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A New Model of Dielectric Analysis for Measurement Soil Moisture Water Content

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Measurement of soil water content (θ) has become an important part of the analysis of various fields of study, especially those involving irrigation in agriculture, forestry, hydrology and land activity. The models for measuring soil water content (θ) is usually based on the permittivity (ε) value. Many previous studies have been proposed e.g., Top et al. 1980; Roth et al. 1992; Malicki et al. 1996; and Robinson et al. 2005. Measurements using electromagnetic methods typically utilize permittivity parameters to determine water content in the soil. This method was used due to the significantly of differences permittivity between soil and water. In this study, a new model of dielectric analysis for measurement soil moisture water content is proposed and then compared with the existing models as the performance evaluation of the model. Result obtained shows that the new proposed model fits secondary experimental data reasonably well over a wide range of soil types. It is therefore suggested the new proposed model be used for the measurement of soil water content.