



## INFLUENCE OF SEED FORMATION CONDITIONS OF CATALPA SPECIES ON THEIR GERMINATION UNDER VARIOUS SALT CONDITIONS

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### ANNOTATION

The article discusses the features of the influence of formation conditions on their germination of seeds of 3 species of *Catalpa* in various salinity conditions of Karakalpakstan. Species of the genus *Catalpa* (family Bignoniaceae) are promising woody introduced plants for landscaping in the conditions of Karakalpakstan.

**KEY WORDS:** soil, climate, conditions, salinity, temperature, seeds, germination.

The Republic of Karakalpakstan is located in the northwestern part of Central Asia and has unfavorable soil and climatic conditions, the extremeness of which has increased due to the deterioration of the environmental situation in the zone of influence of the Aral Sea.

Soil and climatic features of Karakalpakstan - soil salinity, large daily and annual air temperature amplitudes, low air humidity and strong solar heating - place special demands on introduced species. [2].

The species composition of woody vegetation of the natural flora of Karakalpakstan is not rich. For the purpose of landscaping Karakalpakstan, introduced species of plants are used.

Species of the genus *Catalpa* (family Bignoniaceae) are promising woody introduced plants for landscaping in the conditions of Karakalpakstan.

The genus includes about 10 species distributed in North America, Western India, and East Asia [1].

Currently, *C. bignonioides* Walt., *C. speciosa* Ward., and *C. ovata* G. Don are the most common in culture [3].

*Catalpa* is a beautifully flowering ornamental plant that gives good shade. The root system is taproot, the crown is pyramidal, rounded or tent-shaped, height

15-30 m. The leaf arrangement is opposite or whorled with very large heart-shaped leaves.

The area of natural distribution of *C. bignonioides* southeast North America from Georgia to Florida and Mississippi, usually grows on the banks of rivers, and in species *C. speciosa*, the distribution area of the USA is south. Illinois, Indiana, Kentucky, Tennessee, Arkansas and Missouri and grows along the banks of rivers and reservoirs on sufficiently moist, deep and rich soil and *C. ovata* center. China: Hubei province (from 600 to 1000 m abs. alt.) and Shandong. It grows along the edges of the forest and in open places [1].

Chinese and American *catalpas* usually grow along the banks of rivers, reservoirs and streams, where soils are formed from river sediments and are periodically flooded; they are moist and fertile [3].

We studied the influence of the conditions for the formation of seeds of *Catalpa* species on their germination under various salinity conditions.

According to S.I. Sagitov (1989), under conditions of strong salinity, it was not possible to obtain seedlings of seeds of introduced woody plants in the first and second years, so only one cutting of 120 cuttings of honeysuckle took the most heavily saline area [4].

And according to I. A. Sultanbekova (2012), the laboratory germination of *G. officinalis* seeds in the control is higher - 93.8% than in plants from a saline background - 76.8%, the response of *G. officinalis* plants to soil salinity is the development of lower quality seeds with low germination capacity [5].

Seeds collected in three places: in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan (Tashkent), in the Botanical Garden. Amir Temur (Buston) and the streets of Nukus 3 species of catalpa: *C. bignonioides* Walt., *C. speciosa* Ward., and *C. ovata* G. Don. (Nukus) on very strongly saline (Cl -

1.065%, SO<sub>4</sub> - 2.28% in 0-10 cm layer) soil. In 18-20 days after sowing, in the 3rd decade of April, the first shoots began to appear from the seeds of these species.

