WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 5, Issue 6, June - 2024

ADAPTATION OF MULBERRY TREE SEEDLINGS TO OUTDOOR CLIMATE FROM IN VITRO GROWTH

Rahmonberdiyev Vahobjon Karimovich
Docent, Tashkent State Agrarian University

Quziboyeva Mahliyo Farhod qizi
Trainee Researcher, Scientific Research Institute of Silk Industry

Abstract
Studying the amount of mulberry seeds obtained from mulberry trees intensively established from mulberry branches propagated from leafy cuttings in summer using innovative technologies in indoor areas and from old-type seed mulberry trees and determining the economic efficiency based on the results of the research conducted on one hectare.

Keywords. Pen, leaf, stem, potassium, phosphorus, nitrogen, film, seedling, box, variety and hybrid.

Introduction

The mulberry tree is one of the most important trees in terms of economic efficiency, and it is a very valuable tree that is highly heterozygous for its longevity and cross-pollination of new species.

Widely distributed throughout Central Asia, it is resistant to diseases and pests, abiotic stress reactions, saline soils, used to polish sizot waters, and is the sole food of the mulberry silkworm.

Mulberry fruit is used in several fields, such as pharmaceuticals, cosmetics, food industry. If mulberry leaves are used as tea and as a nutritious feed in animal husbandry, molasses, mulberry raisin, various drinks are made from its fruits, and they are used as feed for fish and various poultry. The root is used for dyeing and medicine, and the mulberry trunk is used as a raw material for making various musical instruments.

Multiplying mulberry using modern marker-associated selection methods, in order to continuously develop the food base of the silkworm is to increase the size of mulberry tree with high nutritional value, high-yielding seedling size in vitro and to develop agrotechnology of primary seedling cultivation.

It is recommended to produce the results of scientific research by effectively using the "Smart Greenhouse" designed to maintain the temperature and humidity of the air inside the special greenhouse, as well as the level of sunlight.

Light is also important in accelerating rooting in mulberry cuttings. Sunlight is especially necessary for the rooting of leafy cuttings, because direct sunlight enhances the absorption apparatus, but causes the decomposition of chlorophyll, burning, and wilting of leaves, so we should shade the greenhouse or greenhouses on hot sunny days until the cuttings take root.

To do this, one day before the cutting of the growing one-year variety, 1/2-1/3 of its leaves are removed with garden shears or ordinary scissors. Water reflection through the leaf is reduced when the mowed area becomes dry.

Inside the device, 3 planting strips with a width of 1.2-1.5 m were made, and a path of 50-60 cm width was left between each. The pen planting strip mainly consists of three layers, and the lowest layer consists of fine gravel 20-25 cm thick and serves as a drainage (wet absorbent).

In order to accelerate the rooting of cuttings, before planting them, 50 mg of indolyl acetic acid. is placed in its solution in water for 12 hours. Then it is planted in moistened sand in a scheme of 7x5 cm. It is necessary to ensure that the humidity of the room is 90-100% before rooting, 75-85% after rooting, and the temperature is +24-27 degrees. After moisture is created with the help of an automatic water sprinkler, the pen is fed 3 times with nitrogen, phosphorus and potassium fertilizers. The last fertilizer is given in the first half of August. From the second half of July, windows and films were periodically opened to adapt the pens to the outside air. At the end of August, the films were completely removed.

Indicators of rooting of mulberry leaf cuttings and rooting in a specially organized layer for the development of the root system

Specially organized layer composition	Rootability of cuttings, %				
		Jarariq 2 variety %	Jarariq 7 variety %	САНИИШ 43 variety %	Pioneer variety %
River sand - control		69,3	71,2	70,7	78,3
Sand + humus, 1:3		85,0	86,0	85,0	84,2
Sand + sawdust, 1:2		80,8	81,2	80,8	81,0
Sand + rice bran, 1:3		79,2	79,8	79,2	79,9

River sand from specially organized layers was taken as a control option. Jarariq-2 variety made 69.3%, Jarariq-7 variety 71.2%, Saniish-43 variety 70.7% and Pioneer variety 78.3%. The mixture of sand + sawdust in the ratio of 1:2 was 80.8% in Jarariq-2 variety, 81.2% in Jarariq-7 variety, 80.8% in Saniish-43 variety and 81.0% in Pioneer variety. The mixture of sand + rice bran in the ratio of 1:3 has slightly higher fertility compared to the control layer, and it was 79.2% in Jarariq-2 variety, 79.8% in Jarariq-7 variety, 79.2% in Saniish-43 variety and 79.9% in Pioneer variety. The mixture of sand + humus in the ratio of 1:3 showed a higher index compared to all layers, and it was 85.0% in Jarariq-2 variety, 86.0% in Jarariq-7 variety, 85.0% in Saniish-43 variety and 84.2% in Pioneer variety.

When studying the adaptation process of climate-adapted primary mulberry seedlings to the soil mixture, i.e., to in vitro conditions, plastic and paper boxes were also used in the adaptation of healthy primary mulberry seedlings. Mulberry seedlings obtained in vitro were planted in different containers. The boxes are closed with polyethylene films.

