The Impact of descriptive evaluation on Expectation of Watershed Management Operation and Level of People Participation

B. M. Golrang [1], F. S. Lai [2], M. Rostami [3]

Khamurudin. M. N [4], Kamziah, Abd Kudus [5], S. H. R. Sadeghi [6], M. Mashayekhi [7], R. Bagherian [8]

[1.] Department of Forest Management (ph.D Candidate), Faculty of Forestry, University Putra Malaysia, 43400 UPM, Malaysia

[2, 4, 5.] Department of Forest Management (Assoc. Professor), Faculty of Forestry, University Putra Malaysia, 43400 UPM, Malaysia

[3.] Department of Mathematic (PhD Candidate), Faculty of Science, University Putra Malaysia, 43400, Malaysia

[6.] Department of Watershed Management Engineering (Assoc. Professor),, Faculty of Natural Resources, Tarbiat Modares University (TMU), Noor 46417-76489, Mazandaran, Iran.

[7] Department of English Language (PhD Candidate), Faculty of Modern Language, University Putra Malaysia, 43400, Malaysia

[8] Department of Watershed Management, Agricultural and natural resources of Khorasan Razavi Province, Iran

b_golrang@yahoo.com

Abstract: During the last years, natural resources in Iran have suffered severe degradations. For the sustainable and better management of these resources, various policies have been advised, the most promising of which is the management of natural resources through participation of the local people. However, it has proven difficult to involve local people in natural resources management activities. Therefore there is a great need to know the reason for the low level of participation by the local communities. This study was designed to analyze the relationship between attitude toward watershed management plans and people participation in Iran. The purpose of this study is to assess Farmers' attitude toward the soil conservation practices in the Kushk-Abad catchment basins in the province of Khorasan Razavi. A sample of 200 farmers was randomly selected from 1200 farmers living in Kardeh catchment basin. A questionnaire was developed and revised by experts' panel of agricultural education and promotion to confirm the validity of the questionnaire and satisfactory reliability coefficient was obtained as well. The results showed a medium level of soil conservation use by most farmers. It was also found that there is a significant positive correlation between the amount of communication channels, information resources, and access to the IT infrastructures use with our dependent variable i.e. soil conservation implementation. The hierarchical regression analysis was applied in two steps to determine the predictive variables of soil conservation practices which, at the first step, the variables pertaining to the amount of communication channels and information resources were entered followed by variables of access to the ICT infrastructures on the second step as the independent variable. They explain 16.1% of variance of soil conservation practices. The results of this research also showed that the level of the respondent's attitude toward SCP was relatively high. This study also proved that participation in SCP is positively and significantly correlated with attitude toward SCP (r = 0.534, p =0.000).

Keywords: Attitude, People participation, Kushk-Abad, Iran, Soil Conservation Practices (SCP)

1. Introduction

The main role of agriculture in each country is to produce food for its population. Agriculture concerns food production, although its' role is well known in other fields such as job creation and raw materials production for industry; moreover, it will help country's development if it has been well implemented.

Therefore, considering the fundamental role of agriculture sector in each country, the necessity of attention to its multilateral development is inevitable. In Iran, agriculture is known as pivot of independency and sustainable development, thus a special attention should be directed to its infrastructure and development.

Nonetheless, considering this important matter should not cause negligence of the natural resources which are the substrates of agriculture. It should be noted that increasing population along with the need to natural resources have highlighted the importance of the soil erosion reduction and sustainable agriculture development in recent decades. Given that most of arable lands is devoted to the cultivation, the development approach regarding the principles of

sustainable agriculture seems essential. However, the production of agricultural products is based on the two main materials: water as a vital matter and soil as a life foundation so that today more than 98% of the total world's food is obtained from the soil (Gerrard, 2000) and (Adekunle & Eniola, 2008) & (Lafen and Roose, 1998).

In recent years, soil erosion, as one of the most important issue of the world environment, agriculture and food production, has been intensified due to the population growth and the change of human activities, so that annually round 75 billion tons of fertile agricultural soil and billions of the other soil layers is eroded [(Ghodoosi et at, 2005), (Mahmoodabadi, 2003), (Baryan,2000), (Bayramin et al, 2003)]. This phenomenon ruins the agricultural ecosystems through lowering soil fertility (Anbarani,1998). Each year approximately 22 million hectare of the arable lands is lost and only the worlds' 1.5 billion hectare is cultivated (Najafi,2005).

