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SELECTION OF PEACH VARIETIES SUITABLE FOR THE CONDITIONS OF ANDIJAN REGION

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Abstract: The article presents the results of a study conducted in the conditions of the Andijan region, identifying the highest yield per unit area among 6-year-old peach varieties. Among the fuzzy peach varieties, Monalu (254.9 c/ha), Rom Star (253.0 c/ha), and Champion (252.0 c/ha) showed the highest productivity. Among the hairless peach varieties, Muyassar (244.4 c/ha), Lyuchak Ranniy (244.2 c/ha), and Shirin Magiz (196.8 c/ha) were the most productive.
Keywords: peach, varieties, fruit weight, yield per tree, productivity.

ANDIJON VILOYATI SHAROITIGA MOS SHAFTOLI NAVLARINI TANLASH

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Annotatsiya: Maqolada Andijon viloyati sharoitida 6 yoshli shaftoli navlaridan maydon birligidan eng yuqori hosildorlik tukli shaftolining Monalu (254,9 s/ga), Rom star (253,0 s/ga) va Chempion (252,0 s/ga) hamda tuksiz shaftolining Muyassar (244,4 s/ga), Lyuchak ranniy (244,2 s/ga) va Shirin magiz (196,8 s/ga) navlarida aniqlanligi bayon qilingan.
In the article, in the conditions of Andijan region, the highest productivity per unit area of 6-year-old peach varieties is Monalu (254.9 s/ha), Rom star (253.0 s/ha) and Champion (252.0 s/ha) and hairless peach Muyassar (244.4 s/ha), Lyuchak ranniy (244.2 s/ha) and Shirin magiz (196.8 s/ha) it is stated that it is determined in varieties.
Kalit so‘zlar: shaftoli, navlar, meva vazni, bir tup daraxtdagi hosil, hosildorlik.

Introduction

Peach is a fast-growing and high-yielding stone fruit crop. It is widely cultivated in the USA, southern Europe, Japan, China, Turkey, Central Asia, and the Caucasus. It was domesticated over 2,000 years ago and today, there are around 5,000 known varieties. At present, peach is grown in all subtropical and tropical countries of both the Northern and Southern Hemispheres. The global peach production reached 25.0 million tons in 2021, with leading producers being China (14.5 million tons), Spain (1.5 million tons), Italy (1.43 million tons), the USA (927.2 thousand tons), Iran (863.9 thousand tons), Greece (847.9 thousand tons), and Turkey (674.14 thousand tons).

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In Uzbekistan, peach ranks third among fruit trees in terms of cultivated area. In 2021, peaches were grown on 19,376 hectares, producing a total of 226.13 thousand tons of fruit. Per capita production was 6.925 kg, and average yield was 116.7 centners per hectare.

In horticulture, mainly common peach varieties are cultivated (other species are used for ornamental purposes or as rootstocks). The tree grows 3 to 9 meters tall, with alternate, lance-shaped leaves, and bisexual flowers. The fruit is juicy (weighing 50 to 600 grams), stone-bearing, and varies in shape from flat-round to oval, in color from pale green to dark red, and may be either fuzzy or smooth-skinned (nectarines). The flesh ranges in color from greenish, pale pink, yellow, to dark red, and may either separate easily from the stone or not, with a sweet-sour to sweet taste.

The fruit contains 80–90% water, 10–14% sugar, 0.081–0.2% malic, citric, and tartaric acids, 0.56–1.26% pectin, as well as tannins and nitrogenous compounds, vitamins A, C, and B, and the kernel contains 20–60% oil, amygdalin, proteins, and other nutrients. Peaches are consumed fresh, dried, or processed into preserves (jam, marmalade, compote). Infusions made from the leaves and flowers are used in traditional medicine to treat headaches, rheumatism, and gastrointestinal diseases. Peach trees are also good nectar producers [2]; [4]; [5].

Peach is relatively heat-loving, light-demanding, and can tolerate short-term frosts of -15 to -20°C, but perishes at -25°C, especially vulnerable to spring frosts during blooming [2]. In Uzbekistan, around 50 varieties are grown. However, the intensity of peach cultivation varies, primarily depending on a complex of organizational, economic, and technological measures. The transition to industrial-scale production of stone fruit crops in Uzbekistan necessitates the development and implementation of modern technologies.

