

Blackleg of Potato

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Black leg of potato, caused by the bacterium *Erwinia carotovora* subsp. *atroseptica*, is a common potato disease in Kansas. It is most severe in the early part of the growing season during cool, wet weather.

Symptoms

Pre-emergence and Early Growing Season

Blackleg may occur early in the season causing the seed pieces to rot before emergence. When this happens, skips appear within the row and poor stand establishment is observed. After emergence, the infected plants are characterized by stunted, yellowish foliage with an upright habit. The lower stem typically blackens and decays giving the “blackleg” designation for this disease. Plants affected at this stage typically die.

Later Growing Season

More mature plants also may develop blackleg symptoms including plants that have begun flowering. Typically, the disease appears on healthy plants as a black



Figure 1. Black leg symptoms on lower stem later in growing season giving the disease its name. Courtesy of: A. F. Sherf (deceased), Department of Plant Pathology, Cornell University, Ithaca, NY.

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discoloration of stems and rapid wilting and sometimes leaf yellowing. Black discoloration starts below ground and moves up the stem until the entire stem turns black and the plant wilts. Potato tubers infected with black leg exhibit a soft-rot and are watery. In later stages, the tubers often have a foul odor. Diseased tuber tissue is creamy or tan colored, often with a black border between it and healthy tissue.

Disease Cycle

Blackleg is spread in contaminated seed pieces. The bacteria survive in or on seed tubers. All evidence suggests that the bacteria do not survive well apart from its association with potato plant tissue. Thus, the seed tuber is the most important source of inoculum and the key target for disease prevention. However, the bacteria may also over-winter in soil inside infected tubers or other plant debris. The disease is most severe under cool, wet conditions at planting time followed by high soil temperatures (higher than 75 degrees Fahrenheit) after plant emergence.

For more information contact Megan Kennelly, Extension Plant Pathologist, Kansas State University, at kennelly@ksu.edu



Figure 2. Black leg tuber symptoms. Courtesy of: Cornell University, Department of Plant Pathology, Cornell University, Ithaca, NY.

Control

Management Option	Comments
Sanitation	While cutting tuber seed pieces frequently disinfest cutting tools in a 10 percent solution of bleach or some other disinfectant. If blackleg is noted during the growing season, rogue and destroy all portions of affected plants, including below ground portions of plant. Avoid contact with uninfected plants in field.
Planting precautions	Plant only certified tuber seed. Plant whole seed tubers where possible. If not possible, give seed pieces adequate time to heal before planting. Plant in well-drained soil after soil temperature is greater than 50 degrees Fahrenheit.
Irrigation	Do not irrigate until plants are well emerged. Avoid using surface water for irrigation.
Proper harvest and storage	Avoid injury to tubers when lifting out of the ground. If the tubers are injured, allow time to heal before storing. Homeowners wishing to store tubers should provide good ventilation, maintain low temperatures, and keep tubers dry during storage.
Chemical treatment	Seed treatments can prevent other problems that could allow the bacterium to enter the plant and blackleg to develop.

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