Vegetable Crop Update

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

No. 19 – August 23, 2014

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Calendar of Events

October 29-30 – Hancock Ag Research Station Fresh Market Potato Variety Trial Open House (Jeff Endelman), Hancock, WI
January 13-15 – Wisconsin Crop Management Conference, Madison, WI
January 26-28 – Wisconsin Fresh Fruit & Vegetable Growers Conference, Wisconsin Dells, WI
February 3-5 – UWEX & WPVGA Grower Education Conference, Stevens Point, WI

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. Veg Pathology Webpage: http://www.plantpath.wisc.edu/wivegdis/

Late blight updates: In Wisconsin, late blight has now been confirmed in five counties: **Portage** (potato US-23/8), **Milwaukee** (tomato US-23), **Racine** (tomato US-23), **Adams** (potato), and **Waushara** (potato). With favorable weather, late blight development and spread is of great concern at this time.

All susceptible crops should be managed for late blight in WI at this time. US-8 is an A2 mating type with resistance to mefenoxam/metalaxyl fungicides. US-23 is an A1 type with sensitivity to mefenoxam/metalaxyl fungicides. Nationally, in the past week, there have been several new late blight reports from NY, ME, NH, NY, OH, PA, VA, WI, and WV on tomato, potato, and petunia (from MI). Recent reports are indicated on map above in dark red. All *P. infestans* isolates that have been genotyped from field samples in 2014, thus far, have been of the US-23 genotype/strain, with the exception of the Portage Co. WI US-8. Reports from >one week ago include FL, IN, MA, MD, ME, MI, NC, NH, NJ, NY, ON Canada, OR, PA, VA, VT, and WI. Details can be found at http://www.usablight.org/. Map was downloaded at 11:36AM 8/23/14.

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations (R.V. James, UW-Plant Pathology/R.V. James Designs): A P-Day value of ≥ 300 indicates the threshold for early blight risk and triggers preventative fungicide application. A DSV of ≥ 18 indicates the threshold for late blight risk and triggers preventative fungicide application. Red text in table

below indicates threshold has been met/surpassed. NA indicates that information is not yet available as emergence has yet to occur. Blitecast and P-Day values for actual potato field weather from Grand Marsh, Hancock, Plover, and Antigo are now posted at the UW Veg Path website at the tab "P-Days and Severity Values."
http://www.plantpath.wisc.edu/wivegdis/contents_pages/pday_sevval_2014.html

Location	Planting Date	50% Emergence	P-Day Cumulative	Disease Severity Value	Date of DSV Generation	Increase in DSV from last week (8/15)
Antigo	Early 5/20	6/9	**574**	**82***	8/22	17
	Mid 5/27	6/16	**526**	**82***	8/22	17
	Late 6/6	7/2	**390**	**51***	8/22	17
Grand Marsh	Early 4/20	5/19	**745**	**133***	8/22	16
	Mid 5/4	6/1	**658**	**127***	8/22	16
	Late 6/3	6/23	**481**	**92***	8/22	16
Hancock	Early 4/24	5/20	**788**	**73***	8/22	14
	Mid 5/8	6/2	**689**	**70***	8/22	14
	Late 6/3	6/24	**500**	**52***	8/22	14
Plover	Early 4/21	5/20	**702**	**132***	8/22	15
	Mid 5/5	6/1	**618**	**129***	8/22	15
	Late 6/5	6/24	**441**	**100***	8/22	15

Please note that we have surpassed the threshold for late blight DSVs (18) in all monitored areas for all plantings of potatoes. Please note: asterisks on the DSVs indicate that I have revised the value as displayed in the SureHarvest Blitecast daily output that is found at the UW-Vegetable Pathology website. In some cases, the number of hours of relative humidity above 90% was being issued as a value greater than 24 - giving unusually high DSVs for the individual day. I assigned a maximum DSV of 4 to such dates.

