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Factor Analyses the Management Skills in Development of Organic Agriculture in West Azerbaijan Province Farms, Iran

Soleiman Rasouliazar[1], Maryam Sadeghi[2], Nouraldin Shayesteh[3]
[1] *Assistant Professor of Agricultural Management, Mahabad Branch, Islamic Azad University, Mahabad, IRAN*
[2] *MSc Student of Agricultural Management, Mahabad Branch, Islamic Azad University, Mahabad, IRAN*
[3] *Professor of Plant Protection, Mahabad Branch, Islamic Azad University, Mahabad, IRAN*

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Abstract

Organic agriculture, sometimes called biological or ecological agriculture, combines traditional conservation-minded farming methods with modern farming technologies. The purpose of this research was to identify management skills in development of organic agriculture in West Azerbaijan Province, Iran. The target population of this research included all agricultural experts who work in West Azerbaijan Province. By using a Cochran formula a number of 200 agricultural experts selected as statistical sample. The research instrument was a structural questionnaire including close-ended questions which its validity was confirmed by using expert panel and reliability by Cranach's alpha test (α= 0.89). According to the results of the factor analysis, finding shows that five factors included the the skills of using methods and technologies of organic agriculture, the informing skills, the farming skills, the educational skills, the reduction of obstacles in cultivation involved 51.46 % of the total variance and played crucial roles in development of organic agriculture in the West Azerbaijan Province farms. Among these factors, the factor of using methods and technologies of organic agriculture involved 12.44% of the total variance and played a more important role in using the management skills in development of organic agriculture in West Azerbaijan province farms.

1. Introduction

Over the centuries, agriculture has changed very much and humans have been the most important factor of this change. Because of the population rate growth, humans' early view about the nature was replaced with a unilateral interaction and anti-nature point of view. In this way, fertilizers, pesticides, hormone products, entered the agriculture and with the aid of improved varieties, great changes occurred in the increase of the production of agricultural products to respond the increasing demand for food (Jafari et al., 2004). However, this increase in the production caused some problems for producers and consumers which need to be considered. Some of the problem the reduction in the variety of living creatures and the extinction of many animal and plant species, the compilation of harmful materials in the environment and the suffering of people from some illnesses. World Health Organization (WHO) studies in developed countries have demonstrated the annual incidence rates of acute pesticide poisoning in agricultural workers to be as much as 18.2 per 100 000 full time workers 3 and 7.4 per million among schoolchildren (Alarcon et al., 2005).

Organic agriculture, sometimes called biological or ecological agriculture, combines traditional conservation-minded farming methods with modern farming technologies. It emphasizes rotating crops, managing pests naturally, diversifying crops and livestock, and improving the soil with compost additions and animal and green manures (Ciccarese and Silli, 2016). Overall, organic farms tend to store more soil carbon, have better soil quality, and reduce soil erosion. Organic agriculture also creates less soil and water pollution and lower greenhouse gas emissions. And it's more energy efficient because it doesn't rely on synthetic fertilizers or pesticides. It is also associated with greater biodiversity of plants, animals, insects and microbes as well as genetic diversity. Biodiversity increases the

services that nature provides like pollination and improves the ability of farming systems to adapt to changing conditions (Reganold and Wachter, 2016).

Many farms in both developed and less-developed countries implement organic practices but are not certified organic. However, growers are increasingly turning to certified organic farming systems as a way to provide verification of production methods, decrease reliance on non-renewable resources, capture high-value markets and premium prices, and boost farm income. Although requirements vary slightly between certifying agencies, they promote soil quality, crop rotations, animal and plant diversity, biological processes, and animal welfare, while generally prohibiting irradiation, sewage sludge, and genetic engineering, the prophylactic use of antibiotics, and virtually all synthetic pesticides and fertilizers. Standards continue to evolve with changing technologies and socio-ecological conditions; some requirements are based on scientific evidence, whereas others are driven by ideology (Ciccarese and Silli, 2016). Organic agriculture has a history of being contentious and is considered by some as an inefficient approach to food production. Yet organic foods and beverages are a rapidly growing market segment in the global food industry (Reganold and Wachter, 2016).

