Blight Confirmations 2009-2025



## Predominant *P. infestans* Genotypes in the US 1840-Present



Clonal Lineage	Mating Type	Host(s)	Years Found	Mefenoxam Sensitivity
US-1	A1	potato	1840-present	sensitive
US-6	A1	potato/tomato*	1979-94	sensitive
US-7	A2	potato/tomato*	1992-95	resistant
US-8	A2	potato*/tomato	1992-present	resistant
US-11	A1	potato/tomato	1994-present	resistant
US-17	A1	tomato	1996	resistant
US-18	A2	tomato	1995-98	sensitive
US-22	A2	potato/tomato*	2009-present	sensitive
US-23	A1	potato/tomato*	2010-present	sensitive
US-24	A1	potato*/tomato	2010-present	resistant
US-25	A2	tomato	2018	resistant

\*= favored host if two hosts are shown. Table (modified) from Halterman & Gevens, *Phytophthora infestans* in the U.S., book chapter, *Phytophthora: A Global Perspective*, Edited by K. H. Lamour, CAB published 2013.



## Decision Support Tools – Blitecast (WI Example)

**Vegetable Disease & Insect Forecasting Network**

Model Type:

Data Range:

Model Selection:

Crop/Host:

Disease:

Model parameters:

Date Range:

Crop emergence/last fungicide application:

End Date:

**Severity Legend:**

- Very High
- High
- Medium
- Low
- Very Low

**More Information**

Late blight infects all aboveground plant parts and potato tubers and can be transmitted via seed, culls, volunteers, and weeds (i.e., nightshade). Late blight disease advances quickly under conditions of high humidity (≥90%) and cool temperatures (50-70°F). Prevention is critical for control.

**Grid Point Details (44)**

**Late Blight (potato/tomato)**

Current season: Apr 1 to Aug 5, 2025 (127 days)

Season total DSVs: 29

Selected dates: May 15 to Aug 5 (83 days)

Selected total DSVs: 28.0

14-day total: 7.0 (0.5 / day)

7-day total: 0.0 (0.0 / day)

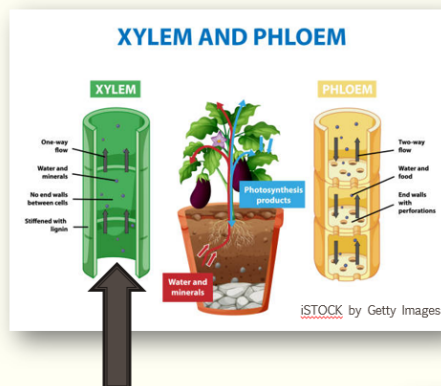
2-day total: 0.0 (0.0 / day)

Date	Mean Temp.	Hours High RH	Mean Temp. (High RH)	Daily DSVs	Cumulative DSVs
2025-08-05	69.4°F	4	56.2°F	0	28
2025-08-04	68.2°F	7	57.1°F	0	28
2025-08-03	65.9°F	9	54.3°F	0	28
2025-08-02	65.8°F	10	54.7°F	0	28

