

## Late Blight Found in Wisconsin: Scout Tomato and Potato Plants for Late Blight in Your Gardens and Fields

By: Ken Schroeder, Agriculture Agent  
UW-Extension, Portage County

On July 29, the University of Wisconsin disease diagnostic clinic confirmed the presence of *Phytophthora infestans*, the pathogen causing Late Blight, on both leaves and fruit from a tomato sample submitted from Oregon WI. The sample was from a large home garden. According to Amanda Gevens, University of Wisconsin Plant Pathologist, the source of the late blight on the home gardener's tomato plants seems to have been from aerial dispersal and not from infected transplants from outside Wisconsin. The gardener planted primarily heirloom varieties by seed and just one variety by transplant that came through a retailer. Lesions on the foliage look to be approximately one week old (photo courtesy of Adrian Barta). The initial infection points have expanded and



leaves have the characteristic oily, dark brown, water soaked appearance. If inoculum had come in on the one transplanted variety earlier in the season, it is unlikely that the plants would have struggled along this far to fruit set. Interestingly, the home owner had some potatoes in the garden nearby and they appeared symptomless at this time. A similar case in the Madison area was reported Sunday August 2<sup>nd</sup> by Brian Hudelson of the UW-Madison plant disease diagnostics lab where tomato plants grown by the gardener from seed were confirmed to have late blight. Thus indicating presence of airborne inoculum, not something brought in on transplants from out of state. As in the July 29<sup>th</sup> case, the potatoes appeared unaffected.

Late blight, a fungal-like disease caused by *Phytophthora infestans* is a very serious disease that infects potatoes, tomatoes, and occasionally egg plant, hairy nightshade, and black nightshade. Late blight was the cause of the Irish potato famine of the 1850's. This issue is not only of concern to commercial vegetable growers but home gardeners as well. Late blight is capable of quickly wiping out your entire potato and/or tomato crop. If undetected and uncontrolled, this source of inoculum could devastate neighboring gardens and commercial vegetable fields. Farmers who grow tomatoes and potatoes are at serious risk of losing their entire income for the season.

**Environmental factors that promote Late Blight:** Disease development is favored by moderate daytime temperatures between 60 and 70 °F with nights of 50 to 60 °F and relative humidity of 90 to 100% (not unlike recent weather conditions over much of Wisconsin). However, it can also develop during very warm daytime temperatures if conditions are extremely wet with moderate night temperatures. Individual lesions can

produce 100,000 to 300,000 sporangia per day. Each sporangium is capable of causing a new infection, thus spread can be quite rapid. This disease has the potential to completely defoliate fields within 3 weeks of the first visible infections. Spores are easily spread by wind, rain, machinery, workers, and wildlife. Because the fungus produces so many spores that can travel long distances through the air it is very important that everyone, farmers and gardeners alike, who grow tomatoes and potatoes are able to identify late blight.

**Identification:** Leaf symptoms appear as pale green, water-soaked spots that often begin at the leaf edges or tips where water from rain and dew accumulates. Lesions can be circular or irregular and bordered by pale yellow to green blending into healthy tissue. They enlarge rapidly (expanding ¼ to ½ inch per day) turning brown to black over time. When relative humidity is in excess of 90% leaf lesions are often surrounded by cottony white mold on the lower leaf surface. This white, cottony growth distinguishes late blight from several other foliar diseases of potatoes and tomatoes. Infected stems and petioles turn brown to black and may also be covered with white masses of sporangia. Stem lesions frequently appear first at the junction between the stem and leaf, or at the cluster of leaves at the top of the stem. Entire vines may be killed very rapidly. A characteristic odor similar to that produced by green tissue after a severe frost can be detected. Visit the Portage County UW-Extension agriculture website <http://portage.uwex.edu/ag/index.html> for additional late blight photos and links to other late blight information and identification resources.

**Control:** Check tomatoes and potatoes closely for symptoms of late blight at least twice weekly. If you suspect late blight on your crop contact your local University of Wisconsin Extension office and have a sample sent to the plant diagnostic lab for confirmation. Destroy infected plants by burying or putting in plastic bags for disposal. Don't compost. Preventative treatments for homeowners are limited to protective fungicides containing Chlorothalonil or copper. Commercial growers should consult the Commercial Vegetable Production in Wisconsin Guide, University of Wisconsin Extension publication A3422 (<http://learningstore.uwex.edu/pdf/A3422.PDF>) for an extensive list of available treatments.

**Late Blight look-alikes:** *Early Blight* – appears as brown to black lesions with concentric rings on the leaves. Typically, lesions are produced on older, lower leaves and progresses upward. Significant yellowing may accompany the lesions. Moderate temperatures (75 to 85 °F), high humidity, and prolonged leaf wetness are conducive to development of early blight. Alternating periods of wet and dry weather tend to increase progression of this disease.

*Botrytis/Gray Mold* - Gray mold appears late in the season on the foliage, and may be mistaken for late blight. A grayish-green, wedge-shaped, spreading lesion with concentric rings appears on the leaves, often near an injury or a dried blossom. Lesions begin on the margins or tips of leaves. With severe infections, leaves are blighted and a soft gray rot attacks the stems and exhibits a fuzzy gray fungal growth. When vines are

disturbed, spores billow from them like a cloud of dust. Cool temperatures and high humidity promote disease development. Gray mold is often found in fields where a lot of fertilizer is used. Typically, gray mold is not of economic importance in Wisconsin.

*Septoria Leaf Spot* – A very common leaf disease of tomato, however, not necessarily a look-alike. Symptoms begin on the foliage closest to the ground and then move on up the plant. Leaf spots tend to be small and circular with dark borders and gray or tan centers. Eventually, multiple spots on a single leaf will merge. Warm, wet, humid weather increases the severity of the disease that can progress to the point where all the foliage is killed and falls from the plant. This disease does not advance nearly as rapid as late blight.

For assistance in identifying this potentially disastrous late blight disease, contact your local University of Wisconsin Extension Office. Portage County UW-Extension contact information: <http://portage.uwex.edu> 715-346-1316.