

Title Internal quality assessment of mandarin fruit by vis/NIR spectroscopy
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Abstract

Different measurement modes (reflectance, interactance and transmission) and spectral windows (500-1100 nm) were compared for their ability to predict non-destructively the harvest soluble solids content (SSC) and titratable acidity (TA) of Satsuma Mandarin (*Citrus reticulata* cv. "Miyagawa"). A direct transmission measurement mode (source and sensor opposite sides of fruit coupled with a single spectral window from 700 to 930 nm) delivered the most accurate SSC predictions ($R^2 = 0.93$, $RMSEP = 0.32\%$). Accurate TA prediction was not possible with any measurement mode and the predictive ability that was achieved (best results: $R^2 \sim 0.65$, $RMSEP \sim 0.15\%$) was only afforded indirectly through a correlation with the skin chlorophyll changes that occur as the fruit matures.