Iran is ranked first in the region and second in the world regarding the volume of soil erosion. With an assumption of 2 to 2.5 billion tons annual country's soil lost, 20% of natural soil erosion and 8% of soil erosion in the world occurs in Iran [(Mahdian and Karami,2006)].

One of the main challenges in many catchments of the country is soil erosion and sedimentation. Soil erosion not only destroys the soil but also clogs up the channels and the reservoir of dams through sedimentations (Gvancheng,2004). Kushk-Abad watershed area experiences also the same scenario and although no study has been done on its soil erosion status but there are proofs that this region is increasingly under severe erosion. Since this region of Khorasan province has high agricultural potential, therefore, attention to its soil erosion issues seems inevitable (Ahmadi,2006).

Forms and intensity of soil erosion are considered through several factors such as climate, topography, geology, land exploitation, type of vegetation and surface runoff status [(Mahdian,2005), (Sadeghi et al, 2004), (Bagherian,2009)]. Mahdian (2005) divided the reasons of land destruction into two natural and non-natural factors of which human factor (non-natural) has demolished the natural ground cover through land exploitations for food, clothes and provision of other needs resulting in exposure of more soil to the erosion process (Sadeghi et al.2005). Totally, anthropogenic disruptions in the nature system accelerate the soil erosion process (Tripathi and Singh, 2001) therefore knowing different dimensions of human being would end up with success on the way of natural resources conservation planning.

Mohseni quoted from Kuletz that attitude is a kind of complex and regular ideological systems that prepares people for special behavioral reactions (Mohseni, 2000). Karimi and Chizari (2007) revealed through their studies that there is a meaningful relationship between farmers' attitudes towards soil conservation practices. Moreover, most farmers showed a positive attitude to soil conservation adoption.

Sain and Barreto (1996) stated that most farmers have a positive attitude towards soil conservation as well as high awareness on the soil erosion issues; however, they refuse to accept soil conservation technologies because of being complex and costly with direct and short-term profit. Harrisson et al., (1999) concluded that adoption of the soil conservation technologies can be limited by benefits and personal resources, time constraints, labor and economic barriers.

Experts believe that high implementation costs, the need for long-term investment, lack of direct and observable final result, lack of conservation ethics and sustainable culture among farmers and their poor attitude toward conservation and stability are the main causes of low adoption level of conservation technologies. Karami and Lari (1995) believe that soil erosion is a socio-technical issue; consequently, being successful at planning soil conservation, there is a need to assess the socio-economic dimensions of adoption of soil conservation technologies.

Soil as an important resource has a great role in meeting humans' needs and demands. Soil is regarded as a non-renewable resource because of its slow formation (Nikgohar,1999). In today's changing world, increasing population along with the excessive pressure on natural resources including ground and soil have caused severe erosion of more than one third of the world's soil. As most arable lands are devoted to the cultivation, paying attention to the principles of sustainable agriculture in development of the management techniques is essential (Anbarani,1998). According to the available data, Asia, more than other continents, is faced to the soil erosion problems especially Iran (Mohseni et al., 2008).

As mentioned earlier, Iran has 2 to 2.5 billion tons the annual soil loss and being accused of 20% of natural soil erosion and 8% of global soil washouts. This rate, considering Iran's share of 1.1 percentage of the world's land area, is highly significant. In addition, 15% of the arable lands of the country are affected with salinization, sodium and marching processes caused by over irrigation. Situation is so alarming that more than half of the Iran area (i.e. 88 million hectares) is announced critical in the country's draft law of the watershed and soil conservation regarding soil erosion rate in hectare (Sadeghi et al,2004).

In a study by Kayongo and Mobithi (1979) in Kenya with the active people and groups in soil conservation, it was found that the first priority in soil erosion control is through soil terraces, obtaining favorable attitude of 44 percent of the participants. They mentioned the next priorities as proper use of tools and machinery (37%), people integration (14%), methods like leaders' training, pasture seed production and etc. (5%), respectively. They also showed that positive attitude of the participants towards effects of terracing on soil erosion control have caused them to have more tendencies in its application on some part of their farms.