In 2013 the amount of land used for organic farming across the world reached 37 million hectares (Mha) (FIBL-IFOAM, 2015). Also in more than 5 billion pounds of pesticides are sprayed onto crops each year. A recent report from Farm Worker Justice highlighted just how bad the pesticide exposure has become. Up to 20,000 farm workers are poisoned by pesticides each year, according to data from the US Environmental Protection Agency. The actual number is likely far higher, as many of the workers may not seek medical care or may be misdiagnosed if they do seek treatment. There is also no coordinated national incident reporting system to track such exposures. Despite this, pesticide exposures cause farm workers more chemical-related injuries and illnesses than any other workforce nationwide **(**Mercola, 2015). The effect was so bad that due to the concern about the environmental problems, the modern agriculture systems have been very much criticized (Rodriguez et al,. 2003). As a result of this, a global consensus has been created to develop a kind of agriculture which is able to increase the productivity, while it has the least harm to the environment (Bagheri et al., 2008). Therefore, offering some strategies like organic agriculture, human tried to stop this disastrous process. The organic agriculture is a system of agricultural products in which fertilizers, pesticides, hormones, and artificial chemical additives are not used. In this system, in order to enhance the fertility of the soil, control of the pests, illnesses, and weeds are done by non-chemical methods such as crop rotation, green manure, biologic fight (and other non-chemical controlling methods of the pests, illnesses, and weeds), compost are used (Jafari et al., 2007).

Nowadays the world has faced with the problem of population growth. One of the consequences of this problem is food shortage. The supply of the food of this growing population is related to the agriculture sector. The growth of population has caused uncontrolled entry of chemical fertilizers, pesticides, hormone products, and other dangerous factors to the environment so that this sector can respond the growing demand for food. However, this increase in the production has always had various environmental and social problems such as the pollution of water source, the continuation of the economic forces on the farmers, and lack of trust in the existence of appropriate markets. Thus over the recent decades, due to the growing worries about the food quality, food health, people's health, and the destruction of the natural resources, sustainable agriculture has been attended (Pouratashi and Shabanali Fami, 2009).

In West Azerbaijan Province due to having 887187 hectares of farmlands, has the noticeable rank of fifth in the country. In average, about 1000 tons of agricultural poisons are yearly used to poison these farmlands (Statistical yearbook of west Azerbaijan province, 2015). Considering that every year spring cultivation and in recent years, garden and vegetables (melon, watermelon, tomato, cucumber) widely cultivated personally and impersonally and everybody is trying to gain a huge benefit in a short time form the activities on their products, especially in rental farms, do not avoid using more of any materials, particularly, fertilizers and different types of chemical poisons. It can be argued that there are probably a few farmers who don't use the poisons because of the financial problems. They use them abundantly in spring and summer from ground and air in their gardens and farmlands. Most of the farmers do this without being aware of its bad effects on the environment and humans who try to stay healthy (Jafari et al., 2007).

Dinpanah and Akhavan (2014) investigated and analyzed the effective factors on the organic knowledge among greenhouse keepers of Varamin city. Their findings revealed that the organic agricultural knowledge of 13.3% of the respondents was low, 44.2% was average, and 42.5 % was high. Also, the ecologic state, social participation, and the visibility of the innovations of the organic agriculture elaborated 70.8% changes in the organic agriculture knowledge.

Moradi et al (2013) in a study entitled as the recognition of the necessities of applying the integrative pest management (IPM) in garden products from agricultural experts' viewpoints found that the requirements of applying integrative pest management are divided into five factors through factorial analysis. The factors were involved educational-extension, economic planning, policymaking, technical supervision and planning. These factors involve 66% of the total variance of the variables (Moradi and Najafabadi, 2013).

Rajabi et al (2013) conducted a study to investigate the factors of the acceptance of the organic agriculture products from consumers' point of view (a case study in Karaj township, Iran). The results of the study showed that people's knowledge and information about the organic products is almost average. Besides, people's point of view about organic products is average and favorable. Finally, using the factor analysis, four factors were recognized as the effective factors in the acceptance of the organic products. These factors were informing and educating, improving access, improving the qualities of the product, and providing the supportive facilities which involved 26.60%, 23.61%, 9.41% and 8.8 % of the total variance (Rajabi et al., 2013).

