

Annotation

Makarchuk M.O.

Formation of elements of the maize yield structure depending on the hybrids genotypes and growing areas

In Ukraine maize is an important intensive type cereal crop and needs all technological processes employment for getting high yields. It acquires particularly acute strategic significance in dry years when getting the planned harvest is under the threat. Maize production is a promising direction of increasing grain productivity of our country. Herewith, a decisive factor should be not an expansion of maize acreage but increasing its producing capacity and using the genetic potential of modern hybrids adapted to zonal growing conditions.

Maize seed production is a time-consuming process which requires considering a large number of cultivation features which correspond zonal conditions of the region. The most common way to reduce costs in the production of heterosis hybrid maize seed is the use of parent components with cytoplasmic male sterility (recently in Ukraine the C- and M-type sterility are the most common). The use of cytoplasmic male sterility belongs to one of the variants of the genetic systems of the controlled reproduction. Thus, genetic markers of grain colouring, can be useful to make the control of seeds hybridity purity easier.

To prove the efficiency of using in seed production the heterosis maize hybrids genetic markers of colouring grains, we have tested coisogenic analogues of a simple hybrid Pioneer-Grand 3978 and trilinear hybrid Grand-6 in two points of testing with different soil and climatic conditions: in the Right-Bank Forest-Steppe at the experimental area of Uman National University of Horticulture (UNUH) and Southern Steppe at Brylivka Research Station (BRS).

*The results obtained from our researches showed the possibility of using genetic markers of grains colouring *a1* and ACR for forming high quality hybrid seeds and do not result in reducing its productivity. It was found that the introduction of hybrid genotype genetic markers ACR into maternal components and P-RR or CI into parental components contributes to higher yields of hybrids. It was established that the presence of simple trilinear hybrid of the genetic markers *a1* and ACR does not lead to a deterioration of the structural elements in both areas of research. It was revealed that these genotypes (with markers *a1* and ACR) can be used to simplify the control of hybridity in color grains while production of seeds.*

*It was found that the presence of a genetic marker *a1* in the coisogenic analogue of the simple hybrid increases the rate of the cob diameter in both areas of research, and at the genetic markers ACR the index of the length of the cob is improved in terms of UNUH. The presence of the above mentioned genetic markers has a significant impact on the number of grains in a row in terms of UNUH and BRS. It was determined that the significant increase in the cob diameter and number of rows of beans is characteristic to coisogenic analogues of the trilinear hybrid with the same genetic markers.*

Key words: *hybrid, coisogenic analogue, genetic marker, M- and P-type of sterility, fertility fixe.*