



The Balkan Botanical Congress is an international meeting that has been held nearly every three years, since 1997. It brings together botanists from around the world who perform research on plants in the widest sense, as well as scientists who are engaged in the plant sciences and their applications. We were honored to host such an extraordinary scientific event this year in Serbia.

The 7th Balkan Botanical Congress – 7BBC 2018 took place in Novi Sad from September 10th to 14th 2018. The Congress was organized by the University of Novi Sad, Faculty of Sciences, Department of Biology and Ecology and the “Andreas Wolny” Botanical Society, along with the great help of 7 co-organizers and more than 30 supporters and sponsors. It truly was not possible to happen without exceptional help of our co-organizer - the Institute for Nature Conservation of Vojvodina Province who made this congress not only possible, but totally awesome.

7BBC 2018 placed a special emphasis on plants of the Balkan Peninsula and covered various research fields. The Congress was organized into ten sessions: Plant Anatomy and Physiology, Plant Taxonomy and Systematics, Plant Molecular Biology and Genetics, Floristics, Vegetation and Phytogeography, Conservation Botany and Plant Invasions, Phytochemistry and Plant Resources, Agronomy and Forestry, Botanical Collections and History, Ethnobotany and Cryptogam Biology. These topics were elaborated through five plenary lectures given by eminent scientists, as well as in the form of introductory lectures, oral and poster presentations. With an overall number of 387 abstracts presented on the very latest of botanical science, we shared knowledge, expertise and novel ideas. We welcomed nearly 400 scientists to Novi Sad, and we believe that we succeeded in our joint endeavor to make new networks and new connections among botanists. We hope that we contributed to advancements in the wide and beautiful field of botany, ranging from fundamental botanical research to applied botany.

It is our great pleasure to publish this Abstract Book in Botanica Serbica, in the same year that this international journal, a renamed continuation of the Bulletin of the Institute of Botany and Botanical Garden Belgrade, celebrates its 90 year jubilee. On behalf of the Scientific and Organizing committee of 7BBC 2018 we would like to express our gratitude to all contributors, colleagues and sponsors for taking part in the 7th Balkan Botanical Congress, as well as for their efforts and contributions to it's successful realization.

Goran Anačkov and Lana Zorić,
Co-presidents of the Scientific Committee of the 7 BBC
and guest editors of Botanica Serbica 42 (supplement 1).

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Sessions:

The 7th Balkan Botanical Congress consists of plenary lectures, introductory lectures of each session, as well as oral and poster presentations on the following topics:

Sessions 1. Plant Anatomy and Physiology

Sessions 2. Plant Taxonomy and Systematics

Sessions 3. Plant Molecular Biology and Genetics

Sessions 4. Floristics, Vegetation and Phytogeography

Sessions 5. Conservation Botany and Plant Invasion

Sessions 6. Phytochemistry and Plant Resources

Sessions 7. Agronomy and Forestry

Sessions 8. Botanical Collections and History

Sessions 9. Ethnobotany

Sessions 10. Cryptogam Biology

Poster presentation 20 01 04

COMPARATIVE PERICARP ANATOMY OF WILD PERENNIAL *HELIANTHUS* L. SPECIES

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The production of high yielding cultivated sunflower genotypes, which are of higher and improved quality, as well as of increased resistance to abiotic and biotic factors, has been the main goal in the process of breeding. Apart from the taxonomically useful information, the characteristics of pericarp are very important in defining the fruit yield potential. General anatomy of the sunflower fruit is relatively well known, but not enough attention has been given to the research of the anatomic characteristics of the pericarp as potentially important parameters in the breeding programme. Therefore, we considered that it was important to make very detailed comparative analysis of pericarp anatomic characteristics of the 19 wild perennial *Helianthus* species. The plant material was cultivated in the experimental field. For anatomical observation mature achenes were randomly selected and cross sections were obtained from the middle part of the fruit, using cryotechnic procedure. Observations and measurements of the pericarp features were carried out using the scanning electron microscope (SEM) and light microscope with Image Analyzing System. The results obtained indicated the presence of some quantitative and qualitative differences in the pericarp anatomical characteristics among analyzed species. SEM analysis of the pericarp epidermis shows that cuticle varies in texture. Among the examined species the differences in the structure of pericarp are mostly recognized in the number of layers of hypodermis and sclerenchyma, by the percentage of sclerenchyma and in the shape of sclerenchyma groups. The results of the Multivariate Discriminant Analysis showed that species *Helianthus giganteus* L., *H. resinosus* Small, *H. hirsutus* Raf. and *H. glaucophyllus* D.M.Sm had remarkably bigger tissue differentiation than other species. Variations of the pericarp anatomy among the wild perennial *Helianthus* species could be related to their different dispersal strategies, as well as different dormancy and germination requirements.

ACKNOWLEDGMENTS: This study was supported by Provincial Secretariat for Higher Education and Science of Vojvodina, project 142-451-2422/2018-03.