The key elements of such technologies include the choice of variety, planting schemes, and shaping the tree to create highly productive orchards that maximize biological potential to increase yield and fruit market quality [4].

Peach has a very high growth potential, which increases orchard maintenance costs and hinders the formation of dense plantings. At the same time, planting density can be increased to a certain extent, as the increasing wood mass supports leaf surface expansion but worsens light conditions inside the canopy, reducing fruit yield and quality. To address these issues, the introduction of new varieties into production is proposed.

Research methods

Field experiments were conducted based on methodological guidelines such as “Program and Methodology for Studying Varieties of Fruit, Berry, and Nut Crops” (Oryol, 1999) [3], and “Methodology for Calculations and Phenological Observations in Experiments with Fruit and Berry Plants” (Buriyev Kh.Ch., et al., 2014) [1].

The research focused on the study of both fuzzy and hairless peach varieties zoned in Uzbekistan. Among the fuzzy peach varieties, the local varieties Farhad (standard), Gulnoz, Istiqlol, Uchkun, Khilola, Sharq, and Yutuq, as well as the foreign varieties Monalu, Rom Star, and Champion were examined. For the hairless peaches, the varieties Lola (standard), Lyuchak Ranniy, Malinoviy, Muyassar, Tashkent Nectarine, and Shirin Magiz were evaluated in terms of fruit characteristics and productivity.

Research results

When measuring the average fruit weight of peach varieties grown under the conditions of Andijan region during the period of 2021–2023, it was found that among the fuzzy peaches, the Sharq (168.4 g), Rom Star (163.5 g), and Champion (156.7 g) varieties produced larger

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fruits compared to the standard Farhad variety (148.9 g). In contrast, the fuzzy peach varieties Uchkun (131.4 g), Gulnoz (126.5 g), Istiqlol (121.7 g), Khilola (121.7 g), and Yutuq (120.7 g) were determined to produce smaller fruits by 17.5 to 28.2 grams compared to the Farhad (st) variety.

Among the hairless peaches, the Muyassar (147.0 g), Malinoviy (136.2 g), and Shirin Magiz (105.9 g) varieties formed significantly heavier fruits than the standard Lola (81.4 g), exceeding it by 65.6 g, 54.8 g, and 24.5 g respectively. On the other hand, the Lyuchak Ranniy (49.0 g) and Tashkent Nectarine (45.1 g) varieties yielded much smaller fruits, weighing 32.4 g and 36.3 g less than the Lola (st) variety, respectively (Figure 1).

Regarding productivity per tree, the highest average yields among the fuzzy peach varieties from 2021 to 2023 in Andijan region were observed in the Monalu (51.0 kg), Rom Star (50.6 kg), and Champion (50.4 kg) varieties. These outperformed the Farhad (st) variety (47.9 kg), while the Yutuq (28.5 kg) and Uchkun (26.9 kg) varieties produced considerably lower yields, with a decrease of 19.4–21.0 kg per tree.

Among the hairless peach varieties, the standard Lola yielded 32.4 kg per tree. In comparison, higher yields were recorded from Muyassar (48.9 kg) and Lyuchak Ranniy (48.8 kg), whereas the Malinoviy variety demonstrated a significantly lower yield, producing only 27.5 kg per tree (Figure 2).