Kaliba and Rabele (2004) investigated the impacts of adopting soil conservation practices on wheat yield in Lesotho and indicated that farmers adopted long term (including terracing practices, silt traps, water ways and sand bags) and short term practices (including crop rotation, inter planting, fallowing, vegetation cover and contour ploughing) intervals with the most common measure adopted by the farmers as crop rotation. Other popular soil conservation measures were fallowing construction of waterways, vegetable cover, and contour farming, respectively. The least common method among the respondents were sandbag construction and inter-planting. However all respondents have adopted at least one of the soil conservation measures. In addition, Patel et al. (2003) studies on adoption of the wheat production technologies demonstrated that most wheat cultivators had adopted the wheat production technology at medium level. Psychosocial characteristics had a significant relationship with adoption behavior.

Having said all these, the current study would like to examine the effective factors involving in soil conservation practice adoption by farmers at Kardeh and Kushak watershed areas as the farmers' attitude towards erosion is crucially an effective factor in its prevention. More specifically, the following objectives were drawn for more empirical investigation in current study:

1. Studying individual and socio-economical characteristics of farmers of Kushak Abad and Krdeh watershed area.

2. Investigating forms and amount of soil conservation practices application by farmers of Kushak abad and Kardeh watershed area.

3. Analyzing the relationship between selected variables and the application rate of soil conservation by farmers of Kardeh Abad watershed area.

4. Identifying Factors affecting the utilization rate of soil conservation by farmers of Kardeh and Kushak Abad watershed and defining estimation equation.

2. Material and Methods

Population of this study include heads of households Population of this research include heads of households were living in the area Kushk-Abad which had participated in the Soil Conservation Practices (SCP). The total population which had participated in the program is 1200 people that is comprised three villages (including Kushk- Abad, Goosh and Bahreh). Data for this research were collected from 200 respondents, through personal interview based on questioner in 3 rural village from Jun to August 2011.

To design the questionnaire of the study, at first, face to face interviews with farmers were done to formulate the conceptual fundamentals of the issue, followed by preparation of a pilot questionnaire with regard to previous studies, result of interviews, and the theoretical framework. Validity was verified by revision of experts and professors of Agriculture education and promotion at Tehran University. To determine the questionnaire's reliability, 30 farmers were required to fill up the questionnaire in a pilot study. The Cronbach alpha for attitude toward Soil Conservation Practices and participation in Soil Conservation Practices are in order 0.71 and 0.92 was obtained which considered as high reliability for the questionnaire. SPSS and Excel software were applied for data analysis.

Ten set of instruments were applied to collect data in this research. Respondents rated their agreement with items in a five part Likert scale ranging from completely disagree (1) to completely agree (5) for positively worded items and vice versa for negatively worded or unfavorable items, then the points of respondents behavior rate was obtained by the summation of given responses to the items (Shalini, 1992). This raring for questions which are designed to be positive and the value of negative questions is contrary to them.

So, negative questions have been recorded and their values changed to positive questions. These questions have mixed by using factor analysis and finally their standard scores were derived. Then, by using the following formula, scores of attitude toward SCP were distributed between 0 to 100.

$$\text{Attitude toward SCP} = [Z\_\text{ (score)} - \text{Min}]/(\text{Max-Min}) \times 100$$

To retain or remove items, the coefficient of internal consistency (Cronbach's alpha) and the differentiation index (Mann- Whitney test) were used. The items were set in a set of regular expressions with

a certain order and equal weights and the respondents expressed the extent of their application via a five part Likert scale (from never to every year in the range of 1 to 5) then the score of the soil conservation extent by farmers was estimated through summation of the responses given to the items.

The second instrument, which has 20 questions, is dedicated to data collection about measure of respondent's participation in the watershed management plan. To measure these questions, 5 point Likert scales are considered based on participant's previous experience, from very less 1 to very much 5 (Raiisian, 2007). Also, to measure the rate of communication channels and information sources use, 30 communication channels and sources including written (i.e. magazines, brochures and etc.), individuals (i.e.promoters, peers and etc.), media sources (i.e. radio, television and etc.), as well as institutional ones such as agriculture, public and etc., pertaining to soil conservation and erosion prevention were offered to the respondents in an orderly set with equal weights to express the rate of their usage of the sources in a five –item Likert scale (from large to nothing ranging by 0 to 5).