Preventive fungicide application for late blight control may include base protectants such as chlorothalonil or mancozeb, or include a base protectant tank-mixed with one of the reduced risk fungicides with specific activity in controlling late blight. Be mindful of the season-long limitations for use of chlorothalonil and mancozeb fungicides. Bravo and Echo products do have the WI special registrations for long season potato use of up to 16 lb active ingredient per acre. Other chlorothalonils do not have this special allowance and their use must be limited to 11.25 lb active ingredient per acre. Mancozeb use is limited to 11.2 lb active ingredient per acre. Triphenyltin hydroxide fungicides (ie: Super Tin and Agri Tin) have season limits of 11.25 oz. For further information on specific fungicide rates and activities, please find the 2014 updated list of potato fungicides for WI at the link below.
http://www.plantpath.wisc.edu/wivegdis/pdf/2014/June%206%202014.pdf

Further details on registered fungicides for WI vegetables can be found in the Univ. of WI Commercial Vegetable Production in WI Guide A3422,
http://learningstore.uwex.edu/assets/pdfs/A3422.PDF.

P-Days and early blight management: P-Days are over the 300 threshold for potatoes of all planting dates at all locations. Recall, the P-Day 300 threshold is an indicator for timing the initial fungicide application for management of early blight. Early blight lesions are active now in lower canopies of earliest and some mid-planted potatoes in southern and central Wisconsin.

White Mold in Bean and Vegetable Crops: White mold is a potentially severe crop disease caused by the soilborne fungus *Sclerotinia sclerotiorum* and has been problematic in several parts of Wisconsin over the past 2 weeks. This pathogen has a very broad host range (>350 plant species) including bean, cole crops (ie: cabbage, kale), tomato, pumpkin, carrot, and sunflower. The tell-tale symptoms/signs of white mold include white, cottony mycelial growth on above ground infected plant parts, soft/rotted fruit/stem/foliar plant parts, and conspicuous black pellet-like fungal structures known as sclerotia (see pictures below). The sclerotia fall to the soil after plants decompose and become the long-term fungal structures which can cause disease on future susceptible crops when environmental conditions are favorable. The fungus produces spores when the soil temperature is between 50 and 80ºF (optimally 55-60ºF) and when the soil moisture has been at field capacity for ~10 days. The spores are forcibly shot into the air when the relative humidity drops. These spores require a film of free water on the plant tissue to germinate but they can survive under low humidity until these conditions are met. At 75ºF they require 16 hours of free water in order to germinate and infect. Longer periods (2-3 days) are required at lower temperatures.

In bean crops, flowering is typically the time of greatest risk as this timing can align with the release of pathogen spores which infect flowers and cause disease on bean pods. On other fruiting or heading vegetable crops, all plant parts can become infected either by spores or by direct germination of the soilborne sclerotia. Plant parts in contact with soil can be infected directly, above-ground parts can become infected with aerial/splash dispersal of the spores. Infection can occur in the field during production, or post-harvest.

Control:

1. Crop rotation is of limited value because the sclerotia are long-lived (~5 years) and because spores can be blown in from outside the field (it should be practiced anyway to control other diseases). Non-susceptible rotation crops include corn and small grains.
2. Where possible, crop residue should be removed after harvest to prevent the post-harvest build-up of sclerotia.
3. Do not compost infected plants.
4. Avoid isolated fields surrounded by windbreaks. Such fields, especially when small, have poor air circulation with resultant high humidities.
5. Maintain proper spacing of rows and do not overcrowd plants within rows.
6. Plant rows parallel to the direction of prevailing winds to promote rapid drying of foliage and the soil surface.
7. Plant in well-drained soils. Raised beds dry out quickly and can be of some benefit.
8. Plastic and other mulches offer a barrier to spore dispersal.
9. Irrigate only when necessary.
10. Some varieties of various crops may be more or less resistant.

11. Fungicides such as thiophanate-methyl (ie: Topsin), boscalid (Endura), iprodione (ie: Meteor, Iprodione) can give good control depending on the timing of spray(s). There are several newer fungicide registrations for white mold control. In beans, for example, additional reduced risk fungicides that have been registered over the last several years include Omega (fluazinam), Switch (cyprodinil, fludioxonil), Priaxor (fluxapyroxad, pyraclostrobin), Omega (fluazinam), and Fontelis (penthiopyrad). Contans, a biological fungicide consisting of the fungus *Coniothyrium minitans* has also been utilized in Wisconsin with some long term benefit in reducing number of soilborne sclerotia in the soil – ultimately reducing disease incidence and severity. Check fungicide labels for rates and appropriate crop uses.

