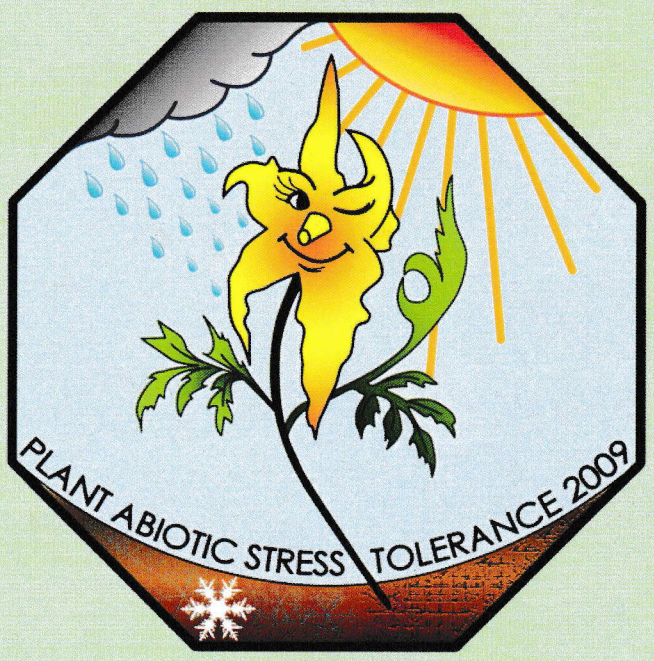
International Conference

PLANT ABIOTIC STRESS TOLERANCE



Programme and Abstracts

Vienna, Austria
8-11 February 2009

Organizing Committee

International

Prof. Ray A. Bressan (USA)
Prof. Jian-Kang Zhu (USA)
Prof. Jen Sheen (USA)
Prof. Kazuo Shinozaki (Japan)
Prof. Jaakko Kangasjärvi (Finland)
Prof. Wolf-Rüdiger Scheible (Germany)

National

Prof. Alisher Touraev
Prof. Heribert Hirt
Prof. Erwin Heberle-Bors
Dr. Claudia Jonak
Dr. Markus Teige
Ms. Julia Szederkenyi

Sponsors and Exhibitors of the Conference

RIJK ZWAAN

GenomePrairie

MONSANTO imagine

Bayer CropScience

Dow AgroSciences

CLF Plant Climatics

Agrisera
Antibodies for plant sciences

Image Analysis Systems for Plant Science
INSTRUMENTS RÉGENT

SYSTAT

conviron

LemnaTec

SZABO SCANDIC

WALZ
Mess- und Regeltechnik

QS research
www.qubitsystems.com
Instruments for Photosynthesis

LGC Setting standards in analytical science

AGOWA genomics

Hansatech Instruments

N 119. Physiological Responses of *Nicotiana glauca* and *N. tabacum* under Zinc and Cadmium Stress

Christofakis M., Konsolakis G., Primikirios N., Loulakakis K.

Several plant species are able to accumulate and withstand large quantities of heavy metals in their tissues. Metal accumulating plants are tested and used for remediation of contaminated soils and waters. In an effort to better understand the responses of accumulating and non-accumulating plant species, and particularly the physiological role of ammonia assimilating enzymes under heavy metal stress, a comparative study was held between *Nicotiana glauca,* a plant with promising properties for phytoremediation and *N. tabacum*. Plants were grown in the presence of different concentrations of zinc (Zn) and cadmium (Cd) in the following experimental systems in the greenhouse: in pots containing artificial substrate for 35 days and hydroponically for 8 days. Endogenous metal concentrations as well as several morphological and physiological parameters of the plants were followed. Heavy metal concentration negatively affected plant parameters such as morphology, total chlorophyll content, photosynthesis rate, photosynthetic efficiency, transpiration and stomatal conductance. Differential responses were observed between *N. tabacum* and *N. glauca*. In addition, the concentration of Zn and Cd differentially affects the activity and protein levels of ammonia assimilating enzymes of both plant species. Correlation of the endogenous heavy metal concentrations with alterations of physiological parameters and the levels of ammonia assimilating enzymes are presented.

This work was supported by an Archimedes Project, co-funded by the European Social Fund and National Resources.

N 120. The Effect of Partial Root Drying on Antioxidant Activity in Different Agricultural Crops

Vucelic-Radovic B., Savic S., Stikic R., Jovanovic Z., Paukovic M.

Partial root drying (PRD) is a new irrigation strategy which applies alternating regimes of irrigation to half the root system while the other half dries out. Many published results showed that PRD may save water without significant effect on yield. The aim of this work was to compare the effects of PRD with full irrigation (FI) on yield and antioxidant activity in grape berry, potato tuber and tomato fruit.

In both experimental conditions (field and polytunnel), the soil water content in FI treatment was kept close to field capacity, although in PRD treatment, 70% of the irrigation water in FI was applied to one half of the root system, and irrigation was shifted according to soil water content decrease in the dry side of the root zone. At the end of the vegetation season, analyses of total yield of fruit and tubers and their quality were carried out. Antioxidant activity of tomato fruit ethanolic extract was evaluated against 2,2′-azinobis (3-eyhylbenzothiazoline-6-sulfonic acid) radical cation ($ABTS^{\cdot+}$) and expressed as Trolox (6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid) equivalent antioxidant capacity (TEAC).

In general, treatment differences in yield were not significant for either crop although WUE and antioxidant activity in the PRD treatments were higher than in the FI treatment for investigated crops.

These results for all PRD-treated crops showed that PRD could be a useful strategy to save irrigation water without significantly sacrificing either the quantity or quality of yield.