

Research Paper

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## Association and diversity studies in wheat

■ SHASHIKALA S. KOLAKAR, R.R. HANCHINAL<sup>1</sup> AND SADASHIV NADUKERI<sup>2</sup>

### AUTHORS' INFO

#### Associated Co-author :

<sup>1</sup>Department of Crop Improvement and Biotechnology, College of Horticulture, U.H.S. (B), MUDIGERE (KARNATAKA) INDIA

<sup>2</sup> University of Agricultural Sciences, Krishi Vigyan Kendra, DHARWAD (KARNATAKA) INDIA

#### Author for correspondence :

**SHASHIKALA S. KOLAKAR**  
Department of Crop Improvement and Biotechnology, College of Horticulture, U.H.S. (B), MUDIGERE (KARNATAKA) INDIA  
Email : shashikala\_kolakar@yahoo.com

**ABSTRACT :** The 169 wheat genotypes including checks viz., DWR 162 and Kalyansona evaluated for 11 traits. The correlation studies revealed that grain yield per plot was positive and significantly associated with days to 50 per cent flowering and negatively significant with plant height, peduncle length and protein content. The maximum direct effect on grain yield was exhibited, by days to 50 per cent flowering followed by number of tillers per meter length. Hence, dwarf varieties are preferred, as they could withstand lodging, this association could be used advantageous for development of dwarf varieties. Following the cluster analysis all the 169 genotypes showed that the genotypes were grouped into twelve clusters, with the variable number of genotypes in each cluster. The inter cluster distance was found to be highest between cluster VIII and XI; hence accessions from these clusters are suggested to obtain improvement in seed yield of wheat.

**Key Words :** Wheat, Correlation, Path analysis, Genetic divergence, Cluster

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**W**heat (*Triticum aestivum* L.) is an important cereal crop of cool climates, and plays an important role in the food and nutritional security of India. Wheat, a cereal grass of the *Graminae* (*Poaceae*) family and of the genus *Triticum*, is the world's largest cereal crop.

India's productivity and the prominent position, it holds in the international food grain trade. Yield is one such character that results due to the actions and interactions of various component characters (Grafius, 1960). It is now realized that sustaining as well as increasing productivity may be essential. The knowledge of factors responsible for high yields has been rendered difficult as yield is a complex character.

Therefore, attaining higher yield levels, the breeder is required to deal the complex situation through handling of the yield components. The studies of characters association provide information about the estimates of interrelationship of various yield components in manifestation of yield. Path analysis focussed direct and indirect effect of component traits on yield. With this objective the present investigation has been taken in the wheat genotypes. Knowledge of genetic diversity in a crop species is fundamental to its improvement. Evaluation of genetic diversity levels among adapted, elite germplasm can provide predictive estimates of genetic variation among segregating progeny for pure-line cultivar development.

According to Franco *et al.* (2001) the study of phenotypic and genotypic diversity to identify groups with similar genotypes is important for conserving, evaluating and utilizing genetic resources; for studying the diversity of pre-breeding and breeding germplasm; and for determining the uniqueness and distinctness of the phenotypic and genetic constitutions of genotypes with the purpose of protecting a breeders intellectual property rights.

## RESEARCH PROCEDURE

The material for the present investigation consisted of 169 wheat genotypes along with checks DWR 162 and Kalyansona, collected from Directorate of wheat research, Karnal. The experiment was laid out in an Simple lattice design with two replications. Each genotype in each replication was grown in a plot of 3 rows of 2 meter length each with a spacing of 23 cm between rows, at Wheat Improvement Project, Main agricultural Research station Dharwad, during 2004-05. All the agronomic practices were followed during the crop growth period. Observations were recorded on five randomly selected competitive plants for eleven characters days to 50 per cent flowering( $X_1$ ), days to maturity( $X_2$ ), plant height( $X_3$ ), peduncle length ( $X_4$ ), number of productive tillers per meter( $X_5$ ), spike