



UNIVERSITI TEKNOLOGI MARA

**EVALUATING THE HEALTH AND DISEASE
LEVEL OF OIL PALM TREES USING
VEGETATION INDICES**

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Thesis submitted in fulfilment of
requirements for the degree of
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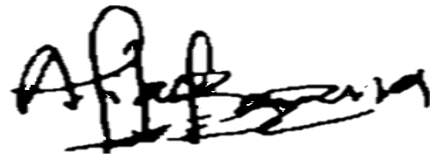
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AUTHOR'S DECLARATION

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

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ABSTRACT

The oil palm vegetation in Malaysia plays a significant role in the country due to the economic growth, and it must be well managed to help the plant produce healthy yields. When the oil palm trees grow widely, it will be challenging to monitor manually due to energy, cost, and time constraints then will cause the plants to be diseased and not grow well. Therefore, this study aims to (i. classify the vegetation health of oil palm trees using the vegetation indices, (ii. identify the chlorophyll content using canopy chlorophyll content index (CCCI), and (iii. determine the relationship between the vegetation health and chlorophyll content of oil palm trees plantation. The method in this study is to classify the disease symptom of oil palm trees from Sentinel-2B using the vegetation indices. Then compute the chlorophyll content with different vegetation indices that indicate the condition of the oil palm plantation. Therefore, the regression analysis is used to perform the relationship between oil palm disease symptoms and chlorophyll content then execute the result of oil palm trees condition either healthy or vice versa. This study is performed fully in Python language. Otherwise, this study expects that the oil palm tree's health and disease level can be detected using the Remote Sensing technique and helps the industry produce quality and good results from the oil palm tree and impact the country's economy.

KEYWORDS: Remote Sensing, Oil palm tree, Health, Diseased, Vegetation Indices, Machine Learning (ML), Support Vector Machine (SVM)

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