

# BIOLOGICAL FUNDAMENTALS OF VEGETATIVE PROPAGATION OF TASHKENT-16 AND SAMARKAND-7 VARIETIES OF THE ELAEAGNUS ORIENTALIS IN THE CONDITIONS OF KARAKALPAKSTAN

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**Abstract.** *In the article, the biological basis of vegetative reproduction of Tashkent-16 and Samarkand-7 varieties of the east oleaster the duration of cuttings preparation, their size (length), keeping the cuttings prepared in the fall in a special trench in the winter and planting them in the spring, In the spring season, the processes of preparation and immediate planting are presented before the movement of aphids begins on the trunks of trees. In these two seasons, before planting in the spring, the average number of shoots recorded in cuttings planted with mineral fertilizers is up to 83%, and the length of the branches is up to 3-8 cm.*

**Keywords:** *Tashkent-16 and Samarkand-7 varieties, cuttings, genetic resources, food safety, green covers, 2008-2020, callus.*

**Introduction.** Natural fruit plants growing in the conditions of the dendroflora of the earth are planted and grown according to their scientific and practical importance, distribution scale and genetic potential. It is known that plants served as the only source of food for humans, then selection works were carried out aimed at cultivating plants and increasing their yield and quality of products, many local varieties of fruit plants were created, and this continuous process continues even now.

At the same time, in our Republic, but also in the whole world, there is growing interest in the problems of studying, preserving and breeding fruit varieties and forms created by folk selection and their wild ancestors. Genetic resources of plants play a decisive role in improving food security and living standards of the population in every country, therefore, conservation of genetic diversity in the natural distribution areas of promising plants on the globe and introduction of their use for various purposes remains a priority.

Among the various fruit trees that have been cultured and cultivated on a large scale in Uzbekistan for centuries, *east oleaster* has a unique position. *East oleaster* plant has food, medicinal, land reclamation and scenic properties, and has been of great importance to the peoples of Central Asia and the Caucasus since ancient times. The fruit contains 40-67.8 % sugar, 11 % protein, 36% tannins, 0.44-2.46 % organic acids, up to 100mg/% vitamins and other active substances.

The economic and natural conditions of Uzbekistan allow the use of many types of fruit trees, including the *east oleaster* tree, for obtaining a high yield and in the pharmaceutical, food industry, for the establishment of green coverings in the harsh amelioration conditions, in the saline

arid lands. In addition, *east oleaster* fruits have been used as a medicine for the treatment of many diseases since ancient times. In folk medicine, juniper fruit is used to treat flu, bronchitis, laryngitis, pneumonia, varicose veins of atherosclerosis, arthritis, rheumatism, hypertension and other diseases.

In recent years, there has been an increasing interest in studying the medicinal properties of gooseberry fruit in the Russian Federation. Russian scientists have determined the presence of 41 chemical compounds, including 20 amino acids, in the fruits, leaves, and flowers of 7 types of ginseng introduced to Russia, including the eastern and thin-leaved ginseng. It has been determined that 15 main microelements are present in the leaves of *east oleaster* among which the content of molybdenum and nickel elements is particularly high. Researches have shown that *east oleaster* species is a pharmacologically promising plant [3; 48-52 p].

In the regions of our republic with a high level of agricultural culture, among other fruit plants, there are many promising types of *east oleaster*. Especially in the Republic of Karakalpakstan, Khorezm, Tashkent oases, Fergana, Syrdarya, Zarafshan river valleys, Kashkadarya and Surkhandarya oases, many large-fruited and high-consumability forms of the *east oleaster* created by folk selection are being grown naturally and culturally in people's homesteads. Among them, the Tashkent-16, Tashkent-22 and Samarkand-7 varieties of the *east oleaster* were created on the basis of selection and selection between 2008-2020 [1, 2, 6, 7, 8, 9].

**Methods of research.** Conducting field and production experiments, preparation, planting and maintenance of cuttings, calculation of standard seedling yield, seedlings rooted from cuttings of sedum UzDSt 2813:2014, ГООТ – 24835-81 "Seedlings of trees and shrubs", according to the requirements of the technical conditions of 3317– 90 (UzDSt 322.15.04.2009), "Seedlings of trees and shrubs", it was carried out based on the requirements of state standards and methodological manual "Program and methodology for the study of variety of fruit, berry and nut crops" (1999) [4].

## **RESEARCH RESULTS AND THEIR DISCUSSION**

Today, in our Republic, the scale of work, such as the industrial-scale cultivation of promising forms of *east oleaster* with valuable economic characteristics and their use for various purposes, is at the initial stage.

Vegetative propagation is desirable for the cultivation of clones of the *east oleaster* that retain valuable economic biological traits. The importance of vegetative reproduction is the cultivation of seedlings that can fully preserve all economic and biological characteristics of the mother tree.

In forestry and horticulture, the vegetative reproduction of sedum is a promising method, although its seed propagation is rarely used in practice. However, due to the high heterozygosity of seedlings grown from seeds, valuable economic and biological characteristics are lost. For this reason, the method of vegetative reproduction is used in the reproduction of large-fruited local varieties of *east oleaster*. This method makes it possible to grow genetically identical clone-seedlings, these seedlings are almost indistinguishable from the parent plants in terms of varietal and economic-biological characteristics. Accordingly, it is promising to root cuttings, that is, to grow seedlings with their own roots from cuttings.

