Original scientific paper
10.7251/AGSY1404754S

SOIL EROSION: CAUSES AND EFFECTS WITHIN PERILO SMALL CATCHMENT (WESTERN SERBIA)

Gordana SEKULARAC[1*], Miodrag JELIC[2], Milena DJURIC[1], Miroljub AKSIC[2], Tanja JAKISIC[3]

[1]Faculty of Agronomy, University of Kragujevac, Čačak, Serbia
[2]Faculty of Agriculture, University of Priština-Kosovska Mitrovica, Lešak, Serbia
[3]Faculty of Agriculture, University of East Sarajevo, Republic of Srpska, Bosnia and Herzegovina
*Corresponding author: gordasek@kg.ac.rs

Abstract

This study deals with the evaluation of soil erosion in a small catchment. Mean annual and total specific erosion-induced sediment yields in the Perilo Brook catchment are induced by both natural and anthropogenic factors. The catchment erosion factors evaluated in this study, viz. relief, geological substrate, soil, climate and vegetative cover, have contributed to the annual erosion intensity of 162.90 m^3 km^{-2} of soil in the catchment area of the Perilo, classified as a small torrential brook and a dry watercourse.

Keywords: *erosion factors, erosion intensity, soil, catchment*

Introduction

Land degradation and soil loss are global events. Human induced pressures on natural ecosystems are still in progress, along with conservation efforts (Hacisalihoğly et al., 2010). The main factor causing soil degradation worldwide is water erosion, which threatens 56% of the world's arable land (Oldeman et al., 1990).

Over 90% of the total land area in the Republic of Serbia suffers from different types and intensities of erosion (Djorović and Kadović, 1997). The erosion process can have both direct and indirect impacts, inducing permanent soil disappearance. The calculated value of the total annual sediment yield suggests that some 16.0 cm of soil are annually eroded off the 21,000 ha of land in Serbia (Spalević, 1997). In the Republic of Serbia (Central Serbia), there are 1.221 million ha of eroded soil, and 36,000 ha are in a steady state, now (Statistical Yearbook, 2008).

Erosion has mostly affected strongly sloping, deforested or cultivated shallow soils on slopes, formed on impermeable geological substrates, due to the effects of intense rainfall and fluctuating air temperatures (Spalević, 1997).

The tendency of air temperature to increase and of rainfall to decrease is quite evident in the region of Čačak (Šekularac, 2002). Climate change leads to degraded soil physical properties, increases soil erodibility and reduces the protective role of vegetation.

The above factors cause intensification of both surface and deep-cutting processes of erosion.

Given the above, the objectives of this study are quantitative assessment of soil erosion induced by a range of factors and estimation of sediment yield in one part of the catchment area of the Kamenica River (part of the Zapadna Morava catchment) i.e. its subbasin, including its first order left-hand tributary the Perilo.