

DISTRIBUTION OF CERTAIN TYPES OF *FERULA* L. GROUP IN THE WESTERN PAMIR-ALAY

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ANNOTATION

The current state of the species of the *Ferula penninervis* Regel et Schmalh., *Ferula ovina* (Boiss.) Boiss., *Ferula dshizakensis* Korovin, *Ferula angrenii* Korovin, *Ferula kuhistanica* Korovin, *Ferula kokanica* Regel et Schmalh., *Ferula samarkandica* Korovin, *Ferula helenae* Rakhmankulov et Melibaev, *Ferula diversivittata* Regel et Schmalh., *Ferula foetida* (Bunge) Regel. *Ferula ovina* (Boiss.) Boiss., *Ferula dshizakensis* Korovin, *Ferula angrenii* Korovin, *Ferula kuhistanica* Korovin, *Ferula kokanica* Regel et Schmalh., *Ferula samarkandica* Korovin, *Ferula helenae* Rakhmankulov et Melibaev, *Ferula diversivittata* Regel et Schmalh., *Ferula foetida* (Bunge) Regel., population in Western Pamir-Alai has been determined, the range has been specified and a GIS map has been compiled.

Key words: GIS, *Ferula*, species, population, range, anthropogen, introduction, mapping.

The conservation of biodiversity, the conservation and rational use of flora is one of the global challenges in the world. Therefore, special attention is paid to the study of bioecological characteristics of plant species, the conduct of introductory work, the development of conservation measures, the identification and conservation of rare and endangered species. Of particular importance here are the species of *Ferula* L. family, which are used as an essential oil, fodder, honey, medicinal, resin-preserving, aromatic, edible and technical plant.

In the world, special attention is paid to the study of the biomorphological properties of medicinal resin-containing plants in ontogenesis and the identification of raw materials. In this regard, it is important to determine the composition and habitat of *Ferula* species in the Western Pamir-Alay ridge, substantiate the factors influencing it and assess the possibility of using promising species in production industries. The unique physical and geographical location of the region has led to the diversity of *Ferula* species.

The Pamir-Alay Mountains are a mountainous region in southeastern Central Asia, with the Republic of Tajikistan in the south, the Kyrgyz Republic in the north (northeast), the Republic of Uzbekistan (in the west) and the Republic of Turkmenistan (in the southwest). The Western Pamir-Alay or Alay Mountains are mountains in Central Asia, located in the east of Central Asia, between the Tien Shan and Pamir Mountains. It consists of three main parts, Gissar-Alay, the Tajik Depression, and the Pamirs [1,2].

