

BIOLOGY AND HISTORY OF CULTURE OF POMEGRANATE (PUNICA GRANATUM L.). Pomegranate GROWING COUNTRIES AROUND THE WORLD

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Annotation: *This article analyzes the plant pomegranate (punica granatum). In addition, information is provided on the history, origin, biological characteristics of pomegranate (punica granatum), as well as species, in which regions they grow.*

Keywords: *Pomegranate, pomum, granatus, Punica granatum, Patiala, flower, gen.*

Biology of Pomegranate Pomegranate (*Punica granatum* L.) is a subtropical plant species belonging to the family Punicaceae Horan and *Punica* (*Punica*), 2 species (*P. granatum* L. and *P. protopunica* Balf.) consisting of 1 generation (*Punica* L.) containing. Also, the family Punicaceae was originally called Lythraceae. From the point of view of pomegranate taxonomy, Myrtales was probably assumed to belong to the Saxifragales type. The scientific name of pomegranate by K. Linney - *Punica granatum* - is derived from the Latin words "pomum" - "apple" and "granatus" - "selected".

Morphological and molecular research over the past decade has also led to attempts to make some approximate clarifications to the taxonomic classification of pomegranate (*Punica granatum* L.). The botanical collection of pomegranates collected in the Nikitin Botanical Garden on the Crimean peninsula during the former Soviet Union is estimated to contain 340 varieties. In particular, the collection includes "Halva", "Sharodi" from Iran, "Punicagra natumvar" from Japan, and "Vanderful" pomegranate from America. Pomegranate is a shrub-like, woody plant with a height of 2-10 m, with bright red bisexual flowers ($\varnothing = 8$ cm) with 1-5 flowers at the end of the branch, which bloom in summer and autumn.

In a cup-shaped flower, the seeds are normally developed, and the bell-shaped or shock-shaped flowers do not bear fruit. Pomegranate flowers are pollinated from the outside, the fruit (250-1000 g) has a white, reddish-brown outer skin. On the inside of the fruit (~ 29-50% of the total dry weight), seeds (10-20%) are formed in 6-12 cells, the outside of which is covered with a white-red skin². The upper part of the 2-3-year-old pomegranate branch is smooth, gray-green, and the non-woody branches are usually quadrangular. The leaf-forming buds of the pomegranate are usually located in pairs on the branch, of the opposite type. During the growing season, the pomegranate plant produces several buds and a new branch from the central bud. In some cases, the central bud stops growing and may form a thorn.

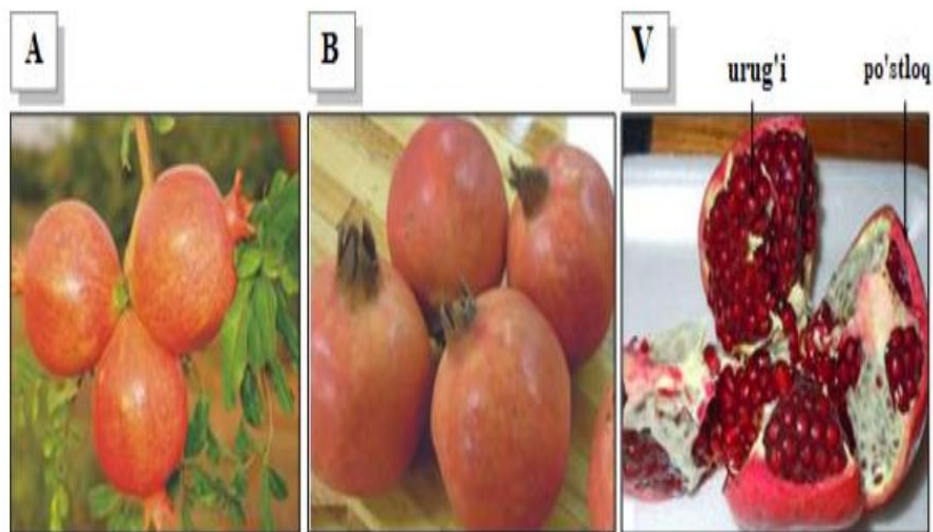
Pomegranate (*Punica granatum* L.) tree appearance (A) and flower structure (B). Pomegranate flowers are large, beautiful, solitary or in balls, dark red, orange-red (4-5 cm long, 2-2.5 cm in diameter), bright red. lib is usually formed from buds located at the end of the rod. In one pomegranate there are two different elongated petals in the shape of a cup

The bell-shaped and intermediate-type flowers are shed. The normal flowers are composed of 4-8 toothed petals and petals of hard flesh, seeds with a large number of nodules, and a large number of pollen grains. After flowering, up to 300-1000 seeds are formed, which are covered on the outside with a skin full of juice.

