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Bioecological Features and Reproduction of *Leucaena Pulverulenta* Benth. in the Conditions of the ABSHERON

Aynur HUSEYNOVA
Institute of Dendrology Azerbaijan NAS

Abstract. The article presents information about the introduction of the species *Leucaena pulverulenta* Benth., belonging to the genus *Leucaena* Benth., in the conditions of Absheron, bioecological features, reproduction, a comprehensive study of growth and development, research work and results. It is important to study the changes that occur at all stages of ontogeny, the study of growth and developmental characteristics of plants under the conditions of introduction, reproductive characteristics such as flowering and fruiting. Methods for assessing the main bioecological characteristics of plants provide obtaining the main bioecological characteristics of the species, its growth and reproduction. The choice of plants for landscaping, along with their biological and ecological characteristics, is closely related to the soil and climatic conditions of the region. For the stability and durability of the planted greenery, it is advisable to use plants that have more valuable decorative properties. When choosing plants for landscaping, it should be borne in mind that they are more decorative, resistant to diseases and pests. *Leucaena pulverulenta* Benth., when analyzing the results of the study in terms of its ecological and biological characteristics, the species has a dry subtropical character, is recognized as drought-resistant, heat-resistant, photophilous and less demanding on the soil. The relatively low and high alkalinity of organic and inorganic substances in the gray-brown soils of the study area has a negative impact on the vegetative and generative organs of plants at certain stages of the seasonal development rhythms of these plants. However, this effect is not decisive in completing the life cycle of the studied plants. Thus, it can be concluded from the research that in the conditions of Absheron plants can fully complete the rhythms of development, which is expedient in terms of their widespread use in the landscaping of the Absheron Peninsula.

Keywords: Bioecological features, Reproduction, Phenology, Morphology, Landscape.

Introduction

Recently, extensive research has been conducted on the protection of biological diversity, increasing the plant gene pool, and the efficient use of natural resources. Along with our natural flora, it is very important to study the cultural dendroflora and enrich it with new species resistant to soil and climatic conditions. To this end, the laboratory of the Institute of Dendrology "Introduction and acclimatization of trees and shrubs" conducts extensive research on the introduction of new species of exotic plants, the study of biological properties, adaptation to environmental factors and application to landscape architecture.

Methods for assessing the main bioecological characteristics of plants provide the main bioecological characteristics of the species, its growth and reproduction. The choice of plants for landscaping, along with their biological and ecological characteristics, is closely related to the soil and climatic conditions of the region. For the durability and longevity of planted greenery, it is advisable to use plants that have more valuable decorative properties. When choosing plants for landscaping, it should be borne in mind that they are more decorative, resistant to disease and pests. *Leucaena pulverulenta* Benth. Bioecological features, generative reproduction, phenology, morphology, perspective of the species in Absheron conditions were studied.

Material and methods

The research was conducted in 2020-2022 in the experimental areas of the laboratory "Introduction and acclimatization of trees and shrubs" of the Institute of Dendrology of ANAS. The species *Leucaena pulverulenta* Benth., introduced in the Absheron, was obtained by exchange from the Central Botanical Garden of Padua, Italy. Observations of the studied species were carried out every ten days. In the research work - introduction Agamirov et al. (1985). Biological features Sokolov (2014), seed propagation Firsova (1955), morphology of seedlings Serebryakov (1952), bioecological features Iskenderov (1989), growth dynamics was studied based on the methods of Molchanova (1967), morphology of the root system Kolesnikov (1972) and also, literary materials (2022); Plant List (2013) were studied according to the methodologies.

Analysis and Discussion

Leucaena pulverulenta Benth. species of evergreen shrub or tree with gray-brown bark, up to 20 m high. The leaves are bipinnate, up to 30 cm long, consisting of 3-10 pairs of leaflets of the first order, in turn, consisting of 10-20 pairs of soft lanceolate leaflets of the second order. The flowers are collected in rounded inflorescences-heads of a greenish-white color with a diameter of about 2 cm. The fruits are flat straight or slightly crescent-shaped beans up to 20 cm long and 1.5-2 cm wide, pointed at the end. The skin is thin, brown and brittle in ripe beans. Each pod contains up to 16-18 ovoid seeds 6-10 mm in diameter, dark brown when ripe (Sokolov, 2014). Before sowing, all seeds are scarified by scalding their hard shell with very hot water (~80°C). After that, the seeds should be immersed in cold water. They are kept for at least 12 hours in water, and not dried, they are sown in moist soil under glass.

Leucaena pulverulenta Benth. seeds are sown in autumn, indoors and outdoors. 04.10.2020 sown to a depth of 1.5-2.0 cm in a substrate prepared in the form of a mixture of soil, sand and peat (1:1:1) (Firsova, 1955).

Figure 1. *L. pulverulenta* Benth. in autumn. seedlings of the species in open and closed conditions.

