Correlation and Path Analysis of Grain Yield and Yield Components of some Turkish Oat Genotypes
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Introduction
Determination of direct and indirect effects of yield components on GY through path analysis. Path coefficient analysis indicated that PN m-2 (0.23), 1000-GW (0.149), GFP (0.062), DM (0.011), and PH (0.011) had positive direct effects on GY while GWP (-0.032) and PH (-0.021) had negative direct effects on GY. The sum of these two traits was higher than that of 1000-GW and GNP. The sum of direct and indirect effects of PN m-2 was 0.29 and the rate of 35.05 %, respectively. DM had positive direct effect on GY and its great importance in determining GY of a genotype.

Material and Methods
Field experiments were carried out in rainfed conditions for two winter cropping years (2002-03 and 2005-06) in Kahramanmaraş province. The climatic data were obtained from the Department of Agriculture. The climatic data used in table 2 are average climatic data for the region and yield components were determined byy the software of TARIŞ (Ankara at 1998).

Table 2. Some average climatic data belong to experiment (2002-03 and 2005-06) and long term years (1930-2006) in Kahramanmaraş province.

<table>
<thead>
<tr>
<th>Date</th>
<th>Temperature</th>
<th>Precipitation</th>
<th>Sunshine</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>23.1°C</td>
<td>102.3 mm</td>
<td>177.4 h</td>
<td>58.5%</td>
</tr>
<tr>
<td>July</td>
<td>32.1°C</td>
<td>261.9 mm</td>
<td>287.2 h</td>
<td>67.3%</td>
</tr>
<tr>
<td>September</td>
<td>19.3°C</td>
<td>45.3 mm</td>
<td>179.3 h</td>
<td>54.0%</td>
</tr>
<tr>
<td>November</td>
<td>9.5°C</td>
<td>26.3 mm</td>
<td>305.2 h</td>
<td>66.8%</td>
</tr>
<tr>
<td>December</td>
<td>11.2°C</td>
<td>0 mm</td>
<td>1053.6 h</td>
<td>68.9%</td>
</tr>
</tbody>
</table>

Table 3. The objectives of this study were i-) to estimate Pearson correlation coefficients between grain yield and yield components for oat genotypes, ii-) to determine the order of priority of yield components through path analysis. The objectives of this study were i-) to estimate Pearson correlation coefficients between grain yield and yield components for oat genotypes, ii-) to determine the order of priority of yield components through path analysis.

Results and Discussion
Correlation coefficients between pairs of variables used in this experiment are shown in Table 3. According to the correlation coefficients, there was a negative and significant correlation between GY and DM (r = -0.35), while there was positive and significant correlation between PN and GNP (r = 0.702**), PN and GNP (r = 0.699**), 1000-GW and GNP (r = 0.604**), 1000-GW and GNP (r = 0.511**), DM and PN (r = 0.330**), and PN and GNP (r = 0.345**). The correlation coefficients between the other yield components were not significantly related with GY. Path coefficient analysis indicated that PN (r = 0.23), 1000-GW (r = 0.149), GFP (r = 0.062), DM (r = 0.011), and PH (r = 0.011) had positive direct effects on GY while GWP (r = -0.032) and PH (r = -0.021) had negative direct effects on GY. Moreover, the positive direct and indirect effects were added to the negative indirect effects for the sake of direct and indirect effects of 1000-GW, PN m-2 on GY were positive and in the rate of 35.02 %, 18.88 %, respectively. The effect of these two traits was higher than that of 1000-GW and GNP. The sum of direct and indirect effects of PN m-2 was 0.29 and the rate of 35.05 %, respectively. Therefore, PN m-2, DM, and PH could be priority in breeding programs for the conditions of East Mediterranean region of Turkey. Some traits path analysis correlation coefficients listed in Table 4.

Table 4. Path Analyses Showing Direct and Indirect Effect of PH, GNP, GWP, 1000-GW, GFP, DM and PN m-2 on Oat Grain Yield for Two Years.

<table>
<thead>
<tr>
<th>Phenomenon</th>
<th>Direct Effect on GY</th>
<th>Indirect Effect on GY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN m-2</td>
<td>0.23</td>
<td>0.11</td>
</tr>
<tr>
<td>1000-GW</td>
<td>0.149</td>
<td>0.01</td>
</tr>
<tr>
<td>GFP</td>
<td>0.062</td>
<td>0.011</td>
</tr>
<tr>
<td>DM</td>
<td>0.011</td>
<td>0.01</td>
</tr>
<tr>
<td>PH</td>
<td>0.011</td>
<td>0.01</td>
</tr>
<tr>
<td>GNP</td>
<td>0.29</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Conclusion
The results of this study showed that selection for plants with fewer days from emergence to flowering and longer period between flowering and maturity could have the most priority. The results of this study also showed that selection for plants with fewer days from emergence to flowering and longer period between flowering and maturity could have the most priority.