

AN INVESTIGATION INTO THE FARMERS' ATTITUDES TOWARDS ORGANIC FARMING IN RIYADH REGION – KINGDOM OF SAUDI ARABIA

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Abstract

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With the prime objective, the present research aimed at exploring the attitudes of farmers of the Riyadh region towards organic farming. The study also focused to identify the relationships of personal, social and economic characteristics of the farmers and their attitudes toward organic farming.

Personal interviews were conducted against a pre-tested questionnaire for the collection of the data. Tests of validity and reliability of the questionnaire were conducted before launching the study. A simple random and well-represented sample, consisting of 300 farmers was drawn. The data were arranged and to make them more meaningful, by using the percentages, arithmetic means, standard deviation, correlation coefficient- Simple Spearman Test. For analyzing the data statistically, Statistical Program for Social Sciences (SPSS) was used.

The study revealed that the majority of farmers (65.7%) were with positive attitudes; about 34.3% farmers were with neutral or negative attitudes. The average standard deviation for the attitudes of the farmers on Likert Scale was about 0.59 with an average mean of 3.92.

The study illustrates a direct positive correlation for the factor like level of education with the attitudes of the farmers towards organic farming. However, an inverse relationship exists for the parameters like total area of the farm and area being utilized for the agricultural activities and for the attitudes of the farmers towards organic agriculture. The study suggests for the change of the attitudes of the farming community, farm workers and the extension professionals by launching the extension education, training, and capacity building programs for promoting organic agriculture in the Kingdom.

Key words: Farmers' attitudes; Urban migration; Foreign laborers; Organic farming; IPM Concepts; Extensions Education; Capacity building

Introduction

Sustainable agriculture has been the subject of growing interest in the Kingdom of Saudi Arabia due to the depletion and degradation of natural resources for realizing extensive farming. Traditional agriculture heavily relies on injudicious pumping of water resources, application of high rates of fertilizers and pesticides and other chemicals that pose adverse impacts on the ecosystem health and the human life (Al-Otaibi, 2000; Al-Subaiee 2006; El-Hag, 2007; SPAR, 2012).

The Food and Agriculture Organization of the United Nations - FAO (1999) has defined sustainable development as the management and maintenance of natural resources to meet the needs of present and the future generations while conserving land, water and genetic diversity of flora and fauna. Sustainable agriculture is based on the environmentally

sound, appropriate, economically viable and socially acceptable farming principles and practices.

Organic agriculture is one of the most important areas of sustainable agriculture (SPAR, 2012). According to Hartmann et al. (2012) Organic agriculture is a production management system that promotes the sustainability of agricultural ecosystems and ensures the production of safe healthy foods. Al-Rudaiman (2004) views organic agriculture as an agricultural food production system that preserves of the environment, enhances the natural ability of the soil, protects the flora and fauna and acts as the basis for producing good quality food essential for health.

Organic agriculture has the ability to save water up to 70-80 percent. Farmers in the Kingdom do waste a lot of water as they not have to pay any price for this coming from their own

wells. In the Kingdom, the farmers use sprinklers to water their crops in their conventional farming methods. They adopt flooding technique to water Date palms. Both the irrigation methods result in the huge amount of wastage, as a large percentage of the water simply evaporates due to the high prevailing temperatures. By contrast, the drip irrigation method applied in organic farming enhances the water efficiency up to 70 and 80 percent compared to the 50 to 60 percent achieved with the conventional methods (Hartmann and Khalil, 2012).

Organic agriculture aims at producing high nutritional value food in sufficient quantities while making constructive interactions with the other components of Ecosystems - that help in maintaining renewable natural resources and agricultural systems in good shape, and avoiding pollution from agricultural operations (FAO 1997; Al-Rudaiman and Alshnaoi, 2004). Al-Rudaiman and Alshnaoi (2001) explain that organic fruits and vegetables contain more vitamins, nutrients and anti-oxidants - chemicals capable of fighting against cancer and at the same time, the organic foods are more delicious. Al-Rudaiman (2000) showed that organically grown vegetables contain low proportion of nitrates and their higher concentrations have adverse impacts on human health. Similarly, Waibel et al. (2000) explained that organically grown products could be less attractive however, are higher in their nutritional value than the traditional products.

