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Effectiveness Of Miraba an Indigenous Soil and Water Conservation Measures On Reducing Runoff And Soil Loss In Arable Land Of Western Usambara Mountains

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Soil erosion by water is rampant mainly in mountainous areas of Tanzania leading to environmental hazards, low land productivity, low income and increased poverty. Despite the severity of the soil erosion problem, there is not much quantitative data on the erosion effects and effectiveness of indigenous soil and water conservation (SWC) measures. The consequence is that indigenous knowledge in SWC planning is ignored. The on-farm field experiment was conducted for three years in Migambo village, Lushoto district in Tanzania, to determine the effectiveness of improved Miraba (IM) an indigenous soil erosion control measure on reducing runoff and soil loss. Management practices were tested viz: control that is without any soil conservation measure (C), Miraba alone (M), Miraba with farmyard manure and mulching (MFM) replicated three times in CRD setting. Maize (*Zea mays*) and beans (*Phaseolus vulgaris*) were used as test crops, due to their importance as food crops and the high erosion rates on fields with these crops. The crops were planted in rotation, maize and beans in short and long rains respectively. Gerlach troughs and runoff plots were used to evaluate the physical effectiveness. Results show significant effects of IM against control on crop yields, soil loss, surface runoff and moisture retention. MFM is the most effective measure in reducing soil and water losses followed by MF and M. The results further showed that these management practices can be implemented to reduce soil erosion and nutrient losses in the study area and areas with similar ecological setting. To facilitate adoption of these practices further research works is recommended for identifying economically feasible indigenous SWC measures under different biophysical and socio-economic conditions.