

**ASSESSMENT AND MAPPING SOIL EROSION
RISK HAZARD ZONES IN ANURADHAPURA,
POLONNARUWA AND VAVUNIYA DISTRICTS
OF SRI LANKA**

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By

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ABSTRACT

Soil erosion is a serious problem in Sri Lanka which has intensive agriculture, especially in Dry Zone of Sri Lanka. Therefore a study was carried out in Anuradhapura, Polonnaruwa and Vavuniya Districts of Sri Lanka to assess and map soil erosion risk hazard zones using Revised Universal Soil Loss Equation (RUSLE). Software used for the analysis included ARCMAP10.3.1, Integrated Land and Water Information System (ILWIS) 3.4 and Environment for Visualizing Images (ENVI) 4.5. All data were made using UTM projection in 44 North datum and discrete GIS files were developed for each of parameters for estimation of annual soil loss rate. Annual soil loss was estimated by interpolating different layers developed for five different factors viz rainfall erosivity (R), soil erodibility (K), land slope and length (LS), crop management (C) and erosion control management practice (P) considered in RUSLE also adopting methods available in scientific literature. Results of study revealed that rainfall erosivity ranged from 130.33 to 1121.57 MJmmha⁻¹hr⁻¹yr⁻¹. Soil erodibility values were generally low over study area, ranging between 0.0 to 0.46 Mg ha h ha⁻¹MJ⁻¹mm⁻¹. Land slope and length ranged from 0.33 to 26.36 and majority of study area had a value less than 10.1. Crop management factor ranged from 0.11 to 1.28. Erosion control management practice factor of study area ranged from 0.0 to 1.0. Thus, estimated annual soil loss was in between 0.00 to 1366.10 tha⁻¹yr⁻¹ in studied three districts. Also, entire Vavuniya District and majority of Anuradhapura District were with less soil erosion risk hazard. However, majority of Polonnaruwa District was with a fairly high soil erosion risk hazard, especially in lower boundary, which has extended from central highlands. Finally, it can be concluded that, more emphasis should be paid to all risk hazard zones of study area, especially to the areas categorized above moderate soil erosion risk category.

Keywords: GIS, Mapping, Revised Universal Soil Loss Equation, Risk hazard zones, Soil erosion.