

## ASSOCIATION OF CHARACTERS FOR YIELD AND ITS ATTRIBUTES IN HUSKED BARLEY (*HORDEUM VULGARE* L.)

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**Abstract:** The genotypic and phenotypic correlation of 12 parents used in diallel mating system between 11 characters was estimated. The results revealed that grain yield per plant had positive and significant association with number of tillers per plant, number of grains per spike, biological yield per plant, harvest index and 1000-kernel weight both at genotypic and phenotypic levels. Its association with plant height and days to reproductive phase was negative and significant at both the levels.

**Keywords:** Barely, Components, Correlation coefficient, *Hordeum vulgare*, Yield

### INTRODUCTION

Barely is an important crop of arid and semi arid region and can thrive well under moisture stress conditions. Moreover it can tolerate salinity and alkalinity upto greater extent. Therefore, this crop had become a boon to the poor farmers surviving on marginal and sub marginal holdings. Keeping in view, its utility and sustainable productivity under stress environmental conditions, selection of appropriate breeding methodology, so as to achieve anticipated advancement in productivity is required.

Twelve husked barely strains were intermated in diallel fashion excluding reciprocals. Parents were evaluated for plant height, days to reproductive phase, number of tillers per plant, length of spike, number of grains per spike, number of spikelets, biological yield per plant, harvest index, grain yield per plant, grain weight per spike and 1000-kernel weight. The observations recorded were subjected to various statistical and biometrical analysis. The genotypic and phenotypic correlation between the characters was estimated using the formula suggested by Robinson *et al.* 1951.

### MATERIALS AND METHODS

**Table 1.** Genotypic (upper) and phenotypic (lower) correlation coefficient for 11 character among parents used in 12 x 12 diallel analysis in barley.

Character	1	2	3	4	5	6	7	8	9	10	11
1	<b>rg rp</b>	-0.064	-0.737**	0.367**	-0.040	-0.171	-0.146	-0.081	-0.240*	0.009	0.109
2	-0.063	-	-0.222*	0.121	-0.447**	0.463**	0.115	-0.711**	-0.577**	0.065	0.495**
3	-0.611*	-0.165	-	-0.367**	0.344**	0.081	0.619**	0.167	0.628**	0.023	-0.528**
4	0.357	0.117	-0.289*	-	0.101	-0.379**	0.330**	-0.461**	-0.125	-0.518**	0.144
5	-0.040	0.411**	0.286*	0.105	-	-0.097	0.341**	0.486**	0.751**	0.158	-0.745**
6	-0.156	0.415**	0.043	-0.316*	-0.038	-	-0.055	0.147	0.050	0.602**	0.088
7	-0.142	0.113	0.507**	0.313*	0.329*	-0.048	-	-0.292**	0.0467**	-0.508**	-0.224
8	-0.079	-0.673**	0.174	-0.417***	0.474**	0.157	-0.267*	-	0.709**	0.327*	0.425**
9	-0.218	-0.510**	0.521**	-0.104	0.668**	0.032	0.458**	0.691**	-	-0.059	0.554**
10	0.002	0.039	-0.083	-0.330**	0.128	0.453**	-0.276*	0.302*	0.088	-	-0.183
11	0.17	0.491**	-0.442**	0.139	-0.729**	0.090	-0.220*	-0.402**	0.487**	-0.139	-

- |  |                                    |
|--|------------------------------------|
| 1 = Plant height (cm)                  | 6 = Number of Spikelets/main spike |
| 2 = 1000-Kernel Weight (g)             |                                    |
| 3 = Days to reproductive phase         | 7 = Biological yield/plant (g)     |
| 4 = Number of productive tillers/plant | 8 = Harvest index (%)              |
| 5 = Length of main spike/plant (cm)    | 9 = Grain yield/plant (g)          |
|  | 10 = Grain weight/main spike (g)   |
| 11 = Number of grains/main spike       |                                    |

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## RESULTS AND DISCUSSION

The correlation analysis (Table-1) revealed that genotypic correlation were higher than phenotypic ones in magnitude. Hence, this association might be due to pleiotropic effects rather than linkage between genes affecting the characters. Grain yield showed positive and significant association with number of tillers per plant, number o grains per spike, biological yield per plant, harvest index and 1000-kernel weight. A similar finding has also been reported by Sethi and Singh 1971, Prasad *et al.* 1980, Hobgood 1983 and Singh *et al.* 1998. Its association with plant height and days to reproductive phase was negative and significant at both the levels. Singh 1999 also observed negative and significant association of grain yield per plant with plant height. Characters among themselves exhibited that, plant height has positive and significant association with length of spike but its association with tillers per plant and grain yield per plant is negative and significant. Days to reproductive phase showed positive and significant relationship with number of spikelets and 1000-kernel weight exhibited the efficiency of genotypes for effective carbon as simulation while its relationship with tillers per plant, number of grains per spike, harvest index and grain yield per plant is negative and significant. Number of productive tillers per plant has positive and significant association with number of grains per spike, biological yield and grain yield per plant while its association with plant height, length of spike and 1000-kernel weight is negative and significant. Length of spike showed positive and significant relationship with plant height and grain yield per plant while its showed negative and significant relationship with tillers per plant, number of spikelets, grain yield per plant and grain weight per spike. Number of grains per spike exhibited positive and significant association with days to reproductive phase, number of tillers per plant, biological yield per plant, harvest index and grain yield per plant while its association with 1000-kernel weight is negative and significant. Number of spikelets showed positive and significant association with days to reproductive phase and grain weight per spike while it showed negative and significant association with length of spike. Biological yield per plant represent positive and significant relationship with tillers per plant, length of spike, number of grains per spike and grain yield per plant while its showed negative and significant relationship with harvest index and grain weight per spike. Harvest index has positive and significant association with number of grains per spike, grain yield per plant, grain weight per spike and 1000-kernel weight while with days to reproductive phase, length of spike and biological yield it has negative and significant association. Grain yield per plant exhibited positive and significant relationship with tillers per plant, number of grains per spike, biological yield per

plant, harvest index and 1000-kernel weight while its showed negative and significant association with days to reproductive phase and plant height. Grain weight per spike represent its positive and significant association with number of spikelets and harvest index while with length of spike and biological yield it represent negative and significant association. 1000-kernel weight showed positive and significant relationship with days to reproductive phase and grain per plant but on contrary it showed negative and significant association with tillers per plant, number of grains per spike, biological yield and harvest index. The inter relationship between characters has been supported by Lu 1995 and Mobasser & Shahmoradi 1996.

Most of the characters like plant height and days to reproductive phase showed negative effect on grain yield per plant while characters like number of tillers per plant, number of grains per spike, biological yield per plant, harvest index and 1000-kernel weight exhibited positive effect on grain yield, harvest index and 1000-kernel weight should given most emphasis while going for yield improvement in the crop like barely.

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