

Title Control of *Monilinia* spp. on stone fruit by curing treatments: Part I. The effect of temperature, exposure time and relative humidity on curing efficacy

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Abstract

Monilinia spp. are the most important cause of brown rot on peaches and nectarines. In many countries, no postharvest chemical treatments of stone fruit are allowed and alternative postharvest treatments are urgently required. The effect of curing treatments at different temperatures, exposure times and relative humidity (RH) to control brown rot was studied. Three curing temperatures were tested (40, 45 and 50 °C) at different exposure times (ranging from 30 min to 6 h). Curing at 50 °C for 2 h successfully increased brown rot control (95%) after fruit were incubated at 20 °C and 85% RH for 5 d after treatment. Longer exposure time was required to achieve the same level of brown rot control at lower curing temperatures. Four relative humidity (RH) levels (60%, 80%, 90% and 99%) were also tested during curing at 50 °C for 1, 2, 3 and 4 h. Brown rot control at 99% or 90% RH for 3 or 4 h were the same, achieving control at higher than 95%. At lower RH levels (60% and 80%), more exposure time was required to achieve the same control as at the highest RH (90% and 99%). Complete control of disease development was achieved when four varieties of peach and nectarine fruit artificially inoculated with either *Monilinia laxa* or *Monilinia fructicola* were cured at 50 °C for 2 h and 95–99% RH. Curing at 50 °C for 2 h and 95–99% RH had a positive effect on fruit quality, with significantly ($P < 0.05$) lower firmness loss in comparison with uncured fruit. No adverse effects were observed on fruit acidity and colour index. Postharvest curing of peach and nectarine fruit may be a suitable alternative to synthetic fungicides for postharvest brown rot control.