Eskandarzadeh et al (2013) carried out a research to study the importance of the essential management skills for applying precision agriculture in the process of sustainable agriculture development in west Azerbaijan province. The results of the factor analysis revealed that the accounting skills, farming skills, the skill of recognizing variability, the information-seeking skills, goal determining and decision making skills, economic skills of using agricultural machinery, technical skills of using agricultural machinery involved 61.27% of the essential skills for precision agriculture in the process of sustainable agriculture development. Among these, accounting skills comprised 23.91% of the total variance (Eskandarzadeh et al., 2013). Parvin (2011) found that factors such as education, training about pest management, access to regular information, extension services, and credits are the prerequisites for the farmers' understanding about the ecological dangers resulting from the wide use of the pesticides. Training in farms under the supervision of the extension along with credit facilities was effective in reducing the use of pesticides. The increase in the education of the farmers in IPM, the farmers' inputs, the local communities, and employment of the traditional agricultural operations, the fear resulted from the use of pesticides, the quality of the rice production, and safety improve the farmers' lives.

Ghadimi et al (2014) conducted a study to investigate the effective factors on the farmers' viewpoints toward organic agriculture. They found that most of the farmers (49%) in this study had a positive viewpoint to organic agriculture. The results of the comparison of the means showed that there were significant differences in the levels of one and five percent between the farmers' point of view toward organic and independent variables like education, participation in extension classes' related to organic agriculture and method of cultivation. Also the results of step-by-step multi-regression indicated that among the variables of the study, four variables (familiarity with organic agriculture and the negative consequences of the common agriculture, participation in extension classes related to organic agriculture, education, and the application of the methods and techniques of organic agriculture) comprised 42% of the variance changes in the farmers' viewpoint to organic agriculture (Ghadimi et al., 2014).

Rains et al (2011) conducted a study on the shift of the direction of technology to support the sustainable management methods in farms. They reported that although agricultural technologies have considerably increased the agricultural production, they have decreased the investment return and are against the environmental concerns. In current methods, intensive operations are conducted in farms. The common technologies and their uses such as product growing and management methods concentrate on monoculture systems which are dependent on chemical inputs fro favorable production. The amount of benefits in the common unstable methods is low or inaccessible and if a family is making a living in the farm, this method must be changes. Rains and his colleagues, through this introduction, offered an ecological approach on the basis of farm management which tries to decrease the dependence on chemical inputs through a better use of the various natural qualities within the agricultural systems. In this method, there is a need for changing directions in developing and using current and appearing technologies. Instances of these certificates in research programs and the development of pest management methods consider genetic engineering and precise agriculture necessary for providing more services of environment and based on the sustainable agriculture approach (Rains et al., 2011). Mahantesh and Singh (2009) stated that 41% of the farmers were aware of the dangers of using pesticides. The environmental awareness and the possibility of expansion of pest management strategy can be possible by biological pesticides and positive view toward organic agriculture (Mahantesh and Singh, 2009).

The purpose of the study was to investigate and analyze the management skills in development of

organic agriculture in West Azerbaijan Province farms.

2. Materials and methods

This study was a quantitative study from a philosophical point, an applied study in terms of goals, and descriptive-correlation in terms of method. Target population of the study consists of all agricultural experts in Agriculture-Jihad Organization in West Azerbaijan province that was 1900 staffs. The sampling of the target population was done on the 18 city of west Azerbaijan Province were randomly selected. By using a Cochran formula a number of 200 staff selected as statistical sample.

The research instrument was a structural questionnaire including close-ended questions which its validity was confirmed by using expert panel and reliability Cranach's alpha test (α= 0.89). The statistical method in the present study was descriptive statistics (mean, standard deviation, coefficient of variation, minimum, maximum, frequency, and frequency percentage) and in order to analysis and summarize the data, factor analysis were used. For analyze data the statistical software SPSS 18 was used.

