

**PERBANDINGAN AKURASI ESTIMASI KERAPATAN
KANOPI POHON MENGGUNAKAN SALURAN TUNGGAL,
INDEKS VEGETASI DAN MODEL *FOREST CANOPY
DENSITY* BERBASIS CITRA LANDSAT-8
(Lokasi Sebagian Hutan Rawa Gambut Provinsi Riau)**

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INTISARI

Suaka Margasatwa Bukit Batu terletak di hutan rawa gambut Kabupaten Bengkalis Provinsi Riau. Lokasi ini memiliki kondisi hutan yang luas dan heterogen dengan kerapatan kanopi pohon yang bervariasi. Perolehan informasi kerapatan kanopi pohon dapat menggunakan teknologi penginderaan jauh salah satunya citra Landsat-8. Teknologi penginderaan jauh mengalami kemajuan yang mendorong munculnya berbagai metode pengolahan citra digital untuk estimasi kerapatan kanopi pohon. Tujuan penelitian ini yaitu membandingkan hasil akurasi tiap metode dalam estimasi kerapatan kanopi pohon dan mengetahui metode yang terbaik untuk pemetaan kerapatan kanopi pohon di lokasi kajian Suaka Margasatwa Bukit Batu.

Metode yang digunakan dalam estimasi kerapatan kanopi pohon diantaranya; saluran tunggal (saluran hijau, merah, dan inframerah dekat), indeks vegetasi (*Normalized Difference Vegetation Index* (NDVI), *Soil Adjusted Vegetation Index* (SAVI), dan *Modified Soil and Atmospheric Resistant Vegetation Index* (MSARVI)), dan model *Forest Canopy Density* (FCD) yang menggunakan empat indeks seperti *Vegetation Index* (VI), *Bare Soil Index* (BI), *Shadow Index* (SI), dan *Thermal Index* (TI) yang diintegrasikan bersama. Nilai piksel tiap metode kemudian dilakukan analisis regresi dengan data lapangan sehingga mendapatkan persamaan empiris untuk estimasi kerapatan kanopi pohon. Hasil model estimasi kerapatan kanopi pohon setiap metode yang diperoleh kemudian dilakukan uji akurasi menggunakan *standard error of estimates* (SE).

Hasil uji akurasi menunjukkan masing-masing metode; saluran hijau 73,66%, saluran merah 75,63%, saluran inframerah dekat 75,26%, NDVI 79,42%, SAVI 82,01%, MSARVI 82,65%, dan model FCD 81,27%. Perbandingan hasil uji akurasi dari ketujuh metode menunjukkan MSARVI yang terbaik untuk estimasi kerapatan kanopi pohon berbasis citra Landsat-8 di lokasi kajian. Hasil estimasi kerapatan kanopi pohon dengan metode MSARVI menunjukkan tingkat kerapatan di lokasi kajian didominasi 60-70 % yang tersebar merata.

Kata Kunci: Kerapatan Kanopi Pohon, Saluran Tunggal, Indeks Vegetasi, FCD.

**COMPARISON OF ACCURACY FOR ESTIMATING TREE
CANOPY DENSITY USE SINGLE BAND, VEGETATION
INDICES, AND FOREST CANOPY DENSITY (FCD) MODEL
BASED ON LANDSAT-8 IMAGERY
(Location A Part Peat Swamp Forests in Riau Province)**

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ABSTRACT

Suaka Margasatwa Bukit Batu is located in the peat swamp forests in Bengkalis, Riau province. This location has conditions of a typical large forest and is heterogeneous with varied density of the tree canopy. Acquisition of a tree canopy density information may use remote sensing technology such as Landsat-8 imagery. Remote sensing technology progressed to encourage the emergence of digital image processing methods to estimate the tree canopy density. The purpose of this research is to compare the results of accuracy of each method for estimating the tree canopy the density and determine best method for mapping the tree canopy density at the site of research.

The methods used in the estimation of the tree canopy density are; Single band (green, red, and near-infrared band), vegetation indices (Normalized Difference Vegetation Index (NDVI), Soil Adjusted Vegetation Index (SAVI) and Modified Soil and Atmospheric Resistant Vegetation Index (MSARVI)), and Forest Canopy Density (FCD) model which uses four indices such as Vegetation index (VI), Bare Soil index (BI), Shadow index (SI), and Thermal index (TI) integrated together. The pixel values of each method was then performed upon a regression analysis to field data to obtain empirical equations to estimate the tree canopy density. The results of the model estimation tree canopy density of each method was then tested upon the accuracy of estimate using Standard Error (SE).

The test results show that the accuracy of each method; green 73.66%, red 75.63%, near-infrared 75.26%, NDVI 79.42%, SAVI 82.01%, MSARVI 82.65%, and FCD model 81.27%. Comparison of accuracy results from the seventh methods used indicated that MSARVI is the best method to estimate tree canopy density based on Landsat-8 at the site of research. Estimation tree canopy density with MSARVI method showed that the canopy density at the site of research predominantly 60-70% which spread evenly.

Key words: *Tree canopy density, single band, vegetation indices, FCD.*