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# Effect of 1-MCP Treatment on Quality of Stored 'Cherry' Tomatoes

## INTRODUCTION

Tomato is one of the most popular species, which is grown in greenhouses (Kowalczyk, Gajc-Wolska, 2011). Tomato fruit has high content of micronutrient (iron, phosphorus) and it is rich in vitamins (B and C), carotenoids, essential amino acids, sugars (mainly fructose and glucose, small amount of sucrose (Malundo et al., 1995; Georgelis et al., 2004) and dietary fibers. It allow for providing healthy and well-balanced diet (Naika et al., 2005). 1-methylcyclopropene (1-MCP), as an ethylene action inhibitor, is a new tool to improve storability of some vegetables. Between 1-MCP-treated and untreated ripe tomato fruits are not any differences for pH, soluble solids, titratable acidity and fructose and glucose content. One 16 hours application of 1-MCP effect on inhibition ripening in both stages of maturity fruits (breaker and pink fruits) about 4 to 6 days and delay loss of firmness for breaker fruits about 6 days and for pink fruits about 3 days (Mir et al., 2004).

## MATERIALS AND METHODS

The experiment was conducted in 2011 and 2012 in the greenhouse and laboratories of the Department of Vegetable and Medicinal Plants of Warsaw University of Life Sciences. The seeds were sown in December, seedlings were planted in January. The plants were grown in coconut fibre slabs and fruits were harvested in September at pink and light-red ripening stages (3rd and 5th stage, USDA standard chart), treated with 1-MCP (1 ppm for 12 hours at 18°C) and stored for two, three and four weeks at 12°C. Before and after storage chemical analyses were carried out. There were determined: dry matter, total sugars content, soluble solids (Brix), pH of juice, titratable acidity and carotenoids content by HPLC. The aim of the study was to determine the effect of 1-MCP treatment on changes of chemical composition of 'Pareso F1' and 'Dasher F1' 'cherry' tomatoes (*Solanum lycopersicum* L. var. *cerasiforme*) during storage. Two cherry tomato cultivars – 'Dasher' and 'Pareso', were taken for the experiment.

The factors of this experiment were: storage period length and stage of fruit maturity. The results were analysed with two-way ANOVA and Tukey's HSD test at  $\alpha=0.05$  using Statgraphics Plus for Windows v. 4.1 software.

## RESULTS

Titratable acidity in fruits of 'Pareso F1' harvested in 3rd stage of maturity was 6.82 (treated) and 5.30 (untreated) after two weeks, 6.75 (treated) and 5.30 (untreated) after four weeks, respectively. Fruits of the same cultivar, harvested in 5th stage of maturity had titratable acidity 5.86 (treated) and 5.09 (untreated) after two weeks, 5.05 (treated) and 4.16 (untreated) after four weeks. Total sugars content in fruits of 'Pareso F1', harvested in 3rd stage of maturity was 4.04% (treated) and 4.06% (untreated) after two weeks, 3.77% (treated) and 3.91% (untreated) after four weeks. Fruits of this cultivar harvested in 5th stage of maturity showed sugars content 4.46% (treated) and 4.51% (untreated) after two weeks, 4.45% (treated and untreated) after four weeks. Similar trends were observed for fruits of 'Dasher F1'.



Photo 1. Fruits in the 3rd stage of maturity



Photo 2. Fruits in the 5th stage of maturity

## CONCLUSIONS

It was found that 1-MCP treatment is effective in delaying ripening of the fruits and may contribute to extend storability, but mainly for fruits harvested at earlier stage of maturity. The fruits harvested at 3rd stage can be stored longer than fruits harvested at 5th stage.

