

APPLICATION OF REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE) MODEL TO ASSESS SOIL EROSION IN 'KALU GANGA' RIVER BASIN

D.L.D. Panditharathne, N.S. Abeysingha, and K.G.S. Nirmanee

Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

Soil erosion is one of the main forms of land degradation. Erosion contributes to loss of agricultural land productivity, ecological, and esthetic values of land and it impairs the production of safe drinking water and hydro energy production. Assessment of soil erosion is vital to identify the lands more prone to erosion. Revised Universal Soil Loss Equation (RUSLE) model supported by a geographical information system was used to assess the spatial variability of erosion occurring at *Kalu Ganga* river basin in Sri Lanka. This study used Digital Elevation Model (30 x 30 m), twenty years rainfall data measured at 11 rain gauge stations across the basin; land use and soil maps; and published literature as inputs to the model. The average annual soil loss in *Kalu Ganga* river basin varied from 0 to 134 t ha⁻¹ year⁻¹ and mean annual soil loss was estimated at 0.63 t ha⁻¹ year⁻¹. Based on erosion estimates, the basin landscape was divided into three different erosion severity classes; low, moderate and high. About 1.68% of the areas (4713.92 ha) in the river basin were identified with moderate to high erosion severity (>5 t ha⁻¹ year⁻¹) class which urgently need measures to control soil erosion. Lands with moderate to high soil erosion classes were mostly found in *Bulathsinghala*, *Kuruwita* and *Rathnapura* divisional secretarial divisions. Use of the erosion severity information coupled with basin wide individual RUSLE parameters can help to design land use management practices appropriate and improved management based on the observations, to minimize soil erosion in the basin.

Keywords: *Kalu Ganga* river basin, Revised Universal Soil Loss Equation, Soil erosion, Soil erosion hazard map