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PERSPECTIVE VARIETIES OF CHERRY (*Cerasus avium* Moench.) IN UZBEKISTAN

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Abstract: Uzbekistan annually produces more than 100 thousand tons of cherries and increases the export of cherries to the countries of the world, according to this indicator, the Republic ranks 5th in the world. The products grown here are distinguished by their unique taste and aroma. The assortment of sweet cherries in the country is small and includes 11 varieties, and one of the main disadvantages of these varieties is the small mass of fruits. The article presents data on the production and biological characteristics of sweet cherry varieties. The highest rates for the average weight of one fruit were obtained when growing varieties Melitopol Chernaya (7.8 g), Bakhor (8.2 g) and Russian (8.4 g). According to a complex of production and biological characteristics, early fruiting, average fruit weight, yield, promising varieties of sweet cherries Melitopol early (11.93 t/ha) and Russian (11.26 t/ha). When growing these varieties, a high yield of cherry fruits with high quality indicators is ensured.

Keywords: Cerasus avium Moench., monitoring, quality, yield

1. Introduction

In Uzbekistan, much attention is paid to the further development of the fruit growing industry, the expansion of the area of gardens of valuable fruit crops, the introduction of promising varieties and advanced technologies. Uzbekistan annually produces more than 100 thousand tons of cherries and increases the export of cherries to the countries of the world, according to this indicator, the Republic ranks 5th in the world (Yusupov 2019). The products grown here are distinguished by their unique taste and aroma. Cherry fruits contain more than 12.2% sugars, 0.23% various acids. The fruits are also used for the preparation of high quality compotes and jams, as well as good quality dried products (Abrorov 2014, Mirzaev et al. 1968). Cherry varieties Savri Surkhoni, Kora gilos, Francis, Dragana Zheltaya, Sariq gilos, Valovye heart, Napaleon, Valery Chkalov and Revershon, zoned in the Republic, are grown on large areas. However, the assortment of sweet cherries in the country is small and includes 11 varieties, and one of the main disadvantages of these varieties is the small mass of fruits. Therefore, it is important to select large-fruited, promising ones. high-yielding varieties of sweet cherries adapted to local conditions (Makhamudov & Masharipov 2020). In 2020, for the first time, an agreement was reached with the

World Bank on the allocation of 500 million dollars for the implementation of a project to modernize the horticulture and viticulture industry (Mirziyoev 2020).

2. Materials and methods

The purpose of the research was to study the biological and production characteristics, fruit quality and productivity of sweet cherry varieties created in Uzbekistan and brought from Ukraine. The studies were carried out in the conditions of old irrigated light gray soils of the Samarkand region at the Research Institute of Horticulture, Viticulture and Winemaking named after Academician M. M. Mirzaev in 2015-2022. The area of the orchard is 850 hectares, including the cherry orchard - 22 hectares, of which 18 hectares are fruit-bearing and 4 hectares are young gardens. On the area of 50 hectares of the fruit nursery, seedlings of fruit crops are grown. The studies were carried out according to the methods of Kh.Ch. Buriev & Enileev (2014) "Method of accounting for phenological observations in experiments with fruit and berry plants", V.F. Moisenchenko (1967) "Method of accounting and observations in experiments with fruit and berry plants". As objects of study in the experiment, we used six varieties of sweet cherries created at the Samarkand Scientific Research Institute of Horticulture, Viticulture and Winemaking named after academician M.M. Mirzaev (Bakhor), the Ukrainian Research Institute of Irrigated Horticulture named after M.F. early, Melitopol black), Nikitsky Botanical Garden, Ukraine (Russian), variety Revershon of Italian origin and variety of folk selection Bark gilos. Of these, 3 varieties (Reversion, Kora gilos, Bakhor) are included in the State Register of Agricultural Crops of the Republic of Uzbekistan (2020). Varieties Melitopol early, Melitopol black, Russian) are promising varieties.

Reversion

Variety of Italian origin. Included in the State Register of Agricultural Crops of the Republic of Uzbekistan. The tree is above average in size, comes into fruiting in the sixth year after planting seedlings. The beginning of flowering is observed in the first decade of April, the fruits ripen on May 20-25. The fruits are large, the pulp is red, sweet, juicy, easily separated from the stone, the average weight of the fruit is 7.0-7.5 g. The fruits contain dry matter 18.5%, sugars 13.2%, acids 0.75%. The tasting score is 4.2-4.5 points, the yield is 100-110 q/ha (Sulaimonov et al. 2016).

