



Rainfall simulations and double ring infiltration measurements - do the results correlate?

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Runoff behaviour of soil-vegetation-complexes as well as the resulting hazard potential are significantly dominated by their infiltration characteristics. Thus the relation of surface runoff and infiltration and therewith also the runoff coefficient are in the focus of numerous hydrological soil investigations. For this purpose various field methods have been developed during the last decades, among them especially artificial rainfall simulations proved their value. Investigations done by KAINZ et al. (1992, Z. Pflanzenernähr. Bodenk. 155, 7-11) showed that area specific hydrological conditions can be best represented on irrigation plots larger than 40 m². Due to the high heterogeneity of alpine soils and vegetation the usage of smaller plot sizes leads to problems concerning the representativeness of the selected area, the significance of the results and therewith their extrapolation to bigger areas. Furthermore, the smaller the area the more border effects gain in importance.

Investigating runoff behaviour of soil-vegetation-complexes by means of rainfall simulations is very cost-intensive and time-consuming. Additionally their application is strongly limited by water availability, especially in the headwaters of the catchment. For this reason we examine if statistical relationships exist that can characterize the outcomes of double ring infiltrometer measurements - which are comparatively easy to realize - and rainfall simulations, especially how many double ring infiltrometer measurements have to be carried out as well as how they have to be positioned to gain representative results.

Within the presented study rainfall simulations at ten locations (hay meadows) in the region Innsbruck Land (Tyrol/ Austria) with an intensity of 100 mm h⁻¹ for a simulation period of one hour and 63 double ring infiltration measurements on the same plots were carried out. Furthermore, soils samples were taken for supplementary soil physical analyses.

First results of the comparative studies are presented.