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Relationship between size of a field plot and measured soil loss

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The contribution presents a comparison of runoff and soil loss from two scales of field plots from rainfall-runoff experiments provided by rainfall simulations. At CTU Prague rainfall simulators (RS) are used for surface runoff and erosion processes research. The purposes of current studies are determination of runoff parameters of surface processes and assessment of the influence of vegetation on erosion and surface runoff. Furthermore RSs are used for verification of physical models (SMODERP, WEPP, Erosion 3D).
A mobile RS of the CTU Prague (Department of Irrigation, Drainage and Landscape Engineering) was used for the presented research. This Fulljet nozzle type RS (40-WSQ) allows simulation on maximum area of 2 x 9.5 m (uniformity index by Christiansen 80 % on 2 x 8m plot). Mean size of raindrops is 1.25 – 1.75 mm. Standard field plot area of 2 x 8m has been used, which has been further extended by second plot 1 x 1m. The basic parameters of surface runoff (surface runoff start, runoff hydrograph, runoff volume) and erosion (soil loss in time, grain size distribution) are measured together with initial soil properties.
To determine the relationship between the size of a field plot and induced erosion, runoff parameters from field plots of 2 x 8 m and 1 x 1 m were monitored. The experiment was performed simultaneously by the same RS on the same location under the same surface conditions (cultivated fallow). Runoff parameters and the sediment yield were measured (sampled) in same intervals. The results show an influence of the field plot length and show an increase in the soil loss in splash and rill erosion. Differences between measured results were also compared with the modelled values using SMODERP model.
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