

BOOK OF ABSTRACTS

3rd International Conference on Plant Biology (22nd SPSS Meeting)



9-12 JUNE 2018
BELGRADE

Serbian Plant Physiology Society

Institute for Biological Research "Siniša Stanković", University of Belgrade

Faculty of Biology, University of Belgrade

**3rd International Conference
on Plant Biology
(22nd SPPS Meeting)**



9-12 June 2018, Belgrade

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PROGRAMME



Saturday 9th June

09:00-14:00 *Registration*

14:00-14:30 *Opening Ceremony*

Section 2 • Plant Stress Physiology

Chairs: Sonja Veljović-Jovanović & Ivana Maksimović

- 14:30-15:00 (Plenary lecture) **Hrvoje Fulgosi** Sifting the elements of FNR-TROL bifurcation
- 15:00-15:30 (Plenary lecture) **Autar Mattoo** Tomato (*Solanum lycopersicum*) lipoxygenase (LOX) gene family: Delineating gene members associated with growth, development and abiotic stresses
- 15:30-15:50 (Invited talk) **Tamara Rakić** Two-year study of ecophysiological parameters of *Miscanthus × giganteus* grown on tailing pond at the mine "Rudnik" (Serbia)
- 15:50-16:10 (Invited talk) **Vladimir Crnojević** Data science in biosystems
- 16:10- 16:40 *Coffee break*
- 16:40-17:00 (Invited talk) **Ingeborg Lang** Tolerance to heavy metals – some examples in bryophyte species
- 17:00-17:15 (Selected talk) **Predrag Bosnić** Silicon mediates sodium (Na⁺) transport in maize under moderate NaCl stress
- 17:15-17:30 (Selected talk) **Milan Borišev** Dynamics of Cd accumulation and metabolic adaptation of *Salix alba* grown hydroponically
- 17:30- 17:45 (Selected talk) **Slavica Dmitrović** Nepetalactone-rich essential oil mitigates BASTA-induced ammonium toxicity in *Arabidopsis thaliana* L. by maintaining glutamine synthetase activity
- 17:45-18:00 *Group Photo*
- 18:00-19:00 *Poster session: Plant Stress Physiology (Section 2)*
- 19:00-21:00 *Welcoming cocktail (Rectorate of the University of Belgrade)*

Sunday 10th June09:00-14:00 *Registration*

Section 1 • Plant Growth, Development, Metabolism and Nutrition

Chairs: Snežana Zdravković-Korać & Miroslav Nikolić

09:30-10:00	(Plenary lecture) Guido Grossmann	Cellular growth regulation in roots - how to adapt in a complex environment
10:00-10:20	(Invited talk) Ondrej Novák	Tissue- and cell-specific analysis of phytohormones
10:20-10:40	(Invited talk) Ksenija Radotić	Plant cell walls – mechanical and chemical modifications underpin growth and stress response
10:40-11:00	(Invited talk) Herman Heilmeier	Bioavailability of elements for effective phytoremediation and phytomining: the role of rhizosphere processes
11:00- 11:30	<i>Coffee break</i>	
11:30-11:50	(Invited talk) Václav Motyka	Comprehensive phytohormone profiling during Norway spruce (<i>Picea abies</i>) somatic embryogenesis
11:50-12:05	(Selected talk) Danijela Paunović	Are receptor tyrosine kinases chimeric AGP's?
12:05-12:20	(Selected talk) Jelena Pavlović	Silicon increases iron use efficiency in cucumber- a strategy 1 model plant
12:20-12:35	(Selected talk) Katarina Ćuković	Characterization of <i>Arabidopsis</i> <i>GLN1;5</i> knockout mutant
12:35- 14:00	<i>Lunch break</i>	

Sunday 10th June

Section 4 • Phytochemistry

Chairs: Vuk Maksimović & Vladimir Mihailović

14:00-14:30	(Plenary lecture) Alain Tissier	Engineering plant diterpenoid pathways in yeast: increasing yield and expanding product diversity
14:30-14:50	(Invited talk) Roque Bru Martinez	Metabolic engineering and elicitation strategies to produce stilbenoids in plant cell cultures
14:50-16:10	(Invited talk) Sokol Abazi	New fatty acids discovered for the first time in <i>Vitex agnus-castus</i>
16:10-16:30	(Invited talk) Peđa Janačković	Do plant volatiles reflect taxonomy?
16:30- 17:00	Coffee break	
17:00-17:20	(Invited talk) Angelos Kanellis	The <i>Cistus creticus</i> terpene synthase gene family
17:20-17:40	(Invited talk) Marina Soković	Terpenes and terpenoids: linking bioactivity, opportunities and challenges
17:40-18:00	(Invited talk) Jules Beekwilder	Plant terpenes and bioplastics
18:00-18:15	(Selected talk) Jelena Dragišić Maksimović	Enzymatic behavior of edible berries – “Beroxidases”
18:15-18:30	(Selected talk) Elma Vuko	Inhibition of satellite RNA associated cucumber mosaic virus infection by essential oil of <i>Micromeria croatica</i> (Pers.) Schott
18:30-18:45	(Selected talk) Dorisa Čela	Structure elucidation of a new alkaloid and other 11 known compounds isolated from <i>Gymnospermium</i> species
18:45-19:45	Poster sessions: Plant Growth, Development, Metabolism and Nutrition; Phytochemistry (Sections 1 and 4)	

