

A Participatory Assessment of Soil Erosion and Farm Management Practices in Northwest Ethiopia

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ABSTRACT

Soil erosion is a widespread problem on cultivated fields in northwest Ethiopia. Plot level survey studies of soil erosion and conservation are few and far fewer have involved farmers in their assessments of the erosion process and farmers' conservation efforts. This paper presents the outcome of a farmer-participatory research conducted at two rural communities, Dubi and Gayta, in Dangila Woreda (district), in the northwestern highlands of Ethiopia. The study estimated the extent of soil erosion from tree root exposure measurements and identified farmers' soil and water conservation (SWC) practices by categorizing the farmers into three income groups: poor, medium and rich households. Data were collected from 31 plots between May and October 2010. Descriptive statistics and analysis of variance (ANOVA) were used to analyze the data. The results indicate average rates of soil erosion to be about 1.26 mm year⁻¹, but rates varied from 1.94 mm year⁻¹ on seriously affected sites to 0.21 mm year⁻¹ on the relatively less affected ones. Also, the rates varied by slope from 1.77 mm year⁻¹ in upstream steep-lands to 0.44 mm year⁻¹ in downstream plain areas and by soil color from 0.8 mm year⁻¹ in fields with black soils to 1.46 mm year⁻¹ in fields with red soils. No statistically significant difference was observed in soil loss between the three household income groups. The farmers used contour farming, traditional ditches, grass and tree planting for SWC purposes. The study concludes that as the extent of soil erosion is highly variable spatially, plot and location specific SWC measures that are designed by considering farmers' indigenous knowledge will be required to control soil loss in the study area. This study demonstrates that participatory plot level tree root exposure assessment provides useful information for soil and water conservation planning.

Keywords: Soil erosion; farmer participation; tree root exposure; conservation; Ethiopia.