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Investigation of East Azerbaijan Researchers and Extension Agents' View about the Role of Extension Services on Agricultural Development

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Abstract

The purpose of this study was investigation of East Azerbaijan researchers and extension agents' view about the role of extension services on agricultural development. The methodology was descriptive-correlation which is carried out by survey method. In this study, the sample population was 335 people including all researchers and extension agents working in the agricultural sector. To assess the reliability of the questionnaire, Cronbach's alpha coefficient was used and level over 0.75 for all sections of the questionnaire was measured. Its validity was established asking for the help from the technical experts. Results showed that the agricultural extension is an undeniable necessity in the agricultural development the effects of which has been positive and significant in the major variables of the agricultural development. The shortcomings are not due to the nature of extension rather they are because of improper execution, lack of support and similar reasons. The reduction of pest damage, improvement of the social status, contribution to boost handicrafts, acceptance of product insurance, recommendations for land leveling, creation of sale cooperation, awareness raising of the market, use of modern irrigation methods and several factors else was those extension role factors that the respondents agreed upon.

Keywords:
Azerbaijan, Agricultural Development, Extension agents, Researcher

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INTRODUCTION

Inside the agricultural development system and its expanded subsectors, the establishment of the helpful and effective communication between these subsectors and the stakeholders is the responsibility of the agriculture extension. The main concern of the extension is a human being that manifests an individual, group and society. However, the main goal of the extension is the creation of the desirable changes in human as the key factor of development (Malekmohammadi, 1999). Despite the strong beliefs about the necessity and importance of the agricultural extension activities for the development of agricultural, agricultural extension systems in different parts of the world have been criticized for their performances. Undoubtedly, these criticisms have not been unsupportive (they have been backed up by evidence). However, it is comprehensible that some of the extension shortcomings are related to the internal factors whereas some are attributable to the inappropriate external attitudes which require configuration as well as agreement regarding their roles. Questioning the efficiency and effectiveness of extension activities, Centralized structure from top to bottom based on technology, Inappropriate service coverage, Carelessness to the vulnerable people, Poor access to facilities, Lack of access to the efficient and helpful knowledge based on the farmers needs and not being able to make use of it, Poor links with other agricultural institutions especially research centers, Insufficient attention to the sustainable development of agriculture, and etc are among the problems of extension worldwide (Qamar, 2002). Despite the obvious role of extension in the development, it seems that there is scarce approach towards the activities of agricultural extension in Iran. Furthermore, the activities performed by this educational institution, have been defined neither to the authors, nor to the researchers, practitioners, executives, farmers and etc (Zamanipour, 2001).

Thus the present study is an attempt to assess the views of researchers and extension agents about the role of extension services on agricultural development in East Azerbaijan province. It aims to provide the possible strategies for the betterment, regulation, modification and prediction of agriculture extension performance in this province. Establishing a connection between agriculture extension researches and agents is crucial to achieve the goals of agricultural development.

Daivic (2008) in his paper entitled 'Extension in African Saharan', Anderson (2008) in his report for World Bank 'Extensional Advisory Services' and Rivera (2001) in his book Global Perspective of Agricultural and Rural Extension, refers to the main reason for the failure of extension activities in the agricultural development process as the peoples problem in understanding the effects of the extension.

Thus the fundamental problem addressed in this study is that the role of extension in the agricultural development programs is unclear and untouchable. Moreover the effect of the extension activities in short term is undetectable (Malekmohammadi, 1999, Shahbazi, 2003) which in turn has led to the negligence of the significance and position of this institution in the agricultural developments. On the other hand, the unclearness of the results of the extension activities has made great inadvertent or deliberate efforts to eliminate it. Thus, the main questions of this research are: according to the respondents' ideas, does the agricultural extension have a role in the agricultural development of the region? And the researches and extension agents agree on what function(s) of the extension on the agricultural development. How is the agreement among respondents and they agree on what function and how they evaluate its effect on the agricultural development of the province.

MATERIALS AND METHODS

The research paradigm was quantitative. This research was an applied study. The methodology is descriptive-correlation which is carried out by survey method. In this study, the sample population were 335 people (the same as total population) including; all researchers and advocates working in the agricultural sector. To assess the reliability of the questionnaires SPSS software was used and Cronbach's alpha coefficient level over 0.75 for all sections of the questionnaire was measured. Its validity was established asking for the help from the technical experts. The

dependent variable of the research was the ideas of the participants about the 'agricultural development' that is formed based on 60 indicators.

