

EXAMINATION FLOWERING TIME OF SMALL BULB PERENNIALS ON OPEN-GROUND AND BALCONY

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Abstract: Bulbs is beloved among ornamental plants and we can use them with pleasure in all the bedding forms.

In this experiment sprouting, blossoming and shedding were observed on 5 bulbs and one corm perennial with the heights not more than 50 cm on open-ground and balcony of Corvinus University of Budapest, Soroksár Experimental Premises and in the roof garden.

INTRODUCTION

Bulbs have great role among ornamental plants and are used with pleasure in all the bedding forms. They can be planted in countless using forms:

- balcony
- on earthenware
- rock-garden
- flower-bed
- on the grass.

Bulb perennials can be rank into two groups on the basis of geographic division:

- tropic
- and nearctic.

Members of group 1. must break yearly, because they are not hardy (Schmidt, 2003).

The natural habitats of species of group 2. have an affinitive climate with our climate, so the bulbs are winterhardy. These species sprout and blossom in spring, have dormancy in summer, restart in autumn and have active dormancy in winter.

Table 1.

Flowering time according to literature data (on the basis of Galántai-Tóth 2001)

Species	Flowering time
<i>Allium moly</i> L.	May-June
<i>Allium sphaerocephalon</i> L.	June-July
<i>Crocus sativus</i> L.	October
<i>Muscari armeniacum</i> Leichtlin ex Baker	April-May
<i>Tulipa bakeri</i> Sieber ex Spreng. 'Lilac Wonder'	April-May
<i>Tulipa tarda</i> Stapf.	March-April

MATERIALS AND METHODS

In this experiment sprouting, blossoming (and flower initiation) and shedding were observed on 6 bulbs and corms perennials with the heights not more than 50 cm. Planting were done in October of 2003, in 4 repetition.

Open-ground experiments were situated in Corvinus University of Budapest, Soroksár Experimental Premises while balconies were placed into roof garden of Corvinus University of Budapest, Buda Campus.

Examined species were as follows:

Allium moly L. (Lily leek) (Figure 2.)

Lily leek is a member of family *Alliaceae*. This is a plant of the Mediterranean region. Has golden yellow star shaped flowers. Blooming in May and June. Growing to 20-25 cm. Probably the best known of the wild garlics (Synge, 1961).

Allium sphaerocephalon L. (Round-headed leek) (Figure 1.)

Round-headed leek is a member of family *Alliaceae*. This is 35-90 cm high perennial bulb with an erected stem. It's area is from Europe to West-Asia, it is surrounded in the dry, rocky places and sand. The tepal is 4-5 mm long egg-shaped or elliptic, blunt, dark red with greenish or yellowish edge. Blooming in July and August. This is very good cut flowers (Synge, 1961).



Figure 1.
Allium sphaerocephalon L.
on open-ground



Figure 2.
Allium moly L.
on balcony

Crocus sativus L. (Autumn crocus) (Figure 3.)

Autumn crocus is a member of family *Iridaceae*. The thin, three branched stigma reach out long from its bright violet flowers. *Crocus sativus* is one of the most ancient medicinal plants. It origin from Asia Minor and the maritime of Mediterranean See, where can be found in wild and is growing widely as well. Plant is only 8-10 cm high and blooming in September-October (singe, 1961).

Muscari armeniacum LEICHTLIN EX BAKER (Grape hyacinth) (Figure 4)

Grape hyacinth is a member of family *Hyacinthaceae*. One of the best species with dense racemes on short stont stalks. The 20 cm high, blue racemose flowered popular garden-plant origin from Asia. This is very easy plant all garden (Priszter, 1974).

Several species of grape hyacinths are common garden plants. The bulbs are easily increased from offsets and more slowly from seed. They are pruned and planted in beds, lifted annually when the leaves are dead and yield saleable bulbs of 6-8 cm (XXX, 1984).



Figure 3.
Crocus sativus L.
on open ground



Figure 4.
Muscari armeniacum LEICHTLIN EX
BAKER and *Tulipa bakeri* SIEBER EX
SPRENG on balcony

***Tulipa bakeri* 'Lilac Wonder'** SIEBER EX SPRENG (Figure 4.)

This is a member of family *Liliaceae*. The wild form is a more subdued yellow & mauve & smaller than the more colorful 'Lilac Wonder', hence not as popular, though sometimes available from specialist (XXX, 1984).



Figure 5.
Tulipa tarda STAPF on
balcony

Tulipa tarda STAPF (Candid tulip) (Figure 5.)

Candid tulip is a member of family *Liliaceae*. The tulip is 7,5-15 cm high, has bunches of elegant star-shaped flowers with chrome-yellow petals edged in bright white (Syngae, 1961). This plant origin from Tien San. 5-7 flowers can form from one bulb.

Examinations were done two-days period, heights of plants and number of flowers were measured from sprouting to shedding respectively retracting. These data became the basis of the examination of decoration value.

RESULTS AND DISCUSSION

Crocus sprouted two weeks later after planting and some plants of them flowered in early November. *Muscari* sprouted as well.

Phenological phases are showed in Table 2. according to average results.

Table 2.

