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FACTORS AFFECTING ATTITUDE OF FARMERS TOWARD ORGANIC FARMING IN KHUZESTAN, IRAN

SUMMARY

Organic farming is assumed to have the capacity to help reduction of negative economic, social and environmental impacts of green revolution, by supporting small scale farmers, meeting consumers' needs, and decrease in using chemical inputs. In line with this, during 2014-2015, a survey study was undertaken to investigate the factors affect farmers' attitudes towards organic farming. A random sample of 121 farmers was selected from west part of Iran. A multi-scale questionnaire to measure variables of general attitude toward organic farming, knowledge, perception toward economic, ecological and social goals of organic farming, perceived barriers and benefits of organic farming, and information channels, was administered to collect data. Analyzing data revealed that none of the respondents manages their farms based on organic farming style. They even do not perform soil test to learn about optimal consumption limit of fertilizers. They use higher rate of urea consumption than the optimal limit of 50 kg/ha advised by experts. Although, respondents' knowledge and attitude toward organic farming were relatively moderate (2.38 and 2.52 out of 5, respectively), their perception towards organic farming barriers (3.48 out of 5) and social goals (3.6 out of 5) showed a better status. They also highly perceived benefits, economic and ecological goals of organic farming. At last, the study concluded that to plan for changing farmers' attitude to cultivate based on organic farming a mixture of significant predictor factors including perception about ecological goals ($\beta=0.55$), perceived barriers ($\beta=-0.54$), knowledge ($\beta=0.30$) and social goals ($\beta=0.25$) must be taken into attention.

Keywords: Organic farming, Attitude, Perceived barriers, Perceived benefits, Iran.

INTRODUCTION

Historically, concerns about food have focused on its shortage and the lack of security of its supply. But, there are questions around the safety of food in light of the pesticide residues, the environmental sustainability of how it is produced, the ethical treatment of producers, the landscape agriculture creates and the treatment of animals within farming (Reed and Holt, 2006).

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Recently, agriculture has been understood as more than just about producing food. It is also perceived as serving important ecological and social functions that sustain the viability of the natural resource base and the vitality of the rural life (Kroma, 2006). From the Green Revolution, there were a minority of those who were often clustered around the early organic farming movement; they questioned the reliance on chemical technologies. As this critique became louder, the organic farming movement came to prominence (Reed and Holt, 2006). Organic producers rely on resource-conserving management practices based on recycling of crop residues through green manures, composting, and using N-fixing plants to drive the multiple functions they perceive an agricultural system should serve (Kroma, 2006). It combines modern scientific research with traditional farming techniques in a sustainable, efficient farming system. By working with natural processes and making use of locally available possessions, farmers can build up the fertility and productivity of their farms while avoiding dependence on expensive external inputs (Mahmoudi and Mahdavi Damghani, 2009). Organic producers place priority on natural processes for maintaining soil fertility, soil conservation and soil health, recognizing them as critical determinants of a viable production system. Such systems adhere to minimum use of synthetic external inputs (Kroma, 2006). While, the most commonly used argument in support of organic farming is its positive environmental effects (Häring *et al.*, 2001), organic farming, based on specific and precise production standards, aims to achieve an optimal farming ecosystem which simultaneously meets ecological, economic and social aspects of sustainability.

Just recently, food scares have led to a boom in demand for organic products and have increased policy makers' awareness of the potential benefits of organic farming (Häring *et al.*, 2001). The demand for organic products is directly linked to growing value orientations toward food products grown under chemical-free management conditions with guarantees of natural flavors and little or no harmful residues (Pugliese, 2001).

