

ESTIMATION OF HETEROSIS AND COMBINING ABILITY FOR SOME MAIZE TRAITS USING THE DIALLEL CROSSING METHOD.

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ABSTRACT

A half diallel cross among six inbred lines (ZP-707, UN44502, OT-140, ZP-607, ZP-352 and IK8) has been adopted to study for characters (days to 50% silking, plant height, leaf area, number of rows per ear, number of grains per row and grain yield per plant), in order to identify the nature of gene action in parents and hybrid population. The analysis of variance revealed that mean square of general combining ability (gca) and specific combining ability (sca) was highly significant for all characters, indicated the presence of additive as well as non additive gene effects for controlling all characters. However, relative magnitude of these variances indicated that dominance gene effects were more prominent for all studied characters. The two parents OT140 and ZP607 characterized by high-performance means and significant desirable general combining ability effects for most characters. The two single hybrids (UN44502 x ZP-607) and (ZP-607 x ZP-352) showing significant sca effects for larger number of characters including grain yield per plant and could be utilized for developing high yielding hybrid varieties as well as for exploiting hybrid vigor. The range of narrow sense heritability was from 9.1% to 51.59% for leaf area and grain yield per plant respectively.

Key words: Genotypes, Hybrids, Combining ability, Heritability.