

GENE ACTION FOR YIELD AND ITS COMPONENTS IN SESAME (*Sesamum indicum* L.)

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ABSTRACT

The study of gene action for yield and components in 6x6 hald diallel cross. The F_1 indicate non-additive genetic variance for all the characters, eight characters exhibited over dominance recessive alleles were predominant for branches/ plant and capsules/ plant. The distribution of genes with positive and negative effects were symmetrical to nearly symmetrical for 1000 seed weight, days to maturity, branches/ plant, capsules on main stem, capsules/ plant and yield/ plant.

INTRODUCTION

Sesame is an ancient oil seed crop grown in India, with an important place in the oil seeds scenario of this country. Information on nature and relative magnitude of genetic components of variation of a character is essential for making an effective breeding strategies for the improvement of a crop. The present investigation was carried out with the objective of assessing the nature and magnitude of gene action for different quantitative characters.

MATERIAL AND METHODS

In the present study, the nature of gene action was investigated in F_1 and F_2 of a 6 parent (JT-7, N-32, TC-25, TMV-5, TNAU-11, RT-4) by diallel cross. The combining ability analysis was done both in F_1 and F_2 by Griffing method model¹. The 11 parents and 55 F were grown in a randomized block design with three replication in three row plots of 3 m row length and a spacing of 45 cm 10 cm at the St. Mary's College, Vidisha (M.P.) during Kharif season of 2001-02. Observations were recorded on 10 random competitive plants for 10 quantitative traits. (Table - 1) Genetic analysis of the data was as per Hayman².

RESULTS AND DISCUSSION

The analysis of variance revealed highly

significant among the 6 genotypes for all the ten characters, indicating considerable genetic diversity among the parents and crosses. The genetic variance of components estimates revealed that the additive component was significant for yield and yield components. The dominance genetic variances were significant for all the characters (Table - 1).

The significant and positive dominance estimates for days to flowering, plant height, branches/ plant, capsules on main stem, capsules/ plant and seed yield indicated that the mean direction of dominance was position for three traits.

The average degree of dominance indicated over dominance for the days to 50%, flowering, branches/ plant, capsules on main stem, seeds/ capsules, 1000 seeds, weight and seed yield/ plant³.

The correlation between parental performance and parental order of dominance was positive for capsules on main stem, capsules/ plant, capsules length and 1000 seed weight indicating that parents possess mostly negative genes in dominant form for three traits. For the remaining traits positive genes were mostly dominant⁴. The present findings that both additive and non additive components of genetic variances were involved with predominance variances for all the traits.

Table - 1 : Estimates of components of genetic variance and related parameters in F_1 for seed yield and yield contributing characters in *Sesamum indicum* L.

Component	Days to 50% flowering	Days to maturity	Plant height	Branches /plant	Capsules on main stem	Capsule/ plant length	Seeds/ capsule	7000 seed weight	Seed yield/ weight plant	
D	0.80	10.76	260.30	0.10	7.40	60.43	1.81	29.20	0.10	0.27
H1	7.43	8.70	329.42	8.72	320.56	14741.50	7.81	60.52	0.11	101.15
H2	6.52	7.80	290.42	8.20	312.00	13962.42	5.62	39.02	0.19	110.02
F	0.42	2.60	71.52	-0.52	3.72	-332.89	2.75	33.09	0.03	0.39
Hf	4.10	4.35	140.70	4.89	343.92	11448.76	0.87	-0.29	0.01	86.98
E	0.56	1.79	13.09	0.07	3.98	39.18	0.42	1.49	0.03	0.29
H _{1/0}	0.89	0.89	1.12	9.33	6.57	15.61	2.07	1.43	1.04	19.35
UV	0.29	0.27	0.28	0.27	0.29	0.27	0.17	0.19	0.27	0.29
KD/KR	1.29	1.43	1.38	0.78	1.09	0.76	2.76	2.24	1.19	1.09
K	0.73	0.76	0.59	0.90	1.20	0.98	0.19	-0.09	-0.06	0.98
$r(Y_p, W_p + V_p)$	-0.17	-0.78	-0.49	-0.46	0.07	0.37	-0.27	0.53	-0.29	0.56

Significant at 5% and % levels, respectively.

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