Effects of environmental factors on the ecological distribution of teucrium polium in the tang sayad of chaharmahal va bakhtiari province.

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Abstract-

TP with the scientific name (teucrium polium) Belongs to the family of mint (lamiaceae). It is known as a traditional herbal remedy for the treatment of many diseases, including; gastrointestinal problems, diabetes, anti-inflammatory, anti-bacterial and anti-oxidants. It is growing in most parts of the world including America, Europe and Asia that must be considered due to the limited germination and indiscriminate harvesting by local people.

In this study, the influence of environmental factors on ecological distribution of TP in the Tang Sayad of Chaharmahal and Bakhtiari province was studied.In order to study these Species, 14Transects in the mentioned area was selected randomly (Each transect 5 plot 2 x 2 with an area of 4 square meters),and soil at a depth of 0 to 2 and 20 to 40 cm were sampled, and for analysis was tested. And also topographic factors such as slope percentage were measured.

Data, using SPSS and PC-ORD softwares were analysed. The results showed that the species in the southern slope for efficient use of solar energy and create more favorable conditions for growth has more distribution. Also it has life outside their origin distribution because of the different form of life which Indicates the power of this species in different climatic conditions and ability to adapt to the environment. Other findings suggest that multiple factors controls the presence of species in the region, That , in addition to topographic factors , the most important factors that influence the distribution of species, are soil factors such as the manganese, nitrogen and sand percentage .Plant parameters are positively correlated with the percentage of sand and silt and have negative correlation with saturation percentage and slope. strong correlation of Plant parameters with the presence of manganese and potassium is for impact on the soil under growing , So that these

species can grow in soil with loam tissue and accelerate the factor ´s absorption and continue their grow .

I.   Introduction:

Treatment plants to treat diseases have been common in ancient civilizations. Today, various forms is prevalent throughout the world. Because the side effects of drugs that are chemically synthesized, there are sensitivity to the drugs and they have resistance against diseases. (Casper, 2005 Education translated, 1385). TP with scientific name (Teucrium polium) is belongs to the mint family (Lamiaceae). This is herbaceous plants, with a wooden root, branched to a height of 10 to 35 cm, and also appears occasionally to 50 cm in this area, (Bagherzadeh, noruzi, 1387). Appearance of white cotton usually grows in arid areas, beaches, sand dunes and rocky areas of the world. Its leaves are narrow, long and covered with cotton fluff in both the lamina.

The plants grows in different parts of Europe, the Mediterranean region, North Africa and Southwest Asia, including Iran , And ,widely ,distributed in different parts of the north, west, south and central part of Iran near Tehran and karaj (Shakeri et al, 1387) , Alborz region, especially in semi-arid and arid mountains areas (zargari 1368).   This plant has been recognized by the ancients. The plant decoction used as a diuretic to relieve fluid in tissues, lack of

urine repelling and fresh leaves used to treat wounds grow in the mid-first century AD.   Flowering branches is helpful for   the impact force, stomach tonic, antipyretic and antiseptic and their ingredients is useful for the digestion system and liver weakness . Over 2000 years, various species of T. polium are known as medicinal plant and anticonvulsant effects, anti-inflammatory, analgesic, antipyretic, the wounds heal of them is clear.(badvian 1963).

Analgesic Effects of T. polium carried out on mice by researchers in Iran leading to the observe the health benefits of it and considered the high consuming probability to relieve pain. Also recently, researchers have studied Antimicrobial and antioxidant activity of the essential oils of some species, such as T.chamaedrys_subsp. T.orientale T.chamaedrys subsp.T. Lydium and T. marum. (Ozanda, 1991).

