CONSERVATION OF LIMONIUM SPECIES AND THEIR USE IN A BREEDING PROGRAM

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INTRODUCTION

The genus Limonium (fam. Plumbaginaceae) consists of about 300 species, well adapted to the Mediterranean environmental conditions, particularly to the southern regions of Italy where several wild species are endemic. Limonium is grown for use as a cut flower for both fresh and dry-flower arrangements. An inventory of botanical species of Limonium has been established at the Experimental Institute for Floriculture since 1994 and a conservation program (F.A.O. International Treaty on Plant Genetic Resources) was started in 2004 in Sanremo and Pesca (Fig. 1). The inventory includes the species shown in Table 1.

Other than conservation purposes, this germplasm has been utilized also for a breeding activity. Wild ecotypes, botanical species, and commercial varieties were utilized in an incomplete diallel cross design since 1998 at the Istituto Sperimentale per la Floricoltura (I.S.F.) in Sanremo and Pesca (Burchi et al., 2005). A first group of selected progenies derived from crosses among L. latifolium, L. geminiflorum, L. cespitosum, L. bellidifolium and L. aurantium. The first interim and intra-specific hybrids, and also progenies derived from open-pollinations and self-pollinations, were obtained in 1999. The selected progenies were clonalized in open-air and in greenhouses in Liguria, Tuscany and Sicily in experimental trials and also by breeding companies for the development of new cultivars (Burchi et al., 2005; Farina et al., 2004). All of these selected genotypes are suitable for cultivation in the Mediterranean environment, particularly in poor soils and marginal areas because they require low-energy for cultivation, minimum tillage and low input of fertilizers and pesticides. In these conditions, the new I.S.F. varieties show a productivity and commercial quality comparable and also higher than the commercial cultivars (Table 2 and Fig. 2).

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Production (Stems per plant)</th>
<th>Stem height (cm)</th>
<th>N. of branches per stem</th>
<th>Stem weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;I.S.F. VIOLET MIX&quot;</td>
<td>12.50</td>
<td>64.47</td>
<td>6.83</td>
<td>9.17</td>
</tr>
<tr>
<td>&quot;Belle&quot;</td>
<td>9.17</td>
<td>57.93</td>
<td>5.33</td>
<td>55.00</td>
</tr>
<tr>
<td>&quot;I.S.F. &quot;SILK MIX&quot;</td>
<td>9.00</td>
<td>54.67</td>
<td>7.70</td>
<td>50.97</td>
</tr>
<tr>
<td>&quot;Lanered Belle&quot;</td>
<td>9.00</td>
<td>69.40</td>
<td>6.37</td>
<td>62.03</td>
</tr>
<tr>
<td>&quot;I.S.F. &quot;SILK MIX&quot;</td>
<td>2.52</td>
<td>51.67</td>
<td>4.73</td>
<td>14.69</td>
</tr>
</tbody>
</table>

The last group, derived from a new breeding program started in 2003, with crosses among L. yardii, L. tenellum, L. trichophorum, L. confertum and the commercial cultivars "Lemon Star", "Yellow Star" and "Superlady". The first hybrids were obtained in 2002; they show both the good agronomic and ornamental characteristics of the parental cultivars and the stress tolerance of the parental botanical species. The best progenies are going to be clonalized and cultivated in plots in the next year (Fig. 6).

Table 2. Production and commercial quality of the new I.S.F. varieties (yellow colour) as compared to the commercial cultivars.

The third group derives from selected progenies of L. tataricum (Burchi et al., 2009). This species could not be crossed with other species, so only one new variety was obtained by this breeding activity. This variety is a selection from free pollination of L. tataricum and is characterized by a good production, a high number of flowers per stem and a very attractive architecture of the inflorescence. The colour of calyx and the corolla is white: this is a typical characteristic of this variety because the colour of the corolla in L. tataricum is commonly pink or light-violet (Fig. 5).

REFERENCES