This variable has three dimensions which include: 1. Social participation (8 items) 2. Economical participation (6 items) 3. Environmental participation (6 items) based on the model proposed by Dolisca et al. (2006) & Searle (1990) & Karl (2000). These questions have combined by using factor analysis and finally their standard scores were derived. Then, by using the following formula, scores of participation in SCP and its subscales were distributed between 0 to 100 (Oppenheim,1992) & (Hematzadeh & Khalighi,2006).

$$\text{Attitude toward SCP} = [\text{Zscore}) - \text{Min}]/(\text{Max-Min}) \times 100$$

Independent variables included age, education level, the level of income from agriculture, specificity of cosmopolitan, usage extent of information resources and channels, which was assessed by questionnaire. Several statistical methods according to need and appropriateness such as descriptive statistics, factor analysis, Independent sample t-test, Analysis of Variance (ANOVA) and Pearson correlation were used to analysis of collected data (Hair et al., 1998; Guilford, 1956). Data analyze was done via descriptive statistics such as mean, frequency, percentages, inferential statistics like correlation and regression analysis.

Factor analysis was applied to measure the level of validity of participation in SCP as the main variable and identify latent dimensions underlying the variables which assessed the level of participation.

3. Results and Discussion

3.1 Socio Demographic Characteristics of responders

Recognition of socio demographic specifications of the respondents was the first objective of this study. This item is useful in understanding of the nature of the respondents that might influence their intention to participate in SCP. These characteristics included age, gender, marital status, education, occupation, land ownership, income, local group membership, and source of motivation to join SCP. Table 1 shows the socio demographic characteristics of the respondent in the study area which are discussed in detail as follow:

Age: The results revealed that 20 percent of responders were between age categories of 45-55 years old. 18.5 percent of responders were between age categories of 35-45 years old. 17.5 and 16.5 percent of responders were between age categories of 25-35 and 55-65 years old. 17 percent of responders were also less than 25 years old. Only 10.5 percent of them were more than 65 years old. Also, responder's age mean was approximately 44.5 years old.

Many studies have shown that the level of participation may differ among the people based on their socio demographic characteristics (Amori and Makinde, 2012). Several studies have shown that participation may depend on individual characteristic such as age, gender, material status, household size, income (Amori et al., 2012).

Gender: The data cleared that 82 percent of responders were male and only 18 percent were female. This shows actual work force in this area. Moreover, the men are considered as head of family. Consequently, the majority of responders who involved in this study were male (Awotide et al., 2012).

Marital Status: The results indicated that 79% of responders were marriage. The majority of responders were married as a result of cultural characteristics of rural area.

Education: Formal education system in Iran is consisted primary level (5 years) secondary level (3 years), high school (4 years) and bachelor (4 years). The data revealed that 32% of responders had no formal education. 24.5% had secondary education while 22.5% had primary education. 18% had high school education and only, 3% achieved diploma and bachelor degree.

The results revealed that most farmers had a positive attitude towards soil conservation adoption. High score of farmers' attitude around 92.7% toward adoption of soil conservation practices proves their

positive attitude and interest on its application at their farms. It showed that financial investments on the soil conservation practices as well as planning of supportive programs may cause the farmers be more intended to adopt them. Therefore, it is suggested to expedite financial investments on these programs and to prepare supporting measures for them.

Table 1. Socio Demographic characteristics of respondents

Variables	Frequency (n=200)	Percentage %
Age (Year)		
18-25	34	17.0
25-35	35	17.5
35-45	37	18.5
45-55	40	20.0
55-65	33	16.5
>65	21	10.5
Gender		
Male	164	82
Female	36	18
Marital Status		
Married	158	79
Bachelor	42	21
Education Level		
No formal education	64	32
Primary School	45	22.5
Secondary School	49	24.5
High School	36	18
Diploma and Bachelor	6	3
No formal education	64	32

A) Individual, social and economic characteristics of Kardeh and Kushk-Abad watershed basin farmers:

Based on the findings, approximately 91.5 percent of the farmers aged over 30 with an average of 49 years old. 26.8 percent of them were illiterate (the literacy was equal to knowing how to write or read). The results showed that 39 percent of farmers had family size of 7-9 with the least frequency of 7.3% for those having a family size equal to or less than 3. Also, 26.8% of the farmers had 30-4- years of farming experience with the least frequency about 11% belonging to the farmers with equal to or less than 10 years farming experience (Faham,2008). All farmers in the study used low level of communication and information channels and sources and none used these communication and information channels in a high level or even medium for acquisition of information pertaining to soil conservation practices. Regarding the access to ICT infrastructures, none of the farmers had access to the internet. Also, 51.25 percent of farmers had a low access to telecommunications. 98.8% of them had no cell phone.

B) Rate of soil conservation practice among Kardeh and Kushk-Abad watershed farmers

Application scale of the soil conservation by farmers of Kardeh and Kushk-Abad watershed area is shown in Table 2. According to the findings, the most preferred practices by farmers were "use of creek water (average 1.94), Stone stile farms (average 3.35) and use of improved plant varieties (average 4.27), respectively (table 2).

Table2. Application rate of Soil Conservation Practices by Kardeh and Kushk-Abad Watershed Area

Soil conservation practice	Average	SD	Variation Coefficient	Rank
Use of Creek water	1.94	0.1	0.051	1
Stone stile farms	3.35	0.75	0.170	2
use of improved plant varieties	4.27	0.83	0.194	3
Pest control	4.29	0.85	0.198	4
Use of Manure	4.02	0.8	0.200	5
Counter Furrow	1.05	0.22	0.209	6
Terracing	1.05	0.27	0.257	7
Intensive Cultivation	2.99	0.85	0.284	8
Plowing	3.77	1.12	0.296	9
Drainage	2.35	0.85	0.362	11
Protective crop rotation	2.21	1.19	0.538	21
Channel cultivation	1.80	1.10	0.611	24
Check dams	1.74	1.09	0.626	25

C. Application rate of soil conservation practices by Farmers in Kardeh and Kushk -Abad watershed Area:

Regarding the results of table 3, highest frequency (0.72) belongs to those farmers with medium application level of soil conservation and none of the farmers in the study had high level of soil conservation application.

Table3. Frequency distribution of the farmers practicing soil conservation

Application rate of soil conservation practices by farmers (Factor)	Frequency	Percentage
Low (50>)	23	0.28
Medium (50-100)	59	0.72
High (100 <)	0	0

D. Relationship between selected variables and attitude of the Kushk-Abad and Kardeh watershed area's farmers toward soil conservation practices.

In order to realize the relationship between selected variables and attitude, correlation analysis was used. Based on the analysis, application and acceptance of soil conservation practices by farmers

was significantly related with access to IT infrastructures (0.296) and application rate of communication and information sources (0.313). Accordingly, the more farmers had access to the IT, communication channels and information resources, the more they were willing to use the soil conservation practices.

Table 4. The correlation between independent variables and the extent of soil conservation

Random Variables (Selected)	Correlation Coefficient (r) Soil erosion
Age	0.04-
Education Level	0.161-
Farm land amount	0.016
Income rate from agriculture	0.131-
Cosmopolis Specificity	0.115
application rate of communication channels and information sources	0.313**
access rate to ICT infrastructures	0.296**

** Significant at 1%

E. Regression analysis of factors affecting the adoption and implementation of soil conservation by farmers

To measure the cumulative effects of independent variables on the dependent variable of acceptance, the stepwise regression is used. This method begins with a comparison of independent variables entering the most significant variable in the first model and followed by the less significant variable at the subsequent steps. This process continues until no other independent variable can make a significant contribution to the variance of the dependent variable (Zare et al.,2008).

3.2 Results of factor analysis

To make decision about which variables are include in each factor according to thumb rule, for a sample with capacity of 200, variables with modulus coefficient greater than0.4 and Eigen value greater than 1 are considered as variables which forms the factors. (Hair.et al., 1998) that you can see Eigen values in Screen plot diagram. Measure of Sampling

Adequacy (MSA) is a criterion used for determining for the factor analysis. According to (Hair et al., 1998) if MSA would be greater than 0.50, the result for factor analysis is valid. Here are some results from factor analysis and the related results.

