



# Vegetable Crop Update

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

No. 20 – August 11, 2012

## In This Issue

Late blight updates  
Early blight updates  
Cucurbit downy mildew updates

## Calendar of Events

**August 23 – UW-Langlade County Ag Res Station Field Day**  
**Antigo, 10:00AM – NEW DATE & TIME**  
October 24&25 – Hancock ARS-Storage Research Facility, Potato Variety Harvest Expo, 8AM-4:30PM

**Vegetable Disease Update – Amanda J. Gevens, Assistant Professor & Extension Vegetable Plant Pathologist, UW-Madison, Dept. of Plant Pathology, 608-890-3072 (office), Email: [gevens@wisc.edu](mailto:gevens@wisc.edu).**

**Vegetable Pathology Webpage: <http://www.plantpath.wisc.edu/wivegdis/>**

County	Crop	Clonal Lineage of the Late Blight Pathogen
Barron	Potato	US-23
Adams	Potato	US-23
Portage	Potato	
Oneida	Potato	US-23
Waushara	Potato	US-23

**Late blight** has been confirmed in 5 Wisconsin counties as of the time of this report. All reports were on potato and all sampled fields that we have tested so far are of the clonal lineage (genotype or strain) US-23.

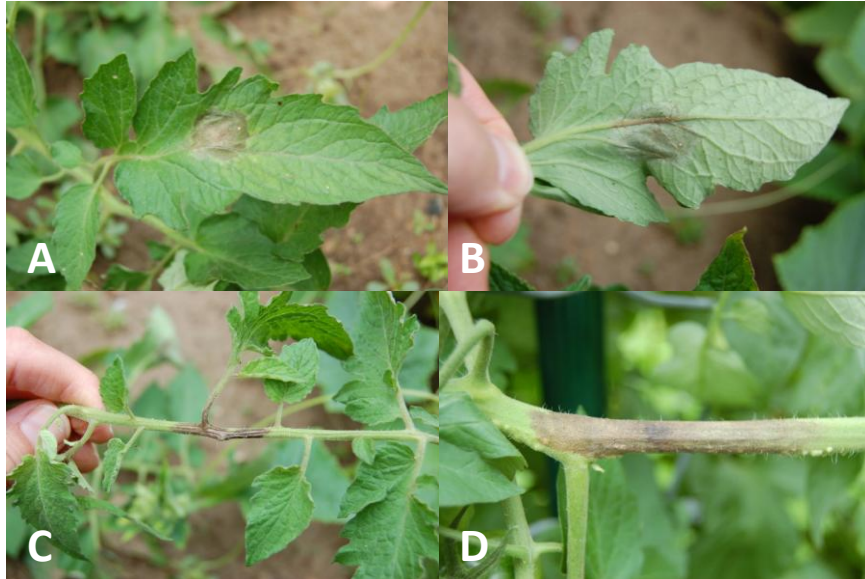
While all reports to date have been on potato, US-23 can cause disease on tomato. We identified this clonal lineage on tomato in southeastern Wisconsin in both 2010 and 2011. Producers of tomato (commercial and home garden) should be carefully scouting plants several times each week for first symptoms of late blight. Pictures of tomato late blight symptoms (likely a one-week old infection) are below in Figure 1.

Home gardeners can apply protectant fungicides containing chlorothalonil or copper. A list of ‘over the counter’ fungicides for the home gardener can be found at:

<http://www.plantpath.wisc.edu/wivegdis/pdf/2012/Home%20Garden%20FungicidesLC.pdf>

It is recommended that organic growers apply copper containing fungicides on a 5 to 7 day program. In the laboratory, my research group has evaluated several organic fungicides for control of late blight on tomato. Our results indicate great variability in efficacy – and we have

evaluated the application of materials only in advance of disease (prior to inoculation with US-23 late blight pathogen). We are interested in further evaluating the potential of these fungicides for use in foliar disease control of vegetables, as the timing of their application in the disease cycle may prove useful in developing an overall program. However, at this time, we do not have conclusive or field level data supporting use of non-copper materials for effective late blight control.



**Figure 1.** Symptoms of late blight on tomato leaves and stems.

In conventional tomato production, we have fungicides with oomycete specific activity including Curzate, Forum, Presidio, Revus, Ranman, and Previcur Flex. Fungicides with early and late blight activity include the strobilurins (Quadris, Evito, Cabrio, Reason, Tanos), Revus Top, and Gavel. Tank-mixing of fungicides with site-specific activity that have risk for resistance with broad spectrum fungicides such as chlorothalonil or mancozeb is recommended.

