

Title 1-MCP is an effective tool for reducing detrimental effects of ethylene contamination during kiwifruit storage

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Abstract

A major challenge during long term storage of kiwifruit is the maintenance of fruit firmness, which could be seriously affected by ethylene levels due to contamination events. In order to reduce ethylene effects during storage several tools are commercially used, including air ventilation and ethylene scrubbers such as catalytic converters and potassium permanganate. The ethylene antagonist 1-methylcyclopropene (1-MCP) has shown benefits in extending kiwifruit storage life, but its effect has not been tested under ethylene contamination conditions, which was the main objective of this work. To perform the assay, kiwifruit applied with 1 ppm 1-MCP for 24 h immediately after harvest were stored for 90 days at 0°C. Ethylene contamination was performed with 400 ppb of ethylene applied for 72 h at four times during storage, i.e., 0, 30, 60 and 90 days. As already reported, fruit applied with 1-MCP remained firmer after storage than untreated fruit. In terms of contamination, ethylene applied in the first 30 days of storage was the most detrimental in inducing fruit softening. This effect on firmness was evident after 60 days of storage when half the fruit not treated with 1-MCP was at a firmness less than 3 lbf. In contrast, less than 10% of the fruit treated with 1-MCP was under this commercial threshold. No other quality attributes were affected by 1-MCP application or ethylene contamination. Therefore, 1-MCP could be considered as an effective tool for reducing the negative effects of ethylene contamination during storage.