3. Results and discussion:

3.1 The personal and professional characteristics of the experts

The description of the age of the sample of the study showed that the mean of the age of the participants was 34 years, and the maximum age was 55 and the minimum age was 24 years. The majority of the participants were men (73%). Regarding their job experience, the mean of the work experience of the participants was eight years. Most of the participants (37%), had the job experience of less than five years. Considering their educational level, there were 161 B.Sc, 36 M.Sc, and 1 PhD. 63% of the participants were gradates of field of agriculture and horticulture whose 75.4% had participated in extension and education courses in using pesticides. Moreover, regarding their relationship with the researchers of agriculture sector in using pesticides, the highest amount was 56% in high level, 34.5% in average level, and 5.5% in low level.

3.2 The factor analysis of the effective variables for management skills in development of organic agriculture in West Azerbaijan Province farms

One of the statistical methods for analyzing the data is the analysis of the factors. The main goal of using factor analysis is to reduce the value of the data and to determine the most important effective variables in the formation of the phenomena. For this reason, exploratory factor analysis method was used in this study to classify the variables and have a better understanding of them. Factor analysis method can be used to for different purposes. In the present study, the exploratory factor analysis with the view of data summarization was used (Zare Chahouki, 2011).

Table 1. The respondent's personal characteristics

The distribution of the subjects' educational group					
Group	Distribution	Percentage			
B.Sc.	161	81.3			
M.Sc.	36	18.2			
PhD	1	0.5			
The distribution regarding the subjects' relationship with the researchers of the agriculture sector					
Group	Distribution	Percentage			
Very low	3	1.5			
Low	8	4			
Average	70	34.4			
Much	88	44.4			
Very much	29	14.6			
The distribution concerned with the subjects' participation in educational- extension courses					
Group	Distribution	Percentage			
Yes	147	75.4			
No	48	24.6			
The distribution of the age groups of the subjects					
Group	Distribution	Percentage	Collective %	Mean	Variance
Less than 30 years	57	28.5	28.5		
31 to 40 years	111	55.5	84	34.45	5.50
More than 41 years	32	16	100		

In the present research, 65 items in management skills in using in development of organic agriculture in the farmlands of west Azerbaijan province were investigated. The aim was to determine a summary of the factors on the basis of the responses of the experts and reach a more precise understanding. In line with the factor analysis were employed in four phases as following:

The calculation of the correlation matrix: The first decision in using factor analysis is calculating the correlation matrix from all variables involved in the analysis (Kalantari, 2005). According to the results obtained, from the 65 variable 31 were removed from the analysis due to not having a meaningful correlation with other variables. Therefore 65 variables were reduced to 34 variables. In order for the suitability of the collected data, the statistical tests of KMO were used. Besides, to ensure about the suitability of factor analysis and to prove non-zero of the correlation matrix, Bratlet test was employed. The meaningfulness of Bartlet test in the level of 99% and the appropriate value of KMO index showed that the correlation matrix in the sample is not zero. Therefore, the act of finding factors is justifiable.

The extraction of the primary factors and the selection of the factors: The specific value of each factor is a portion of the total variance of the variables which is elaborated by that factor. The specific value is calculated by the sum of the squares of factorial loads related to all variables. Thus, the specific values show the discovery importance of the factors in relation to the variables. The low amount this value for a factor means that this factor has a minor role in the elaboration of the variance of the variables (Zare Chahouki, 2011).

One of the main issues in factor analysis is the determination of extractable factors. Although there isn't a precise basis for deciding on the number of the extracted factors, there are some rules which are used to make decisions about the number of the elicited factors. Table 2 shows the number of the extracted factors along with specific values of each of them, the variance percentage of each factor, and the cumulative percentage of the variance of the factors. The specific value indicates the portion of each factor from the total variance of the variables. The greater this value, the more importance and impact of the factor it shows.

The data presented in table 2 showed the effective management skills variables in in development of organic agriculture in west Azerbaijan province farms. According to the table, the set of the extracted factors, after rotation, indicated that three factors had capabilities to elaborate variances. The obtained factors are rotated through Varimax method, the first, second, third, fourth, and fifth factors will include 12.44, 10.60, 10.40, 9.72, and 8.20 percent of the variance, respectively, and in sum 51.46 percent of the total variance. The highest specific value is related to the first factor is about 6.09 and involves around 12.44 percent of the variance concerned with the effective factors in development of organic agriculture in west Azerbaijan province from the subjects' point of view.

