

Prospects for the Cultivation of Black Chokeberry (*Aronia Melanocarpa*) in Uzbekistan

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Abstract: When propagating black chokeberry varieties by cuttings, it is recommended to use coarse river sand + peat as an artificial substrate and plant cuttings in the second and third ten days of August. The cuttings planted during this period have the highest regeneration rates: root formation 18-19 days, the beginning of seedlings - 24-26 days, the rate of rooting is 85-87%, the yield of standard seedlings is 61-64 pieces.

Keywords: Aronia, variety, cutting, substrate, peat, sand, regeneration, crop, standard seedling.

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Introduction

The Latin name for black chokeberry (*Aronia melanocarpa*) comes from the Greek words *aria* - mountain flower, *melano* - black and *karpa* - fruit. Black chokeberry is native to North America, where it grows along the banks of rivers and lakes, is a deciduous shrub up to 3 m high, and in autumn, its leaves are simple, alternate oval in shape, and painted in orange-purple. The crown of a young bush is compact, but with age it grows up to 2 m wide. The flowers bloom from mid-May to early June, collected in inflorescences with a diameter of 5-6 cm. The fruits are spherical or slightly flattened, black, berry-like, 1-1.8 cm in diameter, their taste is sweet and sour. The chokeberry plant is very useful. The Greeks did not call it “useful black fruit” for nothing. It is grown not only as a fruit or ornamental plant, but also as a medicinal plant. That is why the black chokeberry plant is called “Black Pearl”.

The Resolution of the President of the Republic of Uzbekistan № PQ-4549 of 2019, “On additional measures to further develop the fruit, vegetable and viticulture sector, create an added value chain in the sector,” sets the tasks of diversifying the composition of the country's agricultural crops, increasing the income of farmers and dehqan farms, homesteaders, increasing the variety of vegetables and introducing cultivation technologies in order to increase the volume of exports and increase the volume of exports, and protect the health of the population. At the same time, vegetable products are becoming increasingly important in the nutrition of the population, and therefore, great attention is paid to the development of this sector in the republic.

In particular, a training area for growing berries has been established in the neighborhood. Here, seedlings of black chokeberry, blackberry, huckleberry, and blueberry are grown and planted in homesteads. After the harvest, they are purchased by exporters.

Fruits with seeds are distinguished by their rich biochemical composition, healing properties, and excellent taste qualities, and are widely consumed by many people. Apples, pears, and quince are widely grown in our republic. Of the fruit with seeds, hawthorn is widely distributed in mountainous regions and is widely consumed by the local population.

In recent years, special attention has been paid to further increasing the number of fruits suitable for processing, export, and medicinal purposes in our country. For this, many fruits that are not found in our republic are being introduced from abroad. Currently, such fruit plants that have been introduced to our republic and are being successfully cultivated include blackberries, kiwi, blueberries, etc. In addition, there is a growing need for other new fruit plants. Because the demand for their consumption is increasing among our people. One of such fruits is black chokeberry.

Biological properties. Black chokeberry is a strongly branching shrub, reaching a height of 2.5-3 m. Its flowers are bisexual, collected in dense umbrellas (like the flowering of a pear). In its natural range, it blooms in late spring, after the leaves have formed on the tree. The fruits are spherical, dark, dark-crimson, with a gray waxy coating, 6-8 mm in diameter, and edible. The taste is sour-sweet, with a slightly astringent aftertaste. The weight of one fruit is 1.5 grams. Among the cultivated varieties, larger-fruited varieties are more common. In its natural range, it ripens in August-September.

Black chokeberry is a winter-hardy, light-loving plant. Since the root system is located on the surface of the soil, it is highly demanding of moisture. The root system is strongly developed and spreads to the point of spreading branches.

Chemical composition. The fruits contain up to 10% sugar (mainly glucose and fructose) and sorbitol alcohol, which has a sweet taste and can replace sugar for diabetics; rich in vitamin P (on average 2000 mg%, there are reports of even 6500 mg%). Other vitamins contained in black chokeberry include carotene (provitamin A), vitamin C (contains 100 mg%), E, PP, as well as B vitamins. The total content of anthocyanin pigments in ripe fruits reaches 6.4%. Black chokeberry is distinguished by a large set of microelements - it contains boron, fluorine, iodine compounds (6-10 mg per 100 g of fresh fruit), iron, copper, manganese, molybdenum. The total acidity of the fruit, calculated as malic acid, does not exceed 1.3%. They also contain pectin and tannins.

