KNIPHOFIA MOENCH. SPECIES OF PERSPECTIVE FOR ARRANGEMENT OF GREEN AREAS OF REPUBLIC OF MOLDOVA

KNIPHOFIA MOENCH. SPECII DE PERSPECTIVĂ PENTRU AMENAJAREA SPAŢIILOR VERZI DIN REPUBLICA MOLDOVA

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Abstract. *There is no doubt that the main element of amenity planting is flowers, their species are numerous and their diversity is enormous. Therefore, it is important to select plants that will meet both aesthetic requirements and environmental conditions. Kniphofia genus belongs to the family Asphodelaceae Juss. and includes about 70 species. A variety of colors and the original structure of flowers, beautifully situated on a high spike, decorative foliage, the continuing until frost, heat - and drought tolerance, simplicity of habitat conditions and relatively few diseases and pests, do species of the genus Kniphofia priority when choosing the assortment for gardening. To assess decorative qualities of certain kniphofia types we followed the methodology developed in the "Floriculture" laboratory, the Botanic Garden A.N.M. (1991). Kniphofia uvaria Hook was used as a control group. The evaluation was carried out on the basis of the five-point scale, regarding every indicator and was multiplied by the corresponding coefficient. As a result, they summed up all the points, the maximum index number was 100 points. This study was repeated for three times for each species separately.*
Key words*: Kniphofia, ornamental characters, evaluation decorative qualities.*

Rezumat. *Principalul element care aduce culoare în cadrul unei amenajări peisagere sunt plantele floricole, a căror diversitate specifică este enormă. În acest caz, este importantă alegerea corectă a sortimentului utilizat, care trebuie să corespundă atât cerinţelor estetice, cât şi condiţiilor staţionale. Genul Kniphofia face parte din familia Asphodelaceae Juss. şi include aproximativ 70 de specii. Varietatea mare de culori şi aspectul original al florilor dispuse în inflorescenţe spiciforme, frunzişul decorativ care se menţine până la îngheţ, toleranţa la căldură şi secetă, simplitatea condiţiilor de mediu şi numărul mic de boli şi dăunători, determină alegerea cu prioritate a speciilor genului Kniphofia pentru grădini. Pentru o evaluare a calităţilor decorative ale unor specii de kniphofii, am utilizat metodologia dezvoltată în laboratorul de "Floricultură" al Grădinii Botanice a AŞM (1991). Kniphofia uvaria Hook a fost folosită ca grup de control. Evaluarea a fost efectuată pe baza unei grilei de cinci puncte la diverşi indicatori şi înmulţită cu coeficientul corespunzător. Ca urmare s-au însumat punctele, maximul fiind 100 puncte. Acest studiu a fost repetat de trei ori pentru fiecare specie separat.*
Cuvinte cheie: *Kniphofia, caractere ornamentale, evaluare calităţi decorative.*

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INTRODUCTION

There is no doubt that the main element of amenity planting is flowers, their species are numerous and their diversity is enormous. Therefore, it is important to select plants that will meet both aesthetic requirements and environmental conditions (Академия Наук Молдавской ССР, 1986).

The usage of new and naturalized species is a basic principle when selecting plants for landscape gardening. It in its turn requires a careful study of biological and agronomic features of flowering plants in specific climte conditions.

Herbaceous perennials, such as kniphofias are multi-functional, ornamental plants, which, if properly cared for, can bring you joy by their beauty and elegance for years.

MATERIAL AND METHOD

To assess decorative qualities of certain kniphofia types (*Kniphofia uvaria* Hook; *K. nelsonii* Mast.; *K. Tukii* Baker.; *K. citrina* Baker.; *K. ensifolia* Baker.) we followed the methodology developed in the "Floriculture" laboratory, the Botanic Garden (I) A.N.M. (1991). *Kniphofia uvaria* Hook was used as a control group.

RESULTS AND DISCUSSION

Kniphofia Moench. (kniphofia, torch-lily) is genus with perennial, rhizomatous, herbaceous plants of the *Asphodelaceae* family (Bailey, 1947; Tony, 2003). There are about 70 species of the genus that grow in Southern and Central Africa and on Madagascar (Bailey, 1947; Preda , 1989; Tony, 2003). Plants that are from 60 to 120 cm high have short, thick rhizomes. Kniphofia's leaves are ensiform, thick and leathery, collected in a radical and thick rosettes. The flowers are small (1.5 - 2.0 cm), campanulate, bent, of the red, coral, orange or yellow colour. The thick, spicate inflorescences are placed at a big, leafless, thick, rounded flower-bearing stem. The fruit is a capsule (Bailey, 1947; Tony Lord, 2003).

If you grow plants on the field you should follow some natural biological processes and terms of the genus development (Академия Наук Молдавской ССР, 1986). Since kniphofias are plants of an average winter hardiness, they may be cultivated on the field in the Republic of Moldova, taking into consideration its climate conditions.

