

[Short Communication]

## Role of educational and extension strategies in the sustainable exploitation and reducing rangelands destruction (Case study: Ilam Province, west of Iran)

T. Hatamnia<sup>1</sup>, M. K.Motamed\*<sup>2</sup>, A. abedi parijaei<sup>1</sup>

1-Department of Rural Development, Faculty of Agricultural Sciences, University of Guilan, Rasht, Iran

2- Department of Agricultural Economics, Faculty of Agricultural Sciences, University of Guilan, Rasht, Iran

\* Corresponding author's E-mail:mkmotamed@yahoo.co.in

(Received: August. 27.2015 Accepted: Feb. 08.2016)

---

### ABSTRACT

Rangelands renewable resources play a very important role in ecosystem regulating, preserving plant genetic reservoirs, water cycle as well as providing large parts of forage requirements. These resources were considered to be a basis for sustainable development and also a basic platform for various economic activities. During the recent years in Iran, these valuable sources were subjected to strong destruction due to the excessive exploitation and unethical of ranchers. Nowadays, it seems necessary to suggest appropriate grazing management programs, organizing systematic exploitation and preventing the destruction of rangelands. The aim of present study was to evaluate the role of educational and extension strategies in reducing rangelands destruction, grazing management and principally organization of its exploitation. Statistical community of the present study was Ilam Province, Iran. Sample size was calculated using Cochran formula as 255 ranchers and individuals were selected using Simple Randomized Sampling Method. Data were analyzed through Spearman correlation co-efficient and Mann Whitney U test using SPSS software. Results showed that there was no significant relationship between age, number of livestock and the use of educational and extension strategies related to reducing rangeland's degradation but there was direct and significant relation of gender, education, participation of exploiters in educational and extension training courses and also adoption of educational and extension strategies related to reducing rangelands degradation.

**Key words:** Education and extension training courses, Sustainable, Exploitation, Rangelands.

---

### INTRODUCTION

Natural resources are defined as a class of resources which human have no contribution in their initiation and evolution, meanwhile they have great economic importance and value and provide some of human social and vital requirements. Renewable resources were considered as important basis of sustainable development which are not belong to current generation, but they are valuable heritage which must be retained for future generations (Fadayi 2003). Natural resources, especially forests and rangelands, in each country and community, especially in Iran, are safe bases

for socio-economic development, reservoir for water storage, bankroll for sustainable production, a basis for agricultural development, wood production, habitat for the animal and plant species and wild life, the oxygen production source, making job, the road protection as well as the filtration of air pollutants (Samari 1997). By investigation on violations in the areas of national resources, the main reason of violations, degradation and improper exploitations poor knowledge and incomplete awareness of optimum exploitation procedures from natural

resources (Salah Nasab 1998). Increasing knowledge of proper exploitation in natural resources would induce the individuals to be a main conservation element in national resources (Abbasi 1999). Informing people about the importance and sensitivity of natural resources and guide them to maintain and correctly exploitation, are the main objectives of extension of natural resources (Seddighi 2005). Therefore, educational and extension strategies could play the most important role in exploitation, protection and development of natural resources and obtaining sustainable environment through education and informing people. By presenting required skill and knowledge to persons who use resources and changing their view, awareness levels and managing ability would be increase (Akbarzadeh 1983). According to evaluations by Loch & Pockne (1995) in Australia low to moderate grazing compared to rangelands without grazing, decreased water infiltration capacity by about 22% and intensive grazing decreased about 60%. John & William (2000) in their investigations in America concluded that grazing could cause surface soil compaction and its degradation. They also stated that education could play an important role in improving rangeland status. Investigations by Emmerich & Heitschmid (2001) in Forth Quick in order to study the effects of grazing, fire and drought on grazing ecosystem sustainability showed that grazing significantly increased run-off and sediment amount. Argunan *et al.* (2006) in a study entitled "Do developmental operation innovations affect local viewpoints related to protection of rangelands?" which is conducted in three villages of India found that there was significant relation between age, wealth, gender and protection of rangelands. They also showed that both high-income and low-income individuals were suspicious due to their dependency to rangeland and its products. Seyyedi (2012) studied the exploiters view to exclusion and role of exclusion in the rangelands improvement (case study; Bozdaghi and area around north of Ashkhane

Town) and expressed grazing exclusion as a well-known rangeland method and concluded that there was no significant relation between exclusion acceptance from rangeland users and variables like age, the literacy rate, agriculture precedent, rancher precedent and livestock number.

