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A REVIEW STUDY ON NOVEL & EMERGING PROXIMAL SOIL MOISTURE SENSORS

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ABSTRACT

The measuring of soil moisture in agriculture is presently dominated by a few number of sensors, the usage of which is severely restricted by their small sample volume, high cost, requirement for tight soil–sensor contact, and lack of performance in salty, vertic and rocky soils. This study was conducted to investigate the variety of new and developing soil moisture sensors, and assess their potential application in agriculture. The study showed that advances to current methods over the past two decades are modest, and mainly confined to frequency domain reflectometry approaches. However, a wide range of new, novel and arising method of assessing soil moisture were identified including, actively heated fiber optics (AHFO), high capacity tensiometers, paired acoustic / radio / seismic transceiver approaches, thermo approaches, radio frequency identification (RFID), hydrogels and seismoelectric approaches. Excitement about this variety of possible new technologies is nevertheless tempered by the fact that many of these techniques are at initial phases of development, and that few of these methods have been properly tested in situ agricultural soils.

KEYWORDS: *Capacitance, Moisture, Soil Moisture, Sensor, Soil Humidity.*

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