Gene action and combining ability over environments for grain yield and its attributes in bread wheat (*Triticum aestivum* L.)

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ABSTRACT
Gene action and combining ability analysis using line x tester (11 lines and 3 testers) mating design in bread wheat revealed that both additive and non-additive gene actions were important for grain yield per plant, days to heading, days to maturity, number of effective tillers per plant, length of main spike, number of spikelets per spike, number of grains per spike, 1000-grain weight and harvest index. The inheritance of grain yield per plant, days to heading, days to maturity, length of main spike, number of spikelets per spike and 1000-grain weight was mainly under the control of additive gene action. The lines HUW 234, GW 322, GW 273, 7C Nad 63 tab’s, MP 3077 and tester PBW 373 were good general combiners for grain yield and some of its components. Eight crosses showed significant and desirable sca effects for grain yield per plant. The cross Chilero x GW 173 was the most promising as it had high sca effects for length of main spike, number of spikelets per spike, number of grains per spike and 1000-grain weight. Biparental mating or few cycles of recurrent selection is suggested to exploit both additive and non-additive gene actions and to obtain transgressive segregants for grain yield per plant in advanced generations.

Key words: Bread wheat, Combining ability, Gene action and Line x tester analysis.

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