DETERMINATION OF SOIL LOSS FROM EROSION RILLS BY METHOD OF DIGITAL PHOTOGRAMMETRY AND METHOD OF VOLUMETRIC QUANTIFICATION

UHROVA, J.; BACHAN, R.; STEPANKOVA, P.

TGM Water Research Institute, p. r. i., Brno Branch

Keywords: close-up photogrammetry — method of volume quantification — rill erosion — digital terrain model — unmanned aerial vehicles — soil loss

This article presents the first results of the research focused on the recording of rill erosion, and its evaluation using the outputs of the two methods that can be used to determine the soil yield. The consequences of erosion have been documented on a selected pilot site, both as a direct method of volume quantification (using an profile meter – so called soil erosion bridge) and with the use of unmanned aircraft in close-up photogrammetry (UAV). Volumetric quantification of rill erosion on land is a direct field measurement method which was recorded with an soil erosion bridge – a device that allows the direct measurement of the cross section of the terrain. By direct measurement, 25 transverse erosion engraving profiles of 2 m were recorded, which exhibited significant signs of escape erosion. The site of interest was also captured using UAV. A digital terrain model (DMT) was created from the captured images, and DMT cross-sections for subsequent comparison were created at points where direct erodometric measurements were taken. It has been shown that methods such as soil erosion bridge readings and photogrammetry are highly effective in the measurement and analysis of rill erosion. They are efficient, flexible, economical and environmentally friendly methods for collecting data with great precision.