

The Supporting Role of the Agricultural Extension Services (AES) and Implications for Agricultural Extension Instructors (AEIs) as Perceived by Farmers in Esfahan, Iran*

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Abstract

This study is part of a bigger project aimed at designing a competency profile for agricultural extension instructors (AEIs). The present study was designed to investigate farmers' perceptions of the kinds of support that the Agricultural Extension Services (AES) organization in Iran has provided so far, and of the kinds of support that should be provided by AES in the future. 102 farmers, who had already attended AES extension courses, were selected from 17 townships in the province of Esfahan. The farmers completed a questionnaire during a personal interview. The two most-used information sources by farmers to get informed about AES programs were governmental extension agents and their own experiences. The farmers claimed that AES has already supported them to some extent in the past but has focused on animal husbandry and veterinary, agricultural inputs and enhancement of the fertility and size of the farms. For the future, they expressed the need for greater support from AES, most importantly in relation to making an agricultural career more satisfactory for them and to reducing the risk, labor and severity of farming. The farmers were especially positive about the short-term extension courses offered in different disciplines over the last ten years and they regarded these programs as useful.

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Keywords

Agricultural extension, information sources, farmer perceptions, agricultural extension instructors, Iran

Introduction

The major roles of agricultural extension are transferring information from the global knowledge base and from local research to farmers, enabling them to clarify their own goals and possibilities, helping them to make decisions through which they can realize their own goals, supporting them to learn from their own experience, and stimulating desirable agricultural development (Van den Ban & Howkins, 1996). According to Nagel (1998), extension may be considered as vocational education of farmers, but more important is the development of managerial and organizational competencies that will enable farmers to effectively solve their own problems. Thus, human resource development should be aimed at developing critical competencies of farmers. Extension clients know what they need, they can evaluate the appropriateness of information they receive from Agricultural Extension Services (AES) and they can decide whether they will participate in future extension programs or not. If they believe in the benefits of those programs, they will actively seek further assistance. An important task of any extension system is to promote human resource development of underprivileged groups with less access to formal and vocational education, e.g. women farmers, rural youth, and small farmers in remote areas. In this respect, various alternative extension approaches are possible such as public versus private, government versus non-government, top-down (bureaucratic) versus bottom-up (participatory), profit versus non-profit, free versus cost recovery, general versus sector, multipurpose versus single purpose, and technology-driven versus need-oriented.

In general, AES organizations in different countries pursue the overall goals of technology transfer and human resource development, although the focus differs. Several extension experts have introduced different approaches (often used in combination with other approaches) for implementing agricultural extension and supporting farmers. These approaches can be characterized as ministry-based or general, commodity-based, university-based, training and visit (T&V), integrated or project-based, animation rural, client-based and client-controlled, extension as a commercial service, participatory or privatized extension (see Baxter, Slade & Howell, 1989; Benor & Harrison, 1977; Nagel et al., 1992; Rauch, 1993; Umali & Schwartz, 1994). In Iran and many other developing countries a combined approach is used with a focus on the ministry-based extension system.

Additionally, to materialize the adopted extension approach, different extension methods are used. The following extension methods can be discerned: individual methods (individual farm visits, telephone calls, postal letters, emails, etc.), group methods (group discussion sessions, extension courses, method and result demonstrations, etc.) and mass media (TV, radio, field days, etc.) (Campbell & Barker, 1998; Prawl, Medlin & Gross, 1984; Rathore et al., 2001; Swanson, 1984). In the present study, these methods are referred to as information sources of farmers and the importance of these information sources is examined. Other researchers (e.g. Errington, 1986; Ferreira, 1997; Gasson, 1973) proposed different criteria to classify information sources, e.g. internal and external (depending on the origin), direct observation, verbal and written information (depending on the medium), and recorded numerical data, comments from people and the decision maker's own past experience (depending on the source).