RESULTS

A. Descriptive results

Findings show that about 90 percent of respondents were male and 10 percent were women. The distribution of age frequency among agricultural experts was between 41 to 45 years old that makes 38.8% of all respondents. The income mean was 7,934,272 Iran Rials. There was a significant difference between the income of researchers and extension agents. The highest years of job experience among staff are 16-20 years which makes 36.7% out of total percent of the respondents. Regarding the farming experience of the respondents, about 70% of them has the history of agricultural activities. Regarding the relationship between the course of the study and the agricultural activities, 12 respondents had non-agriculture and non- related specialty in agricultural extension. 178 respondents (56%) had a bachelor's degree. 140 respondents (44%) had master or higher degree (PhD). 107 experts (34.7%) was members of social groups. The investigation of the communication between experts and farmers shows that more than 71% of the respondents have stated it as high and very high. 49 respondents (24.7%) had little communication with the farmers who are mainly the members of the researchers group. The obtained ordinal average was 3.97, which is equivalent to a high communication.

A.1. Current and future status of the extension functions in the agricultural development

According to table 1, the current priority gradation of extension activity in region includes; farmers' 'incomes improvement, the development of modern irrigation methods and the establishment of the local cooperation institutions for the farmers'

Regarding the future priorities, experts believe that the creation of the cooperatives for selling agricultural products, the establishment of the conversing and manufacturing industries and the production and improvement of the agricultural technologies are in priority respectively.

As illustrated in table 2, the priorities in the current roles of the extension are; contribution to the production of the needed technology in agriculture sector, matching and conformity of technology with farmers social situations and finally matching and adaptation of the technology with the farmers' economical conditions.

In addition, the future priorities of extension includes; transferring, expansion and developing needed technology, reflecting the effects of the technology distribution delivery to the authorities and contribution to the production of the needed technology in agriculture sector.

A.3. Educational- extension methods in agricultural development

According to table 3, among the priorities to present information for the agricultural improvement are; result demonstration method, method demonstration implementation and using radio and TV programs

A.4. Researchers and Extension agents' participation on research-extension plans

According to table 4, experts took participated in the farmer's education programs, at relevant scientific seminars and workshops, respectively.

A.5. The views of researchers and extension agents about agricultural extension and education

According to table 5, experts believe that extensional programs improve research activities. Furthermore, they contribute to solve farmers' problems. In other words, farmers can't use experts' recommendations without extension activities.

B. Analytical results

B.1. Factor analysis of role variables of agricultural extension and their effects on agricultural development components

In order to reduce the number of variables in classes, factor analysis was carried out. The results of test KMO= 0.851 and Bartlett's test = 11751.84 show that the data are suitable for factor analysis. Having separated the factor analysis and eliminating the heterogeneous variables, the variables in table 6 were classified as follows:

According to the conducted factor analysis, variables were reduced to 7 levels where the sustainability in agriculture and the development of human resource were considered as the first factors (with 15.36% of the variance expla-

Table1: Current and future status of extension function in agricultural development

