The concentration of vegetative substances on the retention and rooting of cuttings when growing cherry seedlings on weakly growing grafts

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Abstract. The article presents data on the soil and climatic process of Uzbekistan when growing cherries using green grafting. It has been established that cherries occupy a special place in the world due to their high content of pectins, pectins, and pectin. 0.39. 0.76 percent of pectin, pectins, and pectin. 0.39. 0.76 percent of cellulose, and 0.72. 32.22 mg percent of vitamin C. Reproduction in flavor and vitamin C. quality. It is determined that the fruits of cherries contain 8.08 .19.32 percent of total sugar, 0.58.2.32 percent of vitamin C. Development of modern technologies for rapid growth of seedlings by green cuttings. The technology of growing cherry seedlings by the method of green grafting provides the greatest stability of varietal grafting combinations and rooting of grafted cuttings.

1 Introduction

In the world, cherries occupy a special place among grains due to their excellent taste and appearance. Contains easily digestible sugars and biologically active substances, including: in cherry fruits 8.08-19.32% total sugar, 0.58-2.22% pectin substances, 0.39-0.76% fiber, 0.72 -32.22 mg/% vitamin C, 0.34-1.70% organics. acids, as well as 1.2-1.8 mg% Fe, 0.15-0.20 mg% Mr, 80. Microelements such as 120 mg/% Cu, 2.6-3.70 mg/% Co , 0.13-0.55% K. Today, the total volume of cherry cultivation in the world is 3 million tons, Turkey (627.13 thousand tons - 25.7%), USA (398.14 thousand tons, 16. 3%), Spain (160.15 thousand tons, 7.7%), Iran (140.08 thousand tons, 5.7%), Chile (126.64 thousand tons, 5.2%).) and other countries are leading. In 2022, more than 200,000 tons of cherries were grown in our republic; according to this indicator, our country this year overtook Spain and took 3rd place in the ranking of the world's leading countries for growing and exporting cherries. In almost all the countries mentioned above, cherry trees are grown in intensive orchards. Increasing the density of trees in gardens significantly increases the efficiency of using a unit of land, as well as labor and material resources. The trend towards increasing tree density in parks is particularly relevant in countries with limited land resources and high prices. Therefore, in most scientific literature, the term “intensive fruit growing” means a high density of trees per

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unit area. But this term refers to the potential intensity of the garden, not the actual intensity. Indeed, if such important agrotechnical factors as the formation and application of fertilizers are violated, even in intensive gardens there is a sharp decrease in productivity. When determining the density of trees in modern intensive gardening, the following important agrobiological indicators should be taken into account: rapid settlement of the allocated area, intensive formation of leaf surface (up to 50 -60 thousand m^2 per hectare); good lighting, falling on most of the leaves and their high photosynthetic activity; constant stability of the growth-yield ratio over many years of using the garden; maintaining tree sizes that ensure high labor productivity at all stages of care and harvesting; the possibility of maximizing the use of mechanization means. Currently, the issue of using weakly wide small plantings in such intensive gardens is one of the most pressing. When using such seedlings, the trees are small in size, which makes care and harvesting easier. It should be noted that such intensive gardens require the use of seedlings based on weakly growing scions. The development of modern technologies for the rapid cultivation of seedlings of fruit plants based on weakly growing scions is today considered important in horticulture throughout the world. Because, in our opinion, the most extensive methods of growing seedlings involve a labor-intensive two-year period. To overcome this, methods of growing seedlings such as green grafting, grafting, in vitro propagation by biotechnological methods, and micrografting are being studied and practical results are achieved. Such seedlings of the majority of intensive cherry orchards created today in our republic are imported from abroad. In addition to the expense of foreign exchange, this creates the risk of many quarantine diseases and pests. In horticulture, which is one of the important strategic directions of agriculture in Uzbekistan, one of the urgent tasks is to study the above-mentioned modern methods of planting, adapted to the soil and climate conditions of our republic. This allows for the rapid cultivation of such seedlings, which makes it possible to create intensive cherry orchards in our country. [1,2,3].

