BIOLOGICAL SCIENCES

DETERMİNATİON OF LEAF APİCAL SURFACE AREA İNDİCATORS İN PEACH VARİETİES İNTRODUCED İN AZERBAİJAN

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Abstract

In recent years, peach and nectarine production in our republic has been 26,311.0 t in 2018, 26,909.5 t in 2019, 29,159.5 t in 2020, and 35,867.3 t in 2021. The highest indicator for peach production among the economic regions of our country has been the Guba-Khachmaz economic region, which has maintained leadership over the past five years, with 13,373.2 t. This accounts for 37.3% of the country's peach production (as of 2020) [1,3], [2]. Peach is a species of the common peach (Prunus persica) belonging to the kingdom Plantae, division Magnoliophyta, class Magnoliopsida, order Rosales, family Rosaceae, genus Prunus. However, some Western scientists refer the peach plant to the genus Plum and subfamily Almond. Its international scientific name is Prunus persica (L.) Batsch, and its synonym is Persica vulgaris Mill. [4, p.4].

There are three different forms of the peach plant [3, p.37-38], grouped as follows:

• Prunus persica var. vulgaris Maxim – common peach;
• Prunus persica var. platycarpa Bailey - flat, fig peach;
• Prunus persica var. nectarina Maxim - nectarine.

Some sources state that the height of the peach plant reaches 3-5 m in Kiev conditions, and 8 m in China and California. The canopy is round or sparsely round, wide. The bark of the young trunk is reddish brown, and as it ages, the bark acquires a greenish-brown color. When there is no fungal layer on the old bark, the bark is silvery [4], [5].

The peach plant has a strong growth and the ability to form numerous shoots. The development of shoots is mainly from May to July, ending in early August (until September). The shoots are initially green, the woody part of the shoot is reddish-crimson, and the other side is green. The branches darken in frosts of -20...-25°C, and when the air temperature rises, the branches regain their original color. Peach tree shoots come in several types. The main shoots are strong, but only produce vegetative shoots .

Keywords: Nectarine, peach, production, leaf cells

RESEARCH AND RESULTS: One of the important factors determining the productivity of fruit plants is the surface area of the leaf blade of the plant. The leaf is one of the important organs that ensure the development of the plant and its high productivity. The total surface area of the leaves in a plant is much greater than the area of the soil surface occupied by the plant. In fruit trees, a healthy leaf blade not only creates conditions for the optimal photosynthesis process, but also ensures the delivery of organic substances formed as a result of this process to other organs of the plant through the leaves.

For the photosynthesis process to proceed normally and intensively, leaf cells must be provided with carbon dioxide. This is possible when the leaf stomata are fully open. The surface of the leaves is covered with a cuticle layer that does not allow water vapor to pass through, which is considered one of the important indicators in preventing additional water loss in the plant under unfavorable conditions (at very high temperatures). In addition, many processes such as transpiration, gas exchange, respiration and evaporation are also carried out through the leaves of the plant. All these processes ensure the growth and development of the plant.

J.M. Aliyev notes that in 15-20-year-old fruit plants, for example, peaches have an average of 24 thousand, plums 58 thousand, cherries 59 thousand, cherries 69 thousand, and apricots 115 thousand leaves, and the number of leaves is directly proportional to the quality of the product. According to the author, 25-75 healthy leaves are needed for 1 fruit to acquire the characteristics of the variety, and an average of 1.4 m2 of leaf surface is needed to obtain 1 kg of fruit [6]. I.N. Golubkova [7] notes in her research results that the surface of the leaf base in the peach species P. davidiana is at least 37 mm2 and at most 46.4 mm2.

Chemical and chromatographic analyses of peach leaves indicate that they contain large amounts of flavonoids, tannins, alkaloids, and coumarins [6,7]

