

Title Extension of avocado storability using e+[®] ethylene remover coated sheets in sea containers

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Abstract

Work was conducted to attest whether a palladium containing e+[®] Ethylene Remover, which has been shown to maintain avocado (*Persea Americana* 'Hass') firmness in recent laboratory trials, could result in a meaningful extension of storage life in a commercial setting.

Early season Chilean pre-climacteric avocado fruits were harvested and graded. In each 4 kg capacity tray a e+[®] Ethylene Remover sheet (19 × 26.5 cm) was added. Control trays had no sheets. Trays were palletised into a commercial sea container and held at 5°C under standard controlled atmosphere throughout the five weeks voyage to the UK. On arrival, treated and control trays located within the same container were selected from the central pallet. Upon arrival at the laboratory, fruits received an additional treatment with or without e+[®] Ethylene Remover. Respiration rate, ethylene production, firmness as well as colour change on removal from cold storage (5-6°C) over 31 days, and then immediately after a subsequent ripening period of 4 days (19°C) were measured. C7 sugars, D-mannoheptulose and perseitol, were also measured as these have been proposed as biomarkers of avocado ripening.

Significant differences in response to the treatment at source and during later postharvest treatment were observed. Early treatment with e+[®] Ethylene Remover resulted in significantly lower ethylene in the storage atmosphere than for untreated fruits. Consequently, the potency of the e+[®] treatment in retarding ethylene induced ripening was significantly enhanced with the earlier treatment. After storage period of 31 days (5-6°C), fruits which had received this early treatment during transit and then treated in the laboratory were significantly more firm compared to fruits treated following 5 weeks of untreated transit. The presence of the ethylene remover at source also maintained greenness. Treatment with e+[®] had no effect on the sugar profile of avocados; however concentrations of heptose sugars substantially reduced during storage. Fruits receiving the early treatment and those treated later showed similar quality parameters. However, it is suggested, that e+[®] treatment is most effective when applied at source.