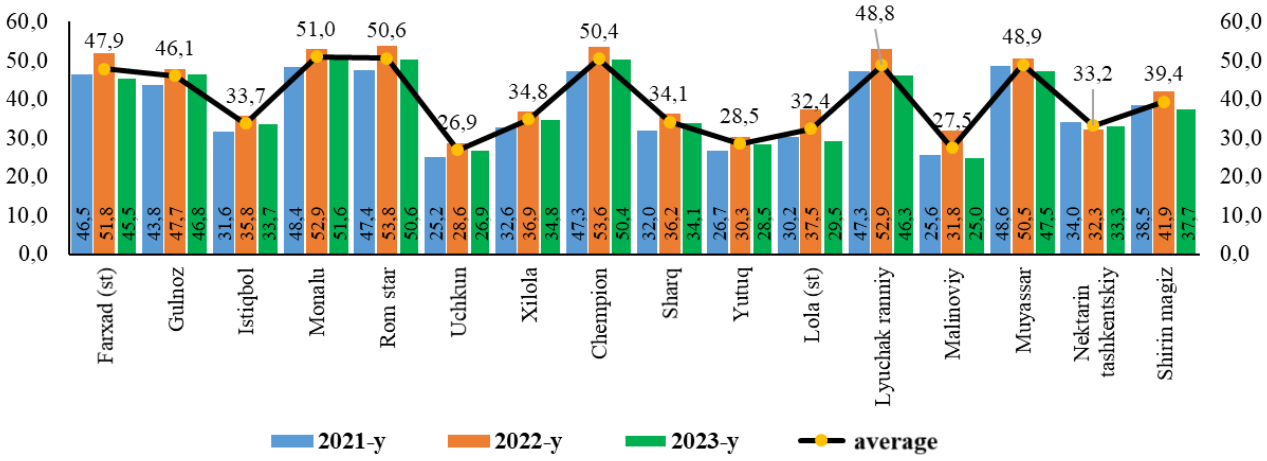

Figure 1. Fruit weight of peach varieties, kg.

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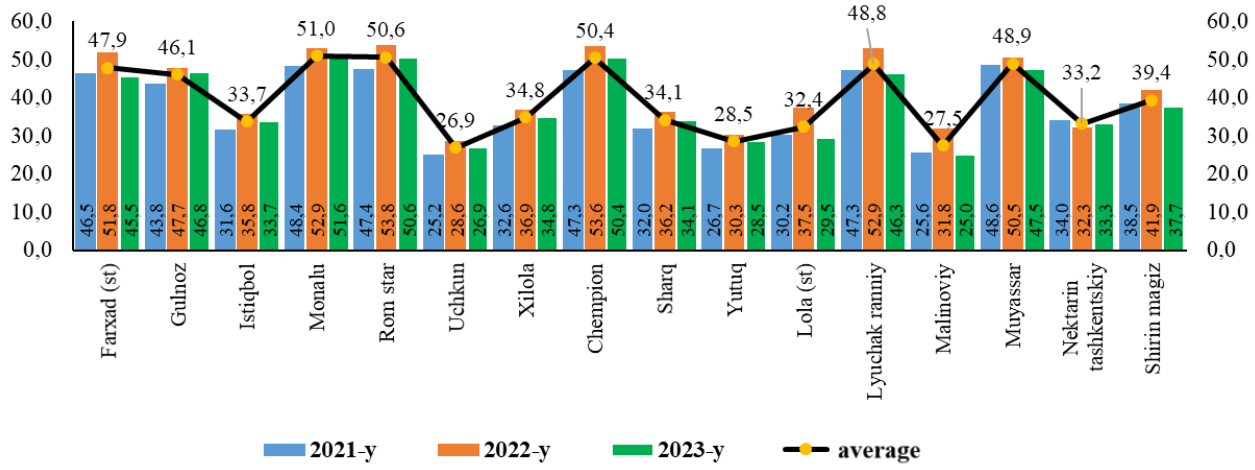

Figure 2. Yield of peach varieties per tree, kg/plant

In the conditions of Andijan region, during the year 2021, the yield per hectare of the fuzzy peach variety Farhad (standard) was 232.7 c/ha. In comparison, the Monalu (242.1 c/ha), Rom Star (237.2 c/ha), and Champion (236.3 c/ha) varieties demonstrated higher yields by 9.4, 4.5, and 3.6 c/ha, respectively. On the contrary, the varieties Khilola (162.9 c/ha), Sharq (159.8 c/ha), Istiqbol (158.0 c/ha), Yutuq (133.7 c/ha), and Uchkun (126.0 c/ha) showed significantly lower yields compared to Farhad (st), with reductions of 69.8, 72.9, 74.7, 99.0, and 106.7 c/ha, respectively.

Among the hairless peach varieties in 2021, the highest yields per hectare were observed in Muyassar (243.0 c/ha), Lyuchak Ranniy (236.7 c/ha), and Shirin Magiz (192.6 c/ha). Conversely, the Malinoviy variety showed the lowest yield (127.8 c/ha), which was 23.0 c/ha less than that of the standard Lola (150.8 c/ha).

In 2022, the yield per hectare of the Farhad (st) variety of fuzzy peach was 259.0 c/ha. Higher yields were recorded in the Rom Star (268.8 c/ha), Champion (267.8 c/ha), and Monalu (264.5 c/ha) varieties, exceeding the standard by 9.8, 8.8, and 5.5 c/ha, respectively. On the other hand, the Yutuq (151.5 c/ha) and Uchkun (142.8 c/ha) varieties produced 107.5 and 116.2 c/ha less yield than Farhad (st), respectively.

