# ABSTRACT

The present investigation aimed to study the genetic performance of some economic traits, which will help to obtain high yielding varieties of hull-less barley to reduce the gap between the production and consumption of cereals in Egypt. Six genotypes were used in this study namely: *1-CI9984 (Hull-less)* *2- Giza129 (Hull-less)* *3-NUDINKA/WEIHENSTWPHAN173//RAN3/PERUGIASEL 1UH-OUH (Hull-less)* *4-GIZA130. ( Hull-less)* *5- ITALIAN LANDRACE. (Hull-less)* *6- GIZA121 (Hulled)*

Half dialell cross was done among them. The experiments were set up during 2000/2001, 2001/2002 and 2002/2003 season at Giza Agric. Res. Stn.of Agric. Res. Center. In winter 2002/2003 seasons, parents, $F_1$ and $F_2$ populations were grown in randomized complete blocks design with three replications. Both *(Griffing,1956)* and *(Hyman, 1954)* methods were used to estimate the genetic parameters such as heterosis, GCA., SCA., heritability, inbreeding depression and genetic components for morphophysiological traits (days to heading, plant height, number of tillers and spike length) and yield as well as components (number of spikes/plant, number of kernels/spike, spike kernels weight, 100-grain weight, grain yield/plant, biological yield/plant and harvest index) in $F_1$ and $F_2$ generations and also regression graphic presentation was also used.

The results could be summarized as follow: heterosis percentages of mid parent and better parent in $F_1$ generation were significant for the most crosses in the studied traits, while remain heterosis in $F_2$ generation were less then $F_1$ heterosis percentages.

Narrow sense heritability (hn) was low for all marphophysiological characters in $F_1$. Except day to heading, and no. of kernels per spike in $F_1$

studied characters.

Regarding G.C.A., S.C.A. Mean squares analyses revealed highly significant GCA. , SCA. For all studied characters in both $F_1$ and $F_2$ generations. According to component of genetic parameters, its results indicated the importance of additive and non additive gene effect controlling the inheritance of the most studied traits. The regression graphic presentation show in $F_1$ that $P_1$ possessed excess of dominant alleles for plant height, no. of tillers, spike length, no. of spikes\plant, 100-kernels weight, grain yield and biological yield. While $P_5$ possessed excess of dominant alleles for no. of tillers/plant, no. of spikes/plant, no. of kernels/spike, spike kernels weight, grain yield /plant and biological yield.

From the above mentioned results, it could be concluded that the parents $P_1$, $P_4$, $P_6$ and crosses ($P_1 \times P_6$), ($P_2 \times P_6$), ($P_3 \times P_6$), ($P_5 \times P_6$), ($P_1 \times P_4$), ($P_2 \times P_4$) and ($P_3 \times P_4$) showed the best results for most of the studied characters. These parents and crosses will be useful in breeding and improvement program of hull-less barley.

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