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Vegetative propagation of black mulberry (Morus, nigra L) recommended for landscaping roads and city streets

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Annotation: Today, special attention is paid to the identification of highly decorative, promising plant species that are resistant to various external harmful factors, and the development of effective and optimal methods for rapid reproduction as priorities for landscaping roads. In this regard, representatives of the mulberry (Morus, nigra L) have a wide decorative potential, the development of fast and effective methods of propagation from seeds and vegetative propagation, the evaluation of the effectiveness of use in landscaping is of great scientific and practical importance.

Introduction

Particular attention was paid to research on the identification of highly picturesque, promising plant species resistant to various external harmful factors, and the development of effective and optimal methods for rapid reproduction as priorities for greening roads in the world. In this regard, new varieties and forms of ornamental species were created, the possibilities of trees and shrubs in modern gardening were assessed, new methods of vegetative reproduction were created, and optimal methods of propagation from seeds were improved. It should be noted that representatives of mulberry (Morus, nigra L) have a wide range of decorative potential, the development of fast and efficient methods of propagation by seeds and vegetative propagation, the evaluation of the effectiveness of use in landscaping is of great scientific and practical importance. importance. In order to continue the reforms carried out in all areas, the Development Strategy of the Republic of Uzbekistan for the period 2022-2026, known as "New Uzbekistan", was developed, and the Road Map project was created for its implementation. This strategy includes seven priorities. On August 31, 2021, the opening ceremony of the "New Garden of Uzbekistan" was held, dedicated to the 30th anniversary of the Republic of Uzbekistan. General view of the park with an area of 104 hectares in the form of five kings of trees, corresponding to the directions of the strategy of action. Quiet zones have been created here where people can relax in the bosom of nature. There is a growing demand for saplings of decorative tree species in large quantities for landscaping cities and villages of our republic. This poses important tasks for nursery farmers, such as breeding high-quality and inexpensive ornamental seedlings that meet standard requirements, developing a technology for rapid cultivation

Material And Research Methods

Field and production experiments, preparation of seed and stem cuttings, determination of seed quality indicators, care of seedlings, calculation of the standard yield of seedlings, selection and evaluation of promising forms 3317-90 (QzDSt 322.15.04.2009). The study and evaluation of mulberry species (Morus, nigra L) according to scenic characteristics in landscaping roads is carried out according to the method of N. I. Shtonda. The generally accepted criteria for statistical processing of the obtained data are also B.A. Dospekhov is carried out according to the method "Methodology of field experience". When calculating the economic efficiency, the results of the “Example of technological maps for the care of the main crops and the production of products. For 2016-2020 (Part II)" (2015). Carried out according to the reference book "Seedlings of trees and shrubs", 26869-86 (QzDSt 322.15.04.2009). Scientific research is carried out on the

