

***COMBINING ABILITY ANALYSIS OF SOME QUANTITATIVE CHARACTERS
IN FABA BEAN***

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ABSTRACT:

Six faba bean varieties were used in a dialled cross to study (i) The relative magnitude of both general and specific combining ability and their interactions with the two years as two different environmental conditions and (ii) The evaluation of the six faba bean varieties according to their general combining ability effects. The obtained results can be summarized as follows: Genotypes, parents and the resultant fifteen crosses mean squares were found to be highly significant for all traits studied at the two years and the combined data. Parent vs. crosses mean squares as an indication to average heterosis overall crosses were found to be significant for number of branches per plant at the two years and their combined data, number of pods per plant at the second year and the combined data, number of seeds per pod at the combined data, yield of pods per plant at the first year and seed yield per plant at the first year and the combined data. Various types of interactions i.e., genotypes with years, parent with years, crosses with years and parent vs. crosses with years were found to be insignificant for mostly traits studied. Both general and specific combining ability variances were highly significant at the two years and their combined data for mostly traits studied. GCA/SCA ratios were found to be greater than unity for seeds per pod and yields of pod at the two years and their combined data, number of pods and seed yield at the first year and the combined data. GCA/SCA mean squares were less than unity for plant height, branches per plant and pod length at the two years and their combined data, pods per plant and seed yield at the second year only. The interactions of both types of combining ability with years were insignificant for most traits studied. The faba bean varieties Giza 402 and G 461 proved to be excellent general combiner for yielding ability. The two hybrid combinations Giza 843 x Giza 716 and Giza 429 x Giza 461 exhibited highly significant estimates of SCA effects at the two years and their combined data for yield of pods per plant and seed yield per plant.

Key words: General and specific combining ability, Diallel cross, Gene action and Faba bean.