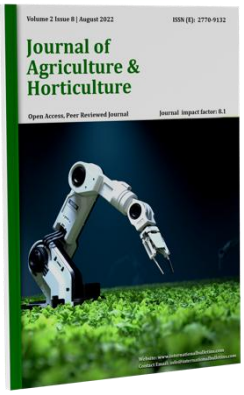

MORPHOMETRIC INDICATORS OF THE NEWLY DEVELOPED APRICOT VARIETY "SALOVAT – PRUNUS ARMENIACA L."

Sultanov Sirojiddin
Termiz University of Economics and Service, Termiz, Uzbekistan
E-mail: sirojiddin_sultanov@tues.uz
ORCID ID: https://orcid.org/0009-0009-3441-2605
https://doi.org/10.5281/zenodo.17800546

Abstract. This scientific study investigates the main morphometric indicators of the newly developed apricot variety "Salovat" and analyzes its morpho-biological and economically valuable promising traits. The research was conducted under the agroecological conditions of Samarkand region, where the growth vigor, branching intensity, leaf morphology, and leaf blade parameters of the variety were evaluated. According to the results, the "Salovat" variety is characterized by medium growth vigor (index 5), moderate branching intensity (index 5), and a slightly spreading crown shape (index 3). The leaf blade is elongated (index 7), of medium width (index 5), with a sharp tip and serrated margins. These morphometric characteristics indicate that the variety possesses high photosynthetic activity, good adaptability, and stability in fruit productivity. The findings allow recommending the "Salovat" variety as a promising breeding material suitable for cultivation in intensive orchard systems.

Keywords: apricot (*Prunus armeniaca* L.), "Salovat" variety, morphometric indicators, growth vigor, branching intensity, leaf morphology, leaf blade length, morpho-biological characteristics, breeding, intensive orchard management.

Introduction

Modernization of the fruit-growing and horticulture sector in Uzbekistan, along with the development of high-yielding, export-oriented varieties adapted to local climatic conditions, is one of the priority directions of scientific research. In particular, the improvement of valuable fruit crops such as apricot (*Prunus armeniaca* L.) through the creation of new varieties plays an important role in enhancing the country's agro-economic potential and expanding the availability of vitamin-rich food sources for the population.

The newly developed "Salovat" variety is a product of domestic breeding and is distinguished by its high adaptability to local climate and soil conditions, early flowering, attractive fruit appearance, pleasant taste, and good storability. Morphologically, this variety is also characterized by balanced indicators in the size and proportions of its leaves, shoots, flowers, and fruit components.

Biometric indicators represent the main descriptive characteristics of plant morphological structure and serve as essential criteria for determining the growth dynamics, yield potential, and level of climatic adaptability of a variety. Therefore, analyzing the leaf morphology, shoot growth intensity, flowering period, fruit dimensions, and seed-to-fruit proportion of the new "Salovat" variety provides a scientifically grounded evaluation of its morpho-biological and agronomic value.

The objective of this research is to study the morpho-biometric characteristics specific to the newly developed apricot variety "Salovat," compare them with existing standard varieties,

identify its promising agronomic traits, and develop recommendations for breeding and horticultural practices.

Methods and materials

The research was conducted under the agroecological conditions of the Surkhandarya region based on the study of the morphometric parameters of the newly developed apricot variety "Salovat." Healthy, uniform-aged trees were selected from the experimental plot, and their morpho-biological traits were evaluated according to standard methodologies.

Biometric measurements were taken in three replications based on average samples collected from shoots and leaves located in the middle part of each tree. For each parameter, 10 samples were examined. The length and width of the leaf blade were measured with a metal ruler with millimeter precision. Leaf shape and margin serration were assessed visually according to the accepted pomological standards — GOST 25826–83 and UPOV TG/70/4 (Apricot) international descriptors.

Branching intensity, crown shape, and growth vigor were evaluated using a 1–9 point scoring scale: 1 – very weak, 3 – weak, 5 – medium, 7 – strong, 9 – very strong.

This scoring system is widely used in breeding studies for the quantitative characterization of morphological traits.

The collected data were processed through biometric analysis. For each indicator, the arithmetic mean (M), coefficient of variation (Cv, %), and confidence interval (±m) were calculated. Statistical analysis was performed using Microsoft Excel and Statistica 10.0 software.

