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Investigation of habitat characteristic of *Phlomis cancellata* Bunge. in Mazandaran Province, in Iran

Mohanna Deylamsalehi[1], Esfandiar Jahantab[2*], Rohallah Jahanbin[3], Mohammad Akbarzadeh[4]

[1]*Department of Range Management Science, Islamic Azad University of Nour, Nour, Iran*

[2]*Department of Agriculture, Payame Noor University Of Yasuj, Yasuj, Iran*

[3]*Young researchers club, Islamic Azad University of Gachsaran, Gachsaran, Iran.*

[4]*Research Center of Agriculture and Natural Resources, Mazandaran, Iran*

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Abstract

Phlomis cancellata Bunge. is a native plant belongs to Labiatae family which can used morein modern medicine and different industries for its essential oil particulars, in addition to Iranian folk medicine. The research has been conducted with the purpose of investigating the of habitat characteristic of *Phlomis cancellata* Bunge. In Mazandaran province in Iran. Topographic, climatologic information derived of the maps of them. Soil data (including organic carbon, clay, Silt, Sand, EC, pH, N, P, K and Caco3) and vegetative cover data (i.e. coverage percent, and frequency of species) have been collected using establishing the quadrates and analyzed. Results showed that the species grows in the heights 1700 to 3240 m in all directions. Also *P.cancellata*is growing in slope gradient from 10% site to 48% . Minimum temperature of the region is -5 ˚C and its maximum temperature is to 22 ˚C. Annual rainfall is about 650 mm based on a neighbor station that often consists of snow. Analysis of the study region soil showed that *P. cancellata* growing in sandy loam and silty loam. Also, N of soil was /03 to /85, P of soil was 5 to 130/96 and K of soil was 118 to 418. Habitat of *P. cancellata* species is located in 6/5 to 44 caco3. The PH of soil was 6/5 to 8/2 , EC of soil 0/1 to 0/7 ml/cm. Results showed that form all factors, temperature has the highest role in distribution of species.

***Corresponding Author:** Esfandiar Jahantab ✉ e.jahantab@yahoo.com

Introduction

Medicinal plants are one of the God´s greatest creat uresand Iran have a suitable position because of it's thephylogenetical reserves (more than 7500 plant species), weathering (11 of 13 types of world climate) and political geography conditions, can reach toan important habitat in the field of medicinal plants. Iran has many capabilities in related to the medicinal plants. This country is the habitat of over 7500 plant species, because of its the climatic diversity and having special conditions, so that diversity of it only is equal to Europe ,s diversity. Based on an opinion, % 10 to 15 of the species consists of the medicinal species (Ebrahimi, 1995). Recognition and introduction of medicinal endemic plants of the country is the first step that should be done to develop in the field of the medicinal plants. Furthermore, Recognition and introduction on the plants have a basic role in management of using them. The rangelands, in addition to producing the foliage, have some other sub-product like medicinal and industrial plants, such as *Ferula gumossa*, *Ferula assa-foetida* and *Dorema ammoniacum* are exported products.

Iran country due to our geographical location and climatic diversity of the few countries in the world which has the greatest diversity of plants. With a better understanding of native species and domesticated, they can be used in applications such as rehabilitation, improvement and utilization of the pastures will be provided. In this study, the life cycle of plants and their habitats for the collection of basic information about each of the plants grown in rangeland ecosystems is necessary (Hassani and Shahmoradi, 2007). With a better understanding of native species and their increasing use in program management and exploitation of endemic species ranges are possible (Ajbar, 2007).In this case, study of habitats and the life cycle of their plants are necessary for the collection of basic information about each of the plants grown in rangeland ecosystems (Shafii, 1998).

The genus *Phlomis* (Labiatae) is represented by about 70 species found in the world, mostly in Asia (Evans, 1996). It has been represented in Iran by 17 endemic species (Mozaffarian, 2007). The species of *Phlomis* genus in spite of proving the high medicinal value and antibacterial virtue 3 has paid less attention of experts. *Phlomis cancellata* Bunge. is a native plant, it has been known as Gushbarre sefid and also Gush-barre Irani and widely distributed in Iran, Iraq, Turkmenistan and Afghanistan and this plant grow in Khorasan, Golestan and Mazandaran provinces in Iran (Morteza-Semnani *et al*:2006, Rechinger: 1982).

Phlomis cancellata Bunge.is a rangeland in Iran. This species growing in northern of Iran (Mazandaran province). *P.cancellata* is an Perennial plant that belongs to the Lamiaceae. Height of the species is about 15 cm and even to 35 cm. Stems is simple with a long internodes, covered with star-mat, hairy. Basal leaves of stems is with long petioles white. Flowers are rather large, complex inflorescence (Ghahraman, 1994). Flower season is April to June. The main purpose of this study is investigating the of habitat characteristic of *Phlomis cancellata* Bunge. In Mazandaran province in Iran.

