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SIGNIFICANCE OF PEDOGENETIC PROCESSES FOR DELINEATION OF EROSION PRONE AREAS IN INDONESIA

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Many methods have been developed for predicting soil loss due to erosion, but it is often that those methods are not practicable due to many parameters involved. A method to predict erosion hazard has been developed, which is based on the relationship between pedogenetic processes with soil characteristics determining soil loss in Sumberjaya area of West Lampung, Indonesia. The principle component analysis (PCA) has been used to screen up the most determining soil parameters to erosion. The analysis has come up with the result that 5 variables of soil characteristics including bulk density, total porosity, hydraulic conductivity, quick drainage pores and organic carbon content have affected the erosion rate. The first two eigenvectors of the PCA explain more than 80% of the data variability, except the bulk density, total porosity, and quick drainage pores. The measured soil loss data from previous field study was used to relate with the soil parameters. The erosion prone areas have been delineated into 4 classes i.e. negligible, low ($<$ 2 t/ha/yr), medium (2-10 t/ha/yr) and high ($>$ 10 t/ha/yr). The classes (low, medium and high) have been derived from PCA analysis and one from the analysis and interpretation of the landform (negligible). The soils of Sumberjaya area vary spatially with parent materials. Soils derived from volcanic ash materials have low erosion rate, while those derived from tuff, basalt and granite have relatively high rate. The spatial distribution of the erosion prone area has been defined, which was bout 37% of the total area of 47,800 ha is susceptible to erosion, 29% with medium erosion rate and 30% with low erosion rate. Only about 4% of the area, the erosion is negligible. Keywords: Erosion prone; Pedogenetic processes; Soil characteristics; Principle component analysis (PCA) Note: The study is part of ASB

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