

# Analysis of Growth Phenology and Growth Rate of the Fragrant Olive (*Osmanthus Fragrans*) Plant

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**Annotation:** In this article, the growth cycle (phenology) and growth rate of the *Osmanthus fragrans* plant, which is famous for its ornamental, fragrant flowers and medicinal properties, were studied in the Namangan Regional University Scientific Research Laboratory and open soil experimental field. During the experiment, the plant's vegetation stages, calendar dates of leafing and flowering times, and monthly growth rates were monitored.

**Keywords:** Fragrant olive, *Osmanthus fragrans*, phenology, vegetation, flower, leaf, branching, soil, climate.

**INTRODUCTION.** Nowadays, the importance of ornamental plants in improving the environment, maintaining ecological balance and ensuring human health is incomparable. Especially aromatic, evergreen, dust-collecting, oxygen-producing and aesthetically pleasing plants are considered ecologically important. One of them is the *Osmanthus fragrans*, which is distinguished by its fragrant flowers, evergreen leaves, decorativeness and adaptability to the climate.

Although this species is widespread in the subtropical zones of Asia, research is currently underway to plant and adapt it to dry climates such as Uzbekistan. Therefore, it is of practical importance to determine the stages of vegetative development (phenology) and growth rate of this plant. This creates a scientific basis for its widespread introduction in local conditions.

## LITERATURE ANALYSIS

The “Green Space” nationwide project program, the implementation of which is stipulated in the “Environmental Protection Concept of the Republic of Uzbekistan for the Period Until 2030” of the President of the Republic of Uzbekistan dated October 30, 2019, the “Measures to Accelerate Greening in the Republic and More Effectively Organize Tree Protection” of December 30, 2021 [2], the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan “On Additional Measures to Improve the State Administration System in the Field of Ecology and Environmental Protection” No. PQ-3956 dated October 3, 2018 [3]. Relations in the field of nature protection and rational use of natural resources in the Republic of Uzbekistan are regulated by this Law, as well as by the laws of the Republic of Uzbekistan on land, water, forests, subsoil resources, on the protection and use of atmospheric air, flora and fauna, and other legislative acts. On nature protection [4] Scientific research on the *Osmanthus fragrans* plant has been conducted mainly in China, Japan and Southeast Asia, and has been studied in the following main areas: Li X. et al. (2012) - provided information on the adaptation of *Osmanthus* to climate and flowering periods. [5] Wang Y. et al. (2016) - analyzed the genetic diversity of the plant, differences between species and varieties. [6] Chen J. (2018) - studied the role of *Osmanthus* in landscape design and the characteristics of its adaptation to the urban environment. [7] However, in Central Asia, especially in Uzbekistan, there is a lack of scientific research on planting this plant, studying its adaptation, and determining its phenology. There is a scientific gap on this topic, and this study provides preliminary experimental data in this area.

The main limiting factors for the introduction of plants are high summer temperatures and dry air, and based on this, the viability of introduced plants was determined using the 100-point assessment method, and during the conducted scientific research, the introduction assessment of plants was carried out Lapin P.I., Sidneva S.V. (1973), [5] N.I.Shtonda (2016) [6] Morphology and vital functions of vegetative organs of trees Kayimov A.Q. Berdiev E.T. [7] Tree and shrub plants are not only a source of raw materials and various products, but also one of the main factors improving the natural environment. The vital activity of the plant world has its own impact on the climate, namely, it neutralizes both SO<sub>2</sub> and other harmful gases in the air, and smog, reduces the amount of dust in the city air, and phytoncides released by trees kill pathogenic bacteria [8].

The study of the flowering process of introduced plants, the pollination of flowers allows us to characterize them ecologically and biologically. The flowering phase is considered the most basic phase, which is a system that embodies the connection of all phenophases and the adaptation of the plant to the new environment [9]. Two processes of plant development are used for observations: generative and vegetative [10]. Phenology (observation methods) D. V. Tishin, N. A. Chizhikova 36/16 – page [11] Zaitsev G.N. Phenology of woody plants. M.: Nauka, 1981, 120 p. [12] *Broussonetia papyrifera* introduction to the territory of Uzbekistan, indicators of growth and development. Introduction and acclimatization plant 16 volume ISSN 0135-1664. pp. 24, 37 [13]

## RESEARCH OBJECT METHODOLOGY



The object of the study was selected 3-year-old seedlings of the *Osmanthus fragrans* species grown on the basis of vegetative propagation. The experiment was conducted in open field conditions of the Namangan region. Research location: Namangan region, spring-summer season 2025 Number of plants: 4 (randomly selected) Age: 3 years Soil type: Loam, enriched with biohumus Irrigation method: Drip irrigation Climatic conditions: Average temperature 25–30°C, humidity 65–75%

## RESEARCH RESULTS

The fastest growth phase of the plant occurred in May-June. Leaf production rates were also high during this period. Starting in July, growth slowed down and flower buds appeared. Plants grew more actively in well-ventilated, sunny areas.

month	Average growth (sm)	Number of new leaves	Phenological stage
April	2,5, 3 sm	6–8 pieces	The beginning of vegetation
May	5,8 sm	12–14 pieces	Active growth phase
June	7,3 sm	19–23 pieces	Leaf production is at its maximum.
July	3,1.5 sm	8–11 pieces	Flowering and budding start

## CONCLUSION

The fragrant olive (*Osmanthus fragrans*) plant is well adapted to the soil and climatic conditions of the Fergana Valley of Uzbekistan. The active phase of vegetation lasts from late April to late June. The growth rate and leaf production are high during this period. This plant can be widely used in landscaping gardens, parks, and green areas due to its decorative and aromatic properties. Future studies are recommended to focus on the flowering period of the plant, pollination conditions, and vegetative propagation methods.

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