

The risks of air-borne inoculum on infections of tubers with *Dickeya solani* and *Pectobacterium wasabiae*

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Cultivation of seed potatoes starts with the use of minitubers or tubers from clonal selection which are basically pathogen free. However, already in the second year of multiplication seed lots can become infected. Several potential sources of primary inoculum have been identified, under which inoculum sources such as rain water, irrigation water, insects, aerosols, men, animals and machines. The relative contribution of these sources in the occurrence of potato blackleg is still unknown. In a two-years study, we investigated the impact risks of haulm infections due to contaminations with an air-borne inoculum. For this, haulms with or without damaged leaves were spray-inoculated with different concentrations of a green-fluorescent protein marked strain of *Pectobacterium wasabiae* or *Dickeya solani*. Contamination of soil during inoculations was avoided. The port of entry was identified and the colonization of plants studied. Microscopic analysis indicated that the bacteria were able to penetrate and colonize hydathodes, stomata and wounds of inoculated leaves. At 42 days after inoculation, *D. solani* could be detected in leaves, stems, stolons and incidentally in tubers. *P. wasabiae* could be detected in leaves and stems, but not in tubers and stolons. The infection percentage of plants was higher for damaged than undamaged leaves, and higher at higher densities. However, also at low densities of *D. solani* (10^2 cfu/ml) systemic infections of leaves were found. It was concluded that under favourable conditions for the pathogen, *D. solani* can be translocated from leaves via stems and stolons into tubers, whereas airborne inoculum with *P. wasabiae* can cause haulm infections. Potentially, blackleg causing pathogens can also be translocated with rain or irrigation water from infected leaves via soil to progeny tubers, in particular after haulm destruction. In glasshouse experiments, the population dynamics of *P. wasabiae* and *D. solani* was studied in plant material after chemically- or mechanically-destructed haulms, as well as the transmission from haulms via soil into tubers. Fourteen days after mechanical destruction, higher densities of the pathogen were detected than after chemical haulm destruction. After an initial increase of densities during the first week a sharp decline in densities was found in the next week. For *P. wasabiae* the transmission from haulms via soil into progeny tubers buried in soil was evidenced but not for *D. solani*.



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Agenda and Abstracts

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