**Title** Effect of irrigation on near-infrared (NIR) based prediction of mango maturity

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**Abstract**

This study investigated the effect of irrigation on the ability of near-infrared (NIR) measurements to predict maturity stage of mango. Fruits from irrigated and non-irrigated trees were sampled on six dates during the final three weeks of development and subjected to NIR and conventional laboratory analyses. Spectral assessment showed differentiation between irrigated and non-irrigated fruits on earlier dates, which was not evident later on. NIR measurements of irrigated samples correlated well to dry matter, this was not the case for non-irrigated samples ($r$ = 0.80 compared to 0.57, respectively), while the reverse was true for acidity with $r$ increasing from 0.55 to 0.85 between irrigated and non-irrigated. Second derivative spectra of all samples best correlated with acid content ($r$ = 0.73). Although dry matter was previously proposed as the most suitable parameter for NIR calibration, this study suggests acidity might be an appropriate harvesting index when considering irrigation effects. Interestingly, NIR technology has been found to adequately predict acidity in other fruits, but results of this study require additional investigation.