II.   Materials and Methods
Study area and methods of sampling:

The selected location is National Park, a protected area of in Tang Sayad of chaharmahal va Bakhtiari province centered Shahrekord, In the central region of the Zagros mountain range, which has special environmental conditions and plant-wide forest cover, and has formed part of west forest in the country. (Sheyvandi, nazarian, 1386). Tang Sayad national Park with an area of 7,000 acres has semi-

humid climate and cold winters. (Planning Department of Economic Affairs, 1383).

these area located in The geographical position of 51 degrees east longitude and 32 degrees north latitude and is Steppe ecosystems with communities of plants and animals of a specific (Sheyvandi, nazarian, 1386).).The Teucrium polium using14

transects systematic sampling, were chosen. Abundant species in the mass region was around 10-7 Each of the two parallel transects toward the slope and used along the road scurry out. Transect were in 100 meters long and 50 to 150 meters apart from each other , and settled on each of them 20 meters to 20 meters, 5 plots 2 x 2 with an area of 4 square meters And was and measured factors such as cover percent, fellow species , plant height and ….

III. Sampling procedures:

1 - Selection of plant biomass: (vegetation type) the studied area should have some type of plant that TP is present in some of them.

2 - Establishment of 100 m transect in each type

3- Register plots and topographical conditions and the soil sampling in horizons of 0-20 cm

4- The measurement of soil properties in the laboratory

5- Register data, multivariate statistical analysis

IV. Analysis of data:

At first, the species matrix must be specified in the sampling plots. Data matrix is required for Comparative analysis test of data, Comparative analysis of the arch, And PCA. Comparative analysis of the data used to determine the slope of the environmental changes in the region, and obtain the gradient of the environmental changes; we can obtain response of plant species through principal component analysis. Plot location and species of the above analyzes diagrams indicate the presence different of species according to the environmental gradient.Data analysis for soil is used according PCA method and the contribution of each factor is obtained for causing differences in populations of plant mass and having the presence of the desired species in plant mass , the share of each species is recognized for The creation of ecological niche of soil factors . Arches canonical analysis procedure to investigate the relationship between the masses of the same species, associated species and soil conditions are used. Extracted vectors by this method will be determining the contribution of these factors (once) and their interactions in determining the ecological niche.

V. Results:

The results of the study identified15 species except of TP, that the order of frequency are: Thahena thrum (1.85 percent) , Species of Stipa hohenackeriana (1.19 percent) , Species of Astragalus sp (1.8%) , Gundelia tournefortii (0.82%), Scariola orientalis species with the (0.75), Acanthaphyllum caryophyllaceae (0.73%) , Hertia angostifolia (0.72%) and other species have the percentage lower than (2%) flora in this study .

Arc comparative analysis results on fellow species and transects shows that in transects that TP found abundance the fellow plants include Polygonum sp, Boissiera squarrosa,, Acanthophylum caryophylum,

Phlomis oacheri and Thahena thrum, and in areas where such plants Echinophora plalyloba, Stipa

hoenekeriana, Stachy infelata are presence the Teucrium species are absent.

20 factors correlated with herbs distribution such as moisture, slope, elevation and elements in soil using soil tests were investigated and the degree of correlation between them, with TP plant growing was studied.

Soil variable (mean, variance, change coefficient and…)in 0-20cm of soil deeps

Changes coefficient	minimum	maximum	variance	Standard deviation	average	Soil variables
150	214	346	1486/21	10/·30	309/67	(*EC*)
·/31	7/60	7/91	0/01	·/02	7/77	(*PH*)
12/20	32/30	44/50	12/91	·/96	40/07	Stored material
·/04	1/25	1/29	·/000	·/01	1/27	volume (g/cm^3) density
·/52	·/16	·/68	·/03	·/04	·/44	Organic carbon p
23/12	12/53	35/65	33/∧58	1/54	20/82	(*mg/kg*)phosphor
207	179	404	4088/84	17/08	293/42	(*mg/kg*)k
·/04	·/02	·/01	·/000	·/01	·/04	Nitrogen percentage
15	24	39	29/44	1/45	31/67	Sand p
19	29	48	41/71	1/72	39/21	silt
24	7	31	33/71	1/55	26/26	clay
2/72	2/29	5/01	·/58	·/20	3/33	(*mg/kg*)Iron
·/41	·/47	·/88	·/02	·/04	·/62	(*mg/kg*)zinc
1/80	4/65	6/45	·/24	·/13	5/34	Manganese (*mg/kg*)

٠/29	٠/7	٠/99	٠/01	٠/03	٠/84	*(mg/kg)* copper

Then, using the Pearson correlation coefficient, t-test, variance analysis and regression, the distribution correlation of TP with effects factors in its growing was analyzed. In this table, for example clay percentage is with an average of 26/26 and changes range 31 to 33/71 and coefficient of variation is 24.

