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TREE AND SHRUB SPECIES AT THE FIRST RESEARCH SITE IN TERMEZ CITY

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Abstract. The study of existing tree and shrub species in Surkhandarya Region is carried out by the expedition method through the selection and analysis of individuals older than 10 years. The species composition, age and condition of the selected seedlings, depending on soil and hydrological conditions, are determined by planting seedlings in test plots, describing soil types, conducting mechanical and chemical analyses of soil samples, excavating the root system and determining the growth rate of tree species. The ecological problems of Termez city are largely associated with the need for greening, and there are a number of difficulties in implementing it under these conditions.

Keywords. Tree and shrub, Robinia pseudoacacia, Sophora japonica, Ulmus pumila, phytomass, Populus nigra, Morus alba.

Introduction. Before selecting local and introduced ornamental trees and shrubs under the conditions of Surkhandarya, it is necessary to take into account the natural and geographical conditions of the site. This is because the conditions of each area differ (strongly saline, moderately saline and weakly saline areas, plains and uneven tugai forests). Selecting local and introduced trees for greening such lands requires deep knowledge and experience.

The tree and shrub plant species recommended at the conference began to be widely introduced in the greening of cities and villages by planting them in the nurseries of the republic’s forestry enterprises, and in 1939-1940, 66,000 tree and shrub seedlings were planted in Termez. Parks of culture and recreation were established within the city. Forest shelterbelts were established around the city to protect it from wind and dust.

The ecological problems of Termez city are largely related to the need for greening, and there are a number of difficulties in implementing these measures under such conditions.

Landscaping in Termez developed further. A study of tree and shrub planting sites in Karakalpakstan up to 1960 shows that 25 species of trees and shrubs were used in greening.

Research results. According to the results of observations conducted in Termez in 2025-2026, green spaces were divided into the following groups:

1) good, 2) satisfactory, 3) unsatisfactory.

Well-developed tree stands are distributed in the second lowland of Surkhandarya. In the southern part of the city, the condition of the trees is relatively good. Among these trees, drying or

completely dried individuals are almost absent. By comparison, the western part of the city, especially its central part, is approximately 1 m lower. The soil here is compacted, and groundwater is closer to the soil surface. The plantings in this area are in unsatisfactory condition; in particular, the poplar and ash trees extending from the park of culture and recreation to I. Karimov Street lag behind in development. Trees in declining and satisfactory condition also occur alternately. Scientific research was carried out on the coniferous tree and shrub species listed in the table, including Juniperus virginiana and Platycladus orientalis from the Cupressaceae family and Pinus pallasiana from the Pinaceae family; among broad-leaved trees and shrubs, Acer campestre and Acer negundo from the Aceraceae family, Ligustrum vulgaris from the Oleaceae family, Sophora japonica and Gleditsia triacanthos from the legume family, Morus alba and Maclura aurantiaca from the Moraceae family, and Salix babylonica, Populus alba and Populus nigra from the Salicaceae family.

(Table 1)

Main Existing Tree and Shrub Species under the Conditions of Termez City (2025)

No.	Family (Latin name)	Genus (Latin name)	Species (Latin name)	Life form
1.	Cypress family (Cupressaceae)	Juniper (Juniperus)	Virginia juniper (Juniperus virginiana)	Tree
			Cossack juniper (Juniperus sabina)	Shrub
		Thuja (Thuja)	Western thuja (Thuja occidentalis)	Tree
		Biota (Platycladus)	Eastern biota (Platycladus orientalis)	Shrub
2.	Pine family (Pinaceae)	Pine (Pinus)	Crimean pine (Pinus pallasiana)	Tree
			Eldar pine (Pinus eldarica)	Tree
			Ash-leaved maple (Acer negundo)	Tree
3.	Mulberry family (Moraceae)	5. Mulberry (Morus)	8. White mulberry (Morus alba)	Tree
		6. Maclura (Maclura)	9. Orange maclura (Maclura aurantiaca)	Tree

4.	Elm family (Ulmaceae)	7.	Elm (Ulmus)	10.	Siberian elm (Ulmus pumila)	Tree
				11.	Dense elm (Ulmus densa)	Tree

Seasonal changes in trees and shrubs, their response to the external environment and their sanitary-hygienic importance were also studied.