2 Level of knowledge of the problem

In countries around the world where cherries are grown, the USA, Russia, Ukraine and other countries, these orchards are being intensively replanted, low-clone scions are used, and cherry seedlings are grown using modern technologies. pubs in foreign countries N.V. Agafanov (1983), V.A.Alferov (2008), G.V.Eremin, O.V.Eremina, V.M.Zhukov, V.M.Karenik (2011), N.M.Zvonarev (2011), T. Crozet (2017), Turkey (1964) Extensive research has been carried out by scientists such as Frenkel A. (1989), who created the preparation of weakly growing seedlings for planting intensive cherry orchards, the production of clonal scions for seedlings and the principles of their use. Using selection methods, world-famous cherry clones such as Gisella, Colt, Maxma-Delbard, KAP, Piku, LS, Krymsky (VSL) were obtained, and a technology for their grafting and propagation by green cuttings was created. cherry in Uzbekistan Sh.Abrorov (2018), Z.A.Abdikayumov (2018), Z.A.Abdikayumov, A.A.Kalandarov and K.S.Abdullaev (2015) on selecting the best types of grafting for the assortment, improving grafting and propagation by green cuttings, improvement of grafting Scientific research was carried out by such scientists as Abduramanova S.A. (2020). These scientists gave recommendations on the use of growth regulators in optimal concentrations for cherry cuttings, vertical propagation by cuttings and propagation by green and woody cuttings, grafting of fruit-bearing plants to cultivated cuttings, and also studied cherry cuttings and agrotechnical elements of growing seedlings in conditions developed for a particular region and standard assortment of cherries in this place, and the technological process of growing seedlings requires at least 2 years. In this regard, according to the research of this master's thesis, the technology of growing cherry seedlings using the green grafting method provides a solution that allows you to complete this

technological process in one year and obtain standard seedlings at the end of the growing season. The most effective way to grow green feathers by grafting[4,7,11].

Research objectives:

Determination of the concentration of the growing substance that ensures the highest resistance of the variety-graft combination and the rootability of the grafted cuttings in the cultivation of seedlings of cherry varieties by the green grafting method; To determine the effect of the duration of their preparation on the retention of cuttings in the cultivation of seedlings of cherry varieties on weakly growing grafts by the method of green grafting; to analyze the economic efficiency of the method of growing cherry seedlings on weakly growing grafts by the method of green grafting.

The object of the study:

Weakly growing VSL-2 (Krimskaya-5) cherry, Volov'ye serdse, Spring varieties of cherry.

The subject of research:

different concentrations of the growth-regulating substance - IMK, the rootability and receptivity of green cuttings in cherry grafts, the morpho-biological characteristics of the growth and development of grafted plants were calculated.

Research methods:

field and laboratory researches in experiments on cultivation of green pencil grafting method Kh.Ch. Buriyev, N.Sh. "Methodology of calculations and phenological observations during experiments with fruit and berry-bearing plants" developed by Yenileyev and others (2014), B.S. Yermakov's "Razmnojeniye drevesnih i kustarnikovikh rasteniy zelenim cherenkovaniem" (1981), M.T. Tarasenko's "Zelenoye cherenkovaniye sadovikh i lesnih kul'tur (theory and practice)" (1991), F.YA. It was conducted according to the recommendations and methods given in the methodological literature of Polikarpova "Zelenoye cherenkovaniye v usloviyax avtomaticheski reguliruyemogo iskusstvennogo tumanoobrazovaniya" (1990) [10].

Novelty:

In the cultivation of cherry seedlings on weakly growing grafts by the method of grafting green cutting,the concertration of growth substances that ensure rooting and mutual adhesion of cuttings was found;

The period of preparation of cuttings ensuring the highest retention of green cuttings of cherry varieties and VSL-2 grafts was determined;

Recommendations were given to the farms specializing in nursery production on the cultivation of cherry seedlings by green grafting method [13,15,25].

3 Theoretical and practical significance of the research results.

The scientific significance of the research results lies in the fact that they are scientifically substantiated by the possibility of developing an accelerated method of growing seedlings based on growing cherry seedlings in clonal grafting without frost (VSL-2) using the green grafting method.

