

INHERITANCE OF YIELD AND ITS COMPONENTS IN SOME SPRING WHEAT CROSSES

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ABSTRACT

Six population “P₁, P₂, F₁, BC₁, BC₂” and F₂ of six wheat crosses: cross 1 (Sakha 69 × Line 1), cross 2 (Sakha 69 × Sakha 94), cross 3 (Sakha 69 × Sids 12), cross 4 (Sids 12 × Line 1), cross 5 (Sids 12 × Sakha 94) and cross 6 (Line 1 × Sakha 94) were evaluated for yield and its components. Gene action, heterosis, inbreeding depression, potance ratio, heritability and genetic advanced for days to heading, days to maturity, plant height, number of spikes/plant, number of grains /spike, 1000 grains weight and grain yield / plant in the six crosses were estimated. Wide differences were detected between each parent within each cross. Dominance gene effects were generally higher in magnitude than additive effect in the six crosses, indicating the important role of dominant gene in the inheritance of such traits. Moreover, at least two types of epistatic gene effects were important in the basic genetic mechanism of these traits. In most cases, additive × additive type of gene effects were relatively more important than additive effects in the inheritance of most traits studied in the six crosses, but less important than dominance ones. These results indicate that additive, dominance effects and the different types of gene interaction were important in the inheritance of the studied traits under investigation. The results indicated that, the genotypic variance for all traits in all crosses was the major part of the phenotypic variance. High heritability (h²b) values in broad sense, were obtained for all traits in the six crosses. Besides high (h²b) values were afar obtained for days to heading, grains/spike and 1000- grain weight. Low to moderate values were detected for days to maturity, plant height, spikes/plant and grain yield/plant. High genetic advance was associated with high heritability values for days to heading, spikes/plant, grains/spike and grain yield/plant in the six crosses. Moderate to high values of predicated genetic gain were obtained for the most studied traits in the six crosses. Significant heterotic values were found over mid- and better parents for grain yield per plant, days to maturity (toward earliness), days to heading, number of spikes/plant, number of grains/spike and 1000 grains weight.

Key Words: Wheat Crosses, heterosis, inbreeding depression, potance ratio, heritability and genetic advanced.