

Title Evaluation of tomato quality on tree and after harvesting using portable NIR spectroscopy

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Abstract

The use of a portable near infrared instrument was evaluated to determine the soluble solids content, moisture content, and hue color value of tomatoes on tree and after harvesting. Calibration models were constructed using data from the winter season and summer season in order to make the model as robust as possible. The 247 samples data were randomly split into 122 samples for calibration and 125 samples for prediction. The results of the correlation coefficient (R) and standard error of calibration (SEC) values for the calibration model, which were obtained using the PLS regressions of the soluble solids content, moisture content and hue color value of the tomatoes after harvesting are 0.95 (0.26), 0.81 (1.85), and 0.94 (3.32), respectively. The positive and similar trend linear correlation of the calibration and prediction of the soluble solids content, moisture content, and hue color value from the winter season and summer season data is shown for the tomatoes on the tree and after harvesting, but have relatively differences in coefficient correlation. Based on the NIR measurement on the tree technique, the farmers can determine the harvesting time until the desired quality, for example soluble solids content and reduce the sorting lose.