

POTATO BLACKLEG, REMEDIES FOR A WAY OUT

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In Europe, potato blackleg is caused by various soft rot coliforms, including *Dickeya solani*, *D. dianthicola*, *Pectobacterium atrosepticum*, *P. wasabiae* and *P. carotovorum* subsp. *brasiliensis*, whereas tuber infections with *P. carotovorum* subsp. *carotovorum* can result in yield reductions. In seed production, the disease is causing increasing losses, possibly as a result of climate change in combination with the occurrence of new variants of the pathogen.

Mini-tubers and tubers from clonal selections are virtually free of the pathogens, but over the years the infection incidence gradually increases in the multiplied seed. Initial infections can occur via contact with contaminated machines, but infections can also result from airborne infections, including precipitation (aerosols and rain) and the use of irrigation water. Inoculations of leaves with *D. solani* or *P. wasabiae* resulted in translocation of the pathogen via stems into underground plant parts. Once a seed lot is contaminated, the pathogen can be spread via machines used in the field, via soil water, but dissemination occurs mainly as a result of smearing during mechanical harvesting.

An integrated approach is recommended to control potato blackleg successfully. The use of clean, certified seed is one of the pillars of an effective control strategy. For this, reliable validated certification methods are required which include an adequate sampling, an efficient extraction, enrichment under selective conditions for the pathogen and the use of robust, specific and sensitive (multiplex) detection methods. Other pillars are the use of hygienic measures and optimized cultivation methods. To avoid introductions, surface water should not be used for irrigation or should be disinfected. Transmission of the pathogen in and between seed lots can be avoided by disinfection of machines and the use of clean materials, by the avoidance of water logging of fields, by roguing of diseased plants, and by removal of rotten tubers from harvesters and graders. For haulm destruction, it is recommended to use full field spraying followed by flailing which results in less infections than flailing followed by spraying. Harvesting should be done under dry conditions and followed by forced drying of seed lots. The tubers should be stored in under conditions preventing tuber decay.

The fourth and fifth pillars, namely the use of control agents and of resistant cultivars, are still under construction. Chemical disinfectants, such as hypochlorite and benzoic acid can reduce tuber contaminations. In greenhouse experiments, biocontrol agents, in particular those that can act as an endophyte, can reduce blackleg incidences. Genotypes have been selected and commercial varieties developed with a certain level of resistance against soft rot coliforms, but immunity against soft rot coliforms is unknown.