UNIVERSITI TEKNOLOGI MARA

ASSESSING THE SOIL NUTRIENTS OF HARUMANIS USING REMOTELY SENSED INDICES AND FERTILIZER MOVEMENT

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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 acknowledge 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, regulation the conduct of my study and research.

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ABSTRACT

The integration of remote sensing and geographical information system (GIS) are used to determine the condition and quality production of crops which is Harum Manis mango. Soil fertilization is the most important factor to ensure the productivity of plant successful. The fertilization must be applied with the accurate amount depends on the plant needs. Besides that, the amount of each nutrient must be balance each other. Due to soil sampling, laboratory analyst consume too much cost and time also elevation of crop affecting the production of Harum Manis mango, it is resulting for obtaining the remotely sensed indices and fertilizer movement to helps laboratory analyser to analyst the macronutrient such as Nitrogen (N), Phosphorus (P) and Potassium (K) in order to reduce cost and time taken. The aim of this study is to assess the soil nutrient of Harumanis from remotely sensed indices with fertilizer movement in UiTM Arau, Perlis. Regarding the aim, the objectives contributed for this study are i) To determine the relationship between soil nutrient (N, P, K) of Harumanis with remotely sensed by using NDVI and SAVI method; ii) To assess the soil nutrient of Harumanis from remotely sensed indices with fertilizer movement in UiTM Arau, Perlis. The study area of this research was selected in the Harum Manis crop in UiTM Perlis. This study only concentrates on relationship between N, P and K soil elements with SAVI index, NDVI index and elevation of Harum Manis crop. For overview, the methodology implemented for this research involves i) ground observation for the elevation of Harum Manis crop and obtaining SPOT 5 satellite image; ii) data processing which is obtaining the SAVI and NDVI indices also fertilizer movement on Harum Manis crop and iii) data analysis which include relationship between SAVI and NDVI indices with soil nutrient and relationship between fertilizer movement with elevation. The result shows that the coefficient of R^2 for SAVI is N = 0.752, P = 0.868, K = 0.878 and coefficient of R^2 for NDVI is N = 0.639, P = 0.781, K = 0.840. The range of the elevation of Harum Manis that consists the biggest amount of accumulated nutrient which are between 5 – 10 meters, 50 – 65 meters and 70 – 89.95 meters high.

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