



# Vegetable Crop Update

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

No. 18 – July 25, 2012

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## 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 Crop Update – A.J. Bussan, Professor, Department of Horticulture, UW-Madison, Phone: 608-225-6842, E-mail: [ajbussan@wisc.edu](mailto:ajbussan@wisc.edu).**

It was good to see many of you at the Hancock Agriculture Research Station field day on Tues. Fortunately, we had fair skies and reasonable temperatures to make for an enjoyable day.

**Potatoes:** We sampled 20 plants of multiple fresh market russet and chip potato clone varieties last Thursday. Fresh market russet potato varieties averaged between 3 and 4 stems per plant. Russet Norkotah line selections CO8 and TX 296 had about 10 tubers per plant. Gold Rush had 10 tubers per plant on July 5, but increased to over 15 tubers per plant by July 19.

Tuber bulking per plant has been over an ounce per day across all 3 potato varieties over the past 2 wk. Average total tuber weight per plant ranges from 2.2 to 2.6 lbs with average tuber size of 4 oz for Norkotah and around 2.5 oz for Gold Rush (smaller size due to higher tuber set). Projected yields for potatoes with 12” spacing between plants was 300 to 375 cwt/acre across the varieties.

Snowden and Lamoka have 4.5 and 2 stems per plant, respectively. Tuber number per plant has averaged 13 and 8 for Snowden and Lamoka, respectively. Total tuber weight per plant for Snowden and Lamoka was just over 2 lbs for each variety. With in-row spacing of 9” for chipping potatoes estimated yields were near 375 cwt/acre. Lamoka tubers are averaging over 4 oz/tuber while Snowden tubers are around 2.5 oz/tuber.

Heat has not seemed to have reduced tuber bulking over at least the past 14 days. Even though there is data suggesting that bulking is reduced by warm soil temperatures the crop has nearly doubled in yield add over 10 cwt/acre/day across most of the varieties.

The vines remain in relatively good shape for many potato varieties suggesting potential for continued good growth and development. The heat may cause issues with specific gravity, but reports for some chipping potatoes are encouraging. In addition, the number of warm nights

would suggest high potential for stem end defect in susceptible chipping varieties especially if they continue over the next 2 to 4 weeks.

There is concern that the heat has ‘lowered the ceiling’ for the current crop or reduced its potential yield and that may be likely. That said, early tuber set and good conditions the first 2 to 3 weeks of tuber growth allows for high potential yields and good quality – especially gravity. It is too early to tell, but this early growth may facilitate the production of a good yielding crop despite the warm weather over the past 4 weeks.

Irrigation management continues to be a critical management factor for many crops. Intermittent rains across different regions will require adjustments to irrigation scheduling. For example, precipitation earlier this week reduced need for irrigation, but the return of near 100°F temperatures on Wednesday necessitated irrigation.

**Processing Vegetables:** Rains have continued in different parts of Wisconsin which should greatly improve productivity of multiple processed vegetable crops under non-irrigated conditions. The very warm temperatures has reduced yields on irrigated and non-irrigated crops. Pollination has been reduced leading to floral abortion and pin bean drop in snap bean. This has been serious enough in some regions to cause double set. Poor tip fill in sweet corn has occurred in irrigated and non-irrigated fields as well.

**Fresh Market Vegetables:** Seems weather patterns have changed a bit bringing continued precipitation to much of Southern Wisconsin. Crops surviving and in good health should be able produce good quality fruit. The season has been difficult to date, especially with limited irrigation, but the rains and respites from scalding temperatures should improve crop productivity. Largest challenges now could be inconsistent growing conditions leading to differential growth rates. This will cause cracking in root crops and fruit.

**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/>**

***P-Days and Early Blight:*** All plantings of potatoes WI, but for late planted potatoes in the Antigo area have P-Day values exceeding the threshold of 300 of this time. Late plantings in the Antigo area are approaching the threshold at 272. Fungicides for early blight control should be applied on all (with the exception of late planted potatoes in Antigo) susceptible cultivars of 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.

