

## **LINE X TESTER ANALYSIS FOR COMBINING ABILITY IN SOME KENAF GENOTYPES**

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### **ABSTRACT**

This study was conducted with the objective of estimating combining ability and gene action for yield and its components in kenaf. This was achieved via evaluating 15 progenies of the line x tester analysis consisting of five females ( $P_1$ =H.119,  $P_2$ =Coba,  $P_3$ =S.96/20,  $P_4$ =S.38 and  $P_5$ =New Indian) and three males ( $P_6$ =Giza3,  $P_7$ =S.108/9, and  $P_8$ =Tianing). In 2005, the eight parents and their 15  $F_1$ 's progenies were evaluated in a randomized complete block design with four replications at Ismailia Agric. Res. Station Farm, Ismailia Governorate, Egypt.

The collected data indicated that the predominant role of additive gene action involved in the expression of all studied characters except for both of stem diameter and seed weight / plant. Therefore, selection should be possible in the  $F_2$  and subsequent generations for all studied characters, except for both of stem diameter and seed weight / plant.  $P_3$  and  $P_7$  exhibited significant and positive GCA effects for green weight and most of its components as well as  $P_2$  for three important components (plant height, technical stem length and fiber length), indicating that the use of these parents in kenaf breeding programs could increase green weight and consequently increasing fiber yield. Concerning, seed weight / plant results indicated that the  $P_5$  followed by  $P_6$  showed significant positive  $\hat{g}_i$  values. Therefore, it could be concluded that these two parents ( $P_5$  and  $P_6$ ) in addition to  $P_3$  and  $P_7$  appeared to be best combiners for seed weight. Correlation coefficients between GCA values and parental means for all studied characters indicated that selection of parental crosses in kenaf breeding program could be depended on their higher mean performance for these traits. Two crosses ( $P_3 \times P_8$ , and  $P_5 \times P_7$ ) exhibited significant and positive SCA effects for two important components viz., fiber weight, fiber percentage in addition to seed weight per plant. These crosses involved high x low general combiners for these traits exception  $P_5 \times P_7$  involved high x high for only seed weight per plant.

Phenotypic ( $r_p$ ) and genotypic ( $r_g$ ) correlation coefficients concluded that green weight, plant height, technical stem length, fiber percentage and fiber length are the major components contributing to fiber weight / plant in kenaf. Therefore, selection for these traits will improve the fiber yield in kenaf. On the other hand, fruiting zone length as selection indices to improve seed yield in kenaf.

**Keywords:** Combining ability, Gene action, Line x tester, Kenaf.