Egypt. J. Appl. Sci; 13 (6) 1998 *65 - 71*

STUDIES ON DIALLEL ANALYSIS OF SOME QUANTITATIVE TRAITS IN BARLEY (*Hordeum vulgare* L.)

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ABSTRACT

Seven genotypes of barley (Hordeum vulgare L.) representing different agronomic characters were crossed in all possible combinations excluding reciprocals in 1992/1993. The seven parents and their 21 F_1's formed the experimental materials and evaluated during 1993/1994 season in field experiment conducted at the Experimental Farm of Agriculture Research Center at Giza. The experimental material, were evaluated under two different irrigation treatments. In the first treatment (E_1), the plants had the recommended irrigation, while in the second one, the plants irrigated only once. Hayman's method (1954) was used for running up the genetical analysis. Grain yield, 1000-grain weight and plant height exhibited complete to over-dominance, whereas partial dominance was noticed for days to heading. The proportion of genes with positive and negative alleles in parents revealed symmetric distribution of positive and negative allels for plant height, number of days to heading and grain yield. An excess of dominant genes was estimated for 1000-kernel weight, i.e. for every recessive gene there were two dominant genes. The results also revealed that there were at least 2-3 groups of dominant genes involved in controlling plant height and number of days to heading, whereas, the number of dominant genes controlling grain yield were about one to two groups of dominant genes. The heritability values for number of days to heading, plant height and 1000-kernel weight were very high in both environments, while moderate heritability values were detected for grain yield in both environments. Early and high-yielding varieties could therefore be developed from present material by adopting conventional breeding program.