How Does the RUSLE Equation Determine the Soil Erosion in Watershed? A Case Study at Serayu Watershed, Banjarnegara, Indonesia

Istiqomah , Erma (School: Bawang Public High School 1)
Alam , Juzaili (School: SMA Negeri 1 Bawang)

RUSLE can measure soil erosion in the United States, China and India (erosion causes soil loss 10-40x faster). Can the RUSLE equation measure soil erosion in Indonesia? because in Indonesia, especially the Serayu watershed, soil erosion reaches 161 t ha-1 year-1 and occurs not because of humans, but also 1) due to 65% geographical conditions at an altitude of more than 1000m, 2) the slope of the area is between 30-45%, 3) high rainfall reaching 5,473mm/year. The purpose of this study was to determine the estimated amount of soil lost due to erosion in the Serayu watershed using the RUSLE model and a combination of GIS, by measuring the average value of the amount of soil lost per year (t ha-1 year-1) (A) based on the erosive factor of rainfall. mean annual rain (MJ.cm/ha .hour.year) (R), soil erodibility (ton.hour/MJ.cm) (K), topography and slope factors (LS), vegetation factor as measured by factor land cover (C), and conservation efforts (P). In addition, this study will compare the intensity of erosion in 2021 with future land use scenarios in 2031. The results showed that mapping the risk of soil erosion in 2021 using the RUSLE equation in the Serayu watershed was able to identify 10 sub-districts in detail that had very high erosion risk with an annual average soil loss value of more than 480 tons ha-1 year-1. RUSLE is able to show scenarios of land use change (2021-2031) to demonstrate soil conservation that will directly affect the safety and security of local residents. Keywords: Soil, erosion, RUSLE, Watershed, Serayu, Banjarnegara

Awards Won: