

INHERITANCE OF GRAIN YIELD AND IT'S COMPONENTS IN TRIALLEL MAIZE POPULATION.

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ABSTRACT

The inbred lines of maize ZM47W, ZM7, W13R, Agr183, OH40, ZM19R and ZP and all single and three-way crosses among them were used in this study. The seeds of genotypes (7 lines, 21 single crosses and 105 three-way crosses) were planted in the 1st of April 2009 at Al-Rahmania region, near Mosul University, using randomized complete block design with three replications, to estimate variances and effects of all kinds of general and specific combining abilities for three-way hybrids, and to determine genetic performance which controls the inheritance of grain yield per plant and its components (ear length, number of rows per ear, number of grains per row, number of grains per ear and 100-grain weight) using variance components from single and three-way crosses analysis. The analysis of variance results for 3-way hybrids showed the presence of additive and non additive effects for all studied characters. The inbred lines ZM47W, Agr183 and ZP characterized by significant desirable general combining ability as parents or grand parents, and the hybrid (ZM47W x W13R) x ZM19R higher specific combining ability for grain yield per plant. Dominant genetic variance values were high as compared with additive one for all characters, indicating the more importance of dominant gene actions in controlling its inheritance. Narrow sense heritability was moderate for all characters that ranged between 33.47% for grain yield per plant and 52.75% for number of grain per row, and average degree of dominance exceeded one for all characters indicating over dominance. It was concluded that the suitable breeding method can be used to improve these characters, may be the production of hybrid varieties or recurrent selection for specific combining ability effect.