

Abstract:

Maturity of peaches and nectarines at harvest determines fruit quality: less mature fruit are easy to handle, but lack flavour, while mature picked peaches and nectarines have better flavour, but soften quickly. In the new cultivars the red overcolour develops early preventing the background colour, which is a good harvesting index, from being seen. Time-resolved reflectance spectroscopy (TRS) is a non-destructive method for optical characterisation of highly diffusive media. Aim of the work was to check the usefulness of the absorption coefficient μ_a measured at 670 nm (μ_{a670}) to assess nectarine maturity at harvest in order to predict quality during shelf life. Springbright nectarines of two sizes were picked on 18 July 2002. 140 fruits of each size were ranked by decreasing μ_{a670} (from less mature to more mature). Fruit were stored at 0°C for 3 days, then at 20°C for 2 or 3 days. To ensure that fruit from the whole range of μ_{a670} were available in each sample, ranked nectarines were randomly assigned to analysis at harvest (mass; skin colour; firmness; soluble solids) and during shelf life (skin colour; firmness; soluble solids; acidity; % juice; sensory analysis). At harvest, fruit mass was lower and firmness was higher in fruit with higher μ_{a670} . Soluble solids depended only on fruit size. During shelf life, with lower μ_{a670} at harvest, the % juice was higher and fruit pulp softened earlier. At sensory analysis, fruit with lower μ_{a670} were significantly less firm and more juicy, sweet, pulpy and aromatic. Non linear regression analysis showed that softening during shelf life followed a logistic model in function of μ_{a670} at harvest and of time at 20°C ($R^2=0.85$). By selecting at harvest nectarines according to their μ_{a670} value, the softening rate can be predicted and the fruit for the different marketing destinations can therefore correctly be identified.