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Erodibilitas Tanah pada Topsoil dan Subsoil di Dlingo, Bantul
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INTISARI

Penelitian ini bertujuan untuk menganalisis hubungan sifat fisika dan bahan organik tanah dengan erodibilitas, membandingkan indeks erodibilitas (K) antara lapisan *topsoil* dan *subsoil*, serta menganalisis pengaruh formasi geologi, penggunaan lahan, dan sudut lereng terhadap indeks K di Kecamatan Dlingo, Bantul. Penelitian dilakukan melalui *stratified purposive sampling* pada 27 plot yang mewakili tiga formasi geologi, tiga penggunaan lahan, dan tiga kelas sudut lereng, dengan pengambilan sampel pada lapisan *topsoil* (0-20 cm) dan *subsoil* (20-40 cm), sehingga diperoleh 54 sampel. Indeks K ditentukan berdasarkan karakteristik tekstur, struktur, permeabilitas, dan bahan organik menggunakan persamaan Wischmeier & Smith. Analisis data meliputi korelasi Spearman, uji Wilcoxon *signed-rank*, ANOVA faktorial, dan uji lanjut Tukey HSD. Hasil penelitian menunjukkan bahwa nilai rata-rata indeks K *topsoil* sebesar 0,19 (rendah), sedangkan *subsoil* sebesar 0,21 (sedang). Pada *topsoil*, permeabilitas berhubungan negatif dan signifikan dengan indeks K (ρ = -0,644; $p < 0,001$). Pada *subsoil*, fraksi pasir dan debu berhubungan positif, sedangkan fraksi lempung dan permeabilitas berhubungan negatif secara signifikan dengan indeks K. Perbedaan indeks K antara *topsoil* dan *subsoil* tidak signifikan pada sawah, tegalan, maupun kebun campur. Penggunaan lahan berpengaruh nyata terhadap indeks K *topsoil*, sedangkan pada *subsoil* tidak terdapat pengaruh faktor utama, tetapi terdapat interaksi nyata antar faktor. Hasil penelitian menunjukkan bahwa variasi erodibilitas tanah di Dlingo lebih dipengaruhi oleh karakteristik fisika tanah dan kombinasi faktor lingkungan daripada satu faktor secara tunggal.

Kata kunci: erodibilitas tanah, formasi geologi, *subsoil*, *topsoil*

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ABSTRACT

This study aims to analyze the relationship between soil physical properties, organic matter, and soil erodibility; compare the erodibility index K-factor between topsoil and subsoil layers; and analyze the effects of geological formation, land use, and slope angle on the K-factor in Dlingo District, Bantul. The research was conducted using stratified purposive sampling across 27 plots representing three geological formations, three land use types, and three slope classes. Soil samples were collected from both topsoil (0–20 cm) and subsoil (20–40 cm) layers, yielding a total of 54 samples. The K-factor was determined based on texture, structure, permeability, and organic matter characteristics using the Wischmeier & Smith equation. Data analysis included Spearman's correlation, the Wilcoxon signed-rank test, factorial ANOVA, and Tukey's HSD post-hoc test. The results showed that the mean K-factor for topsoil was 0.19 (low), while for subsoil it was 0.21 (moderate). In the topsoil, permeability had a significant negative correlation with the K-factor (ρ= -0.644; $p < 0.001$). In the subsoil, sand and silt fractions had significant positive correlations, whereas clay fraction and permeability had significant negative correlations with theK-factor. The difference in the K-factor between topsoil and subsoil was not significant across paddy fields, dry fields, or mixed gardens. Land use significantly affected the topsoil K-factor. In contrast, no main factor significantly influenced the subsoil K-factor, though a significant interaction among factors was observed. These findings indicate that variations in soil erodibility in Dlingo are driven more by soil physical characteristics and a combination of environmental factors rather than any single factor alone.

Keywords: geological formation, subsoil, soil erodibility, topsoil