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DETERMINATION OF WATER EROSION OF SOILS IN THE BASIN AND SUSPENDED SOLIDS LOAD CONVEYED BY ŚCIEKLEC STREAM

Key words: Proszowice Plateau, soil erosion, Soil Loss Equation (USLE), Ścieklec Stream

Summary

The research aimed to determine the content of eroded soil material in form of suspended solids in water samples obtained within Ścieklec Stream which is the left tributary of Szreniawa River (Małopolska Voivodeship). The research was undertaken in order to determine the size of water erosion. During the analysis the following were registered: soil cover, type of land use, terrain configuration and intensity of precipitation. The results are based on analysis of samples taken through the years 2013–2015 as well as monitoring the water flow of the Ścieklec Stream for the years 2014–2015.

The results showed correlation between monthly flow rate of water and the load of suspended solids. The total load in the water was 10.26 Mg·km⁻² in 2014 during growing season and 6.15 Mg·km⁻² in 2015. The portion of the sediment was found to be increased significantly during more intense flows of the Ścieklec Stream.

Analysis of water samples also included the mass of transported loose soil material using Wischmeier and Smith's USLE model. According to Zachar’s classification, the obtained results classify the area of the Ścieklec Stream basin to the second degree erosion (weak) which means a very slight reduction in soil depth due to a down slope transport of soil particles. Some regions with corn cultivation are classified to the moderate (the third) erosion degree.