Vegetable Crop Update

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

No. 11 – July 9, 2013

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Calendar of Events

July 23– UW-Hancock Ag Research Station Field Day, Hancock, WI (tentative agenda begins at noon)
Aug 22 – UWEX-Langlade County Airport Research Station Field Day, Antigo, 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. Vegetable Path Webpage: http://www.plantpath.wisc.edu/wivegdis/

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

P-Day of ≥ 300 indicates threshold for early blight risk and triggers preventative application of fungicide. DSV of ≥ 18 indicates threshold for late blight risk and triggers preventative application of fungicide. Red text in table below indicates threshold has been met. NA indicates that information is not yet available as emergence has yet to occur. **http://www.plantpath.wisc.edu/wivegdis/contents_pages/pday_sevval_2013.html**

Location	Planted	50% Emergence	P-Day Cumulative	DSV Cumulative	Calculation Date
Antigo Area	Early 5/13	6/4	229	25	7/6/13
	Mid 5/22	6/17	152	17	7/6/13
	Late 6/7	6/29	64	1	7/6/13
Grand Marsh Area	Early 4/15	5/10	357	100	7/6/13
	Mid 5/1	5/21	323	100	7/6/13
	Late 5/15	6/5	231	73	7/6/13
Hancock Area	Early 4/20	5/15	400	53	7/6/13
	Mid 5/5	5/23	339	51	7/6/13
	Late 5/15	6/5	257	29	7/6/13
Plover Area	Early 4/22	5/17	377	73	7/6/13
	Mid 5/7	5/30	297	49	7/6/13
	Late 5/24	6/5	255	40	7/6/13

DSVs and Late Blight: From in-potato-field weather stations here in Wisconsin, we have far exceeded initial threshold for Blitecast in all monitored locations with the exception of mid and late planted fields in the Antigo area. Across all locations, accumulations were moderate this past week with a break in disease-favorable weather over the Fourth of July Holiday. A 5 to 7-day fungicide program is appropriate at this time given recent rain events and presence of pathogen.

The UW Vegetable Pathology site offers the Blitecast and Tomcast accumulations for foliar disease control from remotely sensed and forecasted weather data. Information is provided to

help growers interpret the information offered for potato and carrot disease control. The link is entitled: "NEW: Blitecast & Tomcast estimates (from remotely sensed weather data), 2013" right in the center of the home page of: www.plantpath.wisc.edu/wivegdis/

Late blight status in WI and the U.S. Late blight was confirmed in Adams County Wisconsin on Jun 28 on potato (US-23); Juneau County on Jun 29 (US-23); and Sauk County on Jul 2 (US-23). There were no new reports of late blight, nationally, in the past 7 days. To date this production year, late blight has been reported in in FL, TN, WV, LA, NJ, MD, KY, 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.

PDays and Early blight: P-Days have reached/surpassed the threshold of 300 in early plantings and some mid-plantings at Grand Marsh, Hancock, and Plover. Fungicide applications for the management of early blight are recommended at this time for early and mid-planted fields in Central and Southern Wisconsin. Because of the dual risk of late and early blight, consider management options that control against both diseases. We have seen little to no early blight in our Russet Burbank research plots at the Hancock Ag Research Station. Additionally, we've been scouting for brown spot and have not seen any symptoms at this time.

***Cucurbit Downy Mildew*:** has not been identified in Wisconsin at this time in commercial fields, home gardens, or our sentinel monitoring plots. Several counties in north central OH have reported cucumber downy mildew. This is the closest detection to WI at this time. OH, DE, AL, MD, SC, FL, NJ, GA, TX, and NC have reported cucurbit downy mildew this season across multiple cucurbit hosts. 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. The website: http://cdm.ipmpipe.org/ offers up to date reports of cucurbit downy mildew and disease forecasting information.

Black Rot in Cabbage: Black rot disease in cabbage, caused by the bacterium *Xanthomonas campestris*, is problematic in some growing regions of Wisconsin at this time. Black rot caused significant crop losses in cabbage last year due to record rainfall and flooding of fields near creeks and rivers. Symptoms of black rot are most easily recognized by the presence of yellow to brown V-shaped areas extending inward from the leaf margins on outer leaves closes to the ground. Veins in affected areas of leaves are usually black in color. If infection occurred in a young seedling, the disease is usually much more severe since the main stem becomes infected and the disease becomes systemic in the plant. These plants remain stunted and the veins in the stems are black. The heads from these plants deteriorate rapidly after harvest.

