

## **CODIFYING A REGRESSIONAL MODEL TO DETERMINE THE EDUCATIONAL-EXTENSIONAL NEEDS OF IRANIAN KIWI GROWERS: A CASE STUDY OF THE CITIES OF TONEKABON AND CHALUS, THE PROVINCE OF MAZANDARAN, IRAN**

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### **Abstract**

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Recognition and analysis of the educational needs of Iranian kiwi growers with regard to their specific persona, professional and economic characteristics are the main end of the present study. This study incorporates a descriptive-correlation method. The validity of the questionnaire was improved by the revisions made by the researchers, and the stability was calculated by means of Cronbach's alpha to be 0.89. 7132 kiwi growers from the cities of Tonekabon and Chalus, Mazandaran province, Iran, were included as the gross sample in this study, 360 of who were randomly chosen for the net sample by means of Cochran formula. The results of multi-phase multivariate regression showed that experience in growing kiwi, taking extension education classes, access to urban areas, observing other kiwi growers' activity and being in touch with extension instructors were the most important variants, which determined 35% of the extensional-educational needs of these kiwi growers.

*Key words:* educational need analysis; extension activities; kiwi growers

### **Introduction**

Education is the basis for desirable changes and increases the indicators of human development, especially the development of human capital. Looking at the MDGs will reveal that the improvement in both quantity and quality of the completion of primary school by all children is among the eight goals to be achieved by 2015 (United Nations, 2008). According to Huffman (Huffman, 2005), although an improvement in knowledge results in skillfulness, the specialization of labor and as a result in optimization and technical change, the most important role of education in agriculture is technical change. Knight et al. (Knight et al., 2003) studied the effect of education on facilitated risk-taking and innovation in agriculture in Ethiopia by analyzing the farmers' viewpoints. The results showed that instructing the family leaders resulted in a decrease of their incompatibility with taking risks. In addition, education encourages farmers to welcome innovation while an incompatibility with risks discourages the attitude. In order to achieve these, it is essential that needs be analyzed so

that guidelines for future plan making be at hand. According to ICARDA (ICARDA, 2008), FHCRAA (Future Harvest Consortium to Rebuild Agriculture in Afghanistan) bases need analysis on four main grounds: water and soil management; animals, food and pasture; seed and crop improvement systems; and, gardening. The results of one study proved that the need for informal education and educational seminars on agriculture was crucial in adults' case. From the chosen topics, agricultural mechanics, feeding and animal food, animal health and dairy productions ranked among the most important, and from the chosen methods and media, videotapes and speeches among the most preferred (Connors, 1995). Abdolmaleki et al.'s study (2007) of the effectiveness of extension educations for pasture-owners showed significant difference in knowledge and awareness between those who participated in educational classes and those who did not. The study of the effect of education on decreasing wastage and loss in aviculture units (comparing the conditions before and after education) proved a significant role and effect for education; it resulted in a significant decrease in wastage and therefore in

the final price per weight unit (Shahvali and Rahimi, 2006). Tabarrai and Hasannezhad (2007) also reported the significant effect of extension programs on the actions, views and crop of wheat planters.

The gardening unit, due to certain advantages in comparison with other agricultural units, enjoys especial potential for developing the agricultural unit as a whole in order to help achieve national developmental goals (Hajipur, 2003). Kiwi, an expensive product gaining a lot of foreign-currency indigenous to western-southern China, belongs to the mild-tropical fruits and is quite resistant towards coldness (Khazaipul, 2005). Various studies have been done on the educational needs of farmers, each dealing with a number of different factors such as personal, economic, socio-cultural and sub-structural ones (Table 1). Of the middle areas of the shore of the Caspian Sea, the cities of Tonekabon and Chalus, especially, own most of kiwi-growing lands. The gardeners of this area have turned much of the orange-growing lands into kiwi growing, increasing the production of this fruit by a large amount (Qanbari and Zakeri, 2002). This, however, has been done without any intervention by or support from the government. Of the reasons, why farmers turned to kiwi is its relative economic advantage, which makes it a stable source of both income and occupation for the villagers of West Mazandaran. About another advantage, the first time Iranian kiwi was exported in 1987, when one ton of the fruit was exported. This number soon increased to 20 tons in 1998. This trend continued so that today Iranian kiwi is favored among all the markets in the Middle East, the Persian Gulf belt, Turkey, Lebanon, Syria, Western Europe, Taiwan and Indonesia (Anonymous, 2001).