4 Climatic conditions.

It is known that a thorough analysis of the soil and climatic conditions of each experimental site is an important factor ensuring the correctness of the future experiment. Field and laboratory experiments of this study were carried out in 2022-2023 at the Department of Fruit, Vegetable and Viticulture of the Tashkent State Agrarian University and on the basis of the information and consulting center (Center for Advanced Studies), located in the Kibray

district of the Tashkent region. The climate is sharply continental. This region is located in the northeastern part of the Republic of Uzbekistan. Its topographical position is between 42017' and 40015' north latitude, 68039' and 7102' east longitude. The center is located in the upper reaches of the Chirchik River, its height above sea level is about 486 m. The place where the experiment was conducted is hot and dry, typical for the Tashkent region. Temperature plays a critical role in plant growth and development. The average long-term temperature of the experimental site does not differ significantly by region. The hottest period in the experimental site occurs in June-July. During these months, the average temperature reaches 35-38°C, sometimes there are days with even hotter temperatures. Warm temperatures in spring, summer and early autumn have a positive effect on the growth and development of cherry seedlings and budding (Table 1). [26-28].

The average daily temperature variation over the years of research is about 5 degrees. This difference increases significantly during the warmest and coldest periods of the year.

Figure 1. Daily temperature variability in the Tashkent region during the years of research, ºC

The numbers in the picture above show that cherry seedlings must be watered regularly on days when the temperature is high, otherwise their growth and the stability of the grafting buds will sharply decrease. The winter of the experimental site is typical for this region, the snow cover is not very thick, the coldest days are observed from December to February. According to average long-term data, the coldest temperature can drop to -20 degrees. Days with precipitation correspond to the autumn-winter and spring months. Precipitation is almost directly proportional to the temperature of the region, meaning there is a lot of precipitation on cool days and almost none on hot days. The greatest amount of precipitation in the experimental field occurs in March and November. During this period, the maximum precipitation amounted to 101-179 mm on average per month. The least amount of precipitation fell mainly in the summer months and September – the first month of autumn. During this period, the average monthly precipitation did not exceed 0.0-22 mm. Since October, the amount of precipitation has gradually increased. From the second half of the month it began to rain steadily. A lot of precipitation has been observed since the second half of November, the average amount was 1015 mm. The maximum amount of precipitation reached 179 mm in March.

The information in the table above shows that the gradual decrease in precipitation began in the first half of April. Since March, the amount of precipitation has sharply decreased and in 2021 did not even exceed 12 mm. These tables make it possible to understand that precipitation fell mainly from late autumn to mid-spring. During the growing season, when the plants grow quickly, it is clear that it is extremely low (Fig. 2) [2]. The data in the figure show that this plant can be successfully planted when growing cherries in the conditions of Uzbekistan. It is extremely necessary to artificially water the plant. Because the period during which precipitation is likely does not exceed 10% during the year. Wind speed often has a negative impact on the cultivation of seedlings of fruit plants. Because the root system of the seedlings transplanted to the main place has not yet taken root in the soil very well, and it is very important to keep the soil moist during this period.

Wind speed to a certain extent increases transpiration in the leaves and also causes rapid evaporation of moisture from the soil. The data in Figure 3 below shows that the wind speed was relatively strong mainly during the period from May to September.

Figure 3. Average monthly wind speeds in the Tashkent region over the years of research, km/h (2020-2022)

The data in the above image shows that in the hottest summer month, July, the wind speed reached 12 km per hour. This required rapid drying of the soil and frequent watering of the seedlings during this period. Sun hours are also important when growing seedlings of fruit

plants. Too much can cause heat damage, while too little can cause stunted plant development. The duration of sunshine during the study years is presented in Figure 4 below.

5 Soil of the experimental field.

The soil of the experimental plot is not rich in organic matter. Here, the amount of humus in the soil is about 0.75-1.5% in the arable layer, and in the lower layers it further decreases (on average about 0.15-0.6%). The natural supply of basic mineral fertilizers is very small, that is, the total nitrogen content is 0.15-0.65%, and in the lower layers it is even less, that is, about 0.3-0.5%. The amount of phosphorus in the arable layer is 0.2-0.3%, under the arable layer - 0.15-0.17%, and the amount of potassium - about 1.75-2.15% and 1.65-1.85% respectively. It can be seen that the mobile forms of nitrogen are not considered sufficient to support plants, there is a little more phosphorus, and the mobile forms of potassium are average. In terms of the amount of microelements, the soil of the experimental plot is considered to be in moderate quantities. It has been established that the absorbable forms of microelements in the soil are in the following quantities (mg per kg of soil): boron - 0.2-0.3, copper - 0.2-0.6, molybdenum - 0.2-0.7, manganese - 37.6-. 41.5, iron - 142-156, zinc - 3.2-3.5, cobalt - very little.

