

Effect of light and fruit maturity on postharvest colour change in green 'Sondela' peppers (*Capsicum annuum* L.)

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Abstract

Pepper fruit destined for the coloured fruit market are commonly harvested only once colour change from green to ripe colour has been initiated. However, if colour break is sufficiently delayed, plants become overladen with green fruit. This in turn stunts plant growth and inhibits further fruit set, reducing overall productivity and profitability. In response, producers often harvest green fruit, which fetch much lower prices on the market than coloured fruit. This study was conducted to investigate the viability of initiating postharvest colour change in slightly immature (IM) and green mature (GM) 'Sondela' peppers, which are typically red when ripe. Harvested fruit were maintained at 24°C and either illuminated continuously for 12 days with 400 mmol m⁻² s⁻¹ white light supplied by LED lamps (L), or stored in the dark (D). Fruit mass and colour change were monitored daily. Colour was assessed both visually and with the CIELAB tristimulus colour system. Illuminated IM fruit started changing colour after day 2, reaching 90% full colour by day 5, while GM(L) fruit started changing colour immediately and were 90% red by day 4. Both IM(L) and GM(L) fruit were deep red by day 12. Colour change in IM(D) fruit was observed from day 5, and fruit had turned yellow-orange with traces of green by day 12. Harvested GM(D) fruit started changing colour from day 2, and ultimately changed to orange-red on day 10. Both IM(L) and GM(L) fruit lost 24% of their original mass by day 12, while all fruit kept in the dark lost 11% of their original mass. The advantage of accelerating colour change in harvested green pepper fruit by exposure to light has commercial potential if the problem of mass loss can be overcome. The results emphasise the importance of maturity of harvested fruit stored in the dark.