

Title Influences of maturity stage at harvest and ethylene application on colour and quality of controlled atmosphere-stored mango fruit

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Abstract

Short storage life of mango (*Mangifera indica* L.) fruit limits its export to distant markets. Sea transport of mango is more economical but requires a longer period of transportation compared to airfreight. Controlled atmosphere (CA) storage has been developed to extend the shelf life of 'Kensington Pride' mango, a major commercial mango cultivar grown in Australia. Storing mango fruit under CA conditions often results in poor colour development of ripe fruit. The effects of fruit maturity and ethylene treatment on fruit colour and quality of CA-stored mango were investigated. Fruit at two different maturities (hard mature green and sprung) were harvested and stored in CA chambers containing 2% O₂ and 5% CO₂ (balance N₂) at 13±0.5°C and 85±3% RH. After three or five weeks of CA storage, mangoes were removed and treated continuous hours, then allowed to ripen at 21±0.5°C until eating ripe. Ripening and fruit quality attributes (ripening time, respiration, and fruit colour, firmness and concentrations of soluble solids, titratable acidity, vitamin C, and total carotenoids) were measured. Fruit harvested at sprung stage had better colour and carotenoid concentration regardless of CA storage duration and ethylene concentration applied than those harvested at the hard mature stage. Longer CA storage induced adverse effects on fruit colour development, titratable acidity, vitamin C, and total carotenoids concentration. Post CA storage ethylene application had little affect fruit colour and quality. In conclusion, following CA storage, fruit harvested at sprung maturity stage exhibited better colour development and carotenoids compared to those harvested at the hard mature green stage irrespective of ethylene treatments.