1st European Conference of Post graduate Horticulture Scientists

May 12-13, 2016 - Palermo - Italy

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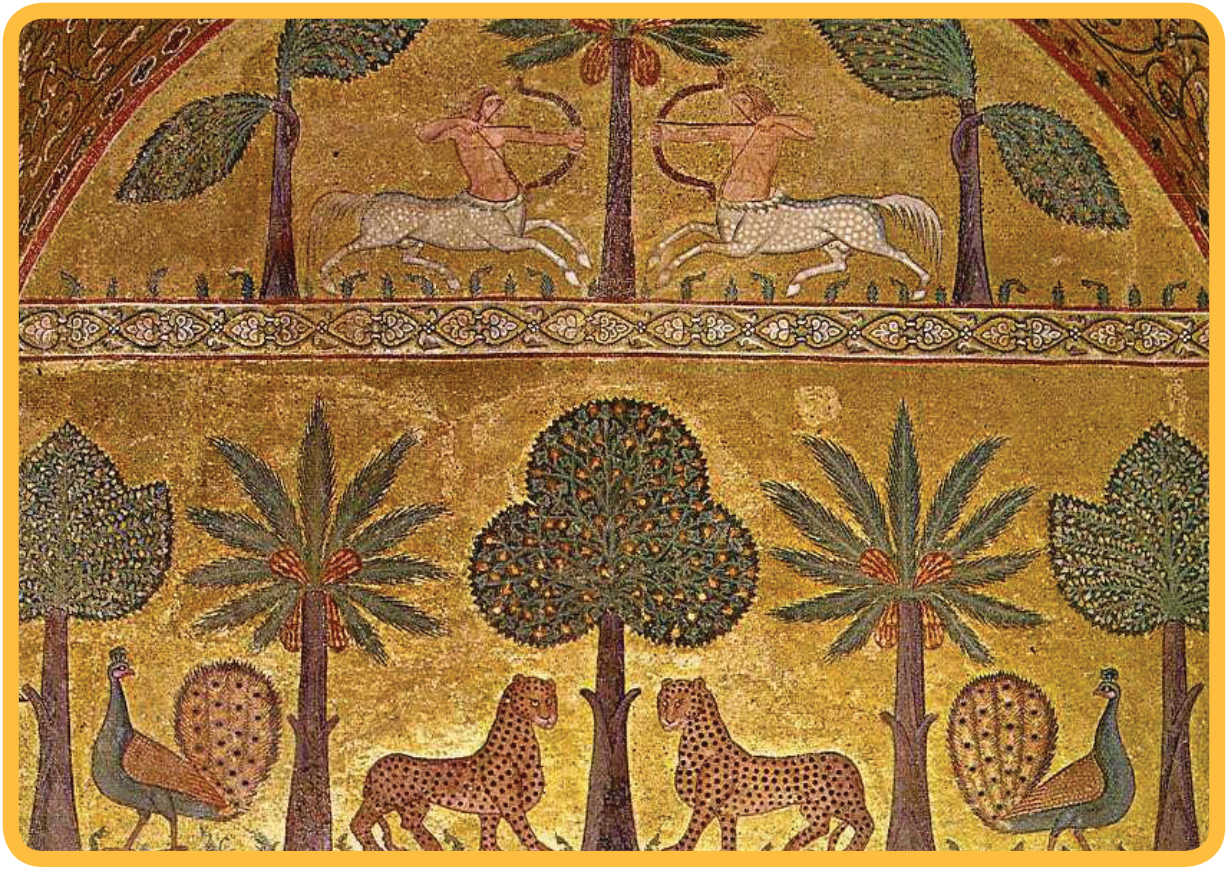

Book of Abstracts and Conference Program

ECPHS2016

SOI - Società di Orticoltura Italiana - Italus Hortus

Università degli Studi di Palermo - Dipartimento Scienze Agrarie e Forestali - Department of Agricultural and Forest Sciences

ISHS

Stevia rebaudiana: a Study in the Volatiles Profile from Plants Grown in the Field in the Greenhouse and Micropropagated *in vitro*.

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Stevia rebaudiana Bertoni leaves are natural sources of steviol glycosides, which are used commercially for sweetening and flavouring foods and beverages. Steviol glycosides are natural sweeteners constituting an alternative to synthetic compounds like cyclamates or aspartame. *S. rebaudiana* has been produced mainly for its stevioside compounds but it contains other metabolites with potential therapeutic benefits such as alkaloids, hydroxycinnamic acids, oligosaccharides or essential oils. The chemical profile of samples development by micropropagation or in green house or in field conditions, should be characterized to ensure the quality of the samples supplied by *Stevia* producers. Multiplication rate and fresh weight were determined for plants micropropagated in two different culture media (medium A - Murashige and Skoog (MS) without hormones and sucrose), (medium B - MS with 0.5 $mg.L^{-1}$ of kinetin and 20 $g.L^{-1}$of sucrose). Apart from spontaneous rooting rate determination, induction of plant rooting by auxin shock, using indole-3-butyric acid (IBA) (2 $mg.mL^{-1}$), was also evaluated. Acclimatization in greenhouse was performed with hydro atomization nozzles working every 10 minutes. Plants on the field were fertilized by a nutrient solution with N, P_2O_5, K_2O and B. The essential oil yield was determined for plants in all conditions (*in vitro*, greenhouse, field) using a Clevenger-type apparatus. Volatiles were isolated using a Likens-Nickerson apparatus and analyzed by GC-MS. The *in vitro* multiplication rate was 300% per month and the fresh weight after a 4 week subculture was 0.9 g. Spontaneous rooting rate was less than 4% after 4 months but induced rooting achieved 30% of plants with developed root system after 1 week and 70% after 2 weeks. Acclimatization rate was 100% after 2 weeks. The essential oil yield was <0.06% for all samples. Volatiles identification revealed identical composition in all samples, with α-pinene (11-31%), bicyclogermacrene (5-19%), *trans*-β-farnesene (7-15%), β-elemene (6-10%) and β-caryophyllene (3-10%) as major compounds. Quantitative differences were noteworthy.

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