

# Description and Geography of Euphorbia L. Species in the Flora of Uzbekistan

**Soatova Dilfuza**

Jizzakh State Pedagogical University, Master's Department, Biology, Teaching Methodology, 2nd year master's degree.

**Abstract.** Based on the materials of the herbarium of the Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan (TASH), scientific literature and cadastral data of the flora of Uzbekistan, reviews and identification of the genus Euphorbia L. were given. Herbarium specimens of the category in the unique herbarium fund of the institute have not been fully processed and analyzed. The article provides information on species found in the flora of Uzbekistan and their distribution. The distribution of species was given on the basis of monographs on the plant cadastre and flora of the regions.

**Key words:** genus, species, Euphorbia, Uzbekistan, flora, herbarium, synopsis.

## Introduction

In recent years, as a result of research conducted at the Institute of Botany of the Academy of Sciences of Uzbekistan, about 4,500 species of higher plants belonging to 166 families have been identified in our flora. Most of them are representatives of Asteraceae (about 260 species), Brassicaceae, Lamiaceae, Chenopodiaceae, Liliaceae, Rosaceae and other such large families[3;].

The 6-volume edition "Flora of Uzbekistan" (1941-1962), which provides detailed information about the flora, lists 4148 species, including 3663 local and 485 non-local species [17;].

Research is being conducted to determine the taxonomic composition of the flora of Uzbekistan. According to it, new national monographs called "Flora" and "Administrative regions of Uzbekistan" were published. The first chapter of this publication is dedicated to the Amaryllidaceae family. The second and third editions listed Primulaceae, Plantaginaceae, Scrophulariaceae, Campanulaceae, Caprifoliaceae, Gentianaceae and several other families [12; 18;].

The genus Euphorbia has long been actively studied in many research centers around the world (Prokhanov, 1949, 1964; Dressler, 1962; Yablonsky, 1973-1974; Hassal, 1977; Subils, 1977; Radclyffe-Smith, 1982, 1985, 1986, 2001; Huft, 1984; Carter, 1985, 1994; Gilbert, 1987, 1994; Benedi and Orell, 1992; Ma and Wu, 1992; Steinmann, 1996; Molero et al., 1996; Park, 1998; Haevermans et al., 2004 ; Baikov, 2007; Binojkumar, Balakrishnan, 2009, etc.)[2;].

Among the works on the taxonomy of the Euphorbia genus, the study conducted by P. E. Boissier (1862) is considered the most important. The scientist provides an overview of the analysis of the genus Euphorbia. According to him, the Euphorbia genus includes 693 species in 27 genera [16;].

Re-analysis of the category Ya. It was carried out by I. Prokhanov [6;].

In the following years, D.B. Along with the analysis of the genus Esula, Geltman made a modern analysis of the genus Euphorbia[2;].

D.V. According to Geltman, the genus Euphorbia L. includes 467 species.

Detailed information about the species of this category is not given in scientific works related to the territory of Central Asia and Uzbekistan. According to the synopsis of the Euphorbiaceae family given by V. K. Pazy in the monograph "Flora of Uzbekistan", 33 species of the family are shown [5;].

In Uzbekistan, there have been no specific researches on the species of the group, information is provided only in works related to the Euphorbiaceae family, local flora and vegetation. These are 72 species of Euphorbia species in the monograph Critical Synopsis of Central Asian Plants (Nasimova T, 1983), 7 species of Euphorbia species were described in the research work of A. Batoshov (2016) conducted in the Southern Kyzylkum Relict Mountains [1; 4; ].

## Materials And Research Methods

In this article, reviews are given based on the materials of the National Herbarium of the Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan, as well as scientific literature and cadastral data of the flora of Uzbekistan.

In the article of K. Tojibayev dedicated to the "Data base of the flora of Uzbekistan", 1006 herbarium specimens of 35 species of Euphorbia are stored in the TASH herbarium fund, and as a result of its analysis, 2 species were newly discovered in the flora of Uzbekistan[17;].

As a result of the research, a modern list of Euphorbia species found in the territory of the Republic of Uzbekistan was compiled. Information about the description, distribution and places of growth of each species was taken from the monographs "Flora USSR" [6;], "Flora Uzbekistana" [5;] Opre delitel rastenii Sredney Azii [4;]. The dissertation work of D. V. Geltman was also used [2;].

The analysis of the category in the flora of Uzbekistan and neighboring republics was carried out on the basis of the literature related to the flora. Species composition, places of occurrence and distribution were given according to cadastral data [7;8;9;10;].

