

Assessment of apple shelf-life next of post-harvest long-term storage under innovative technology conditions

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The objective of the current research was to ascertain the possible shelf-life of widely in Latvia grown ‘Auksis’ cultivar apples next of post-harvest long-term storage under innovative technology conditions. The effect of storage conditions and inhibitory properties of 1-methylcyclopropene (1-MCP) on quality of apples during shelf-life that have been stored under normal atmosphere (NA) in cold storage at 2 ± 0.5 °C, cold storage + 1-MCP and controlled atmosphere (CA) 1.0 % O₂, 2.0 % CO₂ (ULO1) and 1.5 % O₂, 2.5 % CO₂ (ULO2) conditions was evaluated. Experiments have been carried out during the period from 2011 to 2014. Research has been performed at Experimental Processing Department of the Institute of Horticulture, Latvia University of Agriculture (LLU) (formerly Latvia State Institute of Fruit-Growing) in Dobele. Apple fruits immediately after long-term storage at various storage conditions as well as after shelf-life (additionally 24 days with the five day interval) have been evaluated. During the research physical (fruit firmness mass losses), chemical (total soluble and acid content), and sensory (colour, aroma, taste, acidity, sweetness, and juiciness) characteristics of apples have been evaluated and maximal shelf-life ascertained. Results from sensory evaluation of apples indicate that those apples treated with 1-MCP have been highlighted as fruits with distinctive aroma. However, those stored under CA were poor in sweetness and have remarkable acidity and juiciness. Apple fruits stored in cold storage were abundant in aroma and colour, but do not have pleasant taste. The maximum shelf-life of apples stored in cold storage and ULO1 camera was 15 days, but for the apples treated with 1-MCP and stored in the ULO2 camera shelf-life was extended to 25 days.

Keywords: 1-methylcyclopropene, ‘Auksis’, cold storage, controlled atmosphere, fruit storage, quality