The list for conventional potato production is similar to tomato. We have fungicides with oomycete specific activity including Curzate, Ranman, Forum, Omega, Presidio, and Previcur Flex. Fungicides with early and late blight activity include the strobilurins (Quadris, Tanos, Reason, Evito, Headline, Cabrio, Gem), Revus Top, Super Tin, and Gavel. Tank-mixing of fungicides with site-specific activity that have risk for resistance with broad spectrum fungicides such as chlorothalonil or mancozeb is recommended. As discussed in Supplemental newsletter #5, it is critical to maintain fungicide applications post vine-kill.

In order to help better understand the epidemic at hand, please submit samples to my lab or work through your county agent and request that they send to me for genotyping. All we need to know is the county of sample origin, we do not need to have specific field or grower information associated with the sample. Identification of genotype at the county level would be very helpful in improving our understanding of this epidemic and potential future risks. Lab address is: Amanda Gevens, 1630 Linden Dr, Room 689, Plant Pathology Dept., University of Wisconsin, Madison, WI 53706. Please send infected leaves in a slightly inflated ziplock bag with no paper towel. Overnight shipping is best.

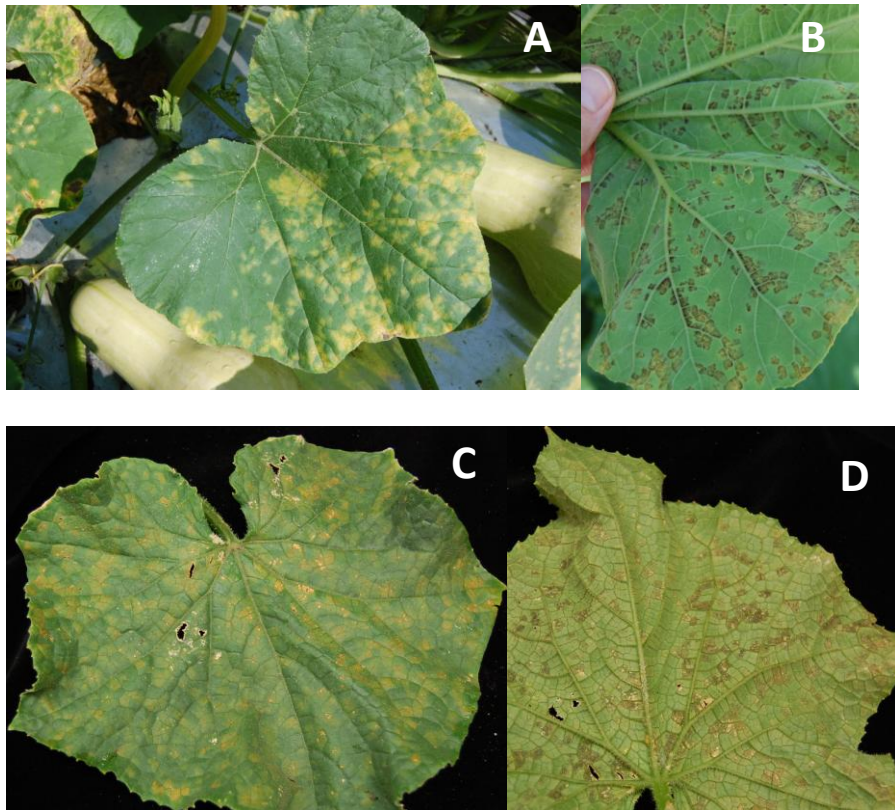
**Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations**

Location	Planted	50% Emergence	P-Day Cumulative	DSV Cumulative	Calculation Date
Antigo Area	Early 5/1	5/30	489	42	8/7
	Mid 5/10	6/6	451	42	8/7
	Late 6/1	6/16	384	42	8/7
Grand Marsh Area	Early 4/3	5/8	623	37	8/7
	Mid 4/15	5/16	576	37	8/7
	Late 4/30	NA	521	36	8/7
Hancock Area	Early 4/1	5/1	690	25	8/7
	Mid 4/15	5/10	633	19	8/7
	Late 5/1	5/17	589	19	8/7
Plover Area	Early 4/3	5/17	623	33	8/7
	Mid 4/19	5/18	558	33	8/7
	Late 5/1	5/27	495	29	8/7

***P-Days and Early Blight:*** All plantings of potatoes in WI have P-Day values exceeding the threshold of 300 of this time. Fungicides for early blight control should be applied on potato at this time. An accumulation of 300 P-Day values indicates a time at which early blight is favored and first infection may occur. I have seen classic, bull’s eye dark brown early blight lesions in lower potato canopies (early blight), as well as smaller flecked lesions with slight bull’s eye patterning on upper canopies (brown spot).