Research program and methodology:

Field and laboratory studies in experiments on growing cherry seedlings on clonal grafting using the green grafting method Kh.Ch.Buriev, N.Sh. “Methods of calculations and phenological observations in experiments with fruit and berry plants”, developed by et al. (2014), B.S. Ermakova “Reproduction of tree and shrub plants by green cuttings” (1981), M.T. Tarasenko “Green cuttings of garden and forest crops (theory and practice)” (1991), F.Ya. Polikarpov "Green cuttings under conditions of automatic controlled artificial fogging" (1990). It is carried out in accordance with the recommendations and methods given in the methodological literature of V.F. Moiseichenko “Methodology of recording and observation in opitax with fruit and berry crops” (1967).

6 Growing seedlings of promising cherry varieties on weakly growing cuttings using green cuttings and improved cuttings.

VSL-2 (Crimean-5) vegetatively propagated cherry clonal scion for propagation of seedlings of promising cherry varieties on weakly growing grafts with green grafting and improved grafting methods, as well as Ox Heart, promising for cherry export, Summit, Skeena and Lapins varieties are used. The experiment is carried out in an unheated room with an artificial substrate and an automatic device that provides comfortable conditions of humidity and temperature inside the structure (creation of artificial fog). Cuttings 8-10 cm long are made from the branches of grafted mother bushes. To prepare cuttings, branches newly formed during the growing season are cut off in the morning. Before planting, prepared cuttings are treated in concentrated aqueous solutions of indolebutyric acid 80 mg/l for 14-16 hours. These treated cuttings are washed with clean water before planting. Before planting the treated cuttings, 1-2-leaf green cuttings of the varieties Bahar, Volovye Serdets, Samba, Nemetskaya, Skina, Lapins, Kupets are grafted onto them using the improved cutting method and placed on a substrate consisting of a sand mixture. soil + humus in a ratio of 1:1. The experimental design is as follows:

1.Harvesting green cuttings of a variety-scion combination in the first ten days of May and planting by grafting using an improved cutting method;

2. Preparation and planting in the second ten days of May, as indicated above;

3. Preparation and planting in the third ten days of May, as indicated above;

4. Preparation and planting in the first ten days of June, as indicated above;
5. Preparation and planting in the second ten days of June, as indicated above;

The artificial substrate prepared in advance for planting has the following composition: the upper part of the substrate consists of 5 cm of pure coarse sand, and the lower part is a specially prepared mixture of river sand and humus in a ratio of 1: 1. Cherry cuttings are planted in this substrate to a depth of 3-4 cm. In each experimental variant, a paddock of 100 grafted species is planted. The planting pattern for cuttings was 10x7 cm. The experiment was repeated four times. The operating procedure of the equipment for generating artificial fog is as follows. In the first days of planting cuttings (20-25 days), in the daytime (from 8 a.m. to 6 p.m.), water with small particles was sprayed in the form of a mist every 6 minutes for 15 seconds. Spraying with water was carried out every 15 minutes after the first root projections appeared on the cuttings. In all experimental systems, the following phenological observations and biometric calculations were carried out: the beginning of bud formation - in most plants, the swelling of the buds and the tip of the leaves The date of the ringan is recorded. This observation is carried out every two days; cessation of growth of scion branches - the date of complete formation of the third growth bud is recorded in branches formed during most of one growing season; the end of the growing season or autumn period - the period when up to 75% of the leaves of plants fall off; the duration of the growing season is taken into account - the duration of the period from the beginning of the formation of buds in plants until the date of persistent frosts, leading to the complete cessation of the growing season; the appearance of callus and root irregularities in green cuttings - from the day the cuttings are transplanted into the substrate, they are analyzed every 2 days, 24 hours; The formation of roots in green cuttings is studied dynamically in the period from the date the first roots appear until they are dug up in the fall, in terms of meters. Monitoring is carried out every 10 days, the size of the root system is determined - the root system of plants dug up at the end of the growing season, in a volume-determining cylinder. The volume of the plant's root system is determined by the volume of water squeezed out of the cylinder and recorded in cm3; the total average length of the root system is understood as the total length of the first-order roots of a plant by measuring, determining the length and calculating their sum, the rooting of green cuttings is determined by calculating the percentage of rooted plants in relation to the total number of cuttings planted during autumn digging, % plant height - the height of the central branches from the beginning of the growing season to the end (root collar up to three o 'to the watered bud') are determined dynamically (every 15 days) by measuring during the period from the beginning of budding in plants to the complete end of growth, see. The yield of certified seedlings was determined by calculating the percentage of planted plants in relation to planted plants - at the end of the growing season they were sorted into commercial varieties in accordance with the requirements of UZDST 1192:2009, and the percentage was calculated by the total number of seedlings, % [8,15,23,].

