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Effects of grazing intensity on vegetation cover and soil properties in central Alborz

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Key points : Investigation of the effects of grazing on the vegetation cover and some chemical soil properties in rural ranges of central Alborz (Iran) at three conditions of reference, key and critical areas were studied. Results of this study show that palatability plants in the reference region, average palatability plants in the key region, and low delicious plants or non delicious plants in the critical region have the most vegetation cover percentage. This study revealed that soil of the reference region had the highest density, vegetation cover, organic carbon, total nitrogen, phosphorus, potassium.

Key words : grazing intensity, reference, key, critical, vegetation cover, soil properties, Alborz, Iran

Introduction For rangeland preservation, reclamation, renovation, development, and exploitation, soil and vegetation cover are the main factors of rangeland ecosystems and they have a reciprocal relationship with the number of livestock. The change process of soil and vegetation cover in different grazing conditions in the steppe rangelands at Semnan (Mousavi, 2001) and South Australia (Michael et al., 2006; Gilfedder et al., 2005). The aim of this research was to identify the changes in vegetation cover and soil properties at different grazing conditions of rural rangelands in central Alborz, in Iran to facilitate the managing activities and permanent exploitation.

Materials & Methods The study area is a part of rural rangelands of Central Alborz and it is located at western part of Savadkuh in the province of Mazandaran. According to Ambarges classification, the area is located at the mountainous (heights) of the cold category. The samples were measured the amounts of soil organic matters, total nitrogen, absorbable phosphorus and potassium and acidity. We used SAS statistical program software to analyze the collected data. Vegetation cover and soil data was analyzed through factorial experiment.

Results & Discussion According to the results of measuring the vegetation cover percentage, the grazing intensity increases as we precede from the reference area towards the critical area. Statistically significant differences at the 1% level were found between the plant coverage percentages of class II in the key and critical areas. As the grazing intensity increases, plant litter percentage would be decreased in the reference and in the key and critical areas. Acidity level in the critical area is higher than that of within the reference area. The pH of reference area was differed with key and critical area at the 1% level. Based on the results of measuring the soil total nitrogen in three treatment areas, differences between the average soil nitrogen of the reference and critical areas were found at the 1% level. The lowest nitrogen was related to the first depth of soil. There was a difference at the 5% level between soil phosphorus in first depth. The results of potassium in grazing treatments showed in reference area with key and critical area were differed at the 1% level. Organic matter could be from excessive yield of plants aero-components (Mohammadi, 2001). The high amounts of phosphorus existed in the soil surface layer of protected area and plants absorb phosphorus from deep layers of soil. The highest amount of soil potassium is observed in the reference area and its lowest amount is related to the key area. Potassium discharge in the key area is more than two other areas, because less animal waste is added to the soil in the key area under a light grazing treatment, and on the other side, yielding some plant components resulted in higher potassium consumption (Sanadgol, 2002; Mohammadi, 2001).

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