What's more, there is evidence that most of the kiwi-growers have only experimental knowledge, and therefore need professional training and information in order to increase their production and also competing abilities, which in its own turn needs a thorough need-analyzing process. In line with these, the following are the specific goals of the present study:

- Describing the personal and professional characteristics of the kiwi-growers in order to better know the present situation.
- Investigating the priority of communicational extension methods in meeting the educational needs of the kiwi-growers.
- Investigating the correlation between the variables and the educational needs of the kiwi-growers.
- Comparing, in quantitative terms, the average educational needs of the kiwi-growers with regard to their personal and professional characteristics.
- Defining the most important factors in explaining the educational needs of the kiwi-growers.

## Materials and Methods

This is a practical study based on communication and comparison. The first variable (dependent) is the educational needs of the kiwi-growers in quantitative terms and the second variables (independent) consist of the following: age, number of family members (who are economically supported by the kiwi-grower), literacy level, experience (in growing kiwi), area of (kiwi) plantation, functionality per hectare, income, access to urban areas, communication with officers of Agriculture Bureau, communication with extension instructors, participation in extensional-educational classes, using extensional-educational journals, observing other kiwi-growers' work, and using extension programs on radio and TV. The moderating effect of personal and professional variables is also assessed. According to Table 2, the gross sample in this study consists of 7132 kiwi-growers from the Cities of Tonekabon and Chalus, which is reduced to a net number of 360 by means of Cochran's formula below. The sampling method is simple randomization. The standard deviation of the educational needs of the kiwi-growers was calculated to be 0.993 with a tolerance of 0.1.

$n = \text{net sample size} = ?$

$N = \text{gross sample size} = 7132$

$T = \text{The size of student's } t \text{ with accuracy of } 95\% \text{ and } 5\% \text{ of tolerance } 1.96 \cong 2$

$d = \text{confidence interval} = 0.1$

In the present study, in order to test the validity of the questionnaire, professors of agriculture extension and natural resources, researchers and experts in Ministry of Agriculture and Agriculture Bureau (Mazandaran branch) were asked to comment on it. In addition, about the stability of the questionnaire, Pilot test was run on 20 of the samples and Cronbach's alpha was calculated to be 0.89. SPSSwin16 was used for analyzing the data.

## Results and Discussion

### *Describing the kiwi-growers' characteristics*

Table 3 shows some the most important professional characteristics of the kiwi-growers. 85% of the growers were male and 15% female. The average age was found to be 40; however, the distribution of age shows most of the growers to be young. More than 50% of the growers had studied at high school and higher level, 15% of which went to universities. Only 6.5% were illiterate. The main occupation of 67% of the growers was in agriculture; each owned an average of 2 hectares of plantation and 9.5 years of experience. About 51% (182 people) of the growers stated that there was a kiwi-growing cooperative office in their locality, and 26% of these 182 were members of these cooperatives.

