

Title	Use of visible-near infrared diffuse reflectance spectroscopy to discriminate between kiwifruit with properties altered by preharvest treatments
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Abstract

Visible-near infrared (NIR) spectra of kiwifruit berries were processed by discriminant analysis techniques to differentiate berries treated during on-vine development. Treatments applied were leaf removal or shading berries with aluminium foil through crop development, or dipping the berries in ethephon two weeks prior to harvest. In order to accentuate the treatment effects, the canes used for individual treatments were cinctured to cut the phloem layer near the central cord. Diffuse reflectance visible-NIR spectra were measured for all berries at harvest and after storing at 0°C for 16 weeks, and in sound ripened berries, for which the mass, skin colour, soluble solids and dry matter content were also determined. Principal components (PCs) were calculated for the 550-990 nm region of the visible-NIR absorption spectra for 500 berries randomly selected from all treatments. Canonical variate analyses of the PC were used to distinguish the berries from the original treatment groups. At harvest and after storage, discriminant algorithms, based on training spectra, were applied to validation spectra sets and correctly classified 99% and 87% of the berries, respectively, by their on-vine treatment. In the sound ripened berries, discrimination based on the visible-NIR data was superior to that achieved using combinations of mass, skin colour; dry matter and soluble solids.