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The economical evaluation of the grazing management project in a part of grasslands in Isfahan province

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Key words : benefit cost ratio-range production-grazing management

Introduction Isfahan province with 10.5 million ha area, 1.9 million ha summer rangeland and 4.4 million ha winter rangeland, has located in the center of Iran. The major part of the summer rangelands includes grasslands. The most important factors in destructing rangelands are: 1-out of time grazing (Pre grazing and late grazing). 2-excessive animal (2.8 times over than grazing capacity). 3-additional ranchers (5 times over). 4-converting rangelands to another land uses (industries, mining, roads and ...). In order to prevent the most destructive factor in the rangelands (pregrazing), the grazing management project has been conducting for the past 2 decades. The attempt in this project is to defer the animal grazing one month later, from the end of April to the end of May. Already in has not performed any economical evaluation about the grazing management project.

Materials and Methods The study area with an area about 10871 ha, includes 1390 ha rocks, and 1729 ha farms and 7750 ha Rangelands and grasslands. Five vegetation types was identified in the region, which in formations of them were represented in Table 1. The study area located between 49°46' to 50°28' eastern longitudes and 32°3' to 33°12' northern latitudes with maximum and minimum altitudes 3703 m and 2373 m respectively. The mean annual precipitation and the mean annual temperature are 547 mm and 9.8°C respectively.

According to Kuppen's method, the climate of the region is moderate with dry summers. In order to have an economical evaluation and estimate BCR (Benefit cost Ratio) we need two factors, costs and incomes. Annual costs of the project according to documents of the Department of Natural Resources of Isfahan was 10 million Rials* for year 2003. To calculate incomes resulted from increased forage production, rangeland production was measured at two times, the end of April and the end of May, using cut and weigh method. The required 6m² constant plots (2×3m) located at defined positions to measure the reproduction resulted from regrowth of plants after primary cutting. For calculating the total incomes of the project, the total increased forage production was multiplied in the value of one kilogram of the rangeland's forage (600 Rials).

Results The total rangeland's production at the end of April and the end of May was 2851528 kg and 4085813 kg respectively. These records show that by implementing the grazing management project and deferring grazing for 1 month, the rangeland production increased 45%. The total incomes of the project, considering 600 Rials for the value of 1 kg forage, is: (4085813-2851528)×600=740571000 Rials.

As the total costs of the project is 10000000 Rials, the calculated BCR is: $BCR = \frac{740571000}{10000000} = 74$

The abstract results represented in Table 1.

Table 1 Production and coverage of 5 vegetation types.

vegetation type	Area (ha)	% cover	A .P*	M .P**	Increased production (kg/ha)	Total increased production (kg)
<i>Astracantha sp-Agropyran intermedium</i>	3090	41	446.5	567.9	121.4	375126
<i>Astracantha sp-Bromus tomentellus</i>	1110	31	130.9	181.9	51	56610
<i>Astracantha sp-prangus ferulacea</i>	658	34	1246	1750	504	331632
<i>Astracantha sp-Ferula ovina</i>	719	42	501.6	822.3	320.7	230583
<i>Astracantha sp-Bromus tectorum</i>	2173	23	67.2	177.8	110.6	240334
∑ or mean of five types	7750	—	367.9	5272	159.3	1234285

* production of the end of April (kg/ha) ** production at the end of May (kg/ha)

Conclusions As BCR is above 1 (=74), this project is economical feasible. According to Lewis and Volesky's views (1988), the emphasis on the grazing management is economically feasible because of its rather low costs and high potential benefits per 1 unit of management inputs.