

## TO VEGETATIVE REPRODUCTION OF ROSMARINUS OFFICINALIS (LAMIACEAE) IN THE CONDITIONS OF INTRODUCTION

Mekhriniso Rakhmatullaevna Nasriddinova

Karshi State University

E.mail: m.nasriddinova@mail.ru

### ANNOTATION

For the first time it is made introduction of *Rosmarinus officinalis* in conditions of Karshi oasis. This specie is multiplied by a vegetative way and ease of reproduction by cuttings is revealed. Preliminary observations showed that the seedlings adapted well to the conditions of the Karshi oasis.

**Keywords:** medicinal plant, rosemary medicinal, introduction, vegetative reproduction, cuttings.

### INTRODUCTION

It has been known since ancient times that many representatives of the plant world are a cure for various diseases. In order to rationally use stocks and preserve wild medicinal plants, the need for their raw materials can be covered by introduction, as well as reproduction and cultivation under conditions of introduction. *Rosmarinus officinalis* is considered one of the valuable medicinal plants introduced to Uzbekistan.

*Rosmarinus officinalis* – rosemary officinalis is an essential oil medicinal plant belonging to the mint family, an evergreen shrub up to 1,5–2 m tall. It is a medicinal plant of the family Labiales (Lamiaceae Lindl.) under natural conditions grows in the Mediterranean countries: on the Madeira Islands, in Algeria, Tunisia, Turkey, Lebanon, Greece, Dalmatia and nearby islands, on dry limestone slopes and sunny open ground. In most cases, it is found in limestones, rocks, well-lit southern slopes of mountains. According to A. Rehder (1947), fully frost-resistant plants are included in the VI climatic zone, and *R. officinalis* belongs to the VI climatic zone [1].

Contains many essential oils. It has been used as a medicinal and aromatic plant since ancient times. In the literature there are data on its use in ancient Egypt. It is introduced into most countries as an ornamental plant. Cultivated in Italy, Austria, Spain, France and North America. In Turkey, it is often used in landscaping. A special farm has been created in Alushta for the production of raw materials from rosemary [2, 3].

The leaves of the plant are included in the British Pharmacopoeia, are the official raw material in the USA, India, China and are used in homeopathy [4]. In the North Caucasus, it is part of the combined preparations "Kanefron", "Pulmeks", "Evkabol", "Tetesept" and biologically active food supplements [5].

This is an evergreen shrub 1,5-2 m high, having stems with multiple leaves. The stems are straight, branched, young shoots are 4-sided, covered with dense light villi. 3-4 year old shoots are stiff. The root system is well developed and reaches up to 3-4 m depth. Leaves 4 cm long, 0,3 cm wide, oblong linear, sessile or with short petioles, opposite, fleshy, the upper side is dark green, shiny, the lower side is gray or light green, covered with dense villi.

Information about the flowering of *R. officinalis* at the age of 2–3 years is given in the literature. Bloomed in the third year of life in the conditions of the Karshi oasis. The generative phase begins in the second half of February in the third year of the plant's life. The flowers are small, light blue or light purple, two-lipped. They grow from the axils of the leaves and create dense inflorescences. The plant produced 30-50 flowers in the third year of vegetation, 200-245 in the fourth year and 180-210 in the fifth year. One flower blooms 3-4 days, one inflorescence – 20-30 days, and one plant – 76-90 days [6]. The fruits are nuts, formed from fused 4 sepals.

Occurrence in the flora of Uzbekistan is not registered [7].

For the first time, *R. officinalis* was brought to Central Asia in the 1930s, and the first studies were carried out. S.N. Kudryashov (1930-36) writes that this plant has broad prospects for introduction in the current conditions. He believed that even in rainfed lands it could be grown and tested [2]. Later, as a valuable medicinal and essential oil plant, Yu. M. Murdakhaev (1992) re-introduced it into the Tashkent Botanical Garden. Under these conditions, good growth in sandstones, gravelly and dry sandy soils, undemanding to soil fertility was revealed [3].

The literature contains only recommendations for vegetative propagation of *R. officinalis* by cuttings. However, no information was found on the method of reproduction from cuttings [2, 3, 6].

## RESEARCH RESULTS

Our experiments on the propagation of *R. officinalis* by cuttings in the conditions of the Karshi oasis showed that plant cuttings root easily.

In order to determine the optimal cutting period, an experiment was conducted in August and November 2018. For cuttings from annual branches, a place with good sunlight was chosen. When preparing the land, sand, local fertilizer and ash (1:0,5:0,5) were mixed into the soil. Cuttings 6-8 cm long were planted in the soil according to the scheme 8x10 cm to a depth of 3-4 cm.

From the 15th day, callus began to form in the cuttings. From the 20th day, the root began to form. The viability of the cuttings was high, this figure is 90-95%, and they bloomed in the spring of the following year. Cuttings grow slowly at first. Seedlings 10-15 cm high overwintered in the open air and were not affected by frost. In February of the following year, they were transferred to a permanent place. The transplanted seedlings continued to grow. They bloom in October. It was noted that *R. officinalis* seedlings bloom again by mid-December due to the arrival of a warm winter. The results obtained are presented in the table (table).

Table Indicators of the influence of the term of planting cuttings on the development of plants

Date cuttings	Number of cuttings	Callus formation, day	Real rooting, day	Plant height at the end of the growing season, cm	Viability of cuttings (%)
27.08.2018	300	17	23	10	96
09.11.2018	800	21	31	6	90

Under the conditions of the Karshi oasis, it was noted that plants grown from cuttings placed in the third decade of August bloomed from the first year of vegetation. It is noted in the literature that under the conditions of introduction *R. officinalis* blooms in March-May and rarely forms seeds. In the conditions of the Karshi oasis, plants bloom in February, sometimes in January, when the winter is warm. Under these conditions, repeated flowering of *R. officinalis* was observed for the second time (in September, October), when autumn came hot and dry, which is typical for most plants originating from a subtropical climate.

### CONCLUSIONS

From the experiments carried out, it was found that *R. officinalis* is easily propagated by cuttings, 90-95% of the cuttings took root and grew well during the summer. It was noted that seedlings are not damaged by hot summer temperatures and winter colds in the conditions of the Karshi oasis. It has also been observed that it adapts well to new conditions, grows rapidly, blooms annually and produces seeds.

### REFERENCES

1. Rehder A. Manual of cultivated trees and shrubs. N.Y. The Macmillan company. 1947. – 996 p.
2. Kudryashov S.N. Essential oil plants and their culture in Central Asia. Tashkent, 1936. – P. 123–128.
3. Murdakhaev Yu. Oriental Bazaar: medicines and spices. New York, 2001. –P. 282–286.
4. Logvinenko L.A., Khlypenko L.A., Marko N.V. Aromatic plants of the Lamiaceae family for herbal medicine // Pharmacy and Pharmacology. 2016. Vol. 4, No. 4. –P. 34-47.
5. Tokhsyrova Z.M., Nikitina A.S., Popova O.I., Melikov F.M., Popov I.V. The composition of the essential oil of shoots of rosemary, introduced in Russia // Pharmacy. 2016. No. 6. –P. 25–29.
6. Nasriddinova M.R. Morphobiological features of the *Rosmarinus officinalis* L. flower in conditions of the Karshi oasis // IV International Symposium "Innovations in Life Sciences". Belgorod, May 25–27, 2022. –P. 127-128.
7. Flora of Uzbekistan. Volume V. Tashkent, 1961. – 668 p.