

Effects of harvest maturity stage on postharvest quality of winter jujube (*Zizyphus jujuba* Mill. cv. Dongzao) fruit during cold storage

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Abstract

Fruit maturity stage at harvest is a fundamental factor for successful storage and final quality of post-harvest fruit. The current study planned to investigate the changes in postharvest quality in winter jujube at three maturity stages (white maturity, half-red maturity, and red maturity stages) under cold storage (0 ± 1 °C). The results showed that there was significant effect among the maturity stage at harvest on storage quality parameters in winter jujube during cold storage. Fruit firmness, titratable acid (TA), L^* , and b^* in winter jujube fruit significantly declined from white maturity stage to red maturity stage, and decreased significantly with the extension of cold storage time. Decay incidence, ratio of sugar and acid (TSS/TA), a^* , ethanol content increased from white maturity stage to red maturity stage, and rose significantly with increasing of cold storage time. At the end of storage, the white maturity stage showed the highest fruit firmness, TA content, L^* , b^* as well as the lowest decay incidence, a^* , ethanol content, while the half-red maturity stage displayed the highest content of total soluble solid (TSS), ascorbic acid (AsA), total phenolics and total flavonoids as well as the lowest weight loss, respiration rate. In addition, the half-red maturity stage fruit maintained better sensory quality during the shelf life. Considering the results of all quality parameters mentioned above, the winter jujube fruit harvested at half-red maturity stages were the ideal harvest maturity for long-term low temperature storage attributing to its stable storability and a higher consumer acceptability after cold storage.