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COMBINING ABILITY FOR EARLINESS, YIELD AND YIELD COMPONENTS TRAITS IN WHEAT

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ABSTRACT:

The investigation aimed to study genetic system for earliness components, grain yield and some of its components of eight parents and their crosses of wheat under three sowing dates (early, normal, and later). Eight parental verities/or lines representing wide range of variability in most of the studied traits were utilized. General and specific combining ability estimates were obtained by employing Griffing`s (1956) diallel cross analysis designated as method 2 model I. General and specific combining ability mean squares were significant in the three sowing dates for all studied traits. GCA/SCA ratio values largely exceed the unity for most studied traits; indicating that, the largest part of the total genetic variability was associated with additive and additive by additive types of gene action. The parental genotype P6 was the best combiner for heading date, flowering date, and maturity date. The parental genotypes P1 and P8 were the best combiners for grain filling period. The two crosses (P1xP6) and (P3xP8) for the heading date in the first and second sowing date, the cross (P1xP3) for maturity date, cross (P5xP7) for maturity filling period in the three sowing date gave high effects in SCA. The parental genotype P5 was the best combiner for spike length, number of grains per spike, 1000 kernel weight and grain yield per plant. Also, the parental genotype P2 showed high values for 1000 kernel weight. The parental genotypes P2 and P4 gave high positive GCA effects for grain yield/number of spikes/plant. Four crosses for number of spikes/plant, and spike length, three crosses for number of spikelets per spike, two crosses for number of kernel/spike give high positive SCA effects in the all studied sowing dates. The cross (P1xP6) in the first and second sowing date and the cross (P4xP6) for grain yield per plant in the three sowing date and the crosses (P4xP5) in the normal and the late sowing date showed highly significant positive specific combining ability effects. The results indicated that the normal sowing date was the best sowing date for testing grain yield and most yield components.

Key words: wheat, sowing dates, combining ability, earliness and grain yield