



Assessment of Soil Losses from Rills and Interills of Cultivated Fields Using Field Methods in Gelda Watershed, Ethiopia.

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Soil erosion is one of the greatest challenges for the agricultural economic sector in particular and the general economic development for a country like Ethiopia in general. Despite this challenge, there have been limited studies on the amount of soil eroded at watershed level even though soil erosion prediction for the whole country has been done based on data collected from few erosion study sites. This led to ineffective soil conservation planning and the land degradation problem is still a threat to the country economy. This calls for an estimation of erosion rate at watershed level with easily manageable, cost effective method that enables the local farmers to participate in data collection so that they have an understanding of the ongoing erosion. The objective of this research was to estimate the rill and interrill erosion rate in Gelda Watershed, South Gondar, Ethiopia using field method (volumetric measurement of rills and interills). The dominant soil types were nitisols and regosols. The findings indicate that soil loss due to rills and interills in the cultivated fields was 50.25 ton/ha/yr. The contribution of rills in the upslope, middle slope and down slope was 7%, 15% and 78%, respectively to the overall rill erosion. In general, the contribution of rills to the overall erosion rate was 54%. The rill density for the nitisols and regosols was 349 and 294 m/ha respectively indicating higher rate of erosion in the former soil type. Average area of actual damage due to rills in the watershed was 113 m²/ha. The most intense erosion rate was recorded in teff field with an erosion rate of 73 tons/ha/yr followed by millet 35 tons/ha/yr. Maize fields showed the least erosion rate of 31 tons/ha/yr. The most important factors contributing to erosion rate variation among crops were time of sowing, hoeing practice, crop morphology and deliberate compaction practice that was common on teff field. The contribution of agroforestry practices (woodlots, scattered trees on farmland and farm boundaries) in reducing both rill and interrill erosion was enormous. Erosion rate in the agroforestry land use was reduced by 36% from that of the non-agroforestry land use. In order to mitigate the ongoing soil erosion problem the following measures should be taken: 1) emphasis should be given to the expansion of agroforestry systems; 2) teff production should be done on the upper slope areas and gradual transition of production from teff to maize has to be considered taking other factors in to consideration and 3) effective soil conservation practices have to be put in place.