Title Lychee quality after hot-water immersion and x-ray irradiation quarantine treatments.

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Abstract

Hot-water immersion and irradiation quarantine treatments are used to disinfest lychee (*Litchi chinensis*) of fruit flies and other pests before export from Hawaii to the U.S. mainland. In the first experiment, one day after harvest, 'Kaimana' lychee fruit were subjected to (1) hot-water immersion at 49.0 deg C for 20 minutes, (2) irradiation treatment at a minimum absorbed dose of 400 Gy, or (3) left untreated as the controls. Fruits were then stored at 2 or 5 deg C in perforated plastic bags, and quality attributes were evaluated after 8 days. Lychee fruit treated with hot-water immersion were darker (lower lightness) and less intensely coloured (lower chroma) than irradiated or untreated fruits at both storage temperatures. Fruit stored at 2 deg C were darker (lower lightness) than fruit stored at 5 deg C, but fruit held at 5 deg C had greater weight loss. External appearance of fruit treated with hot-water immersion was rated as unacceptable, whereas irradiated and nontreated fruit were ratedas acceptable. Taste of fruit was rated as acceptable in all treatments. In the second experiment, lychee fruit were subjected to (1) hot-water immersion at 48, 48.5, or 49 deg C for 20 minutes or (2) irradiation at 400 Gy, or (3) left untreated as the controls. Fruits were then stored at 4 deg C in perforated plastic bags, and external appearance of the pericarp was evaluated after 1, 2, 5, 7, 8, and 9 days. Pericarp darkening was more rapid for lychee fruit treated with hot-water immersion than irradiated or control fruit, and the degree of quality loss increased with increasing hot-water immersion temperature. Overall, under these experimental conditions, irradiation was superior to hot-water immersion as a quarantine treatment on the basis of fruit quality maintenance.