# **UNIVERSITI TEKNOLOGI MARA**

## A STUDY ON NUTRITIONAL CONTENT OF COMPOSTED PRODUCTS FROM OIL PALM WASTE

## SITI NORAIN BINTI AHMAD

Final year project report submitted in partial fulfillment of the requirements for the degree of **Bachelor of Science (Hons.) Plantation Technology and** Management

Faculty of Plantation and Agrotechnology

January 2015

### 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	:	SITI NORAIN BINTI AHMAD
Candidate's ID No.	:	2012495778
Programme	:	Bachelor of Science (Hons.) Plantation Technology and Management
Faculty	:	Plantation and Agrotechnology
Title	:	A Study on Nutritional Content of Composted Products from Oil Palm Waste
		M

Signature of Candidate	:	· ·
Date	:	30 <sup>th</sup> January 2015

#### ABSTRACT

#### A STUDY ON NUTRITIONAL CONTENT OF COMPOSTED PRODUCTS FROM OIL PALM WASTE

Oil palm is one of the major crops planted in this country. Every year, there will be lots of waste produced by the oil palm industries such as palm oil mill effluent, empty fruit bunch, decanter cake, mesocarp fibre, and palm kernel cake. This oil palm waste is becoming major concerns nowadays for the oil palm growers as its disposal problems has become an issue. The oil palm wastes contain many nutrients that can be used as a fertilizer supplement for plants. The main focus in this study was to assess the nutrient elements of fresh composted products from oil palm waste. Other than that, this study was done to determine the effectiveness of different type of oil palm waste towards crop performance and to determine the best composting technique that contributes towards better crop performance. In this study, there were three oil palm wastes used which are palm oil mill effluent, empty fruit bunch and decanter cake. These three materials have undergone two treatments which are dried and aerobic composting technique in order to turn it into finished compost. Then these composts will be used as planting medium for short term crop to compare their effectiveness. The nutritional content of each waste can be assess by making an evaluation on the micro and macro element analysis from preplanting product samples. The outcome of this study is the wastes give significant difference toward vegetative growth of crops.

### TABLE OF CONTENTS

ABSTI	RACT	iv
ABSTI	RAK	v
ACKNOWLEDGEMENTS		vi
TABLE OF CONTENTS LIST OF TABLES		vii
		ix
LIST C	<b>DF FIGURES</b>	x
CHAP'	TER 1	1
INTRO	DUCTION	1
1.1	Background of Study	1
1.2	Problem Statement	2
1.3	Research Questions	3
1.4	Objectives of Study	3
1.5	Hypothesis	4
1.6	Significance of Study	5
1.7	Scope of Study	5
1.8	Limitation	5
CHAPTER 2		6
LITER	RATURE REVIEW	6
2.1	Oil Palm Waste	6
2.2	Nutritional Content of Oil Palm Waste	6
2.2	Palm Oil Mill Effluent (POME)	6
2.2	2.2 Empty Fruit Bunch (EFB)	7
2.2	2.3 Decanter Cake	7
2.3	Composting	8
СНАР	TER 3	0
METHODOLOGY		9
3.1	Location of Study	9
3.2	Tools, Equipment and Materials	9

3.3	Experimental Procedures	11
3.3.1 Preparation of EM solution		11
3	.3.2 Preparation of compost	12
3	.3.3 Preparation of Solution for ICP analysis	13
3	.3.4 Planting of Test Material	15
3.4	Experimental design and Layout	17
3.5	Treatments	18
3.6	Summary of Treatment	18
3.7	Data Collections	19
3.8	Statistical analysis	21
3.9	Work Progress and Schedule	21
CHA	PTER 4	22
RESI	ULTS AND DISCUSSION	22
4.1	Nutrient Analysis	22
4.2	Graphical Summary	26
4.3	Descriptive Statistics	31
4.4	ANOVA (General Linear Model)	35
CHA	PTER 5	45
CON	CLUSIONS AND RECOMMENDATION	45
CITE	D DEFEDENCES	17
CITE	D REFERENCES	+7
APPENDICES		49
CURRICULUM VITAE		54