There was also no significant relation between rangeland exploiters in terms of individual and economic properties for knowledge, viewpoint and behavior to short and long term exclusions.

Change in climate conditions along with recent drought years, made protection of natural resources of the country (Iran) as the most important issue among scientists. So, in order to conserve these resources, viewpoints must be changed and also appropriate strategies should be adopted especially in rural communities. We should also make efforts in developing of natural resources concepts, informing about the necessity of conservation program and the appropriate employing of renewable sources (Jazirei 1992). Iran has an area of about 165 million hectares including 13.86 million hectares forests, 90 million hectares grassland and 43 million hectares deserts.

Illam Province by area of 1754024 hectare has about 642667 hectare forests and also 1146280 hectare rangelands and deserts.

Of these rangelands, 28657 hectare is green, 481438 hectare moderate green, 308522 hectare arid and 327663 hectare desert.

However, degradation rate in the Ilam Province is three-fold of restoration rate and the forest degradation rate is higher than 2-fold of their restoration rate (Khosravi 2003). So, emphasizing on recognition of factors and strategies of reducing the rangeland degradation is necessary.

The present study aimed to study the contribution of educational and extension strategies in sustainable exploitation of rangelands which could largely prevent their degradation and destruction.

So following hypothesis were studied under the following purposes.

### Research hypotheses

- 1) There is significant relationship between individual characteristics of exploiters (age, gender, literacy level) and adoption of educational and extension strategies related to rangeland degradation.
- 2) There is significant relationship between number of grazer livestock and adoption of educational and extension strategies.
- 3) There is significant relationship between participation of exploiters in educational and extension courses and adoption of educational- extension strategies.
- 4) There is significant relationship between technical knowledge of exploiters and adoption of educational and extension strategies.

### MATERIALS AND METHODS

Research method was descriptive and analytical in which data collected using field and documentary methods. Statistical community was composed of all ranchers in Aseman -Abad district of Ilam Province. Based on the Cochran formula 255 ranchers were calculated as the sample volume.

Validity of questionnaire was approved by 15 subject specialists and reliability of the questionnaire assessed using Cronbach's alpha test and the number 0.86 was obtained. Questionnaire randomly distributed between the ranchers and completed by them. Then data were extracted and encoded and using SPSS software and Spearman correlation coefficient and me Whitney was analyzed. The analysis and findings of this research was conducted in two parts: descriptive and analytical statistics.

### RESULTS AND DISCUSSION

Table 1 shows the individual characteristics of ranchers (gender, age and literacy level). According to Table 1, 84.7% of ranchers are male and 15.3% are female. Also, the age analysis of ranchers show that their mean age was 56 years old, while the youngest beneficiary was 27 and the oldest one was 81. The greatest frequency was related to 46 - 55 age group.

In terms of distribution of ranchers according to literacy level, it was determined that illiterate ranchers and ranchers with high school diploma with 29.4% and 9.21 % had the highest and lowest frequency, respectively.

Table 2 shows the kind and number of grazer livestock.

Aseman-Abad District in Ilam Province is a mountainous area where the livestock breeding is still common.

According to Table 2, in this area goat by 54% has the highest frequency and load-bearing livestock by 2% has the lowest one. Table 3 shows the issues and participation of ranchers in educational and extension courses related to rangelands degradation. Results of Table 3 show that the lowest frequency (4.7%) was related to training of sapling cultivation and education of rural women for protection of rangelands and highest frequency was related to familiarization with the causes of grasslands destruction by (67.5%). Table 4 shows the technical knowledge of ranchers for effective factors in reducing rangelands destruction. So, 10 items were prepared according to Table 3.

### Hypothesis test

First hypothesis: There is significant relation between individual properties of exploiters (age, gender, literacy level) and adoption of educational and extension strategies related to rangeland's degradation. According to Table 5, it can be deduced that there is significant difference between gender and adoption rate of educational and extension strategies for rangeland's degradation by 1% error probability. Therefore, research hypothesis was confirmed and zero hypothesis was rejected. By considering that rancher's profession in Iran is man-specific, obtained result is acceptable. It is necessary to perform the required operations for education of ranchers' women as a part of effective workers. It is obvious that this could play an important and fundamental role on grazing management, systematic exploitation of rangeland and protect it.

