

Title           Storage potential of kiwifruit predicted by NIR analysis at harvest  
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Citation        Australian postharvest horticulture conference, Brisbane, Australia, 1-3 October, 2003; 130-131

### **Abstract**

Near infrared (NIR) analysis of individual yellow-fleshed kiwifruits ('Hort16A') was performed on 3 occasions across commercial harvest to predict their storage potential during cold storage (24 weeks). Destructive measurements for dry matter (DM), soluble solids content (SSC) and flesh colour were also determined on cohorts to develop predictive models with NIR spectral properties. Statistics for calibration models were: DM ( $R^2=0.92$ ,  $RMSEP=0.47\%$  DM), SSC ( $0.92$ ,  $0.92\%$  SSC) and flesh colour ( $0.86$ ,  $1.13\text{Hue}$ ). The presence of rots and physiological disorders was assessed monthly. Any affected fruit was identified and removed. Nineteen percent of all fruits developed disorders during storage, the dominant cause being rots on chill-injured fruits. Canonical discriminant analysis (CDA) was employed to optimize the separation between the categories 'sound' fruit and those developing any disorder, using relative reflectance intensities at 227 wavelengths at harvest as quantitative variables. Using the CDA classification as a predictive tool to identify fruits likely to have poor storage potential, it was estimated that the overall incidence of disorders could have been reduced from 33.9 to 17.9% at our earliest harvest, and from 14.7 to 8.5% at the second. Where the categories were 'sound' fruit and 'chill-injury', CDA classification indicated a possible reduction in disorder incidence from 13.7 to 6.8%. Fruits that eventually developed chill-injury and rots were those less mature at harvest. Extrapolated to a commercial setting, classification into 'sound' and 'affected' groupings following NIR analysis at harvest could identify the least mature fruit and lead to a useful reduction in the incidence of postharvest storage disorders in this crop.