Improving collections of floral plants with new *Canna indica* cultivars

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**Abstract**

The most common use of *Canna* by Europeans and North Americans is as ornamentals. Cannas are popular cultivated flowers in temperate gardens because they produce some of the world’s most beautiful and exotic blossoms (3). The species have attractive foliage. In recent years many new cultivars have been created and thousands of *Canna* cultivars have been introduced into the world of gardening. Although a plant of the tropics, most cultivars have been developed in temperate climates and are easy to grow in most countries (2).

Researching activity for diversification of floral plants assortment by introducing the most competitive foreign floral cultivars is one of the objectives of our experiments. This paper describes 8 new *Canna indica* cultivars received from University of Debrecen Hungary, Horticulture Department: ‘Pretoria’, ‘Durban’, ‘City of Portland’, ‘Wialage’, ‘Romeo’, ‘Wyoming’, ‘Madam Butterfly’, ‘Golden Lucifer’.

These were observed in our Transylvanian behaviors and recorded for the following characteristics: blooming time, colour of florets, plant height, spike length, number of florets per spike, and florets diameter. The cultivars studied have a rich range of flower colours with variegated foliage - red/purple stripes on a green leaf.

The most representative *Canna indica* cultivars can be used for landscape design in herbaceous borders, as a patio or decking plant (4). They are also grown as potted plants or as cut flowers.

**Key words**

germplasm, floral collection, diversity, new varieties, morphological characteristics

In Romania the increase of the surfaces cultivated with perennial floral species like as *Canna indica* demand the diversification and improved the assortment of this species with new cultivars and hybrids obtained over the world. The floral varieties are changed relatively fast give search needs for new forms and do to the biological degeneration of the species. In our researches we try to introduce the new varieties of floral species mentioned above (1). This work is possible due to the collaboration existent between USAMV Cluj-Napoca and different universities and institutes from Holland, Hungary, France, England, USA and Canada. As a result of our collaboration with those institutions form abroad, we are able to introduce new varieties not cultivated in our country until now, especially cultivars that are useful for landscapes.

The continuous exchange and collaboration with foreign researchers will be enabling as to evaluate the competitions and the performance of the Romanian floral research activity. That collaboration includes exchanges of documentation materials, or biologic material (species types, varieties, hybrids, and new technologies).

Several thousands of floral varieties are created each year in the words and we try to study in Transylvanian condition for can be quickly put in production and commercial use, for landscape and enrichment the floral trends. The results obtained can be use also for students and doctoral thesis. The best varieties will be genitors in our breeding program for obtain new hybrids.

**Materials and Methods**

The subjects of the research in our experimental field at the USAMV Cluj-Napoca (Fig. 1.), during 2006-2007 periods were 8 *Canna indica* varieties obtained from University of Debrecen, Hungary: ‘Pretoria’, ‘Durban’, ‘City of Portland’, ‘Wialage’, ‘Romeo’, ‘Wyoming’, ‘Madam Butterfly’, ‘Golden Lucifer’ (Fig. 2).
The biological material was planted in field in the period of 30.04.2007-05.05.2008, after a two month forcing period, in the greenhouse, in pots.

This entire species were investigated for the main morpho-decorative characteristics in our Transylvanian conditions and recorded for the following morpho-decorative characteristics: blooming time, color of leaves and flowers, height/width of leaves and flowers, plant height, and number of flowers per plant.

The observations were made for 20 plants from each variety and were calculated the average for each characteristics.

Results and Discussions

The observation and the measurements of main characters of new *Canna indica* cultivars are presented in the following table (1). Analyzing this table we can conclude that the *Canna indica* cultivars were obtained from the University of Debrecen presented a great diversity concerning the colour of flower and of the leaves that give a great value for landscape architecture. The color of leaves vary from light green (‘Madam Butterfly’ – Figure 3) to dark
green (‘Romeo’) with different white, orange, yellow, brown striped or spots.

