# UNIVERSITI TEKNOLOGI MARA

# PSEUDO MAPPING OF TERMITES DISTRIBUTION IN OIL PALM PLANTATION

# MOHAMAD SYAHRUL BIN MISHAM

Final year project report submitted in partial fulfillment of the requirement for the degree of

Bachelor of Science (Hons.) Plantation Technology and

Management

Faculty of Plantation and Agrotechnology

**JANUARY 2015** 

#### APPROVAL SHEET

This Final Year Project Report entitled "Pseudo Mapping of Termites Distribution in Oil Palm Plantation" was submitted by Mohamad Syahrul Bin Misham, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Plantation Technology and Management, in the Faculty of Plantation and Agrotechnology, and was approved by

# DR MOHD RASDI BIN ZAINI Supervisor

Faculty of Plantation and Agrotechnology Universiti Teknologi MARA Jasin, Melaka

# WAN NATASYA BINTI WAN AHMED

#### **Project Coordinator**

BSc. (Hons.) Plantation Technology and Management Faculty of Plantation and Agrotechnology Universiti Teknologi MARA Jasin, Melaka

#### NORDIANA BINTI IBRAHIM

### **Head of Study Center**

BSc. (Hons.) Plantation Technology and Management Faculty of Plantation and Agrotechnology Universiti Teknologi MARA Jasin, Melaka

Date:			
Date.	 		

CANDIDATE'S DECLARATION

I declare that the work in this Final Year project was carried out in accordance with the

regulations of Universiti Teknologi MARA. It is original and is the result of my own

work, unless otherwise indicated or acknowledged as referenced work. The Final Year

project report has not been submitted to any other academic institution or non-academic

institution for any other degree or qualification.

In the event that my Final Year Project is found to violate the conditions mention above, I

voluntarily waive the right of conferment of my bachelor degree and agree to be subjected

to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate : MOHAMAD SYAHRUL BIN MISHAM

Candidate's ID : 2012296974

Programme : Bachelor of Science (Hons.) Plantation

Technology and Management

Faculty : Plantation and Agrotechnology

Title : Pseudo Mapping of Termites Distribution in Oil

Palm Plantation

Signature of Candidate :

Date : 06 March 2015

iii

#### **ABSTRACT**

The objectives of the study are to evaluate of termites incidence also to record and develop termite distributions followed by the creation of a precise termites hazard maps for oil palm plantation. Termite is one of insects that have rapid reproduction. Besides, termite can be hyperactive in finding places for habitat as well as in search the food sources. This behavior leads to high population of termites in particular area. The study will be conducted in oil palm plantation at Asam Bubok, Parit Raja, Batu Pahat (103.08198N, and 1.94918E) each rows by rows in this crop plots. The survey had been accompanied for 3 months, beginning from 23<sup>rd</sup> August 2014 finished in 25<sup>th</sup> October 2014. The method of the study will be divided into two phases. The point sample number of infestation by termites will be determined using systematic random sampling method. The first phase is the process by using Global Positioning System (GPS) model Garmin to setting coordinates point of sampling and number of termite nests and number of damp wood (decomposed fronds) was found will be physically carried out and calculations had been made on the right side only and vice versa in the next rows in the areas and nearby with a sampling point of oil palm tree. At the same time, all collection data will be recorded in a manually form. The second phase of the study is integrating the information collected from GPS device to construct a termites hazard maps using ArcGIS 10 software. From this survey, incidence maps were constructed and these maps had been categorized high because the range of percentage around 65% until 72%. In this study the hazards maps were classified into 5 stages, that is High (>40%), Moderate (30% - 40%), Low moderate (20% - 30%), low (10% -20%) and very low (<10%) according to Cookson and Trajtsman, 2002.

# **TABLE OF CONTENTS**

ABSTRACT ABSTRAK ACKNOWLEDGEMENTS TABLE OF CONTENTS LIST OF TABLES LIST OF FIGURES LIST OF ABBREVIATIONS		
СНА	PTER 1 INTRODUCTION	1
1.1	Background of Study	1
1.2	Problem Statement	2 3
1.3	Objectives of Study	
1.4	Significance of Study	3
CHA	PTER 2 LITERATURE REVIEW	4
2.1	Background of Termites	4
2.2	Biological of Termites	5
	2.2.1 Life Cycle	6
	2.2.2 The Reproductive Stage	6
	<ul><li>2.2.3 The Worker Stage</li><li>2.2.4 The Soldier stage</li></ul>	7 7
2.3	Environmental Condition	8
2.5	2.3.1 The Sign of Presence of Termite in An Area	8
2.4	Geographic Information System (GIS)	9
	2.4.1 Geographic Information System in Terms Agriculture	10
2.5	Global Positioning System (GPS)	10
СНА	PTER 3 METHODOLOGY	12
3.1	Experimental Site	12
3.2	Materials and Methods	12
	3.2.1 Method of Surveying and Mapping the Termite Distribution	13
3.3	Termites Infestation Analysis	21
3.4 3.5	The Hazard Map Analysis Statistical Analysis	22 22
3.3	Staustical Alialysis	22
CHA	PTER 4 RESULT AND DISCUSSION	23
4.1	Data Collection Incidence of Termites	23
	4.1.1 Incidence of Termite Content	24
4.2	4.1.2 Incidence of Termites' Distribution Based on Raw Data	24
4.2	Pseudo Mapping of Termite Distribution	26
4.3 4.4	Relationship between Incidences of Termite with Climatic Climatic in Study Area	32 33