

Title NIR hyperspectral imaging for measurement of internal quality in strawberries
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Abstract

Non-destructive estimation of internal quality of fruits for on-line grading for higher product consistency and enhanced safety will greatly benefit the consumer and the fruit industry as a whole. This research was aimed to develop prediction models for firmness (MPa) and soluble solids content (SSC, %Brix) in strawberries using NIR hyperspectral imaging. From freshly harvested “Akihime” variety strawberries, NIR hyperspectral images (650-1000 nm at 5 nm interval) were taken and calibration models were developed for firmness and SSC using stepwise multiple linear regression. The three-wavelength prediction model for firmness had a correlation of 0.786 and SEP of 0.350 (50% to Full-ripe group). It confirmed the importance of chlorophyll absorbance peak at around 675 nm and water at 980 nm. While for SSC, the five-wavelength prediction model yielded a correlation of 0.87 and SEP of 0.53 (70% to Fullripe group). It included NIR wavelengths above 800 nm where absorptions due to carbohydrate and sugar exist.