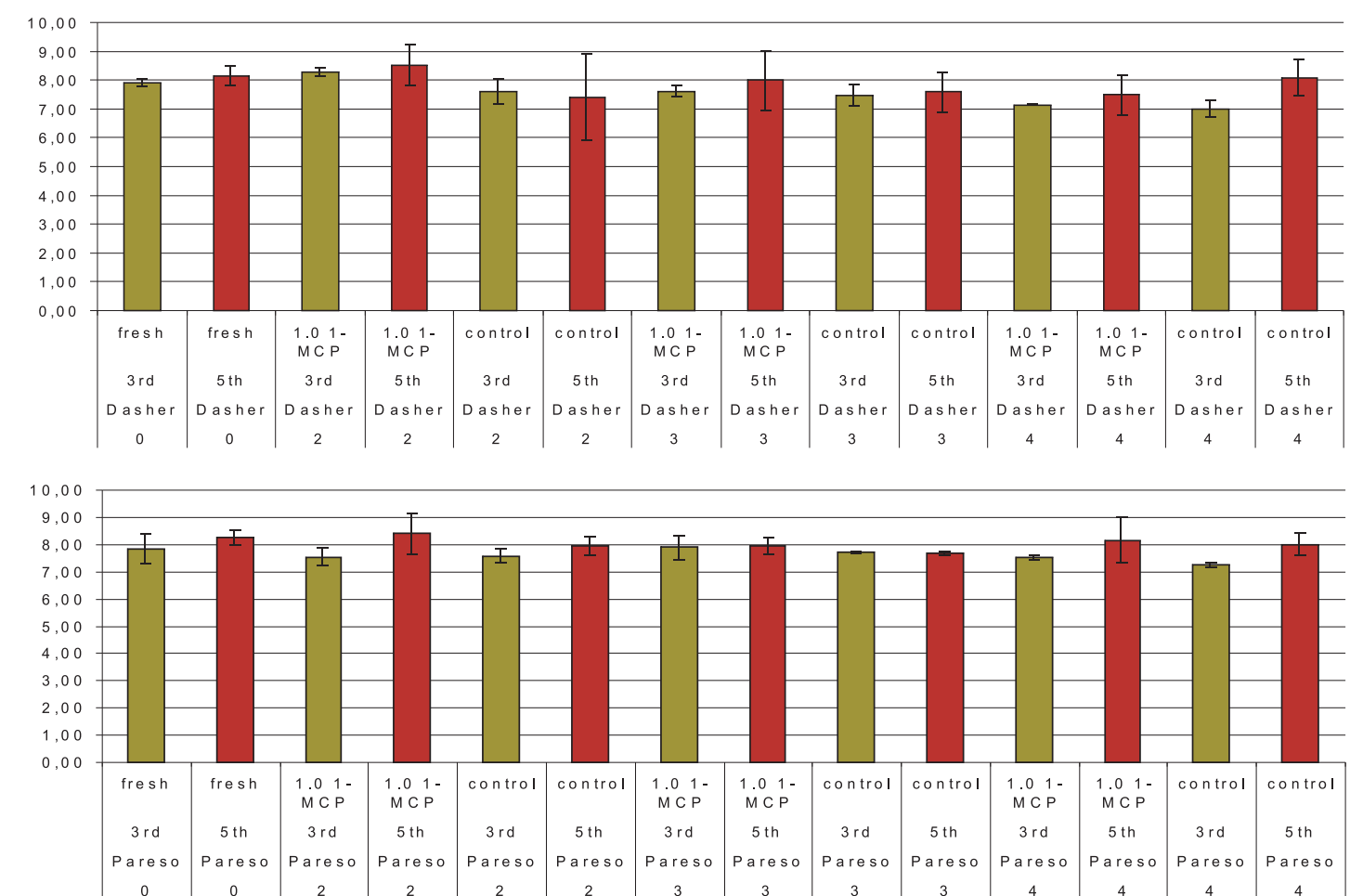


Figure 1. Dry matter content (%) in two cultivars fruits

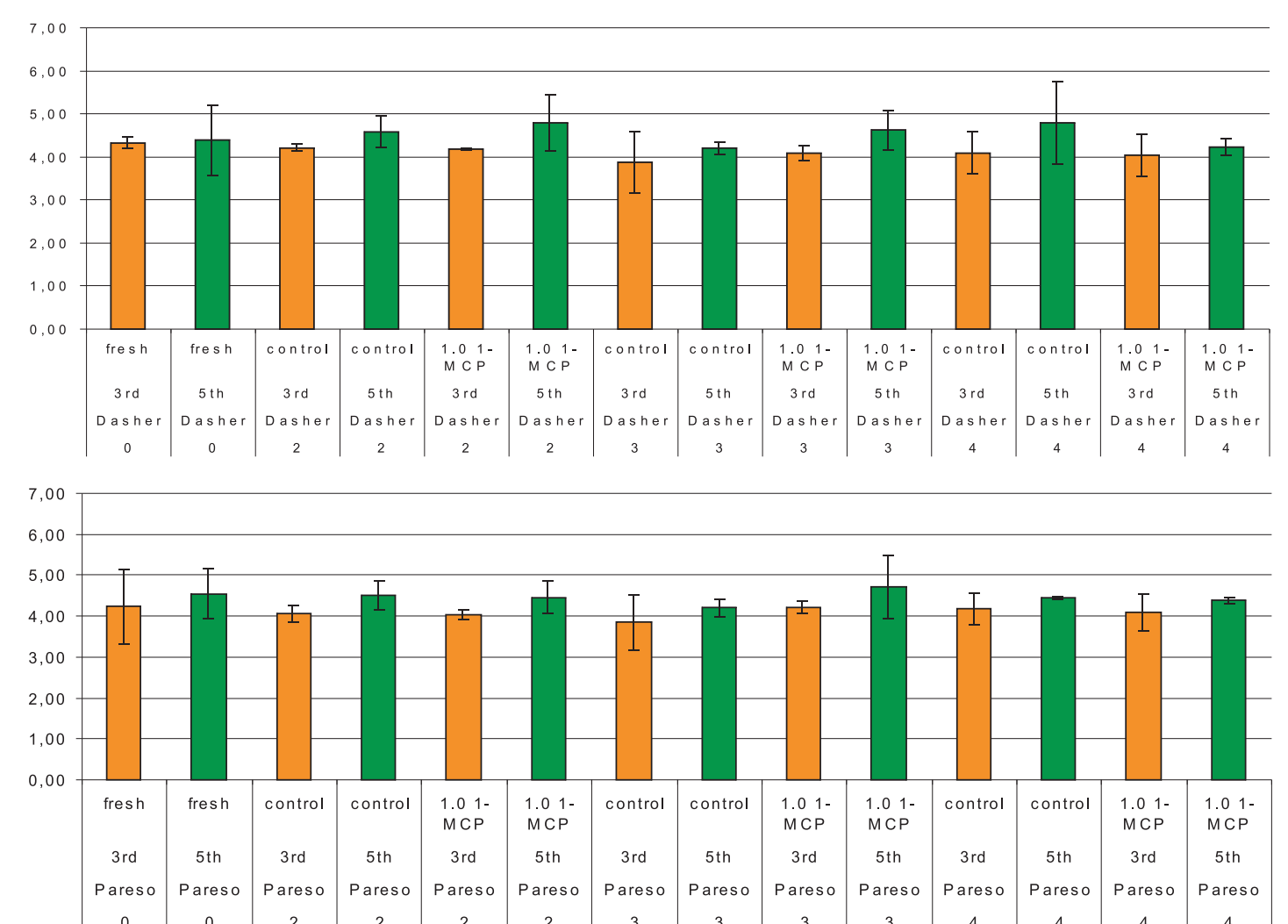


Figure 2. Sugar content (%) in two cultivars fruits