**Table 1**  
**The theoretical framework with regard to educational-extensional needs**

Researcher	Title of Research	Variables in Study
Chizari et al. (2006)	A Study of Educational Needs of Insurance Inspectors of Agriculturan Productions	Age; experience in extensional activities; marriage status; sex
Shahrudi et al. (2007)	Effective Factors in the Functionality and Quality of Saffron Products (Torbat-e Heydarie Area)	Professional skillfulness; literacy level; citizen participation; extensional activities; access to agricultural institutes; marketing
Kafai Lotfi et al. (2007)	Educational-Extensional Factors in Preventing Post-Apple-Harvest Wastage in the Gardeners from the City of Damavand	age; literacy; area of land; place of residence of gardener; education of proper harvesting method; education of proper time of harvesting
Zarafshani et al. (2009)	Determining the Role of Village Women in Educational-Extensional Programs Based on Sherry Arnstein's Ladder of Citizen Participation	literacy; marriage status; women foundations; social media
Mirdamadi and Kavusi (2004)	A Study of the Compatibility of Extension Programs with the Educational Needs of Village Women in the City of Qazvin	Access to urban areas; participation in educational-extensional classes; usage of radio channels; literacy; experience in agriculture; area of owned land; times of communicating with instructors
Mirdamadi and Mahbubi (2003)	A Study of the Educational-Extensional Needs of the Executors of Pasture-Keeping Plans in the City of Damavand	Income; number of owned animals; area of owned pasture; experience in pasture-keeping; access to urban areas
Malekmohammadi and Sarani (2001)	The Role of Effective Extensional Plans in Gaining the Participation of Reed-Growers in Reviving the Reed-Lands of Hamun City	Extensional journals and periodicals; visits to extension areas; number of owned animals; number of meetings with local leaders; population of the village; number of films watched; experience in voluntary activities; experience in attending the Reed Celebration; system of ownership; membership in construction groups
Nasari (2005)	An Investigation of the educational Needs of Tobacco-Growers in the Province of Kurdistan, Iran	Area of plantation; number of meetings with extension instructor; attendance in extension classes; reading and watching extension journals or films; using supportive facilities; owning system; marriage status; sex
Shokrollahzadeh (2005)	A Study of the Educational Needs of Growing Cucumber in the Greenhouses of the City of Garmsar	Age; literacy; area of plantation; average of functionality; experience; the degree of using educational channels
Charmchian Langerudi (2003)	A Study of the Inadequacy and Educational Needs of Silkworm in the Province of Gilan, Iran	Access to Silkworm Bureau; participation in educational classes; literacy level
Yazdian (2003)	A Study of the Educational Needs of the Pistachio-Growers in Qom, Iran	literacy level; experience; area of plantation
Tabatabaifar (2002)	Determining the Educational-Extensional Needs of the Cotton-Growers in the City of Garmsar, Iran	Attendance in educational-extensional classes; number of meetings with instructor; using educational journals and periodicals
Panahi (2004)	The Crises and Educational Needs of Apple-Growers in the City of Eqlid	The extent of using information channels
Khayyeri (2004)	An Investigation of the Role of Extension in the Development and Optimization of Olive Orchards in the City of Rudbar	literacy level; main occupation
Amirinezhad (2001)	The Role of Village Women in the Production of Tea and Their Educational Needs in the City of Lahijan	Experience; number of meetings with instructor

Other findings show that 25.8% of the kiwi-growers have taken advantage of supporting facilities such as loans. The access to urban areas of those interested was also proved high. About 50.5% of the people in this study stated that

there had been educational classes on growing kiwi available to them and about 49.5% that there had been no such classes for them. The investigations about the kiwi-growers not having participated in educational classes show that most of them either did not know of the classes or were notified too late. What's more, the growers also mentioned lack of sufficient transportation, the bad timing of the courses, and lack of interest and inconvenient location of the classes as barriers. In addition, 250 growers (69.5%) stated that there have been no educational classes since 2005. Of the remaining 30.5%, about 24% talked of one course having been run since 2005, 5% of two and 1.5% of three.

**Table 2**  
Net sample size based on the cities under study

City	Gross Sample Size	Net Sample Size
Tonekabon	5632	284
Chalus	1500	76
Total	7132	360