Participation factors

The first factor analysis is related to participation factor. The statistic value of KMO for this analysis is 0.778 that is presented in table 3 and shows the resulted of factor analysis is valid. According to factor analysis, social participation, economical participation and environmental participation factor are provided for participation factor. As it is mentioned before, only questions that have variables with modulus coefficient greater than0.4 and eigenvalue greater than 1 will be selected as the question which forms the analysis. Also, Varimax Rotation is used to have a better identifying of questions which forms a factor.

Results from factor analysis shows that these three factors will provide 64.5 percentage of the total variance. Here are details about Factor Analysis

Table 5: Kmo and Barlett's Test of sample size for participation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.778	
Bartlett's Test of Sphericity		
	Approx. Chi Square	2230.376
	Df	153
	Sig.	.000

4. Conclusion

Based on the results, most farmers applied soil conservation practices in a medium level however all farmers accepted multiple methods of soil conservation which is consistent with the findings of

patel et al., (2003) and kaliba and rable (2004). The reason is that their farm lands are small and application of a high level soil conservation practice will cost a lot of money. Therefore, as the villagers are poor they are not able to afford multiple practices of

soil conservation. In conclusion, economic considerations for these farmers should be at the

priority for the government (table 6 and 7) (figure 1).

Table 6- Estimation coefficients of effective variables on soil conservation practices

Models	Correlation Coefficient	R Square	Adjusted R Square	Sig.
First step	0.313	0.098	0.087	0.004
Second step	0.401	0.161	0.140	0.001

Table7. Regression analysis of effective factors on soil conservation practices by farmers

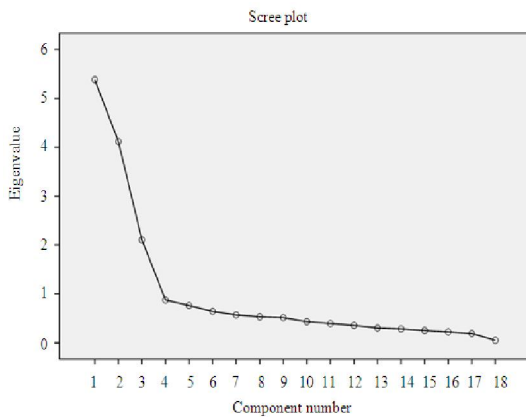| Variable	Unstandardized Coefficient (B)	Standardized coefficient (Beta)	T	Sig t
constant b0	31.933	-	5.22	0.000
application rate of communication channels and information sources	0.266	0.274	2.62	0.01
access rate to ICT infrastructures	0.904	0.254	2.43	0.017

Fig. 1. Scree plot of factors of participation variables

The significant correlation between communication channels and application and adoption rate of soil conservation practices by farmers proves the importance of these sources as the ways of giving information and modern technologies of soil conservation to increase the rate of its adoption by Kardeh and Kushak Abad farmers. Therefore, needed actions should be taken to connect farmers to the communication sources and channels such as Pesticide and fertilizer dealers, corporate culture, industry and research centers. These channels and sources should transfer proper and accurate information to the farmers through promoting and training courses on the modern technologies of soil conservation.

The study showed a significant relationship between the farmers' access to ICT infrastructures and adoption of soil conservation rates. This is because the access to these infrastructures raises the application rate of communication technologies and affects the use of information sources and communication

channels by farmers for getting information on new soil conservation technologies, increasingly.

The findings of the study demonstrate that all farmers of the region had low level of communication channels and information sources application. It is suggested that as the gained score by all farmers regarding application rate of communication channels and information sources is low and on the other hand the relationship between application rate of communication channels and information sources is significant, the accessibility of communication channels and information sources' should be improved. Doing such, a tendency can be developed toward adoption of soil conservation practices and plan properly to boost the interrelations between farmers, promoters and developers and other information and communication sources so that to increment the knowledge, data and awareness on the new technologies of soil conservation based on the farmers' needs.