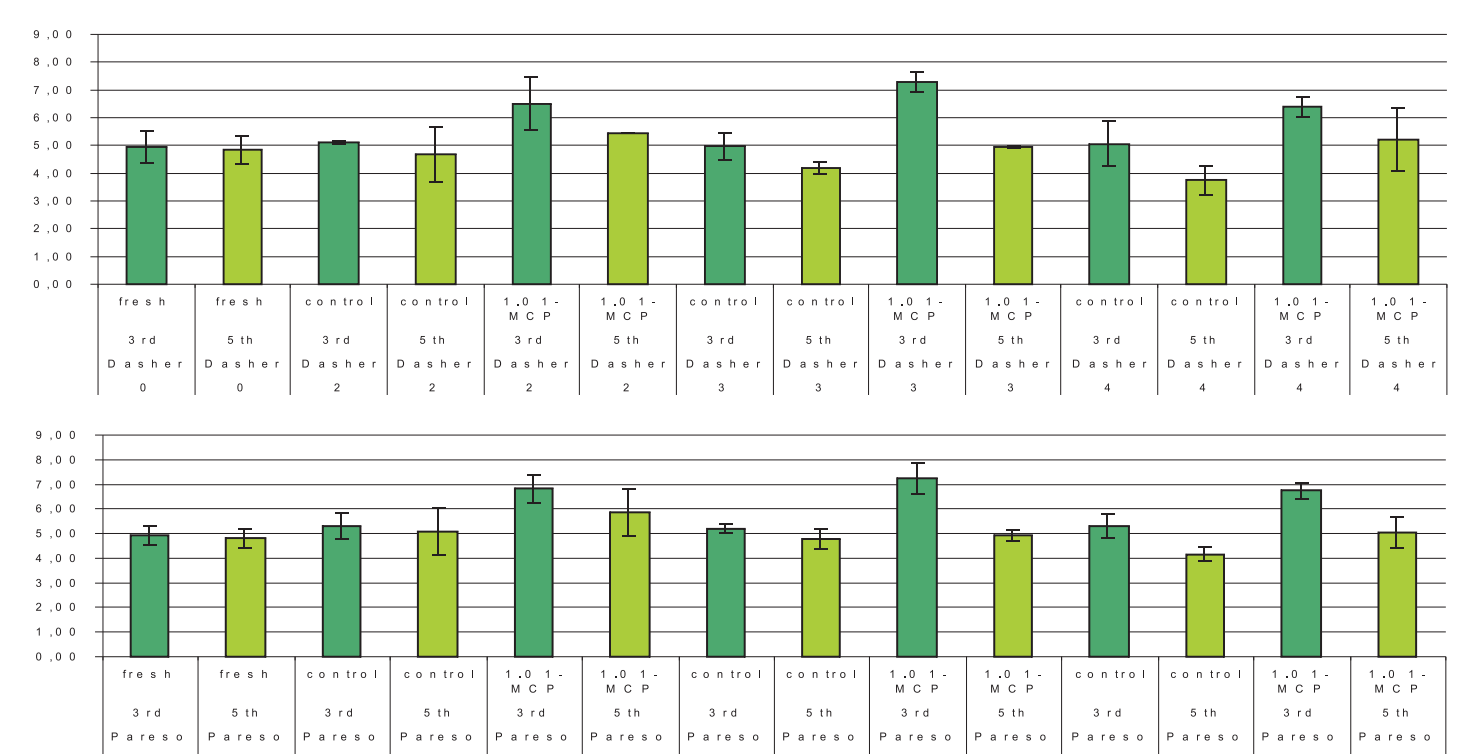


Figure 3. Titratable acidity in two cultivars fruits

## ACKNOWLEDGMENT

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