



**OZIQ-OVQAT XAVFSIZLIGI:
GLOBAL VA MILLIY MUAMMOLAR**
VII xalqaro miqyosidagi ilmiy-amaliy anjuman
ilmiy ishlari to'plami
(14-15-oktyabr, 2025-yil, Samarqand)

**ПРОДОВОЛЬСТВЕННАЯ
БЕЗОПАСНОСТЬ:
ГЛОБАЛЬНЫЕ И НАЦИОНАЛЬНЫЕ
ПРОБЛЕМЫ**

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**FOOD SAFETY:
GLOBAL AND NATIONAL PROBLEMS**
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Ilmiy-amaliy anjuman an’anaviy tarzda Sh.Rashidov nomidagi Samarqand davlat universiteti, BMT ning Oziq-ovqat va qishloq xo‘jaligi tashkiloti (FAO)ning O‘zbekistondagi vakolatxonasi bilan hamkorlikda o‘tkazilib kelinmoqda.

Ilmiy-amaliy anjuman turli mamlakatlar olimlari o‘rtasida ilmiy aloqalarni o‘rnatishga, ilmiy yutuqlarni muhokama qilish, amaliyotga joriy etish va oziq-ovqat xavfsizligi sohasidagi keyingi izlanishlar uchun zamonaviy istiqbolli yo‘nalishlarni hamkorlikda belgilashga bag‘ishlanadi.

Научно-практическая конференция традиционно проводится в сотрудничестве с Самаркандским государственным университетом имени Ш. Рашидова, Продовольственной и сельскохозяйственной организацией Объединенных Наций (FAO) в Узбекистане. Научно-практическая конференция посвящена установлению научных контактов между учеными разных стран, обсуждению научных достижений, реализации и практическому выявлению современных перспективных направлений дальнейших исследований в области продовольственной безопасности.

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FLORAL COMPOSITION AND COMPARATIVE ANALYSIS OF THE URBAN FLORA OF BUKHARA CITY (UZBEKISTAN)

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Аннотация: Урбанофлора города Бухары развивается более интенсивно по сравнению с флорой природных сред. Это связано с адвентивными растениями, поступающими из зарубежных стран. Для определения флористического состава данной территории были проведены исследования на зелёных участках города, рудеральных землях, в парках отдыха, бульварах, а также вокруг зданий и сооружений. В результате было зафиксировано, что аборигенная фракция урбанофлоры включает 36 семейств, 117 родов и 159 видов, а адвентивная фракция - 26 семейств, 70 родов и 96 видов. Мы наблюдали успешную акклиматизацию адвентивных растений, проникших в город естественным путём. В исследовании подчёркивается, что наряду с особенностями местной флоры повышается степень адвентивизации урбанофлоры.

Ключевые слова: адвентивные растения, аборигенные, Бухара, урбанофлора, фракция, семейство, род.

Annotatsiya: Buxoro shahri urbanoflorasi tabiiy muhitlar florasiga nisbatan jadal sur'atlar boyib bormoqda. Bu xorijiy tamlakatlardan kirib kelayotgan adventiv o'simliklar bilan bog'liq. Mazkur hududning floristik tarkibini aniqlash uchun shaharning yashil maydonlari, ruderal yerlar, istirohat bog'lari, xiyobonlar, bino, inshootlar atroflarida tadqiqotlar olib bordik. Natijada urbanofloraning aborigen fraksiyasi 36 oila, 117 turkumga mansub 159 tur va adventiv fraksiyasi 26 oila, 70 turkumga mansub 96 tur uchrashi qayd etdik. Biz shahar hududida tabiiy yo'llar bilan kirib kelgan adventiv o'simliklarning muvaffaqiyatli iqlimlashganligini (successful acclimatization) kuzatdik. Tadqiqotda mahalliy floraning xususiyatlari bilan bir qatorda urbanofloraning adventivlanish darajasi yuqorilab borayotganli ta'kidlangan.

Kalit so'zlar: Adventiv o'simliklar, aborigen, Buxoro, urbanoflora, fraksiya, oila, turkum.

