

YIELD AND BIOCHEMICAL COMPOSITION OF FRUIT OF DIFFERENT PEACH CULTIVARS BELONGING TO NECTARINE GROUP**Yuldasheva Guzal Qakhkhor kizi**

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Аннотация. Ушбу мақолада Фарғона вилояти Олтиариқ тумани шароитида шафтолининг нектаринлар гуруҳига мансуб навлари мевасининг биокимёвий таркибини аниқлаш бўйича амалга оширилган тадқиқот натижалари ёритилган. Тадқиқот объекти сифатида оддий шафтолининг нектаринлар гуруҳига мансуб Ифора, Муяссар, Хосият, Лючак ранний, Нектарин Ташкентский, Заргалдоқ, Суперлола, Лола (назорат) навлари хизмат қилди. Бунда шафтоли навларида мевасининг кимёвий таркибидаги қуруқ модда, қанд, умумий кислота, аскорбин кислота, нитрат миқдори ва қанд миқдорининг кислота миқдорига нисбати ўрганилди, биокимёвий тахлил натижаларига асосан мевасининг сифат кўрсаткичлари, хуштаъмлиги бўйича туксиз навлар ичида Нектарин Ташкентский, Ифора навлари ўрганилган навлардан устунлиги аниқланди.

Калит сўзлар: шафтоли, нав, биокимёвий таркиб, қуруқ модда, С витамини, қанд миқдори, кислота миқдори.

Аннотация. В данной статье представлены результаты исследований, проведенных в условиях Алтыарыкского района Ферганской области, по определению биохимического состава плодов сортов персика, относящихся к группе нектаринов. В качестве объекта исследования использовались сорта обыкновенного персика, относящиеся к группе нектаринов: Ифора, Муяссар, Хосият, Лючак ранний, Нектарин Ташкентский, Заргалдоқ, Суперлола и Лола (контрольный сорт). В ходе исследования в плодах сортов персика изучались следующие показатели химического состава: содержание сухого вещества, сахаров, общей кислотности, аскорбиновой кислоты, нитратов, а также соотношение сахаров к кислотам. На основе результатов биохимического анализа установлено, что среди изученных бессемянных сортов персика сорта Нектарин Ташкентский и Ифора превосходят остальные по показателям качества плодов и органолептическим свойствам.

Ключевые слова: персик, сорт, биохимический состав, сухое вещество, витамин С, количество сахара, количество кислоты.

Abstract. This article presents the results of research conducted under the agroecological conditions of the Altyaryk district of the Fergana region, aimed at determining the biochemical composition of the fruits of peach cultivars belonging to the nectarine group. As the object of the study, peach cultivars belonging to the nectarine group — Ifora, Muyassar, Khosiyat, Luchak Ranniy, Tashkent Nectarine, Zargaldoq, Superlola, and Lola (as the control) — were used. In this study, the chemical composition of the peach fruits was analyzed, including dry matter content, total sugars, total acidity, ascorbic acid, nitrate content, and the sugar-to-acid ratio. Based on the results of biochemical analysis, the cultivars Tashkent Nectarine and Ifora were identified as superior among the studied nectarine-type peach varieties in terms of fruit quality indicators and organoleptic (taste) characteristics.

Keywords: peach, cultivar, biochemical composition, dry matter, C vitamin, sugar content, acid content

Introduction. Today, special attention is being paid to the further development of export-oriented fruit growing in our country. In particular, the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030 calls for "...wide introduction of market principles in the purchase and sale of agricultural products, development of quality control infrastructure, promotion of exports, creation of a favorable agribusiness environment and value chain for the production of competitive, high-value-added agricultural and food products in the target international markets..." is highlighted as one of the important tasks¹. In this regard, the Fergana Valley has broad potential for growing export fruits, particularly peaches, and in-depth scientific research is required to select export varieties suitable for establishing intensive peach and nectarine orchards and develop effective elements of tree shaping technology in intensive peach orchards.

