Abstracts

A Feasibility Study to Monitor Soil Moisture Content Using Microwave Signals

E. Bahar and J.D. Saylor. "A Feasibility Study to Monitor Soil Moisture Content Using Microwave Signals." 1983 Transactions on Microwave Theory and Techniques 31.7 (Jul. 1983 [T-MTT]): 533-541.

A buried leaky coaxial cable is used as a sensor to continuously monitor the average moisture content of irrigated soil at a desired depth. The two-phase feasibility study consists of an analytical and an experimental investigation. The modal equation in the cable is expressed in terms of the surface impedance at the inner conductor boundary and an effective surface impedance at the outer leaky conductor boundary. The effective surface impedance is related to the soil moisture content through its measured attenuation. The results of the experimental work condncted in the field are in good agreement with the analytical results. It is shown that the recorded phase difference between the test signal from the buried cable and the reference signal can be used to monitor the soil moisture content.

❑ Return to main document.