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Studying the Most Important Effective Factors on Dispersion of Sohaerocoma Aucheri and Its Non-Dispersion in Hormozgan

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ABSTRACT

Sphaerocoma aucheri is one of the important types of coastal ranges of Hormozgan Province which plays a role in the production of coastal regions and a level of 23794 hectare was allocated to its growth in this province . Studying the most effective factors in the dispersion and non-dispersion of this type to the soil study in four regions within the dispersion region of this genus and the region of lack of witness type was done via profile digging and different parameters were analyzed .The results have been shown that the average of soil factors, EC, gypsum, sand, Ca and Mg, Na, S.A.R and K amount in each three depths and factors of clay percentage and K amount in two depths and percentage of saturation moisture in 2nd depth between regions of this genus and the regions in which this type was not available, there is a significant difference (*level of Duncan Test= 95%*).There is a significant difference between witness regions with the regions in which this genus exits for soil acidity and sand percentage in three depths. the average of saturated flower response in each three depths in the witness region is less than the dispersion regions of this type and has a significant difference with all compared regions. The average of gypsum in each three depths in the witness region is less than the dispersion regions of this type and has a significant difference with all compared regions. The average of potassium in the 2nd and 3rd depths in the witness region is less than the dispersion regions of this type and has a significant difference with all compared regions. The average of sand percentage in each three depths in the witness region is less than the dispersion regions of this type and the average of silt percentage in all depths in the witness region is more than the dispersion regions of this type.
KEYWORDS: Sphaerocoma Aucheri, dispersion, Hormozgan.

INTRODUCTION

The great community of plants was established and evolved under the various conditions during different periods. *Sphaerocoma aucheri* is one of the most important types in the coastal range regions of Hormozgan and plays a main role in the soil preservation and production of animals feeds.

Stated that this genus disperses in the local center of Andimism which indicates a possible migration for the arid/dry genus (genus which like dryness) in the Pleastoson period, when the decrease of water level dried some parts of Persian Gulf [17].

Dispersion of *Sphaerocoma aucheri* was observed in the coats of Sudan, Egypt, Saudi Arabia, west of Pakistan, south of Iran, and south east of Arabian Peninsula. In Iran, this genus exists in the south and south east parts such as Hormozgan, Qeshm, Bandare Abbas, Chark Port, Lark Island, Kish Island, Bandare Lenghe, Hormoz Island, Jamsk, Minab, Sistan & Baluchistan, Chabahar & Konarak (Rechinger).

Hajkinson 1987 done studies on six genus of this plant in Arizona and New Mexico and stated that the above mentioned genus have a direct relationship with adsorption sodium amount, E.C and soil acidity[1].

Boer and Sargent in a study in the west of Saudi Arabia showed that Cyperus conglomerates is the indicator of saline soils with fine texture and Zygophyllum mandavillei is the indicator of high saline soils, rough texture and a hard surface layer [14]..

Kaya and Axa Kall studied the morphological properties and athecology of Salvia rosifolia as a native plant of Environs, Turkey. In this study, it was shown that there is a relationship between the amount of phosphorus, nitrogen and potassium with this plant distribution in this region. Also the amount of soil acidity for the growth of this genus was about 6.95-8.01[15].

Asad poor & Soltani poor , in a study of athecology of Cymbopogon Olivieri in Hormozgan concluded that this genus in this region exists wither in the arid and warm desert lands (coastal regions

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and Oman island) and in the moderate warm regions and by the increase of latitude and decrease of temperature in the neighborhood regions, its dispersion limits and stops[5].

MATERIALS AND METHODS

In this paper, at first, the dispersion map was provided and then, in order to study the most important effective factors on the dispersion of *Sphaerocoma aucheri* and its non-dispersion in Hormozgan, by using the available maps of Hormozgan recognition plan and repetitive reviews, the boundaries of its dispersion on the topographical maps on the scale 1:50000 was designed .

