

## NEW ZEALAND AVOCADO FRUIT QUALITY: THE IMPACT OF STORAGE TEMPERATURE AND MATURITY

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Most avocados are exported from New Zealand using a 'step down' temperature regime in transit but the temperatures used have not been derived using New Zealand fruit. New Zealand avocados are harvested for export over seven months (August to February) with dry matter ranging from about 24% in August to about 35% in February. Little information exists on the lower temperature limits for New Zealand avocados with respect to cold damage on the skin and internal flesh chilling injury. The quality of fruit after storage at different temperatures may be affected by maturity when fruit are harvested from August through to February. Over this time optimal storage temperatures may change as the harvest season progresses. To investigate the influence of maturity and temperature on chilling injury and fruit quality a series of experiments were carried out using Hass avocados harvested in September, November and February that were coolstored at 5 temperatures: 2°C, 3°C, 4°C, 5°C or 7.5°C, for 28 days. All fruit were ripened at 20°C. The quality of non-stored fruit ripened immediately after harvest was compared to the quality of coolstored fruit. Fruit were assessed for cold damage on removal from storage and for storage disorders and rots once the fruit had softened to eating ripeness. The response of fruit to storage temperature changed as the harvest season progressed. Cold damage on the skin of the fruit was most severe in late harvest fruit. The temperature threshold below which cold damage was observed was 7.5°C for late harvest fruit, 4°C for mid-season fruit and 5°C for early season fruit. Internal chilling injury only occurred in late season fruit stored below 5°C. Incidence and severity of stem end rot was greatest in early season fruit stored below 7.5°C and then declined in mid and late season fruit. By contrast body rots were worst in late season fruit. The ripening time after storage decreased with each harvest from 9.7 days early season to 4.4 days late season. There was a strong association between ripening time and stem end rot incidence and severity with the shorter ripening times having less stem end rot. The importance of isolating the effect of ripening time on fruit quality attributes from storage treatments will be discussed along with changing fruit responses to storage over the export harvest season.