

## Potato Late Blight Status Report and Management Updated September 16, 2009

Amanda J. Gevens

Extension Plant Pathologist, University of Wisconsin, Madison, WI 53706

Phone: (608) 890-3072, Email: [gevens@wisc.edu](mailto:gevens@wisc.edu),

Website: <http://www.plantpath.wisc.edu/wivegdis/>

*Some of the information in this fact sheet was provided by Drs. Dennis Halterman and Walt Stevenson, University of Wisconsin Plant Pathology, Mr. Adrian Barta, Wisconsin Department of Agriculture, Dr. Steve Johnson, University of Maine Cooperative Extension, and Dr. Margaret Tuttle McGrath, Cornell University Plant Pathology.*

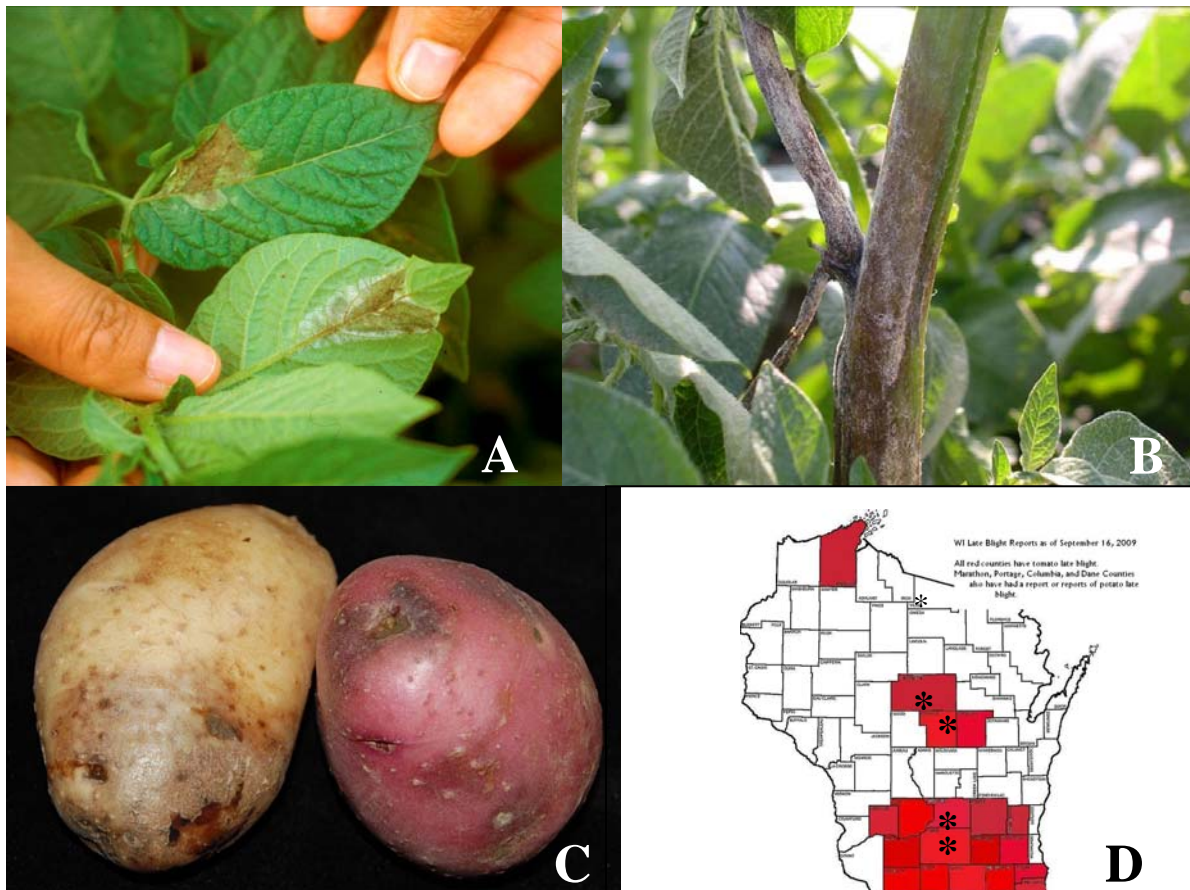
### ***Disease Description & Status of Disease in WI:***