The extraction of the final set through rotating the factors:

After determining the number of the factors, it is necessary to consider what variables each factor involves. In this study, Varimax method was used to rotate the factors. In order to interpret the factorial matrix in which each column shows one factor, the values of each factor, which indicate the factorial load of each variable to a factor, were investigated. The meaningfulness basis was determined 0.5 through SPSS software and the variables without meaningful factorial load were removed from the analysis and only the meaningful variables were interpreted. The position of the variables in the factors value with the relevant factor in accordance with the results obtained from the rotation presented in table 3.

The results revealed that 9 variables had load on the first factor, 7 variables on the second factor, 7 variables on the third factor, 7 variables on the fourth factor, and 5 variables on the fifth factor. According to the results of the study, five factors elaborated 51.46 percent of the variance of management skills in development of organic agriculture in west Azerbaijan province.

Naming the variables or inference of the conceptual sharing:

After the rotation of the factors, the conceptual inference should be done by assigning variables to factors, i.e. a common concept should be determined for each set of variables which belong to a factor so that they can be interpreted. According to the findings, the determined factors were named on the basis of the loaded variables on them (table 3).

As the data presented in the table show, these factors involve 51.46 percent of the total variance of the effective management skills variables in development of organic agriculture at the west Azerbaijan province farms. Also, 48.54 percent of the variance is related to the variables whose prediction was not feasible in this study.

Table 2. The extracted factors along with the specific value, variance percentage, cumulative percentage, and their variance

No.	Factors	Specific value	The percentage of the variance of the specific value	The cumulative distribution of the variance percentage
1	1st factor	6.09	12.44	12.44
2	2nd factor	5.19	10.6	23.05
3	3rd factor	5.09	10.4	33.45
4	4th factor	4.76	9.72	43.17
5	5th factor	3.99	8.20	51.46

Table 3. Factors and accompanying items related to development of organic agriculture coefficients

Factors	variables	coefficients
	making the lands fallow	0.50
The skills of using methods and technologies of organic agriculture	change in the time of cultivation and harvest	0.54
	animal grazing	0.50
	Mixed cultivation	0.55
	Biologic control	0.53
	Mulching	0.61
	Cutting and transplanting	0.69
	waterlogged soil	0.64
	using compost, livestock, and herbal compost, and household and industrial waste	0.77
	Access to the informing about the nutritional value of organic products,	0.57
	Publication and distribution of simple journals for making people aware of the organic products	0.54
The informing skills	The extension of the consumption of organic products	0.69
	The effects of the production of organic products on the environment	0.61
	Using the resistant types	0.53
	Ambiguity and discontinuity of the government's supports,	0.50
	Familiarity with the ways of leveling and drainage of precise farmlands	0.65
	Using protective tillage methods	0.56
The farming skills	Familiarity with the type of the crop for cultivation	0.55
	Familiarity with the ways of precise use of the amounts of the recommended fertilizers	0.53
	Familiarity with cultivation method and using appropriate amounts of seeds in the unit of level	0.65
	The recognition of how o use manure for supporting the soil	0.58
	Participation in extension courses to aware the nutritional value of organic products	0.67
The educational skills	The necessary operations for producing organic crops	0.62
	Crop sequence	0.50
	Releasing useful insects for controlling harmful pests	0.50
	Light plowing in winter for eliminating the seeds of pests,	0.64
	The cultivation of trap plants	0.58
	Using big vacuum cleaners for collecting pests	0.56
	The principles of organic agriculture are not sufficient by themselves	0.58
The reduction of obstacles in cultivation	The high wage of these technologies	0.77
	These technologies depend on the climatic conditions	0.62
	They are inefficient in biologic fight in some crops,	0.63
	The full control of pests is not provided in these technologies,	0.53

4. Discussion, Conclusion and Recommendations

Regarding the nature of the constituent variables such as (change in the time of cultivation and harvest, making the lands fallow, animal grazing, combined cultivation, biologic control, mulching, cutting and transplanting, waterlogged soil, and using compost, livestock, and herbal compost, and household and industrial waste), the first factor was called the factor of the skills of using methods and technologies of organic agriculture. This factor involved the highest percentage of the variance (12.44%). Organic agriculture has been attended as a type of sustainable agriculture and one of the strategies of reducing the environmental problems and a way to achieve the stable development of the agriculture. It has introduced methods and technologies in accordance with the principles of sustainable agriculture to decrease the environmental consequences of the common agriculture. The development of these methods and technologies is one of the important goals of agricultural policies around the world. This was in line with the opinions of Batte (2008); Ghadimi et al. (2011) and Rains et al. (2011).

