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Influence of 1-MCP on compression injury, fruit firmness and quality of Japanese plum cv. Santa Rosa during transportation

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Abstract

Plum is a very delicate fruit and requires massive post-harvest managements for enhancing its shelf-life so as to make it available in the market for longer time. Thus, studies were conducted to observe the effect of 1-MCP treatment on Santa Rosa plums of two maturity groups (climacteric and pre-climacteric) during transportation. Plums of both maturity stages were subjected to 1-MCP treatments (control, 1-MCP @ 0.5  $\mu\text{l l}^{-1}$ , 1-MCP @ 1.0  $\mu\text{l l}^{-1}$ , 1-MCP @ 1.5  $\mu\text{l l}^{-1}$  and Celfresh<sup>®</sup> tablet) for 24 h at 20°C, then packed in CFB boxes and transported to Delhi by road. After transportation, observations were recorded on several parameters. Our results revealed that untreated plums have very heavy loss during transportation due to compression injury in both stages of maturity (25.0 and 9.0%) being quite higher in climacteric stage than pre-climacteric stage. All 1-MCP treatments had significantly reduced compression injury, being the least (0.0) in 1-MCP (1.5  $\mu\text{l l}^{-1}$ ) and Celfresh<sup>®</sup> tablets. There was significant loss in quality parameters like fruit firmness, AOX capacity, TSS, acidity and ascorbic acid in untreated plums but was maintained quite appreciably by 1-MCP, especially by Celfresh<sup>®</sup> tablets. Similarly, respiration and ethylene evolution rates were higher in untreated plums than those, which were treated with different concentrations of 1-MCP, being the least in Celfresh<sup>®</sup> tablet treated fruits.

Keywords

1-methylcyclopropene, Japanese plum, compression injury, respiration rate, ethylene evolution rate.