

## BEHAVIOR OF NEW *ROSA* CULTIVARS IN ECOPEDOLOGICAL CONDITIONS OF THE VÂNĂTORI VILLAGE, GALATI COUNTY

### COMPORTAREA UNOR SOIURI NOI DE TRANDAFIRI ÎN CONDIȚIILE ECOPEDOLOGICE ALE COMUNEI VÂNĂTORI, JUDEȚUL GALAȚI

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**Abstract.** *The interest for the cultivation of the rose in field has increased in the last years, but the various ecopedological conditions existing on the Romanian territory impose the necessity of some studies regarding the behavior of the different varieties at these conditions. The paper aims to evaluate the behavior of four new varieties of roses from the group Tea hybrida ('Artemis', 'Alex Dima', 'Catrina' and 'Cristinica', varieties belonging to the author and approved in 2018 and 2019), in the cultivation conditions in the SE area of Romania, respectively Vânători village, Galati county. The study included the evaluation of the decorative value of the plants based on the morphometric determinations performed during the vegetation period and the rating of the main characters according to the evaluation method proposed by Ștefan Wagner. By using the method of assessing morphological characteristics, a method based on the assessment criteria used by the American Rose Society for the registration of new rose varieties, the highest score was recorded by the variety 'Alex Dima' (84 points) and the lowest score by the variety 'Cristinica' (82 points).*

**Key words:** Tea hybrida, new rose cultivars, ornamental value, ecopedological conditions

**Rezumat.** *Interesul pentru cultura trandafirului în spații deschise a sporit în ultimii ani, însă diversele condiții ecopedologice existente pe teritoriul României impun necesitatea unor studii privind comportarea diferitelor soiuri la aceste condiții. Lucrarea își propune să evalueze comportarea a patru soiuri noi de trandafiri din grupa Tea hybrida ('Artemis', 'Alex Dima', 'Catrina' și 'Cristinica', soiuri apărținând autorului și omologate în 2018 și 2019), în condițiile de cultură din zona de SE a României, respectiv în comuna Vânători, județul Galați. Studiul a inclus evaluarea valorii decorative a plantelor pe baza determinărilor morfometrice efectuate în perioada de vegetație și a bonității principalelor caractere după metoda de evaluare propusă de Ștefan Wagner. Prin utilizarea metodei de evaluare a caracteristicilor morfologice, metodă bazată pe criteriile de apreciere utilizate de către American Rose Society pentru înregistrarea noilor soiuri de trandafir, cel mai mare punctaj l-a înregistrat soiul 'Alex Dima' (84 puncte), iar cel mai redus punctaj soiul 'Cristinica' (82 puncte).*

**Cuvinte cheie:** Tea hibrida, soiuri noi de trandafir, valoare ornamentală, condiții ecopedologice

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**INTRODUCTION**

Roses enjoy superiority over all other flowers, being used for decorative purposes and are appreciated for their decorative value, beauty, charm and fragrance and for landscaping, no garden is considered complete without roses.

Rose was first introduced into the culture for its medicinal properties, being an important source of vitamin C (Austin, 2017). According to some researchers, the genus *Rosa* appeared on Earth 35 million years ago, the first forms being quite primitive (Wagner, 2002).

The creation of new cultivars of roses must pursue the following objectives: attractive colors, elongated buds, abundant and/or remontant flowering, good resistance to disease and pests, adaptability to various climatic and edaphic conditions (Vries de DP and Dubois, 1996; Austin, 2017).

In Romania, located in the temperate climate, for roses grown in the field, in gardens and parks, special attention must be paid to the choice of varieties used for planting, especially the characteristics of their cultivation, even if roses are among the most adaptable plants.

Climatic and edaphic factors play a vital role in plant growth and development, among them, temperature, light and humidity have a direct influence. The rose is a subtermophilic, thermophilic, heliophilic, weakly acid-neutrophilic species, preferring areas where the average annual isotherm is between 7.5° - 10.5°C or greater than 10.5°C (Cairns, 2000). It grows well on soils with a loamy texture, deep, loose chernozems, alluvial soils, permeable, warm enough, with groundwater below 1.5 m, without water stagnating on them. These soils must be rich in nutrients, on soils with southern exposure and with pH values between 6.5-7.2 (Popescu, 1986). Roses are demanding of light, being necessary to place them in places where they can benefit directly from direct light for at least 4-6 hours (Wagner, 2002).

For roses grown in the field, in gardens and parks, the need for water is provided in all geographical areas of our country, where the amount of annual rainfall is about 600-650 mm, provided that in the six months it lasts during the vegetation period (April - September) the precipitations should be between 380 - 420 mm, and the rest of approx. 220 - 250 mm in the other months (Pârnu, 2005).

