SOIL MOISTURE RETENTION CHARACTERISTICS OF REDDISH BROWN EARTH SOILS

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The soil moisture retention curve is a graph showing the relationship between soil moisture percentage and matric suction. This functional relationship is used to estimate matric suction from moisture measurements, to determine water storage capacity of soils, and the relative availability of water to crops. This is also extensively used to estimate pore size distribution and structural stability of soils. More recent developments allow predicting hydraulic conductivity and soil water redistribution following infiltration using water retention data.

This study was undertaken to characterize the soil moisture retention relationship for the three drainage associates (well, intermidiately and poorly drained) for Reddish Brown Earths (Alfisols) of Sri Lanka. Soil core samples were removed from three soil horizons from each drainage class. Water retention data were obtained by equilibrating the saturated samples with different suctions using a pressure plate apparatus.

The results showed significant differences of water retention between horizons as well as drainage classes and fitted best to power functions for comparison of regression using statistical package "INSTAT" (Burn et al., 1985). When pore size distribution was estimated discrepancies of macro porosities were evident at different depths for the three drainage classes. The lateral movement of water in the catena will be influenced by these discrepancies affecting the drainage of Reddish Brown Earch Soils.

Reference

Burn, R.W., Stern, R.D. and Knock, J. (1985). Introductory Guide to INSTAT. Statistical Service Centre. University of Reading.

10th Dec. 1987 (Thursday) 01.45 p.m. 02.00 p.m.