

# STUDIES CONCERNING OF THE MAIN MORPHO- DECORATIVE CHARACTERISTICS OF SOME GLADIOLUS CULTIVARS FOR IMPROVING THE FLORAL ASSORTMENT

## STUDII PRIVIND PRINCIPALELE CARACTERISTICI MORFO- DECORATIVE ALE UNOR SOIURI DE GLADIOLE, PENTRU ÎMBUNĂTĂȚIREA SORTIMENTULUI FLORICOL

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**Abstract:** Today *Gladiolus* is one of the world's most important horticultural plants, valued both as an ornamental garden subject and as a cut flower crop for bouquets and arrangements. The modern *gladiolus* cultivars offer a diversity of colours, shapes, and sizes available in few other flowering plants. It is cultivated in almost countries of the world where spring and summer conditions are favourable. Introducing the most competitive foreign cultivars in the *Gladiolus* culture is the main way of increasing the *Gladiolus* production. For this reason at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Department of Floriculture there are a continuous activity for improve and diversification the floral collection with new species, cultivars or hybrids. This paper describe the new *Gladiolus hybridus* varieties which where observed in our Transylvanian behaviours and recorded for the following morpho-decorative characteristics: blooming time, colour of florets, plant height, spike length, number of florets per spike, media florets diameter and number of florets open in the same time. The varieties were compared with the mean of experiment and data obtained were statistical interpretation.

**Key words:** *Gladiolus hybridus*, cultivar, morpho-decorative characteristics

**Rezumat:** Astăzi gladiolele sunt unele din cele mai importante plante horticole, valoroase atât ca plante pentru ornamentarea grădinilor cât și ca floare tăiată pentru buchete și aranjamente. Soiurile moderne de gladiole oferă o diversitate mare de culori, formă și mărime care sunt puțin întâlnite la alte plante floricole. Ele sunt cultivate aproape în toate țările din lume unde primăvara și vara au condiții favorabile. Introducerea în cultura gladiolelor a celor mai competitive soiuri străine este un mijloc de creștere a producției de gladiole. În acest scop, la Universitatea de Științe Agricole și Medicină Veterinară Cluj-Napoca, departamentul de Floricultură există o activitate continuă pentru îmbogățirea și diversificarea colecției de plante floricole cu noi specii, soiuri, hibrizi. Această lucrare prezintă noi soiuri de *Gladiolus hybridus* care au fost observate în condițiile climatice din Transilvania și au fost înregistrate următoarele caracteristici morfo-decorative: perioada de înflorire, culoarea florilor, înălțimea plantelor, numărul de flori/spic, diametrul florilor și numărul florilor deschise simultan. Soiurile au fost comparate cu media experienței iar datele au fost interpretate statistic.

**Cuvinte cheie:** *Gladiolus hybridus*, cultivar, însușiri morfo-decorative

## INTRODUCTION

*Gladiolus*, *Gladiolus hybridus* L. is an herb perennial plant, geophyte semirustice belong to the Iridaceae Juss. family. Other important genera in this family are *Crocus*, *Freesia* and *Iris*.

Today *Gladiolus* is one of the world's most important horticultural plants, valued both as an ornamental garden subject and as a cut flower crop for bouquets and arrangements.

The modern *gladiolus* cultivars offer a diversity of colours, shapes, and sizes available in few other flowering plants. It is cultivated in almost countries of the world where spring and summer conditions are favourable.

Since the days of ancient Greece, the *gladioli* are said to be cultivated. History reveals that it is known since 1578, as evidenced by a record in *Lyte's Nieve Herball*, first were introduced into France and soon after that spread to England, Germany, Holland and North America. These were the only wild species as garden *gladioli* three hundred years ago.

There is record that 23 wild species have so far been used in the development of the modern garden cultivars of *gladioli* (Misra and Kaicker, 1986). It is thought that modern cultivars of *G* x *grandiflora* originated from a small number of wild species, viz. *G. cruentus*, *G. natalensis*, *G. oppositiflorus*, *G. papilio* and *G. saundersii* (Imanishi, 1989); thus, most *Gladiolus* species did not participate in the establishment of modern cultivars. These species may possess useful characters for plant breeders. A commercial cultivar must possess numerous horticultural qualities (Manley 1969, Wilfred 1971).

In Romania *Gladiolus* are grown by gardeners, hobbyists, and commercial growers and is an easy-to-grow flower, especially valued for use in floral arrangements or landscape.

