

# Research on nondestructive measurement of firmness and soluble tannin content of 'Mopanshi' persimmon using Vis/NIR diffuse reflection spectroscopy

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## Abstract

The objective of this research was to study the potential of visible and near infrared (Vis/NIR) diffuse reflection spectroscopy as a means of nondestructive measurement of the firmness and soluble tannin content of astringent persimmon. Vis/NIR spectral data were collected from 'Mopanshi' persimmon in the spectral region between 570 and 1848 nm. The results showed that the modified partial least squares (MPLS) model, with respect to the second derivative D2  $\log(1/R)$  and detrending, provided better predicted performance for the soluble tannin content of astringent persimmon fruit, with the correlation coefficient (r-value) of 0.908 and root mean square error of prediction (RMSEP) of 0.116%. And the MPLS model, with respect to the first derivative D1  $\log(1/R)$  and without detrending, provided excellent predicted performance for the firmness of astringent persimmon fruit, with the correlation coefficient (r-value) of 0.976 and RMSEP of 1.330 kg/cm<sup>2</sup>. As a result, Vis/NIR diffuse reflection spectroscopy can be used to predict the firmness and soluble tannin content of astringent persimmon.