Items	Priority		S. D.		Mean	
	future	Current	future	Current	future	Current
Rural civilization (water, electricity, phone, etc.)	52	33	1.3	1.07	2.9	1.9
Availability of water supply and drainage channels	25	50	1.16	1.32	3.59	2.32
Products transportation	13	44	1.01	.986	3.48	2.76
Post harvest storage facilities	20	55	1.15	0.81	3.72	3.05
Mechanization	31	7	1.17	1.16	3.44	2.81
Conversion and processing industries for agricultural products	2	28	1.05	1.12	4.08	2.56
Support producers in the form of insurance products	46	16	1.36	1.07	3.48	2.08
Restoration of lands	29	57	1.2	1.12	3.7	2.28
Integration of agricultural lands	11	5	1.12	0.86	3.96	2.92
Leveling of lands under cultivation	32	4	1.31	0.87	3.8	3.02
Increasing lands under cultivation	56	56	1.45	1.03	2.8	2.99
Development of electrical and mechanical wells	30	52	1.15	0.96	3.44	2.4
Availability of inputs required in production	28	54	1.15	1.06	3.56	2.05
provide Credits required by the Agricultural Bank	34	18	1.2	1.07	3.4	2.22
Development of modern irrigation methods	33	2	1.2	1.24	3.3	2.16
Expand the use of modern information tools	9	36	1.09	0.94	3.89	2.85
Production and improvement of agricultural technologies	3	39	1.03	0.99	3.8	2.6
Supply of agricultural technologies	7	49	1.09	1.06	3.9	2.97
Farmers access to new technologies	54	47	1.4	1.19	3.07	1.96
Farmers access to market information	49	9	1.3	1.03	3.09	1.69
Generation sale cooperatives for agricultural products	1	46	0.96	1.28	3.98	2.67
Guaranteed purchase of agricultural products	6	29	1.1	1.13	4.02	2.88
Control intermediaries and brokers in buying products	38	10	1.3	0.96	3.5	2.78
Prevent degradation of natural resources	12	17	1.6	0.96	3.7	2.69
Continuity and sustainability of benefits from agricultural production	55	19	1.31	0.87	2.8	2.41
The use of integrated pest management	47	51	1.3	0.92	3.2	1.69
Proper use of fertilizers	50	38	1.31	0.84	3.05	2.02
Proper use of chemical pesticides	41	37	1.2	0.97	3.2	2.3
soil fertility	53	11	1.3	0.86	2.4	2.17
Consideration to The groups of small farmers and women farmers	58	20	1.5	0.84	3.3	2.32
Development of agricultural production cooperatives	44	41	1.3	0.91	2.32	2.05
Improve professional training for farmers	19	34	1.15	0.99	3.7	2.46
Improve the education level of farmers	10	53	1.1	0.88	3.9	1.5
Develop technical skills of farmers in the production process	16	27	1.15	0.97	3.76	2.02
improve Management skills of farmers in the production process	24	25	1.21	0.79	3.75	2.12
Reduce waste at the time of planting	48	24	1.36	0.84	3.2	2.28
Reduce waste in product growing time	59	31	1.22	0.87	3.35	2.23
Reduce product loss during harvesting by using the Machines	36	23	1.2	0.89	3.3	2.42
Choosing the right time to harvest by farmers	5	40	1.01	0.89	3.7	2.09
increase Product prices by buyers due to improved product quality	15	26	1.07	0.86	3.59	2.29
Reduce contamination of products to various diseases	45	13	1.37	0.89	3.5	2.53
Reduce pest damage to products	43	8	1.37	0.89	3.56	2.6
Improved tillage operations	27	35	1.21	0.88	3.67	2.49
The use of animal manures	17	6	1.07	0.94	3.45	3.16
Using the modified crop and garden varieties	8	45	1.01	1.11	3.6	2.9
Appropriate time for planting	14	39	1.05	0.9	3.6	3.27
Correct use of water resources by farmers	18	60	1.16	0.91	3.7	2.6
Identify the type of fertilizer needed to production in the product during	22	8	1.13	0.88	3.6	2.67
Proper use of chemical pesticides	4	14	1.01	0.89	3.78	2.55
The use of micronutrient fertilizers in crop production	26	12	1.19	0.94	3.6	2.69
management and accounting of financial resources Related to farm	57	15	1.37	0.95	2.67	2.36
Provide appropriate incentives to motivate farmers to increase production	60	59	1.19	0.96	3.3	2.47
Creation of local institutions and farmers' cooperatives	40	3	1.27	0.99	3.36	2.34
Using initiative and creativity in production by farmers	23	42	1.13	1.7	3.5	2.47
Ensure investment in agriculture sector by farmers	42	22	1.26	0.88	3.21	2.38
Increase farmers' incomes	21	1	1.12	0.74	3.59	2.8
Increase the purchasing power of farmers	51	43	1.28	0.99	2.96	2.2
Increase the operation of production	39	60	1.25	1.05	3.4	2.09
Providing off- farm employment opportunities for farmers	35	30	0.92	0.95	4.3	2.57
Exports of agricultural products	37	32	0.84	0.97	3.34	2.27

