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THE CONCEPT OF VARIETY IN CITRUS CULTIVATION IN UZBEKISTAN

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Abstract

In the climatic conditions of Uzbekistan, the limonaria greenhouse of the Kibray District of the Tashkent region is under laboratory conditions.Based on the methods used by Z.Fakhruddinov's selection work, new native plant varieties of lemons were prepared, adapted to climatic conditions, as well as developed improved styles and created new varieties of high-yielding, stress-resistant, citrus plants, hybridization with local varieties, by welding and artificial cross-dressing, it was possible to select shapes and create on their basis competitive new varieties that are resistant to disease, rich in fertile sweet vitamins.

Keywords: Citrus, plant, varieties, climate, greenhouse laboratory, disease, sehosility, cultural varieties, durable.

INTRODUCTION

In the Republic, particular attention is being paid to the cultivation of nutritious and medicinal fruits such as lemon, orange, mandarin, and grapefruit. In this regard, numerous studies have been carried out on the cultivation of high-yielding, export-oriented citrus crops in open fields and unheated greenhouses, yielding significant results. Goal 30 of the Development Strategy of New Uzbekistan for 2022–2026, in its section on agriculture, specifically defines as a priority task: "...cultivating export-oriented products and developing fruit and

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vegetable production, increasing the area of intensive orchards by 3 times and greenhouses by 2 times, and further enhancing export potential by 1 billion USD". Therefore, it is relevant to conduct a series of scientific and practical studies on expanding variety diversity under protected structures, investigating their agrobiological characteristics, developing propagation methods and intensive cultivation technologies, and determining the biochemical composition of the fruits.

"Before starting practical work on citrus breeding," said Uzbek breeder scientist Z. Fakhriddinov, "it is essential to have a thorough understanding of the natural assortment."

"It should serve as the primary source material for improving varieties in the future". Citrus breeding is the science of creating new varieties and refers to "selection" and "isolation". Currently, the term "selection" in citrus growing has a much broader meaning, representing a field of science that works on developing new citrus varieties and improving existing ones using modern scientific methods established by Z. Fakhriddinov.

CITRUS PLANTS BELONG TO THE SAME FAMILY, AND THEIR CLASSIFICATION IS AS FOLLOWS: THEY BELONG TO THE RUTACEAE FAMILY.

Table 1

Lemon - Citrus Limon L. Burm	Lime - Citrus aurantiifolia Sw.
Orange - Citrus sinensis L. sbeck.	Mandarin - Citrus reticulata Blanco
Grapefruit - C.paradisi Macf	Pummelo - Shaddock C. grandis Osb

One of the important economic traits of citrus varieties is their stability (invariance), which means their ability to fully regenerate through vegetative propagation while completely preserving all their characteristics and properties.

It should be noted that the variability of citrus varieties under the influence of mutagens can lead to the emergence of mutants, specifically unique clones.

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Therefore, in greenhouse nurseries, great attention must be paid to the varietal purity of mother orchards, and any emerging new clones should be isolated.

By influencing the nature of citrus plants, humans modify their characteristics and traits, selecting forms that meet their specific requirements.

Each citrus variety possesses specific biological characteristics and morphological traits. Understanding these allows for the effective differentiation of varieties from one another.

A variety is a product of human activity and serves as a means of production in agriculture. A variety is cultivated under specific environmental conditions and created to satisfy particular consumer needs. A high-yielding citrus variety under specific soil and greenhouse climate conditions may result in low yields under different conditions.

A variety must be adapted to greenhouse farming practices and modern mechanization, ensuring consistently high yields and high-quality products under greenhouse cultivation conditions.

Varieties should be intended for processing, drying, export, and fresh consumption.

