

Title            Moisture Content Measurement of Tea Leaves by Electrical Impedance and Capacitance  
Author         Y. Mizukami, Y. Sawai and Y. Yamaguchi  
Citation       Biosystems Engineering. Volume 93, Issue 3 , March 2006, Pages 293-299  
Keyword       tea; moisture content; electrical spectroscopy

### **Abstract**

The objective of this study was to develop a new method for the moisture measurement of tea leaves by using measurements obtained by electrical spectroscopy. The relationship between the electrical properties and moisture content of tea leaves was investigated within a frequency range from 10 Hz to 1.0 MHz. The logarithmic functions of impedance and capacitance can be used to estimate the moisture content at 3.0 kHz to a certain extent. However, the approximations of parameters were insufficient for the tea manufacturing process. Therefore, a new equation was developed that simultaneously satisfies both impedance and capacitance. The new method increased the accuracy of moisture measurement as compared to that obtained using a single parameter. However, it was conceivable that the accuracy of the developed method was influenced by the electrical condition of the cell wall, which varied depending on the steaming treatment and maturity. Therefore, the experimental samples were divided into three classes depending on leaf maturity—younger shoots, middle-mature and over-mature tea leaves—and subsequently, the samples were reanalysed. The developed method can estimate the moisture content within the performance expected from a commercial moisture meter.