

**UNIVERSITI TEKNOLOGI MARA**

**DETERMINATION OF NDVI USING  
LANDSAT 8 SATELLITE IMAGERY  
DATA AND ITS RELATIONSHIP  
WITH CHLOROPHYLL A AND  
CHLOROPHYLL B CONTENT IN  
TERRESTRIAL PLANT SPECIES  
LEAVES AT HUTAN SEMARAK IN  
UiTM PERLIS**

**NUR ATIQA BINTI OTHMAN**

Thesis submitted in partial fulfillment of the  
requirements for the degree of  
**Bachelors of Science**  
**(Biology)**

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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 indicate 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.

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Name of Student : Nur Atiqah Binti Othman

Student I. D. No. : 2016399481

Programme : Bachelor of Science (Hons. Biology) – AS201

Faculty : Applied Sciences

Thesis Title : Determination Of NDVI Using Landsat 8  
Satellite Imagery Data And Its Relationship  
With Chlorophyll A And Chlorophyll B Content  
In Terrestrial Plant Species Leaves At Hutan  
Semarak In UiTM Perlis

Signature of Student : .....

Date : July 2019

## ABSTRACT

Chlorophyll is the most important molecules that are necessary to initiate photosynthesis process and also serves as vegetation's stress indicator. Nowadays, the chlorophyll content can be estimated by using satellite imagery data which offers less time-consuming and convenient method. Remote sensing technology is widely used in estimating the chlorophyll content. The main objectives of this study are to identify the chlorophyll content using satellite imagery data and laboratory measurement for different species of plants at UiTM Perlis, and also to determine the relationship between vegetation indices from satellite imagery data and measurement of chlorophyll content in the laboratory for different vegetation species within study area. Chlorophyll content will be retrieved by using NDVI from Landsat 8 application. Spectrophotometric method also applied in determination of chlorophyll content for leaves sample which the chlorophyll pigment will be extracted from leaf tissue in the laboratory. Then, the chlorophyll extracts will be analyze using spectrophotometric analysis, by measuring absorbance at particular wavelength and using simultaneous equations to calculate the concentration of the chlorophyll pigment. The result shows that each different species have different concentration of chlorophyll content. The result of OIF indicates that band combination of 2-5-6 as the most suitable band to map vegetation areas. For supervised classification, all three Classifier (Minimum Distance Classifier, Spectral Angle Classifier and Spectral Correlation Classifier) gives same result with 80% of accuracy assessment and 0.775 of Kappa Statistic. The relationship between NDVI and determination of chlorophyll content in the laboratory is measured by using SPSS Application. While, the NDVI increases with increasing chlorophyll content since there is a positive relationship between NDVI and chlorophyll content that measured in the laboratory in different species. Therefore, vegetation indices in remote sensing application can helps to detect chlorophyll content of vegetation with combination of laboratory measurement.

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