

Extension Education Effectiveness from Canola Farmers' Perception in Khuzestan Province

Maryam Omid Najafabadi and Azar Saljooghi Pybdani

Department of Agricultural Extension and Education,
Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract: The objectives of this study were to investigate extension education impact on farmers' knowledge; farmer's skill and farmers' attitude on canola cultivation and determine the effectiveness of the extension methods in improving knowledge, skill and attitude on canola cultivation. The research population consisted canola farmers in Khuzestan province (N=643). Using the Cochran sampling formula, sample size calculated 104 farmers divided into 71 trained and 31 untrained canola farmers. In comparing the two groups of farmers, it was found that trained farmers had higher yield. The comparison between two groups of farmers' knowledge and skill showed significant difference. But there is not statistically significant difference in the attitude of two groups. Moreover, according to C.V. index, group methods ranked the first among others. Finally, several suggestions have been made based upon the findings.

Key words: Canola • Extension Education • Khuzestan • Knowledge • Attitude • Skill • Effectiveness

INTRODUCTION

The increase in population of the world and shortage of the resources to meet the requirements for food has increased the need for oil sources. The oil seed crop plants are the most important oil sources for human nutrition. The world area cultivated by Canola has been increased rapidly during the last decade. There are over 350 species oil crop plants. Canola varieties are commonly developed from either or two species of *Brassica napus* and *Brassica campestris*. Canola oil is low in saturated fat, is high in monounsaturated fat and has a beneficial omega 3 fatty acid profit and is recognized by many health professional organizations [1].

Based upon study has been done by Iranian parliament research sector, oil consume per capita dramatically increased from 2.5 kg in 1960 to 16.3 kg in 2010. Iranian population is about 75 millions. This fact along with the above observation shows that Iranian people consumed oil more than 1400'000 tones in 2010. Such huge amount of oil demand mostly imported from abroad [2, 3].

Khuzestan province as a one of the most important Iranian agricultural province, in 2000s, received the fourth rank after Mazandaran, Golestan and Lorestan provinces

in canola production. Therefore, Khuzestan can be a strategic area from canola production view point.

It might highlight the importance of extension and training for farmers as it plays major role building the farmers capacities, raising their awareness and providing them with modern knowledge aiming at enhancing their performance to achieve their ultimate goal of development [4].

Agricultural organizations in Khuzestan province well understood the above point and in current years, several extension educational workshops have been arranged. Certainly, a follow up evaluation has to be done to investigate how much such workshops obtained their goals and significantly increase canola yield in Khuzestan [5].

The purpose of this paper is to study about extension education effectiveness from canola farmers' perception. The objectives of this study are to investigate how much extension education impact on: 1) farmers' knowledge in planting, treatment and harvesting canola stages; (2) farmers' skill in canola cultivation; (3) farmers' attitude on canola cultivation; and (4) determine the effectiveness of the extension methods in improving knowledge, skill and attitude on canola cultivation.

Extension education is concerned with three basic educational tasks: Dissemination of useful and practical information related to agriculture and home economics, Practical application of such knowledge to help farmers and house-wives analyze their problems, Assisting farmers and housewives in using the technical knowledge gained to better solve their own problems [6].

One may classify extension education methods into three categories as follows: (1) Individual extension method: This method involves interaction of the extension worker with the producer on a one-to-one basis to address individual problems of production. For example, farm and home visits, office calls, telephone calls, correspondence and result demonstration. (2) Group extension method: This method is when one or more extension workers communicate with a group of farmers. It aims to develop local skills and empower local people to solve their own problems. Examples are Demonstrations, Field Days, Farm Walks, Folk Media, Group Meetings, Motivational Tours, Participatory Technology Development, Training Days and Farmer Field School. (3) Mass extension method: The method is designed to expose a large number of people to the same information. Mass methods involve the use of the mass media. Radio, television, newspapers, newsletters, motion pictures, photographs, poster exhibitions, etc., are some of the tools to disseminate information. The delivery system used depends on the nature of the information to be disseminated [7].

The ingredients of ASK came from Vinke's (2003) definition of the competency as "the ability of an individual to select and use the knowledge, skills and attitudes that are necessary for effective behavior in a specific professional, social or learning situation" [8].

According to Norman (1986) training programs are designed to change trainee knowledge, attitudes and skills. In terminal evaluation it is intended to see if the training has accomplished this goal and to what degree. The most common method used in a terminal evaluation is to test trainee knowledge, attitudes and skills. Each of the three kinds of learning can be measured through some form of testing [9].

For the purpose of this study, three major dimensions were considered such as: Knowledge, skill and attitude to reflect the training effectiveness. The following statements provide a brief explanation about KSA dimensions.