Then, studying the most important effective factors on the dispersion of *Sphaerocoma aucheri* and its non-dispersion, soil profile digging was done in four regions within its dispersion and its non-dispersion regions in the determined distances (in each region, 3 profiles) and soil sample was provided from the depths of 0-25, 25-50 and 50-75 cm. For analyzing these parameters such as Sp/Saturation percentage, E.C., PH, T.N.V., Gyps, OC, N, P, K, Ca + Mg, Na, SAR, clay/ solution potassium and clay amount, silt and sand, these samples were transferred to the soil laboratory of Hormozgan Natural Sources & Agricultural Research Center and analyzed [2,3,4].

RESULTS

Variance's analysis of soil-parameters of regions in which these genus exists and the other regions in which they are not available shows that there is a significant difference between these two regions based on the soil factors, E.C., Gyps, silt, Ca + Mg, sodium amount, S.A.R., and potassium amount in each three depths and clay percentage factors and potassium amount in two depths and saturation moisture percentage in 2nd depth (in the level of Duncan test=95%) and the numerical value of witness regions is so high.

Also there is a significant difference between these two regions (witness regions without this genus and the regions in which they exist) based on the acidity of soil and sand percentage in three depths. And the numerical value of witness regions compared to the regions in which they exist is so less. Therefore, the average of E.C. in each three depths in the outside regions is more than the dispersion regions and has a significant difference with all compared regions.

It can be said that this genus did not prefer the salinity soils. Also the average of saturated flower response in each three depths in the witness regions is less than the dispersion regions and has a significant difference with all compared regions. In other words, this genus prefers the alkalinity soils. Based on the existence of gyps, it is being observed that the average of gyps in each three depths in the witness region is more than the dispersion regions and has a significant difference with all compared regions.

In other words, this genus does not prefer the soils having gyps. also, based on the existence of potassium, it is being observed that the average of potassium in 2nd and 3rd depths in the witness region is more than the dispersion regions and has a significant difference with all compared regions. In other words, potassium in soils can be a limiting factor (Figure 3).

it is being observed that the average of sand percentage in each three depths in the witness region is less than the dispersion regions and the average of silt percentage in all depths in the witness region is more than the dispersion regions have a significant difference with all compared regions. In other words, habitant of this genus is full of fine and sand Averages in each row which have a common letter have not a significant difference with each other in 5% level of Duncan Test. (Figure 1)

T- TEST RESULTS

For determining the most effective factors on dispersion of *Sphaerocoma aucheri* in four regions in which this genus does not exist (witness region), soil profile has been excavated and compared with soil sample inside type and the results were shown in table 1.

The numbers indicate a significant difference between soil factors in dispersion regions of this genus with its neighborhood region in which this genus does not exist (witness). Positive numbers indicate the highest numerical value in the region in which this genus exists and negative numbers indicate the lowest numerical value of considered factor in the region in which this genus exist and negative numbers).

Table 1: T Test results in the regions in which this genus exists & witness region

Row	Soil factor	Keryan	Sirik	Jask	Chark	Total
1	ph1	+1/57	+0/7	+1/1	+0/95	4
2	ph2	+1/57	+0/76	+0/93	+0/8	4
3	ph3	+1/517	+0/47	+0/69	+0/78	4
4	sand2	+71/62		+46/33	+10/44	3
5	silt1		-5/11	-14	-6/22	3
6	clay3	-9/55	-6/67		-4/22	3
7	Ec1	-60/31		-45	-3/38	3
8	Ec2	-60/35	-2/45	-47/67	-3/04	4
9	Ec3	-60/58	-3/11	-36/83	-3/27	4
10	Ca+Mg1	-536/9	-3/1	-206/6	-32/9	4
11	Ca+Mg1	-538	-8/7	-195/29	-29/8	4
12	Ca+Mg1	-538/3	-19	-128/67	-8	4
13	Na1	-596/9		-529/13	-1/1	3
14	Na2	-596/2	-15/9	-626/9	-0/9	3
15	Na3	-598/8	-14/5	-43/4	-2/8	3

