

CHARACTERISTICS AND PROPERTIES OF THE NAVRUZ VARIETY OF POMEGRANATE (*Punica granatum* L.) CREATED THROUGH SELECTION

OCHILDYEV O'TKIR OLLANAZAROVICH1

Candidate, Scientific Research Institute of Horticulture, Viticulture, and Winemaking named after Academician Maxmud Mirzayev

JUMANOVA MOKHIRA ZOIROVNA2

Scientific Research Institute of Horticulture, Viticulture, and Winemaking named after Academician Maxmud Mirzayev

Abstract: This article presents the results of scientific research conducted from 2019 to 2024 in Uzbekistan, focusing on the selection and creation of new pomegranate varieties. The "Navro'z" variety was developed through selection based on eight evaluation criteria, and its various indicators and characteristics are discussed.

Keywords: pomegranate, variety, selection, fruit, temperature, humidity, shape, climate, marketable yield, morphometric, color indicators.

Introduction: The domestication of wild fruit plants, including pomegranate (*Punica granatum* L.), began over 5,000 years ago. Early human societies collected wild fruits to meet their nutritional needs, leading to the domestication of numerous species. In the early eras, citrus plants were cultivated, and during the Middle Ages, the domestication of wild fruit plants accelerated, marking the period of folk selection. During this time, many local varieties and forms of fruit crops were created and widely used as food sources. Therefore, the domestication of fruit plant species, enriching the collection of cultivated varieties, and implementing continuous agrotechnical measures aimed at increasing yield and product quality are priority areas for ensuring food security, improving the standard of living, and maintaining ecological balance in every country.

Currently, over 7,000 cultivated plant species have been studied, with more than 1,000 herbarium specimens prepared. The pioneers of scientific fruit tree breeding are L. Berbank and I.V. Michurin (1855–1935). The renowned breeder I.V. Michurin successfully created many cultivated varieties from wild fruit plants. Despite this, the unparalleled resources of wild plant forms remain largely unexplored, with many species still unknown to modern science. This necessitates extensive efforts from breeders to create new varieties and forms.

Research objective: The objective of this study is to determine the bio-morphological indicators of pomegranate (*Punica granatum* L.) and create new varieties through selection, as well as to propagate them vegetatively.

Research Tasks:

- Create a new pomegranate variety through selection.
- Analyze the growth, development, and key economic traits of the newly created variety.
- Evaluate the phenotypic traits of pomegranate based on eight evaluation criteria and identify superior indicators, selecting forms from the parent collection garden of the Scientific Research Institute of Horticulture, Viticulture, and Winemaking named after Academician Maxmud Mirzayev.

Research Methods: Field and production experiments were conducted following the "Complex Evaluation of Pomegranate Plants and Vegetative Propagation of Promising Forms" guidelines (2025) and the "Methodology for Complex Evaluation of Promising Forms of Pomegranate (*Punica granatum* L.)" (2025). The preparation, planting, and care of cuttings of the newly created variety were carried out in accordance with state standards O'zDSt 2813:2014 and GOST 24835-81 "Saplings of Trees and Shrubs." The statistical analysis of field experiment data was performed using the Microsoft Excel software according to B.A. Dospekhov's methodology.

**Scientific Novelty:**

- The "Navruz" variety of pomegranate was created for the first time through selection.
- The growth, development, and key economic traits of the newly created variety were analyzed.
- The phenotypic traits of pomegranate were evaluated based on eight evaluation criteria, and superior indicators were identified. Forms were selected from the parent collection garden of the Scientific Research Institute of Horticulture, Viticulture, and Winemaking named after Academician Maxmud Mirzayev.

Through extensive selection processes, the new "Navruz" variety of pomegranate was created. The expression levels of various traits of this variety were analyzed using index indicators (Table 1).

Table 1**Characteristics of the Newly Developed "Navro'z" Pomegranate Variety Through Selection**

№		Trait	Degree of Expression	Index
(*) (+) QN	VG (a)	Plant: growth vigor	Weak	3
			Medium	5
			Strong	7
(+) PQ	VG (a)	Plant: growth habit	Upright	1
			Spreading	3
			Drooping	5
QN	VG (a)	Plant: intensity of gray coloration on the main branches.	Light	1
			Medium	2
			Dark	3
(+) QN	VG (a)	Plant: number of one-year shoots ending in thorns.	Absent or very few	1
			Few	2
			Moderate	3
			Many	4
(+) QN	VG	Young shoot: predominant number of leaves per node	Two	1
			Three	2
			More than three	3
QN	VG/ MS (b)	Leaf blade: length	Short	3
			Medium	5
			Long	7
QN		Leaf blade: width	Narrow	3

