

Chilling injury in green mature 'Gedong Gincu' mango fruits based on the changes in ion leakage

Y.A. Purwanto, H. Okvitasari, S. Mardjan, U. Ahmad, Y. Makino, S. Oshita, S. Kuroki, Y. Kawagoe

Acta Horticulturae 1011: 219-226. 2013.

Abstract

In this study, the chilling induced of green mature mango fruits stored at chilled temperature and the changes in its quality during storage period were examined. The chilling induced was investigated through the changes in the rate of ion leakage. The quality of mango fruits during storage was examined through the changes in firmness, total soluble solid, weight loss and visual appearance. The storage conditions were set at 8, 13°C and room temperature. Ion leakage during storage period was measured every 2 days. The rate of ion leakage was determined by calculating the slope of percentage of total ion leakage with time. The result showed that the rate of ion leakage for mango fruits stored at 8°C was higher than that at 13°C, respectively. The increase in the rate of ion leakage indicates the chilling induced of cell membrane. For mango fruits stored at 8°C, the slope of rate of ion leakage changed from 0.1762 at 0 days to 0.2121 at 4 days and decreased to 0.1777 at 8 days. The highest value of slope at 4 days indicated that mango fruits were beginning to experience chilling injury. This phenomenon was supported by the emergence of black spot on the surface of mango fruits which observed at day 20. For those mango fruits experiencing chilling injury showed the abnormal ripening process which was indicated by the low total soluble solid. This study has demonstrated that the changes in ion leakage could indicate the symptom of chilling injury in mango fruits.