## Results

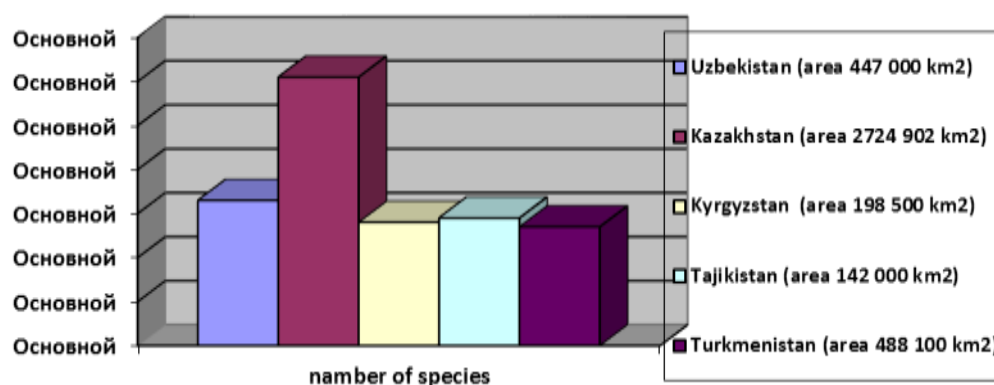
As a result of the research, species of the genus found in the territory of the Republic of Uzbekistan were determined. In the article, wild species that grow only in the territory of the Republic of Uzbekistan are presented. Cultivated species are not shown. Analyzes of the geography of the category were presented.

Many representatives of the category are characterized by their rarity and inclusion in the list of endemic species. In the latest edition of the Red Book of Uzbekistan, Euphorbia densiuscula Popov., Euphorbia kudrjashevii (Pazij) Prokh., Euphorbia densiusculiformis (Pazij) Botsch., Euphorbia triodonta Prokh., Euphorbia sclerocyathium Korovin et Rorov. meeting is recorded [3;].

In the floristic and geobotanical studies conducted in the local flora, the lists of the species of the family and their distribution and other characteristics were highlighted, from which information was given about the place, senopopulations and importance of Euphorbia species. 'tila [11;].

Representatives of the group are not evenly distributed in the territory of Central Asian countries and the Republic of Uzbekistan. The data on the local flora show that there are 33 species of Euphorbia in the Republic of Uzbekistan (1969), 28 species in the Republic of Kyrgyzstan (1957), 29 species in the Republic of Tajikistan (1981), and 29 species in the Republic of Kazakhstan (2001). ) - 61 species, in the Republic of Turkmenistan (1950) - 27 species are found.

Flora analysis of Euphorbia L. species (2022)



The table presents an analysis of the distribution of Euphorbia species in the flora of Uzbekistan and adjacent flora. In it, we can see that the species of the series are most common in the republics of Kazakhstan and Uzbekistan.

We will dwell on the main representatives of this category:

1. Euphorbia densa Schrenk - thick spurge. Annual. On sands, rocky slopes. Plains, foothills. Sandy deserts, outcrops of variegated rocks, rocky slopes. Nurata, Prinurata, Mirzachul, East Kyzylkum, Aktau, Zirabulak-

Ziadin, Kyzylykum, Kyzylykum remnant, Nizhne-Zeravshan, Karshi-Karnabchul, Zirabulak-Ziadin, Srednezeravshan, Tarkapchigai, Karshi-Karnabchul. Not used.

2. *Euphorbia falcata* L. - crescent spurge. Annual. Stony, gravel, fine-earth, loess slopes, outcrops of variegated rocks, pebbles, fields, deposits, banks of ditches. Plain, foothills, lower, middle and upper belt of mountains. Nurata, Prinurata, Malguzar, North Turkestan, Mirzachul. Aktau, Zirabulak-Ziadin, Kyzylykum, Kyzylykum remnant, Nizhne-Zeravshan. Urgut, Aktau, Kashkadarya, Tarkapchigai, Karshi-Karnabchul. Medicinal, weed.

3. *Euphorbia franchetii* B. Fedtsch. Shut up Franchet. Annual. Stony, gravelly slopes, loess-like loams, deposits. Plain, foothills, lower, middle and upper belt of mountains. Nurata, Prinurata, Malguzar, North Turkestan, Mirzachul. Nurata, Aktau, Zirabulak-Ziadin, Kyzylykum, Kyzylykum remnant, Nizhne-Zeravshan, Urgut, Aktau. Kashkadarya, Tarkapchigay, Karshi-Karnabchul Not used.

