

**AUTOMATED RUBBER SEED CLONES IDENTIFICATION USING QTR-1A
REFLECTANCE SENSOR AND PIC**

**This thesis in partial fulfilment for the award of the
Bachelor of Electrical Engineering (Hons)
UNIVERSITI TEKNOLOGI MARA**



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JULY 2012

ACKNOWLEDGEMENT

This project would not have been possible without considerable guidance and support. So, I would like to acknowledge those who have enabled me to complete this project. Firstly, I would like to thank my project supervisor; Mr Fairul Nazmie Bin Osman, for providing the guideline with continues advices and feedback throughout the duration of finishing this project.

Secondly, I would also like to thank all University Teknologi Mara staff members and also lecturer that I may have called upon for assistance since the genesis of this project. Their opinions and suggestions have helped me in realizing this project. Also not to be forgotten, I would like to thank for all my friends with the support, valuable help and sharing ideas during the progress of this project.

Finally, I would like to thank my family for their understanding, encouragement and support, towards the completion of my project. Thank you so much.

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ABSTRACT

This paper studies automated rubber seed clones identification using Reflectance sensors by create an intelligent and simple technology using application of Microcontroller PIC16F877A. There are five types of clones from the same species of rubber seed have been used as samples in this paper which are RRIM2002, RRIM2015, RRIM2020, RRIM2023 and RRIM2024. There three sensor reflectance (QTR-1A) was used to ensure that all surface samples taken the reading. Every surface reflects differently of light. The device measure the percentages of reflectance based on the intensity of light reflected from the seed surface. The Microsoft Office Excel was used to analysis the average voltage that converts from light reflectance of wavelength by takes 25 samples readings from 5 difference clones. Analysis results showed the average voltage derived from the data and graph; there are small differences in voltage for each type of clone. Finally, the range of average output voltage for each clone has been made based on the analysis obtained. It was found that there are the brightness of brown colour at front surface can be used in order to classify the types of rubber tree clones compare with back surface.

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CHAPTER 1

INTRODUCTION

4. INTRODUCTION

Systematic breeding and selection works of rubber clones to improve productivity has been an ongoing process in the Malaysian Rubber Board for almost nine decades. Since it embarked on the process, six series of clones with a total of 185 clones had been developed and recommended to the industry under the names RRIM 500 (1928-1931), RRIM 600 (1937-1941), RRIM 700 (1947-1958), RRIM 800 (1959-1965), RRIM 900 (1966-1973) and RRIM 2000 (1974 till now) series clones. Some of these clones are also widely planted in other rubber growing countries [1].

There were many differences of intensity of brown color and pattern feature at seed's surface based on clone series. From that, the fundamental rubber seed identification is by looking at the seed and later tries to match its appearance to the closest appearance photo from a library text. For experienced workers would just look at the shape, texture pattern or color spectrum of the seed for classification[2]. However, this method consumes time, low percentage accuracy and as well as high labour cost in order to trained new worker or farmer with regards to the identification of rubber seed clones.

Since color plays an important presentation for rubber seed clones identification[2], therefore for this project it be measured using QTR-1A reflectance sensor. This sensor measured the percentage of reflectance based on the intensity of light reflect from rubber seed surface. The factor that influenced of light reflectance