This method is considered to be a promising method from the point of view of production and biology, it ensures the cultivation of genetically pure and self-rooted seedlings at low cost in a short period of time (1 year). Preparation of cuttings in Karakalpakstan (Khojayli district)

experiments were conducted on the basis of various options in order to determine the optimal terms of planting in the nursery.

Cuttings were prepared from trees in 2 periods, from healthy, large-fruited, fertile trees, not affected by diseases and pests: i.e. at the end of November (cuts prepared at the end of November were buried vertically in trenches with sand at the bottom (with the lower basal part touching the sand) and kept in this state until spring and early planted in spring) and was carried out in late February-early March on 1-2-year-old branches that were fully woody. During this period, the *east oleaster* tree is in a period of natural rest, and the accumulation of plastic substances in its branches is high.

In order to study the effect of cuttings on rooting and preservation of cuttings from cut branches, the process of rooting of cuttings was studied by planting 20, 25, 30 cm long cuttings leaving 25% of them on the soil surface.

Cuttings prepared in two periods and planted in the spring season were watered as soon as they were planted, and the soil moisture was kept at 45-60% for the first month. The first growth of buds was observed in the cuttings from the 9th to the 37th day. In these cuttings, it means that the rooting process is in progress. As with plants with high vegetative reproduction, when the cuttings of the oriental gerbil are planted in the soil, they immediately start the process of rooting, that is, the formation of a callus. The formation of callus occurs with the thickening of the lower part of the shoot, and it covers the lower part of the damaged part of the stem. Its tissues first appear in a circular form, then as a result of growth, they completely cover the cross section of the stem and develop due to the activity of the cambium.

The formation of callus in the lower part of the cuttings, the physiologicalization of the cuttings, and the emergence of roots up to 10-15 mm (for gerbera) and the formation of seedlings with full-fledged own roots are faster. The callus does not perform the same function as the root, but instead it has a protective function and serves as a temporary storehouse of nutrients from which the roots will later develop.

In this case, it was observed that in the upper part of the cuttings, i.e., in the cambium, bulges consisting of primary tissues were formed, and they developed by breaking the bark near the leaf bud. Based on this process, buds are formed in the cuttings and new branches are growing and developing. Accordingly, the number of cuttings that formed new branches in the experimental field showed the following results (table).



1-Figure. The process of measuring the nodes produced by cuttings

Table

**The formation of the first buds in the cuttings of Tashkent-16 and Samarkand-7 varieties of *east oleaster* process study results (%)**

Varieties of <i>elaeanthus orientalis</i>	Dates for which cuttings are prepared	Cutting size (cm)	Number of planted cuttings (pieces)	The number of cuttings saved when planted in mineral fertilizers (pieces)				Total cuttings saved (%) account
				Control (without mineral fertilizers)	Kornavin	Succinic acid	Gumi	
Tashkent-16 variety	Autumn cuttings	20	100	79	80	81	81	80.25
		25		81	85	87	93	86.5
		30		84	77	82	85	82
	Spring cuttings	20		80	69	85	89	80.75
		25		82	80	89	88	84.75
		30		95	90	94	90	92.25
Samarkand-7 variety	Autumn cuttings	20		86	82	73	90	82.75
		25		87	89	82	95	88.25
	Spring cuttings	20		85	86	87	87	86.25
		25	90	65	86	84	81.25	
		30	63	71	85	86	76.25	
	Total			82.91%	79.46%	84.64%	88%	83.76%

**Summary.** The best indicator of the preservation of cuttings is the Tashkent-16 variety, that is, 92.25% of the 30 cm long cuttings prepared and planted immediately before the beginning of the vegetation process in the spring season, 86.5% of the 25 cm long cuttings prepared in the autumn season and stored in special trenches in the winter and planted in the spring.

88.25% of Samarkand-7 variety, 25 cm long cuttings planted in spring, prepared in the autumn season and stored in special trenches in winter, made 88.25%.

During these two seasons, the cuttings were planted in early spring with the use of mineral fertilizers such as Kornavin, Succinic acid, Gumi (withheld for 30 minutes) in order to increase the retention %. As can be seen from the data in the table, the rate of catching pens is not less than 83.76% on average, the indicators in the control option are 82.91%. It is desirable to use a cheap and easy method for the research process. Accordingly, from the process of this preliminary research, it can be known that in the area of the land prepared in advance, the cuttings of *east oleaster* varieties with an average length of 25-30 cm are prepared in early spring, immediately planted and maintained based on the agrotechnical measures, it will be possible to grow 75-80% standard seedlings on average.

It is possible to get moderate results by preparing the cuttings of *east oleaster* in the autumn season and keeping them in special trenches in the winter during the spring planting process. Thus, the reproduction of the *east oleaster* from woody cuttings of Tashkent-16 and Samarkand-7 varieties is based on the natural biological feature of callus formation processes in the lower part of the cuttings, which allows to grow many standard seedlings in a short period of time (1 year).



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