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# BIOECOLOGICAL PROPERTIES OF JAPANESE SOPHORA (SOPHORA JAPONICA)

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## Abstract

Bioecological features of the Japanese saphora (Sophora japonica L.), its vegetative and generative organs through vegetative and phenological observations in the experimental fields, as well as scientific research on the growth of this tree in Uzbekistan, its use in forestry and landscaping and pharmaceuticals.

**Keywords:** nursery, growth, development, arboriculture, legumes, phenological observations, leaves and twigs, flowers and fruits, wood, vegetation, cambium, wood, cells, starch, fat and glucose substances, bioecological properties, landscaping, pharmaceuticals.

## Introduction

Today, a large-scale research on the development of nurseries around the world, special attention is paid to increasing the share of standard seedlings in the nursery, reducing the growing season, increasing the retention rate of seedlings, improving the quality of greenery. Significant results have been achieved on the basis of scientific research on the management of growth and development of seedlings of Japanese safflower (Sophora japonica L.), increasing the survival rate of seedlings, managing the degree of retention of seedlings when planting green trees.

Japanese sophora (Sophora japonica), belonging to the family Fabaceae, belongs to the family of sophora, egg (Sophora). The category includes trees, shrubs and grasses. Their leaves are complex, odd-lanceolate, the flowers are white to yellow, clustered in clusters, the fruit is pods, the shape is slightly elongated. There are many types of category, three of which have been introduced to the CIS.

Homeland - Central and Western China. Introduced in the CIS since 1897. Batumi, Sukhumi, Adler, Baku; In Central Asia, Dushanbe, Ashgabat, cultivated in the Black Fortress,

flourishes; In Kiev some years before the snow cover there was a cold snap; Grown in the Botanical Garden in Tashkent, damaged by late spring frosts.

**Research style**

The bioecological properties of Japanese sophora are determined by vegetative and phenological observations in experimental fields [3].

**Research results**

The Japanese sophora (Sophora japonica) is a tree over 20 m tall, with broad branches, spherical, and extremely scenic. The bark is cracked in adulthood and darkens, the bark of the horns and twigs is smooth and dark green, with lentils. The leaves are arranged alternately, odd-shaped, consisting of 7-17 ovate leaves [1, 6, 7].

Figure 1. The leaf of the Japanese sophora

Figure 2. The flower of the Japanese sophora

Sophora blooms in May, the flowers are white-yellow, butterfly-shaped, forming a single stalk at the tip of the branch. It is a nectar-producing plant [4, 5].

Figure 3. The fruit of the Japanese sophora

Figure 4. The seed of the Japanese sophora

Dukkagi ripens in October, it hangs on a tree, the surface is rough, does not separate into layers, is filled with a sticky liquid, first green, then dark red. The seeds are black and look like beans.

Arrow and lateral roots develop vigorously, green from the trunk. The tree contains toxins, but it does not harm animals.

Figure 5. General view of the Japanese saffron tree

Sophora wood is woody, hard. Yellow dye is obtained from the fruit. This tree grows naturally in Japan and China. It was brought to the CIS 200 years ago. Relatively damaged by frost, so it is grown in the southern regions of Ukraine, Crimea and the Caucasus. Light-loving plant, does not choose soil, grows well in loamy soil, drought-resistant. Sophora is one of the most beautiful trees. Because it blooms beautifully. It is important to plant it in the mountains to keep the soil from being washed away by rain. Widely used in landscaping. Many have been planted in the landscaping of Tashkent.

The Japanese saffron is located in the seed stalk of the initial stem, forming a stem with seed germination. The leaves are located on this head (main) branch. The main stem forms a branch in the middle of the first growing season, and the following year. Side branches grow from the main branch and begin to branch. Subsequent branching results in the formation of

branches. In all vegetation years, the branches that form the stems are covered with leaves. The buds are located at the tip of the branch and in the leaf axils. The body, and twigs are dark glossy brown for the first 1–2 years, and from subsequent years to dark brown. The Japanese safflower grows throughout the first year, after which the third bud stops growing. In the second year, an axillary bud is formed and grows faster than the third bud. The result is straight and curved bodies of different order at different ages. These characters indicate that the Japanese sophora belongs to the sympodial branching type. The trunk is the main part of the stem from which the twigs emerge.

In the Japanese saffron, the horns grow close to the main body, forming a close and sharp angle with the body. However, as the tree gets older, the young branches on the body begin to hang. This can take the form of a pyramid in the early years of the tree, then a spherical shape, and finally a branch with a branch bent downwards. The Japanese saffron is more branched than the average branched body formed by the legume representatives. This means that they are shade tolerant. The body of the Japanese sapphire consists of bark, cambium, wood, core. The bark of the Japanese saffron is the outer layer of the tan ava root that protects the inner living tissue from the effects of external adverse conditions. The thickening of the body does not cause the Japanese sapphire bark to rupture. The bark of the Japanese saffron looks very nice in the early years when it is dark green on the main body, then this dark green color turns dark brown. This process is also observed in the upper branches of the tree trunk.

Beneath the bark is a layer of lub, which contains elliptical tubes, mechanical fibers of lub, parenchyma cell, and core rays of wood. Lub fibers are mechanical cells that are elongated and extremely mature. Their walls thicken and wood. The part that begins to wood turns into bark, and the protaplast dies and its place is filled with air and water. Lub fiber is 1 mm long and about 0.25 mm in diameter. The parenchyma cells in the lube contain substances such as starch, fat and glucose. The cambium is a forming tissue in which the meristem tissue is located at the base of the lub layer. The cells of the cambium divide all the time, resulting in the formation of bark and wood layers. The shell of the cells is soft and composed of cellulose, and the inner cavity is filled with a nucleated protoplast. Cambian cells divide by a

tangential barrier. These dividing cells turn into wood and lub cells, such division continues uninterrupted. While most of the dividing cells (4 to 10) turn into wood cells, the rest turn into lub cells, so the wood part of the body becomes thicker and thicker. The wood is located at the bottom of the cambium layer. In the wood of Japanese safflower trees there are a lot of so-called mechanical elements - wood fiber (nay). Wood fibers consist of sharp-tipped cells 0.3-1.5 mm long. The walls of the cells are thick and woody, and in adulthood they are completely destroyed, and reserve substances accumulate in the third cavity.

Several rings can be seen when crossing the body of a Japanese saffron. Each of these rings indicates the age of the plant. The nucleus accumbens is a core tissue located in the central part of the body composed of thin-walled parenchymal cells that form the nucleus accumbens. When the body is cut transversely, these tubes appear in the form of small circles. The body transfers aqueous solutions containing various nutrients to the leaf, and organic matter from the leaf to the root and other parts. Japanese saffron buds are mainly located at the beginning of the leaf axils. In the spring, when water begins to move in the body of the Japanese saffron, the buds sprout and turn green, and the leaves and twigs begin to grow. At the bottom of the branch, the buds turn into dormant buds without bruising, and in this case can be stored for many years. they form sprouted twigs if the tip of the twig is broken, damaged by cold, insects or animals, if necessary. There are also adventitious buds on the Japanese saffron. In Japanese sophora, it enters the flower at the age of 4-5 years, forming generative buds. These buds form a lump without a ball. Japanese safflower is one of the deciduous trees. The leaves completely cover the branches of the Japanese safflower and perform the function of photosynthesis. The leaves are green, arranged in a row.

## Conclusion

By studying the bioecological properties of the Japanese safflower tree, it can be noted that in the conditions of Central Asian countries, including Uzbekistan, this tree can grow well and be used in forestry and landscaping, as well as in the pharmaceutical industry.

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