

PROPAGATION OF PAPER TREE (*BROUSSONETIA POPYRIFERA L.*) FROM SEED AT DIFFERENT PERIODS

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Abstract. *This article presents the results of the research on the evaluation of the parameters of reproduction of the paper tree from seeds, and describes the experimental work on planting paper tree seedlings in the generative method in different periods. The second decade of February, the third decade of February, the first and second decades of March were taken according to the growing periods. The temperature of the experiment area was monitored. Each experimental area was selected with a width of 1x1. During rooting of the paper tree on the basis of its seeds, the temperature index of the area is 18-24°, the air humidity is 40-50%, the sand humidity is 30-40 degrees depending on the temperature (according to the indicators of the soil moisture measuring device mainly) observed. It was observed that the indicators of paper tree plant germination depend on the time of planting seeds. Taking into account the relative humidity of the air and the evaporation of water into the air, 10-12 liters of water were poured into each experimental area in 7-8 days, and the results of the research on the terms of germination and irrigation are presented.*

Keywords: *paper tree (*Broussonetia papyrifera L.*), propagation from seeds, sand, air humidity, planting time from seeds, indicators of germination from seeds.*

Introduction. Today, it is important to expand the assortment of plants used in forestry and greening on a global scale. Special attention is being paid to culturalization of forest plants, wider use of their medicinal and decorative properties, and creation of landscape compositions by planting in forestry lands and around cities. Among the plants of the world of medicine, paper tree is a plant that grows well in Europe and South-East Asian countries due to its useful properties and practical use.

Development of agrotechnics for reproduction of forest plants and introduced plants, in particular paper tree, and establishment of plantations remains one of the urgent issues of today.

In the countries of the world, scientific and research work on improving the bioecological characteristics and breeding methods of landscaping and ornamental plants is widely developed. A number of scientists on the introduction and breeding of landscape plants, including N.I. Kolesnikova, F.N. Rusanov, L.V. Yaskina. etc. have excelled in their scientific work. Greening of ornamental plants introduced in the conditions of Central Asia and Uzbekistan has been studied by scientists for many years. Including, N. I. Denisov (2004), O. V. L. Holonec (2007), F. N. Rusanov, M.R.Q. – 2009, K.Saito Agroforestry systems – 2009, H.W.Ryu – 2010, I.Slavkina, I.V. Belolipov, N.I. Shtonda, A. P. Siorba 2015, A. V. Shutka (2015), K. O. Mkhitarian (2016), N. A. Trusheva (2019), Y. V. Dyachenko, etc., have carried out many scientific works on the development of the field.

In the process of studying the problem, it is shown that no studies have been conducted on the relationship of paper tree (*Broussonetia papyrifera L.*) plants to environmental factors in the conditions of Uzbekistan, the selection and statistical analysis of their promising forms in greening, the development of methods for creating promising varieties by carrying out selection work [7].

Accordingly, the development of agrotechnics for the reproduction and establishment of plantations of the paper tree in the conditions of Uzbekistan is an urgent issue. By breeding this tree species, promising results can be achieved by greening forest lands, highways, degraded lands, many landscape parks and residential areas.

The fruits of the paper tree (*Broussonetia papyrifera* L.), native to Japan and China, contain various substances and were analyzed for their chemical composition and antioxidant activity in ethanol and aqueous extracts. The fruit of this plant has been found to contain high protein.

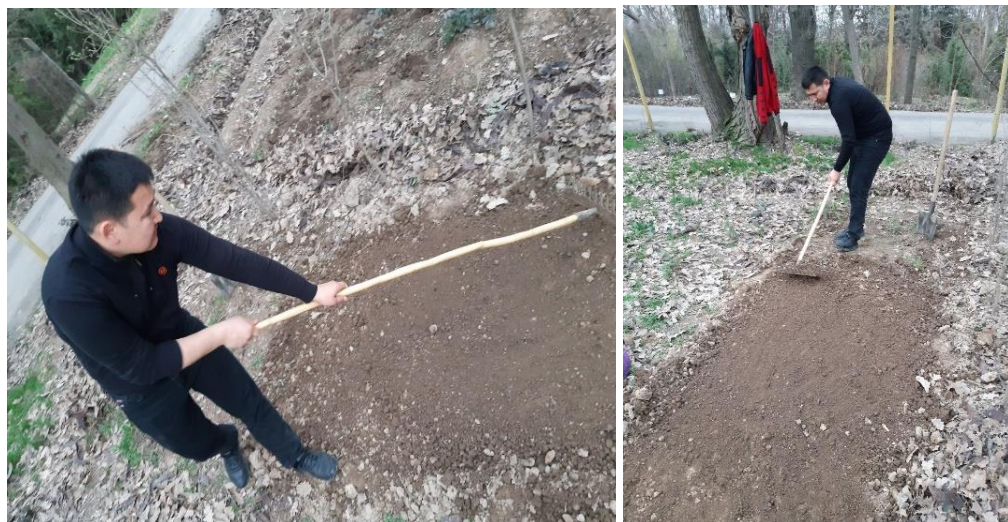
When breeding a plant, it is necessary to know its bioecological features specific to its type. It is necessary to evaluate whether the generative or vegetative method is effective in plant reproduction. Our experiments have shown that the propagation of the paper tree from vegetative organs is the most effective method. As a result of our experiments, studies on the duration of vegetative rooting and irrigation norms are ongoing.

