

# SCIENTIFIC CONTRIBUTIONS IN ORDER TO CALCULATE RAINFALL EROSIVITY FACTOR (R) FROM REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE) FOR VALEA TATA WATERSHED, DAMBOVITA COUNTY, ROMANIA

Marin Alexandru MATACHE<sup>1</sup>, Laurentiu Catalin MANU<sup>1</sup>, Florin CIOCAN<sup>1</sup>,  
Nicolae PETRESCU<sup>2</sup>, Elena CONSTANTIN<sup>1</sup>

e-mail: matachemarinalexandru@gmail.com

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## Abstract

The research studies on the occurrence of complex soil erosion phenomena in the hydrographic basin of the Valea Tata stream, a right bank tributary of the Ialomita river, were carried out in the period 2017-2021 and aimed to quantify the amount of soil that is lost annually from the surface of the analyzed watershed. The main objective of this study was to calculate the rainfall erosivity factor (R) included in the Revised Universal Soil Erosion Equation (RUSLE) based on the records made in the period 2017-2021 on the experimental field as well as the data recorded at the climate monitoring stations in the proximity of the watershed for a period of 30 years for the calculation of soil loss from the Valea Tata watershed depending on the rain aggressiveness. The average value obtained for the Moroeni climate monitoring station was  $289.54 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  with a minimum value of  $83.20 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  and a maximum value of  $964.06 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  while for Fieni climate monitoring station the values obtained were between  $60.99 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  and  $537.22 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  with an average value of  $193.38 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$ . For the experimental field, where the rainfall data, rain intensity and duration of the erosive events were more complex, the results obtained for the erosivity factor (R) has values between  $149.50 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  and  $800.80 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$  with an average value of  $284.91 \text{ MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$ .

**Key words:** R-factor, experimental parcels, RUSLE, ROMSEM, GIS