Pomegranate begins to turn green in early April when the temperature rises to 12-14 °. In autumn, when the temperature drops to this level, it stops growing. The growing season of pomegranate lasts 180-215 days, depending on the navigation and climate. Pomegranate blooms in early May, the first winter buds bloom, and 10-15 days later all of them begin to bloom. A single pomegranate can have up to 5,000 flowers, depending on its navigation and weather conditions. But 96-98% of them are infertile (male) flowers. When different varieties of pomegranate are pollinated freely, the fruit is larger and larger. The most common pollen is bees.

Therefore, it is advisable to use bees to increase the yield of pomegranates. Pomegranates ripen in 120-160 days, depending on the navigation. Pomegranate leaves are elliptical, short-banded, of the opposite type at the base. The pomegranate is a multi-seeded syncarp, the seeds of which are covered on the outside. The fruit of the pomegranate is round, hexagonal, up to 600 seeds, 5-12 cm in diameter, with a reddish outer shell and a white-red cellulose shell on the inside. are located.

Some researchers have studied the biology of pomegranate (*Punica granatum* L.), the composition of the fruit, its beneficial properties, the influence of environmental factors on the morpho-physiological, physicochemical properties of pomegranate fruit. Pomegranate fruit and peel are used in the food industry in a variety of fruits and in various processed forms. Also, pomegranate fruit growing conditions, vegetation period and fruit ripening period differ significantly in different geographical and climatic zones. For example, in the Northern Hemisphere, the fruit of the pomegranate (*Punica granatum* L.) ripens in September-October, while in the Southern Hemisphere (South Africa, etc.) it ripens in March-May. Pomegranate peel contains anthocyanins (which determine the red color), flavonoids, fructose and sucrose complex (10%), pectin, organic acids, lipids and polyphenols in pomegranate fruit. Pomegranate fruit weighs an average of 250-1000 g, and the shape and color of the fruit varies from variety to variety. (Figure 1.1.3).



Pomegranate (*Punica granatum* L.) fruit appearance (A, B) and internal fruit structure (V) The average weight of 1 pomegranate fruit is 229-350 g. Pomegranate fruit produces 300-1000 seeds 3. Pomegranate (*Punica granatum* L.) is a shrubby plant with an average height of 3-5 m, the main stem is brownish-gray, covered with a rough bark . According to the color of the stem of pomegranate species, A.A. Popov divided them into 2 types: 1) yellow-brown Bukhara pomegranate; 2) gray Turkmen pomegranate. The leaves are small, lanceolate, the thorns form thorns and bloom in June-

July in Uzbekistan. Pomegranate is a long-lived tree that can live up to 300 years if properly cared for.

Information about the biological properties of pomegranate is characterized by its molecular genetic properties. *P. granatum* type has $2n = 16, 18$ chromosomes, and *P. protopunica* L. chromosome set is recorded as type $2 = 14$. For example, in the varieties of pomegranate "Dolka", "Ganesh", "Kandahori", "White Muscat", "Patiala" the set of chromosomes is $2n = 16$, and in the variety "Kashmiri" - $2n = 18$. The structure of the genome of the pomegranate (*Punica granatum* L.) (30,903 genes) has been described in detail by some researchers. The nucleotide sequences in the DNA structure of individual genes in the pomegranate genome have also been studied.

The studies examined the structural function of genes encoding enzymes involved in the synthesis of tannins in the structure of the pomegranate genome, and the biosynthesis cascades of tannins. The study identified the genes responsible for the biosynthesis of tannins in the genome of pomegranate (*Punica granatum* L.), as well as a genome map scheme that could be used to clarify the taxonomic classification of pomegranates.

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