

IN THE INTENSIVE METHOD FROM THE GREEN PEN OF THE OLIVE  
PLANTING, CARE AND ATTITUDE TO THE EXTERNAL ENVIRONMENT

Bozorova A Kh, Shodieva Sh. N, Juraev E. B,

<sup>1</sup>Master of Termez State University of Engineering and Agrotechnologies

<sup>2</sup>Uzun Agrotechnological College

<sup>3</sup>Termiz State University of Engineering and Agrotechnology

**Abstract.** *One of the urgent issues of today is the establishment of farms specializing in horticulture and achieving high productivity from gardens using high-level scientific achievements and practical experience in agriculture. The areas planted with olive trees are expanding year by year. From our observations, it became clear that it is appropriate to carry out the following measures to increase the cold resistance of 2-3 and 6-year-old olive seedlings in the open field. In olive plantations, it is important to choose varieties that are resistant to the natural climatic conditions of the natural zone in order to increase the tolerance of seedlings to low temperatures. Generally, it is necessary to plant on the western and northern slopes of the land, which are opposite to the wind, protecting them from the flow of cold air, paying attention to varieties less resistant to cold.*

**Keywords:** climate, root, stem, leaf, physiology, photosynthesis, transpiration, temperature, moisture, light.

**Research location and methods.**

The research was carried out at the experimental site of the Bandikhon experimental farm of the Surkhandarya branch of the “Uzbek Research Institute of Horticulture, Viticulture and Winemaking” named after Academician M. Mirzaev within the framework of the practical project “Development of cultivation of stress-resistant forms and varieties of olive (*Olea europaea* L.) for processing based on innovative technologies”. In May, June, July, cuttings were prepared from the introduced varieties “Nevaldillo”, “Hemlik”, “Nikitskaya I-II”, “Krymskaya-172”, “Arbequena” and planted in various planting schemes and timings, and phenological observations and biometric measurements were carried out.

The main task of the intensive method is to select a mother olive tree based on new innovative approaches, prepare cuttings from semi-lignified one-year-old shoots in the appropriate order and at the established time, apply rooting and nutritional stimulants, accurately determine planting schemes and dates, and control temperature, humidity, and light in a special facility under microclimatic conditions, thereby preparing standard seedlings that have their own roots in one year and applying the results obtained in production. The methods developed by (Tarasenko) [8; 9] and (Buriev et al.) [1] are used in this.

**Research results.**

Studies show that among the approximately 30 introduced olive varieties, the varieties with high morphological and biological characteristics, tolerance to adverse climatic conditions of the environment, such as “Hemlik”, “Nevaldillo”, “Krymskaya-172”, “Nikitskaya-I”, “Nikitskaya-II”, “Arbequena”, require a high level of agrotechnical measures until the season of preparing seedlings for the orchard plantation, that is, until May-June.

## THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

### VOLUME-5, ISSUE-9

Particular attention should be paid to the irrigation regime after the first feeding of olive mother trees. While conventional drip irrigation uses an average of 600-800 m<sup>3</sup> of water per hectare, in our studies, using the drip irrigation method, 60-100 m<sup>3</sup> less water was used. In the future, it will be possible to expand additional areas using the resulting water. [2; 3; 4; 7].

Watering mother trees before preparing cuttings helps to reduce the body temperature of the plant, accelerate the absorption of minerals from the soil, create root pressure, increase the intensity of transpiration and photosynthesis, and saturate the cells and tissues of semi-lignified cuttings with water. When choosing olive mother trees, it is advisable to choose healthy, undamaged, timely shaped plants with a large number of one-year semi-lignified shoots, free from viruses, bacteria and fungi. Experiments were carried out in various options for growing olive seedlings from semi-wooded green cuttings, i.e., in a short period of time due to low costs, low-cost, genetically pure seedlings with their own roots, studying the microclimate of a microclimate controlled structure, determining planting periods and schemes for choosing different substrates, and determining the economic efficiency of all technological processes.

