

Title Prevention of citrus rind injury by utilizing modified atmosphere packaging with perforation
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Abstract

The physiological disorder known as rind injury (brown-pitted area) of the 'Kiyomi' Tangor fruit is recognized as the most serious problem for citrus growers in Western Japan. A study of the causes leading to rind injury of 'Kiyomi' fruit was performed in order to help address this problem. In 2002, the experimental results showed that a higher development of rind injury and weight loss was detected in fruit stored in packages with larger number of perforations. Furthermore, the experimental results in 2003 demonstrated that weight loss of the fruit was the important cause leading to the development of rind injury. A loss in fruit weight less than 5% is recommended as an index for designing packaging to be used for storing 'Kiyomi' fruit. A respiration and transpiration model for 'Kiyomi' fruit was also built. Modified atmosphere packaging (MAP) with perforation was introduced not only to alleviate this rind disorder but also to offer other benefits, such as creating desirable gas concentrations and preventing condensation. In order to use a proposed MAP model for achieving optimum gas concentrations inside the package, an experiment for validating the model was conducted. Measured and simulated gas concentrations inside the package were compared showing high agreement.