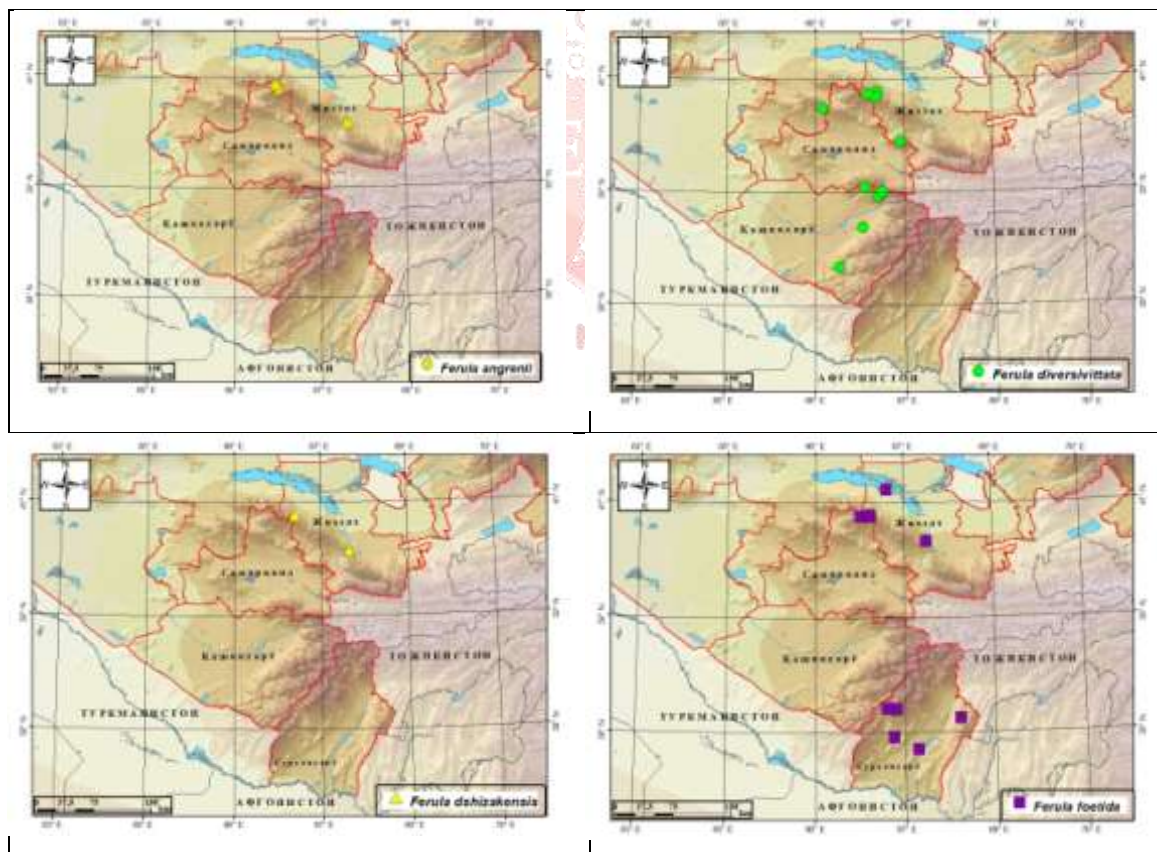
We used the following methods during the collection of materials. Initially, 10 species of the *Ferula* L. family were taken as the object of study, and they were as follows: *F. penninervis* Regel et Schmalh., *F. ovina* (Boiss.) Boiss., *F. dshizakensis* Korovin, *F. angrenii* Korovin, *F. kuhistanica* Korovin, *F. kokanica* Regel et Schmalh., *F. samarkandica* Korovin, *F. helenae* Rakhmankulov et Melibaev, *F. diversivittata* Regel et Schmalh. types. *Ferula* L. series species E.P. Korovin and M.G. It was detected using Pimenov determinants [2,6]. Plants were carried out once during field expeditions in nature, based on observations of plant growth and development in different ecological conditions in stationary specially designated areas. The range of the species was studied by statistical analysis, methods of geographic information systems.