Economic importance and uses. The flowers produce pollen and nectar and are visited by bees. Nectar yield ranges from 81 to 161 kg ha. Nectar yield varies insignificantly during the flowering period.

In medicine freshly picked fruits are used as a vitamin supplement and for hypertension stages I and II. It is used as an adjuvant for rheumatism, measles, typhus, scarlet fever, allergic reactions, and the juice helps to strengthen the walls of blood vessels. The leaves contain substances that improve liver function and the formation and outflow of bile. Black chokeberry extract may be useful for patients with multiple sclerosis. Black chokeberry fruits have antioxidant properties. Their consumption contributes to good thermoregulation in people (women) with a "cold" constitution. The fruits, stripped of branches, leaves, and stems, are packed in baskets or wooden boxes. They are stored in a cool place for no more than 3 days, at a temperature not higher than 5°C, for 2 months. Fruit drying is carried out at a temperature not higher than 60°C. Not only are fresh, frozen, and dried fruits used for food, but also processed products with the best taste qualities: jam, preserves, jelly, candied fruits, compote, and wine are made from its fruits.

Cultivation. Black chokeberry is a plant that is less demanding on care conditions. It is a very frost-resistant plant. In winter, it can withstand temperatures down to -40°C, which allows it to be grown even in regions with severe winters. Black chokeberry prefers sunny, slightly shaded, fertile, moderately moist, well-drained soils. The best soil pH for black chokeberry is from -5.5 to 7.0. It is recommended not to plant it in areas where water accumulates. Black chokeberry is propagated from seeds, cuttings, grafting, and cuttings.

Soil. The main ancestors of black chokeberry grow in the wild, mainly in forest glades, and the soils here are mainly acidic soils formed by the decomposition of dead branches and fallen leaves. Loose acidic soils (pH 4.8-5.5) with good drainage and a high humus content are very suitable for black chokeberry, the most favorable pH of such soils is 5.5.

Sandy and loamy soils are also suitable for black chokeberry. Soil acidity can be adjusted to suit the needs of the blueberry plant. For example, if the soil pH is 5.5 to 7.0, the surface of such soils can be mulched with 0-15 cm of sphagnum peat before chopping and mixing. Sphagnum peat not only increases acidity, but also enriches the soil with humus.

If the soil pH is above 7.0, raised beds can be created and filled with soil of the appropriate acidity. The height of the raised bed should be 20-30 cm above ground level, and the plant roots should be covered with 0-15 cm of soil.

In our experiments, when using IMK, which is characterized by its high rooting ability, at an aqueous concentration of 40 mg/liter and coarse river sand + peat as an artificial substrate, the yield of developed standard seedlings differed depending on the planting date of cuttings. Counting the standard seedlings developed from cuttings planted at different times showed that their highest number was in the variant where the cuttings were planted in the second and third decades of August. In this experimental variant, the number of standard seedlings obtained per square meter of useful area of the structure (planting scheme 10 x 10 cm) was 1-64 pieces.



Comparative characteristics of black chokeberry and Michurin chokeberry

Explanation

black chokeberry

chokeberry Michurin

Bush height, m	0,5—1	1—3
Leaf blade length, cm	1,9—5,9	4,2—5,6
Leaf plate width cm	1,0—2,1	2,4—3,4
Leaf plate shape	oval to lanceolate	elliptical, conical
The ratio of the length to the width of the leaf plate	1,9—3,1	1,5—1,8
Number of flowers in the inflorescence, pcs.	4—6	12—35
Corolla diameter, cm	0,4—0,6	~1,2
Fruit shape	oval to pear-shaped	spherical, slightly flattened
Fruit surface	wonderful	matte
Fruit size and weight, g	small: 0,38—0,84	Middle: 1,15—1,25
The taste and juiciness of the fruit	inedible, dry	can be dried, juicy, sweet, and sour
Variability of characteristics of leaves, flowers, fruits	high	no
Hard	diploid (2n=34)	tetraploid (2n=68)
Reproduction	amphimic	apomict
Cold-resistant according to A. Reder	average (zone IV)	high (zone II)

Conclusion. When propagating black chokeberry varieties from cuttings, it is recommended to use coarse river sand + peat as an artificial substrate, and plant the cuttings in the second and third decades of August. The highest regeneration rates are recorded in cuttings planted during this period: root formation - 18-19 days, the beginning of shoot formation - 24-26 days, rooting rate 85-87%, standard seedling yield 61-64 pieces.

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