Soil erodibility variability in laboratory and field rainfall simulations

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Rainfall simulation experiments are the most common way to observe and to model the soil erosion processes in in situ and ex situ circumstances. During modelling soil erosion, one of the most important factors are the annual soil loss and the soil erodibility which represent the effect of soil properties on soil loss and the soil resistance against water erosion. The amount of runoff and soil loss can differ in case of the same soil type, while it's characteristics determine the soil erodibility factor. This leads to uncertainties regarding soil erodibility. Soil loss and soil erodibility were examined with the investigation of the same soil under laboratory and field conditions with rainfall simulators. The comparative measurement was carried out in a laboratory on 0,5 m2, and in the field (Shower Power-02) on 6 m2 plot size where the applied slope angles were 5% and 12% with 30 and 90 mm/h rainfall intensity. The main idea was to examine and compare the soil erodibility and its variability coming from the same soil, but different rainfall simulator type. The applied model was the USLE, nomograph and other equations which concern single rainfall events. The given results show differences between the field and laboratory experiments and between the different calculations. Concerning for the whole rainfall events runoff and soil loss, were significantly higher at the laboratory experiments, which affected the soil erodibility values too. The given differences can originate from the plot size. The main research questions are that: How should we handle the soil erodibility factors and its significant variability? What is the best solution for soil erodibility determination?