It is clear that extension does not only involve delivering information to farmers but should also attempt to make farmers creative, self-confident and competent enough to overcome

their own problems and dilemmas (Sulaiman & Hall, 2003). To meet this intention, agricultural extension specialists need to prioritize their interventions, fine-tune their methodological approaches, and select efficient support strategies to serve the needs of farmers within specific environmental and socio-economic settings (Patanothai 1997). Leeuwis and Van den Ban (2004) also stressed these trends and discussed the need to forge linkages and form networks within and across different organizations and AESs, to recognize and aim for win-win situations for all players and actors involved, and to be aware of opportunities for change. Moreover, national and international developments with respect to the demand for food, competition, research and innovation, employment opportunities, governmental support for agricultural products and so on have many implications for agricultural extension itself (Van den Ban, 1996). Extension specialists such as Rivera and Zijp (2002) have severely criticized traditional AES and described it as a Jurassic Park with limited value for spectators, where its protected dinosaur-like approaches and practices are kept alive as clumsy beasts that are woefully misaligned with today's realities, having no chance of survival without adequate protection. They then present 18 case studies of contracting for agricultural extension delivery as an emerging form of AES. Ison and Russell (2000) mentioned the need to look at the management of the relationship between rural communities and AES and particularly research and development (R&D) agencies.

In Iran, AES officially started more than 50 years ago, following the basic philosophy for the existence of extension services, and from that time significant efforts have been made to make farmers more productive, healthy and prosperous through applying appropriate extension programs. Despite the attempts by AES to alleviate rural poverty and support farmers to improve their competencies in different aspects of their job and also to be more responsible with environmental and natural resources, there are indications that the efficiency and the quality of the support provided by AES have not been enough to serve the farmers' needs.

Theoretical Framework

As mentioned above, AES have been struggling to support farmers by applying various strategies and approaches in countries throughout the world. Several significant positive results in agricultural rural development have been achieved, as shown by evaluation studies. Nevertheless, serious points of criticism have been raised by many researchers referring to the unsustainability and inefficacy of AES (Sofranko, 1988). Many reasons have been mentioned for the ineffectiveness of AES such as: financial shortages, the frequent encumbrance of extension agents with public duties beyond those related to knowledge transfer, lack of linkage between research and extension, attention to big-farmers instead of small-farmers, large scale and complexity of extension operations, weak political commitment and support, non-participatory approaches, shortage of training, incentives and inadequate competencies of extension employees, low percentage of farmers who have contact with AES personnel, and difficulties in access to poor farmers (Anderson & Feder, 2004; Baliscan & Pernia, 2002; Bunch, 2000; Ozcatalbas, Brumfield, & Ozcan, 2004; Nitsch, 1988; Sofranko, 1988).

Studies in Iran also showed the above-mentioned problems. For instance, Kalantari (1995) mentioned the following problems to be taken into account by AES in Iran if they are to be effective: the small size of agricultural lands and production scales, the restrictive macro policies in the agricultural sector, financial difficulties of the majority of the farmers, the need for greater funds investment in the infrastructure, low quality of products, insufficient technical skills of farmers, and the inefficiency of public services in promoting agricultural extension activities. In addition, Chizari, Lashkarara and Lindner (2003) reported that farmers face limited

financial returns, lack of knowledge of sustainable agricultural principles and methods (also lack of knowledge of extension agents), low levels of education, governmental rules and regulations, and problems with soil erosion and lack of water.

Malek-Mohammadi (1989) examined the role of AES in agricultural development in Iran. Respondents in his study were experts, extension agents, and specialists who were selected based on their level of formal education, length of experience and who were known as active and creative agents. According to his findings, the influence of AES on agricultural development still is relatively high although the agricultural extension system is not very progressive. In this respect, Karbasioun and Mulder (2004b) and Karbasioun, Mirzaei and Mulder (2005) showed that AES in Iran is suffering from malfunctions in the area of human resource management and development.

Numerous extension programs have been provided to farmers and land users by the Ministry of Agriculture, in several cases in co-operation with other organizations such as the Red Cross, national youth organizations, etc. Despite the fact that an integrated evaluation system has been connected to the implementation of these programs, the evaluation results have not yet resulted in significant changes of the AES programs (Karbasioun, Mirzaei & Mulder, 2005). Many other researchers have also focused on the aims and roles of AES in the light of agricultural development of Iran and have reported similar findings (see also Agasizadeh & Shahbazi, 1995; Beygi, Zarafshani & Chizari, 2000; Chizari, Karbasioun & Lindner, 1998; Chizari & Mirikhoozani, 1995; Darvishi, 2003; Hejazi, 1989; Heidari, 2000; Karami, 2001; Karami, 1982; Karami, 1995; Karbasioun & Chizari, 2004; Lotfi, 2004; Ministry of Jihad-e-Keshavarzi, 2002; Najafi, 1991; Pezeshki-Raad, Aghai, & Ukaga, 2001; Pezeshki-Raad, 1993; Pezeshki-Raad & Aghai, 2002; Pezeshki-Raad, Aghai & Ukaga, 2001; Zamani, 2000; Zarafshani, 2002). Most of these studies, however, have concentrated on the support provided by AES to farmers in the past and not on the support that should be provided in the future.

