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Relationship between Awareness of Sustainable Agriculture and Fertilizer Usage by Iranian Farmers in the City Of Bajestan in Khorasan Province: A Case Study

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Abstract. This study strove to determine farmers' awareness of sustainable agriculture and its relationship with fertilizer consumption. It is based on information collected from survey and a researcher-made questionnaire. The face validity (based on expert opinion) and reliability (Coronbach Alfa coefficient) were established for the questionnaire. The statistical population consisted of 5500 farmers in Bajestan County and the sample size was determined by Cochrane formula (n= 140) through a random sampling technique. Correlation analysis showed significant and positive relationship between the variables of manure, environmental pollution, use of resources for production, soil conservation and the preservation and restoration of resources, use of ammonium sulfate to produce a range of basic resources as well as between urea and ammonium nitrate fertilizers and improved agricultural activities. However, there is no significant relationship between Phosphate and Potash fertilizers, and none of the variables studied.

Keywords: sustainable agriculture, fertilizer, farmers' awareness, Bajestan County.

Introduction

Modern agriculture has had many achievements in increasing production, productivity of resources and improving the living standards. Experts believe that agriculture has had a key role in welfare and food security of communities (Alauddin & Tisdell, 1991). However, environment pressures were exerted due to excessive reliance on external inputs, especially fertilizers and increasing use of water and soil (Rahman, 2003; Bylin et al., 2004; Rezaei-Moghaddam, 2005). In fact, in recent decades, modern agricultural systems have been severely criticized due to these concerns (Alonge & Martin, 1995; Rodrigues et al., 2003). Meanwhile, there has been an international consensus in support of the environment to develop agriculture capable of increase productivity, and making the least damage to the environment (Souza Filho, 1999; Bagheri et al., 2008_b).

Structural transformation paradigm focuses on the role of agricultural productivity growth on rural poverty reduction, cognitive changes in demographic and economic development. The structural and demographic changes were seen in many Asian countries during the Green Revolution. There are general agreements among researchers and policy makers that there is a need for increasing use of fertilizers, improved soil fertility management practices and improved seeds and technology in this transformation process in order to control the growth of productivity in fields. However, socio-economic factors seem to be important in achieving sustainability in agriculture since the agricultural disciplines are the intersection of natural, physical and social conditions to achieve sustainability. To have a stable agricultural, each of these dimensions has to be stable (Von Wirén-Lehr, 2001).

Many definitions have been proposed for sustainable agriculture. For example, Earles (2005) states that it is “food production without the use of any land or resources to accumulate environmental pollutants”. In this system, the nature discipline is followed in order to produce and develop crops and livestock. In this way, agriculture earns social value and its main concern is to produce safe and healthy food for everyone.

Sustainable agriculture is a way to deal with environmental pollution, reduction of biodiversity, etc. To achieve sustainability, development must be considered anything more than an infrastructure for agricultural sustainability, and issues must be considered in sustainable agriculture including 1- Confronting with hunger and human needs of food; 2- Improving environmental quality to give economic environment dependence; 3 – Optimizing the utilization of non-renewable resources; 4 - Protecting farmers’ economic interest; 5 - Improving the quality of life for farmers and community. Disadvantages of conventional farming include 1- Reduction of soil fertility; 2- Water pollution due to the use of fertilizers and chemical pesticides; 3 - Lack of water resources; 4- Environmental damage; 5 - Decrease in genetic diversity; and 6- Destruction of natural resources and forests (Gold, 2007).

Sustainable agriculture is a system that increase environmental quality and resources on which agriculture depends. In long-term, it supplies food and fiber needs, having economic sustainability and improving quality of life for farmers and society as a whole (McIsaac, 1996). Despite of variety in the conceptualization, sustainable agriculture emphasizes on three aspects: social acceptability, economical viability and ecological appropriateness (Pretty, 1996; Zhen et al. , 2005a).

