

GIS IN SOIL EROSION ASSESSMENT: A CASE STUDY IN VICTORIA CATCHMENT

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A study was conducted with the objective of prioritization of erosion prone areas within the Vitoria catchment. Rainfall erosivity, soil erodibility, length of the slope and effect of land use were used to generate the soil erosion hazard map. In parallel erosion hazard zonation, estimating the soil loss was done using the Universal Soil Loss Equation within a Geographical Information System. The Catchment area was demarcated using Digital Elevation Model of the area which was developed based on contour information at 1:10,000 scale. Erosioivity values pertaining to the area was obtained from the agro-ecological database in the Natural Resources Management Centre, Peradeniya. Soil erodibility values for respective soils and effect of land uses were obtained from published data.

Spatial analysis was conducted in a raster environment and the resultant raster data layer was reclassified into five classes which represents five different soil erosion potentials under present land use. The un-validated results show that 13.6% of lands within the catchment are falling in “Extremely High, Very High and High” soil erosion potential classes while only 86.4% of land is falling in “Low” class. The results of the soil erosion assessment indicated that the average annual soil loss within the catchment is extended up to 852.2 t/ac/yr. The greatest soil loss was observed in reservoir banks and areas with high slope and elevation. Results emphasized a detailed field survey in the area showing high risk for soil erosion and immediate actions to be taken to control land degradation. The steepest slopes showed high risk of soil erosion and therefore recommended that additional study be undertaken to establish the suitable soil and water conservation measures and land use changes within the whole catchment.

Key words: GIS, Soil erosion, Soil erosion hazard map, Universal soil loss equation