Investigation the vegetation in the catchment area of farm Haj Hassan at Yazd province, Iran

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Abstract:

Catchment area of farm Haj Hassan with an area of 3317 hectares, located on 140 kilometers North East of Yazd city. This research focuses on the study of vegetation in this area in order to identify the flora and dominant types and ecological factors affecting them are discussed and then typology map of the area has developed and then the situation ranch factor of four Forest Service America and rangeland trend by balance method to measure the adherence and rangeland production by clipping achieved. After we calculate the rangeland capacity and in the end, according to information obtained from the above analysis as well as problems in the area, ways to improve the grassland vegetation coverage was provided.

Key words: Catchment area of farm Haj Hassan, vegetation, typology map

Introduction:

Many of rangelands of Iran due to overgrazing have been destroyed or are being destroyed, while the livestock, more than ever is dependent on the rangeland. In the past, due to the balance between production and consumption, irreparable damage would not have entered the body of nature, however, due to human intervention, this balance is disturbed and meadows put on the brink of destruction. According to the latest statistics, vast of Iran pastures were 94 million hectares, and pasture to cattle were dependent on about 90% [5]. On the other hand, the area is located in Yazd province to widespread desertification phenomenon seen here and this adds to the importance of protecting the natural resources in the province.

Location:

Catchment area of farm Haj Hassan located on 140 kilometers North East of Yazd city in longitude 54° 32' and 30" to 54° 37' and 32" and latitude 32 ° 25' to 32° 30' and its area is 3317 hectares. The highest point in the area is 2900 meters and lowest point is 2100 meters above sea level. Average

slope in the areas is 25%. Regional climate was based on Emberger method, cold and dry and average rainfall 279 millimeters per year that is distributed in late autumn and early winter. The average temperature areas were 9.2 ° C and evaporation and transpiration 693.4 millimeters per year. Figure 1 shows location of catchment area of farm Haj Hassan in Iran.

Figure 1: Location of catchment area of farm Haj Hassan in Iran

Review of literature:

Start mapping vegetation in the world of the fifteenth century AD in the fifteenth century preparing vegetation map began in the world; in fact, one of them was in the city Bologna in Italy in the year 1447 AD was prepared and forest was shown as a tree group of plants [1].

Shimper in 1898 divided the modern map of the world based on physiognomy ecological in 5 types. After World War II, Europe began wide movement to map vegetation. In 1982, Boyer examined the relationship of cereals and their environment [4]. In Iran, Koda prepared soil map in 1944 [4].

In 1945, Zohari developed the first map of the distribution of vegetation halophyte units in Iran [4]. In 1961 Sadegh Mobin published Iran vegetation [8]. In 1982, Attaullah Qobadian published natural landscape book in Yazd province [6]. In 1998 Mohammad Shafi Ahmadi a study entitled the relationship between vegetation and soil and slope in the region of Fereydoon shahr in Isfahan carried out [1].

Research Methodology:

In this study we aimed to investigate the area to perform the following steps:

1. Identifying the dominant types of flora and ecological factors affecting them
2. Mapping regional typology
3. Identify the four-factor Forest Service rangeland condition of America
4. Determining the rangeland trend of balance method to measure the adherence
5. Calculating rangeland production using a weigh method
6. Determination of rangeland capacity
7. Providing corrective suggestions for improving rangeland according to information obtained from the above-mentioned steps

Results:

The results of ecologically important factors affecting the flora of the region: these factors are as follows:

Biotic factors: the area, overgrazing and early, the destructive activities in the region.

Climatic factors: vegetation due to low humidity and rainfall, poor and does not have a proper diversity.

The average annual temperature zone 9.2 and at least monthly 2.5 and monthly maximum 16.2 ° C. Due to the high amount of light conditions in the field and plants were all friendly light. Prevailing wind, Western and North Western is due to ups and downs in the region, does not have a large impact on vegetation.

Topography factors: in low-lying areas of *Artemisia sieberi* areas seen cushion at higher elevations such as *Acantholimon sp* and *Acantophyllum sp* seen in the area of 1542 hectares of which has a slope of more than 20 percent.

Soil factors: surface soil texture to a depth of 15 centimeters Clayloam which is heavy and its deep soil texture, from 15 to 70 centimeters Sandyloam that light. On average amount of gravel in this area is between 45 to 60 percent, which is about limiting the work of reform in the region. No building or structure of the soil mass and the arrangement of horizons for A (surface horizon) and C (parent material chopped) and then R (integrated native materials or bedrock) is on these soils can be deployed after the plants have shallow roots.

The results of flora Information in this review is given in Table 1.