**Table 1.** Distribution characteristics of individual ranchers.

Features	Groups	Frequency	Percentage
Gender	male	216	84.7
	female	39	15.3
Age	under 35	12	4.7
	36 to 45	39	15.29
	46 to 55	69	27.05
	56 to 65	60	23.52
	66 to 75	63	24.7
	above 76	12	4.7
	illiterate	75	29.4
Literacy level	elementary	66	25.88
	middle high school	54	21.17
	high school diploma	36	14.11
	higher than diploma	24	9.41

**Table 2.** Distribution the kind and number of livestock.

Type of livestock	Frequency	Percentage
Cow	603	13
Sheep	1381	31
Goat	2435	54
Work animals	58	2

**Table 3.** Issues and distribution of participation of ranchers in educational and extension courses related to rangelands degradation.

Title of educational and extension Training course	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Training of sapling cultivation	12	4.7	243	95.3
Training of excavation and seed sowing education	51	20	204	80
Training of protection of rangeland and natural resources	72	28.23	183	71.77
Training of rules and regulations of natural resources	54	21.17	201	78.82
Training Coping with fire	39	15.29	216	84.7
Visiting the projects pattern	141	55.29	114	44.7
Familiarization with the causes of grasslands destruction	171	67.05	84	32.94
Training of fossil fuels replacement instead of wood fuels	93	36.47	162	63.52
Training of utilization of ancillary products of the grasslands	48	18.82	207	81.17
Training the rural women in the field of rangelands protection	12	4.7	243	95.3
Training the grazing management of the grasslands	87	34.11	168	65.88
Familiarization with grasslands capacity and Correction grazing	81	31.76	174	68.23
Familiarization with the value and benefits of grassland species	54	21.17	201	78.82

**Table 4.** Distribution of technical knowledge of ranchers related to education and extension strategies to reduce the grasslands degradation.

Test scores	Individuals who have participated in the educational and extension training courses.		Individuals who have not participated in the educational and extension training courses.	
	Frequency	Percent	Frequency	Percent
7-12	89	34.9	105	64.64
13-18	75	29.41	37	22.42
19-26	90	35.29	23	12.94
Sum	255	100	165	100

**Table 5.** Evaluation of gender and adoption of educational and extension strategies to reduce the grassland’s destruction.

Dependent variable	Independent variable	Averages	U Mann-Whitney	The significance level
Adoption of educational and extension strategies	Male	46.21	23	0.000
	Female	7.29		

**Table 6.** Evaluation of age and adoption of educational and extension strategies to reduce the rangelands degradation.

Independent variable	Dependent variable	Type correlation coefficient	Amount coefficient	The significance level
Age	Adoption of educational and extension strategies	Spearman	0.058	0.598

According to Table 6, calculation of Spearman correlation coefficient state that there is no significant relation between age and adoption of educational and extension strategies for rangelands destruction at 5% significant level. Thus research hypothesis was rejected and zero hypothesis was confirmed.

Therefore, age has no effect on adoption rate of educational and extension strategies related to rangeland destruction. As shown in Table 1, 80.42% of ranchers in the present study were 46 years old and it can be said that the population of exploiters in this area is old. This issue emphasized on basic attention to the type and procedure of education and must be prepared according to age of ranchers in educational and extension program. According to Table 7, there was a significant and direct relation between literacy level and adoption of educational extension strategies related to rangeland destruction by 99% confidence level. Therefore, the research

hypothesis was confirmed and zero hypothesis was rejected. In other words, ranchers with higher literacy level will get more information from educational and extension strategies related to rangeland destruction and will employ these educations in their daily activities. As shown in Table 1, the highest frequency of literacy level by 29.4% was related to illiteracy group, hence, investment in education is required.