Environmental issues, dating to human use of natural resources and human behavior, are important factors affecting stability (Bagheri et al., 2008b). To view Roling & Pretty (1997), stability is as a result of experiences, goals, knowledge, decision-making and organization of human. Attitude of farmers in sustainable agriculture can effect on farming operational performance. Therefore, experts, designing new program, have to pay attention to both complexity of farmers' attitudes and the other effective components (Ahnstrom et al., 2009).

Attitude has various definitions that can be in a range of theoretical definitions (ready for operation) and operational (as measured by attitudes' test), (Ahnstrom et al., 2009). Attitudes are not fixed or static, yet they can be reconstructed in response to a question, particular behavior or incident (Eagly & Chaiken, 1993). In sustainability, issues determining individuals' attitude towards the environment are in the way that preserves the environment, and view to the environment resources and systems in the long-term (Fakoya et al., 2007). Stroup & Baden (1983) have argued that there are a strong relationship between beliefs, values, norms and attitudes toward environmental management practices. Kerhoft (1990) observed that environment (ecological region), income, age and education affected on attitude.

Pyrovetsi & Daoutopoulus (1999) found out that farmers in wetland areas of Greece were not aware of the environmental impact of modern agriculture or were not considering it. Study of Sheikh et al. (2003) showed that attitude toward using technology and contacting with extension officers have been the main factors influencing the adoption of no tillage operation. Tatlidil et al. (2009) showed that high levels of contact with extension services, education, land ownership and greater access to information leads to a greater understanding of sustainable agricultural practices. They concluded that extension organizations focusing on these factors can create more favorable attitude towards creating sustainability in farmers. Fakoya et al. (2007) showed that women farmers had ambivalent attitude to sustainable agriculture practices. Bagheri et al. (2008b) showed that farmers' perception of sustainable technology was favorable, preferring modern technologies. Pretty (1996), argued that sustainable agricultural system requires knowledge, management and skill so that it is necessary to adapt a favorable attitude towards sustainability in agriculture. Thus, reflecting the attitude of the farmers in this area provides a proper understanding of planning in a practical and wise way. Implementation of sustainable agriculture requires preparation, farmers' favorable attitudes, policies and support services in credit, technology, training, extension and market (Gold, 2009; Pasakamis, 2010).

Like many countries, Iranian farmers also believe that use of fertilizers increase soil fertility and yield. Fertilizer consumption in Iran being 2.225.669 tons in 1996 rose to 3.416.482 tons in 2007, increasing by 53% (Statistical Center of Iran. 2007).

This research tried to identify the component of sustainable farming in the view of farmers and determined the amount of fertilizer to be used by them, and surveyed the relationship between these components. The goal of this study was to assess farmers' attitudes towards sustainable agriculture and relationship with fertilizer use. The objectives were:

1) Personal and job characteristics; 2) measurement of their attitudes toward sustainable agriculture 3) Evaluation of fertilizers consumption by farmers, and 4) the relation between sustainable agricultural components and fertilizer consumption by farmers.

Materials and methods

Descriptive survey design for data collection was adopted in the present study. The population of the study consisted of 5500 rural farmers living in Bajestan city of Khorasan province. The sample included 140 farmers that were determined according to Cochran's formula. Random sampling method was adopted in the selection of the respondents.

A self-made questionnaire including fixed response was the main instrument for data collection. To validate the instrument, the face validity was used. The instrument was validated by a team of four experts. Prior to this, a pilot study was conducted in one of the rural area with collaboration of 30 people. The aim of the pilot study was to test and improve the instrument. However, Cronbach's alpha computed to measure the reliability of perceptions towards sustainable agricultural components indicated that it was 0.87. It meant that index had high reliability. To test the questionnaire for validity and reliability, it was filled out by researcher and then the collected data were analyzed. Farmers' perceptions towards sustainable agricultural components were operationalized as the extent of their agreement with the statements related to 23 selected indicators of sustainable agriculture which were obtained from review of literature. The respondents were asked to indicate the extent to which they agree on each indicator using a Likert-type (five-points continuum ranging from strongly agree, agree, undecided, disagree and strongly disagree) with assigned scores of 5, 4, 3, 2 and 1, for positive statements, respectively and vice versa for negative statements.

