Symposium on Genetics and Plant Breeding in Cereals: 100th Birth Anniversary of Academician Slavko Borojević (1919-2019)

BOOK OF ABSTRACTS

Novi Sad, Serbia, 13-15th November 2019, organized by the Serbian Academy of Sciences and Arts – Branch in Novi Sad, Faculty of Agriculture of the University of Novi Sad, and Institute of Field and Vegetable Crops in Novi Sad

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PROGRAM

Wednesday, November 13

17.00-18.00	Registration and Welcome Reception (The Serbian Academy of Sciences and Arts, Branch in Novi Sad, address Nikole Pašića 6)
from 18.00	Tour of Sremski Karlovci, Wine Tasting and Dinner

Thursday, November 14

9.15 – 10.00	Opening ceremony and welcome speeches by the organizers and special guests	
10.00 – 10.30	Coffee break	
	Chairpersons: Prof. Dr. Miodrag Dimitrijević, academician Dragan Škorić, academician Teodor Atanacković	
10.30-11.00	Opening lecture: From Cold Spring Harbour to the Novi Sad School of Genetics	Prof. Dr. Miodrag Dimitrijević, University of Novi Sad, Faculty of Agriculture
11.00-11.30	Plenary lecture: World Food Supply Present and Future - Problems and Prospects	Prof. Dr. Perry Gustafson, Adjunct Professor of Plant Sciences, College of Agriculture, Food and Natural Resources, University of Missouri, USA and retired geneticist of the Agricultural Research Service, USDA
11.30-12.00	Plenary lecture: Gene Manipulation In Wheat Improvement	
12.00-12.30	Plenary lecture: Селекция мягкой пшеницы в Национальном Центре зерна имени П. П. Лукьяненко: традиционные и биотехнологические методы	Dr. Davojan Rumik Oganesovič, Research Institute of Agriculture named after P.P. Lukyanenko, Krasnodar, Russia
12.30-12.45	Changes in Senescence Pattern Related With Breeding Progress in Winter Wheat	Dr. Milan Mirosavljević, Institute of Field and Vegetable Crops, Novi Sad
12.45-13.00	Improvement of Spike-Stem-Tillers (SST) Complex is a Challenge In Wheat Breeding	Prof. Dr. Ivan Panayotov, Agricultural Experimental Station - Dunav, Bulgaria
13.00-13.15	Polymorphisms and Flow of Gliadin Alleles in Wheat	Prof. Dr. Desimir Knežević, University of Priština, Faculty of Agriculture in Lešak, Kosovo & Metohija, Serbia
13.15-13.30	Discussion	
13.30-14.00	Poster Viewing Session	
from 14.00	Lunch and Closing Ceremony	

INTRODUCTORY NOTE

The greatness and wealth of a nation are not in numbers, area and material resources. The size and wealth of the nation are in people, ideas, achievements and moral values that this nation has created, reached and established.

Prof. Dr. Slavko Borojević, a geneticist, breeder, agronomist, professor, academician, built himself and his work into the greatness and wealth of his people, the state, and much wider than that - in the heritage of humanity.

The aspiration for freedom, the primordial, eternal struggle to achieve it, marked the life and deed of Professor Borojević. Firstly, he fought this battle as a warrior on the battlefield, then as a fighter against hunger, for food security, for liberty and independence through seed and food production self-sufficiency, creating our domestic, varieties of bread grain. It is this constant struggle that has helped to build the scientific thought of genetics at the Faculty of Agriculture in Novi Sad on the right foundation and to create the "Novi Sad School of Genetics", which, by the means of wheat breeding and through thousands of young people attending this school, has been introduced to the world, recognized and respected, like its father - professor Slavko Borojević.

The symposium "100th Birth Anniversary of Academician Slavko Borojević (1919-2019)" is devoted to remembrance of our great people, their work and legacy. In order to wisely go into the future, we need to know who we are, what we are and where we come from. We who are carrying all our ancestors in our genes, we do have the obligation to remember those who have indebted the Fatherland and preserve their work. This Symposium should bring us together around the scientific results of modern genetics and breeding, which were realized on the basis of the work and science of prof. Borojević. With this gathering, we recollect the great scientific and educational work that is possible, when the right people are in the right places and when there is concern for science and education. Professor Borojević created a highly valuable environment around him, but this environment created such a great person, as well. In these times, the Symposium "100th Birth Anniversary of Academician Slavko Borojević" should remind us that we are free, great and rich nation, especially with great achievements in agronomic science. By properly genotype by environment interaction, we could be richer for many new "borojevics", which would not leave for abroad in search for happiness, but remain here and work for the wellbeing of the Fatherland, as Slavko Borojević, a university professor, world known geneticist and wheat breeder honourably did, walking high and tall.

Prof. Dr. Miodrag Dimitrijević
University of Novi Sad
Faculty of Agriculture

ABSTRACTS

Opening lecture

1. From Cold Spring Harbour to the Novi Sad School of Genetics / Miodrag Dimitrijević, Sofija Petrović, Borislav Banjac (Serbia)

Past and Future of Cereal Improvement

2. Changes in senescence pattern related with breeding progress in winter wheat / Milan Mirosavljević, Vojislava Momčilović, Sanja Mikić, Vladimir Aćin, Verica Takač, Srbislav Denčić (Serbia)
3. Improvement of spike-stem-tillers (SST) complex is a challenge in wheat breeding / Ivan Panayotov (Bulgaria)
4. Grain yield changes in historical set of Pannonian winter wheat varieties / Bojan Jocković, Velimir Mladenov, Radivoje Jevtić, Sonja Ilin, Vladimir Aćin, Milan Mirosavljević, Dragan Živančev (Serbia)
5. Utilisation of sodium dodecyl sulphate sedimentation test for quality prediction of wheat cultivars in Serbia / Dragan Živančev, Milan Mirosavljević, Bojan Jocković, Vojislava Momčilović, Radivoje Jevtić, Vladimir Aćin, Slaviša Štatkić, Sanja Mikić (Serbia)
6. Variations of ecological factors in plant production – Frames of living activities of cultivated plants / Ljubica Šarčević-Todosijević, Vera Popović, Sara Has, Ljubiša Živanović (Serbia)

