

## ASSESSMENT OF SOIL EROSION IN *DEDURU OYA* RIVER BASIN, SRI LANKA USING InVEST SDR MODEL

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Soil erosion is a major threat to agricultural productivity and water quality in river basins. The quantification of human-induced soil loss is an essential step in watershed management in river basins. Therefore, soil erosion in the *Deduru oya* river basin was assessed using the Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) Sediment Delivery Ratio (SDR) model. Revised Universal Soil Loss Equation is embedded in InVEST-SDR model. This study used 30 m x 30 m digital elevation model, 20 years of rainfall data measured at 5 rain gauge stations across the basin; land use and soil maps of the basin; and also published literature as input to the model. The average annual soil loss in *Deduru oya* river basin varied from 0 to 277.25 t ha<sup>-1</sup> yr<sup>-1</sup> and the mean annual soil loss was estimated at 0.27 t ha<sup>-1</sup> yr<sup>-1</sup>. Based on the severity of erosion, the landscape was divided into low (<5), moderate (5-12), and high (>12) severity zones. About 5.6% (145.93 km<sup>2</sup>) area of the river basin was identified as high severity zones and they include Kurunegala, *Galagedara*, *Galhinna*, *Mirissala*, *Keppitigala*, *Dodangaslanda*, *Meegaswewa*, *Panagala*, and *Galkanda* areas. The mean annual sediment export from *Deduru oya* basin was estimated to be 0.18 t ha<sup>-1</sup> yr<sup>-1</sup>, and *Kiribathgalla* and *Bambaragahakanda* had the highest sediment export. The results of the study suggest that the implementation of sustainable watershed management options is essential at least for areas to reduce soil erosion and improve the watershed quality of different watersheds in *Deduru oya* river basin.

**Keywords:** Agricultural productivity, Soil erosion risk, Watershed management