# BOOK OF ABSTRACTS

First Legume Society Conference

*2013: A Legume Odyssey*

9-11 May 2013, Novi Sad, Serbia

First Legume Society Conference
*2013: A Legume Odyssey*

First Legume Society Conference
*2013: A Legume Odyssey*

# Book of Abstracts

Editors:
Aleksandar Mikić
Diego Rubiales
Vuk Đorđević

International Legume Society
Institute of Field and Vegetable Crops, Novi Sad, Serbia
2013

# Scientific Committee

Michael Abberton (International Institute of Tropical Agriculture, Nigeria)
Paolo Annicchiarico (CRA, Centro di Ricerca per le Produzioni Foraggere e Lattiero-Casearie, Italy)
Marina Carbonaro (INRAN, Italy)
Branko Ćupina (University of Novi Sad, Faculty of Agriculture, Serbia)
Vuk Đorđević (Institute of Field and Vegetable Crops, Serbia)
Gérard Duc (INRA, France)
Noel Ellis (Aberystwyth University, IBERS, UK)
Aleksandar Mikić (Institute of Field and Vegetable Crops, Serbia)
Teresa Millan (University of Córdoba, Spain)
Fred Muehlbauer (Washington State University, USA)
Diego Rubiales (CSIC, Institute for Sustainable Agriculture, Spain)
Marta Santalla (CSIC, Misión Biológica de Galicia, Spain)
Petr Smýkal (Palacký University at Olomouc, Czech Republic)
Fred Stoddard (University of Helsinki, Finland)
Wojciech Święcicki (Institute of Plant Genetics, Poland)
Cengiz Toker (Akdeniz University, Turkey)
Carlota Vaz Patto (Universidade Nova de Lisboa, ITQB, Portugal)
Tom Warkentin (University of Saskatchewan, Canada)

# Local Organising Committee

Svetlana Antanasović (University of Novi Sad, Faculty of Agriculture, Novi Sad)
Vuk Đorđević (Institute of Field and Vegetable Crops, Novi Sad)
Rada Jovanović (Institute of Field and Vegetable Crops, Novi Sad)
Đura Karagić (Institute of Field and Vegetable Crops, Novi Sad)
Snežana Katanski (Institute of Field and Vegetable Crops, Novi Sad)
Đorđe Krstić (University of Novi Sad, Faculty of Agriculture, Novi Sad)
Jelena Marinković (Institute of Field and Vegetable Crops, Novi Sad)
Ana Marjanović-Jeromela (Institute of Field and Vegetable Crops, Novi Sad)
Vojislav Mihailović (Institute of Field and Vegetable Crops, Novi Sad)
Aleksandar Mikić (Institute of Field and Vegetable Crops, Novi Sad)
Sanja Mikić (Institute of Field and Vegetable Crops, Novi Sad)
Jegor Miladinović (Institute of Field and Vegetable Crops, Novi Sad)
Branko Milošević (Institute of Field and Vegetable Crops, Novi Sad)
Zorica Nikolić (Institute of Field and Vegetable Crops, Novi Sad)
Mirjana Vasić (Institute of Field and Vegetable Crops, Novi Sad)
Sanja Vasiljević (Institute of Field and Vegetable Crops, Novi Sad)

Technical Editors:
Sanja Mikić and Aleksandar Mikić

ISBN 978-86-80417-44-8

Printed by Abraka Dabra, Novi Sad, Serbia, in 300 copies

Under the auspices of

Ministry of Education, Science and Technological Development
of the Republic of Serbia

Secretariat of the Science and Technological Development
of the Province of Vojvodina

Secretariat of Agriculture, Forestry and Water Management
of the Province of Vojvodina

## Antioxidant characteristics of symbiotic association of soybean and different *Bradyrhizobium japonicum* strains

Jelena Marinković[1], Vuk Đorđević[1], Dragana Bjelić[1], Branislava Tintor[1], Jegor Miladinović[1], Dragana Jošić[2], Biljana Vucelić-Radović[3]

[1]*Institute of Field and Vegetable Crops, Novi Sad, Serbia*
[2]*Institute of Soil Science, Belgrade, Serbia*
[3]*University of Belgrade, Faculty of Agriculture, Belgrade-Zemun, Serbia*

The ability of legume plants to fix atmospheric nitrogen in symbiotic association with nodule bacteria, have great environmental and agricultural significance. *Bradyrhizobium japonicum* is the most common soybean microsymbiont. In order to overcome the negative effects of drought, more tolerant crops genotypes are created and agricultural practices are improved. Selection of effective strains of rhizobia more tolerant to water deficit is certainly a measure that can increase nitrogen fixation and improve soybean production under drought conditions. This study was focused on the impact of drought on antioxidant characteristics of symbiotic communities of soybean and different *Bradyrhizobium japonicum* strains from the collection of Institute of Field and Vegetable Crops. Drought stress conditions increased the activity of the soluble and ionically cell wall-bound peroxidases in plant roots and nodules. The antioxidant activities in the roots and nodules as well as the content of soluble proteins were significantly increased under conditions of water deficit. Increased protein content in stress conditions can be explained by the synthesis of proteins involved in antioxidant response and accumulation of plant proteins involved in adaptation to drought, as confirmed by a significant correlation between protein content and the activities of peroxidase in roots and nodules. The applied strain significantly affected the activity of soluble and cell wall-bound peroxidase, antioxidant activity and the content of soluble proteins. The applied strain had a greater impact on the studied parameters in plants that were exposed to water deficit compared to plants that were provided optimum water. Significant correlations between antioxidant activity and the activity of soluble and bound peroxidases in nodules and roots indicated a linked antioxidant response of plant and bacteria under stress.

**Acknowledgements**
The projects TR-31022 and TR-31072 of the Ministry of Education, Science and Technological Development of the Republic of Serbia