Second hypothesis:

There is a significant relation between number of grazing livestock and adoption of educational and extension strategies. Calculation of Spearman correlation coefficient (Table 8) shows that there was no significant relation between number of grazing livestock and adoption of educational extension strategies related to rangeland degradation. 85% of rancher’s livestock are small livestock. So, the effect of this kind of livestock on the rangeland status is obviously uniform,

confirming the findings of the present study. Larger livestock have great impact on vegetation and stepping as well as restoration of rangelands life. Among smaller livestock, goat is more destructive than other smaller livestock. By considering the type of the studied area, appropriate educational and

extension strategies for changing the kind of livestock is needed to create a balance between the kind of livestock. Third hypothesis: There is significant relation between participate of ranchers in educational and extension training courses and adoption of educational and extension strategies.

**Table 7.** Evaluation of literacy level and adoption of educational and extension strategies to reduce the rangelands degradation.

Independent variable	Dependent variable	Type correlation coefficient	Amount coefficient	The significance level
literacy level	Adoption of educational and extensions strategies	Spearman	0.323**	0.003

**Table 8.** Evaluation of relationship between the number of livestock and the adoption of educational and extension strategies to reduce grasslands degradation.

Independent variable	Dependent variable	Type correlation coefficient	Amount coefficient	The significance level
Number of livestock	adoption of educational - extension strategies	Spearman	0.112	0.306

According to Spearman correlation coefficients (Table 9), there was significant relation between participation in educational and extension training courses and adoption of educational and extension strategies related to rangeland degradation ( $P < 0.01$ ).

Individuals participated in educational and extension training courses were introduced by educational and extension strategies with respect to sustainable exploitation of rangelands and prevention from their degradation.

According to Table 3, special subjects related to rangelands are trained. Content of these facts is so that they were prepared in direct relation with their activities. Participation and presence of ranchers in these

training courses directly affect reduction in rangeland degradation.

Fourth hypothesis: There is significant relation between technical knowledge of ranchers and adoption of educational and extension strategies. This knowledge have been tested and the results are shown in Table 9. According to Table 9, highest frequency of technical knowledge score of ranchers was 19 - 26 (35.29%). Notably, educational and extension courses related to decrease in rangeland degradation has direct relation with technical knowledge.

Continuing such courses could results in not only increasing technical knowledge, but also direct impact on maintenance and protection of rangelands.

**Table 9.** Distribution of exploiters based on technical knowledge.

test	Frequency	Percent
7 - 12	89	34.9
13 - 18	75	29.41
19 - 26	90	35.29
sum	255	100

## CONCLUSION

Rangelands as a renewable natural resources, play a different role in the economic, social and environmental status; the rational planning coupled with proper management of the exploitation of these resources can be used in environmental sustainability. The most important role of rangelands in environmental issues such as sustainable development in reducing erosion and sedimentation, filling reservoirs to prevent, protect and sustain wildlife, ecological balance, stylized weather, health, the environment and strengthen the aquifers, regions and countries in which sustainable development is important. Results showed that there was no significant relationship between age, number of livestock and the use of educational and extension strategies related to reducing rangeland's degradation but there was direct and significant relation between gender, education, participation of ranchers in educational and extension training courses and adoption of educational and extension strategies related to reducing rangelands degradation.

## ACKNOWLEDGMENT

The author would like to acknowledge the Forests, Range and Watershed Management Organization. Comments by two anonymous reviewers greatly helped to improve the quality of the manuscript.

## REFERENCES

- Abbasi, M 1999, the construction of artificial islands in the Persian Gulf from the perspective of international environmental law. *Policy Magazine*, 51 p.
- Akbarzadeh, M 1983, *Effects of chemical fertilizers on increasing the forage yield production of natural grasslands*. Research Institute of Forests and Rangelands, 5: 12 - 21.
- Arjunan, M, Holmes, C, Puyravaud, J & Davidar, P 2006. Do developmental initiatives influence local attitudes toward conservation? A case study from Kalakad-Mundanthurai Tiger Reserve, India. *Journal of Environmental Management*, 79:188-197
- Emmerich, WE & Heitschmidt, RK, 2001, Grazing, burning and drought influences on rangeland ecosystem sustainability, in: *10<sup>th</sup> international soil conservation organization meeting processing*, edited by Stott Mortar RH & Steinhardt GC, pp. 261-265.
- Fadayi, MD 2003, *Department of Natural Resources and Watershed experts' attitude towards the maintenance and restoration of forests and grasslands in South Khorasan province*. MSc. thesis on Agricultural Extension and Education, Islamic Azad University of Birjand, Iran, 43 p.
- Jazirei, D, 1992, Drought phenomenon. *Journal of Economic, Social, Forest and Grassland*, 14: 8-11.
- John, D & William, P 2000, *Impact of grazing strategies on soil compaction, Tektran*. United States Department of Agriculture Service, 4: 4-13.
- Khosravi, C 2003, *Attraction participation of the villagers to stop the destruction of forests and grassland*. New Life Business Publication, 27 p.
- Loch, S & Pockne, M. 1995, Do development initiatives influence local attitudes toward conservation? A case study from the Kalked - Mundathural Tiger Reserve. *Journal of environmental management*, 36: 243-252.
- Samari, D 1997, Philosophy of extension natural resources. *Journal of economic, social grassland and forest*, 32: 26-39.
- Salah Nasab, S 1998, Check the impact of floods spread on grassland Chandab station Varamin Grassland and Desert Research, 12: 81-96.
- Seyyedi, M 2012, *The point of view of Beneficiaries to grazing on rangeland improvement (Case study: Bzdaghy and surrounding areas in the north of the city Ashkhaneh)*. University of Agricultural Sciences and Natural Resources, Gorgan, Iran, P: 118-127.