7 A brief description of scions and cherry varieties studied during the study of scion VSL-2 (Krymskaya-5) is given.

The 5th generation scion of the “Crimean” series, obtained at the Crimean experimental breeding station, was obtained through selection. This scion is one of the most promising slow-growing scions that have become widespread in recent years. Cherry trees grafted onto it hold up well and quickly begin to harvest. The welder adapts well to external environmental conditions (soil, weather). Pairs well with most standard cherry varieties. Propagates well from green and lignified cuttings (high rooting rate - more than 90%).

8 Volov’ye serdse Volov’ye serdse.

Evening variety (June 20 – 25). The trees grow medium or slightly taller and begin to harvest after 4-5 years. The horn is rounded-pyramidal. The fruits are dark red, almost black, round in shape, large, with an average weight of about 15 g.

Spring cherry variety. The tree grows vigorously and the growth rate is very fast. The fruits ripen in May-June, depending on weather conditions. The fruits are large, the average weight is about 10 g, the color is dark red, the pulp is very soft and sweet, with a slightly sour taste. Cherry is one of the grain fruits with excellent taste and appearance. It is highly valued and eaten. sweet by many peoples. However, cherries are a late harvest. Cherry belongs to the group of fruit trees, the harvest of which begins in 5-6 or 6-7 years. However, in the experiments of O. V. Eremina [2008], cherry trees grafted onto scions of the VSL-2 clone showed signs of harvest already from the second year after planting. The second scion was in Moscow, the difference in yield was one year. Although this graft was brought to our country not so long ago, growing seedlings in any case is a two-year process: in the first year the graft is grown, and in the second year fruit-bearing plants are grafted onto them and seedlings are grown. Therefore, scientific research to reduce this two-year period of growing seedlings is considered relevant. As an object of research, the cherry variety Volovye serdtsa the most popular in our country, and VSL-2, propagated by vegetative means. funds are the object of study, taken from the transplant. The experiment was carried out in an unheated room with an artificial substrate and an automatic device that provided comfortable conditions of humidity and temperature inside the structure (creating artificial fog). Cuttings 8-10 cm long were prepared from the branches of the current year of the mother plant. bushes of the Volovye serdtsa variety. Before grafting green cuttings of the scion-mark variety using the improved cutting method, the cuttings were soaked in solutions of indolylbutyric acid of various concentrations (10...100 mg/l of water) for 14-16 hours. In this case, the upper part of the seam and the basal (lower) part of the seam were processed. Water-treated cuttings were used as a control. The treated cuttings were washed with clean water before planting. Then, using an improved cutting method, a 1/2-leaf green cutting of the Volovye serdtsa variety was grafted onto them (Fig. 1).

Fig. 1. Preparation of cuttings from a semi-lignified green scion branch and grafting a green cutting of a cultivated variety onto it.

Cross-grafted green cuttings were planted on a substrate consisting of layers of sand, vermicompost and turf soil. Green cuttings were grafted and planted on the substrate in the third decade of May. An artificial substrate prepared in advance for planting is as follows:

