

BOOK OF ABSTRACTS



CONGRESS

OF THE SERBIAN GENETIC SOCIETY

2019 | October
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VRNJAČKA BANJA • SERBIA





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Abstracts of the 6th CONGRESS OF THE SERBIAN GENETIC SOCIETY



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WELCOME TO VI CONGRESS OF THE SERBIAN GENETIC SOCIETY!

Dear colleagues,

Welcome to the 6th Congress of the Serbian Genetic Society. The Serbian Genetic Society (SGS) has been founded in 1968 and the first Congress organized by the SGS was held in 1994 in Vrnjacka Banja. Since then, the Congress of Serbian Genetic Society is held every five years. Over the past years, the Congress has grown from a national to an international meeting.

The experience of the past meetings motivated our efforts to continue with this series with a clear tendency to strengthen the scientific connections among researchers from different European countries.

The Congress will focus on the most recent advances in genetics and on wide range of topics organized in 9 sessions and two workshops. Many of the presentations will be in lecture-like settings, but we hope that there will also be ample opportunities for informal interaction outside the scheduled sessions.

The successful organization of the Congress has required the talents, dedication and time of many members of the Scientific and Organizing committees and strong support from our sponsors. I hope that you will find the Congress both pleasant and valuable, and also enjoy the cultural and natural beauty of Vrnjacka Banja.

Yours sincerely,



Branka Vasiljevic
President of the Serbian Genetic Society

06 – 37 Poster

GENE EXPRESSION AND BIOCHEMICAL PARAMETERS DURING GERMINATION OF MAIZE SEEDS UNDER THE LOW TEMPERATURE CONDITIONS

Ana Nikolić¹, Aleksandra Stanojević², Manja Božić¹, Dragana Nikolić³, Ksenija Marković¹, Marija Milivojević¹, Jelena Vančetović¹, Dragana Ignjatović-Mićić¹

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Maize is one of the most important crops worldwide. During several past decades severe yield losses due to climatic changes have been observed. Avoiding period of high temperatures during the summer, which could have negative effect on flowering and grain filling, could be achieved by earlier sowing. The main concern is how the temperature lower than optimal could affect early phases of maize growing. The object of this research was to test the changes in biochemical parameters and gene expression related to low temperature effect during the imbibition phase in two maize lines, contrasting in the level of tolerance according to breeder's experience. Experiment was set at 8°C as treatment and 22°C as control temperature. Both genotypes were exposed to cold stress for 24h. Germination test performed under treatment/control showed better results for the tolerant genotype. Cell conductivity was significantly higher under cold treatment in the sensitive genotype compared to control conditions. Lipid peroxidation was elevated under the low temperature in both genotypes, but it was more prominent in the sensitive line. Also, expression of some genes proven to be involved in plant response to abiotic stress was tested. Expression of *GID1*, gibberellin receptor, was three fold higher in the sensitive line. The role of this gene in cold tolerance is not yet completely elucidated. *FAD2* (fatty acid desaturase 2) gene was not activated by low temperature, while expression of *FAD6* (fatty acid desaturase 6) was much higher in the sensitive line which is in accordance to literature data for some plant species. Results of these analyses confirmed previous presumption about the level of tolerance in tested material which is important for breeding programs and gave some directions for further more profound research in defining pathways involved in maize plant response to low temperatures in germination phase.

MAIZE, IMBIBITION, COLD TOLERANCE

06 – 38 Poster

GRAIN YIELD STABILITY PARAMETERS OF SINGLE CROSS MAIZE HYBRIDS AND THEIR RECIPROCAL CROSSES

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Grain yield stability was tested in 10 single cross maize hybrids and their reciprocal crosses in 2016 and 2017, within a total of seven environments. Five were early hybrids with Lancaster ZPL-1 line as a mutual parent (ZPH1 to ZPH5 where ZPL-1 was a father, and ZPH1r to ZPH5r with ZPL-1 as a mother). Other five were late hybrids with mutual ZPL-2 Lancaster line (ZPH6 to ZPH10, and ZPH6r to ZPH10r). Significant difference at $p < 0.01$ level was observed between average grain yield of the early vs. late hybrids (10.82 vs. 11.04 tha^{-1}). Also, stability parameters were significantly different; b_i was 0.946 on average for the early hybrids and 1.054 for the late ones ($p < 0.01$), thereby confirming that the early hybrids performed better in poorer environments, and *vice versa*. This is a common finding in Serbia. Regarding $S2d_i$, the difference between early and late hybrids was significant at $p < 0.1$ level (0.166 and 0.487 for early and late hybrids, respectively). Also, $S2d_i$ was significantly different at $p < 0.1$ level for early hybrids and their reciprocals, as well as all the other hybrids and their reciprocals. Namely, reciprocal hybrids were less stable (Lancaster as a mother). Best-performing hybrid was ZPH6r, yielding 12.06 tha^{-1} on average (the highest yield in the trial), with $b_i = 1.16$, and $S2d_i = 0.06$. The hybrid performed well in favourable agronomical conditions, as well as maintaining grain yield stability across other environment types.

GRAIN YIELD, MAIZE, STABILITY, RECIPROCALLS