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Genetic divergence in barley (Hordeum vulgare L.)

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SUMMARY

In order to assess the divergence among the 22 genotypes including two standard checks, Mahalanobis D^2 statistics was applied. The genotypes were grouped into five clusters. Clusters II, had the highest genotypes (8) followed by cluster IV (5). The genotypes falling in cluster II had the maximum divergence which were closely followed by cluster V and III. The maximum and minimum divergence was found between cluster I and III and between cluster I and V. In general cluster IV and V exhibited high mean values for most of the characters. It is suggested that for varietal improvement the hybridization among the genotypes of divergent clusters should be done rather than depending on less divergent clusters.

Key words : Barley, D² analysis, Genetic Divergence.

Barley (*Hordeum vulgare* L.) is one of the most important cereal of the world grown in *Rabi* season. It is used as grain feed to live stock and poultry, food for chapaties and malt in beer breweries. The roasted grains are used as 'Sattu'. Barley foods have many health enhancing attributes in addition to provide sound nutrition. It lowers blood cholesterol, blood glucose and insulin. Feeling of satiety is increased following its consumption.

The estimate of genetic divergence provides an insight on the possible improvement for the characters in the study which is the back bone of any crop improvement programme. Divergence analysis is performed to identify the diverse genotypes for the purpose of hybrdization. Genetic gain is possible only when there is adequate genetic diversity present in the population, therefore, a study on genetic divergence would help in preparing a rationale plant improvement programme. Mahalanobis D^2 statistics has been widely applied to determine the genetic diversity in the population. The genotypes of a cluster are less divergent than those falling in different clusters.

MATERIALS AND METHODS

The investigation was conducted on twenty two strains at Nawabganj Research Farm of C.S. Azad Univ. of Agriculture & Technology, Kanpur-208002 during Rabi season 2003. Each genotype was sown in Randomized Block Design with three replications in two rows of five meters long having spacing of 25cm x 5cm. Data were recorded for days to flowering, days to maturity, plant height (cm), number of grains per ear, grain weight per ear (g), grain yield per plant (g) and 1000 grain weight (g). The data were subjected to statistical analysis using Mahalanobis (1928) and the genotypes were grouped into five clusters using Tocher's method as given by Rao (1952) as it is exhibited in Table 1. Two strains were grouped in cluster I, eight in cluster II, three in cluster III, five in cluster IV and four in cluster V.

RESULTS AND DISCUSSION

The analysis of variance revealed existence of significant differences among genotypes in respect of all the characters under study. The D values for all the

Table 1 : Grouping of twenty two strains of barley in five clusters.

Cluster	Strains	No. of Strains
Ι	K-758, Jyoti	2
II	RD2670, BH663, RD2552, PL762, K768, JB, 31, HB, 648 PL776	8
III	HUB176, HUB177, HUB155	3
IV	HB665, K760, RD2671, NDB1246, RD2035	5
V	NDB-1245, RD-2672, RD2673, K-759	4

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