Corresponding Author:
Bahram Mohammadi Golrang
Department of Forestry Management
University Putra Malaysia (UPM)
43400 Malaysia
E-mail: b_golrang@yahoo.com

References

1. Gerrard, J.2000. Fundamentals of soils. Rutledge Fundamentals of physical Geography, London and New York. pp.113.
2. Adekunle, A. S & Eniola, I. T, 2008, Impact of Industrial Effluents on Quality of Segment of Asa River Within An Industrial Estate In Irorin-Nigeria, New York Science Journal, Volume 1, Issue 1, January 1, 2008, ISSN 1554-0200.
3. Lafen, J. M, Roose, E 1998. Methodologies for assessment of soil degradation due to water erosion. In Law R.: Balum, W. E. and Valentine, c. (Eds.), Soil degrading, CRC press, Bo Ca Raton.320 p.
4. Ghodoosi, J. Soltani, M & Shademani, E (2005), Assessment and management strategies for soil conservation in agricultural lands presented in the Proceedings of the Third National Conference of erosion and sedimentation, 6-9 Sep 2005, Tehran University of Iran.
5. Mahmoodabadi, M (2003), Risk of erosion Ardestan Watershed using GIS, Master's thesis, Department of Soil Science, Faculty of Agriculture, Tehran University, 140 pp.
6. Baryan, R. B.2000. Soil erosion and processes of water erosion on hill slope. Geomorphic, (32):285-415.
7. Bayramin, I. O., Baskan, D. Parlak, M. 2003. Soil erosion assessment with CONA model: Case study Beypazri area. Turk Journal of Agriculture. (27):105-116.
8. Anbarani, J (1998), Estimate runoff in catchment areas of the Caspian Sea, Master's thesis, Faculty of Agriculture, University of Technology, 145 p.
9. Najafi, G (2005), Land and agricultural land in Iran. Journal of Rural, Ministry Jihade-Agriculture of Iran, No 43, 340-349 P.
10. Mahdian, M & Karami, k (2006), Evaluation Land degradation situation ans soil erosion in Kurdestan of Iran. National Conference of erosion and sediment - 6-9 Sept 2005. Tehran. Tehran University.
11. Gvancheng, H. 2004. Consideration on the integrated watershed management in the western China. In the proceeding of Symposium on Hydropower and Sustainable Development, 24-27 April 2004.
12. Ahmadi, A, (2006), Detailed reports of soil erosion in Khuzestan province. Office of pasture and Watershed, Khuzestan Agriculture Organization, Ministry of Agriculture. 150 pp.
13. Mahdian, M (2005), Assessment of land degradation in Iran. Presented in the Proceedings of the Third National Conference erosion, Sep 2005, No24, University of Tehran.
14. Sadeghi, S. Najafi, E & Vafakhah, M (2004), The role of land use change on soil erosion (Lenjan Alian case study in Esfahan province). In Proceedings of the National Conference on Watershed management, soil and water resources. 12 to 15 September 2004 in Isfahan province).
15. Bagherian, R., A. S. Bahaman, A. S. Asnarulkhadi and S. Ahmad, 2009. Community participation in watershed management programs. J. Soc. Sci., 5:1.
16. Tripathi, R. P and Singh, H. P. 2001. Soil erosion and conservation. New Delhi: New Age International Limited Publication, India. PP. 210.
17. Mohseni, M (2000), Knowledge of the attitudes and social behavior - a culture in Iran. Volume 1 - Tehran - 165 pages.
18. Karimi, S. Chizari, M (2007), Evaluation of farmers' attitudes towards soil conservation. Case Study: Tea Nagorno watershed of Central Province, Mahnmah Jihad, No. 276. 54-66p.
19. Sain, G. E. Barreto, H. J.1996. The adoption of soil conservation technology in Elsalvador: Linking productivity and conservation. Journal of soil and water conservation. 51(4):313-321.
20. Harrisson, S. Leibbrandt, H. Contadini, F & Kopel, J.1999. Soil sustainability. Available at: http://www.des.ucdavis.edu/Iaf217/soil-paper-99.html. assessment of soil degradation due to water erosion. In Law R.: Balum, W. E, Valentine, C. Soil degrading, CRC press, Bo Ca Raton. 320.
21. Karimi, E & Lari, M.1995. Farmers' attitude toward soil conservation: a Comparative study. Journal of Extension systems. Vol.11, No. 1, pp.11-26.
22. Nikgohar, A (1999), Fundamentals of sociology. Principles of Sociology (Volume II), Tehran university, 200 pp.
23. Mohseni, S. M., S. H. Hoseini, H. Ahmadi and A. Najafinejad, 2008. Assessment of watershed management projects (case study: Ramian Watershed, Golestan, Iranian Journal of Natural Resources, Vol,61, No.2,2008, pp.335-348.
24. Kiango, D. Moabite, P.1979. Local environment perception and conservation practices. Journal of Agricultural Administration. 6(4): 299-304.
25. Kaliba, A. R. M and Rabele, T. (2004). Impact of Adoption soil conservation practices on wheat Yield in Lesotho.
26. Patel, M. M., Chatterjee, A. and Mohamood Khan, 2003. Adoption of wheat production technology. Indian Journal of Extension Education. 34(1 & 2):45-57.
27. Shalini, B.1992. Cosmopolites scale. Faculty of Social Studies, Department of Psychology,

