

Monopole antenna technique for determining moisture content in the Dioscorea hispida tubers.

Abstract

This study demonstrates the determination of moisture content in *D. hispida* tuber using microwave technique. A network analyzer was used to measure the reflection coefficient of a monopole antenna inserted in *D. hispida* tuber at different percentage of moisture content. The actual moisture content of *D. hispida* tuber was determined using oven drying method. The reflection coefficient measurement was performed at operating frequency between 2 MHz and 4 GHz. The best operating frequency to model the relationship between the magnitude of reflection coefficient and moisture content in the *D. hispida* samples was found to be 0.8 GHz. The model based on measured data of sample D with a regression value of 0.9399 and 1.71% error was the most accurate model to predict moisture content in *D. hispida* tuber.

Keyword: Dioscorea hispida; Moisture content; Reflection coefficient; Monopole antenna; Microwave