

Attitudes of agricultural extension workers towards organic farming in Iran

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Abstract

The purpose of this study was to investigate and analyse the attitudes of agricultural extension workers towards organic farming in Kermanshah Township, Iran. The statistical population in this study consisted of all agriculture extension workers of Jihad-e-Agriculture management and centres of agricultural services in Kermanshah Township (N=148), of whom 123 were available and provided data for this study. The main instrument in this study was a questionnaire, administered face to face in the Persian language, comprising 20 statements pertaining to organic agriculture (adapted from a study by Chouichom & Yamao, 2010) along with demographic questions and sources of information questions. The 20 statements covered organic farming knowledge (7 items), environmental aspects (5 items), marketing aspects (4 items), costs and benefits (4 items), which were rated by respondents on a five point Likert response scale (from 1=entirely agree through to 5=entirely disagree). Results showed that the attitude of the agricultural extension workers toward organic farming was at the neutral to negative level. There were no differences in attitude based on age, gender, marital status, work experience, level of education (bachelor versus masters degree), or amount of time reading newspapers. Those with studies in agriculture were more negative towards organic agriculture than those with backgrounds in other fields. The attitudes to organic farming were more favourable (or less negative) for respondents who used more data sources, used the internet more, read more science magazines or read more scientific research journals. It is concluded that, in general, more informed agricultural extension workers will express more favourable attitudes towards organic farming. The results indicate that agricultural extension workers could be supplied with more information about organic farming and perhaps specialist organic agriculture extension workers would facilitate the faster uptake of organic farming in Iran.

Keywords: Sustainable agriculture, organic farming, agricultural extension.

1 Introduction

Iran lags behind most countries in the uptake of organic agriculture, and reports 42,634 hectares of certified organic agricultural land (0.09% of its agricultural land) and 38,035 hectares of organic wild collection area (Willer & Lernoud, 2014). Globally, 0.86% of agricultural land is managed organically (Willer & Lernoud, 2014). Globally, the total of organic agriculture hectares has been increasing at a compound rate of 8.9% per year over the past decade, and rapid rates of increase have been witnessed, led by Uruguay

(with a x716 increase in organic agriculture hectares over the past decade), India (x689), Philippines (x553), and China (x214) (Paull, 2011). Agricultural extension workers have a role to play in the uptake of organic farming practices (Yadav et al., 2013). This paper examines the attitudes to organic farming of agricultural extension workers in a region of Iran.

Today's agricultural systems are heavily dependent on chemical inputs (Hatirli et al., 2005) and generally there is an abundance of food (Saghafi et al., 2010). But there have been widespread environmental negative outcomes associated with the increasing application of synthetic chemicals, including the contamination of soil and water supplies, a proliferation of pests and novel types of plant diseases, malnutrition and a decrease in the food supplies quality (Kivani & Liaghati, 2007). The combination of these factors mean that the environmental care and the health and safety of food supplies could become one of the most significant issues of the day and has made international human communities try to find solutions to face these issues and achieve sustainable agricultural systems (Mafi, 2008).

Organic farming is a solution that addresses the issues of the deleterious effects of chemical farming (Kings & Ilbery, 2012) and is increasingly accepted by countries and different international organizations of the world. Many countries are interested in organic farming system and organic products to avoid environmental contaminations and to foster health (Grossman, 1972). Organic farming systems offer a solution to counter the destructive effects of the prevalent farming systems (Dunlap & Beus, 1996; Dickinson & Abaidoo, 2003; Dimara et al., 1986; Dahlberg, 1990).

Organic farming is one of the sustainable agricultural systems and relies less on expensive imports such as chemical fertilizers and pesticides (Ramesh et al. 2005). In organic farming, synthetic chemical fertilizers and pesticides are excluded, along with genetically modified organisms, X-radiation, and manufactured nanomaterials. Organic farming is a coherent, organized and humanized system which advances the health development of environmental ecosystems, biological soil activities and living cycles, by the application of existing sources of the farm. Organic farming brings a modern and scientific attitude to the traditional farming that our ancestors used to perform (Abdollahi, 2008).