The main objective of the research was to quantitatively evaluate the leaf morphology, branching structure, and growth vigor of the "Salovat" apricot variety in order to determine its morpho-biological advantages as a cultivar. Thus, the biometric assessment of this new variety provides a scientific basis for recommending it for use in intensive orchard systems.

Results and discussion

According to the table data, the main morphometric indicators of the newly developed "Salovat" variety clearly demonstrate its morpho-biological advantages. The growth vigor of the plant is of medium strength (index = 5), which indicates that the variety develops in a balanced manner without excessive branching, ensuring proper structural formation. The shape of the branches is slightly spreading (index = 3), meaning that the canopy structure of the "Salovat" variety is not widely open but rather semi-spreading. The branching intensity is moderate (index = 5), which reflects the proportional formation of the trunk and an optimal number of fruit-bearing branches.

Table 1. Main Morphometric Indicators of the "Salovat" Apricot Variety

№	Traits	Degree of Expression	Index
1	Growth vigor	Medium vigor	5
2	Branch shape	Slightly spreading branches	3
3	Branching intensity	Moderate	5
4	Leaf blade length	Long	7
5	Leaf blade width	Medium width	5
6	Basic shape of the leaf blade	Acute	1
7	Leaf blade margin serration	Serrated	3

The leaf blade is characterized by a large length (index = 7) and a medium width (index = 5), which indicates a high level of photosynthetic activity. Long and moderately wide leaves efficiently absorb light and contribute to the accumulation of nutrients. The leaf blade has an acute tip (index = 1), which is a morphological characteristic specific to the variety and influences flower bud formation as well as the rate of moisture evaporation. The leaf margin is serrated (index = 3), reflecting an aesthetically and physiologically stable leaf structure.

Overall, the "Salovat" variety exhibits medium growth vigor, good branching ability, and elongated, sharp-tipped leaves, which collectively ensure high photosynthetic efficiency, strong adaptability, and stable fruit productivity. The comprehensive analysis of morphometric indicators confirms that this variety is promising for breeding purposes and is well suited for intensive orchard cultivation.

Conclusion

Based on the research findings, the newly developed apricot variety "Salovat" demonstrates high morpho-biological potential according to its morphometric indicators. The variety exhibits medium growth vigor, balanced branching intensity, and a well-formed structural framework. Due to its slightly spreading branches, the canopy remains compact, making the variety suitable for high-density planting in intensive orchard systems.

In terms of leaf morphology, the long and moderately wide leaves ensure high photosynthetic activity, thereby enhancing the productivity potential. The acute leaf tip and serrated margin contribute to physiological advantages such as improved moisture retention and optimal air circulation.

Overall, the "Salovat" variety stands out for its medium growth vigor, good branching capacity, and morphologically stable structure. These traits enable the variety to adapt effectively to changing climatic conditions, maintain high photosynthetic activity, and ensure stable fruit productivity. The morphometric characteristics indicate strong scientific prospects for this variety, highlighting its suitability for future use in intensive horticulture and breeding programs.

References:

1.Badenes, M. L., & Byrne, D. H. (2012). Fruit breeding. Springer Science & Business Media.
2.Faust, M., & Timon, B. (1995). Origin and dissemination of apricot. Horticultural Reviews, 17, 175–198. https://doi.org/10.1002/9780470650561.ch6
3.Zhebentyayeva, T., Ledbetter, C. A., Burgos, L., & Llácer, G. (2012). Apricots. In M. L. Badenes & D. H. Byrne (Eds.), Fruit breeding (pp. 415–458).
4.Ercisli, S. (2009). Apricot culture in Turkey. Scientific Research and Essays, 4(8), 715–719..
5.Layne, D. R., & Bassi, D. (Eds.). (2008). The peach: Botany, production and uses. CABI Publishing.
6.Khadivi-Khub, A. (2015). Morphological variability of apricot (Prunus armeniaca L.) germplasm from Iran. Scientia Horticulturae, 186, 25–35. https://doi.org/10.1016/j.scienta.2015.02.008.
7.Ruiz, D., Egea, J., & Gil, M. I. (2005). Phenotypic diversity and relationships of fruit quality traits in apricot (Prunus armeniaca L.) germplasm. Euphytica, 143(1–2), 69–77. https://doi.org/10.1007/s10681-005-2447-6