Assessment of soil erosion rate and hot spot areas using RUSLE and Multi-Criteria Evaluation Technique: A Case Study at Jedeb Watershed

Arega Mulu[1] and Tseganeh Getenet[2]

[1]Debre Markos University College of Technology
[2]Debre Markos University

September 24, 2020

Abstract

Soil erosion is a difficult forceful practice by which useful surface soil is removed, conveyed, and stored at a detached place causing in the exposure of subsurface soil and siltation in reservoirs and natural streams. The core objective of this study is to evaluate soil erosion rate and to identify soil erosion hotspot areas using RUSLE and Multi-criteria Analysis. Based on the RUSLE model the potential annual soil loss of the watershed ranges from 0.0 to 706.7 ton/ha/yr and the mean annual soil loss rate is 27.7 ton/ha/yr. From the total area of the watershed (859.2 km2), 63 km2 are potential areas for gully expansion. The overall analysis indicated that 4.8% of the total watershed is highly sensitive; 54.24% is moderately sensitive; 17.69% is marginally sensitive while, 23.28% is currently not sensitive and the remaining 0.06% was a constraint to erosion. Hence, the Area which is categorized under a highly and moderately sensitive class needs direct mediation for better conservation planning by allowing for known priority classes and hotspot areas.

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