BOOK OF ABSTRACTS

3rd International Conference on Plant Biology

(22nd SPPS 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 June

09:00-14:00 *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	*Coffee break*	
11:30-11:50	(Invited talk) **Václav Motyka**	Comprehensive phytohormone profiling during Norway spruce (*Picea abies*) 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 *Arabidopsis GLN1;5* knockout mutant
12:35- 14:00	*Lunch break*	

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 *Vitex agnus-castus*
16:10-16:30	(Invited talk) **Peđa Janaćković**	Do plant volatiles reflect taxonomy?
16:30- 17:00	*Coffee break*	
17:00-17:20	(Invited talk) **Angelos Kanellis**	The *Cistus creticus* 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 *Micromeria croatica* (Pers.) Schott
18:30-18:45	(Selected talk) **Dorisa Çela**	Structure elucidation of a new alkaloid and other 11 known compounds isolated from *Gymnospermium* 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 *Fusarium* 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 phytogenic feed additives
12:15-14:00	*Lunch break*	

Monday 11th June

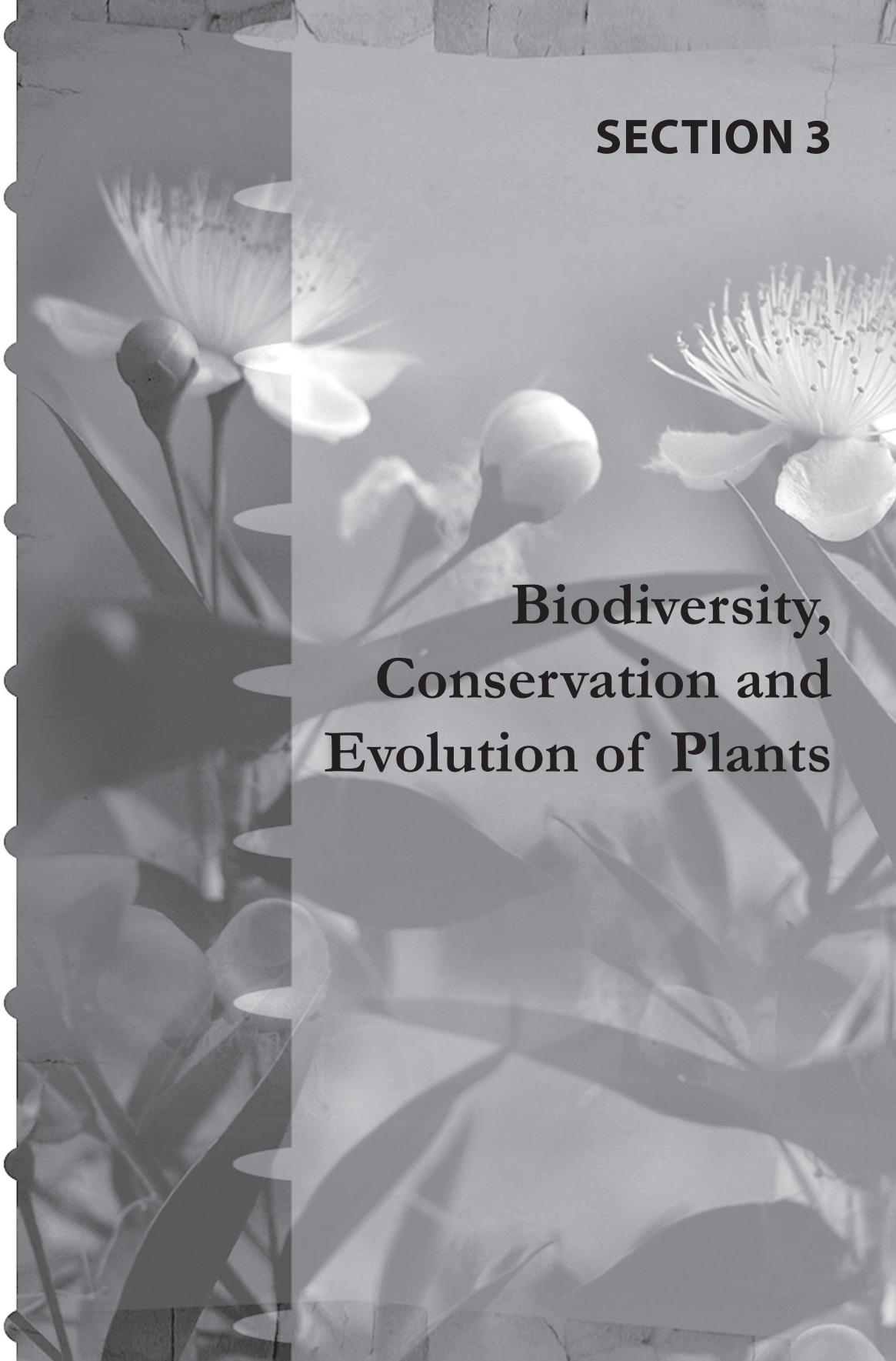
Section 3 • Biodiversity, Conservation and Evolution of Plants

