DEVELOPMENT OF A MINIATURIZED PAPAYA SWEETNESS CLASSIFICATION DEVICE BASED ON INFRARED CHARACTERISTIC VIA REFLECTANCE METHOD

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ABSTRACT

This paper is discusses on the development of a miniaturized device and experimental evaluation of the infrared reflectance to measure the sweetness of papaya. This device used to indicate the sweetness of papaya. Soluble solids content indicative of sweetness was used for papaya as the quality factor for correlation with near infrared reflectance technique. The voltage measured was taken from the center position which is 50% from the length of the papaya and the sugar level content is obtained in % Brix. Ripe papaya can be classified as a sweet papaya. The miniature handheld NIR sensor usually easier to bring anywhere for example can be used in orchard. This device also low cost because the component used inside the sensor are much cheaper compare than big device that used many component and also difficult to bring anywhere.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

NIR instruments have undergone radical change and more versatile in terms of the infrared region in which measurement can be made and more portable. The low cost of instrument have also started to appear in the market. However, before this technology can be successfully transferred to the fruit industry it needs further research. Further research is required into interaction of NIRS radiation from different regions of the near infrared with intact fruit to purpose of optimizing instrument depend on the type of fruit and parameters to be measured [1].

Previous research has demonstrated the potential of near infrared (NIRS) spectroscopy for assessing soluble solid content, firmness and other physiological properties content of fruit including plum [2, 8], cherries [9], watermelon [6], papaya [5, 14], mango [1] and apple [11].

A different technique of measurement has been introduced for obtaining the near infrared spectra. In reflectance mode the light source and detector are mounted under a specific angle for example 45 degree. This angle is to avoid specular reflection. In transmittance mode the light source is positioned opposite to the detector, while in interactance mode, the light source and detector are positioned parallel to each other in such a way light due to specular reflection can't directly enter the detector [10]. This near infrared reflectance spectroscopy technique use reflected spectrum of a sample lit with halogen light by optical