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Plot scale measurements of rainfall erosion losses in central Italy

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Abstract Monitoring erosion processes is of the utmost importance in order to test the applicability of soil erosion models and to establish procedures for the estimation of the factors affecting erosion process. For this purpose an experimental station for soil erosion measurements has been recently created by our Department. The experimental station includes 10 USLE plots oriented parallel to a 16% slope. Total runoff is trapped in sediment tanks and soil loss is measured after each erosive event. Climatic data are also recorded at the experimental site. This paper reports the results obtained during the first nine months of the experimental station exercise. All the Wischmeier plots were maintained fallow and cultivated parallel to the slope. For all the plots, measurements of both rainfall storms and sediments trapped allowed the calculation of the soil erodibility factor, K_e, for each event. The analysis showed a temporal variability (among events) of the soil loss measurements greater than the spatial variability (among replicated plots). The variability among replicated plots decreases as the soil loss increases. The applicability of USLE and USLE-M has also been investigated.

Key words soil loss; USLE; erodibility factor; spatial and temporal variability; erosivity factor