

Relationship between water entry value and saturated hydraulic conductivity of organic manure amended soils

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Soil hydraulic properties are important parameters with significant effects on water movements within the soils. Among them, water entry value is the critical water potential at which water starts to displace air in the soils under unsaturated conditions. Saturated hydraulic conductivity is a property which permits water movement within the soils under saturated conditions. Objective of this study was to correlate water entry value and saturated hydraulic conductivity of soils with different wetting rates to find their relationship. Soils collected from research and training facility of faculty of agriculture, University of Ruhuna were air dried and sieved. The soils were mixed with ground powders of *Cassuarina equisetifolia* (CE) leaves, *Gliricidia makulata* (GL) leaves, Cattle manure (CM) and Goat manure (GM) in different concentrations. Water entry value was determined using pressure head method consists of Buchner funnel porous plate and a burette. Saturated hydraulic conductivity was determined using falling head method. Results revealed that, water entry value increased from 0 to 8 cm in CE amended samples and 0 to 3 cm in GL amended samples with increasing added organic manure content from 0 to 50%. In animal manure amended samples water entry value increased from 0 to 3 cm with increasing organic matter content from 0 to 5%. Saturated hydraulic conductivities of CE, GL, CM and GM amended samples were negatively correlated with water entry values ($R^2 = 0.92, 0.77, 0.82$ and 0.83 , respectively).

Keywords: Water entry value, saturated hydraulic conductivity, organic matter