

Flood-Erosion Rate Assessment (FERA) By Using Revised Universal Soil Loss Equation (RUSLE) In Kota Belud Area, Sabah

ABSTRACT

Soil erosion has been a persistent and significant environmental issue in numerous global regions for an extended period of time. The primary factors contributing to this phenomenon typically include deforestation, the expansion of agricultural production, and development initiatives that neglect considerations of environmental sustainability. The importance of evaluating soil erosion necessitated a comprehensive analysis of the effects and forecasting of soil erosion in the Kota Belud region in Sabah, Malaysia. The integration of the Revised Universal Soil Loss Equation (RUSLE) with a Geographical Information System (GIS) was employed to ascertain the parameters of the RUSLE model. The RUSLE incorporates six key characteristics, namely the rainfall erosion factor (R), soil erodibility (K), slope length and steepness (LS), soil management (C), and conservation measures (P). The calculated effects of these elements were determined. The classification of potential soil erosion in the study area was determined to be moderate, accounting for 44% of the total area of 6237 hectares. A subset of the population was classified as high-risk, constituting 22% of the whole area spanning 3232 hectares. Within this high-risk category, 11% of the area, equivalent to around 1608 hectares, was found to be susceptible to severe erosion. Additionally, 4% of the total area, including 501 hectares, was identified as being exposed to this erosion. The findings indicate that the incorporation of Geographic Information Systems (GIS) has the potential to facilitate spatial analysis on a regional level