Although the distribution of diseased plants in the field may be quite uniform, the disease may be more common and severe in low-lying, wet, and shaded areas. If few infected seedlings were planted in the field, scattered diseased plants will appear early in the season. Diseased plants often appear in a single row of a field as a result of spread during cultivation or other field activities. Seedling infection is often hard to detect with symptoms of stunting and one-sided growth. The leaves may be light green, and lower leaves may drop prematurely and the vasculature may be black. The bacteria spread and cause most damage in wet, warm weather. The black rot pathogen does not typically spread in dry weather and is limited by temperatures below 50°F. The bacteria can survive in the soil for a year and may be spread in surface water or

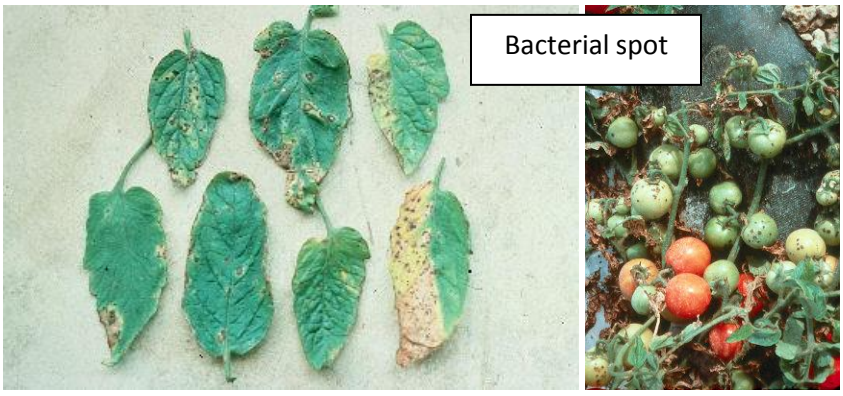
through irrigation. Black rot can affect most members of the crucifer family, such as mustard, collards, wild mustard, cauliflower, Brussels sprouts, kohlrabi, rutabaga, kale, rape, and Chinese cabbage.

Commercial cabbage varieties do not have appreciable black rot resistance. The application of copper containing fungicides can limit the spread of black rot from head to head in the field. The following management measures can help in limiting losses to black rot in cabbage:

1) Use disease free seed and transplants
2) Practice crop rotation (out of crucifers for 2 years) and avoid replanting in fields known to be heavily infested with the black rot pathogen
3) Limit spread of bacterium on equipment by cleaning and sanitizing equipment and tools between fields
4) Manage irrigation water and limit the occurrence of standing water in fields
5) Avoid activities in a black rot infected field as bacteria can be moved on clothing and equipment from affected to healthy areas of the field
6) When/where appropriate, copper application can limit spread from plant to plant in field

Cabbage black rot symptoms. Note V-shaped brown/necrotic lesions along leaf edges. For more information: http://learningstore.uwex.edu/assets/pdfs/A3181.PDF

Tomato bacterial diseases: Bacterial spot (causal agent: Xanthomonas campestris pv. vesicatoria), bacterial speck (Pseudomonas syringae pv. tomato), and bacterial canker (Clavibacter michiganensis subsp. michiganensis) tomato diseases have been seen in some fields (tomato and pepper). These bacterial pathogens are favored by moist conditions. Bacterial spot and canker are also favored by warm conditions (75-85°F), whereas bacterial speck is favored by cool conditions (65-75°F). Bacterial spot can cause moderate to severe defoliation, blossom blight, and lesions on developing fruit. Bacterial speck also causes these symptoms. Bacterial canker causes wilt, vascular discoloration, scorching of leaf margins, and lesions on fruit.



Bacterial spot

Foliar symptoms of bacterial spot and speck include small, water-soaked, greasy spots on infected leaflets. Lesions may be surrounded by yellow halos with brown centers that frequently fall out. Lesions may coalesce to form large, irregular dead spots. Spots may also appear on seedling stems and fruit pedicels. In some cases, blossom blight may occur, causing flower abortion. This is more severe with bacterial spot and may result in a split fruit set which is especially troublesome with determinate cultivars.

Bacterial spot lesions are small, water-soaked spots that become slightly raised and enlarged. The centers of these lesions become irregular, light brown, slightly sunken with a rough, scabby surface. In the early stages of infection, a white halo may surround each lesion, giving it the appearance of bacterial canker fruit spot. Small lesions are often confused with lesions of bacterial speck. Bacterial speck appears on immature fruit as a black, slightly sunken stippling, eventually causing lesions less than 1/16 inch in diameter. Mature fruit become more resistant to infection by bacterial speck.

Systemic symptoms of bacterial canker (from infections originating in seeds or young seedlings) include stunting, wilting, and vascular system may exhibit a thin, reddish-brown discoloration of the tissue, especially at the base of the plant. On young seedlings in the greenhouse, lesions may appear as raised pustules on leaves and stems. These plants rarely survive the season in the field. Secondary symptoms in the field include browning of the leaf margins adjacent to a thin band of yellow, and fruit lesions. Spots on fruit are relatively small surrounded by a white halo. Canker bacteria may also invade internal fruit tissues, causing a yellow to brown breakdown. Bacterial canker can infect plants systemically. It is seedborne and can survive on infested plant debris in soil.

Controlling bacterial diseases in tomato includes 1) rotating away from tomatoes and other solanaceous crops for 2-3 years, 2) plant only seed from disease free plants or seed treated to reduce bacteria, 3) good field and greenhouse sanitation, 4) do not handle wet plants to avoid spread, 5) control irrigation to limit leaf wetness. Copper applications can provide some management of bacterial pathogens, but control is limited once there is an established infection.

The 2013 A3422 Commercial Vegetable Production in Wisconsin guide is available for purchase through the UW Extension Learning Store website: http://learningstore.uwex.edu/Commercial-Vegetable-Production-in-Wisconsin2013-P540.aspx

A pdf of the document can be downloaded or is available at the following direct link: http://learningstore.uwex.edu/Assets/pdfs/A3422.pdf