



Vegetable Crop Update

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

No. 22 – August 22, 2012

In This Issue

Early blight updates
Late blight updates
Cucurbit downy mildew updates
Zebra chip/potato psyllids
Langlade Co. Field Day agenda

Calendar of Events

August 23 – UW-Langlade County Ag Res Station Field Day

Antigo, 10:00AM – TOMORROW

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.

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

Early Blight Complex: Early blight continues to progress in Wisconsin potato and tomato crops. Unmanaged early blight can prematurely defoliate the crop impacting yield and quality. Symptoms may vary as our survey has indicated presence of both classic, bull's eye dark brown early blight lesions in lower potato canopies (early blight), as well as smaller fleck lesions with slight bull's eye patterning on upper canopies (brown spot).

Typical foliar symptoms of early blight, caused by *Alternaria solani*.

Typical foliar symptoms of brown spot, caused by *Alternaria alternata*.



Differences in control of early blight and brown spot were noted in our early blight foliar fungicide trial at the Hancock Agricultural Research Station this past week. Timing of early blight targeted fungicides seemed to play a role in the later season control of brown spot. We will further evaluate the efficacy of the fungicides and their timing and follow up with reports in winter 2012 grower educational sessions.



Early blight has also been seen on tomato fruit in the past week. The symptoms may vary, but typically include sunken and dark brown lesions often on shoulders. In the fruit shown here, irrigation stress was also involved and is evidenced by cracking.

Over the past few years, septoria and early blight have been very problematic on tomato. However, with the dry conditions of much of the growing season, we have not seen these diseases until just recently when we received some rainfall and prolonged dew periods.

Potato and Tomato Late Blight: In the past week, late blight has been confirmed on both tomato (Waushara County) and potato (Marathon County) in Wisconsin. To date, the following counties have had confirmed reports of late blight: Barron, Adams, Portage, Oneida, Waushara, and Marathon. All late blight samples that have been tested to date, from potato and tomato, have been of the US-23 strain or genotype.

Management of late blight is critical as unmanaged late blight creates significant inoculum which is readily airborne and can spread to nearby fields and gardens, causing further infection. The Wisconsin Department of Agriculture, Trade, and Consumer Protection (WDATCP) has a policy in place to support protection of the state's potato and tomato crops due to the potential risk and economic loss that can be had with late blight. Good preventative and reactive stewardship in all production systems (home gardens, commercial farms, conventional, organic) is essential in successfully controlling late blight through the production season and post-harvest in potatoes.

Nationally, new late blight reports from CT (tomato), NY (tomato), OH (tomato), Ontario Canada (tomato) and PA (potato). To date this production year, late blight has been reported in CA, CT, FL, MA, ME, NC, NH, NJ, NY, OH, PA, VA, VT, WI, and Ontario Canada. 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.

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. We are also offering free diagnostic services for potential late blight samples (along with the UW-Plant Disease Diagnostic Clinic). 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. Lab address: 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. Thresholds for both diseases have been met. Accumulations will continue to be provided until the end of potato production season.

Location	Planted	50% Emergence	P-Day Cumulative	DSV Cumulative	Calculation Date
Antigo Area	Early 5/1	5/30	587	47	8/20
	Mid 5/10	6/6	549	47	8/20
	Late 6/1	6/16	482	47	8/20
Grand Marsh Area	Early 4/3	5/8	716	53	8/20
	Mid 4/15	5/16	669	53	8/20
	Late 4/30	NA	614	52	8/20
Hancock Area	Early 4/1	5/1	801	31	8/20
	Mid 4/15	5/10	743	25	8/20
	Late 5/1	5/17	700	25	8/20
Plover Area	Early 4/3	5/17	717	43	8/20
	Mid 4/19	5/18	652	43	8/20
	Late 5/1	5/27	589	39	8/20

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, KY, MA, MD, MI, NC, NY, OH, WV. **The newest reports within the past 7 days have been on cucumber, winter squash, and Jack-o-lantern pumpkin with closest detects in southeastern MI on cucumber and cantaloupe.**

No forecasted risk of movement of spores from states reporting detects to Wisconsin at this time. Disease forecaster, Tom Kever of North Carolina State University reports, “low to moderate risk for cucurbits in southern VA through the Carolinas into eastern GA, parts of southern GA and FL, southwest LA, and near the sources in eastern WV / western MD. 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.

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>

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

Vegetable Entomology Webpage: <http://www.entomology.wisc.edu/vegento/index.html>

Zebra Chip / Potato Psyllids – Potato psyllids have recently been described as the biological vector of the bacterium that is responsible for the disease condition known as ‘Zebra Chip (ZC)’. Every week, Dr. Don Henne, USDA ARS scientist located in Weslaco, TX, provides a detailed report on the potato psyllids captured within the trapping network located in the following states: (Colorado, Kansas, Minnesota, Nebraska, North Dakota, Texas, and now Wisconsin). At selected locations, a series of yellow sticky cards are placed along linear transects extending into potato fields and checked and replaced weekly to determine the numbers of insects captured. A portion of these insects are sent to Washington for detection of the bacterial pathogen. The mollicute pathogen, *Liberibacter solanacearum*, causing the internal tuber necrosis condition described as ‘Zebra Chip (ZC)’, was recently documented in the Columbia Basin (2011) potato production region in the western U.S. as well as throughout much of Idaho where significant disease has again been observed in 2012. In 2012, a single trap line (5 sticky traps) was placed in a field in Menominee, WI. And during the week of 6-13 August, a single adult potato psyllid was captured on a single card at this location, but the infection status of this insect has yet to be determined. In 2009, our laboratory also collected a total of nine adult potato psyllids from among all of the non-aphid insects captured in the North Central Region’s, Aphid Suction Trap Network. These insects were obtained from late August collections and were obtained from 4 traps, 3 in MN and 1 in Wisconsin (Spooner, WI). The epidemiological significance of these new captures is unknown, and the likelihood that we will continue to see increased captures later this fall and into the coming year(s) is also unknown. This is, however, an area of investigation that we will begin to monitor closely

