

COMBINING ABILITY ANALYSIS IN KENAF (*HIBISCUS SABDARIFFA* L.)

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ABSTRACT

Diallel analysis in kenaf showed predominance of additive gene action for seed yield per plant and number of capsules per plant. Genotypes RIN-051, RIN-049 and RIN-096 exhibited positive significant gca effects for seed yield per plant and hence may be used in future breeding programme of kenaf.

Key words: Combining ability, kenaf, diallel.

Kenaf (*Hibiscus sabdariffa* L.) is self-pollinated, drought resistant crop mainly cultivated for fibre. The seed of kenaf contains 20% oil, which is edible after refining or hydrogenation. The object of present study was to select parents useful for breeding genotype with high seed yield. The high seed yield has been reported to be positively associated with oil content in kenaf [1].

MATERIALS AND METHODS

Eight strains selected from a collection of 104 genotypes obtained from Jute Research Institute, Barrackpore, were crossed in all possible combinations (nonreciprocals). The 28 F₁s and their parents were sown in randomized block design during kharif 1993–94. The parent strains are RIN-02, RIN-015, RIN-035, RIN-041, RIN-049, RIN-051, RIN-066 and RIN-096. Observations were recorded on plant height, number of branches per plant, number of capsules per plant, and seed yield per plant.

RESULTS AND DISCUSSION

The variation among the progenies of kenaf was significant for all the traits. The gca variance/sca variance ratio ($\sigma^2_{gca}/\sigma^2_{sca}$) is more than unity for seed yield (1.44) and

number of capsules per plant (1.10), suggesting predominance of additive gene action in the expression of these traits.

The gca estimates were calculated to assess the combining ability of each parent. The parent RIN-051 showed significantly high gca (1.30), followed by RIN-049 (1.18) and RIN-096 (1.09) for seed yield per plant.

The crosses with significantly high and positive sca for seed yield are listed in Table 1.

The high sca effects in the crosses of RIN-035 with RIN-041 and RIN-066 are due to dominance gene effect. Hybrid vigour can be exploited in such cases.

Table 1. Estimates of significantly positive sca effects for seed yield in F₁ progenies of kenaf

Nature of cross (gca of parents)	Cross with high positive sca	Sca
High x High	RIN-049 x RIN-051	4.44
Low x High	RIN-015 x RIN-051	4.73
	RIN-015 x RIN-096	4.44
	RIN-035 x RIN-049	3.05
	RIN-041 x RIN-049	2.08
	RIN-041 x RIN-051	2.35
Low x Low	RIN-035 x RIN-041	4.17
	RIN-035 x RIN-066	5.05

REFERENCE

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