

Title Control of a wide range of storage rots in naturally infected apples by hot-water dipping and rinsing

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Abstract

Hot-water rinsing (3 or 4 min) and dipping (15, 20 or 25 s) at a range of incubation temperatures was applied to apples (cv. ‘Ingrid Marie’ and ‘Pinova’) naturally infected with a range of North West European storage-rot fungi. Significant reductions in the incidence of fruit rot were achieved by incubation periods of 3 min at 50–54 °C (dipping) and 20 or 25 s at 55 °C (rinsing), followed by up to 100 d cold-storage at 2 °C and 14 d at 18 °C. Pathogens controlled in this way were *Neofabraea alba*, *N. perennans*, *Monilinia fructigena*, *Colletotrichum acutatum*, *Phacidiopycnis washingtonensis* and *Cladosporium* spp. *Neonectria galligena* was reliably controlled by dipping but not rinsing. No effects of either heat treatment on *Gibberella avenacea* and *Botrytis cinerea* were apparent. Following rinsing at 65 °C for 20 s, the incidence of *P. washingtonensis*, *Penicillium expansum*, *Mucor* spp. and *Phoma exigua* was higher than in untreated control fruit or in apples rinsed at lower temperatures, and was associated with heat damage. The relative contributions of heat effects on inoculum viability and activation of defence responses of apple fruit are discussed. Hot-water rinsing has several advantages over hot-water dipping related to the efficient processing of fruit either directly after harvest or after long-term storage.