Osmania University. Hyderabad, India. Scientific Report. PP.12.

28. Raiisian, R (2007), Effect of soil texture, rainfall, vegetation, land slope on runoff and the role of the few areas of Chahar Mahal Bakhtiari Privines. published MA thesis. Faculty of Agriculture, Isfahan University of Technology, p 145.

29. Dolisca, F. Douglas, R, C. Joshua, M, Mc, Daniel, 2006, Factors influencing Farmers participation in forestry management programs: A case study from Haiti. Journal of Forest ecology and management. Vol.23.324-331 DOI: 10.1016/j.foreco.2006.09.017

30. Searle, M. S., 1990. Social Exchange Theory as a Framework for Understanding Ceasing Participation in Organized Leisure Activities, Editor: Bryan J. A. Smale, Ontario Research Council on Leisure. Proceedings, Sixth Canadian Condress on Leisure Research, May 9-12 1990. University of Waterloo.

31. Karl, M., 2000. Monitoring and evaluating stakeholder participation in agriculture and rural development projects: a literature review, Sustainable Development Department (SD), Food and Agriculture Organization of the United Nations (FAO).Available from www.fao.org.

32. Oppenheim, A.N.1992. Question native design & attitude measurement (2nd Ed.). Printer Publication. UK. PP.185.

33. Hematzadeh, Y. and N. Khalighi, 2006. Effective factors survey on lake of participation of users in pasture and watershed management design. J. Agric. Sci. Natural Resour., Vol.13(4), Oct-Nov 2006. www.magiran.com/jasnr

34. Zare, S. Hossin, S. M, Namiranian, 2008. People participation, an undeniable necessity for conserving forest areas of arasbaran rigion in

Iran. American Journal of Agricultural and Biological Science. ISSN1557-4989 Volume:3; Issue:4: 673-680. DOI:10.3844/ajabssp.200.

35. Hair, H. R., J. F. Anderson, R. L. Tatham and W. C. Black, 1998. Multivariate data analysis. Prentice Hall International statistics in Psychologu and education New York: McGraw-Hill.

36. Guilford, J. p.,1956. Fundamental statistics in Psychology and education New York: McGraw-Hill.

37. Amori, A. A, Makinde, A, 2012, Gender and socio-economic Differences in public Attitude to water Tariffs in Lagos and Abeokuta, New York Science Journal,2012, 5(1): 85-89.

38. Amori, A. A, Makinde, A and Ojekule, O. Z.2012, Socio-Economic Factors, Occupation and Family size as predictors of public perception of water Resources planning in Oyo state, Nigeria. New York Science Journal,2012, 5(1): 128-131.

39. Awotide, B. A. Awoyemi, T. Oluwatayo, I.2012, Gender Analysis of Income Inequality and poverty among Rural Households in Nigeria: Evidence from Akinyele local Government Area, Oyo State. New York Science Journal, 2012, 5(10):13-19.

40. Faham, E., 2008. Analysis of factors influencing rural people's participation in national action plan for sustainable management of land and water resources in hable-rud basin, Iran. American Journal of Agricultural and Biological Science., 3(2): 457-461,2008ISSN1557-4989 DOI:10.3844/ajabssp.2008.457.461.

41. Patel, M. M.; Chatterjee, A. and Mohamood Khan. 2003. Adoption of wheat production technology. Indian Journal of Extension Education. 34(1 & 2): 45-57.

9/25/2018