Dependent variable was the consumption of fertilizer by farmers. Fertilizers fell into three categories: "chemical", "organic", and "biological". For each category, the type and the amount of fertilizers used by farmers were identified. Chemical fertilizers are located in 9 groups, organics in 5 groups, biological in 7 groups. For each of these fertilizers, the amount of consumption, price, availability, recommendation to consumption, time and manner of use were also investigated. In order to illustrate the results, descriptive statistics, the mean frequency, standard deviation, and Pearson correlation analysis and factor analysis were used.

Results and Discussion

Economic and social characteristics: The results show that the average age of the respondents was 42.39, indicating that they are fairly young and ready to train and make changes for optimal use of fertilizers and sustainable field operations in long-term (Fakoya et al., 2007). The average farming experience of respondents was 22.7 years; 51.1 percent of the respondents were cultivating;

and 48.9 percent were planting a garden. Concerning literacy level, 83.4 percent of the respondents had less than high school diploma degree, 16.6 percent had high school diploma or higher degrees. These results indicate that low literacy level caused difficulties in application of optimal methods. Mean distance from their residence to the fertilizer distribution center was 4.13 km, which represents relatively easy access to this source. The average respondents' farm size was 5.88 hectares in that 80.5% of the respondents had less than 5 hectares and 19.5% had more than 5 hectares of lands, representing smallholders in the region.

From the total respondents, 77.4% owned the land and only 22.6% of them leased the land or cooperated in joint lands. Land ownership plays an important role in optimal management of agricultural lands and, in many cases, defines the farm management techniques. Generally, tenants are looking for operational productivity and maximum profit in the short term that usually refers to increase in fertilizer use (Fraser, 2004; Kevane, 1997). This means that the absence of land ownership reduces the farmers' incentives in maintaining and improving soil fertility, and changes their long-term point of view to the short-term benefits.

The census for active labor force in agriculture for less than 3 people was 52.6%, and for more than 3 people was 47.4%. Farmers' average income was 63 million Rials per year, which is considered as average income.

Attitudes towards sustainable agriculture: The attitude of the respondents were assessed on the base of 23 items. Items and their corresponding results are listed in Table 1. The results show that the first ranking of the table was about improving new farming methods. This mean (4.57) indicates that most respondents believe that the use of the new method can improve the agricultural activities. The second ranking of the table was about the need to familiarize farmers with soil fertility management. The mean (4.43) indicates that most respondents have relatively right attitude towards familiarity with the management of soil fertility.The third priority is based on the real needs of the fertilizer plant. Average of 4.45 quarters indicates their agreement with the fertilizer needs. The last item was the expense of agriculture-related laws, which is 2.56 for this amount, indicates that farmers are satisfied with the laws of agriculture.

Table 1: Distribution of respondents according to awareness of sustainable agriculture on soil fertility management

Indicators to measure awareness of sustainable agriculture	Frequency						Mean rank	rank
	strongly disagree	disagree	undecided	agree	strongly agree	missing		
Improved farming practices with using modern methods	0	2	14	63	48	6	4.75	1
Farmers need to be familiar with the management of soil fertility	0	0	6	61	62	3	4.43	2
Plant fertilizer according to actual needs	0	0	1	76	53	3	4.4	3
Necessity of maintaining and restoring soil and water resources for the next generation	2	1	3	63	62	2	4.38	4
Maintain soil fertility with proper use of fertilizers	0	0	3	76	50	4	4.36	5
Proportion of cropping patterns by region	0	2	12	60	53	6	4.29	6
Groundwater pollution threat to human health	0	2	16	54	57	4	4.28	7
Farmers' awareness of membership in local organizations	1	1	19	57	50	5	4.2	8
Diversified production for economic	0	1	25	51	51	5	4.18	9
Ability to protect and restore the land with agricultural laws	1	3	15	69	42	3	4.13	10
Necessary for the proper management of basic agricultural inputs	2	0	21	61	43	6	4.12	1 11
The loss of soil fertility with inappropriate use of fertilizers	1	5	20	56	48	3	4.11	12
Agricultural recovery activities in partnership with Sustainability	1	1	18	71	37	5	4.1	13

