SOIL EROSION PROBLEMS ASSOCIATED WITH DIFFERENT ROAD CONSTRUCTION TYPES IN MOI UNIVERSITY CAMPUS AND SIGOR DIVISION, WEST POKOT DISTRICT, KENYA

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ABSTRACT

This study sought to investigate erosion on roads and the erosional damage on the area bordering the road resulting from road drainage. The study was carried out on 17 road segments in Moi University Campus and on a 42Km stretch of the B4 road in Sigor Division of West Pokot District. The studies were carried out between November 1995 and March 1996.

Between November 1995 and January 1996, 17 road segments on Moi University Campus were surveyed to obtain information on road erosion and the environmental damage resulting from road drainage. The extent of erosion in terms of gullies and rills on the road surface and the roadside drains was used to give erosion and sedimentation indices/classes for each of the roads. Murram roads were found to be less eroded than the dust roads and footpaths.

A more detailed investigation was conducted on a 42 kilometre stretch of the B4 road between Marich and Chesegon Centres in Sigor Division of West Pokot District, between January 1996 and March 1996.

In terms of the lengths of the eroded road surface, the roads of Moi University Campus were more eroded than the B4 road in Sigor Division.

Road drainage facilities were lacking from all the roads of Moi University Campus. However culverts, drifts and mitre drains were used on the B4 road to provide drainage of the run-off from the road surface. The amount of erosion on the road surface was found to depend on the slope of the road, the slope length of catchment and soil erodibility as reflected by the slaking index. The amount of roadside erosion depended on the slope of the road and the soil characteristics of the road segment.

Erosion of the area bordering the road was severe for the B4 road in Sigor Division (a semi arid area) but there was no erosion on areas around roads of Moi University (a high agricultural potential area).

Road drainage structures (culverts, drifts, mitre drains) were found to be effective in protecting the road from erosion. However erosion control measures were generally lacking in the areas outside the road reserves. As a result, serious erosion of the environment was observed for the area around the B4 road of Sigor Division. The use of culverts for drainage of run-off from the road was found to cause more environmental damage than the use of drifts for this purpose.

A GIS vegetation-soil map overlay was conducted for the Chesegon-Sigor area on which the B4 road is located. The overlay was used to predict areas of high soil erosion potential which coincided with the sections identified to have serious gully erosion from field observations. This indicated that GIS analysis could be useful for planning soil conservation works on the areas along the roads.