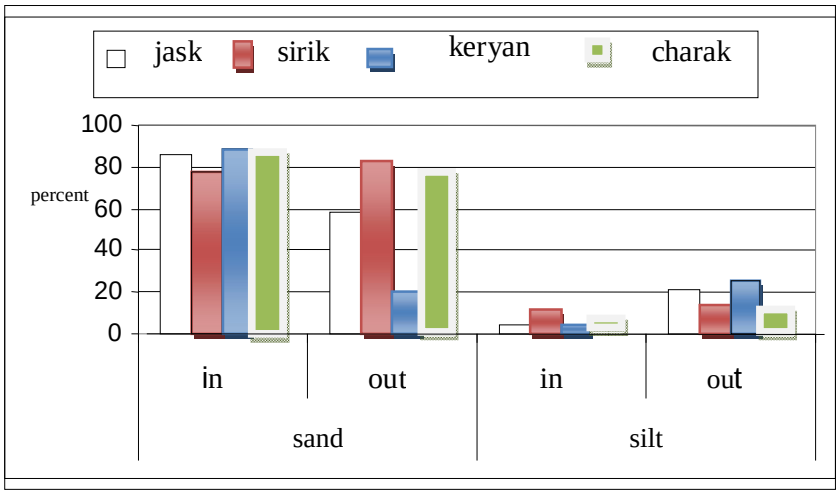

Figure 1: comparison of sand percentage in the witness regions and the regions in which the genus exists

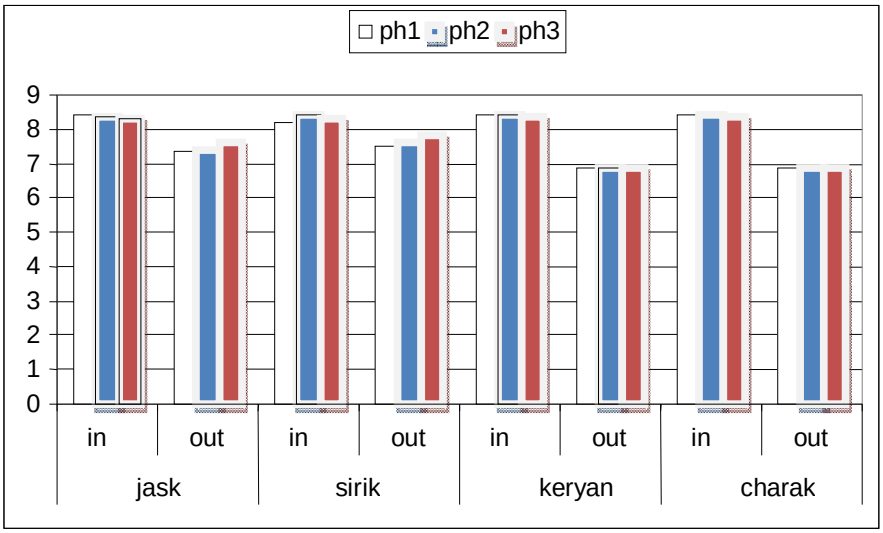

Figure 2: comparison of soil pH in the witness regions and the regions in which the genus exists (in 3 depths)