Table2: Current and future role of extension in agricultural development

Items	Priority		S.D.		Mean	
	future	Current	future	Current	future	Current
Improve farmers' technical to cope with the changes in agricultural environment	9	16	0.85	1.2	4.2	3.3
Improve the managerial to cope with the changes in agricultural environment	7	13	0.84	1.14	4.17	3.3
Preparation attitude and willingness of farmers to cope with the changes in agricultural environment	6	14	0.84	1.19	4.2	3.3
The use of indigenous knowledge of farmers in agricultural development projects	11	19	0.83	1.26	4.2	3.3
Identification and assessment of educational needs of farmers	4	11	0.83	1.2	4.29	3.5
Identify problems and needs of farmers in production and feedback them to the related sectors	16	7	1.3	1.12	3.87	3.6
help to production Technologies needed to agricultural sector	3	1	0.81	1.04	4.2	3.9
Assimilating and adapting technologies with farmers' economic conditions	14	3	0.97	1.05	4.13	3.6
Assimilating and adapting technologies with farmers' social conditions	18	2	1.04	1.01	4.1	3.5
Assimilating and adapting technologies with farmers' technical knowledge	17	18	1.04	1.23	4.2	3.3
Assimilating and adapting technology to local customs and cultural level of farmers	13	8	0.95	1.07	4.2	3.4
Transfer , development of needed technologies	1	5	0.75	1.11	4.4	3.7
feedback of technology Supply effects to the concerned authorities	2	6	0.79	1.12	4.4	3.7
help To expedite the transfer and acceptance of findings and innovations	5	9	0.83	1.13	4.3	3.4
Preparation Appropriate context to consultation with 17the farmers for development programs	10	15	0.88	1.24	4.2	3.5
attract trust of Farmers for Implementation the developmental activities	19	10	1.2	1.4	3.9	3.9
help To attract farmers participation in the implementation of development activities	8	12	0.86	1.2	4.3	3.5
attract farmers participation in the evaluation of development activities	12	17	0.94	1.3	4.2	3.5
Increased cooperation between farmers , policy makers and experts in agricultural development activities	15	4	1	1.1	4.3	3.7

Table3: Extension methods in agricultural development from expertise' perspective

Method	Mean	S. D.
Result demonstration	4.81	1.09
Method demonstration	4.65	1.05
Radio- TV programs	4.71	1.11
On farm education	4.49	1.08
Educational films	4.48	1.33
Visiting sample farms	4.25	1.3
Extensional meetings	3.81	0.97
Select template and sample farmers	3.52	0.98
Educational workshops	3.46	1.29
Extensional publications	3.05	1.02

Note. Scale (Very low=1, low=2, moderate=3, high=4, very high=5)

nation) and infrastructural improvement (with 3.94% of the variance explanation) as the 7th factor.

B.2. Agreement study between researchers

The results of the 'agreement study' among experts about the role and functions of extension in the agricultural development have been summarized in table 7. The results show the agreement among researchers on the raised issues

B.3. Agreement study among extension agents

B.4. Agreement study among all respondents

Table 4: The rate of the researchers 'and extension agents' participation at plans

Effect of extension Methods in agricultural development	Mean	S. D.
participating in Farmers training	3.74	1.07
Participate in related academic seminars	3.61	1.13
Holding training workshops	3.59	1.17
Participation in research - extension projects	3.33	1.16
Participation in accelerate results project	3.05	1.29
Participation in research - adoptive projects	2.82	1.27
Participation in the "transfer of findings week" plan	2.25	1.07

Note. Scale (Very low=1, low=2, moderate=3, high=4, very high=5)

Table 5: The researchers' and extension agents' ideas about agricultural extension and education

Items	Mean	S. D.
Extension programs causes to improve the activities of research section	4.5	0.62
Extension programs help farmers to solve their problems	4.36	0.74
Without the extension activities, farmers do not use the opinions of experts	4.56	0.89
Without extension activities, do not establish good communication between executives and farmers	4.25	1.03
extension provides new and needed Information for farmers	4.22	0.79
Research sector, cannot teach new technologies and how to use them to farmers and extension is needed	4.19	0.84
If extension sector not exist, no part care the farmer	4.11	0.86
extensional programs are very useful and improve agriculture situation	4.09	0.88
Without the extension, cannot be informed of the effects of technology in agriculture sector	3.89	1.03
Training farmers has impact in agricultural development	3.68	1.04
Without the extension program, farmers cannot overcome new problems	3.36	1.05

Note. Scale (Strongly Disagree = 1, disagree = 2, Apathetic = 3, disagree = 4 strongly agree = 5)

