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SOIL EROSION OF THE CUVERAK RIVER BASIN (WEST SERBIA)

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Abstract

Various factors of erosion, natural and anthropogenic, and general conditions of the area of Cuverak torrential flow contribute to the understanding of the intensity of basin soil erosion. Midterm amount of erosion sediments is W_{year} 646.05 m^3/year. The value of the specific total annual erosion sediments at the mouth of the Cuverak in Kamenica ($G_{yr/sp}$), is 171.48 m^3/km^2/year.

Key words: soil, erosion, river basin, sediment production

Introduction

Soil is the basis of agricultural production, and thus important for the survival of the human race. Formation of soil is a continuous process, but parallel, there are processes of soil degradation. Process of soil regeneration is very slow. The effects of different factors of erosion change the soil and geological substrate. Changes in soil can be slow or fast, as a result erosion characteristics are slow or fast. In Serbia more than 90% of the total soil area is affected by erosion of various types and intensity (Djorovic and Kadovic, 1997). In the Republic of Serbia, it is registered that each year from an area of 21,000 ha layer of soil depth of 16.0 cm has been removed. (Spalevic, 1997). In the Republic of Serbia (Central Serbia) there is 1.221 million ha of eroded soil and 36,000 ha is steady now (Statistički godišnjak, 2008).

In the region of Čačak trends of increase in temperature and decrease in rainfall are evident (Šekularac, 2002). That climatic changes cause deterioration of the physical characteristics of the soil, increasing its erodibility, reducing the role of protective vegetation, and aggravated its natural and artificial regeneration. All this affects intensification of the process of erosion, both surface and deep forms. Negative impact of the erosion endangers agriculture, forestry and water management, thus there is an increasing need for erosion protection and soil reclamation.

Quantitative amount of erosion and regarding how much sediment it causes, is shown on the part of the river basin Kamenica (part of the West Morava river basin), its sub-basin, the area of which is its right tributary of the first order, Cuverak.

Materials and methods

Using the ground of reconnaissance, the elements of the configuration of the river basin were monitored and shown. This basic method is complemented by the use of topographic, geologic and soil maps of certain scales, allowing for defining the nature and impact of natural erosion agents in the studied basin. Using the method of rainfall interpolation by rain-gradient (Bonacci, 1984) and calculation of air temperature for any altitude (Dukic, 1984), meteorological parameters