Considering the nature of the constituent variables such as (informing about the nutritional value of organic products, the publication and distribution of simple journals for making people aware of the organic products, the effects of the production of organic products on the environment, using the resistant types, ambiguity and discontinuity of the government's supports, the extension of the consumption of organic products), the second factor, which involved 10.60 percent of the variance, was named informing factor. Since one of the leading and effective factors in the production of these products is the taste and interest of the consumers, it requires their basic and necessary awareness about this issue. Thus, along with creating the culture in the level of production systems, the awareness of the consumers should be improved and increased through the media. The findings of this part of the study were in line with the findings of Rajabi et al. (2013) and Pouratashi et al. (2009).

Regarding the nature of the constituent variables like (familiarity with the ways of leveling and drainage of precise farmlands, the recognition of how to use the recommended fertilizers accurately, the familiarity with modern methods of irrigation in precise agriculture, familiarity with cultivation methods, using appropriate amounts of seeds in the unit of level, and using protective tillage methods), the third factor involving 10.40 percent of the variance was named as the skills of factorial agriculture. One of the most important sources which have a considerable share in the economic development and achieving the developmental goals is the human factor. Providing appropriate context for the extension of knowledge, insight, and technical skills has gained attention of managers and planners. Although planning in formal education is of great importance, it is necessary to update and improve the knowledge of the adults who are currently the active workforce of the society. Considering the vital role of agriculture in the stable development with regard to the noticeable capabilities of the sources and factors of production, the necessity of planning for production and productivity is inevitable. Therefore, in order to enhance the knowledge, skills, and technical-professional qualifications of the beneficiaries of agriculture; or in other words, to develop their management abilities in line with the goals of national development perspective, paying attention to continuous education in accordance with their individual and asocial characteristics is absolutely necessary. The results of this section of the study were in agreement with the findings of Eskandarzadeh et al. (2013); Bordbar (2009); and Onyuma et al. (2006).

Considering the nature of the constituent variables such as (the nutritional value of organic products, using big vacuum cleaners for collecting pests, crop sequence, releasing useful insects for controlling harmful pests, light plowing in winter for eliminating the seeds of pests, the cultivation of trap plants, the necessary agricultural operations for the production of organic products), the fourth factor involving 9.72 percent of the variance was named the educational skill. One of the important issues for farmers is education since the number of studies in the field of agriculture is increasing and the technologies and information is constantly improving. Educating and making farmers aware of the new developments in agriculture t improve their agricultural methods is of great significance so that they can develop their industry through today's up-to-date equipments. In this regard, getting help from specialists and advisors to understand the conditions and difficulties of the work is important. Also, visiting farms as a pattern to enter the farmers to the fields of policy and management can lead to success. This has already been mentioned in the studies of Pour Atashi and Shaban Ali Fami (2009); Ghadimi et al. (2014); Rajabi et al. (2013) and Parvin (2011).

Regarding the nature of the constituent variables such as (these technologies depend on the climatic conditions, the high wage of these technologies, the full control of pests is not provided in these technologies, they are inefficient in biologic fight in some crops, the principles of organic agriculture are not sufficient by themselves), the fifth

factor involving 8.20 percent of the variance was called the obstacles in cultivation. Regarding the high potential of producing healthy crops, our country can have a desirable position in domestic and international markets. This requires appropriate policies by the government. In this regard, the government can reduce the obstacles to ease the movement toward stable systems. Achieving this is possible by overall contribution of different sections such as beneficiaries of agriculture sector, governmental institutes, and private institutions. The findings of this part of the study were in line with the findings of Haji Maleki et al. (2012) and Eskandarzadeh et al. (2013).

