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Genotypic Variation in Wheat Genotypes under Agro Climatic Condition of Kaghan Valley

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Abstract: Eleven wheat genotypes were evaluated during kharif season 2003 at Himalayan Agricultural Research Station Kaghan. The genotypes tested were Chakwal-86, Kohinoor-83, Pasban-90, Iqbal-2000, Chinab-2000, MH-97, Auqab-2000, Chakwal-97, Parwaz-94, Inqlab-91 and Punjab-96. Significant difference were found among genotypes for tillers/plant, number of grains/spike, thousand grain weight (g), days to maturity and grain yield (kg ha^{-1}) where difference for spike length (cm) were found non significant. Maximum grain yield (1762 kg ha^{-1}) was recorded by wheat genotype Chakwal-86 followed by wheat genotype Chakwal-97 (1678.99 kg ha^{-1}) while minimum grain yield was noted in wheat genotype Kohinoor-83 (1069.900 kg ha^{-1}).

Key words: Wheat, *Triticum aestivum,* genotypes, Kaghan valley, Pakistan

INTRODUCTION

Wheat (*Triticum aestivum*) is the most important cereal crop of Pakistan. It is a staple food and indispensable food article of the people of Pakistan. The prosperity of the people of Pakistan up to large extent depends on good wheat harvest. Wheat is occupying an eminent place in economy of Pakistan[1].

In Pakistan wheat is grown over an area of 8057.5 thousand ha with annual production of 18226.5 thousand tons[2]. Its current average yield (2262 kg ha^{-1}) is however as for below than genetic potential of existing cultivars. Apart from other factors causing low yield, suitable cultivars play an important role in achieving its potential yield[3]. Wheat genotypes differ from each other in yield potential[4]. The higher yield of wheat can be achieved identifying high yielding genotypes. Shah *et al.* [5] tested wheat genotypes and recorded significant variation among genotypes for plant height (cm), number of grain/spike, 1000 grain weight (g), by days to maturity and grain yield (kg ha^{-1}). Akbar *et al.*[6] observed significant variation among wheat genotypes for plant height, number of tillers/plant, spike length and grain yield.

Qari *et al.*[7] evaluated eight wheat genotypes and found significant difference among genotypes for grain yield. Waraich *et al.*[8] observed significant variation among wheat genotypes for number of tillers/plant, spike length, number of grains/spike and grain yield.

Keeping in view importance of high yielding genotypes in bridging the yield gap, the present study was undertaken to find high yielding genotypes under agro climatic condition of Kaghan valley.

MATERIALS AND METHODS

Eleven wheat genotypes viz., Chakwal-86, Kohinoor-83, Pasban-90, Iqbal-2000, Chinab-2000, MH-97, Auqab-2000, Chakwal-97, Parwaz-97, Inqlab-91 and Punjab-96 were evaluated at Himalayan Agricultural Research Station Kaghan during kharif season 2003. The experiment was carried out in Randomized Complete Block Design replicated three times. The plot size was 5x1.8 m.

All the cultural practices were kept constant for all the treatments. Data were recorded on number of tillers/plant, spike length (cm), number of grains/spike, 1000 grain weight (g), days to maturity and grain yield (kg ha^{-1}) and subjected to analysis of variance according to Steel and Torrie[9] to find out significant difference among treatment means. Treatment means were compared using LSD test.

RESULTS AND DISCUSSION

Number of tillers/plant: Number of tillers/plant were significantly affected by various wheat genotype (Table 1). Maximum number of (7.87) tillers/plant was registered by wheat genotype Pasban-90 followed by wheat genotypes Iqbal-2000 and Inqlab-91 which noticed

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Table 1: Number of tillers/plant, number of grains/spike, 1000 grain weight (g), Spike length (cm), days to maturity and grain yield (kg ha^{-1}) as affected by various wheat genotypes

Wheat genotypes	Number of tillers/plant	Number of grains/spike	1000 grain weight (g)	Spike length (cm)	Days to maturity	Grain yield (kg ha^{-1})
Chakwal-86	5.50b	36.55a-c	46.00ab	9.51a	122.66a	1762.98a
Kohinoor-83	4.87b	35.88a-c	29.00d	7.79c	101.00b	1069.90c
Pasban-90	7.87a	40.07ab	37.33a-d	7.87c	107.00b	1404.13a-c
Iqbal-2000	6.16ab	33.00a-c	33.00cd	8.25bc	103.33b	1358.02a-c
Chakwal-97	5.43b	38.76a-c	48.00a	9.36ab	120.00a	1678.99ab
MH-97	5.93ab	42.67a	41.66a-c	8.35a-c	104.33b	1456.79a-c
Auqab-2000	5.43b	38.55a-c	45.00ab	8.35a-c	102.66b	1470.92a-c
Chinab-2000	5.63b	30.43bc	39.00a-d	9.22ab	118.33b	1407.43a-c
Parwaz-94	5.30b	30.33bc	42.66ab	7.85c	103.33b	1283.96a-c
Inqlab-91	6.16b	30.33bc	36.33b-d	8.12bc	103.00b	1382.71a-c
Punjab-96	5.53b	28.76c	41.66a-c	7.66c	101.66b	1185.18bc

Means followed by different letter(s) are significantly different at 5% level of probability

(6.16) number of tillers/plant, respectively. Minimum number of (4.87) tillers/plant was recorded by wheat genotype Kohinoor-83.These results are in conformity with those of Akbar *et al.*[6] who recorded significant variation in wheat genotypes for number of tillers/plant.

Spike length (cm): Spike length was not significantly affected by various genotypes. These results are not in line with findings of Akbar *et al.*[6] who observed significant variation in wheat genotypes for spike length.

Grain/spike: Significant difference in genotypes was noticed for number of grains/spike (Table 1). Maximum number of (42.67) grain/spike was recorded by wheat genotype MH-97 followed by wheat genotype Pasban-90 which registered (40.07) grains/spike while minimum number of (28.76) grains/spike was observed in wheat genotype Punjab-96. Similar results were noted by Waraich *et al.*[8].

1000 grain weight (g): Data presented in (Table 1) showed that various genotypes had significant affect on 1000 grain weight (g). Maximum 1000 grain weight of (48 g) was recorded by wheat genotype Chinab-2000 followed by wheat genotype Chakwal-86 which noticed (46 g) 1000 grain weight while minimum 1000 grain weight of (29 g) was recorded by wheat genotype Kohinoor-83. Shah *et al.*[5] also observed significant difference in wheat genotypes for 1000 grain weight.

Days to maturity: The data regarding days to maturity revealed (Table 1) that days to maturity was significantly affected by genotypes. Wheat genotype Chakwal-86 took maximum(122.67) days to maturity followed by Chinab-2000 (120) while minimum (101) days to maturity were taken by Kohinoor-83. These findings are in agreement with those of shah *et al.*[5].

Grain yield (kg ha^{-1}): Grain yield was significantly affected by various wheat genotypes (Table 1). Maximum grain yield of (1762.98 kg ha^{-1}) was recorded by wheat genotype Chakwal-86 followed by Chakwal-97 which registered (1678.99 kg ha^{-1}) while minimum grain yield of (1069.9 kg ha^{-1}) was noted by wheat genotype Kohinoor-83. Similar results were recorded by Shah *et al.*[5], Akbar *et al.*[6] and Qari *et al.*[7].

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