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Statistical assessment of soil-water characteristic models

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ABSTRACT

A statistical assessment of curve fitting to soil water retention curve has been carried out for two different types of soils viz., Kharagpur sandy loam soil (four layers) and Black clay soil of Akola. The closed form equation describing soil water retention function of van Genuchten [VG (m, n) and VG (n)] and Brooks-Corey (BC) was fitted using RETc software and detailed statistical analysis was carried out to compare their performance. Results revealed that all the three models were found to perform reasonably well. The statistical analysis performed to discriminate the models such as R², AIC, t-value and RSS had showed a little difference among the models used for comparison. However, considering the relative ease at which the computation of hydraulic properties can be performed and the practical situation that can be accommodated, VG(n) is the best model among all the three models. This represents a simple closed form equation that can be derived to express the hydraulic conductivity function as compared to VG (m, n).