Sustaining water resource use in the degraded environment of the Irangi Hills, central Tanzania

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Abstract

The Irangi Hills in the semiarid central Tanzania are known for their severe land degradation, particularly through soil erosion. This study aims at investigating the dynamics in the local resource management and adaptive farming strategies. A combination of conventional survey methods, participatory analysis, soil description and aerial photo interpretations were used in the analysis of spatial and temporal land-use patterns. Results from the study showed that farmers utilised all possible niches in the landscape with the agricultural practices varying considerably, depending on spatial variations in soil conditions, water availability and retention capacity of the soil. The hard clayey soils were often ploughed at the end of the rainy season, before the soil dried out, to facilitate timeliness of planting in the following growing season, and to enhance water infiltration at the onset of the rainy season. Seasonally waterlogged soils were intensively cultivated and planted late during the growing season, with crops maturing only from groundwater resource. To make effective use of available groundwater resources during the dry season, the droughty and often infertile sands in ephemeral watercourses are used for growing vegetables or sugarcane in sunken holes without additional fertilisers/manure. This suggests that the crops grown obtain sufficient nutrients only from groundwater resources. However, the sustainability of cultivation in these ephemeral waterways is still questionable.