In sum, among those extension role factors that the respondents agreed upon are; the reduction of pest damage, improvement of the social status, contribution to boost handicrafts, acceptance of product insurance, recommendations for land leveling, creation of sale cooperation, awareness raising of the market, use of modern irrigation methods, new information distribution, recommendations for optimal use of chemical fertilizers and pesticides, How to use suitable technology, insight preparation to synchronize the

Table 6: Factor analysis of extension role variables in agricultural development

Variable	Factor							
	F 1	F 2	F 3	F 4	F 5	F 6	F 7	
Prevent degradation of natural resources	.823							X1
Proper use of pesticides and fertilizers	.796							X2
Soil fertility ,attention to the livelihood farmers	.763							X3
Provide job counseling	.713							X4
Increasing technical and managerial skills and overcome to production problems	.684							X5
Market information		.756						X6
sale cooperatives provide		716						X7
helping to guarantee the purchase of production		.688						X8
interfaces control		.657						X9
help to the proper use of funds		.625						X10
using new Information tools			.633					X11
deliver technologies			.612					X12
Provide recommendations on the use of machinery				-.581				X13
help To increase income					.741			X14
reduce costs and increase purchasing power of input					.702			X15
increase exports					.689			X16
reduce Infectious to diseases and losses of pests						.958		X17
proper water consumption						.635		X18
reduce waste						.604		X19
Helping to boost handicrafts							.641	X20
packaging							.622	X21
industrial processing							.597	X22
storage silos							.569	X23

Note. F 1: Stability and development of human resources; F 2: Improved marketing; F 3: Providing technology; F4: Mechanization; F5: Economic development; F6: Waste reduction; F7: Infrastructure improvements

Table7: Kruskal- Wallis test results among extension agents about the extension role factors involved in agricultural development

variables	χ^2	P-value	variable	χ^2	P-value
Introduction of chemical fertilizers	7.204	0.206	help to provide job opportunities	3.99	0.59
Introduce corrective seeds	3.26	0.660	Help to improve export	4.52	0.47
Introduction of chemical pesticides	6.305	0.278	Diversification of production	7.98	0.15
Supply of appropriate technologies	2.824	0.727	Optimized use of fertilizer	1.32	0.93
Farmers access to technologies	6.514	0.259	Recommendations for soil fertility	6.44	0.26
Awareness of market information	2.566	0.767	Creation of production cooperatives	1.39	0.99
Create sale cooperatives	7.299	0.199	Improve job training	6.78	0.23
Degradation of natural resources	4.109	0.534	Increase the technical skills	6.66	0.24
Correct use of water resources	2.819	0.728	Improvement of management skills	5.44	0.36
optimize use of poison	4.183	0.523	Improving the social status	2	0.84
Encourage the construction of irrigation canals	9.558	0.089	power to overcome Problems	4.78	0.44
			Attention to small farmers	9.26	0.09
Use of Implant machinery	6.861	0.231	Improvement initiatives and creativity of farmers	2.35	0.79
usage The machines take care of the product	8.841	0.116	Assessment of educational needs	3.381	0.136
The use of harvest machinery	4.26	0.512	Identification of production problems	3.381	0.136
Help to improve packaging	4.765	0.445	Matching technology with the economic conditions of farmers	4.447	0.487
The insurance product	5.238	0.387	Provide feedback of technologies	8.368	0.137
Increase operation	9.161	0.103	Accelerate the adoption of findings and innovations	7.089	0.214
Land leveling	6.056	0.301	Substrate preparation in consultation with farmers	8.12	0.15
Integration of lands	4.377	0.496	Participation in the Implementation	2.571	0.766
help to the Contribute and restoration of lands	10.072	0.073	Identification of production problems	6.064	0.3
Preparation of farmers ' attitudes	10.1	0.072	attract Participation in design developmental activities	5.685	0.338
Loss reduction in the harvest stage	10.43	0.064	Enforcement partnerships between actors, researchers and farmers	3.865	0.569
Reduce pollution to disease	5.92	0.31			
Reduce pest damage	9.75	0.083	Preparing farmers ' attitudes for change	3.049	0.692
Reduce production costs	4.79	0.34	Assess the training needs of farmers	4.326	0.503
help to increase the purchasing power	9.01	0.1	Matching technology with the economic conditions of farmers	6.771	0.238
Improve income	5.69	0.33	Matching technology with the knowledge of farmers	6.718	0.242