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basis of the following program. 1. Study of the bioecological features of the mulberry plant (Morus, nigra L) in the picturesque landscaping of roads in the conditions of Uzbekistan; 2. Improving the technology of vegetative propagation of mulberry plants (Morus, nigra L) in landscaping roads in Uzbekistan; 3. Improving the technology of using mulberry seedlings (Morus, nigra L) in landscaping green spaces on highways; 4. Development of technology for the care of seedlings of the mulberry tree (Morus, nigra L) in landscape gardening of highways; 5. Determination of the economic efficiency of growing mulberry seedlings (Morus, nigra L) in the landscaping of roads. Phenological observations of I.N. Beideman "Methodology and study of plant phenology", "Vegetative propagation of plants", developed by M. Brouz for the purpose of vegetative propagation of trees and shrubs, assessment of picturesqueness by N.I. Made in the style of a bench. The generally accepted criteria for statistical processing of the obtained data are also B.A. Dospekhov is carried out according to the method "Methodology of field experience". When calculating the economic efficiency, the results of the “Example of technological maps for the care of the main crops and the production of products. For 2016-2020 (Part II)" (2015). Determination of soil and climatic conditions of the place of the experiment. To determine the biological and ecological characteristics of the mulberry (Morus, nigra L) plant species, their phenological phases are studied, with special attention paid to the periods of flowering. To determine the dynamics of annual growth, the height of the cuttings and the diameter of the root neck are measured every month and entered in a special table. The study of bioecological features of the mulberry plant (Morus, nigra L) in the landscaping of roads in the conditions of Uzbekistan. The study of the theoretical foundations of the use of mulberry (Morus, nigra L) species in road landscaping. Scientific literature, foreign literature, dissertations, articles, Internet information and other sources on the topic Libraries, scientific databases Google Scholar and Scopus, Information Resource Center Tosh DAU, Library of the National Research Center for Forestry, Tashkent, Rusanov Botanical Garden Library, Republic Uzbekistan Alisher Navoi Navoi, is studied and compared with its current state. To determine the possibilities of vegetative propagation of the mulberry tree (Morus, nigra L) when landscaping roads, dividing bushes and propagating by cuttings using growth stimulants, solutions of different norms are prepared and cuttings are placed. by options. In the experiments, a growth stimulator was used, consisting of "4 (indolyl-3-yl) fatty acid" and "24-epibrassinolide" in 3 versions. Distilled water is used as a control. Selection of varieties of mulberry (Morus, nigra L) for landscaping roads, determining the duration of flowering. When landscaping roads, mulberry (Morus, nigra L) and its species are selected according to decorative and promising forms according to flower color, flowering duration, flowering duration study, experiment or module numbers. are carried out on selected plant species, and experiments are carried out by the method of modular selection of plant species. Economic efficiency of work. When analyzing the economic efficiency of the work, the importance of the mulberry plant (Morus, nigra L) in the landscaping of selected highways was studied. In order to determine the economic efficiency, the maintenance costs for one year are deducted from the proceeds from the sale of mulberry seedlings (Morus, nigra L) in road landscaping and the net profit is calculated. The economic efficiency of work is analyzed using tables and charts.

Results Of Research

Vegetative propagation of forest tree seedlings is mainly used in years when there are no seeds or when they are harvested in small quantities, and good results can be obtained using this method. Vegetative propagation is the asexual propagation of trees and shrubs, examples of which are propagation by cuttings, propagation by grafting, and propagation by grafting. When seedlings are propagated by the vegetative method, all properties of the mother plant and signs of its economic value are completely preserved. With this method, the work of growing seedlings will accelerate, moreover, it will not be associated with the release of seeds. Trees and shrubs such as poplar, grapes, willow, plane tree, blackberry, fig, pyracantha, cypress, Syrian rose, mahonia, snowberry, forsythia are propagated by cuttings. To do this, annual branches are cut into several pieces and a pack of 100 pieces is buried in moist soil or sand. The cuttings are 20-30 cm long and 0.5-2.0 cm thick. Before planting, they are stored in sandy (8-10 cm) pits or trenches with a moisture content of 60-70%. If the prepared cuttings are placed in 0.6x0.20 m, there are 83,000 pieces per 1 ha of land, and 92,000 pieces in 0.7x0.15 m. Prepared cuttings are planted in a straight line in a parallel row vertically or at a slight slope, leaving 2-5 cm above the ground, leaving one or two buds. Water immediately after planting and treat after 2-3 days. Methods have also been developed for growing several types of trees from green shoots (juniper

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virginiana, spruce, camellia, rose species, Farsisia, Syrian rose). To do this, in May-June, cuttings with 1-2 buds are cut on the one-year-old part of the branch. It is planted in the lower prepared rows so that the branches can take root. They are covered with materials of different thicknesses. Before planting branches, manure, sawdust and river sand are mixed and leveled to a thickness of 2-4 cm. The distance between the branches is 5x4 cm, planted to a depth of 2-3 cm. humidity 90%, and grown in conditions where the temperature does not exceed 30 ° C, green shoots take root within a month. In the autumn and winter months, they are covered with various straw, shavings, and a film to protect them from the cold. Green shoots that have formed roots at the cuttings are transplanted into the nursery. One of the most common methods of vegetative propagation is cuttings. Mulberry (Morus, nigra L) was vegetatively propagated in the Tashkent Botanical Garden named after Academician F.N. Rusanov. Since Mulberry (Morus, nigra L) is an introduced plant, rooting characteristics were studied based on 3 regressions from lignified and semi-lignified cuttings. In the Tashkent Botanical Garden in March-July-September, wooden cuttings of the Indian nastrani bush were harvested. The cuttings are 10-15 cm long and come in three sizes: thick, medium and thin. Prepared cuttings were frozen for 15-20 minutes in a mixture of control, root and gummate stimulants. The sand was evenly levelled. For 15-20 minutes, the cuttings thawed in stimulators were nailed to a foggy structure at a slope of 35-400. The cuttings were watered every 2 hours due to the high air temperature. The top of the rain structure is covered with a polyethylene cover. The temperature of the greenhouse was provided at the level of 20-24ºC. Agricultural activities were carried out on time. Weeded, fed, watered. Cuttings are watered 2-3 times a day from sprinklers. This is due to the fact that the cuttings require a lot of water in the first days of planting. After 15-20 days, new leaves appeared on the cuttings. Feathers were constantly cared for.