Citrus fruit varieties are classified into local and bred (selected) varieties based on their origin. Local, or landrace varieties, include those that have emerged over many centuries in a specific area as a result of the simplest natural and artificial selection methods. Most of them were created between 1967 and 1980 by the folk breeder and Uzbek scientist Zayniddin Fakhriddinov. Due to their diverse economic and biological characteristics, they are of great importance as primary source material in Uzbek breeding. In Uzbekistan, the breeder-scientist Z. Fakhriddinov developed the lemon varieties F-1 Tashkent, F-2 Yubileyniy, F-3, F-4, and F-5. Between 2019 and 2026, the breeder-scientist Dr. M.Z. Fakhrutdinov (DSc) developed 15 new varieties of citrus plants and obtained patents for them, which are presented in Table 2.

Local Varieties of Citrus Plants Developed in Uzbekistan

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Table 2.

№	Names of local citrus plant varieties	Year of development and Patent №		Varieties used in the creation of local varieties
		Year	Patent №	
1	Lemon F-1 Tashkent	1967		Meyer, Novogruzinsky
2	Lemon F-2 Yubileiny	1970		Новагрузин Новаафон
3	Mandarin Tashkent	2020	NAP 00276	Unshiu, Lemon F-2 Yubileyniy
4	Orange Uzbekistan	2020	NAP 00275	Hamlin, Lemon F-2 Yubileyniy
5	Grapefruit pummelo Zayniddin	2020	NAP 00274	Grapefruit pummelo, Lemon F-2 Yubileyniy
6	Lemon Z.M. Sanat	2021	NAP 00369	Ponderosa, Lemon F-2 Yubileyniy
7	Lemon Turon	2021	NAP 00368	Lisbon, Lemon F-2 Yubileyniy
8	Mandarin Yangi Uzbekistan	2021	NAP 002224	Clementine, Lemon F-2 Yubileyniy
9	Grapefruit Z.F. Yubiley	2021	NAP 002224	Grapefruit pummelo, Lemon F-2 Yubileyniy
10	Grapefruit Renaissance III	2022	NAP 68018	Grapefruit pummelo, Lemon F-2 Yubileyniy
11	Orange NUR	2024	NAP 20240066	Orange Uzbekistan, Lemon F-2 Yubileyniy
12	Grapefruit Uzbegim	2025	NAP 594	Grapefruit pummelo, Lemon F-2 Yubileyniy
13	Lemon Tosh DAU-93	2025	NAP 20230095	Lemon F-1 Tashkent, Lemon F-2 Yubileyniy
14	Lemon Yangi Tashkent	2025	NAP	Lemon Turon, Lemon F-2 Yubileyniy
15	Mandarin Mediana	2026	NAP 20230077	Mandarin Medyovka, Lemon F-2 Yubileyniy

Bred Uzbek varieties include those developed in research institutions based on scientific breeding methods. Additionally, there are introduced varieties, which consist of those brought from foreign countries, regardless of their origin. Since citrus varieties are propagated vegetatively, the offspring of both local and bred varieties are highly uniform in their morphological traits, as well as economic and biological characteristics, unlike the offspring of annual crop varieties.

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CONCLUSIONS

1. Under greenhouse laboratory conditions and based on the methods used in Z. Fakhruddinov's breeding work, new local citrus varieties were developed and acclimatized. Improved methods were established, leading to the creation of high-yielding and stress-resistant varieties. The selection of forms through interspecific and intraspecific hybridization, grafting, and artificial crossbreeding enabled the development of competitive new varieties that are productive, rich in vitamins, and disease-resistant. Additionally, the life and scientific legacy of Z. Fakhruddinov were thoroughly studied.
2. The main genera and species of widely distributed citrus plants, their botanical characteristics, biological peculiarities, growth and development conditions, and beneficial properties were studied. The potential for creating new varieties was demonstrated, and the life and scientific activities of Z. Fakhriddinov were thoroughly examined.
3. It was determined that citrus varieties were obtained through hybridization with cultivated varieties based on crossbred hybrids and multiple selection. Their advantages over control varieties, such as high yield, early maturity, disease resistance, and beneficial properties, were studied. Additionally, the life and scientific activities of Z. Fakhriddinov were examined.

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