



**TÜRKTOB**  
TÜRKİYE TOHUMCULAR BİRLİĞİ

**TAGEM**  
AR-GE & İNOVASYON



# IV.

**INTERNATIONAL**

**PLANT BREEDING CONGRESS**

*Plant Breeding for the Future: From Local to Global*

*21-25 November 2022 | Porto Bello Hotel, Antalya, Türkiye*

**CONGRESS BOOK**

[www.intpbc2022.org](http://www.intpbc2022.org)



**TURKTOB**  
TÜRKİYE TOHUMLUKLAR BİRLİĞİ

**TAGEM**  
AKADEMİK İNOVASYON



# IV.

## INTERNATIONAL PLANT BREEDING CONGRESS

*Plant Breeding for the Future: From Local to Global*

**21-25 November 2022**  
*Porto Bello Hotel, Antalya, Türkiye*

<b>INVITATION.....</b>	<b>3</b>
<b>CONGRESS ORGANISATION COMMITTEE.....</b>	<b>4</b>
<b>CONGRESS ADVISORY COMMITTEE .....</b>	<b>5</b>
<b>SCIENTIFIC COMMITTEE .....</b>	<b>6</b>
<b>SCIENTIFIC PROGRAM .....</b>	<b>7-27</b>
<b>SPEAKER SUMMARY .....</b>	<b>28-36</b>
<b>ORAL PRESENTATIONS .....</b>	<b>37-87</b>
<b>POSTER PRESENTATIONS .....</b>	<b>88-123</b>
<b>FULL TEXT PRESENTATIONS.....</b>	<b>124-267</b>



# IV

## INTERNATIONAL PLANT BREEDING CONGRESS

Plant Breeding for the Future: From Local to Global



21-25 November 2022  
Porto Bello Hotel, Antalya, Türkiye

### [PP-50]

#### Grain Yield Predictions of ZP Maize Hybrids

Zoran Camdzija, Milomir Filipovic, Nenad Delic, Jovan Pavlov, Nikola Grcic, Danijela Ristic, Marija Kostadinovic

Maize Research Institute "Zemun Polje", Belgrade Serbia

Maize hybrids are created by crossing inbreds of opposite heterotic groups, where the discovery of genetic distances (GD) is of great significance. With the presence of modern breeding tools for discovering heterotic pairs and GDs in used material an efficiency in breeding can be increased for more precisely planned field work.

For this study 11 crosses were made in order to compare the prediction of data obtained by GDs between crossed inbreds with the results of same hybrids from field testing. Crosses were done in 2020 according to the GD suggestions which ranged from 0.386 to 0.465 to check out is it possible to predict specific superior hybrid performance before the field results itself. 25k SNP Illumina Infinium Array for maize was used to determine GD values.

As a check ZP 457-market accepted hybrid (registered in 2018 in Republic of Serbia) was used together with 10 other hybrids. All 11 hybrids shared the same female component (Lancaster Sure Crop heterotic group), while male components from opposite heterotic groups (BSSS and Iowa dent) were used. GD values of used males ranged from 0.190 to 0.412 clearly stating one broad heterotic group. The most famous heterotic pair B-73 x Mo-17 as well as two Institute's top selling hybrids (ZP 434 and ZP 606) were also included for GD comparison with test hybrids with the GD values of 0.488, 0.466 and 0.462 respectively.

Review of B-73 x Mo-17 through ZP 434 and ZP 606 to the newly created hybrids suggests GD values are decreasing with every new cycle of selection between crossed material. Results from field testing compared to GD values show somewhat positive correlation as for ZP 3 exp which ranked 2nd highest GD value and 3rd rank in grain yield outyielding ZP 457 significantly, but ZP 457 GD value of 0.458 (ranking third in GD) suggests higher yielder should be thought to find. Grain yield results proved same hybrid ZP 457 to be one of the lowest yielders being superior only to ZP 4123 despite high GD value. In top three yielders GD values were in great correspondence for only one mentioned

combination ZP 3 exp, but for the ZP 4 exp and ZP 457 taking first and third position according to the GD rank proved to be good only for 5th and 10th rank within field results, while the lowest yielder ZP 4123 took 4th position according to GD values, having very high value of 0.457.

This result proves SNP to be powerful tool in predicting herotic pairs in maize and must be considered for more precise planned field work. Even though GD values being so informative on one side they do not specifically imply to the solution for detecting the most superior hybrid combination therefore leaving field observations to confirm start assumptions.

**Keywords:** maize hybrid, grain yield, genetic distance

### [PP-51]

#### Stability Analysis of Different Maize Hybrids Grown in Serbia

Jovan Pavlov, Nenad Delic, Srboljub Zivanov, Zoran Camdzija, Nikola Grcic, Danijela Ristic, Marija Kostadinovic

Maize Research Institute "Zemun Polje", Belgrade, Serbia

Maize is the most important field crop in Serbia. The total surface area under maize production is in range from 800.000 to 900.000 hectares annually, which encompasses 25% of the total agricultural land area. The majority of the production is without irrigation, therefore there is a high variation in total annual production, depending on the amount and distribution of precipitations.

The main challenge for maize breeders in Serbia is to develop high yielding and stable hybrids for diverse environmental and climate conditions. Different response of genotypes to diverse environmental conditions is a result of genotype x environment (G x E) interaction. Several statistical methods have been developed for testing G x E interaction. Parametric methods are based on variance components and regression, while non-parametric methods are based on the ranks of genotypes in each environment.

In order to evaluate stability of different maize hybrids, seven commercial ZP maize hybrids within maturity range FAO 400-700 were tested at nine different locations across the Serbia for two years period. Selected locations represent the main growing regions