Organic agriculture is a production system which excludes application of synthetic fertilizers, synthetic chemical pesticides, herbicides, and fungicides, and advocates composting, crop rotation, fallow rests, and biological controls to maintain the equilibrium. The main purpose of these methods is to create a production system which forms a constructive, appropriate equilibrium among the humans, soils, plants and animals in the system and does not have any contradiction with the human and environmental interests (Asadi & Naderi Mahdiei, 2009). Most of the organic farming activities like the use of nitrogen stabilizer plants, returning agricultural wastes to the soil, and application of covering plants would result in an enhancement of return of carbon to the soil and would help preserve and storing it in the soil.

Despite the advantages of organic farming, statistics show that the international rate of application of chemical fertilizers has more than doubled between 1950 and 1996 (Akbari & Asadi, 2005). In Iran during the years of 2003 & 2004 about 4.1 tons of different kinds of fertilizers were distributed among farmers (Babaakbari & Mobahedian, 2006). It seems

to be imperative for Iran to adopt and develop organic farming systems. Kermanshah Township could be a pioneer in Iran's organic agriculture and can greatly contribute to the country economically. Laying the groundwork for progress in agriculture in this Township can be regarded as an imperative for the improvement of the whole country's progress in sustainable agriculture (Purjavid et al., 2011). The question is how can we persuade the farmers to adopt the organic farming methods? Wheeler (2005) believes that the rate of the uptake by the farmers is affected by these elements: their perception of "risk measurement", profit and innovation advantages; the reliability or un-reliability the innovation; the amount of the information that the farmer needs to know about the innovation: the farmer's attitude toward "risk" and "un-confidence".

The existing information about an innovation is a significant and influential factor for the farmer to adopt an innovation. This information can be transmitted to the farmers by different means. Information sources of the farmers include extension workers, scientists, researchers and the graduates of universities. Researchers have mentioned the significant role of the extension experts in their studies about the introduction of the agricultural innovations among farmers (e.g. Fuglie & Kascak, 2001; Marsh et al., 2000; Kromm & White, 1991; Van den Ban & Hawkins, 1988; Feder & Slade, 1984).

Some studies have indicated that those who have implemented organic farming have been complaining about the negative attitude of the extension experts toward organic farming and their lack of knowledge and they have even mentioned that these experts had been frustrating other farmers in their uptake of organic farming practices (Morgan & Murdoch, 2000; Harp & Sachs, 1992; Busch & Lacy, 1983).

Generally it can be regarded that one's activities in any field are the manifestation of one's attitudes toward it and these attitudes consist of a combination of complex beliefs, motivations and experiences (Fishbein & Ajzen, 1975). An attitude can be identified as a tendency to answer to an idea or situation in a particular way which is mostly considered as a concept to guide individual's behaviour (Grossman, 1972). The attitudes of the extension workers of the Kermanshah Township toward organic farming is studied in this research. Wheeler (2005) has reported factors affecting on the attitude of the extension experts toward organic farming and biotechnology. He concluded that like other people, the decision making of the extension workers is not merely dependent to the scientific results about the technologies and novel innovations of the scientists and researchers. The advocacy of innovations by agricultural experts, particularly extension workers, is not independent of their own values and beliefs. That study also indicated that factors including knowledge, experience, educational degrees, available information and the attitude toward sustainable agriculture would have an effect on the attitude of the agricultural extension workers toward organic farming and any other innovation.

In another study, Wheeler (2008) concluded that a greater level of knowledge of the agricultural experts about sustainable agriculture would enhance positive outcomes toward that system. Khaledi et al. (2007) indicated in his research that farmers do not have enough information about organic farming, and that organizations which are connected to the organic farming sector can provide them with appropriate information. It can be inferred that agricultural extension workers are a significant source that can provide farmers with information. However, the experts transmit the information to the farmers according to their own attitude. So, in order to advocate organic farming to the farmers and extending this agricultural system as one of the sustainable agricultural

systems, it is important to recognize the attitude of the extension experts of agriculture and the effect on developing organic agricultural systems among the farmers.

To advance the uptake of organic agriculture, it is important to improve agricultural extension expert's attitudes toward organic farming as a sustainable agricultural system which contributes to protect the environment, to achieve abundant food supplies and sustainable agricultural practices. Unfortunately, existing evidence indicates the lack of uptake of organic agricultural system among the farmers of Iran, therefore, we have made our attempt to analyze the attitude of the agricultural extension experts of Kermanshah Township as the pioneer of the countries' agricultural system, toward the organic farming. The results of this study could provide managers and legislators of agricultural improvement with some indications and proposals. Results emerging from this study may be utilized to create plans to improve the attitude and knowledge of the agricultural extension experts toward organic farming that would bring about the extension of this agricultural system among farmers.