On the other hand, Aljalloud (2003) reports that organic agriculture production in the Kingdom of Saudi Arabia does not cover vast areas due to the low availability of the good arable lands. Therefore, the choice for organic agriculture must be carefully made. Saudi farmers must know the nutrient contents of their soils and realizing of clean agriculture seems more desirable than organic agriculture because the Saudi lands needed large quantities of essential elements (NPK). He is of the opinion that damage from chemical fertilizers on the environment is limited compared to the damage to the environment from pesticides. In the Kingdom, many scientists like: Al-Subaiee (2006) and El Hag (2008) reported the positive attitudes of the farmers towards pesticides.

At present, organic crops cover an area of about 34 997 hectares, however, the area and the sales of organic products are expected to achieve 10% annual growth due to the increase in awareness among the local community about the advantages and diversity offered by organic farming. The study also predicts that area with organic crop would form 5% of the total planted area in the Kingdom. The Saudi Government has allocated SAR 60 Billions to boost the domestic agricultural sector this year and is actively looking at regional and global agricultural products and services and focusing on organic alternative farming to meet the growing nutritional needs of its citizens (Halal Focus, 2012).

The Kingdom has launched a national programme aiming at improving efficiency, productivity, and exploring new marketing opportunities at the local and global levels (Hartmaan et al., 2012). Many studies on the farming of organic crops have been launched in the Kingdom. However, it is not flourishing at the desired pace, may be due to the negative attitudes of the farming community. Therefore, it seems imperative to study the attitudes of the people and bring positive change in the attitudes of those having negative or neutral attitudes towards organic farming. With this objective, present study was launched.

Research Problem

Despite the great potential and interest in organic farming in the Kingdom, only few studies on organic farming are available. However, studies on the attitudes of farmers towards organic farming have not been conducted so far. In the situation, it seems imperative to conduct studies on the attitudes of farmers. Such studies would certainly strengthen the initiatives of the Ministry of Agriculture focusing on diffusion and expansion of organic agriculture.

Research Objectives

1. To identify the attitudes of the farmers towards organic agriculture in Riyadh Region
2. To explore the relationship of some of the personal, social and economic characteristics of the farmers with their attitudes towards organic agriculture

Research Methodology

Data were collected by using the pre-tested questionnaires, carrying the questions, phrased in easy and simple language, avoiding technical terminologies. Reliability and validity test was applied before distributing the questionnaires. About 300 farmers (3.4%) were chosen through a random sample, out of the 8800 farmers. Data were collected and analyzed by using frequencies, percentages, means, standard deviation, and correlation coefficients (Spearman) were used to analyze the data statistically by employing SPSS.

Results and Discussion

Attitudes of Farmers in Riyadh Region towards Organic Agriculture

Twelve statements were very carefully phrased in simple and plain Arabic to measure the degree of the attitudes respondent farmers. Their response for each statement towards

for organic agriculture was assessed against a 5-point Likert scale:

Completely agree	=	5 pts.
Agree	=	4 pts.
Undecided	=	3 pts.
Do not agree	=	2 pts.
Completely disagree	=	1 pt.

Each response was given a weight value like 1, 2, 3, 4, 5 respectively. In addition, the mean and the Standard Deviation were calculated as shown in Table 1.

The table shows that the respondents responded to all the statements but to varying degrees. It is noticed that the attitudes of respondents towards organic farming were quite positive where the average standard deviation of respondents

Table 1
Attitudes of the farmers towards organic farming arranged according to the mean values (N =300)

