

CITRA AQUA MODIS UNTUK IDENTIFIKASI LAHAN PERTANIAN BASAH DI PULAU JAWA DENGAN TRANSFORMASI INDEKS VEGETASI

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INTISARI

Citra Aqua MODIS merupakan citra penginderaan jauh yang relatif baru dan memiliki 36 saluran. Saluran 1 sampai 7 mempunyai kemampuan untuk kajian daratan. Kemampuan citra Aqua MODIS yang menyajikan informasi skala global, maka daerah penelitian yang dipilih satu Pulau Jawa. Tujuan penelitian ini yaitu mengkaji citra Aqua MODIS untuk identifikasi lahan pertanian basah berdasarkan transformasi NDVI (*Normalized Difference Vegetation Index*) dan EVI (*Enhanced Vegetation Index*) serta mengetahui perbandingan nilai indeks tingkat kehijauan vegetasi (THV) hasil transformasi EVI dengan NDVI pada lahan pertanian basah.

Penelitian ini menggunakan citra satelit Aqua MODIS perekaman 30 September 2008 level 1B resolusi spasial 250m dan 500m. Selain itu, data kondisi lahan pertanian basah yang diperoleh dari lapangan. Jumlah sampel yang diambil sebanyak 150 titik sampel dengan menggunakan metode *purposive sampling*. Data pendukung berupa peta liputan lahan untuk membantu dalam klasifikasi multispektral penutup lahan. Metode yang digunakan adalah transformasi indeks vegetasi dengan formula: $NDVI = (R_{nir} - R_{red}) / (R_{nir} + R_{red})$ dan $EVI = [(1.5 + L) * (R_{nir} - R_{red})] / (L + R_{nir} + 6 * R_{red} - 7.5 * R_{blue})$.

Hasil yang diperoleh menunjukkan bahwa saluran merah (0.62-0.67 μm), inframerah dekat (0.841-0.876 μm) dan biru (0.459-0.479 μm) dari citra Aqua MODIS mampu memberikan informasi distribusi lahan pertanian basah dengan indeks vegetasi berdasarkan tingkat kehijauan vegetasi. Hubungan antara tingkat kehijauan vegetasi dengan nilai indeks hasil EVI ditunjukkan dengan nilai korelasi yang lebih tinggi yaitu $r = 0.887$ dibandingkan nilai korelasi NDVI ($r = 0.873$). Dari hasil analisa dapat disimpulkan bahwa tingkat kehijauan vegetasi lahan pertanian basah dapat dibedakan lebih tajam oleh EVI dibandingkan NDVI.

Kata Kunci: Aqua MODIS, Lahan Pertanian Basah, Transformasi Indeks Vegetasi.



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Citra aqua modus untuk identifikasi lahan pertanian basah di pulau Jawa dengan transformasi indeks vegetasi

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THE WET AGRICULTURE LAND IDENTIFICATION WITH AQUA MODIS IMAGERY IN JAVA ISLAND USING TRANSFORMATION OF VEGETATION INDEX

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ABSTRACT

Aqua MODIS image is one remote sensing image that is relatively new images, which has 36 bands *i.e.* band 1 to band 7 of the imagery has the ability to observe the land. Aqua MODIS imagery represents the land information in global scale; therefore, the entire of Java Island is selected as the research area. Aims of this research were to investigate the Aqua MODIS ability in identifying the wet agricultural land based on NDVI (Normalized Difference Vegetation Index) transformation and EVI (Enhanced Vegetation Index) and to analyze the comparison of vegetation greenness level as the EVI and NDVI transformation results in wet agricultural land.

This research used Aqua MODIS image acquire remotely sensed on September 30, 2007 that has spatial resolutions at 1B level are 250 m and 500m. The other primary data that had been used was wet agricultural land data as the recently result of field checking. There were 150 samples taken using purposive sampling method. In order to assist the multispectral classification, the land cover map had been used as the supporting data. The applied method vegetation index transformation, with the formula: $NDVI = (R_{nir} - R_{red}) / (R_{nir} + R_{red})$ and $EVI = [(1.5 + L) * (R_{nir} - R_{red})] / (L + R_{nir} + 6 * R_{red} - 7.5 * R_{blue})$.

The result of the research displayed that the red band (0.62-0.67 μm), near infrared band (0.841-0.876 μm) and blue band (0.459-0.479 μm) of the imagery were able in representing the information of wet agricultural land distribution using vegetation index based on vegetation greenness level. The relationship between vegetation greenness level as the EVI and NDVI transformation results in wet agricultural land are that EVI has higher correlation value namely $r=0.887$, than NDVI has ($r=0.873$). From result of inferential analysis that the greenness level of wet agricultural land can be diverged sharper by the EVI imagery than NDVI one.

Keywords : Aqua MODIS, Wet Agricultural Land, Vegetation Index Transformation.