

Influence of the maturity stage on the storage life and quality of 'Nagpur' mandarin fruit stored at chilling temperature with intermittent warming

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Abstract

The influence of maturity stage (green or orange rind colour) on storage life and quality of Nagpur mandarin fruit under chilling storage conditions with intermittent warming (IW) every 2 weeks was evaluated at different intervals up to 75 days. Quality was also evaluated after 1-week post-storage holding at ambient conditions at the same intervals. Weight loss was 4.8-4.9% for the longest storage duration regardless of fruit maturity. Chilling injury was not observed in fruit of any maturity stage. Up to 30 days, the overall decay (*Diplodia* rot, green mold and *Alternaria* core rot) was negligible, but after 60 and 75 days followed by 1-week shelf-life, it increased to 19.83 and 22.26% in orange fruit and 11.97 and 16.27% in green fruit, respectively. Juice content, fruit firmness and titratable acidity were significantly higher in green fruit whereas total soluble solids and ascorbic acid contents were higher in orange fruit. With extension of the storage, fruit colour changed, with an increase in chroma and decrease in hue values. Colour and appearance of fruits of both maturity stages was similar after 60 and 75 days plus 1-week shelf-life. Chlorophyll content declined and total carotenoids increased during storage. Fruit respiration rate was 5 mg CO₂/kg.h at chilling temperature and increased by nearly 4-times during IW, and by 5-6-times when transferred to ambient conditions. Flavour score was initially higher in orange than in green fruits, but after 75 days storage plus 1-week shelf-life it was similar for both maturity stages, none of which developed off-flavours.