Purpose and Objectives

The study described in this article built upon the findings of a pilot study that revealed that farmers had serious difficulties in coping with the negative changes and problems that happened to their farm. Most of the times, they had to overcome these changes and problems just by relying on themselves, relatives, and friends and they were not adequately supported by AES (Karbasioun & Mulder, 2004a).

The current study was aimed at exploring the kinds of support that AES has provided to farmers in the past and the kinds of support that AES is expected to provide in the future (the forthcoming five years) to empower farmers in their farming activities. In this respect, the perceptions of farmers as the audience of AES took a central position. Farmers' information sources that they used to get informed about AES programs and farmers' perceptions of the usefulness of recent AES programs carried out by the Ministry of Agriculture in their region were examined as well. Moreover, the relations between farmers' personal characteristics and their information sources and preferred kinds of AES support were explored. Implications for competencies of agricultural extension instructors (AEIs), who are supposed to support farmers on behalf of AES, are discussed. The current study is part of a bigger research project aimed at designing a job competency profile for AEIs in Iran.

Methods

In this study, the farmers completed a questionnaire during a personal interview. The first version of the questionnaire (with open-ended questions) was tested in a pilot study. As part of this pilot study, 27 interviews were held with farmers in two townships in the province of Esfahan. Based on the results of the pilot study, a new version of the questionnaire with fixed answer categories was constructed. The validity of the new questionnaire was judged by 4 professors and other academic staff members of Wageningen University and 9 agricultural experts from Iran (Ministry of Agriculture and Ministry of Research, Science and Technology). In order to test the reliability of the new version of the questionnaire, a second pilot study with a group of 22 farmers (comparable with the subjects of the present study) was carried out. Based on the judgments of the experts and the reliability test, the questionnaire was revised again where necessary.

The structure of the final questionnaire was as follows (number of questions for each topic is mentioned between brackets): demographic profile of the farmers (8); products of the farm (7); information about AES programs (1); information sources regarding AES programs (13); kinds of support already provided by AES (39); kinds of support expected to be provided by AES (39); perceptions of the usefulness of recent AES programs (9). The final questionnaire included open and closed (using a 5-point Likert scale) questions.

In the current study, 102 farmers were selected who had participated in the extension training courses offered by AES in the province of Esfahan during the year 2004. The reason for choosing farmers who had been participants in AES courses was that these farmers were most likely to be able to compare previous kinds of support with expected kinds of support (because of the fact that they had already received support through the AES courses). They are also more able to compare AES courses with other extension programs held in their villages. Because of the great diversity of AES programs, which encompass different agricultural contexts and deal with various domains, a select stratified sampling method was applied to cover all different areas. In each township (see Table 2), farmers from different categories such as animal keepers, crop growers, rangeland users, fruit producers, etc. or mixed categories were selected. In addition, it was ensured that farmers with diverse personal and farm characteristics (see Table 1) were included in this study.

As mentioned above, the questionnaire was completed by the farmers during a personal interview. The interviews took place in the period from February till April 2005 in the farmers' villages (by visiting their farms or their homes). Since the educational level of the majority of the farmers was low, experienced experts were selected and trained to interview the farmers. Inasmuch as farmers were busy with their farming activities, suitable interview times were appointed by getting help from rural council members. Each interview lasted one to one and a half hours. During the interview, simplifications and explanations were given by the interviewers in order to prevent farmers' misunderstanding. For data analysis, descriptive (mean, standard deviation, percentage, frequency) and inferential statistics (Cronbach's Alpha, Kendal Tau, Kruscal Wallis, and F-tests) were used.

Results

The demographic profile of the farmers who participated in this study is described in Table 1. As can be seen in Table 1, 43.6% of the farmers only went to primary school or were uneducated, 83% of them were males, 86% were married and almost 60% of the farmers were older than 40 years of age. A considerable percentage of the farmers (43.6 %) had between 1 to 5 hectares of land under cultivation. Additionally, around 80% of the farmers had personal lands and about the

same percentage did not have any dry-land. These personal characteristics of the farmers were very similar to farmers' characteristics in previous studies (see Chizari, Karbasioun & Lindner, 1998; Karbasioun & Chizari, 2004; Karbasioun & Mulder, 2004a; Karbasioun, Mirzaei & Mulder, 2005).

