

Ozonated water combined with heat treatment to control the stem-end rot of papaya

Daniel Terao, Kátiade Lima Nechet, Rosa Toyoko Shiraishi Frighetto and Fabiana Fumi Cerqueira Sasaki

Scientia Horticulturae 257: 108722. (2019)

Abstract

Stem-end rot is the major postharvest disease of papaya in Brazil, causing significant losses, specially, during long-term transportation and storage. The infection occurs mainly during the flowering period and remains quiescent, without showing any symptom, until the fruit ripening stage begins. The current method of control, using fungicides, has not been effective, besides contaminating the fruit. The aim of the present research was to evaluate the combined treatment using hot water followed by ozonated water to control the disease. The results showed that, as stand-alone treatment, heat and ozone treatment significantly reduced the stem-end rot, controlling around 50% of the severity, and delaying the onset of the symptoms in 3 and 4 days, respectively. A synergistic effect was observed when the treatments were applied combined. The efficacy of the control increased to over 90% and the symptoms onset delayed 7 days. Moreover, the combined treatment delayed the maturation process, increased the PPO activity, and preserved the overall fruit quality, thus extending the shelf life. The integrated approach, combining heat treatment by immersion of peduncle of papaya in hot water at 70 °C followed by immersion in ozonated water (3 mg L⁻¹), controlled efficiently the stem-end rot, therefore being a safe and sustainable alternative for the use of chemicals in postharvest treatment of papaya.