the upper part of the substrate consists of 5 cm of pure coarse sand, and the lower part - a specially prepared mixture of river sand and humus in a 1:1 ratio. Cherry cuttings were planted in this substrate to a depth of 3-4 cm. In each experimental variant, a paddock of 100 grafted species was planted. The planting pattern for cuttings was 10x7 cm. The experiment was repeated four times. The operating procedure of the equipment for generating artificial fog is as follows. In the first days of planting cuttings (20-25 days), in the daytime (from 8 a.m. to 6 p.m.), water with small particles was sprayed in the form of a mist every 6 minutes for 15 seconds. After the first root tubercles appeared on the cuttings, spraying with water was carried out every 15 minutes. Experiments on green cuttings and grafting Kh.Ch. Buriev, N.Sh. "Methods of calculations and phenological observations in experiments with fruit and berry plants" developed by Enileev et al. [2014], F.Ya. It was carried out on the basis of the recommendations given in the methodological literature by Polikarpova and V.V. Pilyugina "Growing planting material by green cuttings" [1991]. The essence of this physiological process increases even more when a cultivar cutting is grafted onto these rooted cuttings. The rooting of green cuttings is influenced by various factors, including the type of growth regulator and its concentration, preparation of cuttings and timing of planting, physiological state of the mother plant, microclimatic conditions (internal temperature of the structure, relative humidity, type of substrate). and its humidity, etc.), etc. Experiments have shown that when the basal part of the scion and the tip of the scion are treated with growth-controlling substances, their mutual connection and rooting are directly dependent on the concentration of this substance. . Ready. At the same time, the best preservation of components and their rooting ability were observed in the components of the variant treated with an IBA concentration of 50 mg/l of water (Table 1). The table shows that in the variants treated with a growth regulator, rhizogenesis of green cuttings (scion + grafting dust), their regeneration (regeneration) and cross-linking (susceptibility) of green cuttings are known. control, it is noted that it passes faster [7,16,25,27].

Thus, callus formation in the phloem part of treated cuttings decreased from 8 to 12 days as the IBA concentration increased compared to the control. The formation of large roots in the grafted part of the components also occurred on average 3-11 days faster. In the grafted component, the swelling of the bud in the leaf axil was recorded after 53 days in the control, and in the experimental variants - in a faster period - 4-24 days.

Table 1. The influence of the growth agent - IBA concentration on the retention and rooting of green feather scion components (scion mark - VSL-2, grafting - variety Volovye serdtsa)

Experimental option	**Grafting with cuttings.**		**Planting buds in cuttings**
	callus formation,day	**days gross root formation**	
Water – control	33	48	53
IMC – 10 mg/l	25	45	49
IMC – 20 mg/l	24	39	35
IMC – 30 mg/l	23	39	34
IMC – 40 mg/l	22	39	32
IMC – 50 mg/l	20	35	29
IMC – 60 mg/l	20	35	29
IMC – 70 mg/l	21	36	30
IMC – 80 mg/l	21	36	31
IMC – 90 mg/l	21	37	33
IMC – 100 mg/l	21	37	35

It is worth noting that although the formation of the gross root in the scion part and the swelling of the bud in the leaf axil in the scion component occurs faster than in the control at all concentrations of IBA, their mutual attachment is possible only at 50. In the proposed variant, the concentration of IBA is noted in mg/l of water. In this experiment, the percentage of grafted components was 66 %. As the IBA concentration approached the control or, conversely, when it was used in very high concentrations, although rooting was observed in the grafts, the number of component compounds decreased, which had a different effect on the rate of plant development. Observation of further phases of development of rooted cuttings showed that in all variants of the experiment, IMC was recorded in cases where a water concentration of 50 mg/l was used.

As the IMC concentration approached the control or, conversely, when it was used in very high concentrations, although rooting was observed in the grafts, the number of component compounds decreased, which had a different effect on the rate of plant development. . Observation of further phases of development of rooted cuttings showed that in all variants of the experiment, IMC was recorded in cases where a water concentration of 50 mg/l was used. Features of the development of the root system in the VSL-2 cherry grafting clone directly depended on the rate of onset of rhizogenesis. In particular, it was noted that a powerful root system was formed in the experimental variants, where the development of the root system began the earliest. At the end of the growing season, the root system with the highest rates was formed in cherry scion species with high regenerative properties. Consequently, this VSL-2 clone graft produced the highest, respectively, up to 15 first-order roots and a root system of up to 6.5 cm3 at a nutrient medium concentration of 50 mg/l, which is 8 pcs. and 1.7 cm^3 higher than control. (Table 2).

Table 2. The influence of different concentrations of growth factor (IMC) on the development of the grafted rootstock VSL-2, the rootstock variety Volovye Serdets (2022-2023)

Experience Options	**Indicators of development of a rooted cutting**			
	number of roots of the first order, pcs	**volume of the root system, sm^3**	**plant height, sm**	**diameter of plant stem, mm**
Water treatment of cuttings (control)	7	4.8	34	3.9
IMC -10 mg/l	8	5.1	38	4.2
IMC - -20 mg/l	9	5.7	39	4.3
IMC - -30 mg/l	12	6.1	45	4.7
IMC - -40 mg/l	13	6.3	49	5.1
IMC - -50 mg/l	15	6.5	53	5.6
IMC - -60 mg/l	14	6.4	52	5.5
IMC - -70 mg/l	14	6.4	51	5.3
IMC - -80 mg/l	13	6.3	51	5.5
IMC --90 mg/l	13	6.3	50	5.3
IMC - -100 mg/l	13	6.0	50	5.1

