

Combining ability studies in *Kharif* sorghum [*Sorghum bicolor* (L.) Moench]

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SUMMARY

Combining ability effects and variances were estimated in F_1 s and their parents. The analysis of variance for combining ability indicated that, mean sum of squares due to female x male interaction was highly significant for all the traits except days to maturity. In the present study contribution of females for variability was found to be higher than that of males for majority of the characters studied except number of leaves per plant, peduncle length and panicle length. The sca variance was higher than gca variance *i.e.* variance ratio was less than unity, indicating predominance of dominance variance. Dominance variance was more than additive variance for all the characters studied. The parents SB 7001, CS 3541 and DSV 6 among females and IS 3547 among males were good general combiners for grain yield and its components. These parents should be extensively used in the crossing programme to exploit maximum genetic variability and isolate transgressive segregants for grain yield and its components. Based on the sca effects and *per se* performance the hybrid CS 3541 x IS 8607 was found to be better than commercial hybrids CSH 16 and DSH 3 for grain yield and other traits. Hence, segregants of these in further generation may give promising genotypes. Thus these may be advanced to next generation.

Key Words : Combing ability, *Kharif*, Sorghum

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Genetic information especially about the nature of combining ability and type of gene action governing the inheritance of important traits are guidelines to breeder in

selecting the parents for the development of hybrids, varieties and parental lines. Selection of parents based on combining ability play a vital role in developing superior genotypes for grain yield and its components.

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MATERIALS AND METHODS

Experimental material was supplied by All India Co-ordinated Sorghum Improvement Project, University of Agricultural Sciences, Dharwad. The base material for experimentation consisted of four resistant males *viz.*, IS 8607, IS 8185, IS 3547 and IS 27042 for downy mildew and eight females *viz.*, SB 7001, CS 3541, DSV 3, DSV 6, IMS 9B, DSV 2, SPV 1747, SPV 1600 and their 32 F_1 hybrids. Thirty-two F_1 hybrids were developed by hybridization between resistant x susceptible genotypes during 2005-06. The observations were recorded on five plants for grain yield and other component traits. To derive information on combining ability, line x tester