

Title Development of a new strategy for monitoring *Epicoccum nigrum* 282, a biological control agent used against brown rot caused by *Monilinia* spp. in peaches

Author I. Larena and P. Melgarejo

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Abstract

The registration of biological control agents requires the development of monitoring systems to detect and quantify the agent in the environment. *Epicoccum nigrum* strain 282 (EN282) is a biological control agent that reduces the incidence of brown rot in peaches. A semi-selective medium (ENSM) was developed as a preliminary screen for *E. nigrum* from fruit. Based on the nucleotide sequence of a 600-bp RAPD-PCR product that was specific for EN282, we designed two sets of primer pairs for use in conventional and real-time PCR that enabled the specific detection of EN282 in stone fruit. EN282 was detected and quantified by two different strategies: (1) its growth on ENSM and amplifying its DNA using conventional PCR, and (2) quantifying its DNA using real-time PCR. Real-time PCR was more sensitive than conventional PCR for quantifying EN282 DNA, but less specific for detecting EN282. We showed that EN282 can be identified in fruit by conventional and real-time PCR with two strain-specific oligonucleotide primer sets and DNA that was either extracted from viable *E. nigrum* colonies that were grown on a semi-selective medium (ENSM) or from fruit. From the results of all these experiments, we developed a strategy for detecting the biocontrol strain 282 of *E. nigrum* in fruit.