Cuttings were cut with sharp garden shears in the morning without damaging the bark of the branch. The lower cut was 10-14 cm long directly below the bud, and the upper one was 1-1.5 cm above the bud, leaving 2 side leaves. To study the length and diameter of the cuttings, the diameter is 1.0-2.5 mm and the length is 12-14 cm pencils were prepared.

50 cuttings were tied and placed in different working solutions of ISK (indolylacetic acid) and IMK (indolylbutyric acid) at a depth of 2.5-3 cm for 16-18 hours. Prepared cuttings were planted on different substrates (coarse-grained river sand (fraction 0.2 - 0.3 mm), rice husk, wood shavings, humus, sand+humus 1:3, rice husk+humus, wood shavings+humus 1:3 ratio) and callus formation was tested. When determining a suitable feeding area, cuttings were placed on the substrate in a scheme of 15x5, 15x10, 15x15 cm, at a depth of 2 cm. In the microclimate-controlled facility, the average daytime air temperature was 28-31 °C, the relative humidity was 80-90%, and the light level was maintained at 82-90 thousand/lux for 20-24 days.



**Fig.1.** Substrates used for rooting green cuttings: (1-river sand, 2-wood shavings, 3-rotted manure, rice husk and their combination)

A special fog generating device was used to determine these indicators. During the first 20-30 days, the plant microclimate control system was used from 800 to 2000 hours. The period of spraying water in the system is 20-25 seconds. Spraying intervals are 5-10 minutes (depending on weather conditions). Control of hydrothermal conditions favorable for the cultivation of olive seedlings in a special facility was provided using the KEP-12 device.

During the period of rooting, the temperature and humidity of the air inside the structure were monitored weekly using a thermograph M-16AN and a hygrograph M-21AN at the level of the tip of

## THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

### VOLUME-5, ISSUE-9

the cuttings. The temperature of the substrate at a depth of 4-5 cm was measured using a Savinov thermometer. The temperature was determined by ordinary and electronic thermometers, humidity by an Assman psychrometer, and light by a luxmeter according to the established table. In the experiment to determine the convenient feeding area, the pens were placed in the following schemes: 15x5, 15x10, 15x15 cm.

Cuttings prepared for planting were planted in the substrate at a depth of 2 cm. The amount of cuttings rooted in autumn (October) was counted. In 10 plants of each variant, the number of different types of roots, their total length, size, weight, seedling height, number and length of branches, number of leaves and their total level, as well as their compliance with the state standard were analyzed. The grafting of olive branches was done according to the method recommended by scientists.

The results of the study on the dependence of the phenological phases of the olive varieties selected from the collection, the duration of the vegetation period on the beneficial temperature range, biometric indicators, and the timing of the pigmentation process in the fruits show that when analyzing the phenological indicators of the olive varieties, it was found that among the selected varieties, the earliest fruit ripening (10%) in the Nikitskaya-II variety occurred on average on September 8 and full ripening (75%) occurred on September 21, while the latest ripening occurred on September 11-19.

**Table-1.** The results of phenological monitoring of the transition of vegetation phases in the collection of maternal-breeding plants, 2015-2025.

Types	The origin of the variety	Buds begin to bud	Flowering, date			Fruit ripening	Technical ripening of fruits	Budding - technical ripening
			beginning	ending	duration, day			
<b>Krmskaya - 172</b> (template)	Russia	22.03	18.04	29.04	11	21.09	29.10	217
<b>Nevaldilo</b>	Italy	27.03	19.04	27.04	8	05.09	25.09	177
<b>Gemlik</b>	Turkey	25.03	19.04	29.04	10	05.09	01.10	186
<b>Nikitskaya - I</b>	Russia	24.03	19.04	28.04	10	04.09	01.10	187
<b>Nikitskaya - II</b>	Russia	25.03	19.04	29.04	10	20.09	15.10	200

Our research shows that in 2020, the beginning of the “budding” phase of the Nikitskaya - II variety fell on 10.04., when the sum of useful temperatures was 370 °C. In 2015-2025, the average sum of useful temperatures was 385-400 °C, and the average three-year sum of useful temperatures was 385 °C.

