# AUTOMATED CLASSIFICATION OF RUBBER SEED CLONES USING COMBINATION TWO DIFFERENT SENSORS WITH ARDUINO

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### ABSTRACT

This paper describes work on automated system device that able to identify and different type of rubber seed clones. This paper also describes on rubber seed clones classification. There are five different types of rubber seed clone being taken into this work as a sample which are the RRIM2015, RRIM2002, RRIM2020, RRIM2023, and RRIM2024. 30 samples from each type of rubber seed clones is taken of measurement and make it total into 150 samples using in this work. For data measurement, two type of different sensor is involve which is QRE1113 and LDR. The input reading was taken from detected light that reflected form the rubber seed skin surface and the data being controlled by the Arduino, act as controller to perform the desire output. All reading data been taken and will displayed on LCD display. To perform the data analysis, one – way ANOVA measurement is used to get all the the possible value needed in this project which are mean, median, standard error, minimum value and maximum value. Error plot was constructed from ANOVA analysis in order to observe and identify if there any overlapping occur between the rubber seed clone using in this project.

# TABLE OF CONTENTS

DEDICATION	ii
ACKNOWLEDGEMENT	.iii
ABSTRACT	.iv
TABLE OF CONTENTS	v
LIST OF FIGURES	viii
LIST OF TABLES	.ix
LIST OF ABREVIATIONS	X

CHAPTER 1	1
INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 OBJECTIVES	2
1.3 SCOPE OF THE PROJECT	3
1.4 CONCEPT DESIGN	4
1.5 ORGANIZATION OF PROJECT	5
1.5.1 PROJECT INFORMATION	5
1.5.2 PROJECT PREPARATION	5
1.5.3 GANTT CHART	5
1.5.4 CONCEPTION DISCUSSES AND REVIEWS	5
1.5.5 EXPERIMENTAL TEST	5
1.5.6 PREPARE PRESENTATION	5
1.6 ORGANIZATION OF THE THESIS	6
CHAPTER 2	7
LITERATURE REVIEW	7
2.1 INTRODUCTION	7
2.2 PREVIOUS WORK	7
2.3 RUBBER TREE	10
2.4 RUBBER TREE CLONE	12
2.4.1 TYPES OF CLONES	12

## **CHAPTER 1**

### INTRODUCTION

#### **1.1 INTRODUCTION**

Malaysia, comprising 14 states from Peninsular Malaysia and East Malaysia is among the world's most important rubber growing area. In order to ensure continuous supply of quality latex and heavewood to manufacturers, replanting with higher yield rubber tree clones is hence very important [1]. From that material it will produce to use in industrial application such as surgical glove, tire, furniture and other application. In another word, rubber is the importance economics resource for our county.

From this point, seed plantation needed a quality rubber tree series clone and must been utilised effectively. At this moment, there are more 30 clones of rubber trees in Malaysia. Diferrent rubber seed clones have a different features such as colour, texture, pattern and weight. The conventional way of rubber seed identification is by look and match its appearance to the closest appearance photo from library text. In advance, experienced workers can classified by just look at the features but still unreliable enough to get high percentage accuracy, consumes less time as well as reduce labor cost. Before this the best rubber series clone was recognized based on a range of reflectance of shape, wavelength and texture of the rubber series seeds through the image processing and wavelet technique. [1, 2, 3, 4].