Title Maturity sorting index of dragon fruit: *Hylocereus polyrhizus*

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Abstract

The purpose of this research was to investigate maturity prediction of red flesh dragon fruit based on non-destructive measures. Specific weight, sphericity, color value *L*, *a*, *b* and light reflectance spectrum were linearly combined by partial least squares regression (PLSR) analysis. The PLSR models could predict days after fruit set, weight ratio and total soluble solids relatively well with standard deviation divided by standard error of prediction (RPD) of 2.86, 2.45 and 2.38, respectively. Date after fruit set, total soluble solids, total acid, ratio of total soluble solids and total acidity and weight ratio were transformed into a principal component 1 (PC1) by the principal component analysis and used to represent a single maturity index. The PLSR model with non-destructive parameters resulted in an improved performance in the prediction of the maturity index (PC1) with a RPD increase to 3.49. The model could be further simplified but retained a comparable accuracy by the application of a log (R680/R550) in place of the light reflectance spectrum.