

Serbian Plant Physiology Society

Institute for Biological Research „Siniša Stanković”, University of Belgrade

# 19<sup>th</sup> SYMPOSIUM

of the Serbian Plant Physiology Society

*Programme and Abstracts*



Banja Vrujci, 13-15 June 2011



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**PROGRAMME  
SERBIAN PL**

**Monday, June 13**

*Presentations and*

Up to 12.00  
12.00-14.00  
13.00-14.00  
14.00-14.30

**Section 1 - Plena**

14.30 - 15.00

15.00 - 15.30

15.30 - 16.00

16.00-17.00

**Section 2 - Plena**

17.00 - 17.30

**Section 3 - Plena**

17.30 - 18.00

18.00 - 18.30

18.30 - 19.00

**Tuesday, June 14**

*Presentations and*

**Section 4 - Plena**

8.30 - 9.15

9.15 - 9.45

9.45 - 10.30

10.30 - 10.50

10.50 - 11.20

11.20 - 11.50

## Proteome analysis in fruits pericarp of tomato plants exposed to partial root drying

Milena Marjanović<sup>1</sup>, Radmila Stikić<sup>1</sup>, Mireille Faurobert<sup>2</sup>, Biljana Vucelić-Radović<sup>1</sup>, Zorica Jovanović<sup>1</sup>, Slaviša Đorđević<sup>1</sup>  
(e-mail: milena.pauk@agrif.bg.ac.rs)

<sup>1</sup> University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia

<sup>2</sup> National Institute for Agricultural Research - INRA, Domaine Saint Maurice, BP 94 - 84143 Montfavet Cedex

Recent results demonstrated that partial root drying (PRD) is the irrigation methods that tend to decrease agricultural use of water with the small or no effect on yield. Method is based on the knowledge of plant reaction to drought. The aim of this paper was to provide a broader view of tomato fruit responses to PRD at the level of proteins by the use of proteomic tools. Two dimensional electrophoresis techniques were used to detect changes in the levels of protein expression in two stages of development of tomato fruit pericarp of two genotypes (wild type and flacca mutant - deficient in plant hormone abscisic acid), and the varying protein spots (70 of them) were picked, and proteins were analyzed by LC-MS/MS mass spectrometry. Identification was done using the SGN tomato unigene database. Proteins were clustered in several categories according to their functional role: related to cytoskeleton and cell growth, related to the stress resistance, energy production, hormone metabolism and signalling, membrane transport, nucleic acid metabolism and other metabolic processes. The results link protein variation and network with the major phases of fruit development and explained the effects of applied irrigation techniques.

This work was supported by Ministry of Education and Science of Republic Serbia (Project TR 31005).

## The effects of deficit irrigation methods on the yield and quality of tomato

Sladana Savić<sup>1</sup>, Radmila Stikić<sup>2</sup>, Zorica Jovanović<sup>2</sup>, Biljana Vucelić-Radović<sup>2</sup>, Milena Pauković<sup>2</sup>, Slaviša Đorđević<sup>2</sup>  
(bonita.sladja@gmail.com)

<sup>1</sup> Megatrend University, Faculty of Biofarming, Maršala Tita 39, 24300 Bačka Topola, Serbia

<sup>2</sup> University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia

Tomato is a crop of worldwide economic importance, and the factors controlling its fruit growth and quality attracted considerable research interest. The aim of this paper was to investigate the effects of deficit irrigation methods (partial root-zone drying (PRD) and regulated deficit irrigation (RDI)) on the yield, water use efficiency (WUE) and quality of tomato fruit and to compare these results with the results obtained for fully irrigated (FI) plants. Under PRD and RDI tomato plants were irrigated with 60% of the water that was applied to FI. At the end of the vegetation season, analyses of total yield, fruit quality and WUE were carried out. WUE was calculated on the basis of fruit dry weight and the amounts of water used by the crop. Tomato quality was characterized on the basis of fruit fresh weight by measuring soluble solids, titrable acidity and antioxidant activity. Results showed that with both deficit irrigation methods is possible to increase WUE without significant reduction of tomato yield or yield quality. Comparison between deficit irrigation methods showed an increase in antioxidative activity in tomato fruits under PRD and thus indicated that for tomato PRD method could be more beneficial irrigation method than RDI.

This work was supported by Ministry of Education and Science of Republic Serbia (Project TR 31005).

## Expression (*Solanum*)

Ivana Momčilović  
(ivana.momcilovic@agrif.bg.ac.rs)

<sup>1</sup> Institute for Biotechnology, University of Belgrade, Bulevar despotov 61, 11000 Belgrade, Serbia

<sup>2</sup> University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia

<sup>3</sup> University of Belgrade, Faculty of Biology, Studentski trg 16, 11000 Belgrade, Serbia

Small heat shock proteins (sHSPs) which play an important role in preventing the denaturation of soluble heat shock proteins (HSPs) and in maintaining cellular homeostasis. In this study, the expression of sHSPs in tomato plants subjected to heat stress was analyzed. The results showed that sHSPs were induced in tomato plants subjected to heat stress. The expression of sHSPs was higher in the leaves than in the fruits. The results showed that sHSPs are involved in the response of tomato plants to heat stress. Financed by Ministry of Education and Science of Republic Serbia (Project TR 31005).

## Toxic effect of (*Triticum aestivum*)

Milan Stanković  
(mstankovic@kg.ac.rs)

University of Kragujevac, Faculty of Agriculture, 27000 Kragujevac, Serbia

The aim of this study was to investigate the effect of deficit irrigation methods (PRD and RDI) on the yield, water use efficiency (WUE) and quality of tomato fruit and to compare these results with the results obtained for fully irrigated (FI) plants. Under PRD and RDI tomato plants were irrigated with 60% of the water that was applied to FI. At the end of the vegetation season, analyses of total yield, fruit quality and WUE were carried out. WUE was calculated on the basis of fruit dry weight and the amounts of water used by the crop. Tomato quality was characterized on the basis of fruit fresh weight by measuring soluble solids, titrable acidity and antioxidant activity. Results showed that with both deficit irrigation methods is possible to increase WUE without significant reduction of tomato yield or yield quality. Comparison between deficit irrigation methods showed an increase in antioxidative activity in tomato fruits under PRD and thus indicated that for tomato PRD method could be more beneficial irrigation method than RDI.