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Performance of Narrow Strips of Vetiver Grass (*Vetiveria zizanioides*) and Napier Grass (*Pennisetum purpureum*) as Barriers against Runoff and Soil Sediment Loss on a Clay Loam Soil (Andosol) in Kenya

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Abstract

The use of narrow grass strips as barriers against runoff and soil loss on steep slopes is a vegetative soil conservation approach that can be applied in developing terraces. The advantage of this approach is that it is cheaper, less labour intensive and takes less land out of production compared to other methods of soil erosion control. In this study runoff plots were used to investigate the performance of narrow strips of Vetiver and Napier grass as barriers against runoff and sediment loss on a clay loam soil (Andosol) in Tatton farm of Egerton University, Kenya, between January 2000 and August 2001. The amount of sediment and runoff from the plots, the depth of sediment deposition along the strips and growth rate of the strips were measured. A total of nine runoff plots, each measuring 16 m long by 2 m wide were used. The study site had an average slope of 8 % and the grass strips were located at the lower end of the plots. The experiment was a randomised complete block design having three blocks with Napier grass strip, Vetiver grass strips and no grass strip (control) as treatments. Compared to the control the runoff from the Napier and Vetiver grass strip plots averaged 46 % and 88 % respectively, while the sediment loss from the plots averaged 8 % and 52 % respectively. Compared to the control the deposition of soil sediment along Napier and Vetiver grass strips was significantly higher. The difference between Napier grass and Vetiver grass, in sediment deposition, was only significant during the first year of the study (2000) but not in the second year (2001). The growth rate in width and height of Napier grass strip was 84 % and 36 % respectively, higher than that of Vetiver grass. Napier grass was more effective in reducing runoff and sediment under the conditions of the study due to its faster growth rate, which enabled it to form a more effective barrier than Vetiver.

Keywords: Grass strips, *Pennisetum purpureum*, runoff, sediment, *Vetiveria zizanioides*