

Studies on gene action on sesame (*Sesamum indicum* L.)

K. KUSELAN AND S. THIRUGNANAKUMAR

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SUMMARY

The variance due to SCA was higher than that of the variance due to GCA for all the seven characters of interest. The variance due to dominance was much pronounced than that of additive genetic variance for all the characters studied. The study revealed the importance of both dominance and epistasis for evolving genotypes with higher seed yield. It may be achieved by resorting to population improvement programme.

Key words : Sesame, Line x tester analysis, Seed yield

The genetic control of characters related to seed yield and seed yield *per se* is important in any systematic crop improvement programme. A plant breeder must possess adequate knowledge on gene action of seed yield and its component characters. The present study was formulated to find out the gene action governing seed yield and its component characters in sesame.

MATERIALS AND METHODS

Fifteen lines *viz.*, IC-204410 (L₁); IC-205256 (L₂); IC-205091 (L₃); IC-204579 (L₄); IC-205165 (L₅); IC-96130 (L₆); IC-204854 (L₇); IC-204628 (L₈); IC-204997 (L₉); IC-205082 (L₁₀); IC-205347 (L₁₁); IC-205492 (L₁₂); IC-204973 (L₁₃); IC-204996 (L₁₄) and IC-204666 (L₁₅) were crossed with three testers *viz.*, TMV 3, CO 1 and VRI 1. The resulting 45 hybrids along with 18 parents were evaluated in a randomized block design with three replications, during 2004-2005. The crop was planted at a spacing of 30 x 15 cm in two rowed plots of 4.5 m length. Recommended agronomic practices and need based plant protection measures were undertaken. Data were recorded on five randomly selected plants for the characters *viz.* days to 50 per cent flowering, plant height at maturity, number of branches per plant, number of capsules per plant, number of seeds per capsule, 1000 seed weight and seed yield per plant. The data were subjected to statistical analysis given by Kempthorne (1957).

RESULTS AND DISCUSSION

The variance due to lines and testers was significant

Correspondence to:

S. SHIRUGNANAKUMAR, Department of Agricultural Botany, Faculty of Agriculture, Annamalai University, ANNAMALAINAGAR (T.N.) INDIA

Authors' affiliations:

K. KUSELAN, Rasi Seeds (P) Ltd., Attur, SALEM (T.N.) INDIA

for three out of seven characters studied. The variance due to line x tester was significant for all the seven characters studied. Similarly, the variance due to hybrids were significant for all the traits of interest (Table 1). This indicated that there existed significant differences among lines, testers and hybrids. Therefore, further analysis is appropriate.

The variance due to GCA was less than that of the variance due to SCA for all the seven characters studied (Table 2). It indicated that the characters *viz.*, days to 50

Table 1 : Analysis of variance

Sr. No.	Characters	Hybrid df=44	Lines df=14	Tester df=2	Line x tester df=28	Error df=62
1.	Days to 50% flowering	41.50**	42.60	1.57	43.80**	0.37
2.	Plant height at maturity	352.29**	555.53**	288.91**	255.19**	0.26
3.	Number of branches	6.01**	5.42**	23.39**	5.60**	0.02
4.	Number of capsules per plant	167.42**	51.61	120.38	228.68**	0.18
5.	Number of seeds per capsule	19.12**	8.67	4.08	25.42**	0.27
6.	1000 seed weight	0.34**	0.26	0.39**	0.38**	0.00
7.	Seed yield per plant	4.66**	5.63**	0.25	4.04**	0.01

* and ** indicates significant of values at P=0.05 and 0.01, respectively