

Some Ecological and Biological Characteristics of *Paeonia peregrina* Miller Distributed in Uşak

Mehtap Dönmez Şahin^{a,*}

^aUşak University, Faculty of Education, Department of Mathematics and Science Education, Uşak.

***Corresponding author: mehtap.sahin@usak.edu.tr**

This paper was presented at 3th IPSAT Congress, Afyon, Turkey, 18-20 December 2019

ABSTRACT

Paeonia peregrina Miller (Paeoniaceae), which is known as Itecik Tulip, is one of our biological riches which is under protection in Uşak province. It is spread over a rocky stony terrain at 1200 m and 500 m² in area of the Itecik Mountain in Uşak. In this research, ecological and biological characteristics of *Paeonia peregrina* Miller in Uşak province were studied.

Keywords: Ecology, Autoecology, *Paeonia peregrina* Miller, Paeoniaceae, Uşak.

INTRODUCTION

People have been interested in plants since early ages. The reason for this was to feed the plants with the abdomen or cure diseases at that time. Given the deteriorating biological equilibrium today, and the consequence that the world is dragging into disaster, the role of plants in our lives is much greater. The floristic wealth of our country is quite high. With the increase of human population and environmental pollution, the number of plant species decreases day by day. Flora has many applications. The use of drugs in physician control has become widespread in our country in recent years. The improvement of diseases by taking advantage of the active substances of many plants shows the importance of plants for our health. In terms of agriculture; identification and conservation of gene resources; pasture breeding, conservation of important plants in terms of beekeeping, forest species in order to achieve a certain uniformity of silviculture, separation, identification of forest types, biotechnology; Genetic resources, shows the importance of revealing the diversity of plants. Knowing which plants grow and where to make the best use of them without wasting time. It is also very important to know which chemicals and quantities in which plants are used to cure cancer, which is a growing disease of humanity. Turkey, should have different climates both in terms of abundance of plant species owing to the presence at the intersection of three floristic region is one of the world's richest countries. There are about 10 thousand plant species in our country and 3 thousand of them are endemic. It is estimated that 1000-2000 of these plants are used for medical purposes (Arslan et al., 2000, Şahin, G., 2007, Arslan et al., 2010).

Paeonia peregrina Miller, known as Itecik Tulip or Ball Tulip in Uşak province, was taken under protection in 2008. Although it is not endemic, due to its beautiful appearance, the number of people in their natural habitat, picking up and planting rhizomes in their gardens, is decreasing. (<https://www.star.com.tr/yasam/bu-cicegi-koparmanin-cezasi-42-bin-lira-haber-1227352/> date of Access 18.12.2019) Itecik tulips are spread over a 500 square meter area in stony, rocky terrain at 1200 meters on the Itecik Mountain in the east of Kayağıl Village in the central district of Uşak.

The aim of this study is to investigate and record the ecological characteristics of the plant habitat in Uşak and the biological characteristics of the plant in Uşak.

MATERYALS AND METHODS

Spreading

It is common in Italy, Romania and the Balkans. This plant naturally grows in Bursa, Istanbul, Canakkale, Yozgat in Turkey. (Davis, 1967-1982). It was found in İtecik Mountain in Usak and Denizli in 2019.

Ecology

During the flowering period of *Paeonia peregrina* Miller in May and June 2019, the field was visited with the authority from the Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks, Uşak Province Nature Conservation and National Parks unit, and the plant and soil samples were taken. Soil samples were analyzed in Ege University, Soil Department. Climatic data were obtained from Uşak Meteorology Provincial Directorate.

Biological Properties

The organs of the plant were recorded by taking measurements of root, stem, leaf, flower and seed.

The autoecology

Plants and animals around *Paeonia peregrina* Miller were identified and recorded.

