



The Growing of Pavlovnia Plant in Syrdarya Region

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Abstract

This article describes the characteristics of the Paulownia tree, its geographical distribution and problems of its reproduction in the Syrdarya region. The article also discusses ways to propagate the Paulownia tree, taking into account the climate and soil conditions of the Syrdarya region.

Keywords: *Paulownia; Paulownia; The Medicinal Plants; Phytomeliorant; Sanitary-Hygienic; Greenhouse; Innovative Technologies*

Introduction

Paulownia tree grows in the Far East and Southeast Asia: China (Anhui, Fujian, Guangdong, Hubei, Jiangxi, Sichuan, Yunnan), Korea, Taiwan, Laos, Vietnam.

In gardens and parks in Europe and North America, paulownia felt, or imperial (*Paulownia tomentosa*) is cultivated - a tree 15-20 m high with a wide crown and large (up to 30 cm long and up to 25 cm wide) whole-edged leaves on long petioles. The flowers are pale purple, in erect pyramidal inflorescences; flowering - before the appearance of leaves. The bolls remain on the tree sometimes until the following summer.

In Russia and neighboring countries in culture: in the Caucasus; in the west and south of Ukraine, on the southern coast of Crimea; to the north - it freezes over in winter.

Paulownias are deciduous tall trees.

The trunk is straight, the crown is spreading.

The leaves are opposite, on long petioles. The leaf blade is large, deeply toothed or three-lobed. The edge of the sheet is whole. There are no stipules.

The flowers are large, purple-lilac, sometimes almost white, in paniculate inflorescences at the ends of the shoots. The calyx is bell-shaped.

The fruit is a box. Seeds are small, winged.

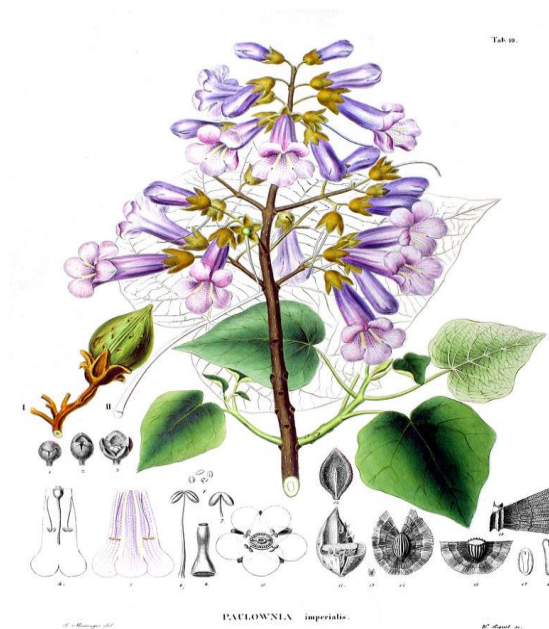
This tree is suitable for the climatic conditions of Uzbekistan and is one of the most promising ornamental plants, attracting attention with its resistance to heat and salt. Therefore, in the conditions of Syrdarya region, it would be expedient to cultivate ornamental, phytomeliorant, sanitary-hygienic, greenhouse gas-reducing plants, as well as timber and agroforestry.

In the last 5-6 years, interest in Pavlovnia has been growing in our country. Pavlovniya is distinguished from the existing trees on the planet not only by the fastest growth, but also by the discovery of fantastic beauty, flowering, precious wood, honey, a source of biomass, it decorates parks, alleys as a decorative tree. Of course, as Pavlovniya is a new plant in our country, there are a number of problems in its propagation in our country.

The 90% of the territory of the Syrdarya region is saline, the climate is sharply continental and differs from other regions. In winter, the temperature can drop to -5°C , -10°C due to the inflow of cold air masses from the Arctic. In summer, the temperature rises to $+41^{\circ}\text{C}$, $+42^{\circ}\text{C}$.

In our region, a variety of ornamental trees are planted every year for the beautification of cities and districts. Despite the ongoing landscaping work, the proximity of groundwater, salinity of the soil, negatively affects the development of planted ornamental tree seedlings. As a result, many of the trees planted each year die without sprouting, leading to excessive costs and time. In this case, it is advisable to plant trees in accordance with the natural climatic conditions of our region. In this place Paulownia attracted attention as a decorative tree.