The height of the main body was 195 cm on average in the Krymskaya - 172 (control) variety, 197 cm in the Nikitskaya - I variety, while the Nikitskaya II variety was 4 cm or 2.0% higher than the control.

In the Nikitskaya - II variety, the number of leaves on the first-order lateral branches was 7-10 times higher than in our control variant by year. As for the number of leaves on the second-order lateral branches, it was found that in 2020, the Nikitskaya - II variety had 7 more leaves, in 2021 - 11 more leaves, and finally in 2024 - 9 more leaves.

**THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY****VOLUME-5, ISSUE-9**

In scientific research conducted in 2015-2025, green cuttings were prepared from the olive mother tree and the rooting biostimulant "Kornevin" and the growth-regulating stimulant "Heteroauxin" were used.

Plant hormones or phytohormones are active substances that are produced in very small quantities in the plant body and participate in the control of physiological processes. With the help of these substances, the interaction between cells, tissues and organs occurs. These compounds are formed in the growing parts of young leaves, stems and roots of the plant and subsequently actively participate in growth processes. Although their effect is small, they participate in and control a number of reactions in the plant body. In conclusion, based on the results of observations and scientific sources, olive seedlings adapt to a certain extent to external environmental factors. The positive results obtained from scientific research and observations in recent years are our main goal in the future to create olive plantations, select varieties with high productivity, resistant to cold and stress factors, create a raw material base for the processing industry and process fruits, and prepare ecologically clean products for consumer consumption.

**REFERENCES**

1. Buriev X.Ch. Juraev Э.В. "Mevali va rezavor mevali o'simliklar bilan tajribalar o'tkazishda hisoblar va fenologik kuzatuvlar metodikasi". Uslubiy qo'llanma. -Toshkent. 2014.-54.b.
2. Buriev X., Juraev Э. - Tecnologia intensiva di coltivazione delle piantine di olivo (Olea) in strutture speciali con microclima regolato. "Tecnologie intensive per la riproduzione del materiale di piantagione in Uzbekistan" (Monografia collettiva). LAP LAMBERT Academic Publishing RU. 17 Meldrum Street, Beau Bassin 71504, Mauritius. 2020. P, 107-116. (lingua italiana, Italia).
3. Buriev X.Ch., Juraev Э.В., Abdullaev S.B - Morpho-biological and economic characteristics of introduced olive varieties in Surkhandarya region. // "Journal of agriculture & horticulture" International scientific journal. JAH. ISSN:2770-9132; Impact factor 8.1. UIF=9.1. SJIF=7.83. Выпуск 1, Zenodo. -P. 5-13.
4. Darvin Ch. Proisxozhdenie vidov. -M.: Izd-vo AN SSSR. 1939, -83s.
5. Juraev Э.В - Izuchenie mikroklimata v spetsialnom sooruzhenii dlya vygashchivaniya sajenцев masliny vegetativnym putem. //Agro ilm jurnali. 2017 y. -№3. -B. 60-61.
6. Juraev Э.В - Vliyeniye srokov cherenkovaniya pobegov na rost i razvitiye sajenцев masliny. //O'zbekiston qishloq xo'jaligi jurnali. 2017 y. -№5. -40 b.
7. Reva M.L. Vegetativnoe razmnnojenie drevesnykh rasteniy v estestvennykh usloviyax USSR. Avtoreferat diss... doktora biol. nauk. -Kiev, 1968. -39s.
8. Tarasenko M.T. - Razmnnojenie rasteniy zelenymi cherenkami. M., Kolos. 1967. -352s.
9. Tarasenko M.T. - Promyshlennaya tehnologiya vygashchivaniya posadochnogo materiala sadovykh kultur na osnove zelenogo cherenkovaniya. M., TSXA. 1984. -32s.
- 10.