Table 1: List of floristic area

No	Palatability classes	Durable plant	Family name	scientific name
1	II	Perennial	Compositae	*Artemisia sieberi*
2	III	Perennial	Euphorbiaceae	*Euphorbia sp*
3	III	Perennial	Ephedraceae	*Ephedra strobilacea*
4	III	Annual and perennial	Chenopodiaceae	*Anabasis aphylla*
5	III	Annual and perennial	Chenopodiaceae	*Noaea mucronata*
6	III	Perennial	Plumbaginaceae	*Acantholimon sp*
7	III	Perennial	Caryophyllaceae	*Acantophyllum sp*
8	III	Perennial	Zygophyllaceae	*Peganum harmala*
9	III	Annual and perennial	Compositae	*Cousinia sp*
10	III	Perennial	Polygonaceae	*Pteropyrum aucheri*
11	III	Annual and perennial	Labiatae	*Nepeta persica*
12	III	Perennial	Leguminosae	*AStragalus sp*

13	III	Annual	Graminae	*Bromus tecturom*
14	III	Perennial	Compositae	*Echinops sp*
15	III	Perennial	Umblliferae	*Eryngium sp*
16	III	Perennial	Moraceae	*Ficus sp*
17	III	Perennial	Boraginaceae	*Heliotropium sp*
18	III	Perennial	Labiatae	*Teucrium polium*
19	III	Annual and perennial	Graminae	*Stipa barbata*
20	II	Annual and perennial	Malvaceae	*Malva sp*
21	II	Annual and perennial	Chenopodiaceae	*Salsola sp*
22	III	Perennial	Labiatae	*Salvia eremophila*
23	III	Perennial	Compositae	*Pulicaria gnaphalodes*
24	III	Perennial	Labiatae	*Stachys inflate*
25	II	Perennial	Compositae	*Lactuca orientalis*

In the table above, III palatability class that is non-palatable and palatability class II that palatability is average. The results of regional typology: two types were detected in the study area: Type *Artemisia sieberi*: generally the dominant type is seen mostly in wet areas and much of it on loess located. This type of coverage 12.5 % and production of fodder 23.76 kg per hectare and given the allowed harvest is 40%, is responsible for 47.4 animal units for three months. Type area was 167.4 hectares and allocated surface 48.47% of area.

Brigade *Artemisia sieberi-Peganum harmala*: This type of problem is often located inside the cover *Artemisia sieberi* in this type 11.7 and coverage *Peganum harmala* was 5.47 percent. The extent of this types that 5% of the total area was 168 hectares covers. This type of forage production was 16.3 kg per hectare.

Results of rangeland condition in this study calculates the percentage of vegetation cover in the area of linear transects the length of 50 meters and 3 in each type used in the entire coverage area of 17.6 and 82.4 percent obtained bare soil as well as the composition of the plant *Artemisia sieberi* 96.5 percent obtained. Results of rangeland condition are as Table 2 and Table 3:

Table 2 - Determination rangeland by 4 factors in type *Artemisia sieberi*:

Total scores	Type situation	Points vigor and vitality of the plant	Plant combined score	Points canopy	Soil Points	coverage Percent	Dominant species
22	Poor	4	4	2	12	5.12	***Artemisia sieberi***

Table 3 - Determination rangeland by 4 factors in type *Artemisia sieberi-Peganum harmala*

Total scores	Type situation	Points vigor and vitality of the plant	Plant combined score	Points canopy	Soil Points	coverage Percent	Dominant species
19	Poor	2	3	5	9	17.97	***Artemisia sieberi-Peganum harmala***

The results of determining the rangeland trend: The results given the poor rangeland condition are as Table 4 achieved:

Table 4 - Determine the rangeland trend balance method to measure the adherence:

Rangeland condition	Positive	Negative
plants Class I developing and replacing low-value		
Further exploitation much of it is not in poor condition	1	
Plants in five previous damage		
Multiply considerably less valuable species and annual plants		2
Tapping more than that, for the poor		

Overgrazing of the plant or plants in the presence of class II		
Total Points	1+	2-

According to the table above, the rangeland trend is negative. Determination of rangeland capacity results in this area of research in Tables 5 and 6 are:

Table 5 - Determination of rangeland capacity for the entire area

Forage production kilograms per hectare	Percent allowable use	Forage harvesting kilograms per hectare	rangeland capacity for three months	Livestock unit for one month	Livestock units per hectare for a month	livestock units for the whole Rangeland year
8.29	40	92.11	8.118	356	2.0	2.29

Table 6 - Livestock unit capacity for the type *Artemisia sieberi*:

Forage production in kilograms per hectare	Percent allowable use	Forage harvesting kilograms per hectare	Forage harvesting kilograms per hectare	Livestock unit for one month	type level
7.23	40	5.9	4.47	2.142	4.1607

Discussion and conclusion:

1. In this area the dominant type in the early growth of the plant *Artemisia sieberi* is not a good palatability therefore it is in the autumn and winter rangeland area considered.

2. On the slopes above the area due to poor vegetation cover and soil erosion lot of shallow, should

apply to certain administrative procedures, such as certain plant species for wildlife and rangeland gradients used to it.

3. Ability to work piles is large parts of the hills area thus there that can improve range condition. It is suitable for any *Artemisia sieberi*.

4. In areas of adequate rainfall and the area that is about 280 millimeters per year, depending on the type of soil and other ecological conditions, *Stipa barbata* can be used for drilling.

5. Because the watershed is poor water resources therefore, in areas where there is a well must apply to the construction of destiny.

6. Given that the amount of gravel in area about 45 to 60 percent, therefore, improve vegetation and improve rangelands of species must be used in the root surface.

7. Because we are in a negative tendency should be to reduce the number of animals among other things mentioned in other corrective action.

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