Materials and methods

The studied region is located in Mazandaran province in Iran. The studied region is located at 50-36 to 54-09 eastern longitudes and 36-23 to 38-12 northern widths. In this study, the required information and data are supplied in two following methods:

Library Investigations

- Library investigations is included: studying the books, journals, seminars reports, documents, these and that are achieved into the country and overseas related to the subject and based on the recent findings.
- Case studies and regional studies are achieved by Management and Planning Administration, Research Institute of Natural Resources and Cattle Affairs, Agricultural Jihad Organization and etc.

Field Investigations

The field studies, is including the collection of soil and vegetative cover data. Climatic and topographic data were made of their maps and then analyzed. Soil data (including organic carbon, clay, Silt, Sand, EC, pH, N, P, K and Caco3) and vegetative cover (i.e. coverage percent, and frequency of species) systematically collected using the settled quadrates (plots). 60 plots sized 2×2 m^2 had been settled along 4 transects. Organic carbon of soil had been determined using the wet oxidation method (Walky and Black 1934). Also soil texture of the samples was determined by the soil texture triangulation. Plots positions recorded by GPS.

Results and discussion

Vegetative Cover: dominant types of the vegetative cover were: *Phlomis- Astragalus*, *Phlomis-Stachys, Nepetea- Stachys*. Of course, *Phlomis cancellata* Bunge.*Stachys lavandulifolia, Nepeta crassifolia* species were more than the other species in the plots. Some of these species were shown at table 1.there are 64 species that The species belonged to 15 families that separately showed in table 1. Lamiaceae and Poaceae families have the highest frequency and Apiaceae ، Brassicaceae ، Boraginaceae ، Euphorbiaceae ، Papaveraceae ، Plumbaginaceae and Zygophyllaceae family have the lowest frequency, too.

Table 1. Floristic list of species in region.

Family (number of species)	Species	Perce-ntage	Family (number of species)	Species	Perce-ntage
Apiaceae(1)	*Ferula ovina*	1/56		*Stachyslaxa*	
	Achilleabiebersteinii			*Stachyslavandulifolia*	
	Achilleamillefolium			*Stachysturcomanica*	
	Artemisia aucheri			*Teucriumpolium*	
	Artemisia chamaemelifolia			*Thymus falax*	
Asteraceae(7)	*Centaureazuvandica*	10/93	Lamiaceae	*Thymus kotschyanus*	
	Tanacetumpolycefallum			*Thymus pubescens*	
	Taraxacumsyriacum			*Ziziphoraclinopodioides*	
Berberidaceae(2)	*Berberisintegrrima*	3/12		*Ziziphoratenuir*	
	Berberisvulgare		Papaveraceae(1)	*Papaversomnifera*	1/56
Boraginaceae(1)	*Onosmamicrocarpum*	1/56	Plumbaginaceae(1)	*Acantholimonpterostegium*	1/56
Brassicaceae(1)	*Alyssum linifolium*	1/56		*Agropyronintermedium*	
Caryophyllaceae(2)	*Acanthophyllumacerosum*	3/12		*Agropyronpectiniforme*	
	Dianthus orientalis			*Agropyrontauri*	
Cupressaceae(3)	*Juniperuscommunis*	4/68		*Agropyrontrichophorum*	
	Juniperusexcelsa			*Alopecurustextilis*	
	Juniperussabina			*Bromusjaponicus*	
Euphorbiaceae(1)	*Euphorbia boissioriana*	1/56		*Bromuspersicus*	
	Medicago sativa			*Bromustectorum*	
	Trifoliumrepens		Poaceae(17)	*Bromustomentellus*	26/25
Fabaceae(5)	*Trifoliumpratense*	7/81		*Festucaovina*	
	Astragalusgossypinus			*Loliumperenne*	
	Onobrychiscornuta			*Melicapersica*	
	Marrubiumastracanicum			*Poabulbosa*	
	Marrubiumcordatum			*Stipabarbata*	
	Marrubiumvulgare			*Stipahohenackeriana*	
	Nepetacrassifolia			*Stipalagascae*	
Lamiaceae(18)	*Phlomisherba-venti*	28/12		*Dactylisglomeratae*	
	Phlomisolivieri			*Alchemillapersica*	
	Scutellariapinnatifida		Rosaceae(3)	*Cotoneaster ovate*	4/68
	Stachysbyzanthina			*Rosa canina*	
	Stachys inflate		Zygophyllaceae(1)	*Peganumharmala*	1/56

Data analysis showed that *P.cancellata* species have the following ecological properties:

Habitat properties of *P. cancellata*: The species grows in the heights 1700 to 3240 m in all directions.

