

Investigating the Effectiveness of Leader Horticultural Producers from Gardeners' Perspectives in Kerman Province

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Paper Received on October 01, 2019, Accepted on February 01, 2020 and Published Online on May 20, 2020

ABSTRACT

The use of local leaders and leader farmers in extension programs, such as modeling for other farmers and producers, the dissemination of beneficial innovations as well as extensional notifications, has been common in most countries. The overall objective of the present study was to evaluate the effectiveness of leader horticultural producers in increasing the quantitative and qualitative efficiency of horticultural products in Kerman province from the gardeners' perspective. The research method was descriptive-co relational. The statistical population of the study consisted of horticultural producers in Kerman province (Bardsir, Baft and Orzuiyeh) in 2015-2016 (=310). Sixty gardeners were selected using Cochran formula and random cluster sampling. The research instrument was a questionnaire whose face validity was confirmed by a panel of experts. Reliability was also obtained using the ordinal alpha coefficient in the range (0.75-0.89). The results showed that "leader producers" can influence different aspects of production process. Therefore, use of leader producers as extension workers, as well as holding training classes and field visits, were suggested.

Key words: Effectiveness; Horticultural producers; Increase production; Kerman; Leader gardeners;

Effectiveness is the degree to which objectives are achieved and the extent to which targeted problems are solved. In contrast to efficiency, effectiveness is determined without reference to costs (Ehsani & Khaleidi, 2003). The results of the surveys show that there is, in many cases, a significant gap between the average yield and that of the leader producers. Much of this difference is due to their work experience as well as use of technical and extensional findings and recommendations. The use of local leaders and leader farmers in extension programs, with goals such as modeling for other farmers and producers and using them to disseminate useful innovations as well as extensional notifications, has been common in most countries, and there has always been a place for them to play an extensional role in extension programs. Perhaps the most important goal of selecting leader agricultural producers is to increase the quantitative and qualitative and sustainable production of agricultural

products by transferring the technical knowledge and applied research findings, relevant and appropriate technologies and scientific experiences of sample producers to other producers. The success of leader farmers is because they have combined knowledge with experience and they have been able to achieve much more than the national average with better management. One of the reasons for the gap between leader farmers and others, is in the utilization of agricultural research results. Since in our country, leader producers with the aim of carrying out extension activities, have been selected and introduced as an extensional strategy in various specialized fields of agriculture and natural resources, this question has been raised by the relevant authorities to what extent the leader selected farmers are able to carry out extension activities; in other words, what are the extension functions of a leader farmer and do the leader farmers have the necessary and sufficient effectiveness in carrying out the extension activities?

Limited studies have been conducted on the effectiveness of agricultural extension activities in Iran and other countries. In this regard, the following can be mentioned. In a study, *Abbasi (2009)* investigated the effectiveness of education-extension publications of Agriculture-Jihad Ministry from the viewpoint of farmers in Hamadan province. Based on the findings of this study, farmers raised 25 education needs. The methods of milk production, and the principles of keeping livestock products, were identified as the strongest and weakest education needs, respectively. The results of the study by *Forouzesh and Chaharsoughi (2007)*, in evaluating the effectiveness of education-extension films on rangeland users in Varamin city, showed that the average technical knowledge of rangeland users about the content of mentioned films is slightly higher than the average rating. This average in control and experimental groups was almost identical and indicated that their technical knowledge was not heavily influenced by these films. Also, individual variables such as age had a significant influence on rangeland users' technical knowledge, which necessitates grouping them based on this individual character and making films tailored to their job conditions and needs. *Mahmoodi et al. (2014)* investigated the effectiveness of in-service training courses for agriculture-Jihad staff in Qom province based on KirkPatrick model using JAM software. The results showed that these courses were effective at three levels of KirkPatrick model, namely, reaction, learning and behavior, but were not effective at the results level. In the research of *Moaydi and Hayati (2016)*, the effectiveness of agricultural television programs from the perspective of Fars province farmers and their influential structures was examined using Percy's model. Findings revealed that low percent of farmers were as the programs audiences. From the viewpoint of the audience, the effects of agricultural television programs were moderate regarding direct, conditional and overall effects and below average in terms of cumulative and cognitive effects. Satisfaction toward provincial television network; audiences' goals to pay attention to programs and trust in provincial programs had the most important roles in predicting the effectiveness of the programs. Also, among audiences' agricultural information resources, television had the fourth rank. Some applicable recommendations were made to enhance the effectiveness and attract more audiences

