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Determination of Ripening Stage in Date Cultivar 'Barhi' by the Level of Ethylene Emission

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'Barhi' dates change their color from green to yellow during ripening and they are marketed as slightly astringent yellow fruits. 'Barhi' dates which contain above 25-27% total soluble solids (TSS) are regarded as matured and will have the desirable color, taste and texture. In order to improve the quality of 'Barhi' dates postharvest life, we study various indices, for determination of the best stage for fruit harvesting. During breaking stage from green to yellow there is an increase in ethylene emission which decreased when the fruit color was changed to complete yellow. There is high correlation between increased yellowing expressed as hue angle and reduction in ethylene emission. The decrease in ethylene production rate was also highly correlated with levels of TSS which was determined by NIR (near infra-Red) spectrometry. Highest ethylene production rate was found in yellow fruits with low TSS of 17%, while, high TSS level of 37% was correlated with low ethylene production rate. It is note worthy that in fruits with high TSS levels (37%) although ethylene levels are low in the first week after harvest, later during storage at 20°C, ethylene levels was increased probably because of fungal contamination. Our results show that ethylene production rate can be a good index for determination of 'Barhi' maturity.

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Effect of 1-MCP from SmartFreshSM on Apple Quality and Storage Ability in Ukraine

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Apples of Idared, Jonagold, Golden Delicious and Reinette Simirenko varieties were picked at the optimum harvest date and half of them were treated with 1-methylcyclopropene (1-MCP from SmartFreshSM) for 24 h at 50°C. Then both groups were placed in common cold storage at the temperature of 20°C for 7 months. Fruit quality was assessed at 2-month intervals, beginning from the first two months of storage, immediately after storage or after 7 and 14 days of shelf life at room temperature. The post-harvest treatment of fruits with 1-MCP with the subsequent common cold storage reduced the intensity of respiration along with softening and chlorophyll degradation, inhibited occurrence of senescent breakdown and fruit rot, especially during the shelf life at room temperature, reduced the loss in fresh weight during storage. The post-harvest treatment of apples with 1-MCP facilitates the maintenance of flesh firmness, higher acidity, dry soluble content, juiciness and level of green coloring, slows down the process of over-ripening and also prevents the occurrence of superficial scald, for example on variety Reinette Simirenko, in the cold storage and subsequent shelf life at room temperature. As a result, the storage time may increase as well as the marketability of the produce. In the conditions of CA storage at 2% CO₂ and 1.8% O₂, the post-harvest treatment of variety Golden Delicious with 1-MCP favors the maintenance of flesh firmness, inhibits the processes of over-ripening (higher acidity, dry soluble content, juiciness and level of green coloring), including the time when fruits are in shelf life at room temperature.