**Table 3**  
Personal and Professional Characteristics Data Collected from the Sample

Variable	Ranges	Distribution	Percentage	Comments
Age	30 or lower	77	21.4	Average: 40 Standard deviation: 11.35 Mode: 31-40
	31-40	134	37.2	
	41-50	90	25	
	51-60	35	9.7	
	61-70	18	5	
	Above 70	6	1.7	
Number of people economically supported	1-2	127	47.9	
	3-4	115	43.4	
	5-6	10	3.8	
	7-8	13	4.9	
	No answer	95	26.4	
Literacy Level	Illiterate	23	6.5	Mode: High school Diploma
	Primary school	36	10	
	Guidance school	50	14	
	High school	54	15	
	(High school) Diploma	143	39.5	
	University	54	15	
Main Occupation	Farming	132	38.6	Mode: Farming
	Animal-raising	17	5	
	Gardening	80	23.4	
	Office worker	53	15.5	
	Market	60	17.5	
	No answer	18	5	
Experience	1-5 years	72	20	Average: 9.5 Standard deviation: 4.94 Mode: 6-10
	6-10 years	186	51.7	
	11-15 years	66	18.3	
	16-20 years	30	8.3	
	Above 20	6	1.7	
Area of Plantation	1 hectare or lower	182	51.4	Average: 1.83 Standard deviation: 1.61 Mode: 1 hectare or lower
	1.1-2	88	24.9	
	2.1-3	37	10.5	
	3.1-4	19	5.4	
	Above 4	28	7.9	
	No answer	6	1.6	
Ownership type	Private	276	79.3	Mode: Private ownership
	Rent	42	12.1	
	Held in Common	24	6.9	
	Devoted	6	1.7	
	No answer	12	3.3	

### **Studying the priority of communicational extension methods of agriculture in meeting the needs of kiwi-growers**

The prioritization of the views of the kiwi-growers about the effect of educational-extensional classes in meeting their educational needs showed that educational visits to exemplary kiwi-orchards, the presence of the extensionalist in the orchard and the providing of practical educations in the orchard ranked first to third in effectiveness (Table 4). Various methods and media act during the different stages of the introduction of a new hardware or software method to the growers. For example, according to a developed practical sample provided by FAO of the introduction of a new technology, social public media, instructor-oriented group-based communicational method, and individual instructors-potential users and farmer-farmer communication, and practical education have effective roles in the successive stages of, respectively, promotion, information/education, personal persuasion, and training. Therefore, the employment of any of these methods and devices depend on the educational, economic and social characteristics of the target audience and is related to the aim and stage of education (FAO, 1996), (Leemakers, 1993). According to Shahrudi and Chizari (2008), there is a significant and positive relation between the functionality of farmers in their methods of managing agricultural water, extensional visits, communicational channels on one hand and the farmer's participation in watering-canals management activities.

Analyzing the views of the kiwi-growers about the effect of social factors in meeting their educational needs showed that detecting barriers in kiwi production, forming a kiwi-growing cooperative, presence of instructors in orchards, and creating opportunities to raise new orchards could have significant effect in meeting their needs. In addition, their views

on the effect of economic factors showed that easy access to financial facilities, the fulfilling of promises by the government, proving the kiwi-growers with the needed sapling, preparing the ground for the sapling by the government, and investigation economic problems by governmental institutions could have effective role in meeting the growers' needs.

### **Investigating the correlation between the variables and the educational needs of the kiwi-growers**

The results of the test of the correlation between the variables of personal, economic, and extensional characteristics on one hand and the variable of the size of educational needs are as was shown in Table 4. According to the Davis Convention (Davis, 1971), the correlation coefficients are ranked as follows: 0.01-0.09 = minor, 0.10-0.29 = weak, 0.30-0.49 = medium, 0.50-0.69 = rather strong, and 0.70 or above = very strong (qtd. in Shahrudi et al., 2008).

#### **- Personal characteristics**

According to Table 4, there is a negative significant relationship between the kiwi-growers' experience (in growing kiwi) and the size of their educational needs. The correlation coefficient between them is calculated to be medium. No significant relationship was observed between the kiwi-growers' age or the number of people they economically support and their educational needs. Charmchian's study (2003) showed a negative significant relationship between the kiwi-growers' level of literacy and their educational needs, which is confirmed by the present study, but Zarafshani et al. (2009) suggested a significant relationship between the level of literacy and the women's participation in educational-extensional programs, Lotfi et al. (2007) between the level of literacy and apple-growers and factors preventing post-harvest wast-

