The effect of Grazing Management on Carbon Sequestration Astragalus Species (*Astragalus peristerus*) in the Fasham Pastures of Tehran

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Extended Abstract

Introduction

The phenomenon of climate change is one of the most important challenges in sustainable development, which has a negative impact on aquatic and terrestrial ecosystems. This will change rainfall patterns the power to increase hurricane and the risk of drought, flood and will strengthen pressure on water resources. Therefore, in order to reduce atmospheric carbon dioxide and greenhouse gas content balance, Atmospheric carbon should be absorbed and sequestration in various form. Our country pastures options for research on carbon sequestration projects are. Because on the one hand, many pastures in arid and semi -arid region is located which covers an area of about 90 million hectares to be included. On the other hand, according to the UNDP, the areas capable of storing approximately one billion tons of organic carbon. In recent years, the role of grasslands as a basis for reducing atmospheric carbon dioxide and carbon sequestration more important than ever given, but far more important is not a lot of research on the effects of grazing management on carbon sequestration. The present study examined the effect of management grazing and enclosure of the *A. peristerus* carbon sequestration.

Material and Methods

The study area is approximately 24 km from city Shamiran located in the North East of Tehran. The study area is 314.5 hectares. 159 hectares to preserve plant and animal species enclosure, and the levels of that is 155.5 hectares of grazing it takes. Based on rainfall data recorded can be seen that the average rainfall system Fasham station 696.2 mm. Average maximum and minimum average annual rainfall is 1321 mm and 248.5. The average annual temperature of 15.2°C, the warmest and coldest months of the year an average of 28.4 and 1.7, respectively, July and December were. The registered absolute maximum and minimum temperatures are also mentioned belong to two months and 39.8 and -11.4C. The prevailing wind in the area southwest and the average annual wind speed is 3.6 nots. The direction and speed of wind worst annual western and is 47 nots. Generally the bare earth or very shallow gravel soils with moderate to heavy texture. Soil acidity in the area between the 7.2-7.5.

After preliminary identification and demarcation of the area under study, in order to study vegetation variables, the systematic sampling was used. So that in each of the treatments (grazing and enclosoure) two transects the length of 100 m (a transect in the direction perpendicular to the slope and a transect of the slope) and along each transect, 10 plots of one square meter (based on the plants pattern) was established. To determine the percentage of dominant canopy species, a list of plants in each plot and cover plants species were assessed separately. In order to estimate above-ground biomass include plant shoots direct measurement method (cutting and weighing) was used. To determine underground biomass the root to shoot ratio were these. To this end, 10 of these were selected by the digging of the soil to the depth of root biomass was harvested roots. Then, with the total weight of the plant biomass (above-ground biomass + underground biomass) above-ground biomass and underground biomass ratio was determined. Then, with the total weight of the plant biomass (above-ground biomass+ underground biomass) above-ground biomass underground biomass ratio was determined. In order to determine the carbon conversion efficiency above-ground and underground organic carbon, the combustion method was used. For this purpose, plant samples were dried in the oven completely milled and from each of

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species, three samples (each 5 g) were taken. The samples were then weighed and electric oven at 550°C for 5 hours was. Samples (organic matter or ash) after leaving the electric furnace and cooling were weighed by desiccator. Finally, with a weight (5 g) and the amount of organic carbon, according to Equation (1), organic carbon conversion coefficient was calculated for above-ground and underground.

$$\mathrm{COC}\,\frac{\mathrm{OC(gr)}}{\mathrm{Wp}} = \mathrm{COC} \quad (1)$$

By multiplying the conversion coefficient of organic carbon in the above-ground and ground fresh weight of each species according to (2), the total weight of carbon sequestration , respectively (g per square meter).

$$\mathrm{CS}\ \ \mathrm{COC} \times \mathrm{W_p} = \mathrm{CS} \quad (2)$$

The study was a randomized complete block design. Initially, data normality by the Kolmogorov- Smirnov and homogeneity of variances was checked by the Leven test. To compare the weight of plant biomass, conversion coefficient and carbon sequestration plant in the area of enclosure and grazing were used as t-Test.

Results and Conclusions

Weight of biomass

The mean weight of above- ground and underground biomass of the species are significant differences in the two areas of enclosure and grazing there .But the biomass plant of this kind in the region, there is no significant difference. ($P<0.05$)

Conversion coefficient biomass

By comparing conversion coefficient the above- ground and underground biomass in the pasture grazing and enclosure of *A. peristerus* species has revealed that no significant difference between the conversion coefficient ratio of two organ in the region. ($P<0.05$)

Carbon sequestration

Above-ground biomass and plant biomass carbon sequestration *A. peristerus* species no significant difference in the two areas. But carbon sequestration underground biomass, a significant difference. ($P<0.05$).

Carbon distribution

In both grazed and enclosure rangeland carbon underground organ is more.

Conclusions

The management tools that influence carbon levels in rangeland ecosystems are: the intensity and frequency of grazing livestock that through grazing systems applied. Plant biomass *A. peristerus* species is allocated to a greater degree of enclosure area. Mr. Mohseni Fashamy with study carbon storage in the central Alborz concluded that enclosure the development of perennial plants and reduced annual plants is too early. Compared to carbon ratio in the treatment of enclosure and grazing *A. peristerus* not show any significant difference in the region. Livestock grazing is likely to have profound effects on the ability to store carbon in plant species *A. peristerus* is not. Conversion coefficient Carbon in underground parts ground due to more wood and less body water underground is more. This plant is one of the perennial plants. That is why it is natural that the enclosure increase of underground plant biomass and thus increase carbon sequestration more. Distribution of carbon in biomass underground *A. peristerus*, it was more than the above ground biomass. Large amounts of organic matter inputs to the soil the land grazed by organs located under the soil (such as root). Effect the upper floor disorders such as grazing, fires, etc. on the underside of soil organic matter, indirect. In general we can say, rangeland management should be multilateral management. Means a manager, maximum rangeland production, maximum animal production, sustainable use, management of soil erosion and the carbon sequestration should also consider and coverage range will lead to the side that won all of the above at the same time. If biomass is increased with moderate grazing, due to higher amounts of organic matter to the soil system will increase the carbon in pasture. After the conclusion, a balanced grazing capacity is the best option for pasture management as with the exploitation of the natural resources, the benefits of carbon storage and carbon sequestration and the mitigation of global warming benefit. It should be noted that the enclosure of soil and vegetation in pastures that are in the waney, it can be effective to deploy and protect the soil until later in the pasture ready for principles operation.

Keywords: *Astragalus peristerus*, carbon sequestration, enclosure, fasham pasture, grazing.