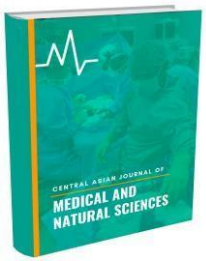

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Bioecological Characteristics Of Canadian Bagryannik (Cercis Canadesis) Plant In Andijan Region

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Abstract: In the article, the morphological and bioecological characteristics of the Canadian redbud (Cercis canadensis) introduced to the conditions of Andijan region were studied in terms of their effectiveness in landscaping areas undergoing urbanization processes with hormones and population density. Initially, during observations, its morphological characteristics (height, diameter, and branching) were analyzed. The various specimens of Canadian redbud displayed a diverse range of morphological features. This is primarily attributed to the environmental factors influencing their growth in the specific locations where they have been planted, as indicated by the data.

Keywords: *: Forestry, landscaping, ornamental plant, species, tree, spherical shape, branching, climate, air, gas, dust.*

Introduction

In recent years, in our republic, special attention is being paid to the expansion of our forest areas, the greening of residential areas, buildings and structures, and roads at various levels.

The decision of the President of the Republic of Uzbekistan dated May 11, 2017 No. PQ-2966, PF-5041 "On the organization of the activities of the State Forestry Committee of the Republic of Uzbekistan" and In accordance with the decree, a long-term perspective strategy of forest works was developed [1], [2].

Forestry enterprises have a unique role in the implementation of government decisions, and are suppliers of various decorative seedlings used in landscape design to customers engaged in landscaping. Several hundred species of trees and shrubs with high decorative properties are grown in forestry farms. These include Crimean pine (Pinus nigra subsp.), virgin juniper (Juniperus virginiana), oriental biota (Madjerum juniper), false chestnut (Aesculus hippocastanum L.), Japanese safflower (Sophora japonica L.), maple (Acer L.) and Fraxinus species, beautiful catalpa (Catalpa speciosa), Paulownia (Paulównia), white acacia (Robinia pseudoacacaia L), Canadian lilac (Cercis canadensis), Indian lilac (Lagerstroemia), Syrian rose (Hibiscus syriacus) we can show [4].

Canadian lilac (Cercis canadensis) is of special importance among the few trees with its beautiful flowering, decorative leaves, resistance to negative climate factors, not demanding on the soil, and can grow in the shade of buildings and large trees. Its early flowering, beautiful pink-purple flowers covering the entire

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trunk of the tree, the appearance of dark green glossy leaves, and light brown pods during the winter give this species a special look. Because of this, interest in Canadian purple has increased among the population [3].

Supplying these decorative plant species is considered one of the urgent issues in the greening of forests and residential areas being built in our country. The Purpose Of The Research, Study the morphological and bioecological characteristics of the Canadian redbud (Cercis canadensis) in the conditions of the open sandy soils of Andijan region.

Materials and Methods

Primarily in conducting scientific research, observation, laboratory analysis, and comparison methods were utilized. In the course of the study, the quantification of pigments in plant leaves was carried out using spectrophotometric method (Yermakov 1987) [7].

Scientific research activities were conducted within the framework of the project 'Cultivation of landscape trees in the ''Andijon Yol Kokalam''nursery of the 'Andijon' branch of the 'Andijon district' of Andijan region in the years 2020-2022 [15].

Results and Discussion

Numerous scientific studies on the cultivation of the Canadian maple have been conducted in several countries around the world, including the USA, Canada, Germany, the Russian Federation, and others. Scientists such as Plibin I.V., Lapin P.I., Kalutskiy K.K., Kalutskaya O.N., Shreter A.I., Panasyuk V.A., among others, have carried out various research on this topic [5], [8].

In Uzbekistan, scientists from the Institute of Horticulture conducted scientific work on the cultivation of Canadian maple, led by Jeltikova T.A., while Temirov J.T. focused on studies related to its biology and ecology. However, in the conditions of Andijan, information on the bioecological characteristics of the Canadian maple plant has not been provided [9].

Results

Observations were conducted in Andijan city and region. This involved studying the landscape characteristics of Canadian maples growing in the territory of Andijan State University, Niyozbotir neighborhood in Asaka district, and along Toshkent Street in Andijan city.

During the experiment, initially, its morphological characteristics (height, diameter, and branching) were analyzed. The morphological features of the Canadian redbud trees varied depending on the location. The main reason for this is their growing environment.

Table 1. Morphological characteristics of growing Canadian redwood trees

No	Growing place	studied trees, pcs	Tall league,m	Diameter ri, cm	The shape of the horn
1	Andijan State University	4	4.5-5.0	15-20	Spherical
2	"Andijan Road Greenery" UK ornamental plant nursery	10	5.5-6.5	20-25	It is oval in shape
3	Niyozbotir neighborhood of Asaka district	2	4.5–5.5	17-22	Spherical
4	Tashkent street, Andijan city	4	6.5-7.5	25-27	Spherical

The varied indicators of the Canadian maple in Table 1 confirm its dependence on external environmental conditions. Specifically, Canadian maple trees located within the territory of Andijan State University and in the ‘‘Andijon Yol Ko‘kalam’’ nursery also exhibited diverse indicators. The primary reason for this is that the maple trees planted near Andijan State University are located on the back side of the building, receiving less sunlight, meaning they are shaded, whereas the maple trees in the 'Andijon Yol Ko‘kalam' nursery are situated in a location where sunlight consistently reaches them, planted closer to the building. This resulted in variations in their morphological indicators. Furthermore, this condition also confirms its adaptability to various conditions.

