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# Heterosis and combining ability in *Abelmoschus esculentus* (L.) Moench for some important biometerical traits

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**SUMMARY**

Eight genotypes *viz*., NOH 303, Indol 031, Arya 351, DOV 2, Pusa A 4, DSU 1, Varsha Uphar and Hissar Unnat were mated in half-diallel fashion. The resultant 28 hybrids were studied for general combining ability of parents and specific combining ability of crosses for eight economic traits *viz*., days to 50 per cent flowering, plant height at maturity, number of branches per plant, fruit length, fruit girth, fruit weight, number of fruits per plant and fruit yield per plant. The estimates of *gca* effects of parents revealed that Hissar Unnat and Varsha Uphar were found to be superior for most of the traits including fruit yield per plant. Among the hybrids Varsha Uphar x Hissar Unnat had high mean, positive significant *sca* and high standard heterosis for five traits including fruit yield per plant.

**Key words :** Heterosis, Combining ability, Biochemical traits, Okera, *Abelmoschus esculentus*.

Okra *Abelmoschus esculentus* (L.) Monechis an important vegetable crop grown for its tender fruits in almost all parts of India. It is basically a self pollinated crop but natural cross pollination to an extent of 8.75% may occur (Purewal and Randhawa, 1947). The characters like growth, earliness, quality, yield and its component traits are very useful for a breeder for developing commercial variety and hybrid. The success of hybrid largely depends on the efficiency of choosing appropriate parents of good genetic potential. In the present investigation attempts have been made to evaluate eight parents and twenty eight hybrids through half -diallel analysis by determining the magnitude of the general and specific combining ability effects and heterosis for different traits.

## MATERIALS AND METHODS

The experiment was carried out at the Plant Breeding Farm, Faulty of Agriculture, Annamalainagar. Eight parents *viz*., NOH 303 ($P_1$), Indol 031 ($P_2$), Arya 351 ($P_3$), DOV 2 ($P_4$), Pusa A 4 ($P_5$), DSU 1 ($P_6$), Varsha Uphar ($P_7$) and Hissar Unnat ($P_8$) were raised in a crossing block during February 2007. The $F_1$ generation of all crosses were raised during August 2007 in a Randomized Block Design replicated thrice. Seeds were dibbled with a spacing of 45 cm between rows and 30 cm between plants in two rows plot of 3.0 m length. Five plants were randomly selected for each genotype from each replication to measure the biometrical traits. Recommended agronomic practices were followed through out the crop period

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## RESULTS AND DISCUSSION

The results obtained from the present investigation are presented below:

### *Analysis of variance:*

The analysis of variance for combining ability revealed that the variances were significant for all the traits studied indicating the presence of substantial variation among the genotypes . In the present study, the GCA and SCA variances were found to be highly significant for all the traits indicating the importance of both additive and non-additive genetic variances. However, the non-additive variance was preponderant (Table 1).

### *Combining ability effects:*

The values of parents with high mean and *gca* effects for various traits are presented in Table 2. The mean values of hybrids with high mean, *sca* and *gca* of the corresponding parents as well as percentage heterosis over standard parent for eight characters are presented in Table 3. The parent $P_7$ had superior *per se* performance for number of fruits per plant, fruit yield per plant , plant height and fruit weight . The parent $P_8$ had the next superior *per se* performance for number of fruits per plant, number of branches per plant and days to 50 per cent flowering. The parent $P_4$ showed high *per se*