

Title Factors affecting the apricot quality for the consumer with special attention to the use of 1-MCP and of NDT for detection of bruising

Authors F. Mencarelli, A. Bellincontro, R. Forniti, K. Vizovitis, R. Botondi, M. Valentini, P. Sequi, C. DiNatale, B. Basile, R. Romano

Citation ISHS Acta Horticulturae 717: 315-320. 2006.

Keywords 1-MCP; ethylene; bruising; NMR; electronic nose; Vis-NIR

Abstract

The quality of apricots today is very poor due to the distribution system. The longer the distribution time, the worse is the quality. This is because apricots are harvested too early and kept at low temperature. In this paper, after giving an overview on current research into the post-harvest quality of apricots, we will report on the influence of 1-MCP in the control of ripening of apricots of var. 'S. Castrese' and the potential for the use of the non-destructive technique (NDT) to monitor hidden bruising injuries. 1-MCP (1-methylcyclopropene) (1000 nl l^{-1}) was applied for 20 hours at 20°C to apricots, which were then kept at 15°C . In parallel, 48-hour treatments with 100% N_2 or 100% CO_2 were performed; apricots were then maintained at 15°C in air. 1-MCP was able to reduce significantly ethylene production, while carbon dioxide had a residual effect on ethylene production and nitrogen did not control it at all. The effect of 1-MCP on ethylene was shown by a maintenance of the penetrometer firmness. The soluble solids content (SSC) was not affected by the treatments while titratable acidity (TA) diminished significantly in treated apricots, above all with nitrogen. The 1-MCP treatment performed to simulate the effect of alternating temperature during the IN-OUT of apricots in the cold room of the retail facility has shown that 1-MCP is not able to control the acceleration of ripening. Finally, the application of different NDTs to impacted apricots has shown the ability of MRI (magnetic resonance image) to identify the hidden injury soon after the impact, but the electronic nose and the Vis-NIR spectra images were able to differentiate injured and intact fruits also.