

Abstract

Saturated hydraulic conductivity is one of the most important hydraulic properties affecting water flow in soils. As for wide application of this parameter, it is very important to acquire closer results toward its real value, but because there is not a scale method to compare obtaining values toward it, just is tried to remove factors which cause decrease of water flow into the soil. In this study, saturated hydraulic conductivity has been acquired through five methods containing falling head, constant head, double ring, tension disk and Guelph permeameter. In falling head method, saturated hydraulic conductivity was acquired through sample which was used to take it from cylinder smeary with silicon grease and compared to acquired value obtaining from sampling without silicon grease. In constant head method also saturated hydraulic conductivity value obtaining from sampling compared in two ways with and without using silicon grease. In double ring method values obtaining from four formulas containing Philip, Kutilek-Krejča, Horton and Mezencev were compared to one another. Another method called tension disk in which a thin layer of sand placed under disk of set and value of saturated hydraulic conductivity was compared to the case in which sand has not been used. Fifth method is Guelph permeameter in which values obtaining from sink with smeary walls by silicon grease were compared to sink without silicon grease, like wise three formulas Single depth, Laplace and Two depth compared to each other. Applying grease in falling head and constant head methods caused increasing in saturated hydraulic conductivity value especially in clay. Comparing formulas of double ring, we only can conclude that obtaining numbers from Philip equation is higher than other formulas which can be result of using early experiment numbers in estimating amount of saturated hydraulic conductivity. Also, applying sand under tension disk can increase correlation between disk and soil surface and can also prevent from forming clay layer under disk that causes increasing in amount of saturated hydraulic conductivity. In Guelph permeameter method values obtaining from sinks in which we have used silicon grease were higher than sinks in which silicon grease has not been used because grease prevented from falling of sink wall and in comparing formulas, results of Laplace and Single depth nearly tied but amount of saturated hydraulic conductivity in Two Depth formula in clay and silt clay loam was lower and within sandy clay loam was higher.

Keyword: Falling head, Constant head, Double ring, Tension disk, Guelph permeameter



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