

Postharvest response of peach and nectarine cultivars to 1-methylcyclopropene treatment

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Abstract

With the registration of 1-methylcyclopropene (1-MCP) in the USA and large scale use on apples, the question was posed of how effective the product would be in maintaining the flesh firmness of tree ripened peaches. In NC where peaches are sold primarily through retail outlets immediately after harvest, high quality tree-ripened peaches are expected. However, to meet this expectation peaches are picked at a more advanced stage of maturity and they are softer with a reduced shelf life. Six peach (*Prunus persica* L. Batsch) cultivars and one nectarine cultivar were harvested at tree-ripe maturity. The cultivars were selected to represent a range of maturity from early to late season. The cultivars included in this study were: 'Candor', 'Goldprince', 'Carolina Red', 'Redhaven', 'Contender', 'China Pearl', and 'Big Red'. After harvest the fruit were cooled overnight to remove field heat and then treated with 1-MCP for 24 h at 5°C. After treatment with one µL/L 1-MCP the fruit were held at 21°C for up to 8 days to simulate retail and consumer conditions after purchase. Treatment with 1-MCP resulted in fruit with higher flesh firmness, particularly during the first 5 days at 21°C, compared to untreated fruit. Treated fruit were significantly firmer than the untreated fruit after approximately seven days, but this was somewhat dependent on harvest maturity. On fruit harvested at a later stage of maturity that had significantly softened, 1-MCP had little effect. One µL/L reduced the respiration rate of the fruit. Effect on soluble solid concentration was not consistent. It was concluded that use of 1-MCP would allow a tree-ripened peach to maintain slightly greater flesh firmness for a longer period of time when held under room temperature conditions. However, the commercial economics of this treatment need to be determined.