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	VG/ MS (b)		Medium	5
			Wide	7
(+) QN	VG/ MS (b)	Leaf blade: length/width ratio	Low	3
			Medium	5
			High	7
(+) QN	VG (b)	Leaf blade: shape of the apex without tip	Sharply pointed	1
			Moderately pointed	2
			At right angle (perpendicular)	3
			Moderately blunt	4
			Strongly blunt	5
QN	VG (b)	Leaf blade: intensity of green color	Light	3
			Medium	5
			Dark	7
(*) QN	VG/ MS (b)	Petiole: length	Short	3
			Medium	5
			Long	7
(*) QN	VG (b)	Petiole: anthocyanin coloration	Weak	3
			Medium	5
			Strong	7
(+) QN	VG/ MS (c)	Calyx: length	Short	3
			Medium	5
			Long	7
(*) (+) QN	VG/ MS (c)	Calyx: width	Narrow	3
			Medium	5
			Wide	7
(+) QN	VG/ MS (c)	Calyx: length/width ratio	Low	3
			Medium	5
			High	7
(+) PQ	VG (c)	Calyx: color	Orange	1
			Orange-red	2
			Medium red	3
			Dark red	4
			White	1
(*) (+) PQ	VG (c)	Petal cluster (corolla): color	Pink	2
			Light orange	3
			Medium orange	4
			Orange-red	5
			Medium red	6
			Short	3
(*) (+) QN	VG/ MS (c)	Petal: length	Medium	5
			Long	7

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(+) QN	VG/MS (c)	Petal: width	Narrow	3
			Medium	5
			Wide	7
QN	VG (c)	Petal: surface	Smooth or slightly wrinkled	1
			Moderately wrinkled	3
			Strongly wrinkled	5
(+) QN	VG	One-year-old shoot: predominant number of flowers per node	One	1
			Two	2
			Three	3
			More than three	4
(*) (+) QN	VG/MS (d)	Fruit: length	Short	3
			Medium	5
			Long	7
(*) (+) QN	VG/MS (d)	Fruit: width	Narrow	3
			Medium	5
			Wide	7
(+) QN	VG/MS (d)	Fruit: length/width ratio	Low	3
			Medium	5
			High	7
(*) (+) QN	VG/MS (d)	Fruit: crown length	Short	3
			Medium	5
			Long	7
(*) PQ	VG (d)	Fruit: surface color	Orange	1
			Orange-red	2
			Pink	3
			Pink-red	4
			Medium red	5
			Red-purple	6
			Purple	7
			Dark purple	8
QN	VG (d)	Fruit: degree of surface coloration	Very small	1
			Small	3
			Medium	5
			Large	7
			Very large	9
(*) (+) QN	VG (d)	Fruit: shape in cross-section	Round	1
			Round-angular	2
			Angular	3
(+) QN	VG/MS (d)	Fruit: rind thickness	Thin	3
			Medium	5
			Thick	7

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(*) (+) QN	VG/ MS (d)	Fruit: sweetness	Low	3
			Medium	5
			High	7
(+) QN	VG/ MS (d)	Fruit: acidity	Low	3
			Medium	5
			High	7
(*) (+) QN	VG/ MS (d)	Fruit: juiciness	Low	3
			Medium	5
			High	7
(+) QN	VG/ MS (e)	Rind: length	Short	1
			Medium	2
			Long	3
(+) QN	VG/ MS (e)	Rind: width	Narrow	1
			Medium	2
			Wide	3
(*) (+) PQ	VG (e)	Rind: main color	White	1
			Light pink	2
			Medium pink	3
			Dark pink	4
			Light red	5
			Medium red	6
(+) QN	VG/ MS (e)	Seed: length	Short	1
			Medium	2
			Long	3
(+) QN	VG/ MS (e)	Seed: width	Narrow	1
			Medium	2
			Wide	3
(*) (+) QN	VG (e)	Seed: hardness	Soft	1
			Medium	2
			Hard	3
(*) (+) QN	VG/ MG	Flowering onset time	Early	3
			Medium	5
			Late	7
(*) (+) QN	VG/ MG	Maturity time for consumption	Early	3
			Medium	5
			Late	7

In this study, characteristics such as plant growth vigor, plant growth habit, intensity of gray coloration on the main branches, number of one-year-old shoots ending with thorns, presence of leaves on young shoots at each node, leaf blade length, leaf blade width, leaf blade length-to-width ratio, leaf blade tip shape, number of flowers per node on one-year-old seedlings, fruit length, fruit width, and similar indicators were analyzed.

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Conclusion: The newly developed pomegranate cultivar “Navro’z” is considered stable, as it retains its main valuable agronomic traits without change when propagated multiple times by vegetative means. During vegetative propagation, all the positive characteristics and traits of the mother plant are preserved.

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