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 *Centaurium* 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"*



SECTION 3

Biodiversity, Conservation and Evolution of Plants

The longevity of annual wild *Helianthus* seeds in short- to medium-term storage conditions

PP3-16

Sreten Terzić

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Wild species are important in sunflower breeding as a source of genetic variability, as the required characters are not always available in the cultivated sunflower gene pool. The use of wild species is complex due to interspecific cross incompatibility, while regeneration of accessions can be difficult because of low self-fertility. Viability of seeds over extended periods is thus important as it directly influences the frequency of regenerations and seed availability in active collections. Viability of 7 annual wild sunflower species stored up to 14 years at 4 ± 2 ºC and 55 ± 5% relative humidity is reported.

Initially the germination slightly increased, which was most visible in *H. niveus*, and after 3 to 5 years started to decrease, but the curve parameters were species characteristic. After 8 years, the evaluated species had on average 20% lower germination. *H. argophyllus*, *H. petiolaris* and *H. praecox* retained highest germination after 8 years: 70, 65 and 60% respectively. The largest decrease was found for *H. neglectus* and *H. annuus* where germination decreased to 50%. Lowest starting germination was found for *H. debilis* (62%) and *H. niveus* (55%), but unlike *H. niveus* where germination decreased similar to other species, *H. debilis* was the most stable in retaining viability together with *H. argophyllus*. The presented results contribute to better understanding of seed longevity in storage and are important when determining the monitoring frequency and the need for regenerations.

Keywords: *Helianthus*, seeds, longevity, conservation, genebank

This study was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, Grant No. TR31025, and Provincial Secretariat for Higher Education and Science of Vojvodina, Grant No. 114-451-2126/2016-03.

Impact of traffic-borne dispersal of invasive *Asclepias syriaca* L. in Special Nature Reserve Deliblato sands

PP3-17

Stevan Avramov[1], Danijela Miljković[1], Nataša Barišić Klisarić[1], Uroš Živković[1], Aleksej Tarasjev[1], Marius Oldja[2]

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The effectiveness of roadside corridors for the migration of invasive plant species has often been linked to altered site conditions along roads due to increased disturbance, thus reducing the competitive strength of the native roadside flora. The invasion histories of some roadside plant species indicate that, in addition to site-related changes, traffic also promotes invasiveness.

Asclepias syriaca (common milkweed) is a fast-growing competitor with effective clonal spreading and seed dispersal ability. A single common milkweed plant can produce a few thousand seeds with long, white flossy hairs that can easily be carried by wind. *A. syriaca* is common along the borders of the protected area - Deliblato sands, and is spreading into this area, mostly along the roads. Impact of traffic and accompanying human activities as dispersal vectors on seed deposition of *A. syriaca* in Deliblato sands has been investigated and our results demonstrate that, besides altered site conditions and abundance along particular Special Nature Reserve border, traffic-borne dispersal is an important cause of the higher incidence of *A. syriaca* on roadside verges. There was significantly higher number of *A. syriaca* plants along roads with heavier traffic. Also, higher frequency of road use results in higher incidence of new establishment of *A. syriaca*.

Transport and human activities around roads can also explain the occurrence of isolated founder populations and discontinuous distributional patterns of common milkweed in this area.

Keywords: invasive species, *Asclepias syriaca*, traffic-borne dispersal, Deliblato sands

This study is supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, Grant No. 173025.

Comparative study of plant morphology and leaf anatomy of near threatened terrestrial species, *Orchis morio* L.

PP3-18

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A terrestrial orchid, *Orchis morio* L. is one of the near threatened species in Croatia. Although it inhabits different habitats at a different altitude, a variety of anthropogenic influences, including habitat degradation and transformation, succession caused by the abandonment of traditional management activities (e.g. grazing, mowing) as well as expected climate changes, have been recognized as the most serious threats for its survival. To succeed in a variable environment, *O. morio* develops specific adaptive responses. We examined 16 morphological and 10 anatomical parameters of *O. morio* plants growing on two different habitats at a different altitude (steppe-like grassland and hilly grassland area) in Northeast Croatia. The results showed that most of the analysed morphological parameters (e.g. plant height, the total number of leaves, the width of the steam below the inflorescence, inflorescence length, total number of flowers), were similar in both study sites while leaf size and anatomy were significantly different. At the hilly grassland area, orchid leaves have significantly larger upper and lower epidermal cells, thicker cuticles and mesophyll layers. In conclusion, changes in morphology and leaf anatomy of *O. morio* depend on the local environmental conditions, but further investigations are necessary to improve our knowledge about its adaptation strategies and to provide an important base for the effective conservation of this threatened species.

Keywords: *Orchidaceae*, ecological adaptation, elevation gradient, Croatia.