Attitudes are defined as a disposition to respond favorably or unfavorably to an object, person, institution or event. An attitude is (1) directed towards

an object, person, institution, or event; (2) has evaluative, positive or negative, elements; (3) is based on cognitive beliefs towards the attitude-object (i.e., the balancing between positive and negative attributes of an object leads to an attitude); and (4) has consequences for behavior when confronted with the attitude object [10].

Knowledge is a familiarity with someone or something, that include information, facts, description acquired through experience or education. It can be implicit (practical skill or expertise) or explicit (theoretical understanding of a subject) [11].

Skills move from theory and knowledge to action. Skills involve the performance of mental or physical tasks. To be skilled, one must be able to undertake a task competently [12].

MATERIALS AND METHODS

The research in terms of nature is a kind of quantitative research and in terms of goal is applied research, in terms of controlling the variables is descriptive kind, which has been carried out in a survey way. The research population consisted canola farmers in Khuzestan province. Population size is about 643 canola farmers which about 68% participated in at least one of extension education workshops. Using the Cochran sampling formula, sample size calculated 104 canola farmers. This sample size divided into 71 trained canola farmers and 31 untrained canola farmers which distributed in 8 Khuzestan's cities proportional to canola farmers population in each city using stratifies random sampling. A questionnaire was developed to Study about Extension Education Effectiveness from Canola Farmers' Perception. The questionnaire covered five areas as following: (1) demographic characteristics of trained and untrained canola farmers such as age, sex and levels of education; (2) The attitude of a respondent which measured by total scores obtained for 12 items by attributing 5 score for 'strongly agree' to 1 score for 'strongly disagree'. In the case of negative statements the scoring pattern was reversed. (3) The knowledge of a respondent was measured by total scores obtained for 45 items in planting, treatment and harvesting stages (5 score for completely aware to 1 score for completely unaware). (4) 16 items asked to measure canola farmers' skills (5 score for completely skillful to 1 score for completely not skillful). (5) Moreover, 12 items asked to determine the effectiveness of each extension methods. More important items about KSA are presented in Table 1.

Table 1: Research variables

Attitude	The role of canola cultivation in: agricultural self sufficiency; decrease import from abroad; increase farmers' income; attract governmental fund and support; guaranteed marketing; weed control; pest control; farm arability; enrichment oil grain industries; entrepreneurship; adaptable with Khuzestan climate.
Knowledge in planting stage	Have enough knowledge about: plowing before disseminate grains; inhibit soil erosion; appropriate variety of canola; appropriate planting distance; appropriate planting depth; appropriate planting density; winnow the grains; seeding time; canola planting machines.
Knowledge in treatment stage	Have enough knowledge about: optimum irrigation level; appropriate irrigation method; chemical manure; animal manure; chemical weed control; mechanical weed control; usual weed; usual pests; chemical pest control; biological pest control.
Knowledge in harvesting stage	Have enough knowledge about: Harvesting time; harvesting appropriate methods; harvesting machines; crop losses while harvesting; make an appropriate canola stock; combine harvested crop.
Skill	Ability to: appropriate tillage; accurate use of harvesting machines; pest management; application of fertilizers; spraying of herbicides; use of insecticides; soil sampling; select good grains; winnow; dry the harvested products; storage of canola; combine the harvested products.

Face and content validity of the questionnaire was established using a panel of experts consisting of faculty in the Department of Agriculture at Science and Research Branch, Islamic Azad University and extension agents in the Ministry of Jihad Agriculture. A pilot test was conducted to determine the questionnaire's reliability (Cronbach's $\alpha=0.85$). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS/16).

RESULTS

Table 2 summarizes the demographic profile and descriptive statistics of both trained and untrained canola farmers.

About trained farmers, data showed that average age of respondents was 44.3 years old and their canola yield was about 5874.9 kg/ha. 100% of respondents were male. Regarding respondents' education levels, 11.3% of them

Table 2: Personal Characteristics of Canola Farmers

Variable	Trained		Untrained	
	Mean	SD	Mean	SD
Age (year)	44.3	9.2	44.4	10.3
Canola yield (Kg/ha)	5874.9	5653.6	4538.2	6522.2
	Freq.	% of Freq.	Freq.	% of Freq.
Gender				
Male	71	100	33	100
Female	0	0	0	0
Education level				
Illiterate	8	11.3	5	15.2
Primary	14	19.7	8	24.2
Secondary	0	0	9	27.3
High school	14	19.7	4	12.1
Graduate	28	39.4	4	12.1
Missing	7	9.9	3	9.1
Experience in Farming canola (year)				
<1	2	2.8	2	6.7
1-4	36	50.7	23	76.7
>4	28	39.4	5	16.7
Missing	5	7	3	0
Informed about canola cultivation				
Extension experts	56	78.9	16	48.5
Researcher	0	0	0	0
Mass media	2	2.8	0	0
Markets	3	4.2	2	6.1
Other farmers	5	7	8	24.2
Missing	5	7	7	21.2

