Abstract:

The potential of NIR as non-destructive method for determining maturity of Mangifera indica L. `Nam Dokmai´ and `Chok Anan´ was evaluated, investigating fruit lots in two successive crop years in the case of `Chok Anan´. NIR spectra of each fruit were scanned from 650-2500 nm over 6 days of postharvest ripening. Weight loss, firmness, total soluble solids (TSS) and total titratable acidity (TTA) were determined by conventional destructive analyses in the same region of the fruits where the spectrum was performed. The whole NIR spectra and the physical and chemical data were subjected to multivariate calibration techniques using principal component analysis. The quality of the calibration models was expressed by the coefficients of determination (R2) and the standard error of prediction (SEP). The NIR spectra were highly correlated with ripening time and weight loss for both cultivars. Considering `Nam Dokmai´, R2 were 0.97 and 0.92 for ripening time and weight loss, respectively, with SEP of 0.4 d and 0.9 %. For `Chok Anan´, R2 were at least 0.96 and 0.90 for ripening time and weight loss, respectively. R2 for TSS/TTA, being 0.84 and at least 0.70 for `Nam Dokmai´ and `Chok Anan´, respectively, were higher than for TSS or TTA itself. NIR as an extremely rapid and non-destructive method, was shown to be applicable to follow the postharvest ripening process of the mango lots studied, predicting quality attributes, which reveal linear changes during postharvest ripening.