Late blight is a potentially destructive disease of potatoes and other solanaceous plants, such as pepper, eggplant, and nightshade. The late blight pathogen is a fungal-like organism known as *Phytophthora infestans*. This pathogen is referred to as a 'water mold' since it thrives under wet conditions. In most regions of the U.S., the late blight pathogen acts as an obligate parasite, meaning it requires living plant tissue to survive. This 'obligate' status is the result of the pathogen having only one mating type present. Two different mating types (A1 & A2) are required for the production of long term, persistent, overwintering spores (oospores). Currently, in WI, we have only identified one mating type, US#14 *Phytophthora infestans* which is an A2. All potato plant parts can become infected by late blight, with leaf lesions beginning as pale green or olive green areas that quickly enlarge to become brown-black, water-soaked, and oily in appearance (Figure 1A). Lesions on leaves can also produce pathogen sporulation which looks like white fuzzy growth (Figure 1A). Stems can also exhibit dark brown to black lesions with sporulation (Figure 1B). Tuber symptoms start out looking like small bruises with brown to purple coloration (Figure 1C). As tuber infections advance, the lesions cover a greater surface area and the color changes to more of a brown. Tuber infections may be evident at digging, but can become more pronounced within the first month of storage and throughout the storage season. On foliage, the time from first infection to lesion development and sporulation can be as fast as 7 days, depending upon the weather.

In Wisconsin, late blight has not been identified on tomatoes or potatoes since 2002. So, where did this late blight come from? Based on symptoms, timing of appearance of symptoms, and spread of this disease in WI to date, it is likely that inoculum (source of spores for late blight infection) entered the state on air that had moved into WI from other nearby states with reports of late blight on tomato and potato. The late blight pathogen can produce a lot of spores on infected plants and spores can move in air up to about 40 miles from a source. There was/is an epidemic of late blight that started on tomatoes in the northeastern U.S. and has moved westward, infecting both tomatoes and potatoes in its path. Potentially, our epidemic is associated with this larger case which developed earlier in the growing season.

As of September 16, 2009, we have confirmed reports of late blight on potato in 4 counties, Columbia, Portage, Dane, and Marathon (Figure 1D). The newest report from Marathon County came from a home garden and symptoms included lower stem and tuber infections. On tomato, we have late blight reports from 19 WI counties: Dane, Rock, Sauk, Racine, Portage, Waukesha, Waupaca, Jefferson, Green, Iowa, Walworth, Lafayette, Marathon, Bayfield, Richland, Dodge, Washington, Kenosha, and Columbia (Figure 1D). Reports have come in from home gardeners and larger commercial operations (both organic and conventional). During the month of August, there was an increase in both the severity of late blight and in the geographic area impacted by the disease. However, in the first few weeks of September, we have had very warm and dry weather conditions which have greatly reduced the activity of the late blight pathogen. We know that the strain of *Phytophthora infestans* isolated from both Dane County tomato and Columbia County potato is type US#14 which is known to be aggressive on potato,

of the mating type A2, and resistant to fungicide metalaxyl. Although the late blight pathogen has the potential to infect other plants in the Solanaceae family (which includes tomato, potato, pepper, eggplant, nightshade weeds), we have only seen late blight on tomato and potato in WI at this time.



**Figure 1. Potato late blight symptoms and occurrence in WI.** A. Late blight infected potato leaves. Note brown, water-soaked lesion with white pathogen sporulation (Photo courtesy: Dr. Walt Stevenson). B. Late blight infected potato stem. Note dark brown, water-soaked elongated lesion with white pathogen sporulation (Photo courtesy: Dr. Walt Stevenson). C. Late blight infected potato tubers. Note brown-purple discoloration on tuber ends. D. Red counties indicate confirmed reports of tomato late blight as of September 16, 2009. Asterisks indicate counties that have also had reports of potato late blight as of September 16, 2009.