Although the cultivar has distinct characteristics such as the number of shoots per plant, the length and diameter of the shoots, the size, shape of the flower and color intensity, the overall development of the plant, these qualities differ considerably when plants are grown in different climatic regions.

For the examination of new cultivars or for their patenting, the method UPOV is used, respectively DUS test (distinctiveness, uniformity and stability) (UPOV, 2010), which is based on noting the morphological characteristics of rose plants on a scale of 1 to 9, characteristics identified as

useful for distinguishing between varieties or for assessing the uniformity and stability of a new variety.

Also, to determine the quality of ornamental plants as perceived by the human eye, has recently been adapted the sensory methodology (initially developed in the agri-food industry), which can be considered a measuring instrument in this context (Boumaza *et al.*, 2009). The methodology is based on achieving the profile of the plant grown in the pot, presented in rotation using video stimuli. The plant is grown under a degree of shading in three distinct environments (natural conditions, below 55% and 75% shading net). The architecture and video recording of the plant is done in three stages. from 5 to 15 months after the start of vegetation (Garbez *et al.*, 2018).

Given these considerations, this study aims to determine the influence of ecopedological conditions on new cultivars from the Group of Tea hybrida introduced into culture in Romania, by measuring the morphological characteristics that determine the aesthetic qualities and to make recommendations regarding the establishment of rose crops, in field, in the southeast of Romania.

## MATERIAL AND METHOD

The vegetal material used in the present study was represented by four rose cultivars from the Group of Tea hybrida: 'Artemis', 'Cristinica', 'Catrina' and 'Alex Dima', the first two approved in 2018 and the last two in 2019. All four varieties are mutations. The rootstock used was represented by *Rosa corymbifera* 'Laxa'.

'Artemis' - comes from the 'Dr. Waldheim' cultivar, is vigorous, with a height of 100-160 cm and a horizontal development of 100-120 cm, yellow color with pink petal edge, tall buds and flowers with 18 - 20 petals. Registered in 2018. It is mainly used for landscaping in parks and gardens. It blooms in 3-4 waves during the growing season. Has a good winter hardiness, moderately resistant to powdery mildew (fig. 1).

'Cristinica' - initially registered in 2018 under the name of 'Cristinela', comes from the 'Monika' cultivar, the flower is 10-12 cm in diameter, with 25-30 yellow petals, with reddish hues as it advances in vegetation, height of 90-150 cm and a horizontal development of 90-110 cm, has a good winter hardiness, moderately resistant to powdery mildew and black spot (fig. 2).

'Catrina' - cultivar approved in 2019 being a mutation from the 'Grand Gala' cultivar, that is distinguished by the color of the flowers. The flowers are 7-8 cm in diameter, purple red with solitary buds, height of 90-150 cm and a horizontal development of 80-100 cm. The plant is free of thorns, with glossy leaves, has medium resistance to powdery mildew, it is sensitive to wintering. It can be used to produce cut flowers, both in the field and in protected areas (fig. 3).

'Alex Dima' - approved in 2019, mutation from the 'Grand Gala' cultivar. The flowers are 8-10 cm in diameter, pink. The plant is free of thorns, a has medium resistance to powdery mildew, height of 70-140 cm and a development horizontal of 60-90 cm. It is sensitive to wintering. Used for the production of cut flowers, both in the field and in protected areas (fig. 4).



Fig. 1. 'Artemis' (original foto)



Fig. 2. 'Cristinica' (original foto)



Fig. 3. 'Catrina' (original foto)



Fig. 4. 'Alex Dima' (original foto)

For evaluating the ornamental characters of the analyzed rose cultivars, have been proposed for determinations of morphological characteristics the method proposed by Ștefan Wagner (Wagner, 2002). This is a method based on appreciation criteria used by the American Rose Society for the registration of new cultivars of rose, through which, over a period of 3 years, 13 morphological characteristics were evaluated, according to the group of varieties (Tea hybrida) with a maximum score of 100 points: habitus and shape of the bush - larger than 50 cm; the appearance of the leaves - intensive color, luster (well-developed cuticle); stem and flower stalk - erect, intact, well developed, healthy; flower intensity - abundant, remontant; the shape and size of the floral bud - the shape of classic roses, consistent, the size of the floral bud; open flower shape - radial symmetry; durability of the flower (number of petals) - involute; opening color - intense; flowering color - to maintain the initial intensity; how the petals fall (self-cleaning) - after flowering all the petals fall quickly and simultaneously; perfume - intensity; resistance to diseases and pests - resistant; novelty character - special new features.

The experiment was organized in randomized block design with three replications three repetition of 10 cuttings for each cultivar. The planting was carried out in the autumn of 2015 (October 15, 2015) and the observations and measurements were made during the vegetation period, in 2017, 2018 and 2019.

