Efficacy of 1–methylcyclopropene in purple passion fruit (Passiflora edulis Sims) as affected by dosage and maturity stage

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Abstract

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The study was conducted to determine the efficacy of two 1–MCP application regimes (2 ppm for 24 hours and 4 ppm for 12 hours) to extend the shelf life of passion fruits. The fruits were harvested at two stages of maturity (stage 1 and 2) based on peel colour. After 1–MCP treatments, the fruits were kept at ambient room conditions (25 ± 1°C and RH 60 ± 5%) to ripen. Physiological and physicochemical changes associated with fruit ripening, including ethylene evolution, respiration rate, weight loss, peel colour, total soluble solids and total titratable acidity were evaluated every 2 or 3 days from six fruits which were randomly sampled from each of the treatment combinations. 1–MCP treatments significantly ($p < 0.05$) delayed or reduced the rate of most of the ripening changes irrespective of the harvest maturity. Overall, based on the physiological and physicochemical changes observed, 1–MCP treatments prolonged the postharvest shelf life of passion fruits harvested at stage 1 and 2 by 3 and 4 days respectively.

Keywords: passion fruit, 1–methylcyclopropene, 1–MCP treatment, postharvest shelf life, maturity, Passiflora edulis Sims, dosage, fruit ripening, ethylene evolution, respiration rate, weight loss, peel colour, total soluble solids, TSS, total titratable acidity