

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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VRNJAČKA BANJA • SERBIA

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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



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GRAIN YIELD VARIABILITY IN MAIZE HYBRIDS BELONGING TO FAO MATURITY GROUPS 300 AND 400

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Maize is the most widely grown grain crop in the Republic of Serbia, covering over million hectares, with an average yield of 5.9 t ha⁻¹. As there is no universal cultural practice for maize growing areas, production methods should be adapted to the specific climate conditions, soil and other environmental factors for maximum possible utilization of environmental and genotype potentials. To determine grain yield variability in maize hybrids in two locations in Southwestern Serbia (Ivanjica), trials were conducted during 2013–2014. Although these locations are outside the main growing regions, maize is traditionally cultivated in them on relatively small plots. Given the climatic conditions (mountain climate), maize hybrids (ZPSC341, ZPSC360, ZPSC42a, ZPSC434, NS 444 ultra, NS4015 and NS4030) having short growing seasons (110–130 days) were selected for the experiment. Recommended seeding rates (plants ha⁻¹) were used for all hybrids. Climate conditions for maize cultivation were more favorable in 2013, i.e. moderate temperatures during the growing season, evenly distributed precipitation, a great number of rainy days, whereas 2014 was unfavorable due to huge amounts of precipitation, particularly during, germination, emergence but also during subsequent growth stages. Hybrids of the FAO maturity group 400 had significantly higher yields compared to FAO 300 hybrids. The average yield of FAO 400 and FAO 300 hybrids was 5.3 t ha⁻¹ and 4.3 t ha⁻¹, respectively, with the highest yield in NS4030 (5.8 t ha⁻¹). The total average yield was 4.8 t ha⁻¹. The average grain yield was lower by 1.1 t ha⁻¹ than the average for yield Serbia (5.9 t ha⁻¹) and by 0.2 t ha⁻¹ than for Central Serbia (5.0 t ha⁻¹). Despite quite good average yields of some hybrids, a realistic estimate of a maize hybrid in a given area can be made only based on long-term field trials.

MAIZE, HYBRIDS, GRAIN YIELD

CHANGES OCCURRING IN FATTY ACID CONTENT AND TOCOPHEROL COMPOSITION IN OILSEED RAPE SEED DURING ACCELERATED AGEING

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The high content of polyunsaturated and low content of saturated fatty acids gives the oilseed rape seed oil of high nutritional value and a special place in human nutrition. Considering their chemical composition, oily seeds have limited longevity. In the course of aging (both natural and accelerated) there occur changes in the molecule (peroxidation of fatty acids, protein oxidation, activation of nuclease, and DNA damage) that affect both cell membrane and organelles. Seeds of five varieties of oilseed rape were exposed to accelerated ageing (100% relative humidity, 41°C-72h) and seed quality tests of the seed material were performed (mean germination percentage, shoot and root length, shoot and root fresh weight) before and after accelerated ageing treatment. Additionally, lipid composition was determined before and after accelerated ageing. Fatty acid (FA) composition was determined by gas chromatography (Konik HRGC 4000) coupled with a flame ionizing detector, after derivatization to their volatile methylesters (FAME). Quantification of tocopherols was carried out using high-performance liquid chromatography on a column Nucleosil 100-5 NH₂ with fluorescence detection (λ_{ex} =280 nm, λ_{em} =340 nm) in oil. The aim of this study is to determine the mechanisms of oilseed rape seed deterioration, by analyzing changes in the lipid composition during the conditions of accelerated aging of the seed. Obtained results indicate that the contents of oleic (C18:1), arachidic (20:0) and erucic (22:1) acids insignificantly increased in seeds subjected to accelerated ageing. These results indicate that enzymes engaged in biosynthesis of lipids were stimulated by high temperatures. After accelerated ageing treatment, total tocopherol content (α -, and γ -tocopherol) was significantly lower (from 8 mg/kg to 150 mg/kg) in seeds exposed to accelerated aging compared to control seeds.

OILSEED RAPE, SEED AGEING, FATTY ACID COMPOSITION, TOCOPHEROL