Surface water and soil pollution with fertilizers consumption	0	3	23	61	43	3	4.09	14
Production on the land based on the capacity of agricultural	1	1	18	73	37	3	4.08	15
Use maximum resources for the production	4	11	11	57	48	2	4.02	16
The negative effects of fertilizers consumption on plant	0	5	39	52	35	2	3.89	17
Recycling and reuse of agricultural wastes	3	5	42	43	35	5	3.79	18
Acidic or alkaline soil with fertilizer consumption	1	3	51	48	26	4	3.73	19
Different methods of feed	0	4	51	47	25	6	3.72	20
Erosion of agricultural land, with the loss of vegetation.	6	7	33	62	22	3	3.66	21
Agricultural land being revived because of God-given	9	26	31	48	16	3	3.27	22
Farmers losses with agricultural laws	19	48	40	14	8	4	2.56	23

Fertilizer consumption amount: In order to study fertilizers, they fall into three categories: “chemical”, “organic”, and “biological”. For each category, the type and the amount of fertilizers used by farmers were identified. In this regard, the average price of fertilizer, access to fertilizer, time and method of application were assessed.

Table 2: Distribution of respondents about chemical fertilizers (n=133)

Type of fertilizers	Frequent consumers	Average fertilizer use per hectare	Average price, kg/Rls	Frequency of access to fertilizer		Frequency of consumptions' time		Frequency of consumptions' method				
				public	private	Before planting	Growth stages	Surface distribution	Use tape	FERTIGATION	Deep placement	Spraying
Urea	124	183.66	1000	113	27	24	110	97	1	26	8	9
Ammonium nitrate	89	132.4	1060	78	10	24	62	60	---	21	5	3
Ammonium	84	139.5	1030	74	10	23	58	60	---	18	5	2

sulfate												
Phosphate	105	149.57	1150	91	16	29	68	73	1	14	12	2
Potassium	95	126.76	1190	81	15	20	64	63	---	15	10	1
Full macro	17	127.75	1310	15	1	12	3	8	---	0	5	1
Liquid	38	2.94	21770	17	11	3	26	9	---	6	---	27
Micronutrient	10	5.78	26830	5	6	---	9	2	---	3	---	5
External fertilizers	6	8.39	76670	---	5	1	4	3	---	3	---	2

Table 2 shows that the most farmers use Urea, Ammonium nitrate, Ammonium sulfate, Potassium phosphate fertilizers. Among the other fertilizers, Liquid fertilizer seem to have higher frequency of consumption. Too much consumption of Nitrogen fertilizers, have had agricultural pollution, detrimental effects on soil structure and polluted waters and underground water resources. Chemical reaction of Nitrogen losses from agriculture into the environment is a major threat to global health and agricultural policies leading to the Challenge (Hartmann et al. 2007).

Most fertilizers are offered to farmers by public sector. The result shows that fertilizers to be used before planting were consumed in growth stage which is, in turn, the result of incorrect use of fertilizers. Timely use of these fertilizers would seem to be important and vital due to high solubility of Nitrogen fertilizers that makes the synchronization of the growth. Surface distribution and use before planting are the reasons for low utilization of Nitrogen fertilizers. Nitrogen fertilizers, particularly Urea into ammonia gas, are wasted due to surface distribution. In addition, this fertilizer is lost through leaching when consumed simultaneously with irrigation (Malakooti et al. 2008). Most methods of consumption were surface distribution because most of farmers lack the mechanistic features as to fertilizing and are unable to take mechanized vehicles advantage.