Extent of Approval	Completely Agree		Agree		Undecided		Do not Agree		Completely do not Agree		Mean	Standard deviation
	No	%	No	%	No	%	No	%	No	%		
Agricultural crops in organic agriculture are grown by using crop residues, green manures and animal wastes; without the application of chemical fertilizers and still crop yields are not decreased.	124	41.3	87	29.0	72	24.0	15	5.0	2	0.7	4.05	0.96
Nutritional values of organic products are higher than the conventional products.	110	36.7	106	35.3	70	23.3	11	3.7	3	1.0	4.03	0.92
Organic agriculture reduces the risks of environmental pollution.	118	39.3	88	29.3	78	26.0	11	3.7	5	1.7	4.01	0.98
Organic products contain very small amounts of harmful chemicals and little or no pesticide residues.	95	31.7	117	39.0	78	26.0	8	2.7	2	0.7	3.98	0.86
Best organic products are realized from the crops grown on low levels of nitrates.	120	40.0	77	25.7	81	27.0	17	5.7	5	1.7	3.97	1.02
Demonstration and training programmes must be implemented on the organic farming methods.	107	35.7	85	28.3	97	32.3	9	3.0	2	.7	3.95	0.39
Despite the higher prices for organic products than the traditional ones, the citizen will still prefer to buy organic ones.	113	37.7	93	31.0	68	22.7	17	5.7	9	3.0	3.95	1.05
Farmers must focus on the spread of organic agriculture in all the developing and the developed countries in the world.	100	33.3	102	34.0	81	27.0	15	5.0	2	.7	3.94	0.93
Farmers can maintain the productivity of the soil in organic agriculture by employing appropriate agricultural practices and through the use of organic fertilizers.	146	48.7	57	19.0	45	15.0	21	7.0	31	10.3	3.89	1.36
Do the farmers hate using organic and bio-chemical fertilizers as the substitute of inorganic fertilizers in agriculture?	95	31.7	97	32.3	77	25.7	22	7.3	9	3.0	3.82	1.05
Do you agree that many fungal infections and nematodes can be controlled without using the pesticides?	100	33.3	76	25.3	85	28.3	29	9.7	10	3.3	3.76	1.12
Can insect-pests and crops diseases be controlled without using pesticides with bio-resistance methods?	101	33.7	59	19.7	90	30.0	42	14.0	8	2.7	3.68	1.16

were 3.92 and 1.088 and on Likert scale the arithmetic means ranged from 2.02 (minimum) to 4.92 (maximum).

The highest average arithmetic mean i.e. 4.05 and standard deviation 0.96 was achieved for the statement “organic crops are grown by applying crop residues and animal wastes without using the chemical fertilizers and without realizing the reduction in yields”, followed by the statements “Nutritional values of organic products are higher than conventional products” and the “Organic agriculture reduces the risk of environmental pollution” with the average arithmetic means of 4.03, 4.01 and standard deviations 0.92, 0.98 respectively.

The overwhelming positive response of the farmers to statements like: recycling of crops residues, application of green and animals manures, without the use of chemical fertilizers and without compromising the crop yields; nutritional value of organic products are higher than conventional products; and organic agriculture reduces the risk of environmental pollution, is an indication of their liking and positive attitudes towards organic agriculture. The findings of the study are in consistent with the studies conducted by Harvey and Brown (1993), Francis and Carter (2001) and Kotile and Martin (2002).

The statements like “organic agriculture has the potential to fight against many nematodes and fungal infections without using of pesticides” and “controlling pests without using pesticides with bio-resistance methods” have registered the lowest average arithmetic means of 3.76, 3.68 respectively, meaning that attitudes towards the use of alternatives to pesticides by farmers chemical insecticides tend to be neutral, indicating the need to implement training programmes in the areas of bio-control and IPM. The findings of the study are consistent with the results reported by Al-Subaiee (2006) and El-Hag (2007).

Farmers were also grouped based on the numeric values, expressing attitudes toward organic agriculture. They were ranged from 27 degrees (minimum range) and 59 degrees (maximum range) whereas an average arithmetic value was about 47.03 and the Standard deviation comes to 7.19 for the three groups as shown in Table 2.

As shown in Table 2, only 1.3% farmers were with negative attitudes towards organic agriculture, obtaining numerical values less than 29. The study revealed that the farmers with neutral trends make up 33.0% of the population, obtaining numerical values ranging from 29 but less than 45. About 65.7% farmers (45 degrees and more) are with the positive attitudes and placed in the third category.

The study indicates that the majority of the respondents (65.7%) are with positive attitudes and about 34.3% are with neutral and negative attitudes, establishing the importance of the launching of the training programmes for the extension

professionals to change the negative trends and adjust neutral attitudes of the farming community towards organic farming.

Socio-Economic Characteristics of Respondent Farmers

According to 80.7% respondents, an average family consists of more than 6 persons. About 95.3% of the respondents are over the age of 30 years and are married. Some 55.7% respondents were born in the rural areas and as high as 60.3% respondents are living in the urban areas.

Some 44% of the family members are working in agriculture (part or full time). It was also found that more than half of respondent farmers, (55.7%) grew up in rural areas and about 39.7% of them still reside in the countryside - that is an indication of increased rural-urban migration. The study revealed that for 88.3% of the respondents, farming remains a secondary profession for them.

