Title Control of brown rot of peach and nectarine by combining hot water, antagonists and sodium bicarbonate

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Abstract

Monilinia spp. is the most important postharvest disease in peaches and nectarines in the Ebro Valley (Spain). Nowadays, chemical postharvest treatments are not allowed for control of *Monilinia* spp. So it has been necessary to develop other control methods. The aim of this study was to evaluate the effect of hot water dip, sodium bicarbonate solutions or biocontrol agents alone or combined in order to control *M. laxa* in peach and nectarine fruits. The first year, we evaluated separately, eight biocontrol agents, three hot water temperatures and three sodium bicarbonate concentrations per three different times. The treatments 60ºC during 40 seconds and 2% during 40 seconds for hot water and sodium bicarbonate, respectively, were the most efficient, without affecting fruit quality. Moreover, from the eight biological agents evaluated, three were selected. The second year, the most efficient treatments were evaluated alone and combined using five varieties of peaches and nectarines. Two different storage temperatures were studied (20ºC and 0ºC). Generally, when the storage period was at 20ºC, the combination of hot water (60ºC during 40 s) and sodium bicarbonate (2%) showed no significant additional effect against *M. laxa*. In contrast, when the combination was hot water and biocontrol agents (107 cells per ml) there was a significant additional effect. Also, when the combination was triple: hot water, biocontrol agents and sodium bicarbonate there was a significant additional effect. These significant differences between single or combined treatments were reduced when the fruits were stored for 21 days at 0ºC more 5 days at 20ºC.