Research subject and method. Ifora, Muyassar, Khosiyat, Lyuchak ranniy, Nectarin Tashkent, Zargaldoq, Superlola, Lola (control) varieties of common peaches belonging to the nectarine group served as the object of research. The dry matter, sugar, total acid, ascorbic acid, nitrate content and ratio of sugar content to acid content of peach varieties were studied. The study was conducted in a fully-grown orchard measuring 4 x 5 m (the orchard was established in 2019). In this study, the comparative assessment of biometric indicators of peach Kh. Ch. Buriev and others [2; 64 p.], E.N. Sedov, T.P. Ogoltsova [4; pp. 378-399] and Yu.B. Ryabushkin [3; 44 b.] was performed according to the methods recommended by scientists.

Research results and their discussion. The success of horticulture is directly determined by the yield and marketability (quality indicators) of the fruit plant species being grown. Yield is considered the most important economic value of each variety, and research has shown that peach varieties belonging to different groups under study have different potential for yield.

Foreign scientists have also conducted a lot of research on peaches. According to the studies, the productivity elements of selected (18 indicators) and introduced (11 indicators) peach varieties were evaluated. Different varieties with productivity indicators at the level of control varieties were separated [7; 243-250 p.].

Our experiment was conducted at the Fergana Scientific and Experimental Station of the Academician M. Mirzaev Scientific Research Institute of Horticulture, Viticulture and Winemaking from 2022 to 2024. The scientific-experimental station is located in the "Fayziabad" area of Altariq district of Fergana region, 600 m above sea level.

Peach varieties belonging to different groups were studied, and phenological, biometric, and biochemical observations were conducted on them.

According to the results of the analysis, the amount of dry matter in the peach fruit was recorded at the level of 16.69 percent in the Lola variety, which was taken as a control for hairless varieties. The highest amount of dry shoots compared to the control was recorded in all studied varieties and was around 16.73-17.79%. Only in the Khosiyat variety was this indicator lower than the control and was around 17.70%.

¹Ўзбекистон Республикаси Президентининг 2019 йил 23 октябрдаги ПФ-5853-сон «Ўзбекистон Республикаси кишлок хўжалигини ривожлантиришнинг 2020 – 2030 йилларга мўлжалланган стратегиясини тасдиqlаш тўғрисида»ги Фармони.

One of the most important indicators of peach quality is the total sugar content of the fruit. Our studies have shown that there is a direct relationship between the sugar content of peaches and the dry matter content.

High total sugar content was recorded in all varieties with high dry matter. In particular, Lola, which was taken as a control for varieties belonging to the nectarine group, showed that the sugar content was 12.6 percent.

In terms of the total sugar content of the grown fruits, the low values compared to the control variety were found in Lyuchchak ranniy (12.2%), Muyassar (12.5%) and Hosiat variety (11.0%). The content of sugar in the fruit of the rest of the varieties was higher than the control and was around 12.7-13.4% according to the varieties.

The results of determining the total acid content in the fruits of the studied peach varieties showed that there were no significant differences between the varieties. The total acid content in most varieties belonging to the nectarine group was 1.03-1.39%, with the highest indicator of 1.39% recorded only in the Khosiyat variety.

It is known that the amount of vitamin C in fruits is one of the important quality indicators. Determination of ascorbic acid or vitamin C content showed that among the nectarine varieties, higher values were observed in the Khosiyat (14.01 mg%), Superlola (12.8 mg%), and Zargaldok (12.4 mg%) varieties compared to the control variety, Lola (12.1 mg%). The content of vitamin C in the fruit of the remaining cultivars was lower than that of the control cultivar and was observed to be around 11.0-12.0 mg%, corresponding to cultivars (see table).

Table

Chemical composition of peach fruit varieties in a collection garden in the conditions of the Fergana region (2022-2024)

№	Name of varieties	Dry matter content, %	Sugar content, %	Total acid, %	Ascorbic acid, mg %	Nitrate, mg/kg	The ratio of the amount of sugar to the amount of acid
Varieties belonging to the group of nectarines							
1	Lola control	16,69	12,6	1,12	12,1	37	11,2
2	Nectarin Tashkent sky	16,85	13,4	1,03	11,0	40	13,0
3	Luchak ranny	16,73	12,2	1,15	12,0	34	10,6
4	Muyassar	16,84	12,5	1,04	11,7	34	12,0
5	Zargaldok	17,01	12,7	1,08	12,4	41	11,8
6	Iffora	17,61	13,7	1,07	12,0	32	12,8
7	Superlola	17,79	12,9	1,10	12,8	39	11,7
8	Hosiyat	14,70	11,0	1,39	14,01	32	7,9

It is known that from the medical point of view, the amount of nitrate in fruit should not exceed 60 mg per 1 kg of fruit.