P≤0/05

changes, reduction of diseases infection, reduction of the natural resources degradation, enhance technical skills, improvement of management skills, use of planting machines, use of harvesting machines, provide feedback for technology, contribution to improve ex-

Table 8: Kruskal- Wallis test results between researchers about the extension role factors involved in agricultural development

variables	χ^2	P-value	variable	χ^2	P-value
Introduction of chemical fertilizers	7.2	.2	Reduce production costs	4.7	.28
Introduce corrective seeds	3.2	.66	help to increase the purchasing power	9	.76
Introduction of chemical pesticides	6.3	.27	Improve income	5.6	.13
Supply of appropriate technologies	2.8	.72	help to provide job opportunities	3.9	.08
Farmers access to technologies	6.5	.25	Help to improve export	4.5	.09
Awareness of market information	2.5	.76	Diversification of production	7.9	.25
Create sale cooperatives	7.2	.19	Optimized use of fertilizer	1.3	.14
Degradation of natural resources	4.1	.53	Recommendations for soil fertility	6.4	.11
Correct use of water resources	2.8	.72	Creation of production cooperatives	1.3	.06
optimize use of poison	4.1	.52	Improve job training	6.7	.06
Encourage the construction of irrigation canals	9.5	.08	Increase the technical skills	6.6	.45
Use of Implant machinery	6.8	.23	Improvement of management skills	5.4	.36
usage The machines take care of the product	8.8	.11	Improving the social status	2	.25
The use of harvest machinery	4.2	.51	power to overcome Problems	4.7	.6
Help to improve packaging	4.6	.44	Attention to small farmers	9.2	.52
The insurance product	5.2	.38	Improvement initiatives and creativity of farmers	2.3	.36
Increase operation	9.1	.1	Assessment of educational needs	3.3	.32
Land leveling	6	.3	Identification of production problems	3.3	.58
Integration of lands	4.3	.49	Matching technology with the economic conditions of farmers	4.4	.25
help to the Contribute and restoration of lands	10	.07	Provide feedback of technologies	8.3	.08
Preparation of farmers ' attitudes	10.1	.07	Accelerate the adoption of findings and innovations	7	.12
Loss reduction in the harvest stage	10.4	.06	Substrate preparation in consultation with farmers	8.1	.25
Reduce pollution to disease	5.9	.3	Participation in the Implementation	2.5	.08
Reduce pest damage	9.7	.08	Participation in maintenance	6	.32

P≤0/05

Table 9: Kruskal- Wallis test results among all respondents about the extension role factors involved in agricultural development

variables	χ^2	P-value	variable	χ^2	P-value
Provide livestock recommendations	7.204	0.206	Attention to small farmers	9.161	0.103
Loss reduction in the harvested product	3.26	0.660	Improvement initiatives and creativity of farmers	6.056	0.301
Reduce pest damage	6.305	0.278	Correct use of water resources	4.377	0.496
Reduce production costs	2.824	0.727	optimize the use of poison	10.072	0.073
help to increase the purchasing power	6.514	0.259	Participation in the Implementation	2.939	0.401
Improve income	2.566	0.767	Participation in maintenance	1.395	0.707
help to provide job opportunities	7.299	0.199	Identification of production problems	5.624	0.131
Help to improve export	4.109	0.534	attract Participation in design developmental activities	5.618	0.132
Optimized use of fertilizer	2.819	0.728	Enforcement partnerships between actors, researchers and farmers	4.775	0.189
Recommendations for the use of micronutrient fertilizers	4.183	0.523	Preparing farmers ' attitudes for change	3.888	0.274
Creation of production cooperatives	9.558	0.089	Assess the training needs of farmers	7.594	0.055
Improve job training	6.861	0.231	Matching technology with the economic conditions of farmers	4.18	0.286
Increase the technical skills	8.841	0.116	Matching technology with the knowledge of farmers	5.114	0.164
Improvement of management skills	4.26	0.512	Provide feedback of technology	4.626	0.201
Improving the social status	4.765	0.445	Accelerate the adoption of findings and innovations	4.78	0.189
power to overcome Problems	5.238	0.387	Diversification of production	3.756	0.051

P≤0/05

Table10: Investigation of the relationship between the studied variables and agricultural development