The table data shows that, along with the influence of growth factor concentration on the rate of development of VSL-2 scion cuttings, plant regeneration indicators and its genetic characteristics are directly related to it. The total average height of plants rooted from cherry varieties grafted onto green cuttings of these scions was in the range of 38-53 cm, depending on the concentration of the vegetative substance. The superiority of the development of the upper part of the earth compared to the control was 4-19 cm, respectively. Body diameter, which is one of the indicators of the development of the above-ground part of the plant, also changed depending on the concentration of IBA compared to the control. At the same time,

the body diameter was the largest - 5.6 mm in variants with a water concentration of 50 mg/l. In other variants, the conditional body diameter was intermediate between the control and this variant. Today, cherry seedlings are grown mainly by bud grafting. The application of elements of the method developed in our research to production is determined by its economic indicators, that is, the total amount of costs incurred and the level of their reimbursement. In this regard, the economic indicators of growing cherry seedlings by grafting them from green cuttings to green cuttings with VSL-2 grafting were analyzed. To do this, build an artificial fog-forming film structure with an area of 0.1 hectares with indoor microclimate control, an artificial substrate (coarse river sand and vermicompost) used to control the microclimate, planting green cuttings, preparing cuttings, grafting and planting. Methods for extracting and sorting finished seedlings were taken as the main criterion. Analysis of economic indicators. Useful area of 800 m2 with an area of 0.1 hectares with an artificial fog-forming film structure, where cherry seedlings are grown from green cuttings with indoor microclimate control (80%). debited from the account. Based on free market prices obtained from companies involved in the construction of greenhouse structures, today the construction of such a film structure that creates artificial fog with internal microclimate control and installation of microclimate systems is estimated at an average of 1.5 million soums/m2. 150 million. Amounts of material costs will be spent, a total of 2000 kW of electricity was spent on installing artificial fog to control the microclimate of the premises. When calculating the electricity consumed in this volume, the state tariff for manufacturing enterprises was used, published on July 1, 2022 on the Gazeta.uz website. According to the state tariff rate given in this announcement, a fee of 450 soums is accepted for each kilowatt of electricity used. Thus, the total cost of 2000 kW of electricity used during the season amounted to 900,000 soums. When growing fruit plants in installations that create artificial fog, the water spray nozzles do not close due to various cloudings, and chlorine is harmful to plants. Clean, not - To avoid exposure Chlorinated drinking water is used. Today's state tariff for determining prices for clean drinking water, established by Uzsuvtaminot JSC, is estimated at 6,700 soums/m3 for wholesale consumers, a total of 804 thousand soums will be spent. Vermicompost 5-7 cm thick and coarse river sand placed in this thickness were used as an artificial substrate for growing cherry seedlings from green cuttings. Economic analysis showed that to lay vermicompost 5-7 cm thick on a usable area of 800 m2 of a film structure of 0.1 hectares, 500 kg of vermicompost is required. The free market price of this amount of vermicompost in companies involved in the sale of products used in agriculture is 1 million rubles. is estimated at approximately sum. When laying river sand 5-7 cm thick, it is required on average in a volume of 5 m3, and its free price today is 250 thousand soums/m3. The cost of 5 m3 of sand we need is 1 million rubles. It was equal to 250,000 sum. The cost of preparing, processing, grafting and planting cuttings when propagating fruit plants with green cuttings is 100 sum per cutting at generally accepted prices in nursery farms.m, the cost of digging and sorting ready seedlings. is 100 sum per seedling (Table 3).

