

ASPECTS REGARDING THE ORNAMENTAL VALUE OF PLANTS FROM *ERYNGIUM* GENUS

ASPECTE PRIVIND VALOAREA DECORATIVĂ A PLANTELOR DIN GENUL *ERYNGIUM*

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Abstract. *The Eryngium genus, of the Apiaceae family, includes plants characterized by morphological attributes that give them, in many situations, the status of decorative plants. Relatively modest ecological requirements and fairly good resistance to less favourable crop conditions (sunstroke, water deficit, poor soils and salinity etc.) contribute to the interest in these plants. This paper aims to highlight the possibilities of using for five Eryngium taxa (E. alpinum 'Superbum', E. planum 'Blue Sea Holly', E. planum 'Blue Hobbit', E. leavenworthii) with ornamental qualities, cultivated in the conditions of Iași, with a view to their promotion and superior exploitation in floral art and landscaping.*

Key words: *Eryngium*, morphology, ecology, ornamental value

Rezumat. *Genul Eryngium, din familia Apiaceae, cuprinde plante caracterizate prin însușiri morfologice care le conferă, în multe situații, și statutul de plante decorative. Cerințele ecologice relativ modeste și rezistența destul de bună la condiții de cultură mai puțin favorabile altor specii (insolație, deficit de apă, soluri sărace și cu salinitate crescută etc.) contribuie la creșterea interesului pentru aceste plante. Lucrarea de față își propune să evidențieze posibilitățile de utilizare a cinci taxoni de Eryngium (E. alpinum 'Superbum', E. planum 'Blue Sea Holly', E. planum 'Blue Hobbit', E. leavenworthii) cu calități ornamentale, cultivați în condițiile de la Iași, în vederea promovării și valorificării superioare a acestora în arta florală și în amenajări peisagistice.*

Cuvinte cheie: *Eryngium*, morfologie, ecologie, valoare ornamentală

INTRODUCTION

The genus *Eryngium* include about 250 species and is the most complex genus in the *Apiaceae* family, three quarters of the diversity of species belongs to the *Saniculoides* subfamily. The complexity of the *Eryngium* genus is remarkable by the large number of species discovered over time, which have diverse morphological and ecological characters, so researchers continue to find new species, important by food, medicinal or decorative qualities. Information on the

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morphology, diversity, distribution, karyology and ecological preferences of *Eryngium* species is due to studies by numerous researchers who have devoted some of their professional activity to the knowledge of these plants (Calvino *et al.*, 2010).

Representatives of the genus *Eryngium* are perennial or annual plants with fascicular roots (in some cases, a few meters long), erect (sometimes prostrate) stems, rigid leaves, whole or divided, small sessile flowers, grouped in umbels (elongated, spheres or cylindrical). As specific formations, there are the brackets at the base of each flower and the bracts surrounding the base of the inflorescence (first, the smallest and the simplest, and the other better developed the whole or split pens). The fruits are achene, generally oval, slightly flattened, with a rough, scaly covered surface with spines (Wörz and Diekmann, 2010).

Species and cultivars of the *Eryngium* genus can adapt to different environmental conditions. Some of them can grow in poor, dry, saline soils, others thrive in typical garden soil, and one species, *Eryngium aquaticum*, is appreciated for the water gardens (Armitage, 2008). Plants of this genus prefer wet and well-drained soils. Perennial species do not support cold soils that retain water in winter, because it can have a negative effect on the roots.

Eryngium species were grown for the first time in the 18th century, after being brought from the journeys by botanists and plants collectors. Due to the growing demand for new ornamental plants, the ornamental interest in these plants has increased since 1970, being appreciated for their less common appearance, but also for the interesting colour or shape of the inflorescences (tab. 1).