of such programs. Investigating the effectiveness of education-extension activities in increasing the knowledge level of agricultural production cooperatives members in Semnan Province by *Selouki et al (2015)* showed that the variables of extension developmental roles, educational resources, training method and production stages explained 53.8 per cent of the changes in the dependent variable. According to the results of the research, the design and implementation of the programs contents shall be in accordance with the economic, social and technical issues and conditions of the cooperatives members and may assist them in the professional scope of their cooperative activities. *Prathap and Ponnusamy (2006)* studied the relative effectiveness of four mass media channels (radio, television, newspaper, and Internet) on knowledge gain among 144 rural women belonging to self-help groups of three villages in Tamil Nadu, India. All the respondents (100%) had gained "adequate" knowledge after exposure to television, newspaper and Internet, while 97 per cent of those exposed to radio had gained adequate knowledge after exposure. Traditional media were found to have a slight edge over new media in terms of influencing knowledge gain. Television was found to be the most effective treatment, followed by newspaper, Internet and radio. In another study in Dabra block of Gwalior district of Madhya Pradesh, the majority of the respondents perceived farm telecast as medium effective with reference to transfer of agricultural technology. The characteristics of farm telecast viewers i.e. educational status, family background, social participation, land holding, annual income, credit orientation, economic status, attitude towards farm telecast, belief in telecast and extension participation were found to have significant relationship with perceived effectiveness of farm telecast. *Rehman et al. (2011)* determined the factors affecting the print media effectiveness in the dissemination of agricultural information among farmers in the Punjab. The results showed that the print media were major sources of information of the farmers. Some important factors which affected their effectiveness were quality of information, newness, farmers' interest, in time publication, easy access to print media, relevance of information, literacy level of farmers, comprehensiveness, and cost of print media.

Given this importance, the overall objective of the

present study was to investigate the effectiveness of leader horticultural producers in Kerman province. Other objectives of this study were:

- Investigation of demographic characteristics of the studied gardeners
- Identification and classification of gardeners based on the studied parameters
- Investigation the impact of leader horticultural producers on the yield and production of other gardeners
- Investigation the impact of leader horticultural producers on the application of new technologies at farm level

METHODOLOGY

The research method in this study was descriptive correlation and survey type. Given the variety and breadth of fields of activity in the agricultural sector and, consequently, the diversity of leader agricultural producers, as well as the fact that about 23 per cent of the area under cultivation is located in Kerman province, the horticultural sector and related producers, were the target of the present study. The statistical population of the study consisted of producers of horticultural products in Kerman province (Bardsir, Baft and Orzuiyeh cities) in 2015-2016 (=310). Sixty gardeners were selected using Cochran formula and random cluster sampling. The research instrument was a questionnaire whose face validity was confirmed by a panel of experts. Its reliability was obtained 0.85 using ordinal alpha coefficient. Data were analyzed using SPSS software. Descriptive statistics (mean, contingency table, percentage, frequency, standard deviation, median and mode) and inferential statistics (Pearson and Phi correlation coefficients, t-test and regression analysis) were used.

RESULTS AND DISCUSSION

The demographic characteristics of the studied gardeners are listed in Table 1. According to this table, gardeners were predominantly male (96.2%), mostly in the age group of 51-60 years (35.2%) and had a high school diploma (30.8%). The average age of the gardeners was 45.9 years and the youngest and oldest were 20 and 68 years old, respectively. Also, about 7.7 per cent of them were illiterate and 19.2 per cent had higher diploma education.

Table 1. Demographic characteristics of the studied gardeners

Atributies	Groups	%
Gender	Man	96.2
	Female	3.8
	Total	100
Age (years)	≤30	11.5
	31-40	19
	41-50	30.5
	51-60	35.2
	≥61	3.8
	Total	100
Mean=45.9, SD=11.2, Median=45, Mode=52, Mini.=20, Max.=68		
Level of Education	Illiterate	7.7
	Reading and writing literacy	19.2
	Under the diploma	23.1
	diploma	30.8
	Higher than diploma	19.2
	Total	100

Based on the business characteristics presented in Table 2, gardeners had an average of 20 years of working experience. The highest work experience belonged to the age group of 11-20 years (30.7%) and the lowest (11.5%) belonged to those with 6-10 years of work experience. Meanwhile, about 19.3 per cent of gardeners had less than 5 years of work experience. Survey of activity status in organizations also showed that about 85 per cent of gardeners were members of social institutions including the Islamic Council of the city and village, the production cooperative, the mosques board of trustees, and 15.4 per cent were not members of any organization. The average area under crop and horticulture (ha) was 17.4 hectares with minimum and maximum, 2 and 100 hectares, respectively, and the highest frequency (34.6%) belonged to gardeners with areas ranging from 5.1 to 10 hectares. The average area under horticulture and crop were 8.25 and 8.90 ha, and the maximum were 80 and 30 ha, respectively.