The organism apparently causes sugars to accumulate in areas of the tuber instead of starch and affected tubers have necrotic lines throughout the length of the tuber. In chipping varieties, these areas darken when the chips are fried, creating a striped condition resulting in ZC. Infested plants produce fewer tubers and yield losses range between 20 to 50%. Tubers produced on plants that have been infected early in the plant development will prematurely sprout in storage and may result in a condition known as ‘Haywire’. Severe symptoms include overall yellowing with enlarged nodes, development of clusters of small leaves in the axillary buds that appear rosetted, and the formation of aerial tubers. Internodes are shortened and the plant eventually is dwarfed and appears pyramid shaped. The bacterium is transmitted in a persistent manner by the potato psyllid and infected adult insects (and perhaps nymphs) can remain as potentially inoculative for the remainder of their lives.

The organism causes sugars to accumulate in areas of the tuber instead of starch and affected tubers have necrotic lines throughout the length of the tuber. In chipping varieties, these areas darken when the chips are fried, creating a striped condition resulting in the name "ZC". Infested plants produce fewer tubers and yield losses range between 20 to 50%. Tubers produced on plants that have been infected early in the plant development will prematurely sprout in storage and may result in a condition known as ‘Haywire’. Severe symptoms include overall yellowing with enlarged nodes, development of clusters of small leaves in the axillary buds that appear

rosetted, and the formation of aerial tubers. Internodes are shortened and the plant eventually is dwarfed and appears pyramid shaped.



Adult potato psyllids (photo courtesy of Whitney Cranshaw, Colorado State University).



Immature potato psyllids (UC Regents 2007).



Zebra chip symptoms in affected plant foliage and fried potato chip.

Potato psyllids used to be an occasional problem in portions of the western U.S. in certain years when they would migrate into southern states from Mexico. In recent years, however, a more invasive form of the species has been found in portions of south Texas and California and appears to have the ability to overwinter in parts of the southern U.S. Populations of the potato psyllid now occur annually in these areas and have become a chronic problem in several locations along the front range of the Rocky Mountains as well as the inter-mountain west. Potatoes infected with the Zebra Chip pathogen have now been detected in California, Texas, New Mexico, Colorado, Wyoming, Kansas, and Nebraska. The risk of Zebra Chip in Wisconsin is still considered low and this results from the fact that potato psyllids have only intermittently been detected in the state late in the season and in very low numbers.

Antigo Potato Research Field Day Announcement
Alex Crockford, UW Seed Potato Certification Program

We welcome the public again to the Langlade County Research Station Field Day on Thursday, August 23rd at 9:30 a.m. The experimental station is operated by UW Extension with funding and support from the Wisconsin potato industry at the Langlade County Airport (corners of Hwy 64 and Hwy 52 just east of Antigo).

Following the tour and program (complete agenda below) we will meet at the City Park shelter. Questions can be directed to Alex Crockford at [715-527-8939](tel:715-527-8939) or abcrockford@wisc.edu.

2012 Antigo Field Day, August 23rd

9:30 Group photograph for UW Seed Potato Certification 100th Year Anniversary (2013)

9:45 Load Wagons

10:00 Program begins in field

Vegetable Pathology Update

- . The effect of tillage practices on Fall bed fumigation with Pic Plus
Dr. Amanda Gevens, UW-Plant Pathology and Alex Crockford, UW Seed Potato Certification.
- . Potato Early Dying product efficacy trial, Dr. Amanda Gevens

Breeding Program Update

- . Wisconsin Variety and Advanced Breeding Line Trial
Bryan Bowen and Mary Lemere, UW Ag Research Stations
- . Grower/Industry Variety Evaluation Day (October 2012)

Vegetable Entomology Update

- . PVY symptom plot, Dr. Amy Charkowski, A. Crockford, R. Hafner, UW Seed Potato Certification
- . Best management practices to limit PVY using combinations of foliar protectants
Dr. Russ Groves, UW -Entomology and Alex Crockford, UW Seed Potato Certification

Weed and Herbicide Update

- . The evaluation of potato vine dessicants
Dr. Jed Colquhoun and Dan Heider, UW-Horticulture

Potato Production and Storage Update

- . Evaluation of fresh market russet and red-skinned varieties
Dr. A.J. Bussan, UW-Horticulture

Common Scab Work

- . Potato Common Scab Fungicide Efficacy Trial
Dr. Amanda Gevens, UW-Plant Pathology & A. Crockford, WSPCP
- . Breeding for Resistance to Common Scab in Potato
Sarah Braun, Ph.D. Candidate, Jansky