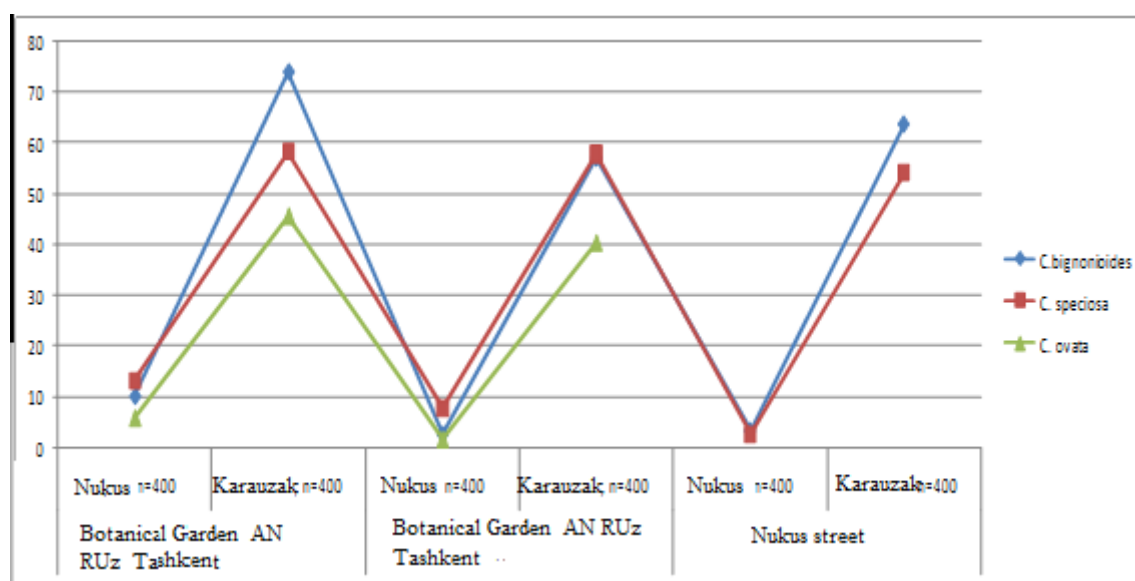
The seeds of the same 3 species were sown on April 12, 2012 in the Karauzyak region on moderately saline (Cl - 0.213%, SO<sub>4</sub> - 0.408% in 0-10 cm layer) soil. 12-16 days after sowing, in the 3rd decade of April, the first shoots began to appear from the seeds.

Among these species, *C. bignonioides* and *C. speciosa* are widespread in North America and *C. ovata* in Western India and East Asia [1]. Seed germination is presented in table. 1. and charts.

**Table 1**

**Seed germination of species of the genus *Catalpa*, %**

| №  | Species                | Nukus, n=400 | Karauziyak, n=400 | P |
|--|------------------------|--------------|-------------------|---|
| Seeds collected in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan, Tashkent |                        |              |                   |   |
| 1  | <i>C. bignonioides</i> | 10±1,5       | 74±2,19           |   |
| 2  | <i>C. speciosa</i>     | 13,2±1,69    | 58,2±2,76         |   |
| 3  | <i>C. ovata</i>        | 5,7±1,15     | 45,5±2,48         |   |
| Seeds collected in the Botanical Garden named after A. Temur, Buston                                       |                        |              |                   |   |
| 1  | <i>C. bignonioides</i> | 2,5±0,78     | 57±2,47           |   |
| 2  | <i>C. speciosa</i>     | 7,5±1,31     | 57,7±2,47         |   |
| 3  | <i>C. ovata</i>        | 1,5±0,60     | 40,2±2,45         |   |
| Seeds collected on the streets of Nukus  |                        |              |                   |   |
| 1  | <i>C. bignonioides</i> | 3,2±0,88     | 63,7±2,40         |   |
| 2  | <i>C. speciosa</i>     | 2,5±0,78     | 54,2±2,49         |   |



**Rice. 1 Seed germination of species of the genus *Catalpa***

Table 1 shows that on very strongly saline soils (Nukus city), seed germination was of species of the genus *Catalpa*: in *C. bignonioides* -10%, *C. speciosa* - 13.2% and *C. ovata* -5.7% (seeds collected in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan, Tashkent), and the Buston seed germination was 2.5% - 7.5% - 1.5% and the Nukus seed germination was 3.2% - 2.5%.

In Karauzyak district, on moderately saline soil, *C. bignonioides* - 74%, *C. speciosa* - 58.2% and *C. ovata* - 45.5% (seeds collected in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan, Tashkent), and Buston seed germination was 57% - 57.7% - 40.2% and Nukus seed germination was 63.7% - 54.2%.

Thus, under very highly saline conditions, the germination of seeds of *Catalpa* species develops poorly than in contrast to moderately saline soils.

Consequently, *C. speciosa* thrives well in highly saline soils than other species, while *C. bignonioides* thrives well in moderately saline soils, unlike other species.

## LITERATURE

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