**Table 4**  
**Prioritization of communicational methods of extension in meeting the kiwi-growers' educational needs**

Educational-Extensional Factor	Mean	Standard Deviation	Priority
Educational visits to sample kiwi-orchards	3.72	1.44	1
Presence of instructor in the orchard	3.66	1.33	2
Practical educations in the orchard	3.62	1.38	3
Discussion meetings for growers	3.61	1.28	4
Broadcasting educational programs on TV	3.53	1.36	5
Using local leaders and gray-beards	3.45	1.23	6
Using educational videos and slides	3.40	1.18	7
Participation in educational classes	3.40	1.22	8
Broadcasting educational programs on radio	3.34	1.15	9
Educational-Extensional journals and periodicals	3.31	1.30	10
Meetings with instructors in office	2.91	1.29	11

Very low = 1      Low = 2      Medium = 3      Much = 4      Very much = 5

age, Shokrollahzadeh (2005) between the level of literacy of cucumber-growers their educational needs, and Khayyeri (2004) between the level of literacy of olive-growers and their educational needs, which are not compatible with the results of the present study. In the present study, more than 50% of the kiwi-growers had finished their high school and/or attended university. Maybe it could be said that the higher the education of the growers, the less need they believe they have. Also, Mirdamadi and Mahbubi (2003) claimed a negative significant relationship between experience in pasture-owning and the educational needs of pasture-owners, Amirinezhad (2001) a negative significant relationship between experience in tea-growing and the educational needs of female tea-growers, as confirmed by the present study though in the case of kiwi-growers. Also, the results of Asadi et al.'s study (2008) on the tomato growers' persistence in getting information, Mirdamadi and Kavusi's (2004) on the positive significant relationship between experience and the educational needs of female village growers, Malekmohammadi and Sarani's (2001) on the positive significant relationship between experience of voluntary participation in cooperational activities and participation in reviving the reed-lands, Yazdian's (2003) on the positive significant relationship between experience and pistachio-growers educational needs contradict the findings of the present study. Perhaps, it could be said that more experienced kiwi-growers feel less educational needs. No significant relationship was found between the variables of the number of people economically supported and age and the size of educational needs.

#### **- Economic characteristics**

The results of the test on the correlation coefficient of economic characteristics showed that there were positive significant relationships between the area of kiwi-plantation ( $r = 0.148$ ) and access to urban areas ( $r = 0.137$ ) and the size of educational needs. The strength of this correlational relationship, though, was calculated to be weak. No significant relationship was observed between the income from kiwi growing and functionality per hectare and the size of educational needs. About the area of plantation, the results of Naseri's (2005), Shokrollahzadeh's (2005), Yazdian's (2003), and Kafai-Lotfi et al.'s (2007) findings are compatible with those of the present study, showing that the larger the area of plantation, the larger the size of perceived educational needs. It could mean that the growers with larger plantations are more cognizant of the economic side of their work and, as a result, are more conscious of educational needs. Also, the findings of Mirdamadi and Mahbubi's (2003) study on the access to urban areas contradict and those of Mirdamadi and Kavusi's (2004) confirm the results of the present study; that is,

increased access to urban areas comes results in increased educational needs.

#### **- Extensional characteristics**

The results of the analysis revealed a negative significant correlation between meeting the officers of Agriculture Bureau ( $r = -0.176$ ), meeting instructors ( $r = -0.359$ ), participation in educational-extensional classes ( $r = -0.334$ ), using educational-extensional journals ( $r = -0.171$ ), observing other kiwi-growers' work ( $r = -0.175$ ) and the size of educational needs. About participation in educational classes, the findings are in line with Asadi et al.'s (2008) study of the tomato-growers' persistent in getting information and Panahi's (2004) of the size of apple-growers' usage of information channels. That is, an increase in participation in educational classes decreases the kiwi-growers' educational needs. These findings, though, contradict those of Shahrudi and Chizari's (2008) study of the positive significant relationship between extensional meetings and the farmers' cooperative in water canals management. The findings also contradict those of Shari'ati's (1999) study but confirm those of Tabatabaifard and Naseri (2002). The results of Mirgozhar and Movahhedmohammadi's study (2008) on the wheat-growers educational-extensional needs showed that the studied farmers chose the following as the best method of presenting technical knowledge in extensional programs: practical workshops, extension classes, educational visits and sample farms. In addition, it can be induced that even though incorporating extensional communicational devices might be in order to get information, the size of the farmers' and growers' educational needs, nonetheless, decrease; on the other hand, decreased educational needs may be an indicator of the farmers' and growers' persistent in using various educational-extensional sources. The present study showed no significant relationship between watching and listening to programs on TV and radio and the size of the growers' educational needs. There seems not to have been any properly scheduled program on either TV or radio.

