UNIVERSITI TEKNOLOGI MARA

SOIL ORGANIC CARBON USING REMOTE SENSING TECHNIQUE AND MULTIVARIATE REGRESSION METHOD

MOHAMAD ARIFF BIN MOHAMAD ASRI

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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.

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	:	Mohamad Ariff bin Mohamad Asri
Student I.D. No.	:	2016490402
Programme	:	Bachelor of Surveying Science and Geomatics– AP220
Faculty	:	Architecture, Planning and Surveying
Thesis	:	Soil Organic Mapping using Remote Sensing Technique and Multivariate Regression Method
Signature of Student	:	……..
Date	:	July 2019

ABSTRACT

Organic is the term use to represent the materials that combined with or derived from living organisms. The quantity of organic matter in soil is frequently used as an indicator of the possible sustainability in a soil system. Soil organic matter was significant part in nutrient cycle and fixing soil structure. Organic carbon in soil was important to build up good health in soil environment and vital in supplying the needs of the ecosystem. This project aims to identify the Soil Organic Carbon (SOC) distribution based on multivariate regression model. This project was used Landsat 8 (OLI) satellite imagery to estimate SOC distribution using remote sensing technique and soil sampling in the District of Arau, Perlis. There were 20 soil sampling collected randomly using a handheld Global Positioning System (GPS) unit to the location the of the soil sampling points. The satellite data extract spectral indices, NDVI and BSI. All the values will used to assess spatial distribution of SOC at the study area by testing in the multivariate regression model. The result of regression analysis between the observed and predicted SOC using $R^2 = 0.54$ value was showed 54% variance of observed SOC can be explained by predicted SOC and it is shows the value is in level of moderate strength of relationship. This information of this study can gave advanced understanding by using the remote sensing approach which had many advantages regarding conventional approach before would be important technique thus increase the effectivity of the soil management method.

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