BOOK OF ABSTRACTS

6. CONGRESS
OF THE SERBIAN GENETIC SOCIETY

2019 | October 13–17

VRNJAČKA BANJA • SERBIA

Publisher
Serbian Genetic Society,
Belgrade, Serbia
www.dgsgenetika.org.rs

Editors
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Printing
Serbian Genetic Society,
Belgrade, Serbia

Number of copies printed
300

Design
Ivan Strahinić
Ana Kričko

ISBN
978-86-87109-15-5

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06 – 29 Poster

DIFFERENCES IN YIELD AND STABILITY OF MAIZE HYBRIDS PRESENTED BY THE AMMI ANALYSIS

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This study presents three-years (2011-2013) research on 36 commercial hybrids from different FAO maturity groups (300-700). Trial was set up according to the Randomized Complete Block Design (RCBD) in three replications at 8 different locations in Serbia. Analysis of variance showed significant impact of genotype, environment and their GXE interaction on the grain yield (p>0,01). An average grain yield in 2011 ranged from 10.38 t/ha (H1) to 13.32 t/ha (H36), in 2012 it varied from 5.70 t/ha (H3) to 7.86 t/ha (H14) and in 2013 from 8.79 t/ha (H5) to 12.01 t/ha (H36). Based on the AMMI analysis, yield and stability of the maize genotypes were evaluated. In the total sum of squares, environment accounted for 72.4%, 73.3%, 69.13% (2011, 2012, 2013, respectively), genotype 6.22%, 2.81%, 6.15% (2011, 2012, 2013, respectively) and interaction between genotype and environment accounted for 9.09%, 10.06%, 11.87% (2011, 2012, 2013, respectively). Due to the fact that IPC1 and IPC2 encompassed 62.7%, 62.6%, 60.0% (2011, 2012, 2013, respectively) of total sum of squares of interactions, AMMI2 model was also considered. Grain yield of hybrids varied in dependance of location and the prodution year. In 2011, the most stable hybrids were H21, H9 and H24; in 2012: H13, H21 and H6; while in 2013 those were H21, H29 and H22. The lowest variation in average grain yield was recorded at locations Sombor and Kikinda (2011), Svilajnac (2012) and Pančevo (2013) where the grain yield was above the average, while location Loznica proved to be the most yielding in all production years. Based on the results from AMMI analysis, more precise reccomendations could be given for the hybrid production at certain locations, aiming to achieve the highest yield.

MAIZE HYBRIDS, GRAIN YELD, AMMI ANALYSIS, GXE INTERACTION

06 – 30 Poster

IMPORTANT AGRONOMICAL TRAITS ASSOCIATED WITH THE NORMALIZED DIFFERENCE VEGETATION INDEX IN TWO AND SIX-ROWED BARLEY ELITE BREEDING LINES

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Recent advances in agriculture phenotyping gave rise to a plethora of speedy and non-destructive screening tools, one of which is the Normalized Difference Vegetation Index (NDVI) technology, widely used for estimation of yield components, biomass and other important physiological traits for crop production. The objective of this study was to evaluate NDVI values and relationship with agronomic characteristics in a diverse set of barley advanced lines. The selected plant material consisted of 24 six-rowed and 23 two-rowed elite barley lines developed at the Institute of Field and Vegetable Crops from Novi Sad. The trial was conducted in a complete randomized block design with four replications at the experimental field Rimski šančevi in 2017/18. The NDVI parameters were collected using the handheld Green Seeker sensor at the anthesis vegetation stage (Zadoks 65), while the following agronomic traits were measured during the growing season: stem height, spike length, hectoliter mass, thousand grain weight and grain yield. Significant correlations between NDVI and grain yield were detected in two-rowed (R2=0.363) and six-rowed (R2=0.268) barley genotypes. The observed positive correlations with stem height were stronger in two-rowed (R2=0.459) than in six-rowed (R2=0.257) genotypes, whereas the relationship between NDVI and thousand grain weight was significant only in six-rowed barley lines. Genotype variation in NDVI values and, especially, its positive correlations with yield indicate that NDVI technology could be used as an additional tool for selection of early maturing genotypes with better adaptation traits, which could accelerate development of better performing cultivars resilient to future unpredictable changing climate.

This research was funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia under the project TR-31066.

HORDEUM VULGARE, NDVI, YIELD COMPONENTS, INDIRECT SELECTION