SICILIAN LENTIL LANDRACES PHENOTYPING: MORPHOLOGICAL, CHEMICAL, TECHNOLOGICAL AND IMAGE ANALYSIS EVALUATION


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INTRODUCTION

The long tradition of lentil cultivation in Sicily has permitted the evolution of many landraces, which are adapted to microclimates in restricted internal hilly areas. This germplasm is an important genetic pool resource to identify types with good grain yield and to recover traditional types, risking to disappear (1). Considering these remarks, this work aims to characterize lentil landraces, collected in different areas of Sicily, and to evaluate their nutritional and technological properties in order to emphasize their good effects on health, if regularly introduced in human diet.

METHODOLOGY

Year: 2005-2006

Experimental field:

Table 1 - Morphological traits recorded in the six landraces of lentil

<table>
<thead>
<tr>
<th>Landraces</th>
<th>Plant height (cm)</th>
<th>Pods weight (g plant-1)</th>
<th>Seed weight (g)</th>
<th>1000-seed weight (g)</th>
<th>Quality of the grain (3)</th>
<th>Iron (mg kg-1 d.m.)</th>
<th>Potassium (mg kg-1 d.m.)</th>
<th>CV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aidone S. Teodoro Caltagirone Linosa</td>
<td>23.6</td>
<td>14.0</td>
<td>0.9</td>
<td>53.2</td>
<td>3 microsperma</td>
<td>0.1</td>
<td>0.05</td>
<td>98.00</td>
</tr>
<tr>
<td>Malteo</td>
<td>24.3</td>
<td>27.1</td>
<td>1.45</td>
<td>41.9</td>
<td>3 microsperma</td>
<td>0.3</td>
<td>0.05</td>
<td>98.00</td>
</tr>
<tr>
<td>Cesarò</td>
<td>25.4</td>
<td>23.6</td>
<td>2.52</td>
<td>72.0</td>
<td>3 microsperma</td>
<td>0.8</td>
<td>0.05</td>
<td>98.00</td>
</tr>
<tr>
<td>Caltagirone</td>
<td>24.4</td>
<td>21.6</td>
<td>1.62</td>
<td>50.0</td>
<td>3 microsperma</td>
<td>2.00</td>
<td>0.05</td>
<td>98.00</td>
</tr>
<tr>
<td>Maletto</td>
<td>25.9</td>
<td>22.5</td>
<td>1.11</td>
<td>31.5</td>
<td>3 microsperma</td>
<td>5.00</td>
<td>0.05</td>
<td>98.00</td>
</tr>
<tr>
<td>San Teodoro</td>
<td>23.4</td>
<td>47.2</td>
<td>1.65</td>
<td>28.6</td>
<td>3 microsperma</td>
<td>8.00</td>
<td>0.05</td>
<td>98.00</td>
</tr>
</tbody>
</table>

RESULTS

1. Results showed genotypes statistically affected all traits, whose mean values were plant height 24.3 cm (CV=9.0%), number of pods/plant 29.9 (CV=44.6%); 1000-seed weight 42.2 g (CV=45.2%), seed yield/plant 1.57 g (CV=37.8%) (TABLE 1).

2. Low CV values were found for crude protein (mean value 267 g kg⁻¹ dm) and carbohydrates amounts (546 g kg⁻¹ dm), while the CV values for iron and potassium content, on average 76.0 and 8099 mg kg⁻¹ dm, were 18.5 and 14.2. Hydration index was 0.88 (FIGURE 1).

CONCLUSIONS

1. The first three among the eight discriminant functions explain 100% of whole variability.
2. The points represent the scores of discriminant functions for each seed. The reliability of classification can be deduced by Mahalanobis barycentre distances. The classifier proposed a classification in every case, showing the grade of prediction accuracy through this value. In training set, Mahalanobis distances resulted included between 0.5-20 in the most of cases (FIGURE 2).

REFERENCES

(3) AOAC (1995) Washington, DC, USA.

ACKNOWLEDGEMENTS

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