

## ORNAMENTAL AND ECOLOGICAL CHARACTERISTICS OF LIRIODENDRON

## TULIPIFERA L.

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<https://doi.org/10.5281/zenodo.19480221>

**Abstract.** This article provides a scientific analysis of the ecological characteristics and ornamental value of *Liriodendron tulipifera* L. (tulip tree) in the territory of Uzbekistan. The study examines the biological growth stages of the tree, its adaptability to various climatic and soil conditions, and its role in landscape design. The results indicate that the tulip tree is distinguished by its rapid growth, strong wood structure, and high decorative appearance. It is also an effective tool for expanding green areas in urban environments, improving ecological conditions, and stabilizing the microclimate. In addition, the plant's richness in nectar makes it an important resource for beekeeping.

**Keywords:** *Liriodendron tulipifera* L., landscaping, ecological adaptation, urban greening, biological growth, ornamental plants, agroecological conditions.

**Introduction.** The city of Tashkent is located in the central part of Uzbekistan and is characterized by its continental climate, with hot and dry summers and relatively mild winters.

Among the trees and plants growing in this region, the tulip tree (*Liriodendron tulipifera* L.) holds a special significance due to its high ornamental value and ecological benefits.

In recent years, large-scale landscaping and beautification works have been carried out in the capital. New green zones are being created, and existing parks and alleys are being further enriched. As a result, Tashkent is becoming more comfortable not only aesthetically but also ecologically.

Currently, due to global scientific and technological progress, the use of natural resources is increasing. Population growth further intensifies the demand for food, fuel, and other resources.

This situation leads to deforestation, soil degradation, disruption of atmospheric balance, and global climate change. Therefore, landscaping plays a crucial role in ensuring ecological stability in Tashkent. In particular, the planting of ornamental trees and shrubs along roads, in residential areas, industrial zones, and around newly constructed facilities is being actively implemented.

One of the most important factors in this process is the selection of tree species that are well adapted to local climatic conditions, long-lived, relatively easy to maintain, and have high aesthetic value. Proper selection and placement of trees and shrubs not only enhance the visual appeal of the city but also provide psychological comfort and aesthetic satisfaction to residents.

**Main part.** The tulip tree (*Liriodendron tulipifera* L.) is one of the promising introduced tree species widely used in ornamental landscaping. Studies conducted over the years have shown that this species meets the necessary agrobiological requirements for planting in residential areas, parks, and alleys. Therefore, studying its ornamental and ecological characteristics under the conditions of Uzbekistan is of great relevance.

The tulip tree belongs to the Magnoliaceae family and naturally occurs in the broadleaf forests of North America. It is widely cultivated in temperate climate regions, including European countries up to Norway, and in the Southern Hemisphere in Argentina, Australia, Chile, New Zealand, South Africa, and Uruguay. No negative ecological interactions with native flora have been observed in introduced regions.

Historical sources indicate that the tulip tree was acclimatized in Russia in 1688 and began to be used in landscaping in the early 18th century. Currently, two main species are known: the North American and the Chinese tulip tree. In practice, especially for landscaping purposes, the North American species is more effective. This tree is characterized by rapid growth and is also known as “yellow poplar” in its natural habitat, although it differs significantly from poplar in its morphological and physical properties.

Its wood is light, strong, easy to process, and absorbs paint well, making it a valuable raw material in the furniture industry. The ornamental value of the tulip tree is defined by its fast growth, straight and smooth trunk, unique leaf structure, and distinctive flowers. The tree usually begins flowering at the age of 6–8 years. Its flowers, 5–6 cm in size, resemble tulips in shape, ranging in color from yellow to light green and having a pleasant fragrance. They are rich in nectar, making them important for beekeeping.

The fruit is winged and cone-shaped, remaining on the tree even in winter, thus maintaining its decorative appearance throughout the year. The trunk is light gray, smooth, and grows upright.

Ecologically, the tulip tree is cold-resistant and can withstand temperatures down to -25°C. It requires moderate moisture and grows well in soils with a pH range of 4.5-7.5. These characteristics increase its potential for cultivation under the soil and climatic conditions of Uzbekistan.

Today, *Liriodendron tulipifera* L. is considered one of the promising ornamental tree species for Tashkent. It plays an important role in the urban landscape, being widely planted in areas such as Mustaqillik Square, the “Uzbekistan” International Forums Palace, the “Turkiston” Palace area, Khadra Square, along the Anhor canal, and on streets such as Islam Karimov, Furkat, Abay, Nukus, Abdulla Qodiriy, and Alisher Navoi. Its beauty enhances the aesthetic appeal of the city for both residents and visitors.

**Ornamental characteristics.** The tulip tree occupies an important place in the landscaping system of Tashkent. Its decorative features are especially evident in spring and summer, when its large and colorful flowers bloom, adding unique beauty to the urban landscape. Its broad and dense crown provides effective shade during hot summer days, creating a comfortable microclimate for residents. In autumn, its leaves turn bright yellow, further enhancing the city’s visual appeal.

The prospects for propagating the tulip tree in Tashkent are high, and its ecological significance is considerable. These trees actively contribute to air purification by absorbing dust and harmful gases, especially in areas with heavy traffic. Their well-developed root system reduces soil compaction and slows erosion processes.

Additionally, the tulip tree serves as a habitat and food source for various insects and birds, supporting biodiversity in urban ecosystems. In the context of climate change, expanding green areas in large cities like Tashkent remains a pressing issue. In this regard, the tulip tree stands out as a highly promising species due to its adaptability, rapid growth, and high aesthetic value.

**Conclusion.** The results of the conducted research show that the bioecological and ornamental characteristics of *Liriodendron tulipifera* L. allow it to be evaluated as a highly promising introduced tree species for landscaping in Uzbekistan, particularly in urbanized areas.

This species is characterized by high adaptability, rapid growth rate, strong wood structure, and high декоративative qualities.

At the same time, *Liriodendron tulipifera* L. plays an important ecological role by absorbing dust and toxic substances from the atmosphere, producing oxygen, stabilizing soil structure, and supporting biodiversity within biocenoses. Its role in optimizing the urban microclimate, reducing anthropogenic noise, and maintaining ecological balance has also been scientifically substantiated.

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