

Estimation of soil loss in Seremban, Malaysia using GIS and remote sensing technique

ABSTRACT

Runoff causes soil loss and is a continuous ecological problem in Seremban, Malaysia. It is crucial to collect data on soil loss for improved agricultural productivity and to manage natural resources effectively. This research maps the distribution and estimates the yearly mean value of soil erosion through the utilization of techniques of remote sensing and GIS by implementing the Revised Universal Soil Equation (RUSLE). To determine the variables of RUSLE's soil loss and analyze them in an integrated GIS environment, we used a scale of 1:50,000 according to criteria of topographic map, Aster Digital Elevation Model (DEM) which has a feature of spatial resolution that extends up to 20 m, a soil map which is digitally programmed with a scale of 1:250,000, and a decade of rainfall records for 12 stations. The data revealed that Seremban records an annual soil loss that ranges from no soil loss in forested areas (Lenggeng - Panti - Ampangan - Seremban) to >100 tone hectare per year in the open area ((Labu - Renggam - Lenggeng). The total annual soil loss is estimated at 883 tonnes/hectare/year and is distributed across different land cover as follows: 198 tonnes from agriculture areas, 39 tonnes from forest areas, and 20.45 from rural areas, 610 tonnes from open area, 12 tonnes from urban areas, and 1.4 tonnes from inland water areas.

Keyword: Soil loss; GIS; Remote sensing; Malaysia