

UNIVERSITI TEKNOLOGI MARA

**APPLICATION OF LANDSAT 8
SATELLITE IMAGERY DATA FOR
MAPPING VEGETATION AND
LAND COVER CLASSES –
A CASE STUDY AT UiTM PERLIS**

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Thesis submitted in partial fulfilment
of the requirements for the degree of
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(Biology)**

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AUTHOR'S DECLARATION

I declare that the work in this 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 Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The lack of research study done within Universiti Teknologi Mara (UiTM) Perlis Branch especially regarding to the trees distribution caused the advent of this research to be carried out. This research aims to study the distribution of trees by identifying trees species, and examine the applicability of Landsat 8 satellite imagery data in monitoring the trees distribution at UiTM Perlis. It specifically focuses the sampling data collection at Hutan Semarak and Tasik Ilham. The methods involve are optimum index factor (OIF), normalized difference vegetation index (NDVI), classification and accuracy assessment to validate the data. All the method has been processes by using ArcGIS and ERDAS Imagine software. The distribution pattern of each trees species was random distribution. The selected species of trees that have been identified within UiTM Perlis including *Hevea* sp., *Microcos* sp., *Cerbera* sp., *Diptrocarpus* sp., *Pterocarpus* sp., *Polyalthia* sp., *Cassia* sp., *Cocos* sp., *Roystonea* sp., *Peltophorum* sp., and *Casuarina* sp., and other land cover classes including building, court, field, lake, parking and road. The best band combination is (2-5-7) with the highest value of OIF is 112312.709 and the lowest value of OIF value is (2-3-4) at 814.258. NDVI red with range of 0.010 – 0.503 is more sensitive towards trees compared to green NDVI with range of 0.015 – 0.444. The Minimum Distance Classifier has produced the highest value of overall accuracy assessment and overall kappa statistics which is 73.33% and 0.7030. Compared to the Spectral Correlation Mapper Classifier recorded value the lowest value of overall accuracy assessment and overall kappa statistics which is 70.00% and 0.6674. From the overall result, Landsat 8 has potential in mapping trees distribution within the study area.

Keywords: trees distribution, remote sensing, Landsat 8, UiTM Perlis

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