Title Ripening induction of 'Packham's triumph' pears treated with 1-methylcyclopropene (1-MCP)

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Abstract

Commercial use of SmartFresh® in pears requires applying a concentration of 1-methylcyclopropene (1-MCP) sufficient to delay the maturity process, but which still allows the proper ripening of the fruit after storage. The aim of this study was to evaluate the effectiveness of various approaches to reverse the effect of 300 and 600 ppb of 1-MCP on 'Packham's Triumph' pears. Simultaneous pre-storage application of 1-MCP with ethylene (300 and 600 ppb) or CO2 (5%) and post-storage temperature treatments (2 or 3 weeks at 17°C before re-entering storage) were assayed. The ethylene production and maturity indexes were evaluated after 160 and 230 days at -0.5°C. All the treatments reversed the ripening inhibition caused by 1-MCP. Fruit receiving simultaneous application of 300 ppb 1-MCP with 300 ppb ethylene completely reversed the effect of 1-MCP treatment and showed no significant differences with untreated control fruit. Simultaneous application of 600 ppb 1-MCP with 600 ppb ethylene or 5% CO_2 were effective only after 230 days of storage plus shelf life. A temperature treatment of 3 weeks at 17°C was effective to reverse 1-MCP effects after 160 days of storage while 2 weeks at 17°C were enough when storage extended up to 230 days. Results showed the importance of considering the length of storage to decide on the most appropriate reversion treatment.