

Title Precommercial, bin size Smartfresh (1-MCP) apple trials
Author Zbigniew B. Jozwiak, Krzysztof P. Rutkowski and Anna Wawrzynczak
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Abstract

Application of SmartFresh™ (1-MCP, 1-methylcyclopropene) to maintain post harvest quality of apples is gaining increasing interest among polish fruit growers. Because of that a small, practical experiment was carried out in the years 2004-2007 (three storage seasons) to check the effect on treating a whole pallet bin of apples with I-MCP. The experiment was established based on an agreement with the AgroFresh company, the developer of the SmartFresh™ technology.

Apples of three cultivars (Cortland, Gala and Champion) were harvested to a standard 1 m³ wooden pallet bins, according to a commercial practice, at various orchard locations. The optimum harvesting window for each cultivar was determined individually by the fruit grower. At harvest, samples of fruits were evaluated for quality factors. Harvested apples were cooled down in a cold storage room for at least 24 hours. Two randomly assigned bins were wrapped in polyethylene plastic bags of at least 0.1 mm thickness. One of the bins was used for application of 1-MCP treatment, the other was a control, allowing to check for any effect of the modified atmosphere generated in the closed bag, and was used as a reference for all the quality assessments after treatment and storage. A standard commercial dose of 0.625 µl.l⁻¹ 1-MCP was applied for all the treatments. The treatment lasted for 24 hours in the cold storage room. Following treatment, samples of the treated and control fruits were held for 7 days in shelf live conditions, at 18-20°C, then ethylene measurements were carried out to validate the treatment efficiency.

Treated and control apples were stored in commercial rooms under refrigerated air (RA) or controlled atmosphere (CA) conditions, for a duration decided by the grower. After storage fruits were evaluate or quality aspects after being held for 1, 7 and 14 days at room temperature. Internal ethylene content (IEC), flesh firmness (FF), total soluble solids (TSS) and titratable acidity (TA) were measured.

In general, application of 1-MCP delayed softening and stabilized titratable acidity. Internal ethylene content was lower for the treated apples. Total soluble solids were comparable for treated and control apples. The treatment effects were related to the stage of fruit maturity at harvest.