

**Title** Influence of exogenous ethylene during refrigerated storage on storability and quality of *Actinidia chinensis* (cv. Hort16A)

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### **Abstract**

The kiwifruit industry was established on fruit of *Actinidia deliciosa* ('Hayward'), which is known as a climacteric fruit with high sensitivity to ethylene. In recent times fruit from *Actinidia chinensis* have become a substantial component of the kiwifruit market. There is limited information about the sensitivity of *A. chinensis* to ethylene during refrigerated storage and hence current ethylene management practices for *A. chinensis* mimic those established for *A. deliciosa*. This research aimed to quantify the effect of ethylene during refrigerated storage on *A. chinensis* ('Hort16A') quality (firmness, colour and total soluble solids). Three grower lines were stored at 1.5 °C, 95% RH with ethylene in the range of 0.001–1  $\mu\text{L L}^{-1}$  applied to the environment after 3 weeks of storage for the remainder of storage (17 weeks). Fruit quality was assessed at regular intervals. Loss of firmness was found to be very sensitive to ethylene, with significant differences between fruit stored in 0.001  $\mu\text{L L}^{-1}$  (as a control) and 0.1  $\mu\text{L L}^{-1}$  occurring after 2 weeks of exposure. Fruit exposed to 1  $\mu\text{L L}^{-1}$  ethylene not only rapidly softened, but also increased in hue angle (greenness) and reduced in lightness (darkened) further reducing the quality of the yellow coloured kiwifruit cultivar. Total soluble solids were not heavily influenced by ethylene exposure, with grower differences being maintained throughout the experiment. This work demonstrates that *A. chinensis* (cv. Hort16A) fruit firmness and colour will be influenced by the ethylene conditions in a commercial storage environment by advancing ripening and senescence.