When the families, genera, species and life forms of the trees and shrubs planted mainly for greening purposes under the conditions of Surkhandarya were analyzed, it was found that they belonged to 15 families, 28 genera and 40 species, and that trees accounted for 72% of the existing trees and shrubs.

Indicators of Changes in the Height of Coniferous Tree Seedlings, cm

In this case, the height of coniferous trees was 57.2-67.2 cm, while the diameter of the root collar was 0.8-0.9 cm. In broad-leaved trees, these indicators ranged from 74.5 to 103 cm in height and from 0.8 to 1.2 cm in root collar diameter.



Figure 1. Studying the taxometric indicators of trunk diameter in a coniferous tree species.

Measurements of seedling growth were carried out at the end of the vegetation period, that is, in autumn. The onset of sap flow and the unfolding of leaf buds in the seedlings were also recorded.

Among the planted tree and shrub seedlings in 2026, the first flowering and fruiting were observed only in the coniferous species Platycladus orientalis and, among shrubs, in Berberis integerrima, Amorpha fruticosa and Rosa canina.



Figure 2. Indicators of Changes in Shrub Seedling Diameter, cm

The study of existing tree and shrub species in Surkhandarya Region was carried out by the expedition method through the selection and analysis of individuals older than 10 years.

The species composition, age and condition of the selected seedlings, depending on soil and hydrological conditions, were determined by planting seedlings in test plots, describing soil types, conducting mechanical and chemical analyses of soil samples, excavating the root system and determining the growth rate of tree species.

The growth indicators of trees and shrubs in the area were analyzed according to the following test plots.

When the soil of 10-year-old Morus alba protective plantations in Termez District was studied, it was found to be meadow-alluvial. Since the groundwater level in the area was 1.5-2.0 m, the average height of the trees was 7.1±0.2 m and the trunk diameter was 11.2±2.5 cm, and their condition was determined to be good.



Figure 3. Measuring the width and length growth of the leaves of tree and shrub species using a ruler.

Although tree and shrub species have been used for greening purposes, in recent years it was determined that the number of species used in greening through the introduction and acclimatization of species adapted to the climatic and soil conditions of the area has reached 40.

The survival rate of seedlings of the selected species was 41-88%. The highest survival rate was observed in Morus alba (more than 80%), medium survival in Ulmus pumila and Morus nigra (59-70%), and low survival in Sophora japonica (44%).

An air temperature of +20-22°C and relative humidity of 40-60% have a positive effect on human health. Through greening territories, air temperature can be reduced by an average of up to 2°C and relative humidity can be increased by 10-15%. This creates an opportunity to moderate the sharply continental conditions of Surkhandarya Region.

Based on the climatic and soil conditions of Surkhandarya Region, Morus alba, Ulmus pumila, Morus nigra, Juniperus zarafshanica and Juniperus virginiana are recommended for large-scale use in production for greening territories.

Among the studied species, Morus alba, Juniperus zarafshanica and Ulmus pumila are recommended for use as drought-resistant species, while Morus alba, Ulmus pumila and Ligustrum vulgaris are recommended as cold-resistant species.

According to the growth indicators of seedlings of the selected species, the greatest height was recorded in Populus alba, Ulmus pumila and Robinia pseudoacacia at 402.5-453.5 cm, while the average height in Fraxinus pennsylvanica, Populus nigra, Salix australior, Gleditsia triacanthos and Maclura aurantiaca was 187.5-223.0 cm.

Based on root system development indicators, it was found that the roots of Salix australior and Populus alba spread in the soil layer down to 80 cm; those of Ulmus pumila, Robinia pseudoacacia and Maclura aurantiaca down to 60 cm; those of Fraxinus pennsylvanica, Populus nigra and Gleditsia triacanthos down to 40 cm; and those of Sophora japonica down to 20 cm.

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