

# BOOK OF ABSTRACTS

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



9-12 JUNE 2018  
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**Serbian Plant Physiology Society**

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

**Faculty of Biology, University of Belgrade**

**3<sup>rd</sup> International Conference  
on Plant Biology  
(22<sup>nd</sup> SPPS Meeting)**



9-12 June 2018, Belgrade

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of this study was to analyze and compare changes in photosynthetic performance of Indigobush and accompanying woody species (*Quercus robur* L. and *Alnus glutinosa* (L.) Gaertn.). Therefore, photosynthetic performance was analyzed by measuring direct chlorophyll fluorescence twice during the vegetation season, in May and July. Indigobush seedlings grow in the Pokupsko basin forest complex near Karlovac (Croatia) in stands of varying size and age. For this investigation, three locations were chosen that were about the same size and age. Our results showed that performance index ( $PI_{abs}$ ) in Indigobush increased significantly in July at all three locations compared to both accompanying species. Moreover, more enhanced electron transport per reaction center ( $ET_0/RC$ ), the efficiency that an electron moves further than primary electron acceptor  $Q_A^-$  ( $ET_0/TR_0$ ), maximum quantum yield of primary photochemistry ( $TR_0/ABS$ ) as well as quantum yield of electron transport ( $ET_0/ABS$ ) followed by an increase in structure-function index ( $SFI_{abs}$ ) in Indigobush was observed in July. Our results suggested that Indigobush was able to utilize absorbed light energy more efficiently than accompanying native species.

**Keywords:** Indigobush, invasive alien species, performance index, structure-function index

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## Mucilaginous exudate from the apical root sections of *Allium ascalonicum* provokes autoinhibition of proliferation and subsequent bud regeneration

PP1-28

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Mucilage secreted from *in vitro*-cultured organs has been frequently reported in numerous *Allium* species. Despite its adverse effect on cell proliferation and subsequent *de novo* regeneration, this phenomenon has never been thoroughly studied. In *Allium ascalonicum* (shallot), only the uppermost part of the root tip responds to a callus induction treatment by forming callus with bud-forming capacity. The very same site of the root secretes mucilage during the course of its cultivation on callus induction medium (CIM). To address this issue, mucilaginous exudate (10  $\mu$ L), collected from previously cultured root-tips of shallot, was applied directly to the root-tips isolated from *in vitro*-cultured shallot plants. Untreated root-tips were used as a control. All explants were cultivated on CIM containing 5  $\mu$ M 2,4 D + 5  $\mu$ M BA for 10 weeks, and then on regeneration induction medium supplemented with 5  $\mu$ M BA for 4 weeks. A remarkable difference in cell proliferation and subsequent bud regeneration between treated and control root-tips were observed. Calli formed from treated root-tips were 3-fold lighter (53.7 mg vs. 169.9 mg) and regenerated buds with lower frequency (14.64% vs. 89.2%) and smaller mean bud number per explant (0.1 vs. 15.4), and these buds were shorter (0.65 mm vs. 16.4 mm) compared to the control. Root-tips isolated from older roots secreted the mucilage at the higher frequency, formed smaller calli and regenerated fewer buds than those isolated from younger roots. Inhibition of cell proliferation indicates the potential of this exudate in control of cell proliferation in the treatment of some diseases.

**Keywords:** *Allium ascalonicum*, bud regeneration, mucilaginous exudate, roots, shallot

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