

Soil moisture sensor and read-out circuit topology for large array deployment.

ABSTRACT

This paper focuses on the analysis of a BJT based soil moisture sensor that outputs a voltage corresponding to the change in soil resistance. The measured sensor's sensitivity is 51.1mV/% with a deviation of 19.7mV from sensor to sensor. The deviation which is more than twice smaller than the sensitivity suggests that it is suitable to be used in a large array to detect gravimetric moisture in individual soil samples. Integration of read-out circuitry to the sensor shows that an array operation of the sensor is possible and can be used to aid in moisture detection in fertigation farms.

Keyword: Fertigation; Gravimetric moisture; Micronozzle; Raster-scan; Soil moisture sensor.