

**Title** Development of a dielectric spectroscopy technique for the determination of apple (Granny Smith) maturity

**Author** Marta Castro-Giráldez, Pedro J. Fito , Creu Chenoll and Pedro Fito

**Citation** Innovative Food Science & Emerging Technologies, Volume 11, Issue 4, October 2010, Pages 749-754

**Keywords** Dielectric spectroscopy; Dielectric spectra; Dielectric properties; Maturity index; Climacteric fruits; Malic acid

### **Abstract**

Dielectric measurements of apple were done during its maturity in order to find relations with apple physiological compounds (sugar content, malic acid). An *Agilent 85070E* open-ended coaxial probe connected to an *Agilent E8362B* vector network analyzer were used in these experiments. All determinations were made at 30 °C from 500 MHz to 20 GHz. These assays were performed in order to consider the potential use of dielectric spectroscopy for determining the state of fruit maturity. Good correlations among apples Thiault Index with a new defined Dielectric Maturity Index were found. The Dielectric Maturity Index was related to loss factor at two punctual frequencies (0.5 GHz and dipolar relaxation frequency). This work is presenting a non-destructive control method for the prediction of climacteric fruits maturity.