Table 1
Demographic Profile of the Participating Farmers

Variables	<i>Freq</i>	<i>Perc</i>	<i>Cum Perc</i>
Level of education			
Uneducated	4	4.0	4.0
Primary school	40	39.6	43.6
Secondary school	22	21.8	65.3
High school	5	5.0	70.3
Graduate from high school	21	20.8	91.1
Associate and Bachelor	9	8.9	100.0
<i>n</i>	101	99.0	
Gender			
Male	83	83.0	83.0
Female	17	17.0	100.0
<i>n</i>	100	98.0	
Marital status			
Single	14	13.9	13.9
Married	87	86.1	100.0
<i>n</i>	101	99.0	
Age (years)			
18-30	27	26.5	26.5
31-40	16	15.7	42.2
41-50	26	25.4	67.6
50-80	33	32.4	100.0
<i>n</i>	102	100.0	
Irrigated land size (hectares)			
Smaller than 1	19	20.2	20.2
1-5	41	43.6	63.8
5-10	14	14.9	78.7
Bigger than 10	20	21.3	100.0
<i>n</i>	94	92.2	
Dry-land ownership (hectares)			
Yes	18	20.2	20.2
No	71	79.8	100.0
<i>n</i>	89	87.3	
Kind of land ownership			
Personal	81	81.8	81.8
Partly personal and partly not personal	12	12.1	93.9
Not personal	6	6.1	100.0
<i>n</i>	99	97.1	

In sum, 17 (nearly all) townships of the province of Esfahan were selected for this study (see Table 2). The numbers of farmers from each township varied because of the size of each township and the number of farmers in each township.

Table 2
Distribution of the Farmers over the Various Townships

Township	<i>Freq</i>	<i>Perc</i>	<i>Cum Perc</i>
1. Esfahan	18	17.6	17.6
2. Khomeini Shahr	5	4.9	22.5
3. Shareza	6	5.9	28.4
4. Tiran-va-Karvan	3	2.9	31.4
5. Natanz	5	4.9	36.3
6. Fereidan	7	6.9	43.1
7. Falavarjan	4	3.9	47.1
8. Lenjan	2	2.0	49.0
9. Dehagan	7	6.9	55.9
10. Daran	5	4.9	60.8
11. Khansar	9	8.8	69.6
12. Semirom	10	9.8	79.4
13. Borkhar-va-Meime	6	5.9	85.3
14. Mobarake	5	4.9	90.2
15. Naein	5	4.9	95.1
16. Chadegan	1	1.0	96.1
17. Najaf Abad	4	3.9	100.0
<i>n</i>	102	100.0	

A large majority of the farmers (87%) was involved in crop production, 57% in domestic animals, 48% in fruits and orchards and 20% in vegetables (see Table 3; combinations of products were possible). Flowers, fish and handcrafts were not very common as products.

Table 3
Distribution of the Farmers in Terms of Products

Kind of product	<i>Freq</i>	<i>Perc</i>
1. Crops	88	87
2. Domestic animals	58	57
3. Fruits and orchards	49	48
4. Vegetables	21	20
5. Handcrafts and artifacts	6	6
6. Fish	3	3
7. Ornamental flowers	0	0

Table 4 shows that about 80 percent of the selected farmers has usually or always been informed about AES programs (M=4.0; SD= 0.9). Only 6.2% of the respondents reported that they have seldom or never been informed about AES programs.

Table 4

Distribution of the Farmers' Perceptions of the Extent to Which They Have Been Informed about the AES Programs Carried Out by the Ministry of Agriculture

Response	Freq	Perc	Cum Perc
Not at all (1)	1	1.0	1.0
Seldom (2)	5	5.2	6.2
Sometimes (3)	13	13.4	19.6
Usually (4)	50	51.5	71.1
Always (5)	28	28.9	100.0
<i>n</i>	97	95.1	

The farmers were also questioned about the information sources they used to get informed about AES programs in their area. As Table 5 indicates, the two most important information sources according to the farmers were governmental extension agents and their own experiences. Other information sources (items 3 to 13) were less important for the farmers. In this respect, research institutes and universities and (non-) governmental financial experts were perceived as the least important information sources by the farmers.