***DSVs and Late Blight:*** All potato plantings in Wisconsin, with the exception of the Hancock area, have exceeded the threshold with 21-26 DSVs. An accumulated DSV of 18 indicates time to initiate fungicide applications for late blight control. While this season has generally been hot and dry, isolated storms have been dropping precipitation across several WI regions creating conditions favorable for disease.

There are no reports of late blight in Wisconsin at this time. This past week there were a few new late blight reports from CT (tomato), MA (tomato), NC (tomato), and NY (tomato). To date this production year, late blight has been reported in CA, CT, FL, MA, ME, NC, NJ, NY, PA, and VA. 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.

**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	377	26	7/23
	Mid 5/10	6/6	339	26	7/23
	Late 6/1	6/16	272	26	7/23
Grand Marsh Area	Early 4/3	5/8	515	22	7/23
	Mid 4/15	5/16	469	22	7/23
	Late 4/30	NA	413	21	7/23
Hancock Area	Early 4/1	5/1	582	17	7/23
	Mid 4/15	5/10	525	11	7/23
	Late 5/1	5/17	481	11	7/23
Plover Area	Early 4/3	5/17	526	25	7/23
	Mid 4/19	5/18	461	25	7/23
	Late 5/1	5/27	398	21	7/23

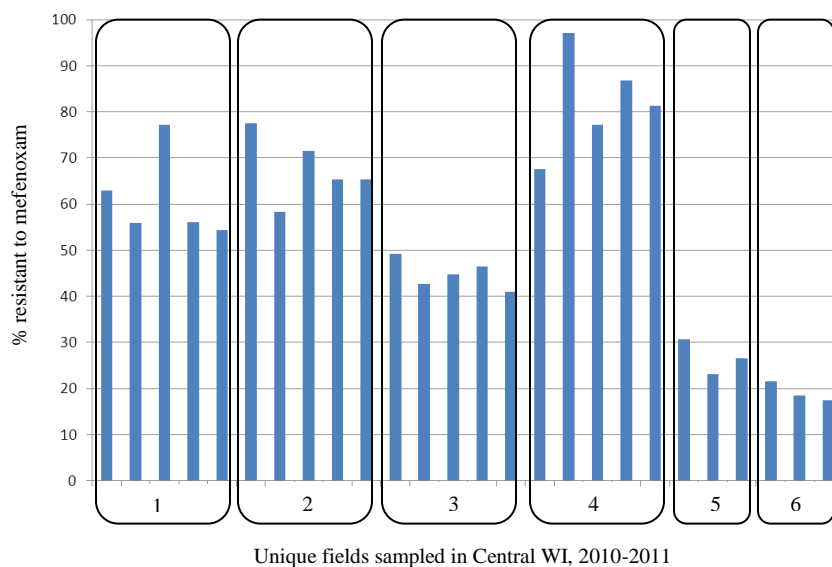
**Cucurbit Downy Mildew:** has not been identified in Wisconsin at this time in commercial fields, home gardens, or our sentinel monitoring plots. Several states have reported cucurbit downy mildew this season across a wide range of cucurbit hosts in AL, DE, FL, GA, LA, MD, MI, NC, NJ, NY, OH, PA, SC, VA, and Ontario Canada. **The newest reports within the past 7 days have been primarily on cucumber with closest detects in southwestern MI (Berrien County) and OH (Sandusky County).** I will be keeping tabs on disease reports in the region 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 Kever of North Carolina State University reports, “HIGH Risk for cucurbits in southern MI and southern ON, northeast IN, northern OH, and extreme western NY and PA. Moderate Risk for AL / GA / FL panhandle, PA, western / southern NY, northern NJ, Long Island, and southern New England. Low Risk near the sources in LA, northern AL, FL peninsula, and from SC / NC through the eastern mid-Atlantic region. Minimal Risk to cucurbits otherwise.” The website: <http://cdm.ipmpipe.org/> offers up to date reports of cucurbit downy mildew and disease forecasting information.

