CHAPTER-VI

SUMMARY

The present study involving "A comparitive study of heterosis in single, double and three way cross hybrids of sunflower" was conducted at oilseed section of the Department of Plant Breeding, CCS Haryana Agricultural University, Hisar during the year 1992-93. A total of 63 genotypes consisting 45 F_1 hybrids, their 15 parents and 3 standard checks, planted in Randomized Block Design with three replication were studied.

The objectives were to compare heterosis among single, double and three way cross hybrids and to study combining ability and association between different morphological characters.

Analysis of variance showed considerable variability for all the characters.

The single cross hybrids were the best for seed yield per plant, number of seeds per head, stem diameter, head diameter, percent unfilled seeds and plant height whereas the double cross hybrids produced highest heterotic effects for earliness and 100-seed weight. The three way cross hybrids also exhibited heterosis for some of the characters, but it was not upto the extent as produced by single and double way crosses. The best cross for the seed yield and its component character was single cross hybrid Cms 336A x RHA857, outyielding the better parent and best check by 35.43 per cent and 51.79 per cent respectively. The same hybrid also

produced significant heterosis for number of seeds per head, head diameter, unfilled seeds (%) and stem diameter.

For earliness, the double cross hybrid (Cms 336A x RHA 856) x (Cms 300A x RHA 298) was found to be the best. Interstingly the same hybrid produced the highest heterosis for 100-seed weight also.

On the basis of the present study, it can be concluded that the single crosses, Cms 336A x RHA 856 and Cms 336A x RHA 857 were found to be the best, as the former produced considerable heterosis for earliness and was involved in the double cross exhibiting significant heterosis for 100-seed weight, whereas the later one produced considerable heterosis for seed yield and its component character and was also involved in the double cross exhibiting heterotic effect for oil content. So these two genotypes may be used in future for breeding for higher seed yields and earliness.

The evaluation of combining ability among six parents and nine hybrids revealed that the female parent Cms 300A was found to be a good general combiner for stem diameter and number of seeds per head. Cytoplasmic male sterile line 7-1A was found to be good combiner for head diameter and Cms 336A was a good combiner for dwarfness.

Among the testers, RHA 273 was found to be a good combiner for head diameter.

Among the crosses, Cms 336A x RHA 273 exhibited highest sca effects for stem diameter, head diameter, number of seeds per head and seed yield per plant.

Heritability estimates (broad sense) were generally high for seed yield and its component characters and low for earliness. Expected genetic gain indicated that seed yield can possibly be improved upto a considerable extent.

Correlation studies revealed that plant height, stem diameter, head diameter, 100-seed weight and number of seeds per head, were having a positive and significant association for seed yield per plant whereas unfilled seeds (%) had a significant negative correlation with seed yield per plant.

Path coefficient analysis revealed that number of seeds per head and 100-seed weight were the most important components of seed yield per plant. contributing directly towards seed yield, whereas, head diameter and plant height were also important components contributing indirectly to seed yield via number of seeds per head.

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