4. *Euphorbia glomerulans* Prokh. - milkweed crowded. Perennial. Stony, gravelly slopes, talus, river valleys, deposits. Middle and upper belt of mountains. North Turkestan, Urgut, Kashkadarya. Not used

5. *Euphorbia helioscopia* L. - *Euphorbia sungazer*. Annual. Stony, gravelly slopes, roadsides, banks of ditches, orchards, kitchen gardens, deposits, waste places. Plain, foothills, lower belt of mountains. Nurata, Prinurata, Malguzar, North Turkestan, Mirzachul, East Kyzylykum. Stony, gravelly slopes, roadsides, banks of ditches, orchards, kitchen gardens, deposits, waste places. Plain, foothills, lower belt of mountains. Nurata, Aktau, Zirabulak-Ziadin, Kyzylykum, Kyzylykum remnant, Lower-Zeravshan, Karshi-Karnabchul, Urgut, Nurata, Aktau, Zirabulak-Ziadin, Srednezeravshan, Karshi-Karnabchul, Kashkadarya, Tarkapchigai. Poisonous, dyeing, weedy.

6. *Euphorbia humilis* C.A. May. ex Ledeb. - *Euphorbia squat*. Perennial. Stony, gravelly slopes, rocks, talus. Upper belt of mountains. North Turkestan. The middle belt of the Urgut mountains (possibly located on the territory of the Samarkand region, in the only collection of Merkulovich from the Zeravshan ridge in the middle reaches of the Zeravshan, stored in TASH and cited by K. Z. Zakirov, the exact location is not indicated). Not used

7. *Euphorbia inderiensis* Less ex Kar. et Kir. - Inder spurge. Annual. Fine-earth, loess slopes, outcrops of variegated rocks, sands, solonchaks. Plain, foothills, lower and middle belt of mountains. Nurata, Malguzar, Mirzachul, East Kyzylykum, Nurata, Aktau, Zirabulak-Ziadin, Kyzylykum, Kyzylykum remnant, Karshi-Karnabchul, Kashkadarya, Tarkapchigai. Not used.

8. *Euphorbia jaxartica* Prokh. (*Euphorbia esula* L.) - Syrdarya spurge. Perennial. River valleys, tugai, canal banks, wet rocky slopes, talus, pebbles, deposits. Plain, foothills, lower belt of mountains. Nurata, Malguzar, North Turkestan, Urgut, Kashkadarya, Tarkapchigai. Dying, poisonous.

9. *Euphorbia polytmetica* Prokh. (*Euphorbia kanaorica* Boiss.) - ancient Zeravshan spurge. Perennial. Stony, gravelly slopes, rocks, talus, damp places near glaciers. Upper belt of mountains. North Turkestan, Kashkadarya. It is possible to be located on the territory of the Kashkadarya region. in the upper reaches of the Kyzyldarya, there is a collection from the adjacent territory of the Surkhandarya region. Not used.

10. *Euphorbia rapulum* Kar. et Kir. - milk turnip. Perennial. Gravelly, stony, fine-grained soils. Plain, foothills, lower belt of mountains. Nurata, Malguzar, Aktau, Zirabulak-Ziadin. Medicinal, poisonous, rubbery.

11. *Euphorbia rosularis* Al. Theod. - euphorbia rosette. Perennial. Stony, gravelly slopes, talus. Middle and upper belt of mountains. Malguzar, North Turkestan. Not used.

12. *Euphorbia sarawschanica* Regel. - *Euphorbia Zarafshan*. Perennial. Stony, gravelly slopes, rocks. Upper belt of mountains. Malguzar, North Turkestan, Kashkadarya. medicinal, poisonous

13. *Euphorbia sororia* Schrenk. - *Euphorbia sister*. Annual. Salt areas, loess hills. foothills. Malguzar. Not used.

14. *Euphorbia szowitsii* Fisch. et C.A. May. - *Euphorbia Sovic*. Annual. Fine-earth, gravelly slopes, talus, pebbles. Lower and middle belt of mountains. Nurata, Malguzar, North Turkestan, Urgut, Kashkadarya, Tarkapchigai. Not used.

15. *Euphorbia anisopetala* (Prokh.) Prokh. (*Chamaesyce anisopetala* Prokh.) - euphorbia unequal (chamezice unequal) - tengsiz tozhbargli sutlama. Annual. Sandy deserts, river valleys, saline places, pebbles, canal banks, roadsides, fields. Plains, foothills. Aktau, Kyzylykum, Lower Zeravshan, Middle Zeravshan, Urgut, Kashkadarya, Tarkapchigai, Karshi-Karnabchul. Weed.

