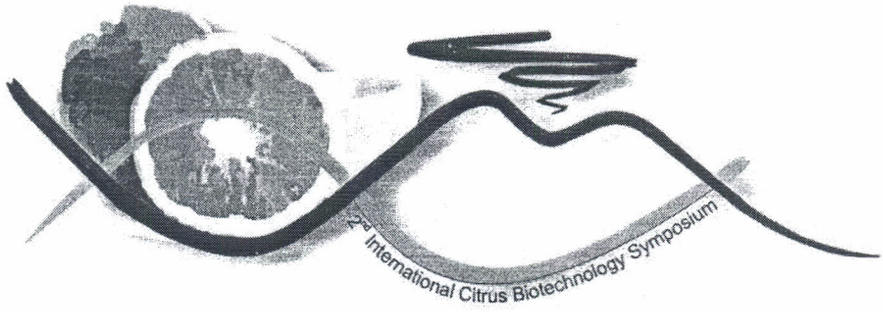
ISHS

University of Catania

ISC

SECOND INTERNATIONAL
CITRUS BIOTECHNOLOGY SYMPOSIUM

BOOK OF ABSTRACTS



CATANIA, ITALY
NOVEMBER 30 – DECEMBER 2, 2009

DISCRIMINATION OF SWEET ORANGE CLONES (*CITRUS SINENSIS* L. OSBECK) USING FLUORESCENCE SPECTROSCOPY TOOLS

Novelli V.M.[1], Carvalho S.A.[1], Machado M.A.[1], Milori D.M.B.P.[2], Venâncio A.L.[2], Pereira F.M.V.[2]

[1] Centro de Citricultura Sylvio Moreira Instituto Agronômico de Campinas Cordeirópolis/SP, Brazil P.Box 04 – 13.490-970

[2] Embrapa Agricultural Instrumentation, Rua XV de Novembro, 1452, PO Box. 741, 13560-970 São Carlos/SP, Brazil

Citrus fruits are one of the main fruit crops in the world, and sweet orange (*Citrus sinensis* L. Osbeck) is the most important citrus species. In spite of their wide morphological variability, the characterization at the molecular level of varieties and clones of sweet orange is a challenge due to low genetic diversity. Several studies using molecular markers such as RAPD, AFLP, SSR, and SNPs, have been unsuccessful in differentiating and characterizing their cultivars. Recently, researchers have used various spectral systems, including image techniques covering several regions of the electromagnetic spectrum for analyses of varieties discrimination (Milori et al. 2008- Method and equipment for citrus seedlings certification). The aim of this study was to evaluate the potential these fluorescence spectroscopy tools for discrimination of sweet orange clones. For analyses were used three leaves of fifty plants of the four clones of sweet orange Pera (Pera 2000, Pera IAC, Pera Ipigua, and Pera Olímpia) two years old. The fluorescence images of leaves were obtained using a Zeiss stereomicroscope Stereo Lumar.v12 coupled to digital camera AxioCamMR5 and mercury-vapor short-arc lamp. The mercury-vapor short-arc lamp was utilized to excite the fluorescence. It was obtained a colorgram (histogram of frequency colors) for each fluorescence image of following colors: green, red, blue, luminosity, relative red, green and blue, hue, saturation and intensity generating a total of 2560 variables. The used system to carry out laser induced fluorescence spectroscopy was developed in Embrapa Agricultural Instrumentation. The spectral range was 580 until 1100nm with a resolution around 5 nm. It was possible to identify patterns for discrimination for the clones sweet orange evaluated. Pera Olimpia sweet orange showed the most distinct pattern. Our study demonstrated that the spectroscopy tools have potential for using in characterization and discrimination of citrus clones.