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MALE PISTACHIO TREES GROWING IN UZBEKISTAN

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Abstract. In Uzbekistan, natural pistachio stands have survived in mountain and foothill areas. In addition, plantations established from seed around water reservoirs in the 1950s also form part of the pistachio gene pool. Male pistachio trees do not bear fruit, and for this reason they are very often cut down for firewood and other purposes. Knowledge of male trees allows us to understand how important they are for the yield of female trees. At present, Uzbekistan has only one officially registered male pistachio cultivar. Scientists of the Forestry Research Institute are conducting breeding work on several more pistachio cultivars.
Keywords: local, cultivar, form, male, evaluation, tree, competition, female, yield, quality.

Introduction. The largest natural pistachio stand in Uzbekistan is located in the Babatag mountain range of Surkhandarya Region. It covers about 30 thousand hectares, situated mainly on rainfed mountain slopes and foothill valleys at altitudes of 500–1200 m above sea level and higher. Trees several hundred years old can be found in these stands. Owing to uncontrolled livestock grazing, the level of natural regeneration in the pistachio stands is very low, and the proportion of plants not eaten by livestock is increasing. In addition, the cutting of pistachio trees for firewood by local residents is reducing the number of trees in the stands. In particular, the number of male trees, which do not bear fruit, has declined significantly as a result of their felling. Nevertheless, it has been reported that in the wild, as well as in pistachio stands grown from seed or ungrafted seedlings, the ratio of male to female trees is equal. Yields in the Babatag pistachio stands are relatively low for several reasons. Uncontrolled grazing disturbs the forest ecosystem balance, leading to infestations of the stands by various pests, particularly outbreaks of pests such as the Turkestan peacock moth. Cases have repeatedly been recorded in which trees were completely defoliated in spring and had to re-leaf, causing serious yield losses. Several similar pest outbreaks have been observed. The natural pistachio stands of Babatag and other ungrafted pistachio plantations are a source of breeding material, and their proper use makes it possible to select pistachio cultivars of high economic value [1; 3; 5; 6].

Research methods. The mensuration parameters of the trees were determined according to the method of M.M. Kalandarov [2], and their phenology and fruits were evaluated according to the method of G.M. Chernova and G. Olekhnovich [4].

Results and discussion. Great attention is being paid to pistachio growing in our country, and scientific and practical work is currently being carried out in several directions, such as expanding the area of pistachio orchards, improving the condition of existing orchards, developing new agricultural technologies, breeding new cultivars and introducing foreign technologies. Particular attention is being given to the development of new cultivars. In this regard, scientists of the Forestry Research Institute are testing several promising pistachio ecoforms. Previously, they had developed twelve female and one male pistachio cultivar.

The only patented local male pistachio cultivar is named Farhod; its authors are A.Kh. Khamzaev, G.M. Chernova, E.K. Botman, L.V. Nikolyai, T.E. Tulyaganov, B.I. Eshankulov, A.A. Normatov and M.M. Inomova. In 2020, the Center for Variety Testing of Agricultural Crops under the Ministry of Agriculture issued certificate No. 674 for the Farhod cultivar, and it was entered in the State Register of Agricultural Crops. In 2020, the Intellectual Property Agency under the Ministry of Justice granted a patent for the cultivar to the above authors [Certificates No. 674 and No. NAP 00309].

The male tree is fast-growing and upright, with a wide and dense crown. The average tree height is 4 m, the stem diameter is 35 cm, and the crown diameter reaches up to 4 m.

The leaves are dark green and rounded, with a shortened tip. It leafs out early compared with other cultivars and forms.

The male inflorescences are elliptical and yellowish-brown. Compared with other male cultivars and forms, it is distinguished by its long and prolonged flowering and its numerous, high-quality stamens.

It begins flowering in the 4th–5th year after grafting. Regardless of climatic conditions, its flowering is stable and prolonged.

It is resistant to fungal diseases and fruit damage, as well as to drought and extreme summer heat.

It is recommended for mixed planting, in the required proportion to female trees, on rainfed lands with moderate moisture supply (annual precipitation of not less than 300 mm).

This male cultivar surpasses other male trees in its long flowering period, which fully covers the flowering period of female trees.

In addition to this patented male pistachio cultivar, several other male ecoforms are also being tested. Some of them are described below. Champion is a provisionally named cultivar (variety testing is ongoing). The male tree is fast-growing and upright, with a wide and dense crown. The average tree height is 4 m, the stem diameter is 30 cm, and the crown diameter reaches up to 5 m.

