

UNIVERSITI TEKNOLOGI MARA

**THE ABUNDANCES AND
INTERACTIONS OF RHINOCEROS
BEETLE (*Oryctes rhinoceros*) IN OIL
PALM (*Elaeis guineensis*) AND COCONUT
PALM (*Cocos nucifera* L.) PLANTATION
AT LADANG PENYELIDIKAN BUKIT
BUJANG, SEGAMAT, JOHOR**

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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ABSTRACT

Oil palm (*Elaeis guineensis*) is one of the crop that most rapidly develop in the world. Coconut palm (*Cocos nucifera* L.) and oil palm (*Elaeis guineensis*) were categorized in the same family of Palmae. Rhinoceros beetle (*Oryctes rhinoceros*) was a major pest and attacked both types of palma. This pest attacked severely at the young stage of palm. A lot of research and technique were applied to reduce and avoid the palms from being attacked by rhinoceros beetle (*Oryctes rhinoceros*). The population dynamic of rhinoceros beetle (*Oryctes rhinoceros*) male, female, and total male and female in different host varieties of oil palm (*Elaeis guineensis*) and coconut palm (*Cocos nucifera* L.) at Ladang Penyelidikan Segamat, Johor was evaluated namely DXP PPNJ 1 and DXP PPNJ 2. Meanwhile, MRD, MYD and Tagnanan were 3 different varieties of coconut palm (*Cocos nucifera* L.). Ethyl 4-methyloctanote is a pheromone aggregation used in this study. The pheromone was placed in the center between metal vanes in a pheromone traps. Data was taken biweekly for rhinoceros beetle (*Oryctes rhinoceros*), rainfall distribution and temperature for 40 weeks from March 2015 till February 2016. Data was analyzed by using SPSS (version 18). Our results clearly indicated that population dynamic of rhinoceros beetle (*Oryctes rhinoceros*) total male and female in oil palm (*Elaeis guineensis*) and coconut palm (*Cocos nucifera* L.) was significantly difference for the whole sampling period. Based on cumulative rhinoceros beetle (*Oryctes rhinoceros*) caught, DXP PPNJ 1 and DXP PPNJ 2 variety have an effect towards the population of rhinoceros beetle (*Oryctes rhinoceros*) male and female. Meanwhile, variety MYD give more effect towards the population of rhinoceros beetle (*Oryctes rhinoceros*) male, female and total male and female when compared to MRD and Tagnanan. Comparison population abundances of rhinoceros beetle (*Oryctes rhinoceros*) in oil palm (*Elaeis guineensis*) was significantly greater ($t=3.861$, $P<0.01$) than coconut palm (*Cocos nucifera* L.). Climatic factor also influenced the population dynamic of the rhinoceros beetle (*Oryctes rhinoceros*) in the oil palm (*Elaeis guineensis*) and coconut palm (*Cocos nucifera* L.). Female of rhinoceros beetle (*Oryctes rhinoceros*) in oil palm (*Elaeis guineensis*) plots was significantly correlated ($P<0.05$) by rainfall and temperature compared to male. Meanwhile, female of rhinoceros beetle (*Oryctes rhinoceros*) in coconut palm (*Cocos nucifera* L.) were not correlated ($P>0.05$) significantly by rainfall and temperature. Both crops having the same species and family were not recommended to be planted at same area because it will face the similar problems where rhinoceros beetle (*Oryctes rhinoceros*) attacks directly and affect the yield. Therefore, MRD, Tagnanan or Matag variety which is cross variety could be recommended to farmers, instead of having higher yield but in the same time less attack by rhinoceros beetle (*Oryctes rhinoceros*). Further study need to be conducted to study chemical compound in different plant varieties and focused on other variables such as plant defenses system towards the population dynamic of rhinoceros beetle (*Oryctes rhinoceros*) in oil palm (*Elaeis guineensis*) and coconut palm (*Cocos nucifera* L.) variety.

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