Table 1. Planting dates and number of root formation of cuttings of mulberry (Morus, nigra L)

№	Mulberry (Morus, nigra L)		Duration			Length and number of roots
			Sowing period	The period of callus formation	Root length (cm)	Quantity, (pcs)
1	Mulberry (Morus, nigra L)	Control	02.03.22	16.03.22	2-4	1-2
			18.07.22	05.08.22	2-8	2-3
			17.09.22	16.11.22	1-2	1-2
		Kornevin	02.03.22	14.03.22	4-8	3-6
			18.07.22	29.07.22	6-12	4-8
			17.09.22	15.11.22	2-6	2-4
		Gummat	02.03.22	15.03.22	4-8	2-4
			18.07.22	31.07.22	6-10	2-6
			17.09.22	15.11.22	3-5	1-3

The 1st repeat has been increased for the spring season. The cuttings were planted on March 2, 2021. Callus formation period: March 14-16, 2021 First thin branch length 8 cm, thick branch length 10 cm Rooting time: observed May 3, 2019 Main root length 14 cm, secondary root length 8 cm. 2nd return was made in summer. The cuttings were planted on July 18, 2021. Callus formation period: July 29-31, 2021 The length of the first thin branch is 6 cm, the length of the thick branch is 10 cm. was increased in the autumn season. The cuttings were planted on September 17, 2021. Callus formation period: November 15-16. The length of the first thin branch is 5 cm, the length of the thick branch is 8 cm. Time of release of the root: January 15, 2022. The length of the main root is 5 cm, and the length of the additional root is 9 cm. Planted cuttings were constantly looked after and mineral fertilizers were applied (see Table 1).). Green cuttings of mulberry (Morus, nigra L) were prepared by cutting 10-12 cm long. Cuttings of 10-12 cm were planted in the soil at a depth of 5 cm. Cut cuttings were soaked in clean water for 24 hours. After 1 day, the finished cuttings were immersed in stimulating solutions and planted at a slope of 40-450C to accelerate their growth. Cuttings planted on the 10-12th day form a callus. A month later, the cuttings began the process of formation of the main and adventitious roots. The length of the main roots is 14 cm, the length of the adventitious roots is 7-8 cm. The planted cuttings were continuously watered and the air temperature was continuously measured. Grown up and rooted cuttings are planted in the ground without damaging the roots. When transplanting into

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the ground, they study the condition of the soil. The composition of the soil for the good growth of Indian mustard: clean river sand, hilly earth, humus-rich earth and humus-rich earth in a ratio of 1: 1: 1: 1.

Discussion Of The Results

Mulberry seedlings (Morus, nigra L) can be used as an ornamental tree species that is resistant to poisonous gases in the air, drought and cold in landscaping roads. Mulberry (Morus, nigra L) can be used for landscaping city streets and avenues, taking into account the climatic conditions of almost all regions of our country.

Conclusion:

In the case of mulberry cuttings planted on March 2, when carnevin was added to the plant mass, callus formed 2 days earlier than in the control, and the root length increased by 4 cm. In mulberry cuttings with ganmat fertilizer, callus formed 2 days earlier than in the control, and the root length is 4 cm. It turned out that there are 4 times more roots than growth. In the case of gummate, the callus is formed 1 day earlier than in the control, and the root length is 4 cm. This shows that the number of roots is 2 more than the growth advantage.

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