Table 3: Distribution of respondents based on the use of organic fertilizers

Type of fertilizers	Frequent consumers	Average fertilizer use per hectare (Kg)	Average price kg/Rls	Frequency of fertilizer recommendations		Frequency of consumptions' time		Frequency of consumptions' method				
				personal	Expertise	Before planting	Growth stages	Surface distribution	Use tape	Fertigation	Deep placement	Spraying
Manure	107	3184	1850	94	15	39	91	89	1	4	81	0
Compost	1	1000	280	1	---	1	---	1	---	---	---	---
Granules	3	65.5	1500	2	1	2	1	3	---	---	1	1
Humic acids	---	---	---	---	---	---	---	---	---	---	---	---
Amino Acids	---	---	---	---	---	---	---	---	---	---	---	---

As shown in Table 3, the most-widely used organic fertilizer was manure. Meanwhile, one farmer consumed compost and three of them consumed granules. The maximum consumption was based on personal recommendations during the growth stages, surface distribution and deep placement. Due to the fact that the use of manure as organic fertilizers increases organic carbon content of the soil, it has direct and indirect effects on soil properties and processes (Prakash et al. 2007) and also organic carbon content of the soil is a sign of sustainability of production systems under the management conditions, because organic materials increase soil quality through soil structure improvement, food storage and biological activity (Ghosh et al. 2002.). Therefore, farmers use manure with awareness of the aforementioned points, whose action is the line with stability and protect the environment. Organic fertilizers have positive effects on biodiversity and modify physical and chemical properties of soil due to the gradual release of nutrients and less pollution to the environment (Roe, et al. 1997).

Lauer (1975) states that farmers can provide about 42% nitrogen, 29% phosphorus and 57% potassium of their farm when using manure. This causes to obtain the maximum performance of the product as well as increases the efficiency of chemical fertilizers.

As disclosed in Table 2 and Table 3, farmers seem to be using combination of chemical and organic fertilizers in this study; in other words, more than 80% of farmers has used combination of fertilizers. Studies have shown that biological sources of organic manure in combination with fertilizer can lead to soil fertility and increase crop production since it often supplies the nutritional needs of plants and increase the product efficient absorption of nutrients (Allievi et al.1993; Bauer and Black. 1994; Parmar and Sharma. 1995; Eghbal et al. 1995).

Factor analysis

In order to classify the components of farmers' knowledge of sustainable agriculture and to determine their correlation with the amount of fertilizer consumption factor analysis was performed for a total of 23 items in order to see to what factors they can be summarized and to what extent the factors extracted from the results of the studies done in different parts of the world are similar to and are confirmed. In this regard, a factor analysis was performed, in which the rate of KMO was 8.0, and the coefficient of Bartlett, 402.1038. It was also estimated significance level equal to 000/0, which proved factor analysis. The next step was to determine the number and amount of variance explained by each factor, which is described in Table 4.

Table 4: Determining factors and described the percentage of variance

factors	percentage variance	Cumulative percentage variance
1-Economy and Production management	18.208	18.208
2-Environmental pollution	11.014	29.222
3- The maintenance of soil fertility	8.764	37.985
4-use of basic resource for production	8.548	46.534
5-soil conservation	7.103	53.637
6-Preserve and restore the resource base	7.011	60.648
7- Improve agriculture activities	5.982	66.629

As can be seen in Table 4, seven factors have been identified for these indicators suggesting that 66.629 of variance was an acceptable variance. This table shows that the factors were named based on the variables and the amount of factor loadings. The first factor including economy and production management, and sustainable agriculture refers to agricultural resource management that maintains or improves the changing needs of the human, environmental quality and natural resources (Kochaki et al., 1994). Sustainable agriculture contributes to the economic dynamism of environment and resource management to improve productivity and quality of life (Law, 2000). In the line with economy and production management, one can refer to the protection of the economic potential for agricultural utilization and improving the quality of life for farmers and society (Gold, 2007).

