

STUDY OF SOIL DEGRADATION FOR BIOMASS PRODUCTION ON PLANTATION AND DRYLAND FIELDS IN KEPUHARJO VILLAGE CANGKRINGAN SUB-DISTRICT SLEMAN REGENCY

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ABSTRACT

In Kepuharjo Village, sand mining activities and lack of upstream vegetation cover have reduced soil productivity and increased erosion risk. This study aims to determine the status of soil degradation for biomass production on plantation and dryland fields in Kepuharjo village. The method used involved surveys and purposive sampling based on eight land system units obtained from an overlay of land use maps and slope maps. Sampling was conducted across various combinations of plantation and dryland land uses with slopes ranging from flat to steep. The determination of soil degradation status refers to Government Regulation No. 150 of 2000 using the matching and scoring method. The parameters used include solum thickness, surface rockiness, soil fraction composition, bulk density, total porosity, pH, permeability, microbial count, redox potential, and electrical conductivity. The analysis results showed that the potential degradation levels included light degradation potential (PR.I) covering an area of 298.05 ha, moderate degradation potential (PR.III) covering an area of 463.08 ha, and high degradation potential (PR.IV) covering an area of 1.69 ha. The soil degradation status consists of namely light degradation status (R.I) covering an area of 374.64 ha or 76.82% and moderate degradation status (R.II) covering an area of 112.86 ha or 23.18% with limiting factors of surface rockiness (b), fraction composition (f), bulk density (d), porosity (v), and permeability (p). Recommended include removing surface rocks, implementing soil conservation practices, planting deep-rooted vegetation, and adding organic matter and clay to improve soil structure and permeability.

Keywords: land, soil, degradation, biomass production, survey, Kepuharjo