

## **Study of improvement of indices maize line to establish their position in hybrids**

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### **Abstract**

*Corn (Zea mays L.) crop that is grown on large areas - over 140 million hectares worldwide, and 400-500 thousand ha in Moldova due to production potential broad diversity of use as food for humans, animals, birds raw material for industrial processing. The upward trend in average yields achieved is largely attributed to the improvement of scientific programs.*

*Select the line with the characters and traits that are transmitted hereditary hybrids and contribute to their performance, ensure progress in improvement. Therefore, the process of creating inbred lines associated with combining ability testing as a measure of productivity conferred hybrids, is significant research programs. Orientation purpose of improved maize hybrids to formulas and simple change to a superior capitalization heterosis effect and perfect uniformity of plant requires changes in methodology for the creation, evaluation and classification of inbred lines.*

*Keywords: corn, hybrid breeding, heterosis, inbred lines, phenotypic groups, heterotic groups, hybrid combinations, diallel crosses, etc.*

### **1. Introduction**

Corn (*Zea mays* L.) is a very valuable plant species with a high yield potential with a wide variety of use as a food source for humans and animals and raw materials for industrial processing, cultivated on large areas worldwide ONA A.D. (2014), but also in Moldova. Worldwide maize ranks third in area and first as production and in our country, the maize area planted is 400-500 thousand hectares annually.

Because of the importance of corn, over time, they have been taken a series of measures to increase production. The upward trend in average fields achieved, largely due to a recovery hybrids with superior heterosis effect. The process of creating inbred lines associated with testing combining ability, is significant in breeding programs. Determining genetic progress is important for improving maize. The improvement in important issues relates to the extension of genetic

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diversity and phenotypic selection of the material. Findings of inbred lines and characters after ameliorative valuable attributes, systematizing their phenotypic and heterotic groups as an effective program to create new hybrids competitive.

Study indices reclamation is crucial to harnessing hybrid combinations. For these reasons it was necessary to conduct investigations that aim to identify the specific features of inbreds scientific rationale for the selection of parental forms in the process of synthesizing hybrid combinations. To achieve this it is planned the following objectives:

- Phenotypic description of biological material after characters UPOV recommendations;
- Findings ameliorative indices in comparative cultures;
- Assess the differences between lines based on the level of heterosis after production of grain;
- Using inbred lines in hybrid combinations and selection State candidates for official tests.

#### **Material and method.**

In the present study as a research object in the reference year were used 10 lines of precocity average: MKP 55 MKP 56, MK 271, AS 5538, AS 6751, AS 6370, AS 6430, MV 990, MV 160, AS 525 and 10 lines precocity late half: MV 42/192, AS 587, MK 267, AS 6161, MK 390, AG - 6242, AG 2448, AG 7021, AG 6567, AG 7487. During the growing season, those lines were multiplied for performing subsequent experiences.

Of all the experimental models, those based on diallel crosses are most commonly used for both the multiplicity and diversity of genetic information that they can provide, and for relatively simple in execution.

In general, by diallel crosses are made all hybrid combinations between "p" parental forms.

The most common systems are made 7-10 diallel parental forms. Below the  $p = 7$ , the results show a less interpretative value, and more than 10 intervening complications for enforcement experience.

To avoid the limitations of the small number of parental forms that can be used in diallel systems, Kempthorne and Curnow (1961) propose partial diallel systems, which reduce the number of crossings and plots can be substantially reduced. Thus, if the 20 lines in a system Diallele fully type  $1/2 (P-1)$  are required 190 combination, in a system Diallele incomplete use only 60 or 80 combinations without diminishing the accuracy of the statistic information obtained, HAS I., G. BUTNARU, Căbulea I. crystals M., et al. (2004).

In our case, the synthesis will be in the crossing scheme Diallele incomplete type  $n (n-1) / 2$  hybrids for experimentation with sufficient guidance comparative cultures.

**Results indicative scientific and practical.**

- Classification of each group of inbred lines of maize groups phenotypic and germplasm selection of donors of favorable genes for agronomic traits;
- Findings peculiarities of agronomic traits event important in hybrid combinations;
- Highlighting the performance of hybrid combinations in advanced testing for promotion.

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