Considering the existence of high potentials of producing healthy crops in the country, the essential infrastructures for cultivating organic products in the country must be created. Moreover, in order to prevent the exit of organic products from the country, in addition to creating a clear mechanism in this section, supplementary regulations for import, export, and quarantine of organic products must be legislated. This requires the government's appropriate policies in this regard. In this regard, the government can reduce the obstacles to ease the movement toward stable systems. Achieving this is possible by overall contribution of different sections such as beneficiaries of agriculture sector, governmental institutes, and private institutions.

Finally, regarding the findings of the present study about the effective factors in development of organic agriculture in agriculture sector, the following suggestions were offered:

1. Considering the results of the factor analysis, the factor using the methods and technologies of organic agriculture is regarded as the most important factor. Thus, the creation of the essential intellectual bases for the acceptance of the technologies of integrative pest management in upper levels among farmers by implementing educational and practical capacity building for farmers to improve their knowledge, insight, and scientific abilities is suggested.

2. Paying attention to the provision of sustainable agriculture inputs like organic fertilizers along with extension and educational activities which facilitates the acceptance process.

3. Creating the essential infrastructures for marketing of organic products.

4. Changing the view and understanding the necessity for using organic agriculture methods and also training skilled and competent workforce for offering better integrative pest management methods.

5. The mechanization of agricultural units and training expert forces in this regard will increase the coefficient of productivity of the sources and institutions' equipments as well as the quality and quantity of the products.

6. More attention and concentration on extension and educational activities in the area as an information source in the field of agriculture.

7. Considering the role of the innovations of organic agriculture, it is suggested that the activities and education should be directed to a direction in which the beneficiaries of can observe

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تحلیل عاملی مهارتهای مدیریتی در توسعه کشاورزی ارگانیک در استان آذربایجان غربی، ایران

سلیمان رسولی آذر[۱]، مریم صادقی[۲] و نورالدین شایسته[۳]

[۱] استادیار گروه مدیریت کشاورزی، واحد مهاباد، دانشگاه آزاد اسلامی، مهاباد، ایران
[۲] دانشجوی کارشناسی ارشدمدیریت کشاورزی، واحد مهاباد، دانشگاه آزاد اسلامی، مهاباد، ایران
[۳] استاد گروه گیاه‌پزشکی، واحد مهاباد، دانشگاه آزاد اسلامی، مهاباد، ایران

چکیده

کشاورزی ارگانیک که گاهی اوقات کشاورزی زیستی و یا کشاورزی بوم‌شناختی نامیده می‌شود، ترکیبی از روش‌های سنتی کشاورزی حفاظتی با فناوری‌های نوین زراعی است. هدف از این تحقیق شناسایی مهارتهای مدیریتی در توسعه کشاورزی ارگانیک در استان آذربایجان غربی بود. جامعه آماری تحقیق کارشناسان کشاورزی در سطح استان در نظر گرفته شد که با استفاده از فرمول کوکران ۲۰۰ نفر به عنوان نمونه آماری تعیین شد. ابزار تحقیق پرسشنامه ساختاریافته شامل سؤال‌های بسته که روایی آن از طریق پانل متخصصان و پایایی آن از طریق ضریب کرونباخ آلفا محاسبه شد. بر اساس نتایج حاصل از تحلیل عاملی، شش عامل شامل مهارت در به‌کارگیری فناوری‌ها و روش‌های کشاورزی ارگانیک، مهارت‌های اطلاع‌یابی، مهارت‌های زراعی، مهارت‌های آموزشی و مهارت‌های کاهش موانع تولید، ۵۱/۴۶ درصد مجموع واریانس مهارت‌های مؤثر بر توسعه کشاورزی ارگانیک را تبیین می‌کند. در بین این عوامل، عامل مهارت در به‌کارگیری فناوری‌ها و روش‌های کشاورزی ارگانیک به تنهایی ۱۲/۴۴ درصد واریانس را تبیین می‌کند و از مهمترین عوامل است.

کلمات کلیدی: تحلیل عاملی، توسعه، مهارت‌های مدیریت، کشاورزی ارگانیک، استان آذربایجان غربی