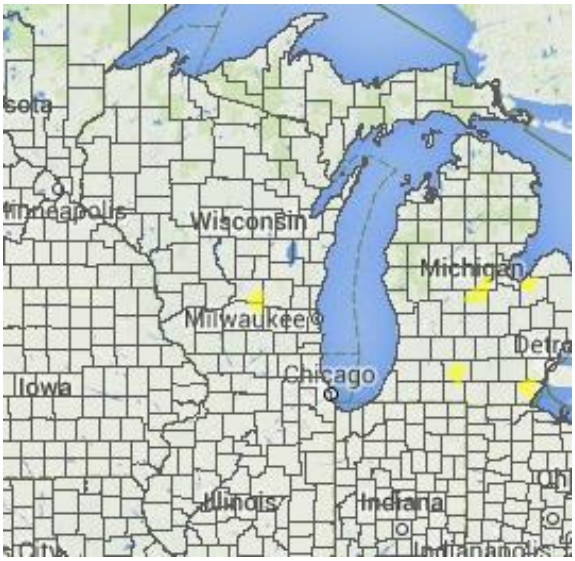
    Further details on registered fungicides for WI vegetables can be found in the Univ. of WI Commercial Vegetable Production in WI Guide A3422, http://learningstore.uwex.edu/assets/pdfs/A3422.PDF.

Cucurbit downy mildew updates: Downy mildew has been identified on cucumber in Dane County, Wisconsin. I am not aware of any new counties with confirmed reports of this disease at this time. **Preventive fungicide applications are recommended**. In the past week, MA, MD, MI, NC, NY, NJ, NC, OH, TN, and WV reported cucurbit downy mildew, as depicted in red on the map below. In summary this year, AL, DE, FL, GA, KY, LA, MD, MI, NC, NJ, ON Canada,

PA, SC, TN, TX, and WI have reported cucurbit downy mildew across multiple cucurbit hosts. Based on the disease forecast system, there is moderate risk of spore movement from current sites of confirmation in Dane County WI to areas to the north (up to Green Bay) and east (to Milwaukee) – see forecast map below with risk area in orange. The website: http://cdm.ipmpipe.org/ offers up to date reports of cucurbit downy mildew and disease forecasting information.

Locations of recent (red) and older (green) reports of cucurbit downy mildew in the U.S. in 2014. Map sourced from http://cdm.ipmpipe.org/ from 12:37PM August 23, 2014.

Further information on cucurbit downy mildew: http://learningstore.uwex.edu/Assets/pdfs/A3978.pdf



Cucurbit Downy Mildew Forecasted Risk for 8/23/2014: There is low risk of spore movement from current site of confirmation in Dane County WI to surrounding areas. See forecast map to the left with small risk area in yellow. Management information for cucurbit downy mildew can be found in UW Vegetable Crop Updates – Disease Newsletter from last week: http://www.plantpath.wisc.edu/wivegdis/pdf/2014/August%2015%202014.pdf

UW-Extension/Madison Plant Disease Diagnostic Clinic (PDDC) Update: *Brian Hudelson, Ann Joy, Joyce Wu, Tom Hinsenkamp, and Catherine Wendt, Plant Disease Diagnostics Clinic*

The PDDC receives samples of many plant and soil samples from around the state. The following diseases/disorders have been identified at the PDDC from August 16, 2014 through August 22, 2014.

PLANT/SAMPLE TYPE	DISEASE/DISORDER	PATHOGEN	COUNTY
VEGETABLES			
Basil	Downy Mildew	*Peronospora belbahrii*	Washington
Dill	Cercosporoid Leaf Blight	*Passalora punctum*	Barron
Pepper	Bacterial Spot	*Xanthomonas* sp.	Shawano
Squash (Winter)	Phytophthora Crown and Root Rot	*Phytophthora capsici*	Racine
Tomato	Black Dot Root Rot	*Colletotrichum* sp.	Dane
	Bacterial Canker	*Clavibacter michiganensis* ps. *michiganensis*	Racine
	Dagger Nematode*	*Xiphinema* sp.	Dane
	Septoria Leaf Spot	*Septoria lycopersici*	Portage, Racine, Shawano

*Diagnosis performed by the UW-Madison Nematode Diagnostic Lab
For additional information on plant diseases and their control, visit the PDDC website at pddc.wisc.edu.