Biodiversity and Utilization of Genetic Resources in Cereals

7. Characterisation of small grains resources at IFVCNS with UPOV descriptors / Sanja Mikić, Verica Takač, Milan Mirosavljević, Dragana Trkulja, Vojislava Momčilović, Ankica Kondić Špika, Ljiljana Brbaklić (Serbia)
8. Estimation of genetic diversity and population structure of IFVCNS wheat collection using molecular markers and pedigrees / Ljiljana Brbaklić, Dragana Trkulja, Sanja Mikić (Serbia)
9. Analysis of chlorophyll content in a bread wheat collection and its correlations with flowering time and grain yield / Verica Takač, Sanja Mikić, Milan Mirosavljević, Vojislava Momčilović, Dragana Trkulja, Ljiljana Brbaklić, Ankica Kondić Špika (Serbia)
10. Improvement of buckwheat production / Vera Popović, Ljubiša Kolarić, Branka Žarković, Ljubiša Živanović, Ljubica Šarčević Todosijević, Jelena Golijan, Jela Ikanović (Serbia)

Cereals Genetics and Genomics

11. **Polymorphisms and flow of gliadin alleles in wheat /** Desimir Knežević (Serbia)
12. Genomic technology identification of varieties and hybrids of perennial grass crops / Kondratskaya I. P., Yuknimuk A. N., Chizhik O. V., Reshetnikov V. N., Stolepchenko V. A., Vasko P. P. (Belarus)

Cereals Breeding in a light of Climatic Changes - Biotic and Abiotic Stress Resistance

13. Obtaining of genetically changed wheat plants (*Triticum aestivum* L.) with increased resistance to drought / Mykhals'ka S.I., Komisarenko A.G., Pryadkina G.O. (Ukraine)
14. Evaluation of wheat (*Triticum aestivum* L.) response to different abiotic stresses using modern phenotyping platforms / Ankica Kondić-Špika, Sanja Mikić, Dragana Trkulja, Milan Mirosavljević, Ljiljana Brbaklić, Vesna Župunski, Imre Vass, Janos Pauk, Carl-Otto Ottosen (Serbia, Hungary, Denmark)
15. Stem store ability of winter wheat under natural drought conditions / V. V. Morgun, G. A. Pryadkina, O. V. Zborivska (Ukraine)
16. Photosynthetic traits of transgenic maize plants with dsRNA suppressor of proline dehydrogenase gene / O. O. Stasik, D. A. Kiriziy, O. G. Sokolovska-Sergiienko, G. O. Pryadkina, S. I. Mykhalska (Ukraine)

Symposium on Genetics and Plant Breeding in Cereals:
100th Birth Anniversary of Academician Slavko Borojević (1919-2019)
Topic: Biodiversity and Utilization of Genetic Resources in Cereals
Poster presentation

Analysis of Chlorophyll Content in a Bread Wheat Collection and Its Correlations with Flowering Time and Grain Yield

Verica Takač*, Sanja Mikić, Milan Mirosavljević, Vojislava Momčilović, Dragana Trkulja, Ljiljana Brbaklić, Ankica Kondić Špika

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Chlorophyll content has been used to assess crop nitrogen status, level of abiotic and biotic stress, and to predict yield. The aim of this study was to determine the level of chlorophyll content in a collection of 100 bread wheat genotypes originating from Europe, Asia and America, and analyse its correlations with flowering time and grain yield. Bread wheat genotypes from the Institute of Field and Vegetable Crops in Novi Sad, Serbia were analysed for relative chlorophyll content, flowering time and grain yield in a field trial at an experimental site at Rimski Šančevi using a completely randomised block experiment design with three replications during 2018/2019. The relative content of chlorophyll index (CCI) was measured with a portable non-destructive clip chlorophyll meter. The number of days to flowering time was calculated from the 1st January to the date when 50% of the plants from the plot have at least one flower. Grain yield was determined at maturity from 5 m2 mechanical harvested plots and calculated at 10% moisture level. Descriptive statistics, analysis of variance and correlations among the traits were performed in the R software. The analysis of variance showed that the highest value of CCI was determined for the genotypes for southern and eastern Europe (32.9), while the smallest CCI value was observed in the group from the American continent (28.6). The earliest flowering time was observed among the genotypes from Asia (128.4 days), while the wheat varieties from the western and central Europe had latest flowering time (138.0 days). The western and central European group and southern and eastern European group (4.199 t/ha) had the highest yields, whereas the Asian and American groups had significantly smaller grain yields. Significant positive correlations were determined between chlorophyll content index and grain yield. The early flowering genotypes on average had higher chlorophyll content and grain yield then the later wheat genotypes. When the genotypes were separated in three groups according to their time of flowering, early and medium flowering groups had significantly higher values of chlorophyll content index than the group with late flowering genotypes. The group with medium flowering genotypes had significantly higher grain yield that the remaining two groups. The genotypes with medium flowering time had on average highest chlorophyll content and grain yield, showing adaptation to Serbian agro-ecological conditions.

Key words: chlorophyll, wheat, correlations, flowering, yield

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