Title Ethylene production and quality in 1-methylcyclopropene treated Abbé Fetel pears after storage in dynamically controlled atmosphere

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Abstract

'Abbé Fetel' is a popular pear cultivar in Italy. It is susceptible to superficial scald and to soft senescent scald when stored in normal atmosphere (NA) and in controlled atmosphere (CA) respectively. Previous researcher have shown that soft scald was reduced in dynamically controlled atmosphere (DCA) storage and by 100 ppb 1 -MCP treatment. This research aimed at studying ethylene production rate (EPR) and quality in 1-MCP treated 'Abbé Fetel' pears after storage in DCA compared to NA and CA. 1-MCP treated (300 ppb) and test fruit were stored at -0.5°C in NA, CA (2 kPa O_2 + 0.7 kPa CO_2) and DCA (0.7 kPa O_2 + 0.3 kPa CO_2). After 4 and 6 months' storage, fruit were put up to 7 days at 20°C. Colour, firmness and EPR were measured during shelf life and the incidence of disorders afters 7 days. 1 -MCP treatment drastically reduced EPR, which began to recover after 7 days at 20°C, except for DCA stored pears. In control fruit, NA stored ones showed the highest EPR. 1-MCP treated fruit were the greenest at the end of shelf-life, especially after CA and DCA. Control fruit stored in DCA and in CA were greener than NA both at day 1 and day 7 of shelf life. Pears treated with 1-MCP did not soften during shelf life, while in control fruit firmness decreased from about 40 N to about 15-20 N, whatever the storage atmosphere. 1-MAP treatment prevented soft and superficial scald internal breakdown, independently of storage atmosphere. DCA prevented superficial scald in control fruit, while increased internal browning and breakdown in control and 1-MCP treated pears. No differences were found for soft scald incidence between control DCA and CA stored fruit. The highest percentage of sound fruit was found in NA stored 1-MCP treated pears, and the lowest in control fruit stored in DCA.