The second factor including environmental pollution, significant environmental damage is the result of improper use of certain inputs. Agricultural area has increased considerably with the loss of habitat and biodiversity, and is limited in providing environmental valuable services (MEA, 2005). The perception of local people in maintaining or environmental damage depends on their decisions about the actions and activities that are legally or illegally committed to doing it , and the extent to which they choose to oppose, support or ignore other malicious actions (Weaver & Lawton, 2008). Educational processes that increase environmental awareness to the community about important environmental issues, activities and decisions provides a vital key to success is the management of environmental issues (Bauman & Smyth, 2007). The local people and farmers' understanding of sustainable agriculture can be effective in reducing environmental hazards (Blaber et al., 2000; Hoare, 2002).

The third factor (Maintenance of soil fertility): Much attention has been paid to the maintenance of soil fertility for future generation, as a component of sustainable agriculture. In this regard, Enyong et al. (1999) showed that soil fertility increasing technologies (SFETs) for many years and being promoted in semi-arid tropics of West Africa (WASAT) had little success. Farmers are knowledgeable about the use of phosphate rock, plant residues and agricultural fertilizers, chemical fertilizers and crop rotation to confront declining soil fertility.

Their attitude and logic are influenced by the availability and use of land and labor policies, food security concerns, perceived benefits, contributing to sustainability and access to information. Some factors are beyond the farmers' control and the need to integrate effort of research, extension and the other governments to develop the use of soil fertility enhance technology in the area. One of the major challenges in conventional agriculture extension to be considered is the loss of soil fertility (Gold, 2007).

The fourth factor: The use of basic resource for production, efficient use of basic resources is an essential component of sustainable development to preserve these resources for future generations (Gold, 2007). Unsustainable use of water for irrigation causes salinization and water saturation and reduce share of domestic and industrial users, on the other hand, the development of mechanization in the production of food increased the use of fossil fuels (Stout, 1998).

The fifth factor involves in soil conservation. Studies suggest that using local people as an input for the design and optimum utilization of management programs for sustainable development is highly important, particularly in protected areas (Moriki et al. 1993; Agrawal, 2000; Papageorgiou and Vogiatzakis, 2006; Trakolis, 2001; Ghimire and Pimbert, 1997). They look at such areas as social spaces that cannot be considered apart from the humanitarian field. Sustainable agriculture causes protect from water, soil and plant and animal genetic resources (FAO, 1999).

The sixth factor: One of the problems with conventional agriculture is destroying the basic resources caused by improper use (Gold, 2007), which is referred to as a component of the sustainable agriculture (Earles, 2005).

As for the seventh factor, improving agricultural activities; use of pesticides, fertilizers and industrial waste disposal to reduce the quality of the environment as pollution sources are agricultural activities. Of course, there is a need and desire to get better information on local people to improve agricultural practices (Kleftoyanni et al. 2010). To achieve sustainable development, it is necessary to consider anything over the sustainability of agricultural infrastructure. Points that should be considered include the sustainability of agriculture, improvement of environmental quality due to economic dependencies, optimizing the utilization of non-renewable resources, protecting the economic potential for agricultural utilization, and improving the quality of life for farmers and society (Gold, 2007).

Correlation Analysis: The results of correlation analysis in Table 5 discloses that there is a significant relationship between perception towards sustainable agricultural and consumption of fertilizers.