### ***Management:***

At this time, intensified scouting of potato fields is critical. The best place to scout for potato late blight is in field corners and areas of fields that are sheltered by tree lines, or are often inaccessible to aerial pesticide application. If late blight is found, infected sections of the field should be killed with a defoliant such as Reglone. Healthy-appearing potatoes surrounding the infected area should also be killed to try to isolate and destroy any potential late blight-infected plants. The field should then be treated with fungicides that are effective in managing late blight. Such products are listed in the table below. Now that late blight is on potatoes in WI it is critical that all plantings be protected with effective fungicides. Some fields may already be receiving vine-kill applications. It may be of value to consider vine-killing early to limit foliar infections which may increase risk of tuber infections. Allow 2-3 weeks between complete vine kill and harvest. Fungicide applications should be continued until vines are dead. When foliage dies, spores of the late blight fungus that remain on the foliage also die. This practice will prevent infection of tubers during harvest and development of late blight in storage.

If late blight is identified in your potatoes at harvest or beyond, do not make cull piles. Such piles are a significant source of spores and centers of large piles may not be subject to freezing/killing winter temperatures which serve to kill tuber tissue and the pathogen. Culls should be spread on fields not intended for potato production the following year in time that they will freeze completely and be destroyed during the winter. Potato culls can also be destroyed in some other way such as chopping, burial, burning or feeding to livestock.

### Comparison of Late Blight Fungicides (highest rates registered)

Provided by Dr. Steve Johnson, University of Maine Cooperative Extension

In addition to the products listed below, Reason (fenamidone) is also labeled and effective for potato late blight management. Please note the change in plant back restriction on Reason. You can now plant the field to corn/soybeans 30 days after application NOT 1 year. An all inclusive fungicide list has been offered in past newsletters and is available at: <http://www.plantpath.wisc.edu/wivegdis/> at the link entitled "Late Blight Fungicide List 2009." Additional information on details of fungicides for late blight management can be found in the Commercial Vegetable Production Guide for Wisconsin A3422.

Product	Effectiveness				Mode of action			Rainfastness	Mobility in the plant	FRAC #	REI	PHI
	Leaf blight	New growth	Stem blight	Tuber blight	Protectant	Curative	Anti-sporulant					
Bravo etc	G	No	P	No	G	No	No	G	contact	M5	12 hrs	7 days
Curzate + Dithane etc	G	?	F	No	G	E	P	G	translaminar + contact	27 + M3	24 hrs	14 days
Dithane etc	G	No	P	No	G	No	No	F	contact	M3	24 hrs	3 days
Forum + Dithane	G	?	F	F	G	P	G	G	translaminar + contact	40 + M3	24 hrs	4 days
Gavel	E	No	P	F	E	No	No	G	contact + contact	22	48 hrs	3 days
Kocide etc	P	No	P	No	F	No	No	P	contact	M1	24 hrs	0 days
Omega	E	No	P	G	E	No	No	G	contact	29	48 hrs	14 days
Previcur Flex + Dithane etc	G	G	G	No	G	G	G	E	systemic + contact	28 + M3	24 hrs	14 days
Ranman	E	No	P	E	E	No	No	E	contact	21	12 hrs	7 days
Tanos	G	?	F	No	G	E	P	G	translaminar + contact	11	12 hrs	14 days
Revus Top	E	?	F	G	E	P	F	E	translaminar + contact	40 + 3	12 hrs	14 days
Tin	E	No	E	E	G	No	E	F	contact	M1	48 hrs	7 days

No=No effect; P=Poor; F=Fair; G=Good; E=Excellent; ?=Unknown.