

Title Influence of film wrapping and fludioxonil application on quality of pomegranate fruit

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Abstract

Pomegranates are sensitive to low temperatures. When fruit are exposed to temperatures below 5–6 °C chilling injury appears as pitting of the skin, browning of the white segments separating the arils and discoloration of the arils, and husk scald, which generally is more severe at temperatures of 6–10 °C. The main objective of this work was to assess the effectiveness of individual film packaging, applied as a stand alone treatment or in combination with fludioxonil, on reducing the occurrence of husk scald, weight loss and decay. Fruit were dipped in an aqueous mixture containing 600 mg L⁻¹ fludioxonil, wrapped or not wrapped with a polyolephinic heat-shrinkable film and stored at 8 °C and 90% RH for 6 or 12 weeks plus one additional week of simulated shelf-life at 20 °C and 65–70% RH. Respiration rate decreased both in cold storage and at 20 °C. Ethylene production was not detected during cold storage; its rate increased upon transfer to 20 °C, but results were inconsistent. Control fruit deteriorated at a very high rate, due to excessive weight loss, skin browning and decay. Film wrapping almost completely inhibited weight loss and husk scald and preserved fruit freshness for the whole storage time. There was no statistical difference in decay incidence between wrapped and control fruit after 6 or 12 weeks of storage and after the first shelf-life, while after the second shelf-life, wrapped fruit had significantly higher decay levels. By contrast, fludioxonil, both alone and in combination with wrapping, effectively controlled mold development, resulting in 50–67% less decay than control fruit after 12 weeks at 8 °C plus one week shelf-life. Control fruit showed minor changes in nutritional compounds as well as in total polyphenols, anthocyanins and antioxidant activity, while higher losses were detected in film-wrapped fruit during storage at 20 °C.