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Sediment Yield Modeling Using an Alternative Environmental Scenario in Northwestern Rio de Janeiro – Brazil

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Abstract

The northwestern Rio de Janeiro (RJ-Brazil) area has been going through deep transformations in its soil use and occupation, which has contributed to increased sediment yield and changes in the soil-water-plant relationship. Because of this picture, this study aims at analyzing the effects of the environmental scenario using reforestation in the areas established by the Article 2 of the Brazilian Forest Code (*CFB*) on the average sediment yield in the period between 2005 and 2007, in relation to the current use and occupation at the Santa Maria creek experimental basin, located in the Municipality of São José de Ubá, in the northwestern Rio de Janeiro. The mathematical model S*oil and Water Assessment Tool* – SWAT, version SWAT2005, named AVSWAT-X was used for sediment yield modeling because of its physical basis and capacity to simulate environmental scenarios. The Digital Elevation Model (DEM), cartographic data on the current soil use and occupation, soil spatialization and its physical-water characteristics, as well as daily and monthly climate and hydrosedimentologic data were needed for the modeling. The results showed that the environmental scenario using *CFB* minimizes sediment yield and the concentration of suspended solids at the Santa Maria creek basin.

Keywords

Brazilian Forest Code. Sediment Yield. Creek.