

## GENETICAL ANALYSIS OF F<sub>2</sub> DIALLEL CROSS IN BARLEY

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### ABSTRACTS

Ten agronomic characters were studied in F<sub>2</sub> generation obtained from 5x5 half diallel barley cross. Both additive with predominant positive genes and dominance effects with asymmetrically distribution were responsible for the inheritance of such traits. Additive gene effects was important than non-additive in the inheritance of most of the studied traits, suggesting the effectiveness of selection in F<sub>2</sub>. Non-additive gene effects was the most importance for no. of tillers/plant, 1000-kernel weight and grain yield/spike. Cases of partial, complete dominance and overdominance relationships were detected in F<sub>2</sub> generation for these traits. One group of genes appeared to be controlled the inheritance of all studied traits, except no. of tillers/plant and 1000-kernel weight which governed by 2-3 groups of genes. Heritability in narrow sense was high for the majority of traits. The relation between parental mean and dominance order showed that non of parent was completely dominant or recessive for any of these characters. Graphical analysis showed that the introduced two rows varieties possessed the most dominant genes for most of studied traits, while the Egyptian six rows variety H. Sahrawy had recessive genes. Estimates of narrow sense heritabilities suggested that selection could achieved in the early generations for yield characters in barley.

### INTRODUCTION

The improvement of barley production is dependent upon a better understanding of the type of the gene action underlying the inheritance of yield and yield contributing characters. Information about the nature of such quantitative traits can be obtained through utilization of diallel techniques.

Singh *et al.* (1986) and El-Shazly *et al.* (1988) reported that the additive genetic component of the genetic variabilities was important than non-additive in the inheritance of heading date, plant height, no. of spikes/plant and no. of kernels/spike. However Baniwal *et al.* (1984), Dolegu *et al.* (1988), Abdel-Sabour *et al.* (1990) and Hassan (1990), reported that non-additive gene effects was the most important in controlling the variation of no. of tillers/plant, 1000-kernel weight and grain yield/plant. Moreover, additive and dominance gene effects were important for spike length (Calhon *et al.*, 1987). Also, various values of high heritability was recorded for yield characters in barley by different investigators (Ismail, 1986, Singh *et al.*, 1986; and El-Shazly *et al.*, 1988).