RESULTS AND DISCUSSION

Some Ecological Characteristics of *Paeonia peregrina* Miller

It is located at 1200 m of *Paeonia peregrina* Mill. The mountain slope is stony, rocky. It is common in areas with sunshine. Under the bush species. The types of shrubs that it is associated with are as follows; *Quercus coccifera* L., *Crataegus monogyna* Jack, *Crataegus aronia* (L.), *Rosa canina* L., *Cornus mas* L., *Spartium junceum* L., *Juniperus oxycedrus* L. subsp. *oxycedrus*, *Paliurus spina-christi* Mill., *Quercus pubescens* Willd. Animal taxa we can detect are as follows; *Sus ssp*, *Scirus ssp.*, *Vipera ssp.*, *Elaphe ssp.*, *Turdus ssp.*, *Lepus ssp.*,

Soil characteristics of *Paeonia peregrina* Miller; One kg samples taken from the upper (0-20 cm) and lower soil (20-40 cm) of the area where Itecik Tulip is common in the field were analyzed in Ege University, Faculty of Agriculture, Soil Department and the results are given below:

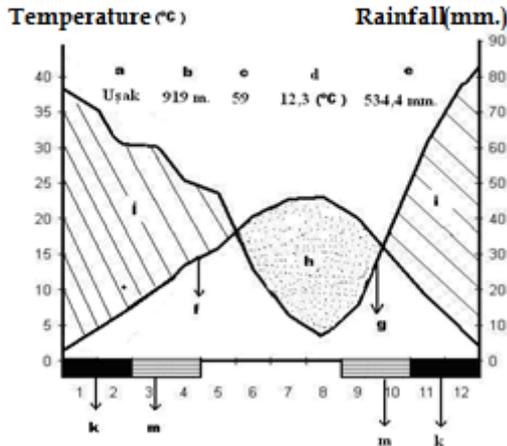
Table 1. Soil Analysis Results

	Physical Analysis						Chemical Analysis					
	No	depth (cm)	clay (%)	Silt (%)	sand (%)	Texture (Structure)	Total N (%)	Total salt (Mikro s/ cm.)	lime (CaCO) %	Receivable K (ppm)	organic matter %	pH
<i>Paeonia peregrina</i> Miller	1a	0-20	33,6	8	58,4	sandy clay Loam	0,263	0,018	1,95	188,20	5,83	6,42

	1b	20-40	31,6	10	52,4	sandy clay loam	0,241	0,018	1,95	180,3	5,91	6,64
--	----	-------	------	----	------	--------------------	-------	-------	------	-------	------	------

When we look at the results of the analysis, it is seen that the soil is physically sandy clay loam. There is no salinity problem in soils. As plant nutrient, it can be taken from the soil is sufficient. Total nitrogen is excess. The soil content is rich in organic matter. Soil ph is neutral.

Meteorological data



- a- Location of weather station
- b- The station's altitude
- c- Observation period
- d- The average annual temperature (°C)
- e- The average annual rainfall (mm)
- f- Temperature curve (based on monthly average)
- g- Precipitation curve (based on monthly average)
- h- Arid period
- i- Rainy period
- k- Frost days
- m- Frost, which may be months

Figure 1. Bioclimatic Features of Usak Province diagram depicting Ombrotermik

Usak Province in cold winter climates, semi-arid Mediterranean climate shows. According to Emberger The climate is cold Mediterranean in winter. (Akman, 1990).

Biological Properties

The morphological definition of *Paeonia peregrina* Miller in Flora of Turkey is given as follows;

Lower leaves divided into 17-30 narrowly elliptic segments, the ultimate segments short, broadly triangular, presenting a serrate appearance, weakly villous to glabrous beneath, and with minute bristles along the main vein above. Flowers 7-13 cm across, cup-shaped. Petals red. Follicles white-tomentose, 2-3.5 cm, with a truncate apex and sessile stigma (Davis, 1967).

Paeonia peregrina Miller is cryptophyte. It is a perennial herb.

Morphological measurements of *Paeonia peregrina* Miller obtained as a result of the field study in May-June 2019, Itecik Mountain, Uşak, are given below.

