

SELECTED RRIM 2000 SERIES RUBBER SEED CLONES IDENTIFICATION THROUGH PHYSICAL PROPERTIES USING STATISTICAL ANALYSIS

**A thesis submitted in partial fulfillment of the requirement for the award of
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ABSTRACT

The main objective of this research work is to recognize selected rubber seed series clones using physical properties based on mass, volume and density. There are five types of clones from the species of *Hevea brasiliensis* rubber seed have been used as samples in this project which are RRIM2007, RRIM2009, RRIM2012, RRIM2016 and RRIM2025. A weighing scale and graduated cylinder were used in order to differentiate the physical properties of each sample. The weighing scale is used to determine the mass of samples, while the water displacement technique is used to determine the volume of the sample. The density of each sample is recognized based on a formula calculation of the mass and volume rubber seeds. Another 150 samples are used for testing and the analysis is done using SPSS software to identify the clones correctly. From the observed one-way ANOVA and error plot measurement, three clone series are shown significantly different from each other in mass and volume classification but for density it is hardly differentiated the clones as the clone does not show a clear difference between each other. As a conclusion, RRIM2007, RRIM2012, RRIM2025 can be used in order to recognize mass and volume between clones while it is not recommend to recognized sample clones using density properties..

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Rubber tree is an important plant in the world to supply the raw material for manufacturing. In order to increase the production of rubber trees, the seeds planted must be from the best quality of rubber tree. There are many differences of intensity of brown color and pattern on the seed's surface based on clone series.

Previously the rubber seed's inspector can only look from the surface of seeds to decide the type of clones. However, these methods will consume time, percentage of accuracy and as well as cost in order to trained new worker or farmer with regards to the identification of rubber seed clones [1].

Therefore, this project proposed scientific approach based on mass, volume and density for rubber seed recognition. The weighing scale and the graduated cylinder were used to determine the physical properties of the rubber seeds.

Previously the best rubber series clone was recognized based on the shape and texture of the rubber series seeds through the image processing and wavelet technique that were introduced by the previous project student. This project is different from the previous project, and this project is the first time introduced in recognizing of rubbers seed clone by using physical properties.