Among the hairless peaches, the standard Lola yielded 187.6 c/ha, while Lyuchak Ranniy (264.5 c/ha), Muyassar (252.5 c/ha), and Shirin Magiz (209.5 c/ha) produced higher yields by 76.9, 64.9, and 21.9 c/ha, respectively. However, Tashkent Nectarine (161.5 c/ha) and Malinoviy (159.0 c/ha) showed lower yields by 26.1 and 28.6 c/ha compared to Lola (st).

In 2023, the yield per hectare of the fuzzy peach variety Farhad (st) was 227.5 c/ha. Monalu (258.2 c/ha), Rom Star (253.0 c/ha), and Champion (252.0 c/ha) again demonstrated superior yields, while the lowest yields were recorded for Yutuq (142.6 c/ha) and Uchkun (134.4 c/ha). Among hairless peaches, the standard variety Lola produced 147.4 c/ha. The highest yields were observed in Muyassar (237.6 c/ha), Lyuchak Ranniy (231.4 c/ha), and Shirin Magiz (188.3 c/ha), which exceeded the standard by 90.2, 84.0, and 40.9 c/ha, respectively. In contrast, the Malinoviy variety showed 22.4 c/ha lower yield, with 125.0 c/ha. (Table 1).

2-Table
Yield of peach varieties under the conditions of Andijan region

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Name of varieties	Yield, c/ha				
	2021-y	2022-y	2023-y	average	per cent of variety, %
Farxad (st)	232,7	259,0	227,5	239,7	100,0
Gulnoz	219,2	238,5	233,8	230,5	96,2
Istiqbol	158,0	179,0	168,5	168,5	70,3
Monalu	242,1	264,5	258,2	254,9	106,4
Rom star	237,2	268,8	253,0	253,0	105,5
Uchkun	126,0	142,8	134,4	134,4	56,1
Xilola	162,9	184,6	173,8	173,8	72,5
Chempion	236,3	267,8	252,0	252,0	105,1
Sharq	159,8	181,1	170,4	170,4	71,1
Yutuq	133,7	151,5	142,6	142,6	59,5
Lola (st)	150,8	187,6	147,4	161,9	100,0
Lyuchak ranniy	236,7	264,5	231,4	244,2	150,8
Malinoviy	127,8	159,0	125,0	137,3	84,8
Muyassar	243,0	252,5	237,6	244,4	150,9
Nektarin tashkentskiy	170,1	161,5	166,3	166,0	102,5
Shirin magiz	192,6	209,5	188,3	196,8	121,6

According to the data from Table 1, under the conditions of the Andijan region, the average yield per hectare from 2021 to 2023 for the fuzzy peach variety Farhad (standard) was 239.7 c/ha. Compared to this, higher yields were recorded in the Monalu (254.9 c/ha), Rom Star (253.0 c/ha), and Champion (252.0 c/ha) varieties, which exceeded the standard by 15.2, 13.3, and 12.3 c/ha respectively. Conversely, lower yields compared to Farhad (st) were observed in Khilola (173.8 c/ha), Sharq (170.4 c/ha), Istiqlol (168.5 c/ha), Yutuq (142.6 c/ha), and Uchkun (134.4 c/ha), with reductions of 65.9, 69.3, 71.2, 97.1, and 105.3 c/ha respectively.

Among the hairless peaches, compared to the standard Lola variety (161.9 c/ha), significantly higher yields were observed in Muyassar (244.4 c/ha), Lyuchak Ranniy (244.2 c/ha), and Shirin Magiz (196.8 c/ha), with increases of 82.5, 82.3, and 34.9 c/ha respectively. On the other hand, the Malinoviy variety showed a lower yield, with 137.3 c/ha, which is 24.6 c/ha less than that of Lola (st).

Conclusion

Under the conditions of the Andijan region, to achieve higher yield per hectare, it is recommended to cultivate the fuzzy peach varieties Monalu (254.9 c/ha), Rom Star (253.0 c/ha), and Champion (252.0 c/ha), as well as the hairless peach varieties Muyassar (244.4 c/ha), Lyuchak Ranniy (244.2 c/ha), and Shirin Magiz (196.8 c/ha).

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