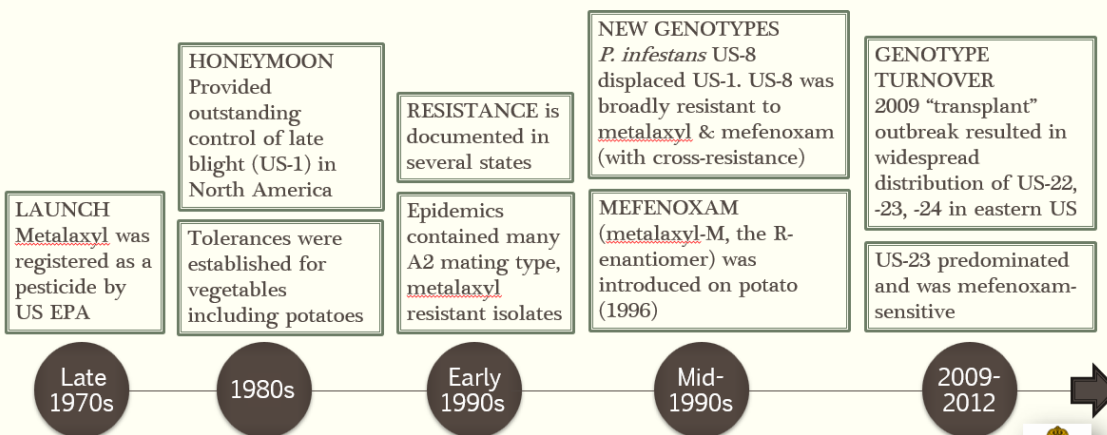


## Fungicide Resistance Action Committee (FRAC) 4

- FRAC 4 is the classification of fungicides whose mode of action (MOA) is to inhibit nucleic acid metabolism by targeting the enzyme responsible for protein synthesis.
- This group, primarily composed of phenylamide fungicides, includes acylalanines like metalaxyl and mefenoxam.
- FRAC 4 fungicides are acropetally mobile (they move upwards in the plant through xylem) and are most effective as protectants but can also have a kickback effect on existing infections.
- Resistance to FRAC 4 fungicides is considered high, especially in oomycete pathogens (ie: *Phytophthora*, *Pythium*).



## Timeline of Metalaxyl/Mefenoxam Resistance in *Phytophthora infestans* in the USA



## Timeline of Metalaxyl/Mefenoxam Resistance in *Phytophthora infestans* in the USA

GENOTYPE PERSISTENCE of US-23 with continued mefenoxam-sensitivity in most isolates (in eastern & midwestern US); **concerns with stability of sensitivity**

Sporadic outbreaks in North America in recent years on potato and tomato

Few regional populations of US-8 (mainly on west coast of US) and US-11, with mefenoxam-resistance



- mefenoxam/metalaxyl resistance is polygenic/complex and can arise (and even recede) quickly under fungicide pressure.
- mefenoxam-sensitive *P. infestans* isolates can rapidly acquire and then lose resistance (reversible), underscoring why sensitivity can shift within a season

Gonzalez-Tobon, et al., 2022. Searching for the Mechanism that Mediates Mefenoxam-Acquired Resistance in *Phytophthora infestans* and How It Is Regulated. *Phytopathology* 112: 1118-1133. <https://doi.org/10.1094/PHTO-07-21-0280-R>

Matson et al., 2015. Metalaxyl resistance in *Phytophthora infestans*: Assessing role of RPA190 gene and diversity within clonal lineages. *Phytopathology* 105: 1594-1600.

Regnier et al. 2025. Mefenoxam-sensitive isolates of *Phytophthora infestans* can quickly acquire and lose resistance to this fungicide. *Plant Disease*. Online Se <https://doi.org/10.1094/PDIS-05-25-1110-RE>



## Practical Contemporary Guidance for Mefenoxam Use for Late Blight Management in the US

- Don't assume sensitivity to mefenoxam based on clonal lineage or genotype—confirm locally each season.
- If sensitivity is confirmed (as likely with US-23), mefenoxam (FRAC 4) can still be effective, particularly early and as part of a program (tank-mixed/alternated with non-FRAC-4 protectants).
- If resistance is confirmed (as likely with US-8), avoid FRAC 4 and select other effective modes of action; FRAC highlights the high resistance risk of phenylamides and the need for mixtures/rotations.
- Key takeaways for the U.S. in 2025-2026.
  - Most cases encountered in the East/Central U.S. are US-23 and likely sensitive, so mefenoxam can still be effective and useful.
  - Resistant pockets persist (notably where US-8 and US-11 occur on the west coast).
  - Sensitivity can change within the same lineage under selection with mefenoxam possibly within a growing season, so treat mefenoxam as a conditional tool, not a guarantee.



For custom values of P-Days (for Early Blight) and DSVs (for Blitecast for Late Blight), 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>). 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 was a confirmed report of cucurbit downy mildew in South Carolina over this past week as reported through the Cucurbit Downy Mildew ipm PIPE website: <https://cdm.ipmpipe.org/>.