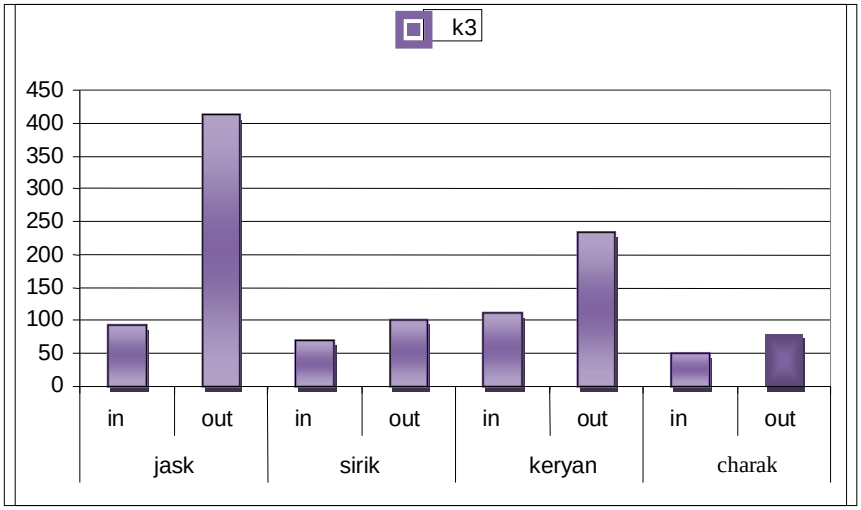

Figure 3: comparison of potassium percentage in the witness regions and the regions in which the genus exists (in 3rd depth)

DISCUSSION

In the dispersion region of this genus in Iran, absolute minimum temperature never gets zero Based on the lack of this species in the west regions of Persian Gulf such as Bushehr & Khuzestan and some regions of Hormozgan in which the temperature reduces under 0. It can be said that temperature factor (cold) is one of the limiting factor in the dispersion of this genus[10] .

It is necessary to mention that the station of Bushehr Aerology which is located in the geographical latitude of 28^0 and 59 minutes and in 14 meter of sea level was registered the absolute minimum temperature about -1 during Jan. 1977 (in 3 glacial days). The soil texture of regions in which the dispersion of this genus was observed is fine.

The high relative moisture percentage of this region and the soil conditions of this species (which are in the range of sandy soils) are the effective factors in the water level and moisture balance in these soils. Annual raining of these regions happens with less amount, high intense/speed and within the least time and also the occurrence of drought periods is the climatic properties of this region .Therefore, despite of the undesirable raining, soil conditions are the effective factors in order to provide the required moisture of this plant. The other factors which related to the soil texture are negligibility of capillary force of sandy soils compared to the heavy soil which leads into the moisture storage within the sandy masses because the atmosphere evaporation power due to the weakness of sand capillary force is not able to evaporate the depth or relative depth moistures. All above mentioned factors indicate that in the sandy hills, the placement of vegetative coverage in comparison to the sandy soils near the sandy fields, in order to provide the required moisture of plant, will be more appropriate. By studying the soil of habitants of this genus and its dispersion regions, the following results were obtained:

- In the above regions, pH did not change significantly and the range f average changes is negligible and between 7.95 (Charak) to 8.64 (Jask). This shows that the soils of regions have an alkali reaction. As a result, pH can be one of the limiting factors (Figure 2).

- Range of E.C. average is in the regions between 1.31 (Sirik) to 2.68 (Hossienieh) but the range of average of S.A.R is between 3.01 (Charak) and 6.54 (Jask); due to this reason, it is one of the non saline soils. in general, the other limiting factor in dispersion of this genus, after climatic one and based on the comparison between soil parameters of this region with the other regions in which they do not exists, is special situation of habitant such as soil texture, E.C., saturated flower reaction, Ca + Mg, K extent, gyps, S.R.A and solvable potassium and also the other parameters such as saturation moisture percentage and potassium.

As a whole and based on the studies of soil, this plant grows in the habitants with fine and sandy soil and this case is consistent with the studies of Gary Brown & Sabitha Sakkir (2004) who stated that this plant is from the sandy hills of Adu Dabi regions. For the soil salinity and based on E.C and soil S.A.R amount, the habitant of this plant is from the non-saline and ordinary soils although Akhani & Ghorbanli introduced this species as psamophytes and likes salinity[11].

This study is consistent with their findings (for the soil texture). But based on the several excavated profiles in these habitants of this plant, its salinity does not confirm. And it seems that due to the proximity of this habitant to the saline field, this result has been stated by these researchers. Also this paper is in consistent with Dinaravand study[6,7,8].

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