Paulownia ornamental tree is well adapted to stressful conditions, resistant to soil salinity, is also important in obtaining high quality wood for forestry, private firms and local people engaged in landscaping. also differs from other ornamental trees. It is one of the medicinal plants that gives people aesthetic pleasure and creates a unique infrastructure.



Picture 1. Paulownia imperialis. Botanical illustration from the book Zibolda and Tsukkarini Flora Japonica, 1870

There are many species and varieties of *Paulownia*. We will consider all the varieties, but due to their valuable properties we will focus more on the most promising varieties for cultivation in Uzbekistan.

Paulownia catalpifolia – Catalpa *Paulownia* or Bowy *Paulownia*

Paulownia elongata – Long *Paulownia*.

Paulownia fargesii – Fargez *Paulownia*.

Paulownia fortunei HEMSL. – Fartuney *Paulownia*.

Paulownia kawakamii – Kavakami *Paulownia*.

Paulownia tomentosa STEUD. – Fiber *Paulownia*.

Paulownia Shan Tong – Shan Tong *Paulownia*

In the context of Syrdarya region, it is important to establish *Paulownia* tree seedlings, grow quality seedlings, use them in landscaping and use them in the cultivation and landscaping of ornamental peacock plants, selection of ornamental plant species, their adaptation, organization and production of nurseries.

The following agronomic rules should be followed to solve these problems:

1. The adaptation of ornamental, introduced peacock plant to the conditions of Syrdarya region;
2. The development of methods for the rapid propagation of *Paulownia* plants.
3. To develop a scientific basis for the construction of a *Paulownia* tree nursery and its use in landscaping.

The *Paulownia* tree is important in finding solutions to these problems. It releases 10 times more oxygen (O₂) into the atmosphere than other trees, preventing air pollution. The leaves are large, give a cool. It does not get any insects on its body and leaves and does not need chemical treatment.

When its branches and leaves are burned in the fall, it emits 10 times less toxic gases than other trees. It grows up to 3-5 meters per year. It grows 20-25 cm wide and lives around 100 years. If the peacock tree is not shaped in time, it will have a diameter of 7 m to 20 m. At the same time it protects the soil from water and rain erosion, improves its reclamation condition. It did not let the groundwater to rise. This in turn prevents secondary salinization of the soil.

The establishment of protected areas, improvement of sanitary and hygienic conditions, creation of recreation areas, conservation of biodiversity, reduction of greenhouse gases, agro-forestry, beekeeping and cheap timber, development of small business. The *Paulownia* tree, as an ornamental tree introduced to our country, decorates parks, alleys and the infrastructure of our roads. Its flowers give off a pleasant scent.



Picture 2. Type of ornamental tree

The Excellent Quality High-Quality Wood Products Can Be Obtained *from the Shan Tong variety of Paulownia. Its body is straight, tall, woody, high quality. Shan Tong is completely different from the Tomentosa type in the length of the crown, the crown of the Tomentosa type is conical. The wood yield of the Shan Tong tree, which has grown individually for 7 years in China, has reached 0.4-0.8 m³, which is 42-96% more than other species of Paulownia.*

The Saving of Crop Areas. All species of *Paulownia* are divided into two categories according to the shape of the crown: long / medium and wide conical. The crown of a tree with an elongated crown is 40 percent thinner than that of a tree with a broad conical crown. For example, *Tomentosa Paulownia* has a wide conical crown, while Shan Tong has an elongated crown, so more Shan Tong trees can be planted on 1 hectare of land than *Tomentosa*. It is also very convenient to grow along with annual plants in Shan Tong *Paulownia* plantations to earn extra income, such as corn, cotton, tomatoes, cucumbers and more.

The Rapid Regrowth Feature after Cutting. After the main body of the tree is cut down, the regeneration process of Shan Tong takes place with 100 percent efficiency. Each time after the next pruning, the transition period of the Shan Tong variety to the maturation stage is shortened and the trees that have been cut twice are matured 1 year earlier than those that have been cut once.