Table 5: Correlations between factors of attitudes toward sustainable agriculture and fertilizer consumption

Factors and variables	Statistics	Urea	Ammonium nitrate	Ammonium sulfate	Phosphate	Manure
Economy and Production management	Coefficient	-0.070	0.069	0.142	0.002	0.144
	Significant	0.226	0.226	0.061	0.491	0.058
	Number	119	121	120	120	120
Environmental pollution	Coefficient	0.026	0.026	-0.036	-0.078	***0.206***
	Significant	0.386	0.385	0.344	0.194	0.010
	Number	124	126	125	125	125
The maintenance of soil fertility	Coefficient	-0.041	-0.007	0.080	0.096	0.070
	Significant	0.324	0.469	0.189	0.143	0.220
	Number	124	126	125	125	125
use of basic resource for production	Coefficient	-0.097	0.035	***0.185***	-0.040	***0.259***
	Significant	0.141	0.384	0.019	0.330	0.002
	Number	124	126	125	125	125
soil conservation	Coefficient	0.103	0.086	0.096	0.113	***0.179***
	Significant	0.126	0.167	0.143	0.104	0.022
	Number	125	127	126	126	126
Preserve and restore the resource base	Coefficient	0.016	-0.005	0.005	0.040	***0.222***
	Significant	0.430	0.467	0.478	0.330	0.006
	Number	126	128	127	127	127
Improve agriculture activities	Coefficient	***0.170***	***0.217***	0.123	0.006	-0.065
	Significant	0.030	0.008	0.086	0.254	0.235
	Number	123	125	124	124	124

Table 6 below shows that economy and production management does not have any significant correlation with the use of fertilizers. Environmental Pollution has positive and significant correlation with manure application; In other words, the more the farmers have favourable attitude towards environmental pollution, the more they will use manure. Using the basic material for the production shows a significant and positive correlation with ammonium sulfate and manure. As a result, the positive attitude of farmers for using basic resources for production will enhance both fertilizers consumption.

Attitude toward soil conservation had a significant and positive relationship with the use of manure. Preservation and restoration of basic material showed a positive and significant relationship with the use of manure. Improving agricultural activities also showed a significant and positive correlation with urea and ammonium nitrate fertilizers.

According to Table 5 above, it can be stated that there is a significant and positive relationship between the use of manure and environmental pollution, use of the basic material for production, soil conservation and the preservation and restoration of basic resources. Furthermore, there is a significant and positive relationship between the consumption of ammonium sulfate and urea with use the basic material for production. Consumption of phosphate and potash fertilizer has no significant relation with any of the variables.

The results and recommendations

Many farmers do not account for using chemical fertilizers or issues such as the causes of environmental degradation. More farmers are considering the application of modern agricultural technologies, as the main cause of agricultural development. Due to poverty, agricultural inefficiency, profiteering and Ignorance, there is a contradiction between attitudes and agricultural practices. The purpose of this study is to investigate the relationship between farmers' attitude toward sustainable agriculture properties and its relation to their consumption of fertilizers.

The following suggestions are provided based on the results of the survey:

Factor analysis was conducted to introduce seven factors; economy and Production management, environmental pollution, maintenance of soil fertility, the basic material for the production, soil conservation, preservation and restoration of basic resources, and improvement of agricultural activities as a component of sustainable agriculture. These factors should be considered necessary on the part of the Ministry of Agriculture and be used in developing programs related to sustainable agriculture. These cases can also be considered as specialized modules in providing training for public experts.

Significant relationship between environmental pollution with manure suggests the need for extending and developing the use of these fertilizers in agriculture; and it must be realized through the development of relevant training for the farmers and vendors. This can also be effective in providing vocational training to farmers and developing specialized modular about efficiency, and recommendation of bio and organic fertilizers consumption.

Soil conservation showed a significant and positive correlation with the consumption of manure, which is essential to provide educational programs empowering farmers towards soil conservation and farm management principles and techniques. This can prevent damage to agricultural soils, and, on the other hand, raise several issues such as territorial integrity or the integrity of the culture in the extensional program to protect the soil with manure consumption.

Preservation and restoration of basic resources also showed a significant and positive correlation with the consumption of manures in that mechanization and Agricultural engineering department should be able to carry out applied research and to adopt a policy to facilitate the provision of this equipment by farmers in order to be more active in this area as well as to control the efficiency of fertilizers by farmers.

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