The growth of the Canadian maple in different conditions (shaded and open areas) was also observed to influence its branching. Maple trees grown in shaded areas tended to have elongated, slender branches, while those grown in open areas had broader, oval-shaped branches.

Thus, considering the above morphological characteristics of the Canadian maple, it can be transplanted into various environmental conditions.

Currently, one of the major ecological challenges is the increase in air pollution levels. Particularly in urban and industrial centers, the presence of air pollutants such as gases, dust, and harmful microorganisms significantly affects the air quality, especially in densely populated areas. In rural areas, for every 1 cubic meter of air, there are about 490 bacteria, while in urban areas, this number can reach up to 36,000 bacteria per cubic

meter. Mature trees in forests absorb about 8 kg of carbon dioxide per day in summer, releasing about 200 liters of oxygen when 200 people breathe. A single large tree releases nearly 2 kg of oxygen per day. Trees along the roadsides absorb up to 30% of the carbon dioxide emitted by passing vehicles. In urban areas, for every 100 square meters of air, about 1 kg of pollutants accumulates monthly, while in botanical gardens, this number is close to 300 grams.

In cities, the average concentration of dust in the air is about 150 kg per hectare per year, while in open areas, it is about 546 kg per year, and in winter, it is about 40%, dropping to 35-37%. The Canadian maple tree is known for its ability to absorb dust and harmful gases.

One of its characteristics is its high resistance to diseases and pests.

Being part of the ecological chain, the Canadian maple tree is considered a good food source for birds and small animals during the winter season. Its fruit and young shoots are considered food for birds and animals. A single Canadian maple tree can produce 4 kg of nectar or 1 kg of honey. It should be emphasized that the Canadian maple tree adapts easily to climate change, showing good adaptation to various locations.

Table 2. ***Ecological characteristics of Canadian cherry (Cercis Canadensis L).***

No	Factors	General description of the Canadian oak tree
1.	Life form	A tree
2.	Sizes	Height - 10 - 15 m The width of the trunk is 6-8 m Body diameter - up to 40 cm
3.	To the light	Light-loving, relatively shade-tolerant.
4.	To the soil	Soil does not choose.
5.	To moisture	Drought-resistant, can withstand a lack of moisture.
6.	To the wind	Withstood the wind.
7.	To the temperature	Cold-loving, hot-loving.
8.	In urban conditions	Resistant to smoke and gas as well as dust.
9.	Landscape	Branches, leaves, flowers, fruits, body are decorative.

For the growth and development of this tree, 1.3% of sunlight intensity is sufficient for photosynthesis for the young shoots of the Canadian maple tree. It is

necessary to provide the plant with sufficient light to support the process of photosynthesis.

Determining the rate of growth for the Canadian maple tree is crucial. This period lasts for 95 days in Shimol (northern part), starting from April to the beginning of August, and 160 days in Janub (southern part), continuing from April to the middle of August.

In indoor conditions, the growth rate reaches up to 4 cm per month, with two growth buds emerging. Each of them develops within 22 days. Growth begins with the emergence of a growth bud and proceeds rapidly within 5-6 days.

The ecological characteristics of the Canadian maple tree regarding climate factors:

Temperature - the Canadian maple tree belongs to the group of heat-loving trees, and suitable temperatures are essential for its growth and development. Favorable temperatures facilitate various physiological processes, leading to good growth and development of the tree. However, prolonged exposure to high temperatures during the vegetative period can cause leaf wilting and damage, resulting in poor growth. The physiological dormancy of the Canadian maple tree buds allows them to quickly resume growth due to their low resistance to extreme cold.

When analyzing the ecological characteristics of the Canadian maple tree in the areas where research was conducted, its aforementioned traits were reiterated. Specifically, maple trees observed around Andijan city indicated the possibility of growth in various conditions. Additionally, the growth of Canadian maple trees in shaded areas and areas with limited sunlight was observed. Furthermore, when observing the growth of Canadian maple trees in shaded areas, it was possible to notice their elongated and slender shape. Utilizing this characteristic, Canadian maple trees can be effectively used in landscaping.

Apart from the above, it was also evident that the Canadian maple tree is tolerant to cold temperatures. It was found that it did not suffer damage during the cold winters of 2020 and 2022. Furthermore, it was observed that the Canadian maple tree remained in good condition even when exposed to prolonged snow cover.

Conclusions

From the conducted research results, we can conclude the following:

1. In studying the bioecological characteristics of the Canadian maple, we determined that it is possible to cultivate it in the Andijan region.

2. The Canadian maple tree demonstrated its resilience to diseases and pests, rapid growth, and landscape features in Andijan city and region.
3. The Canadian maple tree is of great importance due to its landscape attractiveness, high ecological efficiency, and resistance to emitting harmful gases as well as its tolerance to such gases. Expanding the cultivation of this tree and organizing planting on a large scale are considered relevant issues in greening efforts and are in line with the intended goals.

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