UNIVERSITI TEKNOLOGI MARA

Prediction Method of RPW Infestation Using GIS, RS, Machine Learning and Statistical Approach

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Thesis submitted in fulfilment

Of requirement for degree of

Bachelor of Surveying Science and Geomatic

(Hons)

Faculty of Architecture Planning and Surveying

January 2020

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.

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ABSTRACT

The red palm weevil is an indigenous species from South East Asia, has recently become one of the most dangerous pests of palms around the globe. The early detection of Red Palm Weevil (RPW) infestations is critical to prevent palm death and thus serves as an essential element of a successful Integrated Pest Management (IPM) program used to control RPW. However, early detection of RPW is not easy because palm trees do not show any visual evidence of infection. The aim of this study is to determine the influential factor that affecting infestation of Red Palm Weevil at UITM Perlis by using RS & GIS, statistical and machine learning approach. To achieve the aim, the objective of this study are to analyze the RPW dataset for year 2017 and 2018 with suitable parameter using simple linear regression, to predict the pest infestation using different machine learning classifier tool and to map the parameter influenced by pest infestation using GIS interpolation techniques. In this study, there are two variable such as climatic data, and RPW. To accomplish the objective, the software that used including Knowledge Analysis (WAIKATO) and Microsoft Excel, ERDAS and Arch Map Software. The study area focusing at coconut Plantation in UITM Perlis. The methodology of this study is including data acquisition and data processing. The data are collected from Meteorological Department, Malaysia Space Agency (MSA), Department of Agriculture and at the ground. The expected outcome is get the influential parameters to detect RPW infestation. The contribution of this study is to help identify the factor that influence Red Palm Weevil infestation on coconut trees for further investigation and tree monitoring.

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