Table 3. Economic efficiency of growing cherry seedlings using the green grafting method, due to a building with an area of 0.1 hectares (according to regulatory calculations for 2022)

Production indicators	**Unit of measure**	**Quantity**	**Price, soum**	**Total costs, thousand soums**
Construction costs of a microclimate controlled facility	soum/m^2	0,1 ga	2000000	150 000
Electricity	Kvt	200	450	900
Drinking water	m^3	120	6700	804
Biohumus	Kg	500	1000 000	1 000

Large river sand	m^3	5	250 000	1 250
Costs of cuttings preparation, grafting and planting	Soum	80 000	100	8 000
Digging and sorting seedlings	Soum	80 000	100	8 000
Total cost				**169 954**
Unforeseen expenses	5%			8 498
General expenses				**178 452**
Standard seedling output	Piece	51 000		
The cost of one seedling	Soum		3500	
Realization price of total standard ochats	Soum	51 000	6000	306 000
Net income	Soum			127 548
Profitability of planting seedlings	%			71,5

The data in this table show that in our experiments, the grafted components of green cherry cuttings were planted according to a 10 x 10 cm pattern. With this planting pattern, 100 green handles are planted per 1 m2 of usable area of the building. Depending on this, a total of 80,000 pens can be accommodated in a usable area of 800 m2 of this 0.1 hectare film structure creating artificial fog. 8 million and 8 million for mining. Total 16 million soums. 169 million soums of material resources were spent, of which 169 million were allocated for growing cherries from green cuttings in a film structure with an area of 0.1 hectares with a controlled internal microclimate. 954 thousand soums will be spent. In addition to these costs, unexpected costs may also be added (for example, system failure, real-time price changes, etc.). In our experiments, 178 million. 452 thousand soums were spent. The yield of standard seedlings was calculated according to the current state standard. In this case, seedlings with normal development, height, branching and root system that meet standard requirements (on average 65%) were taken as standard seedlings. Economic analysis showed that in our experiments the number of standard seedlings obtained from a useful area of 800 m^2 of an artificial fog-forming film structure with an area of 0.1 hectares was 51,000. To find the cost of production of each seedling, a closed film structure with a controlled microclimate with an area of 0.1 was built ha, in which the total costs of growing cherry seedlings from green cuttings were divided by the number of standard seedlings. Total 178 million. If you spend 452 thousand material resources, you can get 51 thousand seedlings worth 3,500 soums each. At the same time, the net profit from growing cherry seedlings from green cuttings reaches 127-548 thousand soums. The economic profitability of growing cherry seedlings from green cuttings is 71.5% [30,31,32].

9 Conclusions

High results are obtained by selecting cherry varieties using the green grafting method in artificial fogging installations with a controlled internal microclimate on a substrate consisting of layers of sand, vermicompost and turf soil. This agrotechnological measure makes it possible to reduce the 2-year period of cherry cultivation to 1 year. When propagating cherry varieties by grafting with green cuttings, it is necessary to harvest and plant the components of the green cuttings in the second half of May. . During this period, the plants are in high physiological activity, and the microclimate of the room is also at the level of need. The highest stability and cohesion of the components when propagating a green paddock by grafting means that the components stimulate this physiological activity. the process is at the highest level. growing substance - obtained when treated with water with an IBA concentration of 50 mg/l. Green feather grafting allows you to obtain the largest number of seedlings per unit area when treated with water with a concentration of 50 mg/l. from IMC.

In this experimental version, the total number of rooted and intertwined cuttings is 61-65%. Propagation of cherry seedlings in closed buildings with a controlled microclimate using green cuttings means obtaining up to 60 seedlings per unit area of the building and their sale for 127,548,000 soums allows you to get a net income. In this case, the economic profitability of growing cherry seedlings using the green grafting method is 71.5%.. High results are obtained by selecting cherry varieties using the green grafting method in artificial fogging installations with a controlled internal microclimate on a substrate consisting of layers of sand, vermicompost and turf soil. This agrotechnological measure makes it possible to reduce the 2-year period of cherry cultivation to 1 year. When propagating cherry varieties by grafting with green cuttings, it is necessary to harvest and plant the components of the green cuttings in the second half of May. . During this period, the plants are in high physiological activity, and the microclimate of the room is also at the level of need. The highest stability and cohesion of the components when propagating a green paddock by grafting means that the components stimulate this physiological activity. the process is at the highest level. growing substance - obtained when treated with water with an IBA concentration of 50 mg/l. Green feather grafting allows you to obtain the largest number of seedlings per unit area when treated with water with a concentration of 50 mg/l. from IMC. In this experimental version, the total number of rooted and intertwined cuttings is 61-65%. Propagation of cherry seedlings in closed buildings with a controlled microclimate using green cuttings means obtaining up to 60 seedlings per unit area of the building and their sale for 127,548,000 soums allows you to get a net income. In this case, the economic profitability of growing cherry seedlings using the green grafting method is 71.5%.

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