

Title Determination of translucent content in mangosteen by means of near infrared transmittance
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Abstract

Translucent flesh disorder is undesirable in mangosteen meant for export. However, mangosteens are judged as translucent when the translucent flesh is visible on the pulp surface regardless of the quantity of the internal translucent flesh which may result in some mangosteen assessed as normal having the same amount of translucent flesh content as a mangosteen judged as translucent. The critical amount of translucent flesh to be visible on the pulp surface needs to be determined for assessment purposes. A non-destructive technique to measure the translucent content is a practical tool as the first step towards the establishment of the critical value.

A non-destructive model was developed to estimate the translucent content in mangosteens using near infrared transmittance. The translucent area of the flesh section on the fruit surface was used to indicate the translucent content. The effects of the orientation of the fruit and also of the light source to the relative position of the detector as well as the effect of the measurement position of the fruit on the predictive performance were examined. The results showed that the best partial least squares model was achieved with spectra acquired from the fruit position which revealed the largest flesh segment (prediction correlation coefficient was 0.86 and root mean square error of prediction was 7.58%). The horizontal stem–calyx fruit axis and a 135° angle from the light source relative to the detector were the optimal fruit orientation and configuration for measurement.