Phenological phases of the species (bulbs and corm)

Bulbs	I	II	III	IV	V	VI	VII
<i>Allium moly</i>							
<i>Allium sphaerocephalon</i>							
<i>Crocus sativus</i>							
<i>Muscari armeniacum</i>							
<i>Tulipa tarda</i>							
<i>Tulipa bakeri</i> 'Lilac Wonder'							

Explanation of colors:

	Winter dormancy
	Flowering bud stage
	Flowering time
	Foliage stage

Data of flowering times can be seen in table 3.

Table 3.

Flowering time in 2004

Species	Flowering time		
	Balcony	Open-ground	
		Shadow side	Sunny side
<i>Allium moly</i>	14.05-03.06.	25.05-14.06.	24.05-10.06.
<i>Allium sphaerocephalon</i>	01.07-20.07.	05.07-22.07.	03.07-20.07.
<i>Crocus sativus</i>	10.10-30.10.	10.10-28.10.	10.10-28.10.
<i>Muscari armeniacum</i>	22.03-17.04.	12.04-04.05.	06.04-03.05.
<i>Tulipa tarda</i>	12.04-24.04.	13.04-26.04.	06.04-25.04.
<i>Tulipa bakeri</i> 'Lilac Wonder'	21.04-28.04.	28.04-10.05.	26.04-12.05.

As table 3. shows flowering period started earlier in the balcony than in open-ground circumstances and some differences can be seen in the case of flowering time of sunny and shady places, too. In comparison with literature data flowering time were observed more or less in similar time as it was written in literature.

Naturally, flowering time of all the species are influenced by the given year's weather, occasionally by the place of planting as for example soil warm up much more quickly in the balcony boxes than in open-ground circumstances. Planting into balcony boxes create a possibility for planting bulbs on the balcony. It must be noticed that only small bulb perennials can be used in such circumstances, because plants with stem more than 50 cm heights can be broken or beaten down by wind easier.

Thickness of the soil is different in the case of the two growing places as well. In the 30-40 cm height balcony boxes bulbs are forced into smaller places than in open-ground circumstances which factor influences for example the length of the roots, too.

Table 4.

Sprout and flowering % in 2004.

Species	Balcony		Open-ground			
			Shadow side		Sunny side	
	Sprout %	Flowering %	Sprout %	Flowering %	Sprout %	Flowering %
<i>Allium moly</i>	93	100	100	100	95	100
<i>Allium sphaerocephalon</i>	100	93	95	95	100	95
<i>Crocus sativus</i>	100	20	100	80	90	61
<i>Muscari armeniacum</i>	96	100	80	100	100	100
<i>Tulipa tarda</i>	78	83	90	100	90	88
<i>Tulipa bakeri</i> 'Lilac Wonder'	100	100	100	100	100	100

Table 4. shows the summary of measured results. According to the results of the first year the examined plants proved to be good. Examined both sprouting and blossoming it can said that our plants, except *Tulipa tarda* Stapf. on balcony and *Muscari armeniacum* Leichtlin ex baker on the open-ground, on shadow side. *Crocus sativus* L. is suitable for planting to the balcony.

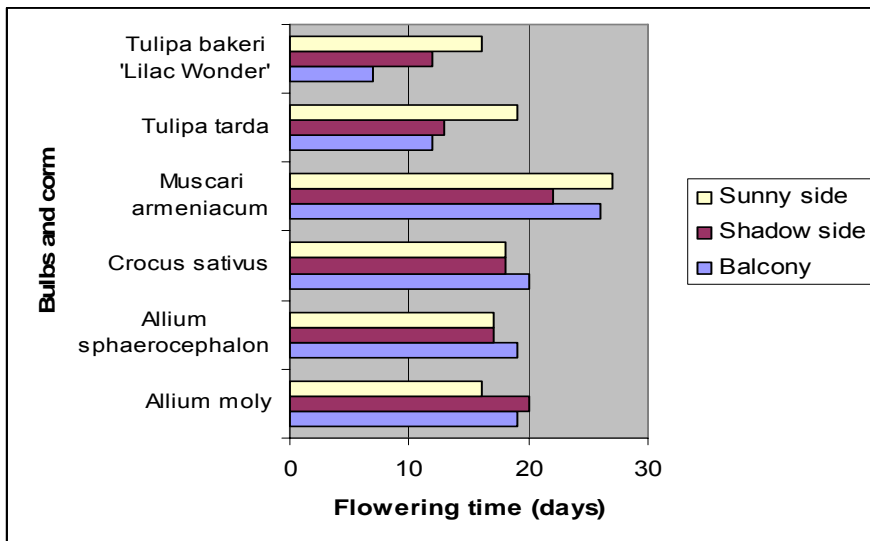


Figure 6. Flowering time of the bulbs and corm

Figure 6. shows the flowering time in days of the bulbs and corm. Longest flowering time were observed by *Muscari armeniacum* on open-ground, on sunny side, the shortest by *Tulipa bakeri* 'Lilac Wonder'.

CONCLUSION

It is not allowed to draw real conclusion according to one year results it will be decide only after the second year blossoming and propanting-biological examines that these bulbs and corm are really well to growing them on balcony.

Further propagating-biological and histological examines are done with the plants mentioned before.

A few days difference were observed on flowering times on the separate places which were influenced by economical circumstances as well (e.g. temperature). Some more experiments are necessary for correcting data.

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