In our experiment, the amount of nitrate in the fruit of all peach varieties studied was lower than the concentration allowed by medical standards. The nitrate content in nectarine varieties was around 32-41 mg/kg, and in hairy varieties around 27-38 mg/kg.

Depending on the variety, the highest nitrate content was found in the nectarine varieties Nectarine Tashkentsky (40 mg/kg) and Zargaldok (41 mg/kg).

Analysis of the ratio of total sugar content to total acid content plays an important role in determining fruit quality.

Among the varieties belonging to the nectarine group, this ratio was higher in the Ifora and Nectarine Tashkentskiy varieties, which are considered the sweetest in taste, compared to the control variety - Lola (11.2), and amounted to 12.8-13.0, respectively. The lowest level of this ratio was determined in the Khosiyat variety, and it was equal to 7.9. The ratio of total sugar content to total acid content in the remaining nectarine varieties had an intermediate value and was equal to 10.6-12.0, corresponding to the varieties.

Thus, based on the results of the biochemical analysis, it was determined that Nectarin Tashkentsky and Ifora varieties are superior to the studied varieties among the non-hairy varieties in terms of fruit quality and taste.

Conclusion. The research conducted revealed the following:

1. The amount of dry matter was higher (16.73-17.79%) in all hairless varieties compared to the control - Lola variety (16.69%). Only in Khosiyat variety this indicator was lower than the control and was 17.70%.
2. The amount of vitamin C was higher in Hosiyat (14.01 mg%), Superlola (12.8 mg%) and Zargaldok (12.4 mg%) varieties than the control Lola (12.1 mg%) variety. The content of vitamin C in the fruit of the remaining cultivars was lower than that of the control cultivar and it was observed that it was around 11.0-12.0 mg% according to the cultivars.
3. The ratio of total sugar content to total acid content plays an important role in determining fruit quality. Among the varieties belonging to the group of nectarines, this ratio was found to be higher in Ifora and Nectarin Tashkentsky varieties compared to the control - Lola (11.2) variety, showing 12.8-13.0, respectively.

References

1. Mirziyoyev Sh.M. No. PF-5853 "On approval of the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030". – Tashkent, October 23, 2019. <http://www.Lex.UZ>.
2. Buriev Kh.Ch., Enileev N.Sh. et al. Methodology of calculations and phenological observations in experiments with fruit and berry plants. – T., 2014. – 64 p.
3. Ryabushkin Yu.B. Research methods in fruit growing and viticulture. Saratov: Saratov State Agrarian University, 2014. – 44 p.
4. Sedov E.N., Ogoltsova T.P. (eds.) Program and methodology of variety study of fruit, berry and nut crops. - Orel: Publishing house of VNIISPK, 1999. - P. 378-399.
5. Zamorskiy V.V., Bushilov V.D. Peculiarities of growth of plum and peach seedlings depending on the type of rootstock. // Collection of scientific works of the Uman National University of Gardening. – 2012. – No. 79-1. – pp. 230-233.
6. Ryndin A. V., Zagirov N. G., Ibragimov N. A. Biological
7. features of growth and development of table and canned peach varieties in the conditions of the coastal lowland of the flat zone of Dagestan (part I). // Vegetables of Russia. - 2020. - No. 2. - P. 78-81.

8. Smykov A. V., Mitrofanov I. V., Mesyats N. V., [et al.]. Productivity of peach varieties bred and introduced by the Nikitsky Botanical Garden. // Proceedings of the Kuban State Agrarian University. - 2020. - No. 85. - P. 243-250.
9. Sotnik A. I., Adamen F. F. Reproduction of clonal rootstocks of peach and growing seedlings based on lignified cuttings. // Bulletin of the State Nikitsky Botanical Garden. - 2023. - No. 146. - P. 40-47.