This plant can be bred both in a generative and vegetative ways. Generative breeding is a longer method, considering the fact that the plants appeared from seeds will bloom in the second or the third year of their life. The vegetative breeding is primary. In this case plants bloom in the same year (the spring division of a bush), or the next year (the autumn division of a bush) (Preda, 1989; Selaru, 2007).

A variety of colours and flowers of the original structure, beautifully placed at a big flower-bearing stem, decorative foliage that is preserved until the frost, drought resistance, easy management in local environmental conditions, and the fact that they are relatively rarely affected by diseases and pests, make species of the *Kniphofia* genus to be the best when selecting an assortment (Fig. 1).

From the architectural point of view, the above mentioned plants can be used in different styles, both in regular forms and in free planning projects. The kniphofias may be used as single plants as well as in various floral associations.

To highlight their decorative qualities in single beddings kniphofias are used against a bright green background of a lawn that pleasantly contrasts with the red color of flowers. Their decorativeness in single planting is flawless in every respect: the decorativeness and originality of the foliage, a beautiful habit, multiple and continuous blooming.

This type can be attributed to architectural plants. British landscape designers suggested using the term to refer to the plants with an interesting habit. They are planted as single plants and can play the role of small architectural forms in the garden space (http://articles.m-strou.ru/article_1215.html). Torch-lilies integrate well in floral compositions as well: beds, ridges, arabesques, groups, parterres and mixborders.

Fig.1 - The studied species (blossoming period)
a. Kniphofia uvaria Hook; b. *K. nelsonii* Mast.; c. *K. Tukii* Baker.; d. *K. citrina* Baker.; e. *K. ensifolia* Baker.

The colour of the plant and its compatibility are not less important. It is the colour which can affect a person's emotional state and mood. The inflorescence of the genus *Kniphofia* may have different shades of yellow, orange and red. These colours are described as warm and energetic at the same time which attracts our attention. Warm colours are generally used in amenity planting. Due to the fact that the yellow-red colour attracts our attention, kniphofias should be better used to emphasize interesting places or significant landscape elements. On the other hand the red colour is mixed well with almost the entire palette of colours (http://articles.m-strou.ru/article_1215.html).

To assess decorative qualities of certain kniphofia types we followed the methodology developed in the "Floriculture" laboratory, the Botanic Garden (I) A.N.M. (1991). *Kniphofia uvaria* Hook was used as a control group. The evaluation was carried out on the basis of the five-point scale, regarding every indicator and was

multiplied by the corresponding coefficient. As a result, they summed up all the points, the maximum index number was 100 points. This study was repeated for three times for each species separately.

Taking into consideration the results received (Table 1), we can say that these species have proved to be very promising and decorative in the climate conditions of the Republic of Moldova.

Table 1

The evaluation of decorative qualities of some *Kniphofia* genus species

The species	The decorativeness evaluation on the basis of the 5-point scale - 1; Coefficient -2																						The total number of points (out of 100)
	The colour of the plant (3)		The size of the flower (2)		The form of the flower (1)		Th flower texture (1)		The number of flowers at a flower-bearing stem (2)		The abundance of blossom (2)		The resistance of the flower-bearing stem (2)		The decorative ness of the vegetative part (2)		The uniformity of plants (2)		The originality of plants (2)		The condition of plants (1)		
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
K. uvaria Hook.	4	12	4	8	5	5	5	5	5	10	5	10	5	10	5	10	5	10	5	10	5	5	**98**
K. tukii Baker.	4	12	4	8	5	5	5	5	5	10	5	10	5	10	5	10	5	10	5	10	5	5	**98**
K. ensifolia Baker.	5	15	4	8	5	5	5	5	5	10	5	10	5	10	5	10	5	10	5	10	5	5	**99**
K. nelsonii Mast.	5	15	4	8	5	5	5	5	5	10	5	10	5	10	5	10	5	10	5	10	5	5	**99**
K. citrine Baker.	5	15	5	8	5	5	5	5	5	10	5	10	5	10	5	10	5	10	5	10	5	5	**99**

CONCLUSIONS

1. After evaluating, the studied species have accumulated 98 (*K. uvaria* and *K. tukii*) and 99 (*K. ensifolia*, *K. nelsonii* and *K. citrine*) points out of 100. This allows us to find that kniphofias represents species of perspective for Moldova's climatic conditions.

2. Red-orange-yellow of kniphofia inflorescences can be combined easily with almost all color palette used in arrangement of green areas.

3. For plant multiplication, more effective is using of vegetative propagation. This method offers us flowering plants in the next season of vegetation. If we using generative multiplication, the plant reaches the generative phases (flowering, fructification) within 3-4 years of the life cycle.

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