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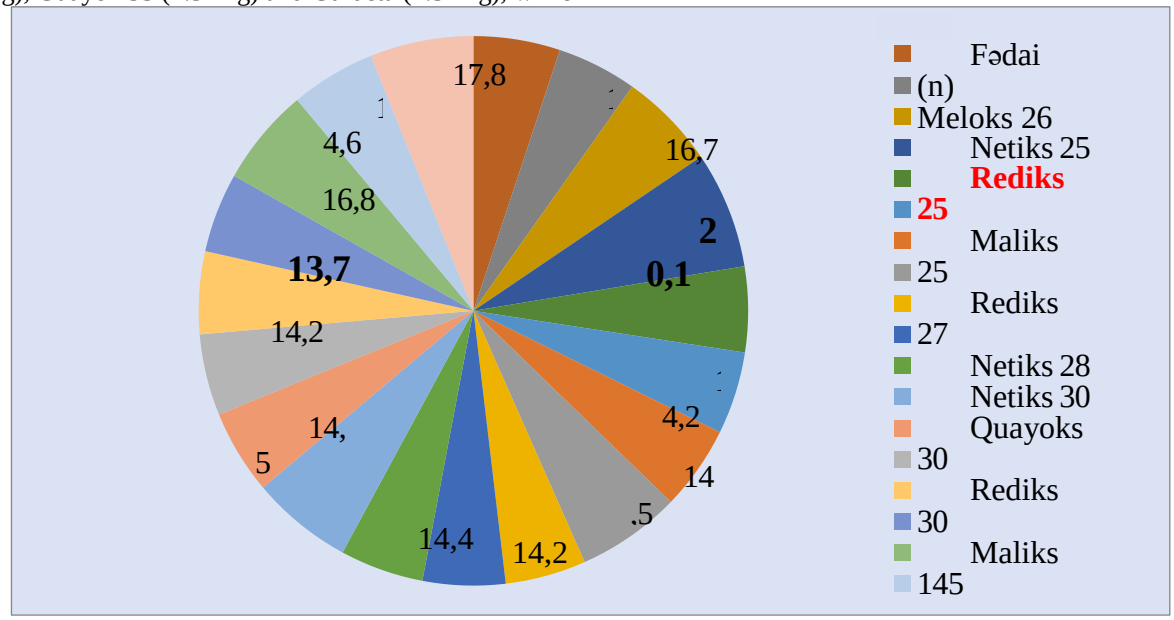
Considering the fact that the leaf is considered the main indicator of productivity, the average leaf apical surface area (cm2), the mass of leaves per tree (kg) and the average leaf apical surface area per tree (m2) were studied in peach varieties introduced in 2018-2020, and the following conclusions were reached [2,7,9] (Figure 1). The results of the study are reflected in Table 1

Table 1

Leaf mass and leaf area of newly introduced peach varieties (average for 2018-2020)

Sort	Leaf mass, kg/tree	Average surface area of a leaf blade, cm2	Average leaf surface area per tree, m2
Fədai (n)	3,7	31,0	14,9±1,30
Meloks 26	2,92	25,5	13,8±1,23
Netiks 25	4,76	35,5	16,7±1,28
Rediks 25	4,89	36,5	20,1±1,01
Maliks 25	3,29	30,0	14,7±1,10
Rediks 27	3,55	26,5	14,2±1,26
Netiks 28	3,38	29,5	14,5±0,64
Netiks 30	4,49	32,5	17,9±1,14
Quayoks 30	3,58	28,5	13,9±1,02
Rediks 30	3,15	29,5	14,2±1,29
Maliks 145	3,38	30,0	14,4±1,21
Meloks 31	4,28	35,5	17,5±0,76
Meloks 37	3,37	31,0	14,5±1,11
Rediks 2-110	3,2	29,5	14,0±1,23
Netiks 34	3,14	30,5	14,2±1,41
Maliks 36	3,68	29,5	13,7±1,38
Quayoks 35	4,32	33,3	16,8±1,01
Qarteyro	3,69	30,0	14,6±1,13
Qardeta	4,54	34,0	17,8±0,92

As can be seen, the leaf mass per tree varied between 2.92-4.89 kg among the studied varieties. Compared to the Fedai (n) variety (3.7 kg), the leaf mass per tree was higher in the Netix 25 (4.76 kg), Redix 25 (4.89 kg), Netix 30 (4.49 kg), Melox 31 (4.28 kg), Guayox 35 (4.32 kg) and Gardeta (4.54 kg), while the leaf mass in the other varieties was relatively lower, ranging from 2.92-3.69 kg. The lowest indicator among the varieties was recorded in Melox 26 (2.92 kg), and the highest indicator was recorded in Redix 25 (4.89 kg).



The surface area of a single leaf blade varied between 25.5-36.5 cm2 across varieties. The average surface area of a leaf blade was 31 cm2 in the Meloks 37 variety, which was the same as the Fedai (n) variety, but it was relatively smaller in the Meloks 26 (25.5 cm2), Redix 27 (26.5 cm2), Guayoks 30 (28.5 cm2), Netix 34 (30.5 cm2),

Maliks 25, Maliks 145 and Garteiro (30.0 cm2), Redix 30, Netix 28, Maliks 36 and Redix 2-110 (29.5 cm2) varieties compared to the Fedai (n) variety, and larger in the Netix 25 and Meloks 31 (35.5 cm2), Redix 25 (36.5 cm2), Netix 30 (32.5 cm2), Guayoks 35 (33.3 cm2), and Gardeta (34.0 cm2) varieties.

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