All of the studied gardeners had at least two jobs (horticulture, agriculture, animal husbandry, non-agricultural self-employment, and government jobs). The most important source of income was “gardening” (57.7%) and the least important source belonged to the two groups of “non-agricultural self-employment,” and “government jobs” (3.8% each) (Table 3). Agriculture and livestock were the source of income, 26.9 per cent and 7.7 per cent, respectively. In terms of economic

Table 2. Business characteristics of the studied gardeners

Atributies	Groups	%
Experience (years)	5≤	19.3
	6-10	11.5
	11-20	30.7
	21-30	23.2
	31≥	15.3
	Total	100
Mean=20.1, SD=13.2, Median=20, Mode=20, Mini.=1, Max.=50		
Activities in organizations	Islamic City and Village Council	11.5
	Production cooperative	7.7
	Board of Mosques Trustees	26.9
	Other organizations	38.5
	Non-membership	15.4
	Total	100
Total area under crop and horticulture (ha)	5≤	15.4
	5.1-10	34.6
	10.1-20	27
	61≥	23
	Total	100
Mean=17.4, SD=18.7, Mini=2, Maxi.=100		
Area under horticulture (ha)	1≤	27
	1.1-5	30.9
	5.1-10	23
	10≥	19.1
	Total	100
Mean=8.25, SD.4, Mini.=0, Maxi.=80		
The average no.of garden pieces is 3 and the maxi. is 12		
Area under crop (ha)	5≤	4/42
	5.1-10	5/34
	10.1-20	3/15
	20≥	8/7
	Total	100
Mean=8.9, SD=7.6, Mini=0, Maxi.=30		
The average no. of the garden pieces is 4.5 and the maxi. is 20		

status, about 23.1 per cent were above average, 42.3 per cent were on average and the rest (34.6%) had economic status below their population average.

Education-extension characteristics of studied gardeners : According to the results of Table 4, more than 30 per cent of the gardeners did not know the expert/extension worker of their aria and more than 34 per cent did not participate in any extension program. The average participation in extension programs was 2.4 times a year, and about 11.4 per cent of producers participated in extension activities more than five times a year. The findings of Table 4 also show that the

Table 3. Income characteristics of the studied gardeners

Atributies	Groups	%
The most important source of income	horticulture	57.7
	agriculture	26.9
	animal husbandry	7.7
	self-employment	3.8
	government jobs	3.8
	Total	100
Comparison of income status with other people	Very desirable	7.7
	desirable	15.4
	In Average	42.3
	Inappropriate	26.9
	Very inappropriate	7.7
	Total	100

average visit to the Agriculture-Jihad centers was 7.4, with minimum and maximum zero and 30 times per year, respectively. The purpose of these gardeners from visiting agriculture-Jihad centers was different, and it is noteworthy that about 34.6 per cent of the gardeners did not go to Agriculture-Jihad centers for expert advice and guidance. More than half (53.8%) of the gardeners did not know the leader farmers in their aria, and more than 53.3 per cent of those surveyed had never visited any “leader farmer” production units or farms. Average number of visits was 1.7 times a year. At the same time, nearly 70 per cent of gardeners stated that they considered the “leader gardeners” to be their agricultural paradigm, but only 26.9 per cent of respondents tended to adopt the “leader gardeners” as Agriculture-Jihad representative/extension worker. Taken together, these findings confirm the weak position of the “leader producers” among gardeners.

The findings in Table 5, illustrate the gardeners’ view of the impact and scientific credibility of leader gardeners. The average of these ten items in the range of 1–5, indicated an average view of the gardeners. In this ranking, “the trust level of the gardeners to the agricultural recommendations of the leader gardeners” had the highest score ($\bar{x} = 3.46, sd = 0.86$) and “the rate of knowledge transfer from experts to gardeners by the leader producers” had the lowest score ($\bar{x} = 2.8, sd = 0.80$). Overall, more than 60 per cent of gardeners, mentioned the effectiveness of leader producers as average.