The leaves are dark green and elliptical, with a shortened tip. It leafs out early compared with other cultivars and forms.

The male inflorescences are elliptical and yellowish-brown. Compared with other male cultivars and forms, it is distinguished by its early, long and prolonged flowering and its numerous, high-quality stamens.

It begins flowering in the 4th–5th year after grafting. Regardless of climatic conditions, its flowering is stable and prolonged.

It is resistant to fungal diseases and fruit damage, as well as to drought and extreme summer heat.

It is recommended for mixed planting, in the required proportion to female trees, on rainfed lands with moderate moisture supply (annual precipitation of not less than 300 mm).

This male cultivar surpasses other male trees in its early and long flowering period, which fully covers the flowering period of early-flowering female trees.



Figure 1. A young tree of the Champion cultivar (provisional name) in full bloom



Figure 2. Male inflorescence

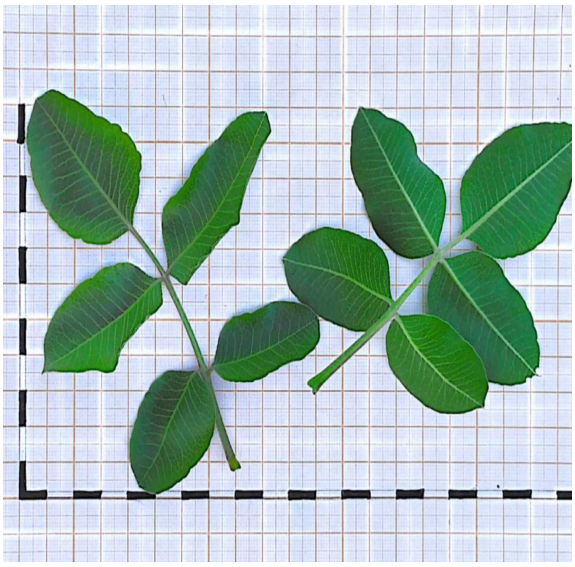


Figure 3. Leaf

Chaqqon is a provisionally named pistachio cultivar (variety testing is ongoing). The male tree is fast-growing and upright, with a wide and dense crown. The average tree height is 4 m, the stem diameter is 25 cm, and the crown diameter reaches up to 4 m.
The leaves are dark green and elliptical, with a shortened tip. It leafs out very early compared with other cultivars and forms.

The male inflorescences are elliptical and yellowish-brown. Compared with other male cultivars and forms, it is distinguished by its very early, long and prolonged flowering and its numerous, high-quality stamens.

It begins flowering in the 4th–5th year after grafting. Regardless of climatic conditions, its flowering is stable and prolonged.
It is resistant to fungal diseases and fruit damage, as well as to drought and extreme summer heat.
It is recommended for mixed planting, in the required proportion to female trees, on rainfed lands with moderate moisture supply (annual precipitation of not less than 300 mm).
This male cultivar surpasses other male trees in its very early and long flowering period, which fully covers the flowering period of very early-flowering female trees.



Figure 4. A young tree of the Chaqqon cultivar (provisional name) in full bloom



Figure 5. Male inflorescence

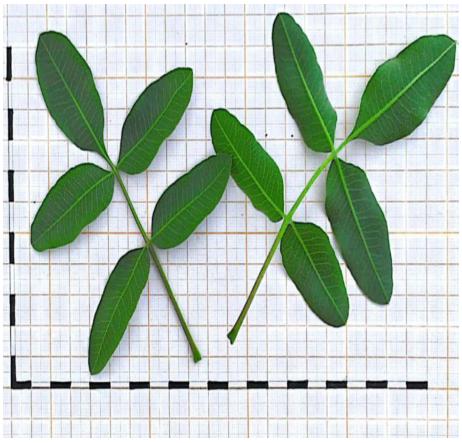


Figure 6. Leaf

Conclusion. A very large gene pool of pistachio has been accumulated in various regions of Uzbekistan, and it must be used properly. These stands contain pistachio trees with nuts of very high quality, and it is of utmost importance to select suitable areas for their propagation, to propagate them, to develop cultivation and agronomic technologies, to carry out grafting and

training, and to ensure primary processing and storage of the harvest. This requires expanding the scope of scientific research and drawing the necessary conclusions.

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