Minimum temperature of the region is -5 ˚C and its maximum temperature is to 22 ˚C. Results showed that form all factors, temperature has the highest role in distribution of species. Table 2 showed that the habitat of *P. cancellata* in province Mazandaran.

Table 2. Habitat of *P.cancellata*in province Mazandaran.

Aspect	Slop	Elevation	Latitude	Longitudes	Habitat	Row
North	15	3240	36 23	50 55	Khorramdasht	1
North, west	35	2700	36 25	50 55	Shahrzamin	2
South	30	1850	36 26	51 36	Koohpar	3
South	28	2100	36 20	51 07	Naater	4
North	45	2000	29 23	51 55	Asbchareh	5
South	25	3100	38 12	55 16	Baladeh	6
North	35	2400	35 50	52 56	Firoozkooh	7
North	25	2200	36 28	54 09	Hezaarjarib	8
North	30	2400	36 36	50 33	Siyah-Godareh	9
North	29	1700	36 38	50 22	Torangsaraa-Aabanbaarkesh	10
Esat	25	2300	36 38	50 40	Siyahguyeh	11

Climate

This region, based on Iran, s climatology map, is located in cold semi-humid class. Annual rainfall is about 650 mm based on a neighbor station that often consists of snow.

Soil

Analysis of the study region soil showed that *P. cancellata* growing in sandy loam and silty loam. Also, N of soil was /03 to /85, P of soil was 5 to 130/96 and K of soil was 118 to 418. Habitat of *P. cancellata* species is located in 6/5 to 44 caco3. The PH of soil was 6/5 to 8/2 , EC of soil 0/1 to 0/7 ml/cm.

Among all parameters, *P.cancellata* had the highest correlation with the rate of K and EC. Therefore the rate of K and EC are the most influential factors on the number of species *P.cancellata*.

Topography

The species grows in the heights 1700 to 3240 m in all directions. Also *P.cancellata* is growing in slope gradient from 10% site to 48% .Based on a results, the highest density of *P.cancellata* species was in 2000 to 2200 elevation.

Chemical composition

Chemical composition of essential oil of *P.cancellata* has been determined. It showed 53compounds of the oil, the major components were germacrene D (25.6 %) and α-pinene (6.4 %). . Also Antibacterial effect of the essential oil obtained of this species has determined (Deylamsalehi *et al*, 2013).

References

Ajbar F, Shahmoradi A. 2007. "Autecology of rangeland species *Ferula* ovina in Tehran". Research Iranian Journal of Range and Desert.Vol. **14**. No. 3, P. 359-367.

Deylamsalehi M, Mahdavi M, Motavalizadeh-kakhky A, Akbarzadeh M, Mahmudi J, Mirahmadi F, Ebrahimi Z, Abedi F. 2013. "Chemical Compositions and Antimicrobial Activity of Essential Oil of *Phlomis cancellata* Bunge. from Mazandaran, Iran". Journal of Essential Oil Bearing Plants. Vol. **16**. No. 4, P. 555-562.

Ebrahimi A. 1995. The national conference of medicinal plants of Iran.

Evans W.C. 1996. Trease and Evan, spharmacognosy. W.B. Saunders Company Ltd. London.

Ghahraman A. 1994. Plant systematic. Publishing Center Tehran University. Vol **3**.

Hasani J & Shahmoradi A. 2007." Autecology of rangeland species Prangos ferulaceae in Kurdistan". Research Iranian Journal of Range and Desert. Vol. **14,** No. 2, P. 171-184.

Mozaffarian V. 2007. Dictionary of Iranian Plant Names. Farhang Moaser Publishers, Tehran, Iran.

Rechinger KH. 1982. *Phlomis*, In: Flora Iranica, Labiatae. Edits., I. C. Hedge, AkademischeDruck and Verlagsanstalt, Graz, Austria. No. **150**, p. 292-316.

Morteza-Semnani M, Moshiri K, Akbarzadeh M. 2006. "Essential oil composition of *Phlomis cancellata* Bunge." J. Essent. Oil Res. Vol. **18**, No. 6, P. 672-673.

Shafii A. 1998. "The final report card in order to collect and review information on watershed catchment areas of the Kohgiluyeh and Boyer Ahmad province". Research Center for Agriculture and Natural Resources Kohgiluyeh and Boyer Ahmad province.

Walky A, Black IA. 1934. "An examination of Degtjareff method for determining soil organic matter and a proposed modification of the chromic acid titration method". Soil Science. Vol. **37,** No. 1, P. 29-38.