Geophysical Research Abstracts
Vol. 19, EGU2017-19100, 2017
EGU General Assembly 2017

Runoff and initial erosion assessment in fruit tree crops and improved forage pastures in the slopes of the Irazu Volcano (Costa Rica)

Miguel Marchamalo (1) and Beatriz González-Rodrigo ()

(1) Technical University of Madrid, Land Morphology and Engineering, Madrid, Spain (miguel.marchamalo@upm.es), (2) Technical University of Madrid, Civil Engineering, Madrid, Spain (Technical University of Madrid, Land Morphology and Engineering, Spain (miguel.marchamalo@upm.es))

Costa Rica is located in the Central American tropical isthmus. It presents high precipitations (ranging from 1400-8500 mm) and protection levels (27% of national territory). However, intensive land use and increasing population in headwaters are major threats for water resource management in this country. Birrís Basin is a 4800 hectares sub-watershed of the River Reventazón Basin, the major hydroelectric source in Costa Rica. Birrís Basin was selected for its high estimated erosion rates and its potential for demonstrative projects (ICE, 1999). Some pilot projects have been developed in this watershed starting from 1999, when major Costa Rican energy producer, Instituto Costarricense de Electricidad, began with a long term watershed management program for the Reventazón Basin. This study aims at measuring runoff and initial splash and sheet erosion to assess the hydrological response of two pilot land use projects. Erosion and runoff plots were established and monitored in a one year period for two pilot projects (fruit trees and forage pastures) and their respective traditional land uses (vegetable crops and extensive pastures). Improved forage pastures showed reduced runoff by 73% and split erosion by 55% compared to prior extensive pastures. Conversion of vegetable crop lands into fruit tree plantations (apricot and avocado) made possible a 97% reduction of soil initial erosion. Land use pilot projects have succeeded in runoff and soil erosion reduction. Now it is time for a wider technology transfer program to expand improved land uses within Birrís Basin.