**Phytophthora in Cucurbits, Peppers, and Tomatoes:** Over the past few years, many Wisconsin producers battled Phytophthora crown and fruit rot in vegetable crops. The disease has again been identified on cucumbers in Wisconsin. This potentially aggressive disease, caused by the

soilborne water mold *Phytophthora capsici*, can infect a broad range of crops including summer squash, zucchini, winter squash, pumpkins, melons, cucumbers, peppers, tomatoes, and eggplant. Over the past few years, reports of this pathogen have also been made on snap and lima beans in commercial fields in the Midwest and Mid-Atlantic regions of the U.S. Symptoms of *Phytophthora* include water-soaking of lower stem or crown of a plant resulting in complete wilting of plants, and water-soaking on fruit often associated with white talcum-like pathogen sporulation on surfaces (see pictures below). Breakdown of plant tissues by this pathogen can be rapid and can occur on fruit post-harvest. To avoid *Phytophthora*, the following measures should be taken: do not plant susceptible crops on fields with recent history of this disease, provide good drainage (raised beds are beneficial), avoid planting in low-lying areas of fields, practice good irrigation management to avoid standing water and extended periods of leaf wetness, apply effective protectant fungicides when conditions favor infection in known infested fields. With dense cucurbit plant canopies and sporadic rains (especially overnight rains in southern WI), it is critical that growers of susceptible crops scout their vegetable fields for *Phytophthora*. Roguing of infected plants from the production field when disease is identified early can aid in limiting spread. Do not allow infected fruit to sporulate and persist in production fields. Culls can continue to provide inoculum for remaining plants. Because *Phytophthora* is soilborne, soil from infested fields remaining on equipment should be removed prior to moving to a new or 'clean' field. Every effort should be made to avoid introducing this pathogen into uninfested fields.

Fungicides can be effective in managing *Phytophthora* when environmental conditions favor disease. The keys to making fungicides work best for you are: 1) select most effective fungicides with no known resistance in your field/area, 2) make a thorough application particularly if fruit are to be protected and are beneath a dense foliar canopy, and 3) make frequent applications when conditions favor disease and crop growth is rapid.

There are reports of *P. capsici* resistance to the fungicide mefenoxam (active ingredient in Ridomil Gold, Ultra Flourish) in Wisconsin and other vegetable-producing states. My program tested several isolates of *P. capsici* from Wisconsin production fields in 2010 and 2011 and determined that individual fields had unique mefenoxam resistance profiles, likely as a result of



different field histories and fungicide use patterns. In the above graph, fields 1, 2, 3, and 4 had 30-90% resistance to mefenoxam, indicating intermediate resistance (mefenoxam *may not* provide complete control of *Phytophthora* crown and fruit rot). Two fields, 5 and 6, had mefenoxam-sensitive *P. capsici* isolates, indicating sensitivity (mefenoxam *should* work to control the disease).

