

Title Effect of water-assisted radio frequency heat treatment on the quality of 'Fuyu' persimmons
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Abstract

Water-assisted radio frequency (RF) heating was studied as a potential alternative to chemical fumigation for providing quarantine security against Mexican fruit fly (*Anastrepha ludens*) in 'Fuyu' persimmons. Three holding times were chosen for each of the three treatment temperatures (46, 48 and 50 °C), one time at, one above and another below 100% insect mortality. Heat-treatment protocols included preheating the fruit in 40 °C water, followed by RF heating in a 12 kW, 27.12 MHz RF system, holding at the target temperature for the required time and then hydrocooling at 4 °C for 30 min. The preheating time at 40 °C was determined based on the final RF heating uniformity over the fruit cross-section. Quality parameters, including weight loss, firmness, soluble solids, titratable acidity, peel and pulp colour and calyx browning of persimmons, were evaluated after 7 days at room temperature (22 °C) or in cold storage (4 °C). All treatments except for one condition (48 °C+8 min holding) had no significantly adverse effects on quality attributes. Slight calyx browning was observed in the treated samples and the degree of browning increased with the treatment time for each treatment temperature. The results suggested that water-assisted RF heat treatments provided the potential for disinfestation of persimmons with acceptable product quality.