Bakhor

The variety was created at the Samarkand scientific station of the Scientific Research Institute of Horticulture, Viticulture and Winemaking named after Academician M. Mirzaev.

Included in the State Register of Agricultural Crops of the Republic of Uzbekistan. Early, fruitful, variety of universal use. Frost resistance is relatively high, early flowering variety, flowering period is 7 days. The beginning of flowering is observed on March 20-25, the fruits ripen in the second decade of May. The fruits are large, weighing 7.0-8.0 g. The tasting score is 4.0-4.5 points. The fruits contain dry matter 19%, sugars 13.8%, acids 0.79% (Makhamudov & Masharipov 2019).

Melitopol early

The variety was created at the Ukrainian Research Institute of Irrigated Horticulture named after M.F. Sidorenko. Promising variety. High-yielding, winter-hardy, sufficiently disease-resistant, early-ripening variety, distinguished by its presentation and excellent taste. The height of an adult cherry is within 6-7 m. The crown is round, dense. The bark on young shoots is brown, on old shoots it acquires a grayish tint.

The fruits are medium, rounded flat, slightly bumpy, dark red, with subcutaneous white dots all over the surface of the fruit. Fruit weight 7 - 8 g. The pulp is gently red, juicy, medium density, tender, sweet and sour in taste. Early maturity. It enters fruiting at the age of 4 [1].

Melitopol black

The variety was created at the Ukrainian Research Institute of Irrigated Horticulture named after M.F. Sidorenko. Promising variety. The tree is large and fast growing. The crown is wide-rounded, raised, dense. The bark on the trunk and skeletal branches is gray-brown. The angle of origin of the skeletal branches is 54-62°. Shooting ability is good. Shoots are straight, yellowish-greenish-gray. The fruits are large, one-dimensional, with an average weight of 6-8 g, round-oval, dark red, the flesh is dark red, dense, cartilaginous, juicy. The juice is dark red. The taste is sweet with a pleasant acidity. The fruits contain 18.2% solids, 13.3% sugars and 0.71% acids. Tasting score 4.4 points. Differs in transportability and universality of use [2].

Russian

The variety was created in the Nikitsky Botanical Garden, Ukraine. Promising variety. The tree is above average size, medium growing. The crown is flat-round, spreading, densely leafy. Skeletal branches of medium vigor, thick branches, angle of origin of skeletal branches 45-50º, medium shoot capacity. The fruits are large, one-dimensional, weight 7.7 g, wide-round, light yellow with a red bright pink blush, which occupies most of the surface of the fruit. The skin is thin, light yellow with a waxy coating. The pulp is light yellow, tender, juicy, watery, sweet and sour, dessert. The fruits contain 18.0% solids, 13.1% sugars, 0.69% acids. The transportability of fruits in the state of technical maturity is average [2].

Hylos bark

Variety of national selection. Included in the State Register of Agricultural Crops of the Republic of Uzbekistan. Early, fruitful, variety of universal use. The fruits are medium, weighing 4.0-4.5 g, the shape is obtuse-heart-shaped, the surface is slightly bumpy. The coloration is dark red. Frost resistance is relatively high, early flowering variety, flowering period is 7 days. A feature of the variety is the ability of mature fruits to hang without falling on a tree for 15-20 days before wilting. while maintaining its high quality. The fruits contain dry matter 20%, sugars 15.68%, acids 0.82% (Mirzaev et al. 1968).

Soil properties

In the arable horizon (0-30 cm) of old irrigated light gray soils of the orchard, the humus content is 1.21%, and in the subarable horizon (31-50 cm) - 0.12%, total nitrogen, respectively, 0.124 - 0.112%, phosphorus 0.180 - 0.151%, potassium 2.6 - 2.1%. The soil is poorly supplied with mobile forms of nitrogen and phosphorus, and the provision with potassium is average. The content of N-NH4 is 21.0–16.2; N-NO3 23.0–18.4; mobile phosphorus 25.5–16.1. The mobile potassium 228–178 mg/kg. The reaction of the soil solution in the topsoil (0-30 cm) is slightly alkaline and is pH=7.6-7.8 (*Table 1*).

