RESEARCH ARTICLE | International Journal of Plant Sciences, Vol. 4 Issue 1 : 114-116 (January to June, 2009)

Study of intra-generation association for yield and its components in bread wheat (*Triticum aestivum* L.) under restricted irrigated condition

RAKHI SINHA, R.S. SHUKLA AND RAJMOHAN SHARMA

Accepted : October, 2008

SUMMARY

Four crosses of bread wheat *viz.* MP 3020 x NI 5439, HD 2868 x HI 1500, HI 1500 x HD 2868 and HI 1500 x HD 2889 were grown in restricted irrigated condition to asses intra-generic correlation between yield and its components. Significant positive association with grain yield per plant was observed in cross MP 3020 x NI 5439 for grains per spike in P_2, BC_1 and BC_2, spike weight per plant in P_1, P_2, F_2 and BC_1, biological yield per plant in P_1, P_2, F_2, BC_1 and BC_2 and harvest index in all the generations. In cross HD2868 x HI1500 significant positive correlation with grain yield per plant was recorded for plant height in P_1, BC_1 and BC_2, tiller per plant in P_2, F_2, BC_1 and BC_2, grains per spike in BC_2, spike weight per plant in P_2, F_2 and BC_2, 1000 grain weight in P_2, biological yield per plant in P_2, F_1, F_2 and BC_2 and harvest index in all the generations. In HI1500 x HD2868 significant positive association with grain yield per plant was observed for plant height in BC_2, tiller per plant in all the generations except F_2 and BC_1 ear length in P_2 spikelets per spike in F_1 for grains per spike in P_1 and F_1 spike weight per plant in F_1, F_2 and BC1 biological yield per plant in all the generations while significant negative association with grain yield per plant was found for plant height in BC1, ear length in P_1, grains per spike in P_2 and for spike weight per plant in P_1. In cross HI1500 x HD2889 significant positive correlation with grain yield per plant was recorded for plant height in BC_2 tiller per plant in P_2, BC_1 and BC_2 ear length in BC_2 grains per spike in P_1, F_1, BC_2 grains per spike in P_1, F_1, BC_1 and BC_2 spike weight per plant in all the generations except in F_1 for biological yield per plant and harvest index in all the generations. Significant negative correlation with grain yield per plant was exhibited for 1000 grain weight in P_2.

Key words : Wheat, Intra-generic correlation

Wheat is the second most important cereal just after rice. It is eaten in various forms by more than one thousand million human beings in the world. In India it is second important staple food crop, rice being the first. In areas where wheat is the staple cereal food, eaten in the form of 'Chapati'. In areas where rice is the staple cereal food wheat is eaten in the form of 'Puris' or 'Upma' (cooked from Suji or Rawa). In addition to this, wheat is also consumed in various other preparations such as 'Dalia', 'Halwa', 'Sweet meals' etc. In most of the urban areas in the country the use of backed leavened bread, flakes, cakes, biscuits etc., is increasing at a faster rate. The global area under wheat comes to 226.95 m. ha. out of which 92 per cent is covered by *aestivum* wheat and 8 per cent by *durum* wheat.

Yield is a complex character governed by several characters. The knowledge of association between yield and its component characters is essential yield improvement in wheat. Hence, present experiment was conducted to study the intrageneric correlation between yield and nine quantitative characters.

Correspondence to:
RAKHI SINHA, Department of Plant Breeding and Genetics, Jawaharlal Nehru Krishi Vishwa Vidyalaya, JABALPUR (M.P.) INDIA
Authors' affiliations:
R.S. SHUKLA AND RAJMOHAN SHARMA, C/o Mr. K.C. Shrivastava, Retd. E.E., Jai Praksh Nagar, Adhartal, JABALPUR (M.P.) INDIA

MATERIALS AND METHODS

The experimental material comprised of five divergent genotypes of wheat (*Triticum aestivum* L.). These were crossed among themselves to develop the four crosses *viz*. MP 3020 x NI 5439, HD 2868 x HI 1500, HI 1500 x HD 2868 and HI 1500 x HD 2889. The experiment was laid out in randomized complete block design with 4 replications. Randomization was carried out in each replication among six populations *viz.* P_1, P_2, F_1, F_2, BC_1, BC_2 of 4 crosses. Row length was 2.5 m and row to row distance 30 cm. One row for P_1, P_2, F_1, BC_1, BC_2 and twenty rows for F_2 generation of each cross in each replication were grown. Recommended package of practices to raise the good crop were taken up as and when required. Fertilizer dose was 60:40:15 NPK kg/ha (basal). The variance and covariance based on individual plant observation were used to determine the correlation among all quantitative characters under study. The data were recorded on the basis of ten randomly selected plants from each row of each cross in each replication for ten characters *viz.* plant height (cm), number of tillers/plant, ear length (cm), number of spikelets per spike, number of grains per spike, spike weight per plant (g), grain Yield per plant (g), 1000-grain weight (g), biological Yield (g) and harvest Index (%). The simple correlation coefficients were calculated in all possible combinations by using the procedure adopted by Miller *et al*. (1958).