Organic agriculture in Iran started within universities, and is taught in specific courses and lectures. Parallel to the interest for organic agriculture within the universities, the market began to develop. Certified organic products in Iran were first documented in 1999, when an orchard with roses for extracting essential oils in Kerman province was converted to organic. In 2006, another company in Fars Province was recorded to have exported organic pomegranate, figs, dates, and medicinal herbs to the European Union, and the organic market has been growing rapidly (Kledal *et al.*, 2012). Although, there is a growing interest in sustainable agriculture among producers, the number of farmers shifting from conventional farming to organic forms is almost small. The area under organic production has decreased during recent years; as the area under organic production during 2011 to 2014 has declined from 43332 to 11601 hectares (Sharifi Moghaddam, 2016). However, this grossly underestimates the area under organic production, as only certified farms enter into the national statistics databases. Some products from the remote areas, for example

mountainous regions, are completely managed according to organic principles, have not been regarded as organic in the present context of organic production (Mahmoudi and Mahdavi Damghani, 2009). Overall, by taking into consideration the natural organic arena in mountainous places, the area under organic production can be estimated as 34451 hectares (Sharifi Moghaddam, 2016). Famous Iranian products are significant in organic production, including products such as pistachio, rose, dates, and pomegranate (Kledal *et al.*, 2012).

There are several reasons to argue that there is a good capacity in Iranian field crop cultivation for making the transition to organic agriculture. Cultural studies have shown that Iranians always were interested in traditional products originating from the villages. Hence, organic products are favored because they are considered free from toxic chemicals, additives, artificial flavorings and colorings, preservatives, and are perceived as having a higher quality (Mahmoudi and Mahdavi Damghani, 2009). The organic sector of Iran resembles the conventional farm sector, but with a much higher concentration of very small farms (Kledal *et al.*, 2012). Despite many advantages of organic agriculture, the results of several case studies show that its adoption rate is still very low among farmers (Soltani *et al.*, 2014). Shifting from a conventional agriculture to an organic system comprises a risky change in perception of farmers in terms of knowledge, practice and, management skills. These uncertainties are critical factors affecting the rate of farmer transitions even though emerging evidence suggests there may be an increasing orientation toward agriculture grounded in sustainability principles among a much broader community of farmers (Kroma, 2006). Therefore, what makes it difficult for policy makers and practitioners to promote organic farming in Iran is that Iranian farmers' motives and challenges towards adopting organic production are still unclear. In addition, the few present studies have mostly considered experts' attitudes towards the dissemination of organic agriculture, not those of farmers (Soltani *et al.*, 2014).

In line with this, a study was undertaken to investigate the factors affect farmers' attitudes towards organic farming.

MATERIAL AND METHODS

This survey study was conducted among farmers from September 2014 to January 2015. A sample of 121 farmers was selected through simple random sampling manner out of all farmers living in Shushtar County, west part of Iran. A questionnaire consisted of several scales to measure variables of general attitude toward organic farming, knowledge, perception toward economic, ecological and social goals of organic farming, perceived barriers and benefits of organic farming, as well as information channels, was administered to collect data. The questions were scored on a 1–5 point scale (very low, low, moderate, high, and very high). The scale reliability of the questionnaire was confirmed by computing Cronbach's alpha coefficient. All scales indicated an acceptable reliability coefficient, 0.68–0.80. Moreover, the questionnaire's validity was approved by a panel of experts. Afterwards, the study data was collected through

a face-to-face interview which conducted among our sample. All farmers were given the right to refuse to participate. There were a few farmers were not interested to answer the questionnaire, and so they were replaced by interested ones.

RESULTS AND DISCUSSION

Demographic variables showed that all the farmers participated in the study were male. Respondents were aged from 19 to 66, and had a mean age of 35.7 years ($SD=10.84$). The educational level of the respondents was almost low: 6.6% were illiterate, 63.6% listed a high school diploma or some secondary courses, 14.01% completed some graduate courses, 9.1% hold a bachelor's degree, and just 6.6% hold a master's degree or higher. Of the 121 respondents, only 9.1% plant under a dryland farming system, 72.7% cultivated under irrigated system, and 18.2% hold a mixed system of farming in terms of irrigation. More than 75% listed only cereals as their main crop and near 20% planted just summer crops (vegetables).