The purpose of this study is to investigate and analyze the attitude of agricultural extension experts toward organic farming with the view to achieving: a description of the personal and professional characteristics of agricultural extension experts; a validation of the measurement model of attitude toward organic farming among the agricultural extension experts; a reporting of the attitudes of the agricultural extension experts toward organic farming; an understanding of the attitude of agricultural extension experts toward organic farming based on the variables of the study; an examination of the relationship between the variables of the study and the attitude of the respondents toward organic farming; and determining factors affecting respondent's attitudes toward organic farming.

2 Material and methods

The statistical population for this study consisted of all agricultural extension workers of Jihad-e-agriculture management and agricultural central services of Kermanshah Township (N=148) and of these 123 workers responded to the questionnaire. The instrument of this research was a questionnaire, administered face to face in the Persian language, which consisted of two parts: (a) personal and professional characteristics of the extension experts; and (b) their attitudes toward organic farming. In the second part of the questionnaire we adapted the 20 attitude measurement items reported by Chouichom & Yamao (2010). The 20 attitude items about organic farming comprised items addressing the organic farming knowledge aspect (OFKA, 7 items), environmental aspects (EA, 5 items), marketing aspects (MA, 4 items), and cost and benefit aspects (CBA, 4 item) (Chouichom & Yamao, 2010) (Table 2). The 20 statements were each rated by respondents using a five step Likert scale (from 1=entirely agree, to 5=entirely disagree); note that this is the reverse of the rating system used by Chouichom & Yamao (2010). In order to refine the content of the questionnaire there has been some reformation based on the viewpoints of some professors and Ph.D. students of the Rural Extension and Development Department of Razi University and experts of agricultural research organizations in Kermanshah Province, and also there has been some other reformation of the items of the questionnaire regarding the consideration of respondent comprehensibility in the pilot stage of this research. In order to validate the internal consistency of the instrument of the research the Cronbach's alpha coefficient was determined. To analyze the data by both descriptive and inferential statistics LISREL8.54 and SPSSwin20 were applied. LISREL software was applied for the confirmatory factor

analysis and SPSS software was applied to describe the variables of the research and analyzing the relations among them.

3 Results and discussion

3.1 Personal and professional characteristics of the agricultural extension experts

The mean age of the agricultural extension experts (N=123) in this study is 37.20 years (with the standard deviation of 12.04 years) and their work experience mean is 15.63 years (with the standard deviation of 9.55 years). The majority of the agricultural extension experts were men (73.6%) and 32 of them (26.4%) were women. The majority of respondents are married (64.5%) and only 43 of them (35.5%) were single. The educational level of the majority of the agricultural extension experts were B.A (82.6%), and only 19 were M.Sc. (17.4%). The majority of respondents had graduated with an agricultural major (73.5%) and 31 people (36.5%) had graduated from other majors. Personal and professional characteristics of the agricultural extension experts are presented in Table 1.

Table 1. Personal and professional characteristics of the agricultural extension workers.

Variable	mean	Standard deviation	Minimum	maximum
Age (years)	37.20	12.04	20	55
Work experience (years)	15.63	9.55	1	31
Number of information sources	3.20	1.48	1	6
Internet usage (hours per day)	3.42	2.34	0	8
Paper reading (hours per week)	3.08	1.91	1	12
Reading science magazines (hours per week)	5.01	2.50	1	10
Reading scientific-research journals (hours per week)	8.18	5.41	0	20
Watching TV (hours per week)	19.72	5.37	9	32

3.2 The attitudes of the agricultural extension workers toward organic farming

The mean attitudes of the agricultural workers are reported in Table 2. Of the 20 items of the instrument, most items (n=17) were rated in the negative (disagree) zone (i.e. >3.00) and a few (n=3) were rated in the positive (agree) zone (i.e. <3.00). Of the four aspect clusters, three (OFKA, EA & MA) were rated in the negative (disagree) zone (i.e. >3.00) while one (CBA) was rated in the positive (agree) zone (i.e. <3.00) (Table 2). In general, the attitudes of the agricultural extension experts of Kermanshah Township is not favourable toward organic farming (Table 2).