The color of flower has also a lot of nuance (red, orange, yellow, freeze which can presented different another striped).

The length of leaves is 28 cm (‘Wyoming’) to 38 cm (‘Durban’) and the width is from 12 cm (‘Wialace’) to 19 cm (‘Durban’ – Figure 2). The cultivars beginning to bloom early June and continue to flower until late autumn (October).

Concerning the vigor of the plant, exist some cultivars with middle height (‘Durban’ - 65 cm, ‘Wialance’ - 68 cm) and another are very high (‘Golden Lucifer’ - 117 cm).

<table>
<thead>
<tr>
<th>Variety</th>
<th>Leaf Color</th>
<th>Height/width (cm)</th>
<th>Blooming time</th>
<th>Flower Color</th>
<th>Height/width (cm)</th>
<th>No. flowers/spike</th>
<th>Height of plant (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretoria</td>
<td>Light green with white-brown striped</td>
<td>31/18</td>
<td>01.07.2007</td>
<td>Orange with yellow striped</td>
<td>9,0/11,5</td>
<td>15</td>
<td>109</td>
</tr>
<tr>
<td>Durban</td>
<td>Dark green with yellow-red striped</td>
<td>38/19</td>
<td>08.07.2007</td>
<td>Orange with yellow striped</td>
<td>8,5/15,0</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>City of Portland</td>
<td>Light green with light striped</td>
<td>32/18</td>
<td>20.07.2007</td>
<td>Yellow with brown striped</td>
<td>8,0/9,5</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td>Wialace</td>
<td>Light green with dark green striped</td>
<td>30/12</td>
<td>20.06.2007</td>
<td>Cream</td>
<td>7,5/8,5</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>Romeo</td>
<td>Dark green with red-brown striped</td>
<td>29/14</td>
<td>20.06.2007</td>
<td>Yellow cream with orange striped</td>
<td>10,3/11,6</td>
<td>20</td>
<td>85</td>
</tr>
<tr>
<td>Wyoming</td>
<td>Dark green with red-brown striped</td>
<td>28/13</td>
<td>24.06.2007</td>
<td>Yellow with orange striped</td>
<td>10,3/14,3</td>
<td>11</td>
<td>78</td>
</tr>
<tr>
<td>Madam Butterfly</td>
<td>Light green with dark green median narrow</td>
<td>33/14</td>
<td>08.06.2007</td>
<td>Frees with yellow striped</td>
<td>11,0/9,0</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>Golden Lucifer</td>
<td>Light green with dark yellow striped</td>
<td>31/13</td>
<td>14.06.2007</td>
<td>Yellow with red points</td>
<td>10,0/11,5</td>
<td>20</td>
<td>117</td>
</tr>
</tbody>
</table>

Table 1

Fig. 2. Cultivar ‘Durban’

Fig. 3. Cultivar ‘Madam Butterfly’
Conclusions

1. The USAMV floral collection will be enriched with some new cultivars of the *Canna indica*, which are not cultivated until now in our country.

2. The knowledge of the morphology and biology of the new cultivars is very important before those can be recommended for new varieties that will be adequate to the Romanian local conditions.

3. The analyzed cultivars in experimental field belonging to USAMV Cluj have a great diversity of their morphological characteristic. The studies of their characteristic behaviors under Romanian climatic conditions have an essential role concerning the ornamental value of some cultivars belonging to *Canna indica*.

4. These varieties can be used primarily for viewing where planted, in the landscape garden. They are very attractive, are very good qualities, very lovely and would blend beautifully or accent perennial garden and landscape.

5. The results will be used also by a large numbers of users both (institutions enterprises and also private persons), which will be able to obtain substantial profit from this research activity (using new varieties for landscapes and green spaces preparations together with other species).

6. The U.S.A.M.V. Cluj-Napoca students will be using the researches for their thesis. The most representative varieties can be also use in our future breeding program as parents for hybridizing.

References
