VEGETATIVE PROPAGATION OF NARROW-LEAVED LAVENDER (LAVANDULA ANGUSTIFOLIA MILL.) UNDER GREENHOUSE CONDITIONS

S. O. Shomuratov, PhD Student, Tashkent State Agrarian University, Department of Introduction, Cultivation Technology, and Agroecology of Medicinal Plants, Tashkent.
E. T. Akhmedov, PhD in Biology, Associate Professor, Tashkent State Agrarian University, Department of Medicinal Plants, Tashkent.

Abstract: Lavandula angustifolia Mill., commonly known as narrow-leaved lavender, is a perennial aromatic plant belonging to the Lamiaceae family. Its flowers and essential oil are widely used in the pharmaceutical, perfume, and folk medicine industries. This study investigates the effectiveness of vegetative propagation methods of lavender, focusing on cutting propagation and the influence of the growth regulator heteroauxin. The experiment was conducted in 2024–2025 under greenhouse conditions in Khiva district, Khorezm region. The results showed that the rooting rate of cuttings treated with heteroauxin solution reached 83%, while the control group achieved only 43%.

Keywords: Lavandula angustifolia Mill., vegetative propagation, cuttings, heteroauxin, rooting, growth stimulators, rooting efficiency.

INTRODUCTION

Lavandula angustifolia Mill. is a species native to the Mediterranean region but is cultivated worldwide as an ornamental, medicinal, and essential oil-bearing plant. Its essential oil is highly valued for its pleasant aroma and its soothing, antibacterial, and antimicrobial properties. The plant’s adaptability to various climatic and soil conditions enables its successful introduction and cultivation in diverse regions, including Uzbekistan.

Plant propagation is generally achieved either through seeds or vegetative methods. However, propagation of L. angustifolia by seeds often results in genetic variability, meaning the valuable traits of the mother plant are not always preserved in the offspring. Therefore, vegetative propagation methods are preferable for maintaining genetic stability, particularly for elite varieties.

The purpose of this study was to examine the effect of heteroauxin growth stimulant on the rooting process of lavender cuttings obtained from different parts of the mother plant (upper, middle, and lower sections).

MATERIALS AND METHODS

Study site and period:

The experiment was conducted from March 2024 to June 2025 in the greenhouse of Khiva district, Khorezm region.

Plant material:

Healthy, one-year-old L. angustifolia mother plants were used as the source of cuttings.

Preparation of cuttings:

1Cuttings of 8–10 cm in length were taken from the upper, middle, and lower parts of the shoots.

2Each cutting contained at least 3–4 pairs of leaves.

3The lower cuts were made obliquely, and the upper cuts were made straight.

Three main groups were established:

1. Control group – Cuttings were immersed in distilled water for 24 hours.

2. Experimental group – Cuttings were immersed in a heteroauxin (100 mg/L) solution for 24 hours.

3. Cutting position subgroups – Within each group, cuttings were categorized as upper, middle, or lower according to their origin from the shoot.Substrat va ekish sharoiti

Substrate composition: Peat + perlite + sand in a 2:1:1 ratio.

- Environmental conditions:
- Container diameter: 15 cm
- Temperature: 20–25°C
- Relative humidity: 70–80%
- Photoperiod: 16 hours of light per day

Measured parameters:

- Rooting percentage (%)
- Number of roots per cutting
- Average root length (cm)
- Rooting duration (days)

RESULTS

The rooting rate of the lavender cuttings was significantly higher in the group treated with heteroauxin:

The following table presents the results of the control variant, in which the lavender cuttings were immersed in water for 24 hours before planting.

During this process, the cuttings were divided into upper, middle, and lower sections.

Table 1

Lavender cuttings prepared	Planting date	Observation dates, number of cuttings					Rooting
		23.03	29.03	05.04	12.04	22.04	

for propagation							percentage (in %)
Upper part	13.03	0	5	18	21	30	30 %
Midle part	13.03	3	14	23	38	43	43 %
Lower part	13.03	2	9	27	30	36	36 %

Germination rate of control lavender cuttings (n=100)

Table 2

Lavender cuttings prepared for propagation	Planting date	Observation dates, number of cuttings					Rooting percentage (in %)
		23.03	29.03	05.04	12.04	22.04	
Upper part	13.03	8	37	53	65	76	76 %
Midle part	13.03	21	46	61	74	83	83 %
Lower part	13.03	12	38	59	72	80	80 %

Germination rate of lavender cuttings treated with heteroauxin (n=100)

Figure 1

ISSN 2181-

Cuttings of narrow-leaved lavender (Lavandula angustifolia Mill.)

DISCUSSION

The research results showed that the growth stimulant heteroauxin had a positive effect on the rooting process of lavender cuttings. This growth regulator accelerates root formation by stimulating cell division and differentiation.

The difference in rooting between different parts of the cuttings can be explained by their physiological condition and the amount of growth substances present. The middle cuttings demonstrated the highest rooting rate because they contained sufficient carbohydrates and growth substances while not being too young.

The use of growth stimulants not only increases the rooting rate but also improves the number and length of roots, creating a strong foundation for further growth and development.

In the vegetative propagation of narrow-leaved lavender (Lavandula angustifolia Mill.), proper selection of cuttings (middle part), the use of suitable substrates, and the application of growth stimulants are crucial factors for achieving successful results.

CONCLUSION

1. The highest propagation efficiency of L. angustifolia was achieved using middle-section cuttings.

2. Heteroauxin (100 mg/L) treatment more than doubled the rooting percentage (from 43% to 83%).

3. Growth stimulants significantly increased both the number and length of roots.

4. Rooting time was shortened by 10–13 days due to heteroauxin treatment.

5. For successful propagation in the conditions of Khorezm region, it is recommended to use middle-section cuttings, treat them with heteroauxin solution, and plant them in an appropriate substrate mixture.

REFERENCES

1. Karimov, A., & Kholmuradov, Sh. (2023). Cultivation of essential oil plants under the conditions of Khorezm region. Khiva: Khorezm Administration Publishing.

2. Otabekova, M. (2024). Vegetative propagation methods of lavender. Uzbekistan Journal of Agricultural Science, 5(1), 67–74.

3. Saidov, R., & Ahmedova, N. (2023). The effect of growth stimulants on plant rooting. Tashkent: Agroilm Publishing.

4. Khiva Agricultural Experimental Station Reports (2024–2025). Khiva.

5. Yusupova, D. (2024). Modern technologies of lavender cultivation. Samarkand: Zarafshan Publishing.