Title Inhibiting tomato ripening with 1-methylcyclopropene.

Authors Mir, N., Canoles, M., Beaudry, R., Baldwin, E. and Mehla, C. P.

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Abstract

The capacity for 1-methylcyclopropene (1-MCP) to inhibit colour change and firmness loss and alter aroma profiles for tomato (*Lycopersicon esculentum*) cv. Plum Dandy fruit was evaluated as a function of 1-MCP concentration, multiple and continuous applications, and stage of ripeness. In addition, the relationship between external and internal fruit colour and firmness was determined. 1-MCP reduced the rate of red colour development in fruit of all stages of ripeness. A single application of 1-MCP delayed colour development by approx equal to 6 days. A second application of 1-MCP 10 days after the first treatment additionally delayed colour development of mature green fruit by another 8 to 10 days. Continuous 1-MCP application completely inhibited colour development of breaker and half-ripe fruit for the duration (34 days) of application, but only partially inhibited firmness loss. When fruits at 50% colour development were treated with 1-MCP, gel colour development tended to lag behind the external fruit colour change compared to nontreated fruit. Some aroma volatiles were affected by 1-MCP applied at the mature green and breaker stages, but the effect was relatively minor; 1-MCP did not affect sugar or titratable acid levels in these fruit. Collectively, the data indicate 1-MCP caused minor shifts in the quality attributes of locule colour, aroma and firmness relative to external colour, which may reduce the value of this treatment, but benefits accrued by slowed firmness loss and colour development may afford sufficient compensation to make 1-MCP application commercially feasible.