As a result of the establishment of *Paulownia* tree plantations, favorable conditions will be created for the population, small businesses will be established, quality wood will be grown and its imports will be reduced. The results of this project are reflected in the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated October 11, 2018 No **819 "On measures to further develop the forestry sector and the introduction of innovative technologies in the Republic of Uzbekistan."**

The measures to introduce research and development to create science-based innovative technologies for their cultivation will ensure the implementation of them into practice. There are enough opportunities in the team to solve these tasks and get the planned results. The project involves potential scientists, highly qualified scientific and technical staff. The project members have been working for several years to establish small plots of *Paulownia* tree.

However, in the context of the Syrdarya region, this project needs the support of the organization of *Paulownia* seedlings, the development of cultivation technology. As a result, *Paulownia* seedlings will be expanded and scientific recommendations for their cultivation will be published. This, in turn, will lead to the widespread cultivation of *Paulownia* in the future in the region. At the same time, the youth of the region will be involved in this work.

Paulownia leaves and young body are used to feed livestock, fish, very close to alfalfa in terms of nutrient content. *Paulownia* leaves contain 20% protein, while a wilted leaf that is shed in the fall contains 12% protein. It is rich in micronutrients, digestibility is 60%. The amount of protein in the body of one-year-old young seedlings is even higher, so planting to obtain biomass for individual livestock is also of great importance.

It is possible to get 30-40 tons of quality biomass from 1 hectare of land in the summer months. Again, it grows again every year, requires less agro-technical processing, which makes the cost of feed much cheaper. It is known that in our conditions it is not allowed to grow and extract wood from *Paulownia* as an ornamental, phytomeliorant, sanitary-hygienic, greenhouse gas-reducing plant.

For the development of landscaping and forestry in the Syrdarya region, it is advisable to select varieties of *Paulownia* trees and plant seedlings in specific soil and climatic conditions. The most effective way to propagate it was to propagate the plant using simple root cuttings. Growing the root

cuttings of the plant in pots consisting of a mixture of soil and biohumus taken from the soil of the region and planting it in large areas allows it to propagate at a rapid pace.

The following goals and objectives have been identified to find solutions to the above issues:

1. *The selection of a species of Paulownia tree suitable for the conditions of the Syrdarya region*
2. *The organization and cultivation of Paulownia seedlings from rootstocks;*
3. *The development of a method of rapid propagation of Paulownia plants;*
4. *To introduce the use of Paulownia tree seedlings in landscaping;*
5. *The development of agro-technical measures for the cultivation of Paulownia tree seedlings;*
6. *To give recommendations on the use of Paulownia tree seedlings in cultivation and landscaping.*
7. *The organization of a service for growing seedlings of Paulownia tree.*

The use of this ornamental plant in landscaping the territory of Syrdarya region has been established. For the first time, pavlovnia seedlings were grown in the saline soil conditions of the Syrdarya region; An optimal method of propagating *Paulownia* in the climatic conditions of the Syrdarya region has been identified; A method of rapid propagation of the Pavlovnia plant was developed;

Further plans include: based on the information and results obtained, a service for the cultivation of *Paulownia* seedlings will be established, -Recommendations for the reproduction of *Paulownia* in unfavorable climates will be developed.

Where should not be *Paulownia* planted?

Paulownia is a tree that does not require much, it loves water, so it can be grown almost anywhere there is water. rN grows in a wide range of environments in a variety of soils. The limiting reasons for the cultivation of this tree are its rapid growth, large size, very strong roots.

Therefore, to my mind, *Paulownia* shouldn't be planted in the following places:

- in the garden area of the house;
- near the foundation or house.

All things considered, we would say that *Paulownia* is not a good choice for decorating private homes not larger than 0.06 hectares (6 acres). Even if the root itself is straight, it can grow horizontally, which can damage the slabs and pave the foundation and cause great damage.

Paulownia tree is mainly found in Japan, South Asia and China. The area of *Paulownia* tree in China is 2.5 million. hectares. This tree is promising for Uzbekistan. *Paulownia* biofuel - pellets are obtained. One ton of pellets burns 480 m³ and 500 l. energy equivalent to diesel fuel is released. *Paulownia* is also used in medicine for the treatment of certain diseases. That is why the demand for this plant is high all over the world. Research on the use of *Paulownia* in landscaping is being conducted in other regions of the country, including Tashkent region. However, in the context of the Syrdarya region, it would be expedient if this work is fully implemented.

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