***DSVs and Late Blight:*** All potato plantings in Wisconsin have exceeded the threshold with 19-42 DSVs. An accumulated DSV of 18 indicates time to initiate fungicide applications for late blight control. Weather has been favorable for late blight this past week. In much of Wisconsin, night time temperatures in the 50s, daytime temperatures in the mid-70s, overcast skies through morning hours, and sporadic rainfall. Temperatures are expected to rise by the middle of next week, but at this time we are going through a period of weather ideal for late blight.

In addition to WI, this past week there were several new late blight reports from CT (tomato), MA (tomato), ME (tomato and potato), OH (tomato), and PA (tomato). To date this production year, late blight has been reported in CA, CT, FL, MA, ME, NC, NH, NJ, NY, OH, PA, VA, VT, and WI. The website: <http://www.usablight.org/> indicates location of positive reports of late blight in the U.S. and provides further information on disease characteristics and management.



**Figure 2. Symptoms and signs of cucurbit downy mildew.** A. Yellow angular lesions on butternut squash. B. Dark brown pathogen sporulation on leaf underside of butternut squash. C. Yellow angular lesions on pickling cucumber. D. Dark brown pathogen sporulation on leaf underside of pickling cucumber.

***Cucurbit Downy Mildew:*** has not been identified in Wisconsin at this time in commercial fields, home gardens, or our sentinel monitoring plots. Several states have reported cucurbit downy mildew this season across a wide range of cucurbit hosts in AL, CT, DE, FL, GA, IN, LA, MD, MI, NC, NJ, NY, OH, PA, SC, VA, and Ontario Canada. **The newest reports within the past 7 days have been primarily on cucumber with closest detects in northwestern IN (South Bend area) on cucumber.** I will be keeping tabs on disease reports in the region as it seems the disease is rounding Lake Michigan and will provide updates in this newsletter.

No forecasted risk of movement of spores from states reporting detects to Wisconsin at this time. Disease forecaster, Tom Keever of North Carolina State University reports, “high risk for cucurbits along the east coast, from southern VT/NH and southeast NY down through the DelMarVa and southeast VA, the piedmont and coastal plains of the Carolinas and GA, into the FL panhandle. Low to moderate risk along the western edges of this region and along the FL peninsula. High risk also for eastern MI and southern ON. Low to moderate risk around the rest of the Lower Lakes, westward across far southern MI and northern IN. Minimal Risk to cucurbits most other areas.” The website: <http://cdm.ipmpipe.org/> offers up to date reports of cucurbit downy mildew and disease forecasting information.

Once identified in a region, cucurbit downy mildew should be carefully managed with effective fungicides. I have included fungicide recommendations for cucurbit downy mildew below – based on efficacy trials arecommendations of Dr. Mary Hausbeck at Michigan State University.



<b>CUCUMBER</b>	
<b>Fungicides applied BEFORE disease</b> <b>7 day interval</b>	<b>Fungicides applied AFTER disease</b> <b>5 day interval</b>
Gavel 75WG (5 day phi)	Previcur Flex 6SC (2 day phi)
Presidio 4FL (2 day phi)	Presidio 4FL (2 day phi)
Previcur Flex 6SC (2 day phi)	Ranman 3.6SC (0 day phi)
Ranman 3.6SC (0 day phi)	Tanos 50WG (3 day phi)
Tanos 50WG (3 day phi)	
Alternate products and mix with either:  mancozeb (ie: Dithane) OR  chlorothalonil (ie: Bravo)	Alternate products and mix with either:  mancozeb (ie: Dithane) OR  chlorothalonil (ie: Bravo)

<b>OTHER VINE CROPS such as pumpkin, winter squash, melon, gourds, zucchini</b>	
<b>Fungicides applied BEFORE disease</b> <b>7-10 day interval</b>	<b>Fungicides applied AFTER disease</b> <b>7 day interval</b>
Gavel 75WG (5 day phi)	Previcur Flex 6SC (2 day phi)
Presidio 4FL (2 day phi)	Presidio 4FL (2 day phi)
Previcur Flex 6SC (2 day phi)	Ranman 3.6SC (0 day phi)
Ranman 3.6SC (0 day phi)	Tanos 50WG (3 day phi)
Tanos 50WG (3 day phi)	
Alternate products and mix with either:  mancozeb (ie: Dithane) OR  chlorothalonil (ie: Bravo)	Alternate products and mix with either:  mancozeb (ie: Dithane) OR  chlorothalonil (ie: Bravo)
Note: Gavel and Dithane are not labeled on some vine crops	

Early detection and management of this disease is critical. If you suspect downy mildew, please contact your county agent, me, or submit a sample for confirmation.

For further information on any fungicides that may be mentioned in this newsletter, please see the 2012 Commercial Vegetable Production in Wisconsin Guide A3422. An online pdf can be found at the link below or a hard copy can be ordered through the UWEX Learning Store.

<http://learningstore.uwex.edu/assets/pdfs/A3422.PDF>