

**PEMODELAN SPASIAL TUTUPAN VEGETASI UNTUK PENGENDALIAN EROSI TANAH PADA DAERAH TANGKAPAN AIR WADUK PANGLIMA BESAR SOEDIRMAN, PROVINSI JAWA TENGAH, INDONESIA**

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**INTISARI**

Konversi lahan hutan pada DAS Serayu, Provinsi Jawa Tengah, Indonesia untuk pertanian dan penggunaan lainnya menyisakan vegetasi sebesar 0,73% saja. Hal ini memicu sejumlah permasalahan seperti erosi tanah, longsor dan sedimentasi sungai. Pengendalian kerusakan lingkungan perlu dilakukan melalui program konservasi yang tepat. Penelitian ini bertujuan untuk mengetahui sebaran erosi tanah dan efektifitas pengendalian erosi tanah menggunakan tutupan vegetasi. Pemodelan erosi tanah dan hubungannya dengan tutupan vegetasi dilakukan menggunakan model RUSLE (Revised Universal Soil Loss Equation) di Arc GIS 10.8 melalui lima skenario tutupan vegetasi yaitu 10%, 15%, 20%, 25%, dan 30%. Parameter yang digunakan untuk menghitung erosi tanah adalah faktor erosivitas hujan (R), faktor erodibilitas tanah (K), faktor panjang lereng dan kemiringan lereng (LS) dan faktor pengelolaan tanaman (C) dan praktik konservasi lahan (P). Hasil penelitian menunjukkan bahwa penurunan total laju erosi dari kondisi aktual ke kondisi pemodelan tutupan vegetasi 30% adalah 82,25 ton/ha/tahun. Peningkatan tutupan vegetasi 5% menurunkan laju erosi sebesar 10,20 ton/ha/tahun. Tingkat bahaya erosi tanah kategori tinggi dan sangat tinggi ditemukan di wilayah DAS bagian utara, barat, dan timur. Hasil penelitian ini memberi gambaran berapa persen tutupan vegetasi yang diperlukan untuk mengendalikan laju erosi tanah ke batas nilai toleransi..

**Kata Kunci:** Erosi tanah, Model RUSLE, GIS, Daerah Aliran Sungai, Tutupan vegetasi

SPATIAL MODELING OF VEGETATION COVER FOR SOIL EROSION  
CONTROL IN CATCHMENT AREA OF PANGLIMA BESAR SODERIMAN  
RESERVOIR, CENTRAL JAVA PROVINCE, INDONESIA

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**ABSTRACT**

*Deforestation in the Serayu watershed, Central Java province, Indonesia for agriculture and other uses leaves only 0.73% of vegetation. It has triggered a number of problems such as soil erosion, landslides and river sedimentation. Environmental damage control needs to be applied through appropriate conservation programs. This study was aimed to determine the distribution of soil erosion and the effectiveness of soil erosion control by using vegetation cover. Soil erosion modelling and its correlation to vegetation cover was performed by using the Revised Universal Soil Loss Equation (RUSLE) model in Arc GIS 10.8 through five scenarios of vegetation cover, namely 10%, 15%, 20%, 25%, and 30%. The parameters used to calculate erosion were rain erosivity factor (R), soil erodibility factor (K), slope length factor (LS) and crop management factor (C) and land conservation practices (P). The results of this study showed that the total reduction in erosion rate from the actual condition to the 30% vegetation cover modelling condition was 82.25 tons / ha / year. The increase of 5% vegetation cover reduced the soil erosion rate by 10,20 tons / ha / year. High and very high soil erosion hazard levels were found in the northern, east, and west watershed areas. The results of this study illustrate what percentage of vegetation cover was needed to control the rate of soil erosion to the tolerance value limit.*

**Keywords:** *Soil erosion, RUSLE model, GIS, Watershed, Vegetation cover*