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Leaf Area Index Estimation of Rubber Tree Using Drone Based Multispectral Images

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AUTHOR'S DECLARATION

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

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ABSTRACT

Unmanned Aerial Vehicle (UAV) remote sensing has opened the door to new sources of data to effectively characterize vegetation metrics at very high spatial resolution and at flexible revisit frequencies. Successful estimation of the leaf area index (LAI) in precision agriculture with a UAV image has been reported in several studies. Rubber growth is important to take care to ensure the absorption of carbon dioxide can be increased. However, in this study there are some area not fully covered by rubber trees. To measure how much area had been covered and does not been covered by the rubber trees, LAI measurement can be used to calculate the canopy. The aim of this study is to evaluate leaf area index on rubber leaves using an unmanned aerial vehicle images at Research Station RRIM, Malaysian Rubber Board (MRB) Kota Tinggi, Johor and the objectives is to produce Leaf Area Index map using drone based multispectral images and to determine healthiness of rubber tree based on leaf area index map. The methods for extracting the vegetation LAI is the vegetation index method. Leaf area index can be identified by the red, blue, green band and little at the near infrared band with using raster calculator. As a result, the map LAI for rubber tree using drone based multispectral images will produce and the healthiness of rubber tree can be identify based on the leaf area index map.

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