When studying the morphological characteristics of the seedlings of seeds sown in autumn in open and closed conditions, it was found that the seedlings of *Leucaena pulverulenta* are surface and have high germination properties observed. Germination yielded 80-83% (06.10.2020). When the seeds of the plant germinate, the upper part of the petals remains inside the seed, thus using the seed as a nutrient, which is used to form a seedling that develops from the embryo. The leaves are bright, oval, the stem is dull, the base is hearty, light green, then darkens. The hypocotyl is white, 1.9-2.0 cm long, and the epocotyledon is 1.5 cm long. The development of the root system begins at the same time as the development of the aboveground part. The life of the leaves lasts 40 days. As the true leaves develop, the edges become ciliated (Serebryakov, 1952).

Seeds sown indoors grow well at a temperature of 19-20°C. The height of the first annual Leucaena pulverulenta, sown in closed ground on February 11, 2020, was 19 cm, the length of the main root was 11 cm, the diameter of the root collar was 3 mm, and the length of the lateral roots was 6.5 - 8 cm (Kolesnikov, 1972). The more intensive development of the root system of *Leucaena pulverulenta* is an adaptation to the fact that the plants grow on dry, stony, sunny slopes. As the root system is formed, intensive growth of the surface part of the plant is observed, the root system is pivotal. Such development of plants is favorable for the dry climate of Absheron. By working deep in the root, it uses groundwater in the lower layers more efficiently. It is recommended to transplant the plant no later than 2-3 years. Dynamic development of surface parts is one of the main indicators of plant life.

Figure 2. *L. pulverulenata* Benth. root system

The growth of *Leucaena pulverulenta* begins in the second decade of April and lasts until the end of October. The plant has a vegetation period of about 210 + 7 days. The plant is warm and light-loving, with a height of 2.5 m for 5-6 years, the diameter of the trunk is 14 cm, and the length of the side branches is 85-90 cm. It fruits from 4-5 years. We studied the beginning and recovery period of the development phases of the first annual *Leucaena pulverulenta* in the conditions of Absheron.

Table 1. *Leucaena pulverulenta* Benth. L. I annual development dynamics of the species (2020-2021)

Species	Height (cm)	Annual height development start	end.	The process of growth	Annual height increase (cm)
L.pulverulenta Benth.	25 ± 5	23.04.±1	29.10.±3	210±7	19 ± 5

The requirements of *Leucaena pulverulenta* to heat, light, humidity, cold air flow and soil nutrition in the Absheron were studied. The results of the study are given in table 2.

Table 2. *Leucaena pulverulenta* Benth. The main environmental factors affecting the species

Species	Environmental factors				
	thermal	sunbeams	humidity	cold weather	the soil
Leucaena pulverulenta Benth.	+	+	+	-	±

Note: (+) very demanding, (-) slightly demanding, (±) relatively demanding. It is highly demanding on environmental factors during the period of growth, flowering and fruiting, the end of the vegetative period is undemanding (Iskenderov, 1989).

The contribution of *Leucaena pulverulenta* Benth. to the environment is multifaceted. Erosion control and reclamation. The deep root helps break up compacted groundwater layers, thereby improving water infiltration and reducing surface runoff. The brine prevents groundwater from rising to the surface. *Leucaena pulverulenta* growing in contour stripes, helps control erosion on steep slopes, prevents wind damage, and uses the leaves as green manure (2022); Plant List (2013). The plant is used to make quality charcoal, small furniture and paper pulp. Young shoots, young leaves and seeds can be used as vegetables in human nutrition. *Leucaena pulverulenta* is one of the highest quality and delicious forage trees in the tropics.

Conclusion

Leucaena pulverulenta Benth which we studied in Absheron ; has all the developmental phases during the growing season and has great potential for application in landscaping. The growth of *Leucaena pulverulenta* Benth. begins in the second decade of April and lasts until the end of October. The plant has a vegetation period of about 210 + 7 days.

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Novelty of the research: The results of the research showed that although the seeds sown in both conditions (open and closed) give good results, it is more expedient to sow the seeds indoors in autumn. Because cold weather is unfavorable for the development of seeds sown in the open. After three years, the plant can be transplanted to a permanently selected open environment.

Leucena - Leucaena pulverulenta Benth. is often planted for hedges and shade, and to protect soil from erosion. It withstands a short-term drop in temperature to -6 C. It is tolerant of the alternation of rainy and dry seasons, thermophilic, it does not like soils with high acidity and aluminum content.
Given the evergreen, long-lived, decorative nature of the plant, it is expedient to use it extensively in landscaping, single and group plantings

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPHELS journal belongs to the author.

Acknowledgements or Notes

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Author Information

Aynur Huseynova
Institue of Dendrology Azerbaijan NAS,
Baku, Azerbaijan
Contact e-mail: *Aynur. huseynova. 1968@gmail.com*

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