

Title Effect of modified atmosphere packaging on storage life of tamarillo fruit and stems
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Abstract

Modified atmosphere packaging and the addition of clove oil were evaluated as tools to extend storage life and reduce stem discolouration of 'Mulligan Red' tamarillo. The polyethylene packaging films had low (Bag 1; $1437 \text{ ml m}^{-2} \text{ day}^{-1}$) or high (Bag 2; $3089 \text{ ml m}^{-2} \text{ day}^{-1}$) oxygen transmission rate (OTR), with or without the addition of a clove oil sachet. Control fruit were stored in a single layer tray with polyliner. All fruit were stored at 4°C for 56 days and fruit quality was measured fortnightly with and without three days of shelf life at 20°C . Compared to the control fruit, packaging delayed the development of stem yellowing, but increased calyx lifting and blackening and stem blackening, especially when clove oil was added. The addition of clove oil did not change the atmosphere inside the packaging but did cause unacceptable surface discoloration to appear after only 28 days of cold storage. Bag 1 resulted in higher CO_2 and C_2H_4 , and lower O_2 concentrations compared to Bag 2. Fruit in Bag 1 had a higher CO_2 production rate and developed pigment 'bleeding' in the locule and surface discoloration after only 28 days of cold storage; this increased in severity during shelf life. Fruit quality in Bag 2 was better than Bag 1 and similar to control fruit after long term cold storage (over 42 days) with or without shelf life, but some MAP fruit shrivelled, lost skin colour and exhibited pigment 'bleeding' in the locule after 42 days of cold storage.