Table 2. Morphological measurements (averaging) of *Paeonia peregrina* Mill.

Measu type	Plant height	Calyx length	Calyx width	Petal length	Petal width	Stamen height	Anter	Flament	Pistil	Floral leaf width	Floral Leaf height	Stem height	Stem width	Fruit diameter	Fruit height
<i>Paeonia peregrina</i> Miller	63,6 cm	3,16 cm	3,1 cm	5,3 cm	3,1 cm	22 mm	5,75 mm	14 mm	1,7 mm	9,25 mm	5,3 mm	28 cm	9 cm	1,5 cm	2,5 cm

CONCLUSION

Paeonia peregrina Miller is one of the biological riches of our country. Uşak Kayağıl Village This species, which is widespread in the area of 500 square meters in Itecik Mountain, attracts the attention of the people because it is beautiful and showy. This situation has activated the Nature Conservation and National Parks unit and has been taken under protection as a result of necessary applications. The plucking of this plant and its dismantling together with its roots require a fine. It does not mean that this plant should not be protected because it is located in other provinces in our country or is located in other countries. Every living thing has an ecological function in ecology. Plants vary according to the amount of chemical compounds they contain according to their habitats. (Emard and Gamal, 2013).

The habitat of *Paeonia peregrina* Miller in Uşak Itecik mountain differs from the habitats in our country. The lime ratio in rocky and soil is high at 1200 m. It was found at 270 m in the flora of Kocaeli (Hereke) (Köse and Özen, 2017). It was found in 200 in the central Efendi district of Denizli. (<https://www.cnnturk.com/yasam/ender-gorulen-itecik-lalesi-denizlide-bulundu?page=1> date of access 18.12.2019)

Although Uşak has not been registered as habitat in terms of distribution, the plant morphologically conforms to the morphological definitions in Davis (1967, 1982).

REFERENCES

- Akman, Y. 1990. İklim ve Biyoiklim. Palme Yayınları, s. 212 Ankara, Türkiye.
- Arslan, N., Yılmaz, G., Akınerdem, F., Özgüven, M., Kırıcı, S., Arıoğlu, H., Gümüştü, A. ve Telci, İ., 2000. Türkiye Ziraat Müh. 5. Teknik Kongresi, Milli Kütüphane- Ankara. 1. Cilt, S: 453-483.
- Arslan, Y., Katar, D., Güneylioğlu, H., Subaşı, İ, Şahin, B., Bülbül, A.S. 2010. Türkiye Florasındaki Yabancı *Carthamus* L. Türleri ve *Aspir* (*C. tinctorius* L.) İslahında Değerlendirme Olanakları. TARM Dergisi, 19 (1-2): 36-43.
- Davis, P.H. 1967. Flora of Turkey and East Aegean Islands, Vol.1. s.76-77. Edinburg University Press, Edinburg
- Davis, P.H., 1982. Flora of Turkey and the East Aegean Islands, Edinburgh University Press, vol. 7, Edinburgh, p: 00-307.

Emad, A, Gamal E.G.(2013). Screening for antimicrobial activity of some plants from Saudi folk medicine, *Global J Res. Med. Plants & Indigen. Med.* | Volume 2, Issue 4 . April 2013 | 210–218

Köse, M , Özen, F . (2017). Flora of Hereke (Kocaeli). *Sakarya University Journal of Science* , 21 (6) , 1165-1175 . DOI: 10.16984/sofenbilder.288613

<https://www.star.com.tr/yasam/bu-cicegi-koparmanin-cezasi-42-bin-lira-haber-1227352/> date of Access 18.12.2019

<https://www.cnnturk.com/yasam/ender-gorulen-itecik-lalesi-denizlide-bulundu?page=1> date of access 18.12.2019

Şahin, G.(2007). Türkiye’de toplanan bazı *Paeonia* türlerinin Antibakterial Etkisi, Ankara Ü.,Fen Bil. Ens. Yüksek Lisans Tezi.