

EVALUATION OF POTATO CULTIVARS AND BREEDING LINES FOR SUSCEPTIBILITY TO TUBER SOFT ROT INDUCED BY *ERWINIA CAROTOVORA* SUBSP. *ATROSEPTICA*

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Bacterial soft rot of potato tubers in storage is an economically important post-harvest disease worldwide. Disease control measures include reduction of tuber damage at harvest, provision of suitable storage conditions, and breeding of resistant cultivars. Tubers of 18 potato cultivars and breeding lines were assessed for susceptibility to infection by *Erwinia carotovora* subsp. *atroseptica* (*Eca*) over three main-crop seasons between 2003 and 2007. Susceptibility to *Eca*-induced soft rot was determined by measuring the weight of rotted tissue in anaerobically incubated whole tubers 7 days after inoculation with *Eca*. Potato lines differed in susceptibility to soft rot by a factor of >3.7 (weight of rotted tissue). Cultivars 'Crop 28', 'Ilam Hardy' and '3097.5' were highly susceptible, and '065/27', 'Crop 15' and 'Crop 16' were least susceptible to *Eca*-induced soft rot. As a consequence of these trials, several of these lines are now being used in Plant & Food Research's potato breeding programme in order to develop cultivars with lower soft rot susceptibility than cultivars currently grown.

POTATO CULTIVARS VARY IN SUSCEPTIBILITY TO BLACKLEG (*ERWINIA CAROTOVORA* SUBSP. *ATROSEPTICA*)

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Ten potato cultivars were tested for susceptibility to infection by *Erwinia carotovora* subsp. *atroseptica* (*Eca*), the causal agent of blackleg, over two main-crop seasons in 2005-06 and 2006-07. The pathogen was inoculated into seed tubers using toothpicks charged with undiluted bacterial growth. Blackleg incidence was assessed 5-6 weeks after planting. The field experiments clearly confirmed that potato cultivars vary significantly in susceptibility to blackleg. Some New Zealand cultivars had a lower susceptibility to blackleg than current commercial cultivars. The new Plant & Food Research release 'Summer Delight', in particular, had an exceptional level of resistance, and will be used as a parent in efforts to develop potato cultivars with lower blackleg susceptibility than current local commercial cultivars. Routine screening of Plant & Food Research breeding lines and cultivars will continue to be carried out over several seasons to confirm results presented here and to determine further blackleg-resistant germplasm.