Analyzing data revealed that none of the respondents manages their farms based on organic style of farming. They even do not perform soil test to learn about optimal consumption limit of chemical fertilizers. They use Urea by average of 124 kg/ha for winter (cereals) and 130 kg/ha for summer (vegetables) cultivations, indicating a higher rate of usage than the optimal limit of 50 kg/ha which is advised by experts. There were also a few farmers who consumed a maximum amount of 300 kg/ha in contrast to those who consumed a minimum amount of 60 kg/ha of chemical fertilizer in their farms. A same trend was observed for pesticide consumption among farmers, indicating an average of 2.43 liter per hectare for cereals and 4.23 liter per hectare for vegetables. The maximum and minimum usage of pesticides among respondent farmers was 12 and 0.2 lit/ha, respectively. This shows that the fertilizer and pesticide consumption for producing crops amounts to about three times the allowable rate.

Examination of the participants' responds indicated that the Internet and the programs provided by the mass media i.e. television and newspaper were their main information source to learn about organic farming. In their view, organic products labels, markets, advise from other farmers, and educational programs hold by extension services placed at the other priorities, respectively.

The descriptive results (Table 1) revealed that the mean scores of knowledge and general attitude toward organic farming were, respectively, 16.66 out of 35 ($SD=1.02$) and 27.78 out of 55 ($SD=5.36$). Our respondents showed a relatively moderate knowledge and attitude regarding organic farming. In their views, organic farming is more rational, profitable, and pleasurable. According to Soltani et al. (2014), those Iranian farmers more likely to adopt organic agriculture are those who have a more positive attitude towards organic agriculture.

The mean score for perceived ecological goals of organic farming was 17.36 out of 20 ($SD=1.64$), suggesting that in the farmers' view, organic farming

contributed to viability of the natural resources, protecting wild life, improving soil fertility and increasing biodiversity. The perceived economic goals of organic farming among our sample (Mean=19.95 out of 25, SD=3.84) was relatively high. Our respondents believed that organic farming is capable to support small scale farmers by reducing production cost, providing a steady income source and economic stability. In this respect, Mahmoudi and Mahdavi Damghani (2009) have persisted that the Iranian smallholders cultivate much of their land without recourse to agrochemicals, and traditional mixed farming systems remain prevalent. In small farming system which account for more than 80 percent of agricultural products of the country still ecological practices are prevalent.

In examining our respondents' perceptions regarding social goals of organic farming, the findings showed that they moderately perceived the social goals of the organic farming (Mean=25.20 out of 35, SD=3.03). They have not completely trusted to the contribution of organic farming in improving food safety and security, meeting local needs, respecting indigenous knowledge and local culture. perceived barriers had a moderate mean score, 52.17 out of 75 (SD=5.15), which shows that our respondents moderately agreed with the lack of enough knowledge to organically produce crops, incompetency of current markets to sell organic products, insufficient information about the benefits and standards of organic products, and decrease in crop yield as the main barriers to develop organic farming among farmers. Therefore, farmers are not relatively sure whether they can sell their products in the market. These findings are also confirmed by some studies carried out on the barriers of Iranian farmers to operate organic farming (Soltani et al., 2014; Maleksaeidi et al., 2009).

However, the benefits of organic farming from our respondents' perspective gained a very high score (Mean=60.05 out of 65, SD=4.03). This means that they definitely sure that organic farming can help to decline in consumption of chemical external input, reduce the chemical contamination of soil and water resources, improve water resources quality, produce safe products, and terminate the side-effects of conventional agriculture. In addition, they believed that by organic agriculture in compare to conventional type of farming, healthier and more qualified crops with better flavor are produced. According to Kroma (2006), organic agriculture relies mostly on natural inputs as opposed to external synthetic chemicals to enhance the fertility status of the soil; its proponents suggest organic agriculture has a less harmful effect on below as well as above ground biotic life, thus engendering a more bio-diverse environment. To make easier comparing the findings, all the data were converted into a scoring scale of 0 to 5. The results revealed that, while the respondents' knowledge and attitude toward organic farming were relatively moderate (2.38 and 2.52 out of 5, respectively), their perception about benefits, economic and ecological goals of organic farming implied a high average score of 4.62, 3.99 and 4.34 out of 5, respectively. However, their perception towards organic farming barriers (3.48 out of 5) and social goals (3.6 out of 5) also showed a moderate status.