Table 1

The decorative characters of the main ornamental species of *Eryngium*
(after Taylor, 1983)

Species/Cultivars	Height (m)	Blooming period	Flower color
<i>Eryngium alpinum</i>	0.60	July-September	blue purple
<i>Eryngium amethystinum</i>	0.60	July-August	blue purple
<i>Eryngium aquaticum</i>	1.20-1.80	July-August	light blue
<i>Eryngium agavifolium</i>	0.45	July-September	green
<i>Eryngium bourgati</i>	0.45	July-August	blue purple
<i>Eryngium creticum</i>	0.25-1.0	June-August	light blue, white
<i>Eryngium giganteum</i>	1.50-2.10	June-August	blue, light green
<i>Eryngium leavenworthii</i>	0.8-0.9	July-September	blue purple
<i>Eryngium oliverianum</i>	0.60-0.90	July-September	blue purple
<i>Eryngium pandanifolium</i>	2.5	July-September	silver purple
<i>Eryngium planum</i>	0.90	July-August	blue purple
<i>Eryngium yuccifolium</i>	0.5-1.0	June-September	whiteish green
<i>Eryngium variifolium</i>	0.40	July-August	silver blue

They are also known for phytochemical properties (diuretics, aromatics, expectorants) and are frequently used in phytopharmacy (Moerman, 1988).

MATERIAL AND METHOD

This paper brings to the front some *Eryngium* taxa (*E. alpinum* 'Superbum', *E. planum* 'Blue Sea Holly', *E. planum* 'Blue Hobbit', *E. leavenworthii*) with ornamental value, cultivated in the collection of Floriculture discipline at the University of Agricultural Sciences and Veterinary Medicine from Iași. The main goal is to promote them in culture, taking into account the advantages of a relatively simple technology and the possibility of much diversified exploitation.

***Eryngium alpinum* L.** is a perennial hemicytrophite species from Austria, Liechtenstein, Croatia, France, Switzerland, Italy and Slovenia. It develops in alpine, rocky and wetland pastures, at an altitude of 1500-2000 m, on soils with a pH between 8 and 10 (Gygax *et al.*, 2013). Cv. 'Superbum' (fig. 1 a) is noticeable by the blue metallic inflorescences,

***Eryngium planum* L.** originates from Central Europe, Yugoslavia, Caucasus, Western Siberia, Central Asia. The plants have heights ranging from 70 to 100 cm, glaucous leaves, blue flowers grouped in umbels, achene fruit. Plants prefer a sunny position and sandy soil, with a pH between 8 and 10 (Taylor, 1983). Cv. 'Blue Sea Holly' has stems in size at 70-100 cm and light blue flowers (fig. 1 b), and cv. 'Blue Hobbit' shows through the dwarf port and intense blue inflorescences (fig. 1 c).

***Eryngium leavenworthii* Torr & A. Gray** is an annual native species from North America's prerogatives. The plants grow properly in places with sunny exposure, reaching heights of up to 90 cm. The foliage is glaucous, which is coloured in autumn, in purple (Mathew and Hall, 2003).

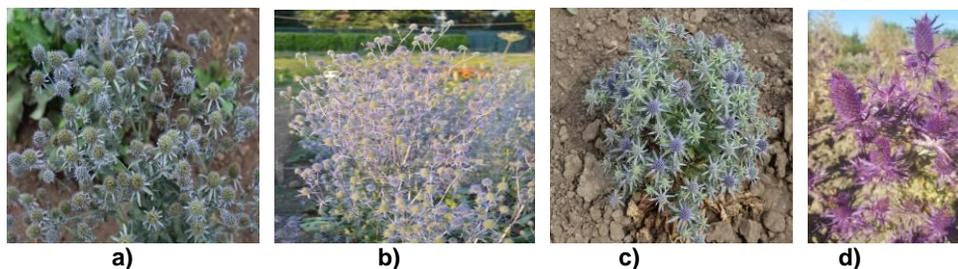


Fig. 1 The appearance of the plants *Eryngium alpinum* 'Superbum' (a), *Eryngium planum* cv. 'Blue Sea Holly' (b), *Eryngium planum* 'Blue Hobbit' (c) and *Eryngium leavenworthii* (d) (original)

Establishing experimental crops for both annual and perennial plants was done with greenhouse seedlings. For a uniform flowering quality, it is important that the cold season is identified in perennial plants naturally with the winter season or can be achieved with thermal treatments. It should also be noted that in the perennial species the plants obtained from the seeds bloom in the second year.