KEYWORDS: anatomy, pericarp, sunflower, wild perennial

Poster presentation 21 01 24

EFFICIENT METHOD FOR *HYSSOPUS OFFICINALIS* L. MICROPROPAGATION

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In the case of medicinal plants, micropropagation procedures are nowadays used for obtaining a large number of valuable individuals starting from a donor plant with high production capacity. A highly efficient and low-cost protocol for tissue culture introduction and micropropagation of the medicinal plant hyssop (*Hyssopus officinalis* L.) has been conducted. Stem tips from plants vigorously growing under controlled conditions were used as initial explants. The explants were sterilized with 0.04% mercuric chloride (HgCl₂) solution for 20 minutes and washing three times with sterile distilled water in 15 minutes. The cultural media was full and half strength Murashige and Skoog (MS) medium containing indole-3-butyric acid. Full and ½ MS media without auxin were used as controls. For each variant, 20 glass tubes with two plants were used. In each tube, two tip and nodal explants were grown. Maximum shoot and root number were obtained on ½ MS medium supplemented with 0.1 mg L⁻¹ indole-3-butyric acid at the same time after four weeks of culture. The number of shoots per explant and shoot height were considered. The data on rooting percentage, the number of roots per plant and root length were collected after the same cultural period. The highest percentage of survival 85% for this medicinal plant was recorded in mixture of soil, sand and perlite (2:1:1 v/v/v). This mixture was most suitable for acclimatization of all propagated plants. Ex vitro acclimatization was carried out at 24°C and 70% relative humidity under 16 h illuminations (50 µmol m⁻²s⁻¹). After an adaptation period, the plants were transferred to the field. Developed in vitro techniques could provide a promising way for successful large-scale propagation of *Hyssopus officinalis* L.

ACKNOWLEDGEMENTS: This study was conducted with financial support from National Science Fund at the Bulgarian Ministry of Education and Science, Bilateral Joint Research Project DNTS Slovakia 01/3, 2016.

KEYWORDS: *Hyssopus officinalis* L., micropropagation, acclimatization, indole-3-butyric acid

Poster presentation 22 01 36

EFFECT OF GRAFTING ON WATERMELON ANATOMY AND GENETICS

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Grafting is an important, ancient plant propagation practice, widely used with fruit trees and in recent decades also with herbaceous plants. Grafting can contribute to an increased resistance to abiotic and biotic stresses as well as to higher yields. The aim of the present study was to investigate the changes in anatomical and genetic traits of the scion, induced by grafting watermelon (*Citrullus lanatus*) on calabash (*Lagenaria siceraria*) rootstock. Plant lines 'Lady' (*C. lanatus*) and 'Argentario' (*L. siceraria*) were grown in Hungary, Cece. 15-15 stem and leaf samples per population were collected from healthy, well-developed plants for microtome sectioning. The qualitative and quantitative characters of the transections of grafted and ungrafted *C. lanatus* were compared. For exploratory genetic analysis, Random Amplified Polymorphic DNA (RAPD) was used. The leaf extracts of the samples were tested by 23 primers, from which 8 were suitable for further analysis. Statistical analysis of anatomy was performed using F-test. Rho values and Principal Coordinates Analysis (PCoA) of the RAPD fragment patterns were calculated by R environment 3.1.2. software. Significant differences were found in the thickness of the one layered epidermis and in the characters of the vascular bundles in the stem. There were 8 vascular bundles arranged in one ring in ungrafted 'Lady', while 10 bundles in two rings in grafted ones. The xylem was significantly thicker in the grafted lines than in the ungrafted samples, because of the higher diameter of the xylem vessels. The only significant difference in leaf anatomy was the size of the rib above the main vascular bundle, the grafted samples having thicker midrib region than the ungrafted plants. Segregation of the samples estimated by Rho values showed that the rootstock was well separated from grafted (0.6051) and ungrafted (0.6367) 'Lady'. Furthermore, the grafted and ungrafted plants can be distinguished based on their RAPD fingerprint (0.2055). Based on our research, grafting influenced significantly the genetic background, and the process may provide i.a. better water uptake and transport for the scion, as supported by anatomical observations.

KEYWORDS: *Citrullus lanatus*, leaf, stem, RAPD, anatomy, grafting

Poster presentation 23 01 34

CHARACTERISTICS OF THE REPRODUCTIVE FEATURES OF *SATUREJA PILOSA* VELEN. VAR. *PILOSA* (LAMIACEAE)

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The genus *Satureja* L. (Lamiaceae) comprises about 200 species, largely distributed in the Mediterranean region of Europe, and in West Asia, North Africa and South America. Five of the *Satureja* species are found in the Bulgarian flora. The objective of the present work was to conduct the first embryological study of the Balkan endemic *S. pilosa* Velen. var. *pilosa* from the Bulgarian flora. The study established the features of the male and female reproductive sphere of the species in order to reveal the mode of reproduction, character, size and state of its populations. The plant material collected from plants of natural populations above the town of Sopot in Stara Planina Mountains was fixed in a mix of FAA and treated according to the Classical Paraffin Method. As a result, the structure in the male and female generative sphere and the processes of gamete development, pollination, endosperm and embryo formation were revealed. The male generative sphere was: tetrasporangiate anthers, Dicotyledonous-type of development of the anther wall that consists of epidermis, fibrous endothecium, one middle layer and glandular tapetum forming placetoids at the stage of one-nucleate pollen, predominantly tetrahedral microspore tetrads formation in result of simultaneous microsporogenesis, 2-celled mature pollen grains. The female generative sphere was: anatropous ovule, unicellular archesporium, Polygonum-type of development of the female gametophyte, Onagrad-type of embryogenesis. The features of the embryological structures and processes, and absence of apomixis characterize *S. pilosa* as a sexually reproducing species. The observed normal pass of processes in the generative sphere provides a high reproductive potential of the species and stability in the population numbers. The balanced processes and stable structures, and only sexual reproduction may decrease the adaptability of the species to environmental conditions. The endemism of *S. pilosa* is probably due to its dependence on specific environmental conditions, and more likely is a consequence of the low plasticity of the generative sphere. Therefore, measures such as conservation of its habitats and limitation of anthropogenic pressure on the populations would be most efficient for the preservation of this species.