



Surface Erosion on a Steep Slope under Perennial Fallowing in Bom Jardim County, Rio de Janeiro State

C. F. Mahler, C. A. R. Mendes, A. Granato

1. D.Sc, COPPE, Pos-Doc Uni. Osnabrueck, Dr. Hab.USP, Prof. UFRJ
2. D.Sc. COPPE;UFRJ
3. D.Sc. UFRRJ, Embrapa

The study of surface erosion in the State of Rio de Janeiro is of major importance to the environment, considering the prevailing tropical climate in mountainous areas, shallow soils and abundant vegetation. The purpose of this paper is to present results of a study of soil loss due to surface erosion and its hydrological components on a 60% gradient slope, using a farming-forest and fallowing system. The study was undertaken in a micro-basin in Bom Jardim County over a period of approximately four years, where experimental plots were taken for monitoring these processes and for later calibration of mathematical models. Around 40 tons/ha/year in soil loss was recorded in the plot with a perennial crop and 8 tons/ha in the plot with one year of forest fallowing, with a critical period of erosion between September and March. The USLE model, with revisions proposed by Nearing (1997), indicated a significant difference between the values measured on site and simulated using the model, despite the $R^2 = 0.98$. The WEPP model in this study analysed only the simulation of isolated rainfall events, and even with an $R^2 = 0.60$ obtained a insignificant difference between the data of the model and total of 40 events noted in the plots. Despite the conservationist practices adopted in the region, it was found that the time used in cultivating and fallowing the plots can hinder the maintenance of natural resources in those places, in detriment to the stability of these slopes.