

**HETEROSIS, GENE EFFECT, HERITABILITY AND GENETIC
ADVANCE IN SOYBEAN (GLYCINE MAX (L.) MERRIL)**

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ABSTRACT Two crosses of soybean (Crawford x Clark) and (Crawford x Calland), each with six populations (P_1 , P_2 , F_1 , F_2 , BC_1 , and BC_2) were tested for yield, some of yield components and some growth attributes.

Significant negative heterosis were detected for flowering date, maturity date, filling period, plant height, first pod height and 100-seed weight in the first cross. Significant positive heterotic effects were detected for other traits. Over dominance towards the higher parent was found for number of pods per plant, number of seeds per plant and seed weight per plant in both crosses, number of branches and plant height in the second cross and first pod height in the first cross.

Significant positive values of inbreeding depression were detected for plant height, number of pods per plant, number of seeds per plant and seed weight per plant in both crosses, number of branches per plant and first pod height in the second cross, and 100-seed weight in the first cross. However, significant negative value was found for first pod height in the first cross, in the remaining traits, the values of inbreeding depression were not significant. Significant E_1 and E_2 were detected for most traits. Additive gene effects were significantly exhibited in all traits, except seed weight per plant and number of seeds per plant in the first and second crosses, respectively. Dominance and additive x additive types of gene action were found to be significant for all traits. Also, additive x dominance and dominance x dominance types of gene effects were significant for most traits. Heritability estimates in broad sense were high to moderate in magnitude with values between 51.73% for filling period to 93.00% for number of pods per plant.

The predicted genetic advance was rather moderate for number of branches per plant in both crosses and first pod height in the second cross, and low for the remaining traits.

Key wards: Soybean, Gene effect, Heritability and Genetic advace.