#### ***Comparing the size of the kiwi-growers' educational needs with regard to personal and professional characteristics***

The results of the Kruksal-Wallis analysis showed significant differences among the size of the kiwi-growers' educational needs with regard to their main occupation. The studies by Khayyeri (2004) revealed that the main occupation affects the size of educational needs. In addition, the size of the growers' educational needs was significantly affected by the ownership system. The results of Naseri's study (2005) confirm those of the present one (Tables 5 and 6).

The results of the Mann-Whitney analysis revealed significant differences of 99% among the size of the kiwi-growers' educational needs with regard to their sex, marital status and

membership of cooperatives. However, no significant relationship was observed between the growers' size of educational needs and their having/not having used loans or other supportive facilities (Table 7).

**Table 5**  
The correlations between effective personal, economic and social characteristics and the kiwi-growers' size of educational needs

First Variables	Second Variable	r	P	Description
Age	Size of educational needs	0.040	0.553	
Number of economically supported people	Size of educational needs	-0.090	0.262	
Level of literacy	Size of educational needs	-0.397**	0.0001	Medium
Experience	Size of educational needs	-0.462**	0.0001	Medium
Area of plantation	Size of educational needs	0.148*	0.032	Weak
Functionality	Size of educational needs	0.107	0.123	
Income from kiwi-growing	Size of educational needs	0.257	0.442	
Access to urban areas	Size of educational needs	0.137*	0.044	Weak
Meeting with officers of Agriculture Bureau	Size of educational needs	-0.176**	-0.009	Weak
Meeting with instructors	Size of educational needs	-0.359**	-0.0001	Medium
Participation in Extension classes	Size of educational needs	-0.334**	-0.0001	Medium
Using Educational-Extensional journals	Size of educational needs	-0.171*	-0.012	Weak
Observing other growers' work	Size of educational needs	-0.175*	-0.010	Weak
Listening to programs on radio	Size of educational needs	-0.054	-0.424	
Watching programs on TV	Size of educational needs	-0.090	-0.185	

\* Significant with a tolerance of 5% \*\* Significant with a tolerance of 1%

**Table 6**  
The Kruksal-Wallis analysis to compare the size of the kiwi-growers' educational needs with regard to their studied characteristics

Group Variable	Compared Groups	Distribution	Significance	Chi-Square
Main Occupation	Agriculture	132	0.001	33.94
	Animal-raising	17		
	Gardening	80		
	Office worker	53		
	Self-employed	60		
System of Ownership	Private ownership	276	0.001	83.34
	Rent	42		
	Held in Common	24		
	Devoted	6		

**Table 7**  
The Mann-Whitney analysis to compare the size of the kiwi-growers' educational needs with regard to their studied characteristics

Group Variable	Compared Groups	Distribution	Sig	Z	W	U
Sex	Male	305	0.001	-4.80	17141	2090
	Female	55				
Marital status	Single	53	0.001	-3.2	18788	2135
	Married	307				
Using supportive facilities	Yes	103	0.883	-0.14	14979	5388
	No	257				
Membership of Cooperative	Yes	54	0.006	-2.76	6087	1239
	No	128				

**Multiple regression analysis to determine and define the most important factors in describing the kiwi-growers' educational needs**

