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Study on infiltrability of some arid region soils based on particle size distribution

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Particle size distribution (PSD) is one of the most important soil properties which affects on soil infiltrability. This study investigates the influence of PSD on infiltration rate (IR) at the field conditions. Infiltration experiments were conducted using double ring method with constant head of water at 15 different land uses. To investigate the effect of soil characteristics on IR, some physical and chemical properties of the soils were measured. The results showed that final IR, ranged between 0.8 – 34.6 cm/h with the CV of 100%. Particle size distribution had a significant effect on the IR in almost all of the land uses. Increasing clay and silt particles as the primary PSD, final IR declined, significantly. Aggregate size distribution (secondary PSD) had a remarkable role in controlling the soils infiltrability. Soils with higher stable aggregates, showed further IR. The results indicate that land management practices which affect on IR deeply, expose their role by means of aggregate size distribution. The PSD parameter, especially aggregates size distribution can be applied in estimating the infiltration process. The findings of this study reveal that among different soil properties, PSD is the most important agent which affects on the IR in the arid regions.

Keywords: Infiltrability, Soil properties, Double ring, Particle size distribution.