Variables	*r*	P-value
Human Resources Development	0.793	***0.000
Supply technologies	0.494	***0.000
transfer Effects of technology supply to the relevant sections	0.328	***0.000
Increase participation of stakeholders	0.421	***0.000
Need assessment	0.591	**0.030
help to improve infrastructures	0.179	**0.020
Help to improve the economic status of farmers	0.317	***0.000
Reflect Problems to the relevant authorities	0.344	***0.000
Improved management of inputs and stability	0.238	***0.000
Networking between specialists, policymakers and farmers	0.326	**0.001
Reduce wastes	0.276	*0.003
Provide recommendations on the use of machinery	0.189	*0.041

* P≤0/05 ** p≤0/01 *** p≤0/001

ports, reducing product loss during harvest, reducing production costs, increasing income, invite for cooperation in execution, problem solving during production process and Participation in conservation, providing employment opportunities, technology transfer, partnerships among executives, researchers and farmer, educational need analysis of farmers and recommendations for the use of modern irrigation methods. According to table 10 there is high correlation among variables involved in the role of extension in the agricultural development.

According to table 11, the extension roles that respondents agreed upon contribute to 79.8% of changes in the agricultural development ($R^2 = 0.798$)

In the final step, Regression analysis was conducted on the all extension role variables. As table 12 illustrates the role of human resources development, technology transfer, the increase of the stakeholders participation, networking among experts, policy makers and farmers, waste reduction and contribution to the improvement of the farmers' economical conditions, are among the extension activities necessary for the agricultural development from the respondents perspective.

Table11: The role of extensional independent variables in the agricultural development

Model	R	R^2	R^2_{Ad}	S.E
Enter	0.893	0.798	75.3	0.195

Table12: The results of the role of independent variables on agricultural extension

	t	Beta	S.E	B	Sig
Constant	4.438	-	0.089	0.397	0.000
Human Resources Development	18.16	0.674	0.031	0.559	0.000
Supply technologies	9.963	0.456	0.043	0.208	0.001
transfer Effects of technology supply to the relevant sections	0.436	0.081	0.059	0.053	0.472
Increase participation of stakeholders	6.328	0.335	0.047	0.179	0.000
Need assessment	1.345	0.218	0.038	0.09	0.06
help to improve infrastructures	0.985	0.082	0.028	0.038	0.326
Help to improve the economic status of farmers	2.609	0.153	0.236	0.328	0.007
Reflect Problems to the relevant authorities	0.689	0.076	0.048	0.033	0.492
Improved management of inputs and stability	-1.925	-0.236	0.057	-0.089	0.08
Networking between specialists , policymakers and farmers	3.611	0.325	0.049	0.128	0.006
Reduce wastes	2.608	0.128	0.025	0.039	0.019
Help to improve marketing	-0.585	-0.049	0.057	-0.034	0.621
Provide recommendations on the use of machinery	1.107	0.059	0.032	0.035	0.27

P≤0/05

DISCUSSION

In sum, the agricultural extension is an undeniable necessity in the agricultural development the effects of which has been positive and significant in the major variables of the agricultural development. The shortcomings are not due to the nature of extension rather they are because of improper execution, lack of support and similar reasons.

The results of the study show the positive effect of the development of human resources on all aspects of agricultural development. It backs up the studies of Wielinga (2006), Anderson (2008), Malekmohammadi (1999) and Karbasioun (2007). According to the results of the present study, the main reason for the technological changes of the agriculture is the supplement and transfer of technology to the agriculture sector. Swanson (2003), Gebrekidan *et al.,* (2005) support the findings of the current study. The increase of partnership among agricultural executives due to the extension has a great role in agricultural development enhancement and contributes to the improvement of its process. The studies conducted by Leeuwis (2004), Anderson (2008), Norton *et al.,* (1997) point out to it as well. According to the results of this study, extension has an effect on the reduction of the agricultural waste via providing appropriate recommendations and counseling methods in the various stages of the production and harvest. The empowerment of farmers in how to use the various methods to combat pests and diseases and improve the quality of the production, contributes to the reduction and prevention. The role of extension is among the agreed roles that have been approved by studies of Hoang *et al.,* (2006). The findings show that the educational-extensional methods used to train the farmers has a significant role in enhancing the agriculture development which is supported by Asiabaka (2003), Karbasiyoun (2007).

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