Table 5

Farmers' Perceptions of the Importance of Various Information Sources on AES Programs

Information source	<i>n</i>	<i>M</i> ¹	<i>SD</i>
1. Governmental extension agents	101	3.1	1.0
2. Own experiences	101	2.6	0.9
3. Other farmers (friends, mates, neighbors, etc.)	100	1.4	1.1
4. Mass Media (TV, radio, newspapers, etc.)	100	1.3	1.2
5. Non-governmental extension agents	99	1.3	1.1
6. Supplier companies	100	0.7	1.0
7. Product buyers	100	0.6	1.0
8. Contract workers	97	0.6	0.9
9. Farmer's employees and workers	99	0.6	0.9
10. Agricultural bank	100	0.6	1.0
11. Research institutes and universities	101	0.4	0.9
12. Financial experts (governmental)	101	0.3	0.8
13. Non-governmental financial experts	101	0.2	0.6

¹ Note: scale: 0= not at all; 1= seldom; 2= sometimes; 3= usually; 4= always

Additionally, possible relationships between farmers' personal characteristics and their information sources were examined (see Table 6). Older farmers considered mass media, supplier companies, contract workers, research institutes and universities and governmental financial experts as less important than younger farmers. Educated farmers considered such information sources as more important than less educated farmers. Moreover, a significant negative relationship between farmers' irrigated land size and perceived importance of governmental financial experts ($K_t = -.21$, $p \leq 0.05$; $n = 93$) was found.

Table 6

Correlations between Perceived Importance of Different Information Sources and Farmers' Age and Educational Level

Information source	Age		Educational level	
	<i>Kt</i>	<i>n</i>	<i>Kt</i>	<i>n</i>
1. Mass media (TV, radio, etc.)	-.23*	99	.36*	100
2. Supplier companies	-.25*	99	.29*	100
3. Product buyers			.22*	100
4. Contract workers	-.21*	96	.19*	97
5. Farmer's employees and workers			.17*	99
6. Research institutes and universities	-.26*	100	.37*	101
7. Financial experts (governmental)	-.16*	100	.29*	100

Note: *Kt*= Kendal tau correlation test; * $p \leq 0.05$

The kinds of support farmers have received from AES during the past years and the kinds of support that farmers expect from AES in the future were examined through 2 sets of 39 questions covering various aspects of the farmers' work. Using Cronbach's alpha reliability test, the questions were clustered into 10 categories (see Table 7). To examine the gap between past and future supports, mean discrepancy scores were calculated (column D). In general, the farmers claimed that AES has supported them only a little or moderately in the past. They mentioned that AES has focused to some extent on animal husbandry and veterinary, agricultural inputs and enhancement of the fertility and size of the farms. According to the farmers, AES has paid the least attention to improving the marketability of agricultural and animal products and to initiating small cottage industries and manufactures near the farm. With respect to farmers' expectations from AES in the future, in general, they stressed that much support will be needed. According to the farmers, the most important kinds of future support are related to making an agricultural career more satisfactory for farmers and to reducing the risk, labor and severity of farming. The least important kinds of future support are related to initiating small cottage industries and manufactures near the farm and to doing animal husbandry and veterinary properly. The discrepancies between the means for future and past supports show that "making an agricultural career more satisfactory for farmers", "reducing the risk, labor and severity of farming" and "improving the marketability of agricultural and animal products" are the kinds of support that are relatively more important for farmers in the future.

Table 7

Farmers' Perceptions of the Kinds of AES Support Provided in the Past and the Kinds of Support that Should be Provided by AES in the Future

Kinds of support provided by AES (in the past)	Q^1	α^2	<i>n</i>	M^3	D^4	<i>SD</i>
1. Doing animal husbandry and veterinary properly	2	0.94	62	2.0	-	1.1
2. Using agricultural inputs in the farm appropriately	8	0.86	53	1.9	-	0.7

