

Publication**Inherent interreplicate variability during small-scale rainfall simulations****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 3720515**Author(s)** Hu, Yaxian; Fister, Wolfgang; Kuhn, Nikolaus J.**Author(s) at UniBasel** [Kuhn, Nikolaus J.](#) ; [Fister, Wolfgang](#) ; [Hu, Yaxian](#) ;**Year** 2016**Title** Inherent interreplicate variability during small-scale rainfall simulations**Journal** Journal of Soils and Sediments**Volume** 16**Number** 6**Pages / Article-Number** 1809-1814

Purpose The validity of soil erosion data is often questioned because of the variation between replicates. This paper aims to evaluate the relevance of interreplicate variability to soil and soil organic carbon (SOC) erosion over prolonged rainfall. **Materials and methods** Two silty loams were subjected to simulated rainfall of 30 mm h⁻¹ for 360 min. The entire rainfall event was repeated ten times to enable statistical analysis of the variability of the runoff and soil erosion rates. **Results and discussion** The results show that, as selective removal of depositional particles and crust formation progressively stabilized the soil surface, the interreplicate variability of runoff and soil erosion rates declined considerably over rainfall time. Yet, even after the maximum runoff and erosion rates were reached, the interreplicate variability still remained between 15 and 39 %, indicating the existence of significant inherent variability in soil erosion experiments. **Conclusions** Great caution must be paid when applying soil and SOC erosion data after averaging from a small number of replicates. While not readily applicable to other soil types or rainfall conditions, the great interreplicate variability observed in this study suggests that a large number of replicates is highly recommended to ensure the validity of average values, especially when extrapolating them to assess soil and SOC erosion risk in the field.

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