Seddighi, H & Kakhk, A 2005, Saffron farmers' attitudes towards the production and cultivation of saffron and discuss their problems. *Iranian Journal of Agricultural Sciences*, 36: 689- 699.

## بررسی نقش راهکارهای آموزشی و ترویجی در استفاده پایدار و کاهش تخریب مراتع

(مطالعه موردی: استان ایلام، غرب ایران)

ط. حاتم نیا<sup>۱</sup>، م. ک. معتمد<sup>۲\*</sup>، ع. عابدی پری جایی<sup>۱</sup>

۱- گروه توسعه روستایی، دانشکده کشاورزی، دانشگاه گیلان، رشت، ایران

۲- گروه اقتصاد کشاورزی، دانشکده کشاورزی، دانشگاه گیلان، رشت، ایران

(تاریخ دریافت: ۹۴/۶/۵ تاریخ پذیرش: ۹۴/۱۱/۱۹)

### چکیده

مراتع به عنوان یکی از منابع تجدید شونده، نقش بسیار مهمی در تنظیم اکوسیستم، حفظ ذخایر ژنیتیکی گیاهی، چرخه آب و تأمین بخش زیادی از نیازهای علوفه‌ای کشورها را ایفا می‌کنند. این منابع خدادادی از تکیه‌گاه‌های اساسی توسعه پایدار کشورها به شمار آمده و بستری اساسی برای انجام فعالیت‌های مختلف اقتصادی است. طی سال‌های اخیر در ایران، این منابع ارزشمند به علت بهره‌برداری غیر اصولی و بی‌رویه دامداران در معرض تخریب شدید قرار گرفته‌اند. امروزه ارائه برنامه‌های مناسب برای مدیریت چرا، سازماندهی اصولی بهره‌برداری از مراتع و جلوگیری از تخریب آن‌ها ضروری به نظر می‌رسد. هدف تحقیق حاضر بررسی نقش راهکارهای آموزشی-ترویجی در کاهش تخریب مراتع، مدیریت و سازماندهی اصولی بهره‌برداری آن است. جامعه آماری تحقیق، ایران، استان ایلام می‌باشد. حجم نمونه با استفاده از فرمول کوکران ۲۵۵ دامدار محاسبه شده و با استفاده از روش نمونه‌گیری تصادفی ساده، افراد انتخاب شدند. تجزیه و تحلیل داده‌ها از طریق آزمون ضریب همبستگی اسپیرمن و آزمون من ویت نیو با استفاده از نرم افزار SPSS صورت گرفت. نتایج پژوهش نشان داد که بین سن بهره‌بردار، تعداد دام و میزان بکارگیری راهکارهای آموزشی ترویجی مرتبط با کاهش تخریب مراتع رابطه معنی‌داری وجود ندارد، ولی بین متغیرهای جنسیت، تحصیلات، دانش فنی، میزان شرکت بهره‌برداران در کلاس‌های آموزشی و ترویجی در میزان به کارگیری راهکارهای آموزشی و ترویجی مرتبط با کاهش تخریب مراتع رابطه مستقیم و معنی‌داری وجود دارد.

\* مولف مسئول