Table1. Descriptive analysis of variables

Variable	Min	Max	Mean	SD	Range
Knowledge	8	13	16.66	1.02	7-35
General attitude toward organic farming	19	37	27.78	5.36	11-55
Perception about ecological goals of organic farming	13	20	17.36	1.64	4-20
Perception about economic goals of organic farming	7	23	19.95	3.84	5-25
Perception about social goals of organic farming	18	29	25.20	3.03	7-35
Perceived barriers of organic farming	39	61	52.17	5.15	15-75
Perceived benefits of organic farming	42	65	60.05	4.03	13-65

*Source: Author's elaboration based on the questionnaire survey results

To examine what factors affect farmers' attitude toward organic farming, a regression analysis was run with attitude toward organic farming as the dependent variable and variables of knowledge, perception toward economic, ecological and social goals of organic farming, perceived barriers and benefits of organic farming as the independent variables. As Table 2 indicates, perception about ecological and social goals, perceived barriers, and knowledge are the significant predictors of the attitude toward organic farming. These variables predicted about 40% of the variance of attitude toward organic farming. Perception about ecological goals ($\beta=0.55$, $p < 0.0001$) appear to contribute most to the model, followed by perceived barriers ($\beta=-0.54$, $p < 0.0001$), knowledge ($\beta=0.30$, $p < 0.001$) and perception about social goals ($\beta=0.25$, $p < 0.02$). Other variables had no significant effect on attitude toward organic farming. Expectedly, perceived barriers is influencing negatively the attitude.

Table 2. Regression analysis of the study variables

Independent variables	B	SEB	β	Sig.
Knowledge	1.59	0.44	0.30	0.001
Perception about ecological goals of organic farming	1.81	0.31	0.55	0.0001
Perception about economic goals of organic farming	0.015	0.10	0.01	0.88
Perception about social goals of organic farming	0.46	0.19	0.25	0.02
Perceived barriers of organic farming	0.65	0.11	-0.54	0.0001
Perceived benefits of organic farming	0.024	0.12	0.02	0.84
Constant=-37.09 F= 11.77 Sig. 0.0001				
Dependent variable	R ²	R ² Adjust	R ² Change	
General attitude toward organic farming	0.39	0.38	0.39	

CONCLUSIONS

The most important principle of sustainability in any agricultural production system is its focus on increasing the capacity of the system being managed to produce desirable environmental, social as well as economic benefits. Organic farming is assumed to have the capacity to help the reduction of negative economic, social and environmental impacts of green revolution, by supporting small scale farmers, meeting consumers' needs, and decrease in using chemical external inputs. According to Mahmoudi and Mahdavi Damghani, (2009) organic agriculture will enable Iranian smallholders to achieve household food security and gain better incomes while regenerating the land, enhancing biodiversity, and supplying qualified food to local communities.

This study revealed firstly that none of the respondents manages their farms based on organic style of farming. The Internet is the most popular source of information and the preferred choice for news ahead of television, newspaper, farmers' face to face visits and extension services among farmers. While, farmers' knowledge, general attitude toward organic farming, perception about social goals and barriers to operate organic farming were relatively moderate, their perception about economic and ecological goals and benefits of organic farming implied a high to very high average score. At last, the study concluded that to plan for changing farmers' attitude to cultivate according to organic qualifications a mixture of significant factors including perception about ecological goals, perceived barriers, knowledge and social goals must be taken into attention. In contrast to other influential factors, perception about barriers is the most significant factor which affect attitude negatively. Finally, this study underlined the necessity that future efforts should concentrate on raising the awareness of all farmers and on building the capacities of Extension services to establish a knowledge system supportive of sustainable agriculture development policies generally, and organic farming policies specifically.

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