In this case, polyethylene films are gradually opened from the edge of the box. The adaptation process continued for 20-25 days. In this method, the adaptation process ensures that 90-95% of the healthy initial mulberry seedlings are kept in open field conditions. A recommended biotechnological method is microclonal propagation from tissue and cell culture of plants that are difficult to reproduce by conventional methods. Compared to the traditional vegetative reproduction method, the in vitro reproduction coefficient is higher, the selection process is accelerated due to the use of meristem tissue cultures, i.e., the transition of the plant from the juvenile period to the reproductive phase, as well as the absence of bacteria and fungi, microorganisms and other infectious diseases, the genetic similarity of the obtained plants with the mother plant and the availability of planting material in a short period of time is different.

The ability to grow plants year-round in laboratory conditions cut off from the external environment, and to keep plants in glass containers at low temperatures for years provides the opportunity to always have the original mother material. The advantage of the work is the possibility of organizing it throughout the year, saving the space needed for growing planting material in stages, as well as the possibility of automating the growing process.

In vitro breeding of mulberry varieties and hybrids with high productivity, adapted to the soil composition of the cultivated area, in vitro, is important for strengthening the food base of silkworms in our Republic.

According to the conducted experiments, it was found that mulberry cultivars and hybrids in WPM (Woody plant medium) nutrient medium take full roots in 21 days, the plant height is 8-12 cm, the number of roots is 7-13 pieces, and the length of the roots is 6-11 cm. The method of breeding primary mulberry seedlings in special facilities with microclimate control, and using a 1:1:1 ratio of sand + humus + soil as a substrate and planting in a 10 x 10 scheme, air temperature 23-250 C, relative humidity 65-70%, seedling growth It was found to be effective for. Planting of seedlings adapted to the open field after adaptation in special facilities in a 20 x 60 scheme was found to be effective. A new agrotechnology for obtaining healthy seedlings was developed and put into practice based on the technology of in vitro microclonal reproduction of the Jarariq-9 variety of mulberry and the hybrid of Uzbekistan. Development of technology for establishing mother mulberry plantations in a protected and open area, which allows rapid reproduction of high-quality sprouts and seedlings of new valuable varieties of mulberry in special facilities with microclimate control, which allows obtaining up to 500,000 standard seedlings from a unit of nursery area in 5-6 months.

Conclusion

It was found that mulberry cultivars and hybrids in WPM (Woody plant medium) medium take full roots in 21 days, plant height is up to 8-12 cm, the number of roots is up to 7-13, and the length of the roots is 6-11 cm. The method of breeding primary mulberry seedlings in special facilities with microclimate control, and using a 1:1:1 ratio of sand + humus + soil as a substrate and planting in a 10 x 10 scheme, air temperature 23-250 C, relative humidity 65-70%, seedling growth was found to be effective for After adaptation in special structures, it was found that it is effective to plant seedlings adapted to the open field in a 20x60 scheme. The highest result was achieved in the composition of sand + humus, 1:3, a specially prepared layer for propagation of mulberry varieties from leaf cuttings in the summer months. Jarariq 2 variety 85.0%, Jarariq 7 variety 86.0% SANIIsh 43 variety 85.0%, Pioner variety 84.2%. The advantages of using devices in the experiments are the presence of special sensors that measure temperature and humidity, light level, remote control, and as a result, costs related to production in the field have been reduced by 15 percent. The use of innovative technologies in agriculture has resulted in high productivity and quality, reduced product costs and water consumption. The introduction of smart technologies arouses interest in this industry among industry experts. This opens the way for the increase of new jobs in the sector.

References

1. Й.Й. Мирзайева. М.Сабирова “Тутчиликда биотехнология” ўқув қулланма Тошкент: ТошДАУ таҳририят-нашриёт бўлими, 2023. – 156 бет
2. Й.Й. Мирзайева. Н.А.Хўжамшукуров “Тутни ин вито усулида кўпайтириш ва бирламчи кўчат этиштириш агротехнологияси” услубий қўлланма Тошкент: “Фан зиёси” нашриёти, 2023. – 124 бет
3. Й.Й. Мирзайева. Н.А.Хўжамшукуров “Янги агротехнология асосида тутни ин витро усулида кўпайтириш ва бирламчи кўчат этиштириш услубиёти” Монография. Тошкент: «Наврўз» насъҳриёти, 2021. – 28 бет
4. В. Рахмонбердийев. “Тут дарахти селекцияси” дарслик.ЎзР Фанлар Академияси Асосий кутубхонаси” босмахонаси “Фан зиёси” насъҳриёти. 2022 й. Гувоҳнома № 237-745.
5. Ш. Р. Умаров.Б. У. Насириллаев. Й.Й.Мирзайева. “Тутчиликда илмий тадқиқот услублари” дарслик. Ўзбекистон республикаси Олий ва ўрта махсус таълим вазирлиги 2022 йил. 17 март. № 106 сонли буйруғи. Гувоҳнома № 106-628
6. Белагҳиҳалли Н Гнанеш, Кунжупиллаи Вижаян. Тҳе Мулберрй Геноме Мар 2023 ДОИ: 10.1007/978-3-031-28478-6 Публишер: Спрингер Натуре Cwитзерланд АГ 2023. Эдитор: Белагҳиҳалли Нанжаппа Гнанеш ИСБН: ИСБН: 978-3-031-28477-9.
7. Й.Й. Мирзайева**.** М.Ф.Кузибоева, Ж.Г. Зҳавлиев “Меасурес фор адаптатион оф ин витро пропагатед мулберрй Вариетиес то эхтернал сондитионс “Галахй интернатионал интердиссиплинарй ресеарч жоурнал (ГИИРЖ). – Индиа, 2021. – Волуме 9. – Иссуе 12. – П. (ИССН (е): 2347-6915).