The results of gardeners’ interest in agriculture (Table 6) show that their interest in this profession was slightly above average ($\bar{x} = 3.13, sd = 1.04$). Over 34.6 per cent

Table 4. Education-extension characteristics of the studied gardeners

Atributies	Groups	%
Recognition of region's agricultural Expert/extension worker Participate in extension programs (No./year)	Yes	69.2
	No	30.8
	None	34.6
	Once	15.4
	Twice	19.2
	3 to 5 times	19.2
	≥ five times	11.4
	Total	100
Mean=2.4, SD=2.8, Mini.=0, Maxi.=10		
Agriculture-Jihad centers Visits (No./year)	None	3.8
	1-3	23
	4-10	57.6
	<10	15.2
	Total	100
Mean=7.4, SD=6.5, Mini.=0, Maxi.=30		
Consult with experts of the Agriculture-Jihad Bureau(No./year)	None	34.6
	1-3	30.8
	4-10	26.9
	<10	7.6
	Total	100
Mean=3.8, SD=4.7, Mini.=0, Maxi.=20		
Recognition of region's leader farmer	Yes	46.2
	No	53.8
Sample farm visits (No.)	None	53.3
	1-4	30.4
	<4	16.3
	Total	100
Mean=1.7, SD=2.3, Mini.=0, Maxi.=7		
Modeling from the region's leader farmer	Yes	69.2
	No	30.8
Adoption of the leader farmer as Agri.-Jihad representative/ext. worker	Yes	26.9
	No	73.1

(19.2+15.4) had a little desire to continue farming with their children, and 38.4 per cent (19.2 + 19.2) also had a low tendency to stay in agriculture.

Studying the sources of information and knowledge of the gardeners can help to understand the position and role of the leader gardeners. Table 7 shows that, in total, gardeners had relied heavily on input sellers (25.5%) and government experts (20.7%) for information on the four areas of “pesticides, agricultural fertilizers, livestock medicines and animal nutrition”. In this ranking, the leader gardeners were the fifth source of information, with only 11.1 per cent of gardeners had received information from them. Separate results of

information sources in the above four areas indicated that in the field of agricultural pesticides, “input sellers” (34.6%), in the field of fertilizers, “input sellers” and “government experts” (23% each), in the field of livestock medicines, again “input sellers” and “government experts” (23% each) and in the field of animal nutrition, “farmers and local friends” (26.9%) were the most important sources of information. The results show that in none of these areas, the leader producers had a high status as a source of information and the highest information related to agricultural pesticides was only 11.6 per cent.

Pearson correlation coefficient and t-test were used to examine the relationship between the research variables with the variables “Influence of leader producers”, “Scientific validity of leader producers” and “Effectiveness of leader producers”. It is recalled that the variable “Influence of leader producers” was derived from the combination of five items with the Likert scale (in the range of 1-5), the variable “Scientific validity of leader producers” from the combination of five items with the Likert scale (in the range of 1-5), the variable “Effectiveness of the leader Producers” from the combination of ten items with the Likert scale (range 1-5) and the “interest in agriculture profession” was derived from the combination of the four items with the Likert scale (range 1-5) and were measured from the point of view of gardeners.

Based on Table 8, gardeners' perceptions of “Influencing leader Producers” had a negative and significant relationship with age ($r=-0.304$, $Sig.=0.000$) and gardener's experience ($r=-0.275$, $Sig.=0.002$) and a positive and significant relationship with education level ($r=0.314$, $Sig.=0.000$), participation in extension classes ($r=0.316$, $Sig.=0.000$), number of visits to agricultural offices ($r = 0.411$, $Sig.=0.000$), and interest in the agricultural profession ($r=0.520$, $Sig=0.000$). In other words, gardeners who had less age and experience, more education, and more participation in extension classes and visits to agricultural departments, as well as more interest in the agricultural profession, found the leader producers to be more influential. Also, there is a positive and significant relationship between gardeners' perspective on “scientific credibility of leader producers” with garden area ($r=0.325$, $Sig=0.000$) and expert consultation ($r=0.339$, $Sig=0.000$).

