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, 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 eminence 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 grains/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. Waniach 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-94, 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
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

<table>
<thead>
<tr>
<th>Wheat genotypes</th>
<th>Number of tillers/plant</th>
<th>Number of grains/spike</th>
<th>1000 grain weight (g)</th>
<th>Spike length (cm)</th>
<th>Days to maturity</th>
<th>Grain yield (kg ha$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chakwal-86</td>
<td>5.50b</td>
<td>36.55a-c</td>
<td>46.00ab</td>
<td>9.51a</td>
<td>122.66a</td>
<td>1762.98a</td>
</tr>
<tr>
<td>Kohnoor-83</td>
<td>4.87b</td>
<td>35.88a-c</td>
<td>29.00f</td>
<td>7.79e</td>
<td>101.00b</td>
<td>1069.96c</td>
</tr>
<tr>
<td>Pasban-90</td>
<td>7.87a</td>
<td>40.07b</td>
<td>37.33a-d</td>
<td>7.87c</td>
<td>107.00b</td>
<td>1404.13b</td>
</tr>
<tr>
<td>Iqbal-2000</td>
<td>6.16ab</td>
<td>33.00c</td>
<td>33.00c</td>
<td>8.25b</td>
<td>103.33b</td>
<td>1386.02b</td>
</tr>
<tr>
<td>Chakwal-97</td>
<td>5.43b</td>
<td>38.76a-c</td>
<td>48.00o</td>
<td>9.36c</td>
<td>120.00a</td>
<td>1678.99b</td>
</tr>
<tr>
<td>MH-97</td>
<td>5.93ab</td>
<td>42.67a</td>
<td>41.60a-d</td>
<td>8.35a-c</td>
<td>104.33b</td>
<td>1456.79b</td>
</tr>
<tr>
<td>Auqub-2000</td>
<td>5.43b</td>
<td>38.53a-c</td>
<td>45.00a-b</td>
<td>8.35a-c</td>
<td>102.66b</td>
<td>1470.92b</td>
</tr>
<tr>
<td>Chinab-2000</td>
<td>5.63b</td>
<td>30.43b</td>
<td>59.00o-d</td>
<td>9.22b</td>
<td>118.33b</td>
<td>1407.43b</td>
</tr>
<tr>
<td>Parwa-94</td>
<td>5.30b</td>
<td>30.33c</td>
<td>42.66b</td>
<td>7.85c</td>
<td>103.33b</td>
<td>1283.96c</td>
</tr>
<tr>
<td>Imjal-91</td>
<td>6.16b</td>
<td>30.33c</td>
<td>36.33o-d</td>
<td>8.12c</td>
<td>103.00b</td>
<td>1382.71c</td>
</tr>
<tr>
<td>Punjab-96</td>
<td>5.53b</td>
<td>28.76c</td>
<td>41.60a-c</td>
<td>7.66c</td>
<td>101.66b</td>
<td>1185.18b</td>
</tr>
</tbody>
</table>

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 Kohnoor-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) grains/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.[10].

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 Kohnoor-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 Kohnoor-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 Kohnoor-83. Similar results were recorded by Shah et al.[5], Akbar et al.[6] and Qari et al.[7].

REFERENCES