

一种土壤电导率测量方法的数学建模与实验研究

A Mathematical Model and Its Experimental Study for a Kind of Measurement Method of Soil Electric Conductivity

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中文摘要：

针对一种土壤电导率的测量方法——“电流—电压四端法”，从理论上深入探讨了该方法的测量原理，建立了对应的数学模型。关于 Wenner 分布、Schlumberger 分布和 Polar dipole 分布 3 种测量组态计算公式的正确性也通过实验进行了检验。

英文摘要：

The measurement of soil electrical conductivity has been increasingly gaining attentions because precision farming technologies rely on accurate field maps of the soil characteristics that affect field. In this paper, a mathematical model for four-electrode measurement method was developed. The discussion concerned with the model consists of three steps. At first, the behavior of single current electrode at a depth of field was treated. Secondly, a combination of two current electrodes at a depth of field was analyzed and some formulas used for different configurations of electrodes were developed. At last, a lemma associated with this model was proven. In addition, some experiment results and a general conclusion referring to this study were presented.

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