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GIS AND REMOTE SENSING APPROACH IN IDENTIFICATION OF PEST INFESTATION AT UITM PERLIS PLANTATION

NURUL AMIERAH BINTI MUSTAFA

2015952599

Thesis submitted in fulfillment

of the requirements for the degree of

Bachelor of Surveying Science and Geomatics

(Hons)

Faculty of Architecture, Planning and Surveying

Jan 2019

AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation 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.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Nurul Amierah binti Mustafa
Student I.D. No.	:	2015952599
Programme	:	Bachelor of Surveying Science and Geomatics (Hons) AP220
Faculty	:	Architecture, Planning & Surveying
Thesis/Dissertation Title	:	GIS and Remote Sensing Approach in Identification of Pest Infestation at UiTM Perlis Plantation

Signature of Student	:	……..
Date	:	January 2019

ABSTRACT

The impact of Red Palm Weevil (RPW) disease has led to the yield losses and revenue and have potential to destroy Malaysia's palm industry within just 20 years if it left unchecked with no effective prevention manner. RPW is currently detected visually from symptoms effected on infected trees in the plantation. Visual monitoring in the field is time consuming. Hence, there is a need for quick detection of pest infestation in the area.The proposed method will be tested using imagery based on remote sensing from unmanned aerial vehicles & satellite imagery that many plantation companies currently operate for surveillance and monitoring plantation coverage. GIS and remote sensing approach offers wide tools in order to monitor pest infestation. This study is intended to identify pest infestation at UiTM Perlis plantation by using satellite imagery. Several methods of achieving the aim have been described. These methods include site observation, image processing and analysis. The use of SPOT 6 Panchromatic image has been examined in detail using a tree counting process in eCognition software. The ERDAS Imagine software is used for the purpose og image geometric correction and image classification for infected and non infected trees. The results are then being assessed by performing accuracy assessment in ArcMap and ERDAS softwares. Pest infestation area in UiTM Perlis plantation is showed in a few maps including the classified image from image classification. **All** important factors influencing the results have been explained in detail. **A**nalysis shows panchromatic image with good pixel resolution has ability to map the infested area only with the integration of ground truth data as reference. Some previous research are done by using multispectral images which could resulting better result from image classification. The results of pest infestation map are presented such that they can be used as an aid for monitoring and prevention purpose.

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