A simple procedure to determine complex permittivity of moist materials using standard commercial coaxial sensor.

ABSTRACT

A simple procedure was developed to determine complex permittivity of moist materials for known percentage of moisture content at any frequency based using a standard commercial coaxial sensor. Polynomial fitting and Gaussian elimination method were applied to obtain a single equation of complex permittivity as a function of frequency and moisture content. The empirical equation was tested for new samples and was found to have mean error percentage of 5.14 % and 10.22 % for dielectric constant and loss factor, respectively, when compared to a commercial probe.

Keyword: Open ended coaxial line; Permittivity; Maize; Empirical model.