Gardeners' perspective on “effectiveness of leader

Table 5. Gardener's perspectives on knowledge and influence characteristics of leader producers

Item	Very Little	Little	Av.	Much	Very Much	Mean*	Sd	Rank
Gardener's trust in the agricultural recommendations of leader producers	3.8	0	53.8	30.8	11.5	3.46	0.86	I
Proper skill level of leader Gardeners	0	7.7	61.5	19.2	11.5	3.35	0.80	II
The impact of leader producers on the use of agricultural machinery and equipment	0	11.5	50	30.8	7.7	3.35	0.80	III
Compatibility of leader producers' actions for other farmers	0	7.7	57.7	30.8	3.8	3.31	0.68	IV
Effect of leader Producers on Use of Appropriate Seeds and Seedlings	0	11.5	61.5	19.2	7.7	3.23	0.74	V
Effect of leader Producers on New Irrigation Methods	0	19.2	46.2	26.9	7.7	3.23	0.87	VI
The impact of region's leader producers on increasing production	0	7.7	73.1	15.4	3.8	3.15	0.61	VII
Accuracy of information and knowledge of leader producers	0	11.5	69.5	15.4	3.8	3.10	0.65	VIII
Up-to-date knowledge of leader producers	0	11.5	73.1	11.5	3.8	3.07	0.63	IX
Level of knowledge transfer from experts to farmers by leader producers	7.7	19.2	57.7	15.4	00	2.8	0.80	X
Mean	1.2	10.8	60.4	21.5	6.1	3.2	0.74	

* In the range (1-5)

Table 6. Gardeners' interest in agriculture

Item	Very Little	Little	Average	Much	Very Much	Mean*	Sd	Rank
No fatigue from agriculture	3.8	3.8	38.5	38.5	15.4	3.58	0.93	I
Interest in (agriculture, horticulture, animal husbandry, etc.)	0	23.1	34.6	26.9	15.4	3.35	1.02	II
Willingness to continue farming with their children	15.4	19.2	30.8	34.6	0	2.85	1.08	III
Willingness to stay in farming	19.2	19.2	34.6	23.1	3.8	2.73	1.13	IV
Mean	9.6	16.3	34.6	30.8	8.7	3.13	1.04	

* In the range (1-5)

producers" also had a negative and significant relationship with gardener's experience ($r=-0.243$, Sig. =0.005) and a positive and significant relationship with education ($r=0.206$, Sig. =0.019), garden area ($r=0.272$), number of visits to agriculture-Jihad centers ($r=0.238$, Sig. =0.006), consultations with experts ($r=0.287$, Sig. = 0.001), and interest in the agricultural profession ($r=0.410$, Sig. =0.000). In other words, farmers who had less experience, higher education, more land, and more visits to agricultural departments and consulted with experts and were more interested in the agricultural profession have found the "leader producers" to be more effective. There was also a negative and significant relationship between interest in agricultural profession with age, experience and

gardening area, and a positive and significant relationship with education, extension classes, and number of visits to agriculture-Jihad centers.

As mentioned earlier, there were two positive and negative views among gardeners as to whether the leader producers could be models. According to the results of Table 9 from T-test, there was no significant difference between the two groups of gardeners regarding the level of leader producers influence ($t=0.068$, Sig. =0.946). But gardeners who were willing to adopt the leader producers as extension workers ($\bar{x}=3.49$, $sd=0.73$) compared to the other group (3.03, $sd=0.44$), had a significant difference in belief that the leader producers were influential ($t=3.472$, Sig. =0.001).

The difference between the gardener groups was

Table 7. Sources of information for the studied gardeners (%)

Information field	1	2	3	4	5	6	7	8	9	10
Agricultural pesticides	34.6	19.3	17.3	11.6	5.8	3.8	1.9	1.9	0	3.8
fertilizers	23	13.5	23	11.5	13.5	5.8	4	3.8	1.9	0
livestock medicines	23	13.5	17.3	15.5	23	5.8	0	0	0	1.9
animal nutrition	21.3	7.6	25	5.8	26.9	7.7	3.8	0	0	1.9
Mean	25.5	13.5	20.7	11.1	17.3	5.7	2.4	1.4	0.5	1.9
Rank	1	4	2	5	3	6	7	8	9	-

1. Input sellers; 2. Consulting companies; 3. Government experts; 4. Leader producers; 5. farmers and local friends; 6. Farmers in other areas; 7. Radio and TV; 8. Magazine and newspaper; 9. Virtual electronics; 10. Other cases;

Table 8. Relationship between individual, educational and economic variables of the leader producers with the dependent variables

