Title Identifying and characterizing microflora of stone fruits to select antagonists for control of brown rot with emphasis on latent infections

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Citation ISHS Acta Horticulturae 905:241-250.2011.

Keywords *Monilinia fructicola*; postharvest biocontrol; fruit decay; fungicide alternatives

Abstract

Fruit surface microflora has been the most productive source of antagonists against fungi causing postharvest decays of fruit. The establishment of populations of these organisms and their interaction with decay causing pathogens in fruit wounds has been the basis for the development of current postharvest biological control systems. However, many pathogens, including *Monilinia fructicola*, the causal agent of brown rot of stone fruits, can also infect fruit through undamaged tissue in the orchard by producing latent infections that are activated as fruit ripens in storage, resulting in decay. We characterized culturable bacteria and yeast resident microflora of nectarine fruit from early development until harvest over a two year period. Time of isolation was a significant factor in the frequency of occurrence of different bacteria during fruit development, indicating a succession of the genera. However, for yeasts, only the last sampling time was distinct from the earlier samplings, indicating the presence of more specialized yeasts on mature fruit. Conventional screening of these microorganisms, for biocontrol of brown rot originating from wound infections on nectarines and plums, resulted in the isolation of several effective antagonists, which constituted only about 2% of all microorganisms tested. We developed a new technique, involving in vitro and in situ tests, for detecting bacteria and yeasts able to control latent infections of *M. fructicola*on stone fruits. This new approach can also be used in other fruit systems, including latent infections caused by *Colletotrichum* spp., and may result in the development of the next generation of biocontrol agents.