16. *Euphorbia chamaesyce* L. (*Chamaesyce canescens* (L.) Prokh.) – spurge chamaesyce (graying chamaesyce) – kulranglovchi sutlama. Annual. Pebbles, river valleys, dry channels, stony, gravelly, fine-earth slopes, fields, waste places. Foothills, lower belt of mountains. Nurata, Aktau, Lower Zeravshan, Karshi-Karnabchul, Urgut, Nurata, Aktau, Kashkadarya, Tarkapchigai, Karshi-Karnabchul. Weed.
17. *Euphorbia cheirolepis* Fisch. & C.A. Mey. ex Ledeb. (*Cystidospermum cheirolepis* (Fisch. & C. A. Mey. ex Ledeb.) Prokh.) - hand-scaled euphorbia (hand-scaled vesicle) - kum sutlamasi. Annual. Sandy deserts. Plain. Kyzylkum, Kyzylkum remnant, Lower Zeravshan, Karshi-Karnabchul. Not used.
18. *Euphorbia ferganensis* B. Fedtsch. - *Euphorbia Ferghana* - Fargona sutlamasi. Perennial. Fine-earth, gravel, rocky slopes. foothills. Aktau, Urgut. Medicinal, dyeing.
19. *Euphorbia granulata* Forssk. (*Chamaesyce turcomanica* (Boiss.) Prokh.) - Turkmen chamezice - Turkman sutlamasi. Annual. Rubble slopes, pebbles, sandy and gravel deserts, salt marshes, outcrops of variegated rocks, fields, deposits. Plains, foothills. Nurata, Aktau, Zirabulak-Ziadin, Kyzylkum, Kyzylkum remnant, Lower-Zeravshan, Karshi-Karnabchul. Urgut, Nurata, Aktau, Zirabulak-Ziadin, Middle Zeravshan, Karshi-Karnabchul. Not used.
20. *Euphorbia turczaninowii* Kar. & Kir. - *Euphorbia Turchaninov* - Turchaninov sutlamasi. Annual. Fine earth, gravelly slopes, fields, deposits, sands, variegated outcrops. Sandy deserts. Plains, foothills. Kyzylkum, Kyzylkum remnant, Middle Zeravshan, Karshi-Karnabchul, Karshi-Karnabchul. Not used.
21. *Euphorbia turkestanica* Regel - Turkistan spurge - Turkiston sutlamasi. Annual. Loess, fine-earth and rubbly slopes, fields, deposits. Plains, foothills. Zirabulak-Ziadin, Lower-Zeravshan, Zirabulak-Ziadin, Middle-Zeravshan, Karshi-Karnabchul. Not used.
22. *Euphorbia humifusa* Willd. (*Chamaesyce humifusa* (Willd.) Prokh.) - spurge squat (chamezice squat) - sutlam pastak. Annual. River banks, pebbles, roadsides, deposits, gravelly slopes. Plains, foothills. Middle Zeravshan.
23. *Euphorbia buhsei* Boiss. - Buse sutlamashi - *Euphorbia Buse*. Perennial. Fine-earth, gravelly slopes, outcrops of variegated rocks. Foothills, lower belt of mountains. Tarkapchigai, Karshi-Karnabchul.
24. *Euphorbia cyrtophylla* Prokh. - kyishikbarg sutlama - curvileaf euphorbia. Perennial. Stony slopes, rocks, damp places near snowfields. Upper belt of mountains. Kashkadarya.
25. *Euphorbia kudrjashevii* (Pazij) Prokh. - Kudryashev sutlamasi - *Euphorbia Kudryasheva*. Perennial. Rocky slopes. Upper belt of mountains. Kashkadarya. QC RUz, category 0.
26. *Euphorbia lipskyi* Prokh. - Lipsky sutlamasi - Lipsky spurge. Perennial. Stony, gravelly, fine-earth slopes. Middle belt of mountains. Urgut. Poisonous, rubber.
27. *Euphorbia transoxana* Prokh. - Amudareorti sutlamashi - *Euphorbia Zaamudaryinsky*. Perennial. Soft slopes. Middle and upper belt of mountains. Kashkadarya.
28. *Euphorbia sclerocyanthium* Korovin et Popov.- Perennial herbaceous plant. Sandy deserts. Sandy, gypsum-bearing, coarsely stony soils. In places, outcrops of parent rocks. Ustyurt. Rare endem.
29. *Euphorbia mucronulata* Prokh. - *Euphorbia spiky*. Perennial. On the pebbles of the upper belt of mountains. Western Tien Shan. Poisonous.
30. *Euphorbia lamprocarpa* Prokh. - Light-fruited *Euphorbia*. Perennial herbaceous plant. Along pebbly and clayey banks of rivers and streams, along ditches. Tashkent, Bukhara, Fergana, Surkhandarin regions. Weed.
31. *Euphorbia talastavica* Prokh. - *Euphorbia Talastava*. Perennial. On the gravelly slopes of the upper belt of mountains. Tashkent region. Poisonous.
32. *Euphorbia spinidens* Bornm ex Prokh. - Prickly-toothed spurge. Perennial. On the outcrops of gypsum-bearing rocks, in the cracks there is limestone rock of variegated low mountains.
33. *Euphorbia sogdiana* Popov - *Euphorbia Sogdian*. Perennial herbaceous plant. On rocky limestone slopes and loess-loamy dry hills in the lower, middle mountain belts. Kashkadarya, Surkhandarya. Poisonous.

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