Researching activity for diversification of *Gladiolus* assortment by introducing of the most competitive foreign cultivars is one of the principal objectives of the Floricultural Department at the U.S.A.M.V. Cluj-Napoca. Introducing the most competitive foreign cultivars in the *Gladiolus* culture is the main way of increasing the *Gladiolus* production (Cantor et al., 2008).

## MATERIAL AND METHOD

The new *Gladiolus* varieties, the subject of the research in our experimental field during 2007-2008 periods, was 10 Holland *Gladiolus* varieties brought from commerce: **'Break a Dawn'**, **'Jester'**, **'My love'**, **'Mon Amour'**, **'Madonna'**, **'Princess Marg. Rose'**, **'Tradehorn'**, **'Blue Isle'**, **'Fiorentina'** and **'Espresso'** (Fig.1).

\* The corms were planted in the period of 30.04.2007-26.04.2008. These were observed in our Transylvanian behaviours and recorded for the following morpho-decorative characteristics: blooming time, colour of florets, plant height, spike length, number of florets per spike, media florets diameter and number of florets open in the same time.

\* The varieties were compared with the average of experiment of the cultivars. The observations were made for 20 plants from each variety.

\* Data obtained were statistical interpretation. The results were calculated and analyzed, using the standard deviation (by limited differentiations method) and the coefficient of variability for each characteristic of the plants (Ardelean, 1986).

\* For blooming season we used the follow earliness approximation:

VE (very early) - under 70 days; E (early) - 70-74 days; EM (early midseason) - 75-79 days; M (midseason) - 80-84 days; LM (late midseason) - 85-90 days; L (late) - 91-99 days; VL (very late) - 100 days or more.



**Fig. 1.** Experimental field of *Gladiolus hybridus* at USAMV Cluj

## RESULTS AND DISCUSSIONS

The observation and the measurements of main characteristics of gladiolus cultivars are presented in the following tables (1, 2). Analyzing those tables we can conclude:

### ***Colour of flowers***

The cultivars studied have a rich range of colours of the flowers from white ('Break a Dawn', 'My Love'), yellow ('Jester', 'Mon Amour'), freeze - salmon ('Fiorentina'), dark red (Traderhorn) to blue-lavender (Madonna). The varieties with various stripped or different colours on lip petals or midribs are completing the range of the colours ('Mon Amour', 'Princess Marg. Rose', 'My love'). There is a large variation of varieties regarding the colour intensity and clarity of the flowers (fig. 2 a, b, c).

### ***Blooming time (days)***

It is a very important to know the blooming time of the cultivars for echelon the flowering on this species on a longer period. The flowering time depends by cultivars. The majority of *Gladiolus* varieties need for blooming over 80 days ('Blue Isle', 'Fiorentina', 'Espresso', 'Madonna', 'Princess Marg. Rose') having a midseason for blooming. Bloom very early: 'Break a Dawn' (68.6 days). The next varieties: 'My Love', 'Mon Amour' and 'Jester' blooming late after 91 days.

Table 1

**Colors and other characteristics of the flowers**

Variety	Colors	Characteristics
Jester	deep yellow with two intense red blotches on lower petals	- nice dark foliage good placement of florets; - very good health and propagation;
Traderhorn	bright red with prominent white throat	- good flower head length with very good mechanics; - extremely healthy and easy propagator;
Mon Amour	medium ruffled lemon with lightly pink brush mark on the centre petals	- ramrod straight spikes and stiff stems attributes to this well standing glad; - flowerheads are florets superior formal placement;
Break a Dawn	clean white ruffled outside of petals with three yellow inside petals	- very simply ruffled florets; - very straight, consistent and the good propagator of beautiful healthy corms;
Espresso	very dark red, deep velvety	- extremely healthy, nice dark foliage and a prolific propagator of beautiful corms and cornels;
Princess Marg. Rose	deeper yellow and ruffled with dark red lip edged	- a nice addition to it's color class; - can make an excellent show spike;
Madonna	blue lavender with prominent white blotches throat	- good formal and balanced placement, nice color; - has vigorous green foliage;
My Love	with cream with red lines on lip petals	- excellent green foliage and heat tolerant; - can be an excellent commercial variety for late in the season;
Blue Isle	dark blue-violet mark on a light with blotch on petals	- very formal placement and self dresser; - the spikes are borne on green healthy foliage;
Fiorentina	rose-salmon with dark red blotch in the lower petals	- very early and is a pleasure to grow; - impeccable cutflower and very healthy;



a. Fiorentina



b. Madonna



c. Princess Marg. Rose

**Fig. 2. Gladiolus varieties**

### ***Plant height***

Plants height of *Gladiolus* cultivars were over 100 cm, the most vigorous were the next: 'Mon Amour', 'Madonna' and 'Traderhorn', while variety 'My Love' are with less vigorous, less than 100 cm.

