

Title Effect of DPA reapplication by thermofogging on scald control in apples
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Abstract

Trials were conducted during three seasons (2001–2004) to determine optimal timing for a second DPA application, for control of superficial scald on apples (*Malus ×domestica* Borkh.) and to evaluate the use of thermofogging for this purpose. ‘Granny Smith’, ‘Fuji’ and ‘Braeburn’ apples from commercial orchards were treated with DPA at harvest and after 2, 3, 4 or 6 months of storage in either regular air (RA, 0°C) or controlled atmosphere (CA, 1.8–2% O₂ and 1.3–1.5% CO₂) storage. Initial DPA treatment was applied immediately after harvest by drenching, thermofogging or dipping. DPA reapplications were done by thermofogging (in refrigerated trailers and commercial CA storerooms) or dipping. Scald incidence (%) and severity was evaluated, at 6 or 8 months after harvest and plus 10 days at room temperature. Samples were drawn periodically for DPA residue analyses. At harvest and monthly thereafter, evolution of scald related compounds (α -farnesene, conjugated trienes and antioxidant capacity) were analyzed. Reapplication of DPA was consistently effective at reducing scald development, especially in susceptible fruit and when applied after two or three months of storage. Scald incidence on ‘Granny Smith’ and ‘Fuji’ apples was associated with α -farnesene and conjugated trienes (mainly those absorbing at 281 nm). Thermofogging was capable of raising DPA residues in the fruit when applied after two or three months of storage, which resulted in reducing final scald. It has the advantages of direct application in storage (feasibility of more than one treatment), a uniform distribution in the fruit, and eliminates environmental problems associated with disposal of chemical wastes.