

THE EVALUATION OF EARLY MAIZE HYBRIDS PARENTAL FORMS FROM ALTERNATIVE HETEROTIC GROUPS

Musteața Simion, Borozan Pantelimon, Spînu Alexei, Spînu Valentina

*Institute of Crop Science „Porumbeni”, Pascani village, Criuleni district,
Republic of Moldova*

E-mail: pantelimon.borozan@yahoo.com

The process of creating corn hybrids includes the stages of systematization of lines inbred in germplasm groups, evaluation of parental forms, identification of the best performing pairs of germplasm groups with highly adaptive and reproductive heterosis in heterotic hybridization formulas. In this study 468 hybrids were included in 2021, 578 hybrids in 2022 from the first test stage for the agronomic value of them and their parental forms, represented by inbred lines and inter-related crosses $A \times A_1$. Inbred lines, selected after combination capacity, are classified in the Euroflint germplasm groups, Iodent, BSSS-B37 and Lancaster based on pedigree and genetic diversity in identification crosses. The assessments were made in comparative orientation testings according to the following indices: growth rate in the phase of 5-7 leaves, phenophases duration from the rising of the seedlings to the flowering of the panicles, the appearance of stigmas and physiological maturity, plant size, productive cob insertion, the share of plants attacked by common embers and loaves, the share of broken and fallen plants, grain production, yield and humidity. Experimental data confirmed the superiority of $A \times A_1$ related crosses as maternal forms regarding the production of grains, which contributes to the efficiency of the production of certified hybrid seeds. In 2021, very favorable for corn cultivation, their average was 6,70 t/ha grains compared to 5.80 t/ha at inbred lines. A clearer differentiation was registered in 2022 with unfavorable climatic conditions, which significantly affected grain production, with average values of 2.79 t/ha at related crosses and 1.17 t/ha for the inbred line set. We mention that the change in the maternal form contributes significantly to the mass of 1000 grains and the share of the fractions 2 and 3 of commercial seeds requested as a matter of priority by buyers. Both groups of germplasm are used as paternal forms of early hybrids. Inbred lines from Iodent germplasm have a higher adaptability under stressful conditions, achieving productions of 4.70 t/ha. BSSS-B37 germplasm group inbred lines offer possibilities of their use both as paternal forms and as related crosses $A \times A_1$.

Keywords: *germplasm groups, hybrids, heterotic patterns, Inbred lines, parental forms.*