Comments on “Wetting Moisture Characteristic Curves Derived from Constant-Rate Infiltration into Thin Soil Samples”

Perroux et al. (1982) have presented a rapid method for determining a wetting curve by supplying a small constant flux of water to the top of a thin soil sample, and measuring soil water pressure head at the bottom with a pressure transducer. Pressure gradient across the sample is assumed to be zero. Average water content of the sample corresponding to the measured pressure at any given time is obtained from the known cumulative amount of water applied and initial water content of the sample. Results with this method compared very well with data obtained by conventional methods.

In a very similar method that we published a few years ago (Ahuja and El-Swaify, 1976), which Perroux et al. (1982) inadvertently missed to cite, water at atmospheric pressure was supplied to a short soil core through a high-resistance porous plate (at slow, but decreasing rates) on one end, while the pressure head was measured with a transducer on the other. From knowledge of plate resistance and inflow rates, pressure head of soil water on water-supply end of the core could also be determined. Average of the pressure head values at two ends was then related to average water content of the sample at any given time. Furthermore, the pressure gradient between the two ends and average water flux through the core at a given time were used to determine unsaturated hydraulic conductivity. Thus, with very little additional work the method provided much more and important information in the wet range. The method was also used to obtain moisture characteristic and hydraulic conductivity during the desorption cycle.

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