Monday 11th June

Section 5 • Applications in Agriculture, Pharmacy and Food Industry

Chairs: Jasmina Glamočlija & Slavica Ninković

09:00-9:30	(Plenary lecture) Mondger Bouzayen	New factors controlling fruit development: epigenetic modifications associated with the fruit set transition in tomato
09:30-10:00	(Plenary Lecture) Andrew Allan	New breeding technologies for fruit trees
10:00-10:20	(Invited talk) Slađana Žilić	Food and pharmacy application of anthocyanins originating from colored grains
10:20-10:40	(Invited talk) Eligio Malusa	Microbial-based inputs: opportunities and challenges for sustainable and resilient agricultural productions
10:40-11:10	Coffee break	
11:10-11:30	(Invited talk) Dragana Miladinović	Old problems, new tools - Integrated approach to oil crop breeding
11:30-11:45	(Selected talk) Brankica Tanović	Prospects of cabbage leaf debris use in the control of <i>Fusarium</i> wilt of pepper
11:45-12:00	(Selected talk) Nina Devrnja	Effects of tansy essential oil on fitness and digestion process of gypsy moth larvae
12:00-12:15	(Selected talk) Zora Dajić-Stevanović	Advantages and limitations of phytogetic feed additives
12:15-14:00	Lunch break	

Monday 11th June

Section 3 • Biodiversity, Conservation and Evolution of Plants

Chairs: Jelena Aleksić & Aleksej Tarasjev

- 14:00-14:30 (Plenary lecture) **Hendrik Poorter** Meta-Phenomics: Converting data into knowledge
- 14:30-15:00 (Plenary lecture) **Antonio Granell Richart** The biodiversity present in European tomato, phenotypes galore and a first insight in the underlying genetics
- 15:00-15:20 (Invited talk) **Zlatko Šatović** Origin and genetic diversity of Croatian common bean landraces
- 15:20-15:50 **Coffee break**
- 15:50-16:10 (Invited talk) **Aneta Sabovljević** Conservation physiology of bryophytes
- 16:10-16:30 (Invited talk) **Nataša Barišić Klisarić** Biomonitoring: Plants' (in) perspective
- 16:30-16:50 (Selected talk) **Sanja Budečević** Morphological diversity of functionally distinctive floral organs in *Iris pumila*: Does the flower color matter?
- 16:50-17:05 (Selected talk) **Žaklina Marjanović** First data on arbuscular mycorrhizal communities from selected climatic borderline forest ecosystems of the Balkan Peninsula
- 17:05-17:20 (Selected talk) **Tijana Banjanac** Verification of interspecies hybridization within the genus *Centaureum* Hill using *EST-SSR* molecular markers
- 17:20-18:20 **Poster sessions: Applications in Agriculture, Pharmacy and Food Industry; Biodiversity and Conservation, Evolutionary Plant Biology (Sections 5 and 3)**
- 18:20-18:30 **Closing Ceremony**
- 18:30-19:00 **SPPS General Assembly Meeting**
- 21:00-01:00 **Gala dinner: Restaurant "Vizantija"**

Tuesday 12th June

- 10:00-16:00 **Excursion: Special Nature Reserve "Carska bara"**

of *Gentianaceae* plants, the aim of this study was to identify and quantify secondary metabolites of methanolic extract of *B. perfoliata* aerial parts, as well as to evaluate its *in vitro* antioxidant and anti-inflammatory properties. Secoiridoid glycosides were detected in the highest quantities in the extract using UHPLC/DAD/(+/-)HESI-MS/MS analysis. Gentiopicrosin (278.49 mg g⁻¹ dry extract) was the most dominant compound among identified secoiridoids. Besides secoiridoid glycosides, HPLC analysis showed that extract also contained more than twenty different phenolic compounds. The antioxidant activities of extract were estimated using seven different methods. Considering the results of the total antioxidant capacity, *B. perfoliata* methanolic extract possessed approximately 16% of the antioxidant capacity of ascorbic acid. *B. perfoliata* extract showed better antioxidant potential with lower IC₅₀ value in the determination of inhibition of lipid peroxidation compared to its DPPH; ABTS⁺ and NO[•] radical scavenging activities. At the concentration of 50 µg mL⁻¹, extract showed 19.65% of COX-1 and 48.02% of COX-2 inhibition activities. The results of the COX-2 gene expression assay in THP-1 macrophages displayed that the *B. perfoliata* extract, at the concentration of 25 µg mL⁻¹, had no significant influence on COX-2 gene expression. The obtained results open up the opportunity to deeply investigate promising anti-inflammatory properties of *B. perfoliata*.

Keywords: *Blackstonia perfoliata* (L.) Huds., secoiridoids, antioxidant activity, COX-1, COX-2

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Effect of nitrogen mineral nutrition on yield and some technological traits of sugar beet root in 2017

PP5-45

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Constant progress in plant breeding, the development of new hybrids and varieties, accompanied by climate change requires continuous review of growing technology. The most important part of plant production is fertilization, particularly with nitrogen. Nitrogen is required in great quantities for growing plants and it affects the yield of many crops. However this is very dynamic element and large nitrogen reserves cannot be stored in the soil. Considering the specificity of sugar beet production, where nitrogen, in addition to its impact on root yield, significantly affects the quality of the root, it is necessary to constantly review fertilization protocols. Effects of four levels of nitrogen fertilizers (40, 80, 120 and 160 kg N ha⁻¹) on root yield and quality of commercial sugar beet hybrids were examined in the field trials during the growing season 2017. Nitrogen fertilizers were applied before the sowing. Field trial was organised by Randomised Complete Block Design (RCBD) with four replications. There were differences between sugar beet hybrids for root yield, sugar content and alpha amino nitrogen. Unfavorable environmental conditions in 2017 reduced the effect of nitrogen fertilization, except that the high nitrogen application rates significantly increased alpha amino nitrogen level in sugar beet roots.

Keywords: growing technology, nitrogen, sugar beet