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Genetical Studies in Field Beans (*Vicia faba*, L.)

II- Earliness and Some Growth Attributes

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HETEROSIS, potence ratio, inbreeding depression, gene action, genetic coefficient of variation, heritability and predicted genetic gain for earliness, number of branches and plant height in the two crosses; Giza 2 X Introduction 54 and Giza 1 X Introduction 44 were studied. Six populations in each cross, namely, P_1, P_2, F_1, F_2, Bc_1, and Bc_2 were used.

Highly significant positive heterosis were detected for; fruiting period, first flowering node and first fruiting node in the first cross, number of branches per plant in the second cross, and plant height in both crosses. Highly significant negative heterosis were detected for; fruiting period, first flowering node and first fruiting node in the first cross, number of branches per plant in the second cross, and plant height in both crosses. Highly significant negative heterosis were detected for; flowering date in both crosses, maturity date and first flowering node in the second cross. Insignificant heterosis were obtained for remaining cases.

Over dominance, towards the higher parent was found for; first fruiting node, number of branches per plant and plant height in both crosses. However, over dominance towards the lower parent was detected for flowering time in the second cross. Partial dominance, towards the higher parent was found for fruiting period and first flowering node in the first cross. Partial dominance, towards the lower parent was found for flowering date in the second cross, and maturity date in the first cross.

The additive and dominance genetic effects were significant for all traits, except the first fruiting node and number of branches per plant. The epistatic gene effects seemed important for most traits studied. Genetic coefficient of variation expressed moderate values for first flowering and fruiting node, number of branches per plant and plant height. However, flowering date, maturity date and fruiting period had low genetic coefficient of variation. High to moderate heritability