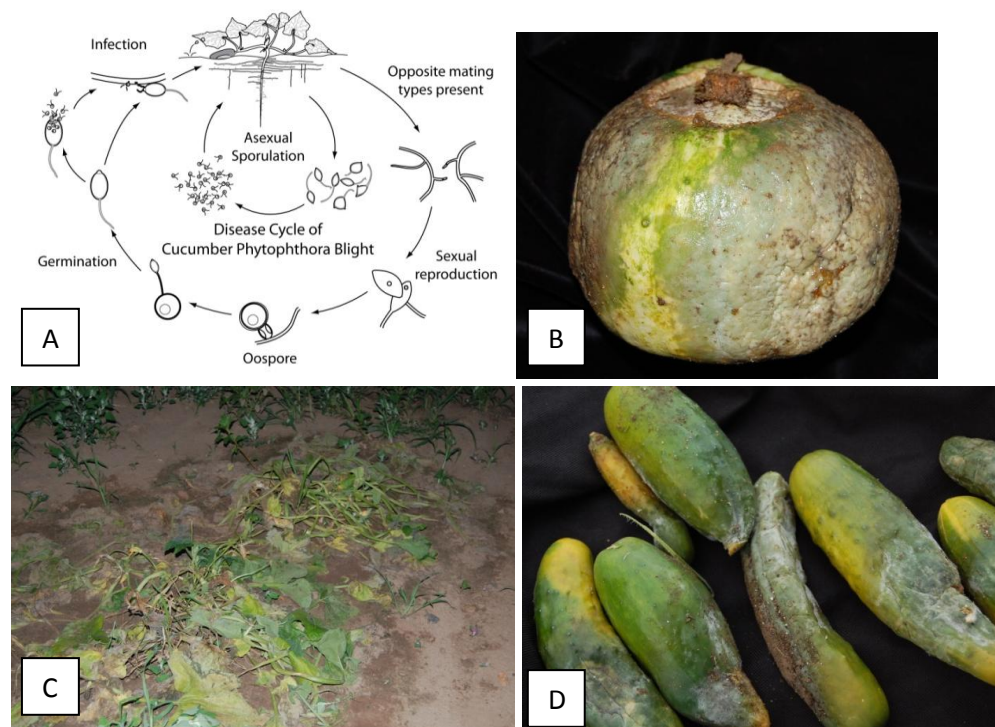
This percentage is calculated based on the relative growth of the pathogen on mefenoxam-free media relative to media amended with 100 ppm mefenoxam. The categorization of resistant (>90%), intermediately resistant (30-90%), and sensitive (<30%) is established in the research of this pathogen and has been correlated to disease response on plants treated with the fungicide. If your farm has no history of mefenoxam (ie: Ridomil) use, it is likely that the fungicide will be effective for disease control. Please contact me if you have questions on resistance or need assistance in determining this status.

Fungicides with activity against Phytophthora crown and fruit rot include: Ridomil (mefenoxam), Ranman (cyazofamid), Forum (dimethomorph), Tanos (fanoxadone + cymoxanil), Presidio (fluopicolide), Aliette (fosetyl-al), Revus (mandipropamid), and Gavel (zoxamide + mancozeb). Fungicides should be tank-mixed with multi-site protectant such as chlorothalonil (ie: Bravo) or mancozeb (ie: Dithane). Tank-mixes of Presidio (fluopicolide) or Revus (mandipropamid) with copper hydroxide (ie: Kocide) have also been effective in trials on picking cucumber in Michigan (see link below).

<http://www.veggies.msu.edu/Research/GLpickle2010.pdf>.

If you have any questions on symptoms, control, or fungicide resistance, please contact your county agent, crop consultant, the diagnostic clinic, or myself at UW-Plant Pathology. 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>

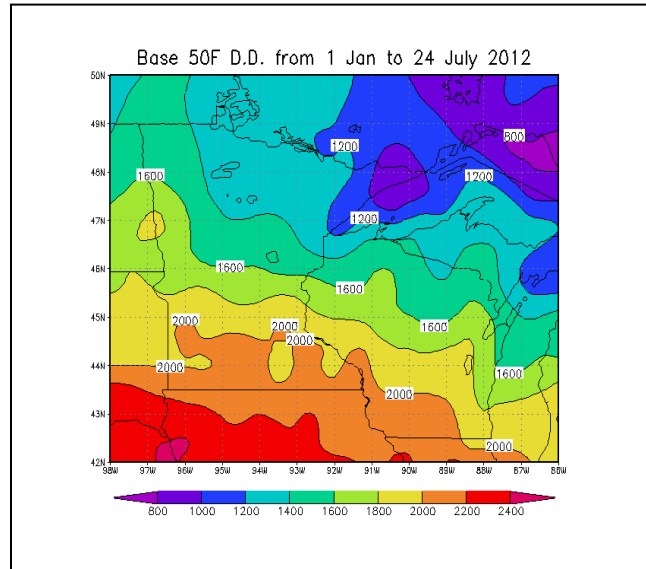


Phytophthora crown and fruit rot pictures include A: disease cycle on cucumber, B: symptoms on winter squash fruit, C: wilting symptom on winter squash plants, and D: fruit rot and sporulation on cucumber fruit.

