

Centrifuge method for measuring water retention properties of soils with small volume samples.

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Soil water characteristics are fundamental properties for understanding water and solute transport in soils. However, we need to sample and bring back soil core samples from the field in order to properly conduct the experiments. Core samples with metal cylinder are heavy and are not easy to bring back if the field are located in the foreign country. We could measure hydraulic conductivity with relatively short time, however, retention properties are not easy to measure with short time. This is one of the reason soil water retention properties are sometimes missing at field research in foreign country. In this research, we introduce centrifuge method with small volume of soils. These days because of bio-chemical research booming, centrifuge machine and sample tubes are very small and handy. We put 3-5 gram of soils to centrifuge tube with pin-hole and centrifuge them with 5,10,20,50 and 100kPa. Because sample tubes were short and put with a slope, deformation of soil body was small, which was an issue for using centrifuge method in the past. Result with centrifuge method well corresponded with pressure plate method and psychrometer method. We know that there are limitations in this method, however, the obtained data is useful if the field was lack of these information.

Keywords: centrifuge method, soil water retention curve, pressure plate