Table 1: Agrochemical indicators of the soil of the apricot orchard

Incision soil (cm)	Humus (%)	Total (%)			Mobile (mg/kg)			
		N	P	K	$N\text{-}NH_4$	$N\text{-}NO_3$	P_2O_5	K_2O
0 – 30	1,21	0,124	0,180	2,6	21,0	23,0	25,5	228
31 – 52	0,12	0,112	0,151	2,1	16,2	18,4	16,1	178

Source: Scientific Research Institute of Horticulture, Viticulture and Winemaking named after Academician M.M. Mirzaev (2022)

3. Results

***Figure 1*:** Monitoring the harvest of sweet cherries in the orchard of Samarkand scientific station

Source: Author's own picture. (2022)

In the conditions of Uzbekistan, sweet cherry comes into fruiting at the age of 3-4 years. Sweet cherry has no periodicity in fruiting. The culture bears fruit annually and abundantly, except in some cases when the buds and flowers are damaged by frost (Potapova & Pilshcikova 2000). During the period of full fruiting at the age of 15-20 years, trees produce an average of 100-150 kg of fruit.

At the Samarkand scientific station, based on the results of the research, new varieties of sweet cherries Melitopol early, Melitopol black and Russian were studied and selected as promising. *Table 2* presents data on the production and biological characteristics of various varieties of sweet cherries. Based on the conducted phenological observations, it was revealed that in varieties the beginning of flowering was noted on March 16 - April 07. In the variety Melitopol early flowering was observed on March 16, in the variety Bakhor - on March 23 and the variety Kora gilos - on March 25. Fruit ripening by varieties was observed on 08 (Melitopol early) - 25 (Russian, Melitopol black, Reversion) May. Depending on the variety, the length of the growing season was 237 (Melitopol black) -249 (Melitopol early) days.

In the studies, the qualitative indicators of sweet cherry fruits were studied. Based on the data obtained, it was revealed that the largest fruits were formed in the varieties Russian (8.4 g), Bakhor (8.2 g) and Melitopol early (7.1 g). In varieties Melitopol chernaya, Reversion and Kora gilos, this indicator, respectively, was 7.8; 7.0 and 5.2 g.

Sweet cherries give excellent dessert fruits, which are valued for their rather high sugar content, the presence of vitamins C and A, and most importantly, because the fruits ripen earlier than other fruit species, opening the fruit season.

In the orchard, the yield of sweet cherries was determined. The highest yield per hectare was obtained when growing the variety Melitopol early – 11.93 tonnes per hectare, which is 32.2% higher than the indicator of the control variety Reversion. In varieties Russian, Melitopol black and Bakhor, this indicator, respectively, amounted to 11.26; 10.89 and 10.24 t/ha. In the varieties Kora gilos and Reversion, the yield obtained, respectively, was 9.85 and 9.02 t/ha. The highest rates for the average weight of one fruit were obtained when growing varieties Melitopol Chernaya (7.8 g), Bakhor (8.2 g) and Russian (8.4 g).

Table 2.: Production and biological characteristics of sweet cherry varieties

Varieties	Flowering		Fruit ripening	Leaf fall		Duration vegetation period, in days	Average weight of one fruit, g	Tasting evaluation, points	Yield	
	mass	start		start	end				t/ha	%
Reverse control	07.04	11.04	25.05-30.05	01.11	01.12	238	7.0	4,5	9,02	100,0
Melitopol black	04.04	07.04	25.05-30.05	29.10	27.11	237	7,8	4,6	10,89	120,7
Russian	05.04	08.04	25-30.05	30.10	29.11	238	8,4	4,8	11,26	124,8
Bakhor	22.03	25.03	15-20.05	21.10	20.11	243	8,2	4,6	10,24	113,5
Melitopol early	16.03	18.03	08-13.05	20.10	20.11	249	7,1	4,6	11,93	132,2
Kora gilos	25.03	28.03	10-15.05	26.10	22.11	242	5.2	4,5	9,85	109,2

HCP_{05} = 4,21 ц /га
Sx % = 3,59%

Source: Research Institute of Horticulture, Viticulture and Winemaking named after academician M.M.Mirzaev (2015-2022)

Discussion

According to the complex of production and biological characteristics, early fruiting, average fruit weight, yield, sweet cherries Melitopol early and Russian were identified. When growing these varieties, a high yield of cherry fruits with high quality indicators is ensured.

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