Materials and methods. The bioecological parameters of the paper tree (*Broussonetia papyrifera* L.) selected for the experiment were studied. Taking into account the planting dates, paper tree seeds were placed in water for stratification in the experimental area. Based on the timing of sowing seeds, the first sowing process was planted in the second decade of February, the second sowing process was planted in the third decade of February, the third sowing was planted in the first decade of March, and the fourth sowing was planted in the second decade of March. During the experiments, the indicators of germination and the speed of rooting during the planting period and its durability were determined. The process of leaf formation in sprouted seedlings was evaluated. The temperature of the experimental area was monitored. During the germination of seeds, the temperature indicator is required to be 18-24°C.

Air humidity should be 40-50%. Soil and sand moisture should be 30-40 degrees depending on the temperature (based on the indicators of the soil moisture meter (WaterScout SM 100)).

Result and Discussion. In order to determine the parameters of propagation of paper tree seeds, observation results were recorded in 8-10 days. Taking into account the evaporation of water into the air, 10-12 liters of water was poured into each field where seeds were planted in 7-8 days. Thanks to these observations, the terms of germination and irrigation were determined.

Experiments were carried out in several periods due to the fact that the planting periods for paper tree propagation from seeds differ from each other.





1 picture. Acad. The process of experimenting with paper tree seeds in the Tashkent Botanical Garden named after F.N. Rusanov.

In the Tashkent Botanical Garden named after Academician F.N. Rusanov, paper tree seeds were planted in 4 periods and monitored based on irrigation standards. Based on the sowing dates, the first sowing process was planted in the second decade of February, the second sowing process was planted in the third decade of February, the third sowing process was planted in the first decade of March, and the fourth sowing process was planted in the second decade of March, and the germination and development indicators were studied.





2 pictures. Appearance and germination process of paper tree seeds.

According to the results of monitoring, the following was determined:

- In the second decade of February, it was observed that the air temperature was 18-20 0C, and the germination rate of the sown seeds was 40%.
- In the third decade of February, it was observed that the air temperature was 20-22 0C, and the germination rate of the sown seeds was 50%.
- In the first decade of March, it was observed that the air temperature was 26-28 0C, and the germination rate of the sown seeds was 80%.
- In the second decade of March, it was observed that the air temperature was 30-32 0C, and the germination rate of the sown seeds was 30%. *Table 1.*

Results of propagation of paper tree from seed in different periods.

Option number	Germination indicators		Percentage of sprouted seedlings
	Air temperature	Soil moisture level	
Second decade of February	18-20	35-40	40
The third decade of February	20-22	35-40	50
The first decade of March	26-28	30-35	80
Second decade of March	30-32	25-30	30

Conclusion and Recommendations. In the course of the research, it can be concluded that propagation of the paper tree from seeds gives good results if the planting dates are selected correctly depending on the air temperature. Based on the results of the experiments, air temperature indicators of 25-30°C, soil moisture level of 30-35% are necessary indicators for seed germination.

For reproduction in sand, soil and other similar compounds, it is recommended to use special containers (made of wood) or special plastic containers 15-20 cm high, 0.5x1.0, 1.x1, 1x2 meters in size. When propagating a paper tree from seeds, the air temperature, soil moisture level and planting period should be selected correctly. According to it, in the first decade of March, the air temperature should be 25-30oC, and the soil moisture level should be 30-35%. It was found that 80-90% of paper tree seeds sown in this period and temperature.

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