

Title Optical absorption and scattering phenomena in 'Jubileum' plums in relation to their colour properties

Author S. Jacob, E. Vangdal, A. Torricelli, L. Spinelli, M. Vanoli, P. Eccher Zerbini, L.M.M. Tijskens and E. Madieta

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Abstract

Absorption and scattering of laser light pulse passing through the fruit determine among others, the optical properties of the product. Efforts have been made in the recent past to utilize innovative techniques such as time-resolved reflectance spectroscopy (TRS) to study the quality aspects of different fruit such as nectarines. These optical properties have been well related to firmness, sugars, acids and other quality attributes. TRS measurements were performed on 'Jubileum' plums at two different wavelengths: 670 nm and 758 nm. The fruit were harvested in Norway and brought to Italy under protected conditions. After sorting the fruit by size, TRS measurements were made and the fruit were randomized for different examinations of quality aspects. It was observed that the absorption coefficient (μ_a) increased for both wavelengths as ripening progressed towards the melting stage of the fruit. The μ_a values at 670 nm were higher than those at 758 nm. The higher rate in the μ_a was distinguishable from the third day onwards as the fruit ripened. Similarly, it was interesting to note that the internal colour measured after destructing the fruit related well with the TRS absorption coefficient (μ_a), i.e., a decrease in the CIE L* (towards darker region) and b* (towards blue) value along with an increase in a* (towards red) from third day of storage.