Table 3: Compare Means of Farmers' KSA

Variables	Mean		T-Value	P-Value
	Trained	Untrained		
Knowledge in planting stage	3.88	3.33	581.50**	0.000
Knowledge in treatment stage	3.60	3.09	661.50**	0.000
Knowledge in harvesting stage	3.75	3.25	819.50*	0.014
Skill	3.46	3.11	872.00*	0.036
Attitude	4.23	4.22	1009.00	0.25

**p<0.01; *p<0.05.

Table 4: Rank Order of Extension Methods Effectiveness

Methods	C.V.	Rank Order
Individual extension method	0.347	2
Group extension method	0.266	1
Mass extension method	0.355	3

were illiterate, 19.7% were in primary education, 19.7% were in high school and 39.4% of farmers had academic education. Most of them (50.7%) had between 1-4 years experience in farming canola and most of them (78.9%) informed about canola cultivation via extension agents.

About untrained farmers, Table 2 showed that average age of respondents was 44.4 years old and they produce canola about 4538.2 kg/ha in average. 100% of respondents were male. Regarding respondents' education levels, 15.2% of them were illiterate, 24.2% were in primary education, 27.3% were in secondary level, 12.1% were in high school and 12.1% of farmers had academic education. Most of them (76.7%) had between 1-4 years experience in farming canola and most of them (48.5%) informed about canola cultivation via extension agents.

Existence of significant difference between two groups has been tested using well-known t-test. The comparison between two groups of trained and untrained canola farmers' knowledge has been showed in Table 3. The results showed there is significant difference between trained and untrained canola farmers' knowledge in planting, treatment and harvesting stages. The t-test clearly showed that there is significant difference between mean score of trained and untrained farmers' skill. Moreover, as shown in Table3, there is not statistically significant difference in the attitude of two groups.

As one may observe, the C.V. index (0.266) pointed out group extension method as the most effective method.

DISCUSSION

In comparing the two groups of farmers (those who participated in extension classes and those who did not), it was found that trained farmers had higher yield

(Table2). Farinde (1991) also found the training and visiting approach to be effective in increasing crop yields [13].

From Table 2, one may observe that none of the farmers attracted to canola cultivation by researchers. Swanson (1997) reveals the lack of a close working relationship between national agricultural research and extension organizations and with different categories of farmers and farm organizations, is one of the most difficult institutional problems confronting ministries of agriculture in many developing nations.

So, it is recommended through collaborative-programmed activities, research and extension personnel develop a positive professional relationship in facilitating the flow of technology and feedback information.

Female farmers did not play any role in canola production (Table 2). Therefore, this is a task of extension to bring female farmers' attention to canola cultivation. Even, a separate research should be conducted to investigate why female farmers did not motivated by canola cultivation.

In general, the knowledge and skill test clearly indicates that extension education workshops significantly improved knowledge of farmers and improved farmers' skill (Table 3). These results are in agreement with the findings of Kefyalew (2006) that training kept the trained farmers more informed and updated [14].

As Table 3 reported, there is no significant difference between attitude of trained and untrained farmers. This observation revealed that extension education could not impact on farmers' attitude toward canola production. Dimara and Skuras (1999) concluded from their research that a significant relationship was found between behavior and the goals and intentions of farmers [15].

This relationship is even stronger when statements on attitudes, social norms and perceived behavioral control are included [9]. Investigators have taken different positions concerning causal relationships between attitudes and behaviors: attitudes cause behaviors; behaviors cause attitudes; and attitudes and behavior have mutual causal impact [16]. Therefore, this article suggests to education extension organizations in Khuzestan province to pay more attention on farmers' attitude. Because, farmers' attitude can be stabilized canola cultivation for a long-run activity and executive managers can take into account canola production in Khuzestan province as a guarantee one.

As Table 4 reported, according to C.V. index, group methods ranked the first as the most effective method among other methods. As Hamito [7] implied, the advantages of group methods include: Cheaper than individual methods in terms of staff time and transportation costs since more people can be addressed using the same material resources and time; extension personnel can serve a wider spectrum of clients more equitably; the group approach speeds up learning, attitude change and acceptance of new ideas; exchange of several view points in a group makes problem identification, diagnosis and screening of possible solutions easier and more relevant; provide an opportunity for strengthening friendship and teamwork, allowing members to share ideas, experiences and problems [6]. From the extension educational methods, the group education methods can be mentioned that includes those methods in which the trainer is always engaged in relationship with a group of trainee clients. Using these methods the number of contacts between the extension workers and the farmers is increased. There are numerous and important features distinguishing the group methods from other extension methods, i.e. individual and mass education methods. These features include increase in the number of contacts between extension worker and the farmers [17].

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