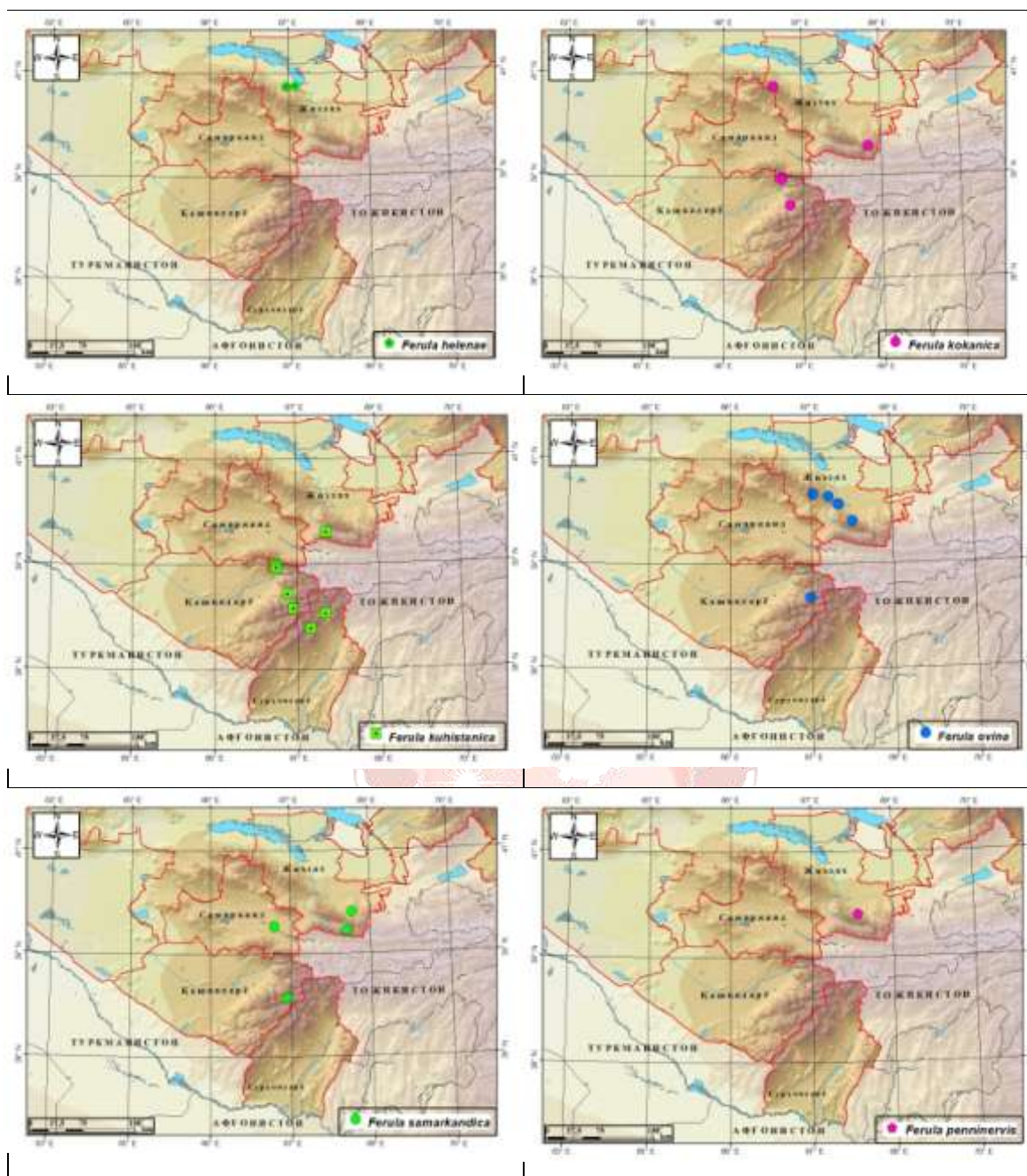
There are 180-185 species of *Ferula* L. in the world, 106 species in the CIS countries, 105 species in Central Asia, 48 species in Uzbekistan, more than 50 species in Western Tien Shan, about 60 species in the Pamir-Alay ridge, 33 species in the Western Pamir-Alay ridge [3,4 , 5].

The range of the following *Ferula* species in the Western Pamir-Alay ridge is *F. penninervis* Regel et Schmalh. - North of Mount Molguzar, above the village of Pishagar, 39°49'45.09 "S68°1'44.92" V (2010), *F. ovina* (Boiss.) Boiss., *F. dshizakensis* Korovin, *F. angrenii* Korovin species - Mount Molguzar northwest - around Amir Temur Gate 40°4'13.10 "S67°41'55.35" V (2010), *F. kuhistanica* Korovin - Turkestan mountain range, around Bakhmal village 39°38'57.29 "S68° 1'5.50 "V (2010), *F. kokanica* Regel et Schmalh., *F. samarkandica* Korovin species - Turkestan mountain range, Zaamin watershed, Zaamin National Nature Park 39°38'57.47" C68°29'24.43 "V (2010), *F. helenae* Rakhmankulov et Melibaev - Mount Nurata, 40°21'29.04 "S67°29'47.81" V (2010), *F. diversivittata* Regel et Schmalh. - 39 ° 56'41.30 "S 67 ° 13'54.52" V (2010) was detected in the Gobsduntog area.