One of the most important aspects of botanical research is clarifying the floristic composition of local and foreign plant species, which is considered one of the key issues. This involves studying the status of local species and adventive plants. Researching the composition of urban flora allows for the assessment of the future characteristics of local floras. Over the last century, botanical research on urban floras has intensified worldwide. Notably, studies conducted in Russia hold an important place [1,10]. These studies examine the composition of urban floras, aboriginal and adventive fractions, the economic damage caused by the impact of adventive species on their dynamics, the future changes in local species populations, and other characteristics. In Uzbekistan, research on adventive species began in the early 21st century. For example, T.H. Makhkamov [9] investigated the ruderal flora and plant cover characteristics of the Fergana Valley. H.K.Esanov [6] studied the characteristics of aboriginal and adventive plants in the anthropogenic ally transformed environments of Bukhara region. It was noted that the role of adventive species in transformed environments is increasing, their impact on local floras is intensifying, and the process of adventivization is progressing. Furthermore, S.M. Gafarova and others [8] presented insights on the sustainability and adaptability of the urban flora in Bukhara city, the impact of urbanization on plant diversity, and the importance of green spaces in enhancing the quality of the urban environment. Another recent study in Uzbekistan was conducted by N.M. Sidiqjanov [12], who researched the current state of the urban flora of Andijan city. The study focused on the process of synanthropization of the urban flora, its bioecological characteristics, the status of rare species, and the role of adventive plants. Additionally, research on the urban floras of Bukhara, Karshi, Samarkand, and Tashkent cities is currently being carried out.

The research material consists of scientific sources related to the higher plants and flora of the Bukhara region, including *Conspectus Florae Asiae Mediae* [2], *Flora of Uzbekistan* [7], as well as works by H.K. Esanov [6], H.K. Esanov, M.X. Usmonov [4], H.K. Esanov, V.K. Sharipova [5], and K.Sh. Tojibayev, H.K. Esanov [14]. The study was conducted in Bukhara city from 2021 to 2024. Plant samples were collected based on a specified route and mapped onto a grid [11]. The classification of families was based on APG IV.

During the research, it was determined that the aboriginal fraction of Bukhara city's urban flora consists of 36 families, 117 genera, and 159 species, while the adventive fraction includes 26 families, 70 genera, and 96 species. Aboriginal species make up 62.35% of the urban flora, and adventive species account for 37.65%. This ratio constitutes 16.86% (89 species out of 528 species) in the Bukhara region and 15.60% (124 species out of 795 species) in the Southwestern Kyzylkum flora [12]. In Andijan city, the urban flora includes 36.34% (129 out of 355 species). Additionally, in Russia's Belgorod city, adventive species make up 27.90% (190 out of 681 species), and in Krasnoyarsk city, they account for 14.23% (143 out of 1005 species) [10]. This indicates that adventive plant species hold a significant place in the composition of Bukhara city's urban flora. This trend can be explained by the level of urbanization, the strong anthropogenic transformation of plant habitats, and the favorable conditions for the growth and development of adventive species.

A comparative analysis of the aboriginal and adventive species in Bukhara city's urban flora was carried out based on the leading families and genera (Table 1).

Table 1.

Analysis of the Leading Families of the Aboriginal and Adventive Fractions of Bukhara City's Urban Flora

Families	Aboriginal fraction		Families	Adventive fraction	
	Species	%		Species	%
Amaranthaceae	25	9.80	Asteraceae	15	5.88
Asteraceae	22	8.63	Poaceae	15	5.88
Poaceae	19	7.45	Brassicaceae	15	5.88
Fabaceae	17	6.67	Amaranthaceae	9	3.53
Brassicaceae	9	3.53	Fabaceae	9	3.53
Convolvulaceae	6	2.35	Malvaceae	4	1.57
Polygonaceae	5	1.96	Ranunculaceae	3	1.18
Caryophyllaceae	5	1.96	Solanaceae	3	1.18
Boraginaceae	5	1.96	Plantaginaceae	3	1.18

A difference was observed in the spectrum of leading families between the aboriginal and adventive fractions of Bukhara city's urban flora. In the spectrum of leading families of the aboriginal flora, the top three were Amaranthaceae, Asteraceae, and Poaceae, which reflected characteristics typical of the local flora, while in the adventive flora, Asteraceae, Poaceae, and Brassicaceae were dominant, highlighting the characteristics of the flora in regions undergoing anthropogenic transformation. The same leading trio in the adventive flora can also be observed in foreign floras. Furthermore, the absence of Caryophyllaceae, Boraginaceae, and Polygonaceae in the leading families of the adventive flora can be explained by the fact that these species are spread in natural habitats. The Malvaceae family does not dominate in the local flora [6,15], but in the adventive flora, it is represented as a leading family due to species like *Abutilon theophrastii*, *Althaea officinalis*, *Hibiscus trionum*, *Malva neglecta*, and *M. sylvestris*. This situation can also be observed in the adventive floras of foreign regions like Amur and Sverdlovsk oblasts [13].

