

Abstract:

The melon fruit is not homogeneous in terms of tissue structure or total dissolved solids (TDS) distribution. This inhomogeneity is expected to impact on near infrared NIR assessments of TDS, with spectral data typically collected from a fraction of the fruit. Spectra were collected from three different areas (the ground spot, an equatorial position and the styler end) on the intact fruit of two cultivars ('Dubloon' and 'Malibu'). TDS was determined for flesh from both the outer one cm and inner one cm of mesocarp for each sample position. Partial least squares calibrations (783-955nm based on inner mesocarp tissue) were stronger (higher reference population standard deviation to calibration error ratio or SDR values) when based on outer, rather than inner, mesocarp TDS (e.g. SDR 2.56 cf. 1.95, respectively, for 'Dubloon', ground spot). Calibrations on inner mesocarp were stronger for 'Dubloon' than 'Malibu' melons, consistent with a higher correlation between inner and outer tissue TDS (R^2 0.92 'Dubloon'; R^2 0.59 'Malibu'). SDR values for inner mesocarp TDS were higher for calibrations developed using styler end and ground spot acquired spectra. The correlation between outer and inner mesocarp TDS was also greater in these positions than in other equatorial positions. The ground spot also has less lenticel development. Future work will consider mesocarp TDS uniformity in terms of cultivar, harvest time and post harvest storage time.