Title Dynamic controlled atmosphere storage of New Zealand grown 'Hass' avocados

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Abstract

The outturn quality of 'Hass' avocados shipped from New Zealand under controlled atmosphere (CA) has been variable. Recommended CA for avocado is in the range 2-5% O_2 and 3-10% CO_2 but CA conditions for New Zealand grown 'Hass' avocados have not been optimised. There are two approaches to applying CA, static (SCA) or dynamic (DCA) systems. The O_2 level in SCA is maintained at a pre-determined level throughout storage whereas in DCA the O_2 level is set dependent on a low O_2 stress response from the fruit. To demonstrate the impact on fruit quality of DCA compared to SCA, 'Hass' avocados were stored for 6 weeks at 5°C in DCA (<3%O_2 / 0.5%CO_2) or SCA (5%O_2 / 5%CO_2), and assessed for quality at the end of storage and when ripe. In addition, fruit were stored in DCA plus CO_2 (<3%O_2 / 5%CO_2) to determine the impact of CO_2. The quality of DCA-stored fruit was significantly better than SCA-stored fruit, with a lower incidence of rots after storage and when ripe. However, inclusion of 5% CO_2 with DCA resulted in rot levels similar to SCA-stored fruit. It is concluded that the quality of DCA-stored fruit was better than SCA-stored fruit, and that a large component of the difference was the result of rot expression stimulated by CO_2 in the storage atmosphere.