In order to detect and define a regressional model of the educational needs of the kiwi-growers as the criterion variable from correlated meaningful variables, stepwise multiple linear regressions were employed. The regression, based on the calculated and standardized beta, revealed that the variables experience in growing kiwi, participation in educational-extensional classes, access to urban areas, observing other growers' work and meeting extension instructors were the most effective in determining the kiwi-growers' educational needs. Therefore, these variables were short-listed for the final model and the rest were dismissed. The results showed that the independent variables could eventually determine 35% ( $R^2= 0.35$ ) of the changes of the criterion variable (Table 8). The regressional mode equation is as follows:

$$Y=163.51 - 2.49X_1 - 6.91X_2 - 4.21X_3 - 3.29X_4 - 3.47X_5$$

**Conclusion and Suggestions**

With regard to the fact that the Cities of Tonekabon and Chalus comprise much of national kiwi production and that this production rate is even increasing with its economic and vocational effects, the present study aimed to detect and define the educational needs of these cities in order to provide a firm grasp of the present situation. The analysis of the views of the kiwi-growers on the communicational and media-based methods of extension revealed that educational visits to sample kiwi-orchards (one of the known group education methods), individual meetings with instructors in the orchard, and practical educations in the orchard ranked as the most important methods which are also effective in adult education.

The correlation between the variable in the study and the size of the educational needs of the growers with regard to

their persona, economic, and extensional characteristics were analyzed. The findings showed that there was a significant relationship between the variables of level of literacy, experience in growing kiwi, area of plantation and access to urban areas on the one hand and the size of the educational needs on the other hand. what can be understood is that access to a variety of educational-extensional media and devices can have a significantly effective role in meeting the needs of the target audience and also can expand the choice from which to choose based on personal, economic and social circumstances, especially in today's world where multimedia education has come to own a very important position in adult education. Another point is that the fact that the correlations have been calculated to be weak to medium seems to show that improved extension of technical and practical tasks can be important in both in itself and from structural and educational-media viewpoints and should be taken more seriously by decision-makers and planners.

What's more, the results of the present study showed that the educational needs of the kiwi-growers were affected by their main occupation and the system of ownership. Age, marital status and potential membership in a cooperative should also be added to the previous list. About membership in a cooperative, also, only 28 percent were members of the kiwi-growing cooperative. Related to this, kiwi-growers demanded that more such cooperatives should be run and more access to financial facilities provided.

Stepwise multiple regression showed that the variables of experience in kiwi-growing, participation in educational-extensional classes, access to urban areas, observing other growers' work, and contact with extension instructors were the most effective ones in determining the educational needs of the kiwi-growers so that 35 percent of the changes of the variable of educational needs depend on the 5 named variables. With regard to the findings of this study, the following are suggested:

**Table 8**  
**The final model of stepwise multiple regressional analysis to determine the most effective factor on the kiwi-growers' educational needs**

Independent variable	R <sup>2</sup>	Non-standardized coefficients		Standardized coefficient beta	Calculated t	Signification level
		Input coefficient	Standard error			
Fix value	---	163.51	9.84	---	---	---
Experience (X <sub>1</sub> )	0.24	-2.49	0.42	-0.38	-5.97	< 0.001
Participation in educational-extensional classes (X <sub>2</sub> )	0.30	-6.91	1.55	-0.26	-4.44	< 0.001
Access to urban areas (X <sub>3</sub> )	0.32	4.21	1.68	0.14	2.49	0.013
Observing other growers' work (X <sub>4</sub> )	0.34	-3.29	1.30	-0.14	-2.52	0.012
Meeting instructors (X <sub>5</sub> )	0.35	-3.47	1.53	-0.14	-2.26	0.025

- To instruct kiwi-growers and promote the latest of knowledge and technology, it is better to use methods, which show the results and the technique since practical education play a very effective role in teaching and learning, and is more compatible with personal characteristics of adults. To achieve this, the raising and presenting of sample orchards and gardens are suggested. In addition, the communicational method of exemplary farmer is suggested.
- Priority should be placed on the starting and expanding of kiwi-growing cooperatives in the localities.
- It is suggested that, with regard to the positive attitude to the economic aspect of this product in this locality, a project should be run in one of these places to facilitate the findings of late research, especially on kiwi, in order to meet the educational needs of the kiwi-growers in all stages through production to marketing.

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