



Vegetable Crop Update

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

No. 3 – April 9, 2012

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Updates on onion thrips, flea beetles, and aster leafhoppers
Preparing for late blight management in potatoes and tomatoes

Calendar of Events

April 11 – UW-Hancock Ag Research Station, Variety Trial Demonstration, 8AM-4:30PM

May 17 – UW-Hancock Storage Research Updates, 10AM-3:30PM

July 24 – UW-Hancock Ag Research Station, Field Day

Vegetable Disease Update – Amanda J. Gevens, 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/>

Considering Late Blight Management in 2012: Late blight is a potentially destructive disease of tomatoes and potatoes caused by the fungal-like organism, *Phytophthora infestans*. This pathogen is referred to as a ‘water mold’ since it thrives under wet conditions. Symptoms of tomato and potato late blight include leaf lesions beginning as pale green or olive green areas that quickly enlarge to become brown-black, water-soaked, and oily in appearance. Lesions on leaves can also produce pathogen sporulation which looks like white-gray fuzzy growth. Stems can also exhibit dark brown to black lesions with sporulation. On potato tubers, late blight symptoms include firm, brown, corky textured tissue. The time from first infection to lesion development and sporulation can be as fast as 7 days, depending upon the weather. Control of late blight in the field is a critical component of long term disease prevention, as infected plant parts, if unexposed to winter killing frost conditions, can carry the pathogen from one growing season to the next.

With an earlier start to the potato and vegetable production season in 2012 comes an earlier start to disease risk. We had a limited number of late blight detections in tomato and potato last year, with a single report on tomato in mid-July in Waukesha County and a handful of detections on potato in late-August in northern Waushara and Adams Counties. Growers in these areas of Wisconsin should be watchful for early symptoms and signs of late blight on susceptible tomato and potatoes and on solanaceous weeds (nightshade species). Tubers infected from late blight of genotypes US-23 or US-24 in late season 2011 may result in volunteers with these strains in 2012. The disease cycle in figure 1 depicts how this disease cycle works.

The national late blight tracking project is again online in 2012. Over the past week, there have been confirmed reports of potato late blight in Florida and in California (www.usablight.org).

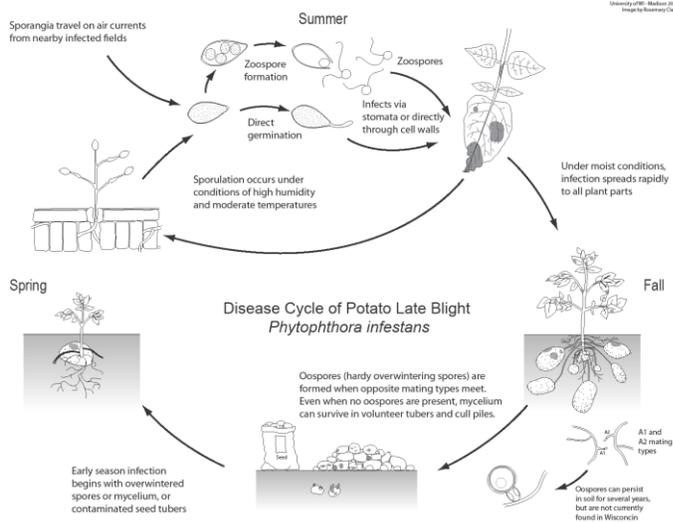


Figure 1. Disease cycle of *Phytophthora infestans*, the pathogen causing late blight of tomato and potato. Illustration credit to Rosemary Clark, UW-Plant Pathology.

Summary of genotype characterization: Isolates of *Phytophthora infestans* from tomato and potato were collected in 2009, 2010, and 2011 for characterization in Wisconsin. Each isolate was evaluated for sensitivity to the fungicide mefenoxam, compatibility type, and allozymes genotypic profile or “genotype”. A smaller group of isolates was further characterized for host range, RFLP profile, and growth optima at different temperatures on artificial media and host tissue. Results of our *P. infestans* characterization work further our understanding of the biology and dynamics of the pathogen population and lend to the development of improved disease management recommendations.

Genotype	Mefenoxam sensitivity	Mating type*	Temperature favoring greatest growth	Comments on host range
US-22	Sensitive	A2	24°C	Can infect tomato and potato; could not infect foliage of single variety of tomatillo, eggplant, pepper, ground cherry; could infect foliage of hairy, black, and bittersweet nightshade (limited sporulation). Found in WI in 2009, 2010.
US-23	Intermediately sensitive	A1	18°C	Found on tomato in southeastern WI in 2010 and 2011. Found on potato in central WI in 2011.
US-24	Intermediately sensitive with great variability among isolates	A1	20°C	Found primarily on potato in Wisconsin in 2010 and 2011.

*Opposite mating types were not isolated from the same fields or from the same counties. Co-inoculations of an A2 late blight isolate collected from Wisconsin in 2009 with a reference A1

isolate on tomato and potato leaves resulted in leaves with water-soaked lesions consistent with late blight symptoms. No oospores were produced on plant tissue. We are further evaluating compatibility type features of the *P. infestans* isolates.