In the agricultural sector, almost 100% hired laborers come from the foreign countries. Almost 100% farms of the respondents are completely run by these foreign laborers. About 94.7% farms spread over an area of 100 Donums (one Donum is equal to 4 201 sq m or 1.038 acre). Most of the respondents mainly grow palm trees in addition to the fruits, vegetables, wheat and are involved in animal breeding. The main agriculture activities of the farmers indicate that 94% are growing palm trees; 83.7% are raising agricultural crops; 68.7% are involved in vegetable production and 29% are raising fruit trees. Although as high as 51.7% grow fodder crops as animal feed yet only 38% are involved in livestock rearing. Only a small fraction like 0.7% farms are owned by the respondents. About 88.3% respondents are part time farmers. As regards their educational levels, only 69.3% hold elementary and higher certificates. Some 80% respondents have earned educational levels and their competence range from a certificate in primary education to the diploma from a university.

The results show that more than half (54.6%) of respondents fall in the age group 30 - less than 50 years; a period

Table 2
Distribution of farmers based on numeric values indicating the level of their attitudes toward organic agriculture (N=300)

Arithmetic Value	% of Respondents	No. of Respondents
Less than 29 degree Negative Attitude	1.3	4
29 to less than 45 Neutral Attitude	33.0	99
45 and above Positive attitude	65.7	197
Total	100.0	300

where the person makes the decision and seems to be more inclined to embrace innovations, make new experiences and try emerging technologies. Some 40.7% respondents aged 50 years or more, while the average age was about 48 years with the standard deviation of 12.96 it is the age when people like to enhance their expertise, gain new knowledge and equip themselves with new technical skills.

Establishing Relationship among Some Personal Qualities, Social and Economic Characteristics of the Farmers and Their Attitudes towards Organic Agriculture by Using Simple Spearman Correlation Coefficient

As shown in the Table 3, the correlation is positive (at the significance level of 0.01%) for the only parameters like educational level of the farmers. This significant and positive correlation clearly indicates that educated farmers have greater appreciation and liking for the organic agriculture. The correlations are significantly negative for independent variables like age (- 0.159**) and the total area of the farm (- 0.134**) towards organic agriculture as a dependent variable. The results are in consistent with the studies of Rogers (1995), Egri (1999), Al-Subaiee (2006) and El-Hag (2007).

Conclusions and Recommendations

Organic agriculture has great potential in the kingdom for its water saving features; better nutritional aspects and ability to fetch premium price in the national and international markets. People are becoming more health conscious and majority of them are having positive attitudes toward organic farming. However, still there is a need to neutralize those having negative feelings about this. There is a dire need to bring the beneficial features to the farming communities and the consumers. Extension in this respect has the great role to play and can help disseminating newer useful information on the sound and viable farming technologies. Extension essentially provides the standardized and experience based knowledge capable of meeting farmers' needs. Many workers like

Table 3
Correlation between personal characters of farmers and their attitudes level towards organic farming

Dependent variables	Correlation coefficient, R
Age	0.150**
Level of Education	0.159**
Total area of the farm	0.134**
Area being utilized for agricultural activities	- 0.146

Significant at 0.01%.

(Al-Zoubi, 1997; Al-Subaiee, 2006; El-Hag, 2008) highlight the importance of agricultural extension in addressing environmental issues and the rational use of natural resources. They stress for the need of making the technical information available on organic farming which has to be disseminated to the potential farmers intend to put organic farming into their practice. In order to fill the information gap, the Kingdom places great emphasis on the extension activities and training programmes to enhance the skills of its clientele.

- Organic farmers rely on natural pest controls (e.g. biological control, plants with pest control properties) rather than synthetic pesticides which, when misused, are known to kill beneficial organisms (e.g. natural parasites of pests, bees, earthworms), cause pest resistance, and often pollute water and land. There is a need to design, formulate and implement training programmes pertaining to the principles and practices of Integrated Pest Management (IPM).
- It seems important and useful to launch outreach programmes to create awareness among the potential users on the agronomic, economic and environmental advantages of organic agriculture; and to change the negative attitudes and adjust the neutral behavior of farmers towards organic farming techniques.
- Since the foreign workers offering unique challenges for Extension service are running the over-whelming majority of the farms (100%), therefore, it seems logical to design special agricultural extension programs to train the foreign labors and bring the desired change in the attitudes towards organic agriculture in the Kingdom.

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