The value of average for this character is 109.7 cm.

Concerning the plant height 'Mon Amour' and 'Madonna' cultivars has a very positive significance of difference.

### ***Spike Length***

For cut flower it is very important to obtain varieties with long, rigid spike and that will conserves its elasticity characteristic during the storing.

The spike length has between 79 cm ('My Love') to 96.6 cm ('Mon Amour'). This property it is very important for cut flower and the vigorous cultivars would make an exceptional cut flower for exhibition, good for marketing, terrific arrangements and corsages. The value of average for this character is 53.2 cm.

Table 2

**Morphological characters of the main characteristics of *Gladiolus* varieties**

Variety	Blooming season (days)	Plant height (cm)	Floral stem (cm)	Spike length (cm)	No. of florets/spikes	Diameter of florets (cm)
Jester	91,1	111,1	87,1	51,0	17,8	9,4
Traderhorn	88,6	114,8**	94,4***	55,7	22,1**	12,1**
Mon Amour	97,9*	119,7***	96,6***	57,4*	18,4	9,3
Break a Dawn	68,6 <sup>o</sup>	112,9	95,5***	65,7***	17,0	9,0
Espresso	88,3	105,7 <sup>o</sup>	80,2**	49,8 <sup>o</sup>	19,6	9,8
Princess Marg. Rose	84,0	102,6 <sup>ooo</sup>	78,6 <sup>ooo</sup>	47,2 <sup>oo</sup>	15,4	7,2 <sup>oo</sup>
Madonna	82,4	117,9***	93,0**	57,5*	18,0	8,7
My Love	95,9	99,6 <sup>ooo</sup>	79,0 <sup>ooo</sup>	51,2	17,2	10,5
Blue Isle	70,0 <sup>o</sup>	106,0 <sup>o</sup>	82,5 <sup>o</sup>	45,5 <sup>ooo</sup>	14,0 <sup>o</sup>	8,9
Fiorentina	70,3 <sup>o</sup>	106,2 <sup>(o)</sup>	82,6 <sup>o</sup>	51,0	15,2	8,9
Mean of experiment (control)	83.8	109.7	87.0	53.2	17.6	9.4
DL 5%	13,1	3,6	4,2	3,3	2,9	1,5
DL 1%	18,0	4,9	5,8	4,6	3,9	2,1
DL 0,1%	24,5	6,7	7,9	6,2	5,3	2,9

### ***Number of florets/spike***

The varieties under study show a between 15 up to 22.1 florets per spike. We should mention the varieties, which are more florets per spike: Traderhorn (22.1 buds), and Espresso (19.6 buds). The majority of *Gladiolus* cultivars have more florets that Romanian varieties (Cantor and Euer, 2004). Generally the florets have a good placement and attachment and can make nice show spikes with commercial attributes.

The average value of this character is 17.6 florets. From statistical point of view 'Traderhorn' cultivar presents a distinct significant difference.

### ***Diameter of florets***

The florets studied have diameter between 7.2 cm ('Princess Marg. Rose') and 12.1 cm ('Traderhorn'). The flower with medium diameter gives an elegant aspect to spike ('Break a Dawn', 'Fiorentina', 'Blue Isle'). Traderhorn has a distinct positive significance.

## **CONCLUSIONS**

The *Gladiolus* cultivars analyzed in experimental field belonging to U.S.A.M.V. Cluj-Napoca have a great diversity of their morphological characteristics.

✱ The studies of their characteristics behaviors under Romanian climatic conditions have an essential role concerning the ornamental value of *Gladiolus* species. These varieties can be used primarily for viewing where planted, in the cutting garden. They are very attractive, are very good qualities, very lovely and would blend beautifully or accent perennial garden and landscape.

✱ They can be special cutflower for any occasions or make beautiful in the vase ('Jester', 'Espresso', 'Madonna', 'Fiorentina').

✱ Most of them have a color very unique, beautifully sculptured recommended for show and excellent commercial glads ('Princess Marg. Rose', 'Mon Amour', 'My Love').

✱ The most representative of *Gladiolus* varieties can be also use in our future breeding program as parents for hybridizing in order to obtain new Romanian cultivars.

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