Additionally, the families *Plantaginaceae* (Veronica) and *Solanaceae* (Datura) led due to their respective genera.

In the aboriginal fraction, the *Amaranthaceae* family took the first place, rich in local elements such as *Chenopodium album*, *Atriplex tatarica*, and *Oxybasis glauca*. In the adventive fraction, *Asteraceae* and *Poaceae* dominated, with species from the Holarctic, Pluriregional, and Palaearctic regions, such as *Digitaria sanguinalis*, *Hordeum murinum subsp. leporinum*, *Lolium temulentum*, *Sorghum halepense*, *Erigeron canadensis*, *Lactuca serriola*, and *Cichorium intybus*. This situation corresponds to the adventive floras of foreign regions [13]. Thus, the leading families of the adventive flora in the study area exhibited similarities to the characteristics of adventive floras in foreign countries.

In the composition of Bukhara city's urban flora, the share of leading families in the adventive fraction (79.16%) was higher than that in the aboriginal fraction (71.07%). This aligns with the opinion of many researchers, who suggest that the share of leading families in the adventive fraction is typically higher than that of the top ten leading families in the aboriginal fraction.

The comparative analysis of the leading genera in the aboriginal and adventive fractions of the urban flora presented the following results. The spectrum of leading genera in the aboriginal fraction of the urban flora is composed of genera that reflect characteristics typical of the flora of the Turan region. In particular, genera such as *Astragalus*, *Atriplex*, *Artemisia*, *Polypogon*, *Climacoptera*, *Bromus*, and others play a significant role, demonstrating characteristics specific to the local flora (Table 2).

The leading species composition of the adventive fraction of Bukhara city demonstrated differences from the composition of the aboriginal fraction. It mainly included species from the genera *Amaranthus*-6, *Lepidium*, *Veronica*, *Sonchus*, *Ranunculus*, and *Vicia*, which played a significant role. Their representatives are widespread across all areas of the city, exhibiting dominance. It is evident that the leading species composition of the adventive fraction in the study area sharply differed from the spectrum of the aboriginal fraction.

Table 2.

Analysis of the Leading Genera in the Aboriginal and Adventive Fractions of Bukhara City's Urban Flora

Aboriginal fraction			Adventive fraction		
Categorys	Species	In %	Categorys	Species	In %
<i>Astragalus</i>	4	2.52	<i>Amaranthus</i>	6	6.25
<i>Atriplex</i>	4	2.52	<i>Lepidium</i>	3	3.13
<i>Polypogon</i>	3	1.89	<i>Veronica</i>	3	3.13
<i>Artemisia</i>	3	1.89	<i>Vicia</i>	3	3.13
<i>Medicago</i>	3	1.89	<i>Sonchus</i>	3	3.13
<i>Climacoptera</i>	3	1.89	<i>Ranunculus</i>	3	3.13
<i>Caroxylon</i>	3	1.89			
<i>Bromus</i>	3	1.89			
<i>Suaeda</i>	3	1.89			
<i>Gallium</i>	3	1.89			
<i>Bassia</i>	3	1.89			

Overall, the main composition of the adventive fraction consisted of groups with 1 species (55 species - 78.57%) and 2 species (9 species - 12.86%). This situation indicates a high dynamic of the introduction of adventive species into the urban flora of Bukhara city. The enrichment of the urban flora of Bukhara with adventive species brings its taxonomic composition closer to the flora of foreign regions.

Currently, the process of adventive plant formation is occurring rapidly all over the world. This is especially evident in several European countries, as reflected in scientific sources. In economically developed countries, this process is believed to be caused by foreign relations and tourism. A similar situation is observed in Uzbekistan as well. Specifically, due to Bukhara being an ancient and historical city, the influx of numerous foreign visitors and the influence of logistics connections have led to an increase in adventive plants. The number of adventive plants identified in the study area constitutes almost half (42.11%) of the adventive plants found in Uzbekistan, and 37.65% of Bukhara city's urban flora. This indicates a high level of adventivization in Bukhara's urban flora. The results of comparisons with adventive floras of foreign countries also support this.

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UZUMNING XO‘RAKI NAVLARINI HOSILDORLIK KO‘RSATGICHLARIGA SIDERAT EKINLARNI EKISH ME‘YORI VA MUDDALARINI TA‘SIRI.

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Аннотация. В статье изучено влияние норм и сроков посева сидеральных культур на показатели урожайности столовых сортов винограда при производстве экологически чистой продукции. Рассматривалось воздействие осеннего посева сидератов (рапс и нут сорта Николсин) в междурядьях виноградников сортов Ризамат, Паркентский роза и

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