Today, it is important to create GAT maps that reflect the range of the species. A geographic information system is a generalized computer system under the control of expert analysts, whose main functions are to collect, store, manage, analyze, model, and describe spatial and geographic data.

Below are GAT maps showing the distribution of some *Ferula* species in the Western Pamir-Alay region (picture).





Picture. GAT maps showing the distribution of some *Ferula* species in the Western Pamir-Alay region

The Geographic Information System (GAT) integrates cartography, statistical analysis, and databases. GAT is a broad-based field that is widely used in cartography, remote sensing, land management, natural resource management, photogrammetry, geography, urban planning, celestial video, and local search engines. It is a two-position spatial information system designed for data management, cartographic imaging and analysis. The GAT is a computer system designed to store, manage, and display geographic information of human activity and software hardware.

The GAT first emerged in the 1960 s as a result of military use in the United States and Canada. Later, this system was widely used as cadastral data.

The results obtained showed that in the territory of the Western Pamir-Alay ridge *F. kuhistanica*

Korovin, *F. diversivittata* Regel et Schmalh, *F. kokanica* Regel et Schmalh., *F. foetida* (Bunge) Regel, *F. ovina* (Boiss.) Boiss. a large number of species populations were identified. They occur as part of a specific group of plants, exhibiting subdominant features in associations and dominance in some places. When analyzed by steep regions, it was found to be more prevalent in hilly and mountainous regions.

To sum up, the current status of the population of 10 species belonging to the *Ferula* family in the Western Pamir-Alay ridge was determined and GAT maps showing the distribution area were compiled.

REFERENCES:

1. Afanasev K.S. Rastitelnost Turkestanskogo xrebt (v predelax Tadjikistana i Kirgizstana) M. –L. 1956. - C. 129-140.
2. Korovin E.P. Illustrative monograph of the genus *Ferula* L. (Tourn.) -Tashkent. 1947. - 93 p.
3. Korovin E.P. Rod *Ferula* L. // Flora USSR. Izd. AN USSR. M. –L. 1951. T. 17. S. 62-155.
4. Melibaev S. Biology and resources of *Ferula tenusecta* and *Ferula kuhistanica* - sources of estrogenic drugs. Diss.kand.biol.nauk. -Tashkent.1985.-131 p
5. Mukumov I. Resursovedcheskaya characteristic of some species of the genus *Ferula* L. - istochnikov biologicheskoy aktivnykh soedineniy. Dis. kand. biol. science. -Tashkent. 1993. - 114 p.
6. Nishanbaeva X.A. Rod. *Ferula* L. in plant cover in the flora of Uzbekistan. Autoref. diss. kand. biol.nauk. -Tashkent. 1972. - 22 p.
7. Pimenov M.G., Ostroumova T.A. Zontichnye (*Umbelliferae*) Rossii. - M: Tov-vo nauchn. izd. KMK, 2012. - 477 p.
8. Pimenov M.G. Family *Umbelliferae* // Opredelitel rasteniy Sredney Azii. -Tashkent. 1983a. T. 7. S. 276-313.
9. Raxmankulov U. Ontogenesis of the genus *Ferula* L. J. DAN RUz. 7. 1998. 67 p.
10. Rahmonqulov U., Avalboyev O.N. Fractions of Uzbekistan (monograph). - Tashkent. 2016. - 240 p.
11. ugliKhurramov, A. M. (2020). The role and role of digital economy and information technology in the agricultural sector. *International Journal on Integrated Education*, 3(2), 42-44.
12. Xidirberdiyevich, A. E., Ilkhomovich, S. E., Azizbek, K., &Dostonbek, R. (2020). Investment activities of insurance companies: The role of insurance companies in the financial market. *Journal of Advanced Research in Dynamical and Control Systems*, 12(6), 719-725.