With the recent presence of the late blight pathogen in Wisconsin, and the likelihood of disease-favorable weather conditions in 2012, it is critical that all growers of tomatoes and potatoes be on alert and prepared for late blight control. Key components of late blight control in potato are:

- 1) Destroy all potato cull piles (May 20 deadline by DATCP) *consider recent warmer temperatures*
- 2) Manage potato volunteers in all fields *-volunteers pose great risk for late blight introduction*
- 3) Acquire disease free seed from a reputable certified source *-infected seed poses great risk for introduction*
- 4) If there is a risk of disease associated with seed, use seed treatment or in-furrow application of effective late blight controlling fungicides (seed treatment is best)
- 5) Apply **only proven effective fungicides** for control of late blight when disease forecast tool indicates environmental risk and stay on a fungicide spray program (DSVs reach 18)
 - a. For conventional systems, a current list of registered late blight-specific materials can be found in the Commercial Vegetable Production in Wisconsin A3422 publication (further information below)
 - b. For organic systems, copper-containing fungicides are the only proven effective materials for preventing late blight in susceptible crops
- 6) Scout regularly and thoroughly for disease in all potato fields
- 7) Re-apply effective fungicides for disease control on a 7 day schedule (recommendation adjusts to a 5 day schedule when late blight is in the area and weather favors disease; recommendation adjusts to a 10 day schedule when late blight is not found in area and weather is hot and very dry)
- 8) If late blight is identified in a field, have a mitigation plan in place for specific site. Depending on days to vine kill, environmental conditions, and extent of infection – plan may vary from complete crop destruction to early vine kill with continued maintenance fungicide sprays. Mitigation plan should limit disease spread within field and from field-to-field.

Wisconsin fungicide recommendations for late blight can be found in the University of Wisconsin Extension Publication entitled “Commercial Vegetable Production in Wisconsin,” publication number A3422 (<http://learningstore.uwex.edu/assets/pdfs/A3422.PDF>) and additional information is provided in weekly newsletters during the growing season (provided at the vegetable pathology website: <http://www.plantpath.wisc.edu/wivegdis/>).

I will begin posting Blitecast disease severity values (DSVs) for Wisconsin in the upcoming weeks.

Vegetable Insect Update – Russell L. Groves, Vegetable Entomologist, 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>

Onion Thrips – Again in 2011, onion growers experienced moderate to, in some cases, low populations of onion thrips. These circumstances were likely due to the cool and wet conditions experienced in May and early June. As with many pest species this spring, several phenological indicators suggest that many insect pests are 20-25 days ahead of normal. As above average daytime high temperatures and dry conditions prevail, onion thrips populations can be expected to build for the coming season. Planned for 2012, we have resubmitted a recertification Section 18, Emergency Exemption from the US EPA for the use of spirotetramat (Movento[®]) against onion thrips. As stated on the exemption authorization, the product may be used consistent with all applicable directions, restrictions, and precautions outlined on the current Section 3 label. Movento may be applied by air or by ground at a rate of 5.0 fl oz / acre of formulated product (0.08 lbs ai/acre) and may not exceed a total of 2 applications per crop season with a 7 day preharvest interval (PHI). Applicators must possess a copy of the use directions for Movento on dry bulb onion in Wisconsin prior to any field application.

New for 2012, Wisconsin onion growers have now received a full Section 3 registration for the use of abamectin (Agri-Mek 0.15EC[®]) against onion thrips. The revised (2011) Section 3 label (includes onion, bulb) can be found at: <http://www.cdms.net/LDat/ld27U000.pdf>. As stated on the new label, Agri-Mek may be applied by air or by ground at a rate of 8.0 – 16.0 fl oz / acre of formulated product (0.012 – 0.019 lbs ai/acre) and may not exceed a total of 2 applications per crop season with a 30 day preharvest interval (PHI).

Flea beetles – Populations of adult flea beetles are becoming prevalent in several fresh and direct market operations. These insects are one of the most difficult-to-manage pests of leafy greens and early season cole crops, especially in hoop or greenhouses. The adults are active leaf-feeders that can, in large numbers, rapidly cause significant damage and may even kill young plants. Symptoms of flea-beetle feeding are small, rounded, irregular holes; heavy feeding makes leaves look as if they had been peppered with fine shot. Cultural controls for this insect include perimeter trap crops using highly attractive mustards, row covers, and the use of transplants which can tolerate greater levels of damage. Specific insecticides containing spinosad, plus bifenthrin and permethrin can provide good control for about a week. Applications of insecticides containing imidacloprid (e.g. Provado) or thiamethoxam (Actara) can also provide good control. However, to protect seedlings, applications usually must be reapplied often. The plants produce continuous new growth and the highly mobile beetles may rapidly reinvade plantings. As with all pesticides, carefully read and follow all label directions.

Aster Leafhoppers – Migrating populations of the Aster leafhopper (ALH) appear to be underway throughout central portions of the US. Recent surveys in northwest Arkansas, west central and central Missouri, as well as southern Iowa reveal significant populations of adult leafhoppers which have apparently already begun to disperse and migrate northward. Averaging

over all locations, an estimated 15 adult ALH / 100 sweeps were observed. Importantly, the Aster Yellows phytoplasma (AYp) is vectored by the aster leafhopper in a persistent, propagative manner. The leafhopper acquires the phytoplasma by feeding on infected plants and may carry and transmit the bacterium over great distances. Once the phytoplasma is acquired, leafhoppers remain infected and may transmit AY for the remainder of their adult life. Migrant leafhoppers will likely to arrive in Wisconsin over the next few weeks as weather systems assist in moving the insects northward. Levels of AYp (infectivity) within the migrating leafhoppers are usually low (0-3%) and insect numbers are influenced by spring weather patterns in the migration pathway. Recall, local leafhopper populations in Wisconsin will often overwinter in small grains (e.g. wheat, rye, barley) and perennial weeds. The first Wisconsin native adults typically enter carrot fields in early to mid-June and are typically infected at higher levels (2-10%) when compared to migrants.