Changes range shows range of each variable in the habitat area. And with knowing it, we can obtain ecologic range and species tolerance towards each variable. Given the scope and varies data measurement unit, is different, the coefficient of variation can be reflect the created gradient pattern. According this argument, the highest variability is for satiety and potassium factors andleastvariability is related to density factors and nitrogen.

VI. Discussion:

Teucrium species (Teucrium polium) is growing in different parts of Europe, the Mediterranean region, north Africa and Southwest Asia, including Iran, and has a dimorphic life gremlin camophyte and hemi-cryptophytic and has two Mediterranean and Iran-Turanian ́s choriotypes. The best distribution model and the position of its publication in height are between (2280-2230). Mohammad Pour Ghorbani (1383). Average annual rainfall and temperature in habitat for this species, is, 581-445 mm, 12-19 ° C respectively and Slope percentage is 45-30 percent.

Flora Survey shown that is present in habitat for 15 species with different life forms and different choriotypes, even in dispersed expansion of species (Teucrium polium). Associated species in this study are as follows:

Acantaphyllum caryophyllaceae,Stipa hohenackeriana,Stachys infelata,Scariola orientalis, Polygonum sp,Phlomis oacheri,Morina persica,Herita angostifolia,Gundelia tournefortii, ,Echinophor platyloba ,Boissiera Boromus tecturum , Astragalus sp,Ahena ʻsquarrosa thrum

The research results is not in close agreement with M. Pour and ghorbani (1383) (saeidfar 1375), (Jalali et al, 1990) , But the survey that (Khedri gherib vand, 1386) carried out on camphor plant in Tang Sayad , showed that some associated species are consistent with our study.

Soil pH changes indicate that the species habitat area of soil pH is alkaline. Variability of soil properties is for dynamics reaction between environmental factors (climate, parent material, cover, and topography). Given the range of soil variables changes and Comparison with other studies (gherib vand (1383). And azarnivand, et al (1382), can be acknowledged that this species has wide ecological amplitude.

It can be said that K factors in the studied population have Maximum variation and depth change in 0 to 20 cm. and therefore it can be argued that, habitat conditions and species characteristics, have important role for establishment of the species and facilitate the Species present in the habitat. So that this species is settlement easily in sandy and sandy clay soils, and caused potassium absorption in the plants.

The results is consistent with (Larsv, 2001) and (Soltanali, 2006), Who have expressed a plants ability for invade to other growth areas not only depend species features, but also on habitat features are important .Given Plant parameters are correlated with each other, we must be acknowledged that there are Positive correlation with silt and gravel plant parameters and the negative correlation saturation with slope. Can be said that the correlation with vegetation parameters such as potassium, phosphorus and organic matter to the soil is by the species presence and influence on soil under growing, So that these species can accelerate uptake of elements with growing in the soil and its loam tissue.

Can be said that species Positive correlation with silt is by no limitation in water absorption because of the abundance of water.

(Abedoljani and Amer, 2003) showed that There is a correlation between soil and tissue saturation. Our results with Khedri gherib vand (1386) are consistent in this case. The main component results for habitat factors show that the main causes of habitat are the Soil texture, elevation, slope parameters and fertility. The plant growth with fertility factors (phosphor and organic material) has positive correlation in this study.

VII.   Conclusions:

According to the results of studies on the medicinal properties of the Teucrium plant that Known for its medicinal properties and, it is necessary that weprevent of extinction because it is an endangered species due to indiscriminate harvesting, Control and monitoring of human damages.

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