

PCR DETECTION OF *ERWINIA CAROTOVORA* ASSOCIATED WITH CALLA TUBER SOFT ROT

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Callas (*Zantedeschia* spp.), a plant native to south-central Africa, are an economically important export cut flower and tuber crop in New Zealand. Bacterial soft rot, caused by *Erwinia carotovora* (*Ec*), is the main disease of callas grown in New Zealand. Each year the disease causes substantial losses to plants in the field and to tubers in storage. Biochemical tests are currently the accepted standard for identification and taxonomy of soft rot erwinias, but on a routine level they are very time consuming and do not always provide a tentative identification. *Pel* genes encoding pectolytic enzymes are considered the main pathogenicity factors of soft rot erwinias. This study describes a rapid and sensitive PCR assay that is capable of specifically detecting *pel* genes present in *Ec* from healthy and diseased calla tubers.

EFFECTS OF BRUISING ON DEVELOPMENT OF BACTERIAL SOFT ROT IN TUBERS OF 22 POTATO CULTIVARS

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Bacterial soft rot of potato tubers, caused by *Erwinia carotovora* subsp. *carotovora* and *E. carotovora* subsp. *atroseptica*, is an economically important disease worldwide. Potato cultivars vary in their resistance to tuber soft rot. Bruising of potato tubers during harvest, handling, storing and marketing operations results in substantial economic losses. Bruising has a major role in predisposing potato tubers to infection by soft-rotting pathogens by providing them with an avenue of entry into the tuber. Potato cultivars vary in their susceptibility to bruising. The aim of this experiment was to determine the effect of bruising on post-harvest bacterial soft rot of 22 potato cultivars and breeding lines. The experiment clearly demonstrated that bruising of potato tubers increases the likelihood that bacterial soft rot will develop in sound tubers stored under conditions that favour the disease (film of water on tuber surfaces and warm temperatures). It was also found that non-bruised potato cultivars varied in susceptibility to bacterial soft rot. However, when soft rot tolerant cultivars were bruised and subjected to conditions that favoured soft rot, they developed severe rots. It is recommended that potato tubers are handled carefully at all times and soft rot-tolerant potato varieties are used where possible.