



## Thesis Abstract

### **Evaluation of the Distribution of Chemical Constituents and Parameters for Near Infrared Spectra of Total Soluble Solids and Dry Matter Content for Dragon Fruit (*Hylocereus undatus*) as an Index of Maturity**

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The nondestructive technology, near infrared spectroscopy was applied to predict the total soluble solids and dry matter content of dragon fruit (*Hylocereus undatus* [HAW.]). The principle of this technology is the absorption of C-H, O-H, N-H and S-H functional groups provide the indication of the presence of sugar and dry matter in fruit tissue. The distribution of fruit attributes such as total soluble solids, individual sugars, dry matter content, total titratable acidity, total polyphenols and vitamin C were characterized in the first chapter. The purpose of this chapter was to correlate NIRs results to whole fruit properties, detect the differences between maturity stages and to direct sampling for quality standard. The second chapter was to characterize the NIR measurement system in term of integration time, signal to noise ratio, repeatability, effect of changes in sample temperature and light penetration into fruit. The objectives of the third chapter were to develop a procedure to optimize spectral data pre-treatments, and to show the feasibility of building prediction models for the determination of total soluble solid (TSS) and dry matter content (DMC) by near infrared spectroscopy of dragon fruit.