

**POPULATION ECOLOGY of BAGWORM (*Metisa plana*) at DIFFERENT
STRATA in OIL PALM PLANTATION**

MOHD ZULKARNAIN BIN JA'AFAR

**Final Year Project Proposal Submitted in
Partial Fulfilment of the Requirement For The
Degree of Bachelor of Science (Hons.) Plantation Management and Technology
in the Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA**

JULY 2015

DECLARATION

This Final Year Project is a partial fulfilment of the requirements for degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

It is entirely my own work and has not been submitted to any other University or higher education institution, or for any other academic award in this University, Where use has been made of the work of other people it has been fully acknowledged and fully referenced.

I hereby assign all and every right in the copyright to his Work to the Universiti Teknologi Mara ("UiTM"), which henceforth shall be the owner of copyright in this Work and that, any reproduction or use in any form or by any means whatsoever is prohibited without a written consent of UiTM.

Candidate's signature: _____



Date: _____

12/7/2015

Name: MOHD ZULKARNAIN BIN JA'AFAR

I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

Signature: _____



Name of Supervisor: MADAM NUR FARHAMIZAH BT. ASKARALI

Position: _____

LECTURER

NUR FARHAMIZAH ASKARALI

PENSYARAH

Fakulti Perladangan & Agroteknologi,

UITM (Melaka), Kampus Jasir,

77300 Merlimau Melaka

Date: _____

12/7/2015

Hp/Office :013-466 3382 | 06-264 5259
Email farhamizah@melaka.uitm.edu.my

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	Page iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	v
LIST OF TABLES	vi
LIST OF ABBREVIATIONS	vii
ABSTRACT	viii
ABSTRAK	x
 <u>CHAPTER</u>	
1 INTRODUCTION	
1.1 Background of study	1-2
1.2 Problem statement	2-3
1.3 Significant of study	3
1.4 Objective of study	3
1.5 Scope of study	3
 2 LITERATURE REVIEW	
2.1 Introduction of Oil Palm in Malaysia	4
2.2 Bagworm	4-5
2.3 Effect attack of bagworm	6
2.4 Leaves	7
 3 RESEARCH METHODOLOGY	
3.1 Experimental site	8
3.2 Material	8
3.2.1 Field materials	8
3.3 Sampling Methods	8
3.3.1 Parameter	8-9
 4 RESULTS	
4.1 Data analysis	11
4.1.1 Normality test (Kolmogorov-Smirnov)	11
4.1.2 Kruskal-Wallis Test	11
4.2 Number of bagworm	13
 5 DISCUSSION	15-16
 6 CONCLUSION AND RECOMMENDATIONS	17
 CITED REFERENCE	18-19
APPENDICES	21-22
CURRICULUM VITAE	23

LIST OF FIGURES

Figure		Page
2.1	Life history of <i>Metisa plana</i> (Marc <i>et al.</i> , 2011). (a) Bag of early instars, (b) Pupa bag of male (<i>right</i>) and female (<i>left</i>), (c) Male mating with a female by intruding his abdomen into the lower section of the female's bag, (d) Male mating with a receptive female; the female bag has been opened and the pupa case removed to illustrate how the extensible abdomen of the male reaches the female's genitalia, (e) Neonates emerging from their maternal bag suspended from a silken thread.	5
2.2	Effect of bagworm attack	6
2.3	Spectral reflectance characteristic on each level of foliar damaged	7
2.4	Nutrient concentration in frond 17 associated with deficiency, optimum and excess in young palm, less 6 years from planting	7
2.5	Nutrient concentration in frond 17 associated with deficiency, optimum and excess in mature, more than 6 years from planting	8
3.1	Sampling design of population bagworm	10
3.2	Three different strata of oil palm frond	11
3.3	Phyllotaxy of oil palm	14
4.1	Mean of total bagworm	15

ABSTRACT

Elaeis guineensis commonly known as oil palm is one of the major industry in plantation that are growth in Malaysia. The oil palm yield can be influence by many factors. One of them is bagworm. The importance and nature of injury we must know about bagworm are bagworm damaging stage is the larva, because the larva will eat plant leaves. In south Asia, *Metisa plana* (Lepidoptera: *Psychidae*) is an important defoliator of oil palm. The experiment was conducted at Felda Gunung Besourt 6, at Sungkai, Perak. The study location was chosen as through history is one of the most serious attack by bagworm and easy to access. The higher for total means are at the Lower strata with 76.9 individuals, followed by Middle strata (63) and lastly at the Upper strata (26.9). Bagworm on ten oil palm tree and six weeks tend to ate at the Middle strata and Lower strata. At the Lower strata and Middle strata are have higher the total means of bagworm with 76.9 and 63.0 individuals