**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](mailto:groves@entomology.wisc.edu).**

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

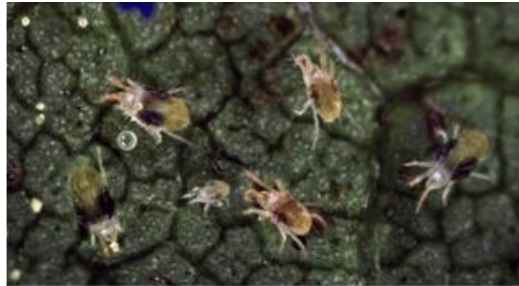
**European corn borer (ECB)** – Adult moth captures in blacklight traps have increased over the past two weeks as degree days have surpassed the predicted 1,400 DD<sub>50</sub> to initiate adult emergence and are now approaching the 2,100 DD<sub>50</sub> for 2<sup>nd</sup> generation larvae. Egg deposition has continued over the past week and the phenology model for this pest suggests that the peak in summer moth activity has now been surpassed in the south-central portions of the state. Susceptible peppers, sweet corn, and snap bean crops should be inspected for egg masses and larvae. In snap beans, larvae that bore into pods are the main concern, because the resultant holes render the beans unmarketable.



In sweet corn, larvae will feed initially on foliage, but will move to the developing ear where significant damage can occur and has already been witnessed. In peppers, young larvae will initially feed on the foliage before boring into the developing fruit under the cap and destroying the marketable value of the fruit. Properly timed insecticide sprays are an effective tool for ECB management in all three crops. The timing and number of applications in sweet corn is influenced by moth activity during silking and the history of ECB damage in specific field locations. The decision to spray in snap beans and peppers is often implemented as a preventive insecticide program and is started soon after the new generation of moths begins emerging, as determined by the traps. Insecticide should be applied at 5- to 10-day intervals during the 3 to 4 weeks that moths are active, or longer if a third generation develops this year.

**Two-spotted spider mites** – As reported last week, spider mites continue to cause problems in several vegetable crops (vine crops principally) in the last two weeks. Briefly, spider mites development differs somewhat between host plant species, but a typical life cycle begins with eggs that are attached to fine silk webbing and hatch in approximately three days. The life cycle is composed of the egg, the larva, two nymphal stages and the adult. The length of time from egg to adult varies greatly depending on temperature. Under optimum conditions (> 80°F), spider mites complete their development in five to twenty days. There are many overlapping generations per year. The adult female lives two to four weeks and is capable of laying several hundred eggs during her life. The mites feeding causes graying or yellowing of leaves and necrotic spots occur in the advanced stages of leaf damage. Mite damage to the open flower causes a browning and withering of the petals that resembles a spray burn or phytotoxicity. After spider mites remove the sap, the tissue collapses and a small chlorotic spot forms at each feeding site. Continued feeding causes a stippled-bleached effect and later, the leaves turn yellow, gray or bronze. Predators are very important in regulating spider mite populations and should be

protected whenever possible. These include the predatory mites, the lady beetle, minute pirate bugs, predatory thrips, and lacewing larvae. Care should be taken when selecting a miticide to limit the direct impacts on these beneficials.



**Submitted by Alex Crockford, Current: UW-Langlade County Agricultural Extension Agent, Langlade County Extension, Antigo, E-mail: [alex.crockford@ces.uwex.edu](mailto:alex.crockford@ces.uwex.edu), Office Phone: 715-627-6236. (On Aug 1, Alex will assume the position of Program Director of the Wisconsin Seed Potato Certification Program)**

### **Antigo Potato Field Day - 2012**

9:30 Group photograph for UW Seed Potato Certification 100<sup>th</sup> 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 Cert
- 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 plot, Dr. Amy Charkowski, A. Crockford, R. Hafner, UW Seed Potato Cert
- Best management practices to limit PVY using combinations of foliar protectants  
Dr. Russ Groves, UW –Entomology and Alex Crockford, UW Seed Potato Cert

#### **Weed and Herbicide Update**

- The evaluation of potato vine desiccants  
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  
Bryan Webster, Amanda Gevens, UW-Plant Pathology & A. Crockford, WSPCP
- Breeding for Resistance to Common Scab in Potato  
Sarah Braun, Ph.D. Candidate, Jansky Lab

12:00 Lunch