The present study was carried out within the group represented by the author's rose collection, a group located in the area of Vânători village, Galati county (latitude: 45 ° 32'26.5 "N; longitude: 27 ° 59'59.1" E; altitude: 85 m).

#### **Climatic and edaphic factors**

The average annual temperature in Vânători village, Galati county is 10°C. The average summer temperature is 21.3°C. The average monthly temperature is lower in January when it has values of -3°C -4°C. The average temperature in July is 21.7°C. During the year, there are approx. 210 days with temperatures above 10°C (Wikipedia).

Throughout the vegetation period of 2017, the temperature distribution followed a normal trend, with an annual average of 12.5°C, with a gradual increase in temperatures until July. The highest temperature was recorded in July (38.6°C on 01.07.2017) and the minimum temperature was recorded in January (-15.2°C on 10.01.2017). In 2018, the annual average was 12.3°C.

The maximum temperature was recorded in August (35.9°C on 18.08.2018) and the minimum temperature was recorded in March (-13.5°C on 10.03.2018). The annual distribution of precipitation is uneven, the largest amounts of water fall in the summer season, in the form of showers. In 2017, the amount of precipitation during the vegetation period was 649.5 mm, their distribution being uneven, with minimums in August (9.6 mm) and September (3.2 mm) maximums in July (154 mm) and October (106 mm).

In 2018, the maximum amount of precipitation was recorded in February, with a value of 63.7 mm, and the minimum was recorded in April with a value of 0.60 mm. The amount of precipitation during the vegetation period in 2018 was only 402.90 mm.

Both in 2017 and in 2018 for the periods when the precipitations did not ensure the daily water needs of the plants, it was ensured by a drip irrigation system, with deep water from a drilled well.

The soil in the area of Vânători village is represented by typical cambic chernozem, moderately eroded, with loam-clay texture (clay - 44.5%, sand -

32.25%, dust -23.75%), formed on loessoid deposits, a reaction in the layer 0-20 cm weakly acidic, with a medium content in humus and nitrogen (humus -3.56%, total nitrogen - 0.16%) and a medium insurance in mobile phosphorus (12 ppm P2O5) and very good in potassium mobile (169 ppm K2O).

## RESULTS AND DISCUSSIONS

Following the evaluation of the morphological characteristics. according to the American Rose Society methodology (tab. 1), the cultivar 'Alex Dima' accumulated the highest number of points (84) for the glossy appearance of the leaves; erect stem and long. healthy floral peduncle; remontant and abundant flowering; cup-shaped flowers with an intense color at the beginning of flowering; resistance to diseases and pests.

Table 1

Centralizing the variety evaluation form

Nr. crt.	Assessment criteria	Score	Cultivar			
			'Artemis'	'Cristinica'	'Catrina'	'Alex Dima'
1.	The habit and shape of the plant	1-10	8	8	7	7
2.	The appearance of the leaves	1-9	6	8	8	8
3.	The stem and the flower stalk	1-8	6	7	8	8
4.	Flowering intensity	1-10	9	9	7	7
5.	Button shape and size	1-8	8	7	8	8
6.	The shape of the open flower	1-8	8	8	7	8
7.	Flower durability (number of petals)	1-5	4	4	5	5
8.	Color on opening	1-8	8	8	8	8
9.	Flowering color	1-8	7	5	4	4
10.	How to drop the petals (self-cleaning)	1-5	2	2	3	3
11.	Parfume	1-5	3	2	4	4
12.	Resistance to diseases and pests	1-8	7	7	7	7
13.	The novelty character	1-8	7	7	7	7
<b>Total score</b>		<b>13-100</b>	<b>83</b>	<b>82</b>	<b>83</b>	<b>84</b>

With a lower score it was appreciated for changing the color of the petals after 5-6 days after flowering. it loses its intensity becoming pale pinkish-white. with small longitudinal stripes and poor self-cleaning ability of the flowers.

The ‘Cristinica’ cultivar accumulated the lowest number of points (82), with a lower score was appreciated for its low self-cleaning capacity. weak fragrance and flowers with few petals (25-30 petals).

## CONCLUSIONS

1. The evaluation of the decorative value of the four new varieties of roses from the Tea hybrida group, showed the superiority of the ‘Alex Dima’ cultivar, a variety that can be used both for arranging green spaces and for obtaining cut flowers.

2. The use of new varieties of rose, for ornamental purposes, imposes the need for studies on the behavior of different varieties under the conditions of the area.

3. In the case of the present study, all four cultivars presented valuable characteristics, both for the decorative features and for the adaptation to the ecological conditions.

4. We recommend cultivating these new varieties of roses in areas with cultivation conditions similar to those in the area of Vânători village, Galați county, Romania.

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