



Requirements for future development of small scale rainfall simulators

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Rainfall simulation with small scale simulators is a method used worldwide to assess the generation of overland flow, soil erosion, infiltration and interrelated processes such as soil sealing, crusting, splash and redistribution of solids and solutes.

Following the outcomes of the project “Comparability of simulation results of different rainfall simulators as input data for soil erosion modelling (Deutsche Forschungsgemeinschaft – DFG, Project No. Ri 835/6-1)” and the “International Rainfall Simulator Workshop 2011” in Trier, the necessity for further technical improvements of simulators and strategies towards an adaption of designs and methods becomes obvious.

Uniform measurements of artificially generated rainfall and comparative measurements on a prepared bare fallow with rainfall simulators used by European research groups showed limitations of the comparability of the results. The following requirements, essential for small portable rainfall simulators, were identified: (I) Low and efficient water consumption for use in areas with water shortage, (II) easy handling and control of test conditions, (III) homogeneous spatial rainfall distribution, (IV) best possible drop spectrum (physically), (V) reproducibility and knowledge of spatial distribution and drop spectrum, (VI) easy and fast training of operators to obtain reproducible experiments and (VII) good mobility and easy installation for use in remote areas and in regions where highly erosive rainfall events are rare or irregular.

The presentation discusses possibilities for a common use of identical plot designs, rainfall intensities and nozzles.