3. Increasing yield through enhancement of the fertility and size of the farms	3	0.72	88	1.9	-	0.8
4. Improving the socialization process of farmers	14	0.93	54	1.8	-	0.7
5. Making an agricultural career more satisfactory for farmers	1	—	98	1.7	-	1.0
6. Helping farmers to apply new technology in the farm	1	—	94	1.7	-	0.8
7. Implementing sustainable agriculture	1	—	97	1.6	-	0.8
8. Reducing the risk, labor and severity of farming	2	0.76	95	1.6	-	0.8
9. Improving the marketability of agricultural and animal products	6	0.81	70	1.4	-	0.6
10. Initiating small cottage industries and manufactures near the farm	1	—	70	1.1	-	0.9
Kinds of support to be provided by AES (in the future)	<i>Q¹</i>	<i>α²</i>	<i>n</i>	<i>M³</i>	<i>D⁴</i>	<i>SD</i>
1. Making an agricultural career more satisfactory for farmers	1	—	95	3.5	1.8	0.7
2. Reducing the risk, labor and severity of farming	2	0.71	92	3.4	1.8	0.6
3. Implementing sustainable agriculture	1	—	96	3.3	1.7	0.9
4. Helping farmers to apply new technology in the farm	1	—	96	3.3	1.6	0.9
5. Increasing yield through enhancement of the fertility and size of the farms	3	0.74	95	3.3	1.4	0.9
6. Improving the socialization process of farmers	14	0.91	65	3.2	1.4	0.6
7. Improving the marketability of agricultural and animal products	6	0.85	80	3.2	1.8	0.7
8. Using agricultural inputs in the farm appropriately	8	0.78	76	3.2	1.3	0.7
9. Initiating small cottage industries and manufactures near the farm	1	—	84	2.6	1.5	1.2
10. Doing animal husbandry and veterinary properly	2	0.99	84	2.4	0.4	1.8

Note: ¹: number of questions; ²: Cronbach alpha; ³: scale: 0=nothing; 1=a little; 2=moderately; 3=much; 4=very much ⁴: discrepancy of means (kinds of AES support in the future and in the past)

Relationships between farmers' personal characteristics and the kinds of support they expect from AES in the future were examined as well (see Table 8). Older farmers appeared to need more future support to make their career satisfactory than younger farmers. They expressed less interest in initiating small industries near the farm. Educated farmers expected more future AES support than less educated farmers when it concerned implementation of sustainable agriculture, improving their socialization process and improving the marketability of agricultural and animal products. Finally, farmers who possessed bigger irrigated lands were more interested in receiving help in using agricultural inputs in the farm ($Kt = .23$, $p \leq 0.05$; $n = 68$).

Table 8

Correlations between Kinds of Support Expected from AES in the Future and Farmers' Age and Educational Level

Kinds of support to be provided by AES in the future	Age		Educational level	
	<i>Kt</i>	<i>n</i>	<i>Kt</i>	<i>n</i>
1. Making an agricultural career more satisfactory for farmers	.19*	94		
2. Implementing sustainable agriculture			.33*	79
3. Improving the socialization process of farmers			.25*	64
4. Improving the marketability of agricultural and animal products			.30*	95
5. Initiating small cottage industries and manufactures near the farm	-.19*	83		

Note: *Kt*= Kendal tau correlation test; * $p \leq 0.05$

Finally, farmers' perceptions of the usefulness of 9 recent AES programs (carried out by the Ministry of Agriculture) in their region were examined (see Table 9). The farmers were generally satisfied with the short-term extension courses offered in different disciplines over the last ten years and they regarded these programs as useful. They were moderately positive about the role of extension centers in delivering agricultural inputs, key farmers, research-extension common farms, and the policy of offering awards to rural models. On the other hand, according to the farmers, constructional army and construction (Basij) groups did not have a significant added value (many farmers were not even familiar with these extension programs as illustrated by the number of respondents). Finally, the farmers expressed that rural Islamic councils and rural (4H) youth clubs were hardly useful for them.

To examine possible relationships between farmers' personal characteristics and their perceptions of the usefulness of AES programs, the 9 items in the table were recoded into three main levels of satisfaction with extension programs (low, moderate and high); the item scores were combined into one new variable (satisfaction with extension programs; $\alpha=0.72$). Then, a Kruskal Wallis test for nominal and ordinal variables (gender, land size, educational level, etc.) and an F test (ANOVA one-way) for interval variables (age) were carried out. No significant differences were found between different farmer groups with respect to the level of satisfaction with AES programs.

