

**Title** Extending shelf-life of 'Royal Zee' plums with 1-methylcyclopropene without compromising organoleptic quality

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### **Abstract**

'Royal Zee' plums were collected from a commercial harvest. One group of fruit were treated at harvest with  $0.5 \mu\text{l L}^{-1}$  1-methylcyclopropene (1-MCP) for 18h at 20°C and then put at 0°C storage, while a second group were placed directly in 0°C for 3 weeks. A third group was placed at 20°C for ripening without storage. Ethylene production and quality parameters of firmness, peel colour, soluble solids content, and titratable acidity were monitored. In addition, antioxidant activity, anthocyanin, ascorbic acid, flavonoids and total phenols were determined. Taste tests were conducted after different ripening periods. Results indicate that 'Royal Zee' is a climacteric-type plum with an ethylene peak 7 d after harvest and after 4 d when fruit are stored. 1-MCP prevents ethylene accumulation, but does not affect fruit respiration. Antioxidant activity increased during ripening of plums that were stored at 20°C, while it declined in plums ripened after storage. Anthocyanins, flavonoids and total phenols increased during ripening without storage but not after storage, while 1-MCP treated plums after storage showed an increase in flavonoids. Taste tests of the fruit after storage found that after 4 d of shelf life tasters preferred control fruit because the 1-MCP treated fruit were still very firm, while after 8 d the 1-MCP fruit were rated as highly as fruit ripening right after harvest. The results indicate that 1-MCP can maintain the nutritional and organoleptic quality of this rapidly ripening plum and enable longer marketing and shelf life.