Independent variables	Interest in Agriculture profession		Effectiveness of leader producers		Scientific validity of leader producers		Influence of leader producers	
	Correlation coefficient	Significance level	Correlation coefficient	Significance level	Correlation coefficient	Significance level	Correlation coefficient	Significance level
Age	-0.253	0.004	-0.095	0.280	0.162	0.065	-0.304	0.000
Education level	0.396	0.000	0.206	0.019	0.022	0.800	0.314	0.000
Experience	-0.232	0.008	-0.243	0.005	-0.129	0.142	-0.275	0.002
Garden area	-0.190	0.031	0.272	0.002	0.325	0.000	0.143	0.105
Participation in extension classes	0.307	0.000	0.119	0.178	-0.135	0.127	0.316	0.000
Number of visits to agricultural offices	0.446	0.000	0.238	0.006	0.026	0.765	0.411	0.000
consultation with experts	-0.149	0.092	0.287	0.001	0.339	0.000	0.156	0.077
Visits to leader producer farms	0.040	0.654	-0.082	0.354	0.040	0.649	-0.179	0.053
Interest in agriculture	-	-	0.410	0.000	0.158	0.072	0.520	0.000

different about the scientific credibility of the leader producers. Those who considered the leader producers as models also had higher scientific credibility (3.37, sd =0.57), and the difference was statistically significant (t=4.807, Sig. =0.000); however, adoption (3.29) or non-adoption (3.25) of the leader producers as extension workers by the gardeners did not differ significantly in their view of leader producers scientific credibility (t=0.321, Sig. =0.748) (Table 9).

The findings in Table 9 also indicate that the gardeners who considered the leader producers as models also found the leader producers to be more effective (3.26, sd =0.52), and in this respect with another group that did not considered them as models (3.09, sd=0.25) had a statistically significant difference (t=2.573, Sig. =0.011). There was also a statistically significant difference (t =2.413, Sig. =0.020) between the two groups of gardeners (those who adopted the leader producers as extension workers (3.39,

sd=0.54) and those who did not adopt them (3.14, sd=0.41)). The first group rated the leader producers more effective and rated their effectiveness at 3.39 (Table 9).

CONCLUSION

The results of the present study showed that more than half of the studied gardeners (53.8%) had no knowledge about the leader producers in their area, and more than 53.3 per cent of those surveyed did not visit any of the leader production units or farms. At the same time, nearly 70 per cent of gardeners stated that in their view, the “leader producers” could be their agricultural model; however, only 26.9 per cent stated that they preferred the “leader producers” as agrarian agents or extension workers. The leader producers were the fifth source of information and only 11.1 per cent of the gardeners received information from them. Therefore, they do not have a high status as a source of information.

Table 9. Influence, Scientific Credibility, and Effectiveness of Leader Producers from the Viewpoints of Different Gardener Groups

Variable	Gardener Groups	Mean*	sd	EV**		t	Sig	df
				f	Sig			
Leader producers influence	recognition Leader producers as models	3.16	0.66	43.923	0.000	0.068	0.0946	1277.931
	Non-recognition Leader producers as models	3.15	0.28					
Leader producers influence	Adoptionleader producers as extension workers	3.49	0.73	28.985	0.000	3.472	0.001	43.474
	Non-adoptionleader producers as extension workers	3.03	0.44					
Scientific credibility of Leader producers	recognition Leader producers as models	3.37	0.57	21.183	0.000	4.807	0.000	127.504
	Non-recognition Leader producers as models	3.02	0.23					
Scientific credibility of Leader producers	Adoptionleader producers as extension workers	3.29	0.42	0.090	0.765	0.321	0.748	128
	Non-adoptionleader producers as extension workers	3.25	0.55					
Effectiveness of Leader producers	recognition Leader producers as models	3.26	0.52	22.242	0.000	2.573	0.011	127.067
	Non-recognition Leader producers as models	3.09	0.25					
Effectiveness of Leader producers	Adoptionleader producers as extension workers	3.39	0.54	10.289	0.002	2.413	0.020	48.807
	Non-adoptionleader producers as extension workers	3.14	0.41					

* In the range (1-5); **EV=Equality of Variances (Levene's Test)

Taken together, these findings confirm the weak position of the “leader producers” among gardeners. Overall, more than 60 per cent of gardeners cited the effectiveness of leader producers as average. Gardeners who had less experience, higher education, more area under cultivation, and a high number of visits to agricultural departments and consultations with experts and were more interested in the agricultural profession also found the “leader producers” to be more effective. According to the results of the research the following

suggestions can be made:

- Using “leader Producers” as representative of the Agriculture-Jihad or extension worker in areas covered by agricultural activities
- Planned visits from the “leader Producers” farms in the application of new technologies, including modern irrigation monthly, seasonally, etc.
- Organizing extension and training classes on the optimal use of inputs and marketing of agricultural products with the presence of “leader producers”.

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