Table 9

Farmers' Perceptions of the Usefulness of Recent AES Programs

Extension program	<i>n</i>	<i>M^f</i>	<i>SD</i>
1. Short-term extension courses offered in different disciplines	98	2.9	0.9
2. Delivering agricultural inputs (pesticides, fertilisers, seeds, etc.)	75	2.2	1.0
3. Key farmers (contact farmers)	80	2.2	1.0
4. Research-extension common farms	72	2.1	1.2
5. Offering awards to rural models	78	2.1	1.2
6. Constructional army	51	1.2	1.2
7. Basij (construction) groups	56	1.2	1.3
8. Rural Islamic councils	78	0.9	1.1
9. Rural (4H) youth clubs	44	0.7	1.2

Note: ¹scale: 0=nothing; 1=a little; 2=moderately; 3=much; 4=very much

Conclusions and Discussion

Based on the results of this study, several conclusions can be drawn. First, the majority of farmers have usually or always been informed about AES programs. The interviews revealed that there is a group of farmers who has close contacts with extension personnel. These farmers are informed about AES programs at an early stage and benefit most from these programs. On the other hand, not all farmers in Iran have easy access to extension programs. At this point, it should be noted that all farmers in this study had participated in AES courses before. In a pilot study carried out by the first author, however, respondents were mainly non-participants in extension courses: in this case, an overwhelming majority of the farmers claimed that they had seldom been informed about extension programs in their region (Karbasioun & Mulder, 2004a).

The two information sources that farmers use most to get informed about AES programs are governmental extension agents and their own experiences. This finding shows that the farmers in this study (participants in AES programs) do not only rely on AES personnel for information about AES programs but also depend on their own experiences and curiosity (this is not the case for farmers in general as mentioned in the previous paragraph).

However, AES personnel and AEIs are considered as the most important information sources by farmers. AEIs should be sufficiently competent to guide farmers through other potentially relevant information sources such as research centers and universities or mass media. These other information sources are often not used spontaneously by many farmers.

Older farmers appeared to consider mass media, supplier companies, contract workers, research institutes and universities and governmental financial experts as less important than younger farmers. Educated farmers consider such information sources as more important than less educated farmers. These findings support the idea that AEIs need different competencies to serve the needs of farmers with different educational and age levels. Thus, in designing a competency profile for AEIs, stratification of target groups of farmers is needed.

The farmers claimed that AES has only supported them to some extent in the past; for the future, they expressed that they will need much more support. They stated that AES used to concentrate on animal husbandry and veterinary, agricultural inputs and enhancement of the fertility and size of the farms. In the years to come, however, the focus should be more on making an agricultural career more satisfactory for farmers, on reducing the risk, labor and severity of farming and on improving the marketability of agricultural and animal products. Farmers expect AES to support them not only in terms of technical information delivery but also with respect to socialization competencies and emotional aspects (see Table 7). This shows the multi-functionality of the roles of AEIs and the necessity of developing their competencies both in technical and general domains.

As mentioned before, older farmers appeared to need more future support to make their career satisfactory than younger farmers. They expressed less interest in initiating small industries near the farm. Educated farmers expected more future AES support than less educated farmers with regard to implementation of sustainable agriculture, improving their socialization process and improving the marketability of agricultural and animal products. These results again indicate that the competency profile of AEIs should be tailored to the farmers' age and educational level: different AEI competencies are needed to address the problems and demands of different groups of farmers.

Finally, the results of this study (and the pilot study mentioned before) uncovered that, although AES has tried to be in contact with farmers, has organized different supportive programs and has realized good results with short-term extension courses offered in different disciplines over the last ten years (according to the farmers), this has not led to satisfying results of other extension programs yet. Many farmers are not yet convinced of the usefulness of a number of extension programs which have been implemented in their villages.

In general, this study shows that farmers nowadays feel a strong need for the supports provided by AES. In other words, they are more than ever aware of the fact that there is a big gap between their current and ideal situation and they feel that some capacities are still unused in their farms. Although they have done their best in the past, they feel that it will be very difficult to be successful as a farmer in the future without the help from AES. In this respect, farmers expect to receive help from the Ministry of Agriculture. According to them, in the past they have been forgotten and neglected by the government; whereas other non-productive careers have been specially considered and supported by the policymakers (see also Karbasioun & Mulder, 2004a).

In this respect, AES can be advised to use a more participatory approach. When a more participatory approach is adopted, the farmers will be increasingly willing to cooperate with the extension personnel and will be acquainted with the limitations and strengths of AES in a reciprocal manner. In addition, the usefulness, feasibility and practicality of AES supports in the forthcoming years will be fostered.

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