RESULTS AND DISCUSSIONS

Eryngium species with ornamental characters have been described by recognized botanists and scientists such as: Carl Linnaeus, 1753 (*E. alpinum*, *E.*

maritimum, *E. planum*, *E. aquaticum*); André Michaux, 1803 (*E. yuccifolium*); Friedrich August Marschall Von Bieberstein, 1808 (*E. giganteum*); Ernest Saint-Charles Cosson, 1875 (*E. variifolium*); François Delaroché, (*Eryngium x oliverianum*); John Merl (*E. yuccifolium* var. *synchaetum*); Edward Lee Greene, 1895 (*E. alismifolium*); Jean-Baptiste Pierre Antoine de Monet de Lamarck (*E. creticum*); Asa Gray, Mildred Esther Mathias, (*E. aquaticum* var. *ravenelii*); Melines Conklin Leavenworthii (*E. leavenworthii*) (Wörz, 2004).

The morphological characters of the *Eryngium* taxa studied and cultivated under the conditions of Iasi determine their use in different ways. It is noticeable that it generally falls within the category of medium-sized plants (approximately 70-100 cm), which are blooming in summer (tab. 2).

Table 2

Morphological characters and possibilities of using of *Eryngium* taxa cultivated under the Iași conditions

Species/Cultivars	Height (m)	Blooming period	Flower colour	Ornamental use
<i>E. alpinum</i> 'Superbum'	0.70-1.00	June-July	metallic blue	cut flower: fresh and dry landscaping: groups, rocks garden, colour spots
<i>E. planum</i> 'Blue Sea Holly'	0.70-1.00	July-August	light blue	cut flower: fresh and dry landscaping: groups, rocks garden, colour spots
<i>E. planum</i> 'Blue Hobbit'	0.20-0.30	June-July	dark blue	landscaping design: groups, mixed borders, rocks garden
<i>E. leavenworthii</i>	0.90	July-September	purple	cut flower: fresh and dry landscaping: groups, rocks garden, colour spots

In landscaping, *Eryngium* plants are useful because they are light-loving and can be positioned in full sun, decorating areas where other flower plants do not resist. It is recommended to use these species in mixed bordering arrangements along with other resistant species. The silver or blue bracts, typical of the *Eryngium* species, can be perfectly combined with almost any type of decorative plant (tab. 2).

In addition to the design that plants offer in gardens (fig. 1), *Eryngium* flowers can be used in floral arrangements (fig. 2) both fresh and dry (as immortal). In 1991, *Eryngium* was ranked by Armitage as the top 30 plants suitable for dry use.

The blooming period is summer. For *Eryngium* taxa, harvesting occurs when the inflorescences and bracts are coloured in characteristic shades (Scoggins, 2002).

Storage in refrigerated warehouses at temperatures of 4-5°C, without water, can be done for 7-10 days (Armitage, 1993, 1991); in water-filled pots the flowers resist even 30 days, but the foliage is around 7-10 days (Cantor and Buta, 2010). Also, low positive temperatures intensify flowers' colours (Whyman, 1993).



Fig. 2 Floral design with inflorescences of *E. alpinum* 'Superbum' (a) and *E. planum* cv. 'Blue Sea Holly' (b, c) (original)

CONCLUSIONS

1. The genus *Eryngium* is one of the largest and most complex genus of the *Apiaceae* family and includes species of medicinal and ornamental importance.

2. Research has shown that *Eryngium* species have moderate environmental requirements, being adapted to a temperate climate, perennials being resistant to low temperatures.

3. From an economic point of view, generative multiplication is recommended, with the specification that perennial plants bloom from the second year. Splitting of bushes, although recommended, requires attention because plants have a sensitive root system and do not easily support transplantation.

4. Species / cultivars of *Eryngium* have decorative importance in the summer months, through habitus, colour and inflorescences.

5. Because of their rusticity, they can be used in group arrangements,

colour spots, mixed borders, rock gardens, etc.

6. In floral design, they are attractive due to the unique appearance of the inflorescences and the effect they give to the arrangements. Although used as a secondary role in floral creation, they often become the centre of attraction of compositions.

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