Table 2. Attitudes toward organic farming (N=123).

Aspect/Item	mean*	S.D.	C.V.	Priority**
Organic farming knowledge aspect:	3.42	0.69	-	-
Organic farming is more complicated than chemical farming	3.55	1.10	0.338	7
Organic farming needs preliminary soil nutrition	3.48	0.93	0.267	2
Adoption of organic farming brings about environmental cleanliness	3.27	0.82	0.251	1
You have to utilize quality seeds from valid sources in organic farming	3.25	1.02	0.314	6
It is essential to provide the soil with organic fertilizers in organic farming	3.46	1.05	0.303	4
Organic farming does not need synthetic pesticide application	3.58	1.03	0.288	3
Organic farming is the application of innovations compatible to the local issues	3.55	1.08	0.304	5
Environmental aspect:	3.33	0.65	-	-
Organic farming brings about improvements in soil features	3.16	0.73	0.231	1
Organic farming protects natural resources in comparison with chemical farming	3.48	0.82	0.236	2
Organic farming does not give off toxic gases	3.62	0.93	0.257	3
Organic fertilizers utilized in the farms do not endanger the farmer's health	3.19	0.84	0.263	4
Chemical farming damages natural resources next to the farms	3.17	0.85	0.268	5
Marketing aspect:	3.25	0.59	-	-
Consumers are prefer to purchase organic farming products than chemical farming products	3.23	0.74	0.229	2
-Consumers can easily buy organic products from the farms	3.32	0.69	0.208	1
Government support the production of organic farming products more than that of chemical farming products	3.22	0.74	0.230	3
Organic farming product marketing is easier than that of chemical farming product marketing	3.24	0.73	0.235	4
Cost & benefit: aspect	2.95	0.63	-	-
Generally, the production of organic farming products would cost more than that of chemical farming products	2.88	0.93	0.323	4
Production of organic farming products is more beneficial than chemical farming products	2.94	0.80	0.272	2
Organic farming reduces costs by using organic fertilizers and family participation on farm	2.95	0.90	0.305	3
Consumers pay more for organic products	3.03	0.77	0.254	1
Attitude (General):	3.27	0.46	-	-

*Likert scale: 1=entirely agree; 2=agree; 3=neither agree nor disagree; 4=disagree; 5=entirely disagree.

** Ranking based on the Coefficient of Variation (C.V. = S.D/mean).

3.3 Attitudes of the extension workers based on demographic variables

The attitudes of the agricultural extension experts of the Kermanshah Township toward organic farming, based on the three variables of gender, marital status and academic field is reported in Table 3.

Table 3. The attitudes of agricultural extension experts toward organic farming based on gender, marital status and academic field.

Dependent variable	Independent variable	Levels	F	mean	S. D.	t	Sig.
Attitude	Gender	Male	89	3.33	0.41	1.877	0.067
		Female	32	3.12	0.56		
	Marital status	Married	78	3.30	0.50	0.738	0.462
		Single	43	3.23	0.39		
	Academic field	Agricultural	86	3.35	0.42	2.904**	0.004
		Other	31	3.07	0.51		

**p<0.01

There was no significant statistical differences among the attitudes of the experts toward organic farming on the basis of gender or marital status. In other words, it is shown that women and men, single and married experts have comparable attitudes toward organic farming. However, there was a significant difference among the attitudes of the experts toward organic farming based on their academic field. The attitudes of those who had studied in a field other than agriculture were more positive than those whose studies were in agriculture. There was no statistical significant difference based on the academic level achieved (B.Sc. or M.Sc.) in the attitudes of the experts toward organic farming.

3.4 The relationship between the variables of the study and the attitudes of the respondents

Results shown in Table 4 indicate that there is no significant statistical relationship between the variables of age, work experience, and the rate of newspaper reading and the attitude of the agricultural extension experts of Kermanshah Township toward organic farming (using Pearson's r). For five variables there is a positive relationship (Table 4).

Using more sources of data, using the internet more, reading more science magazines, reading more scientific research journals, and even watching more TV were all associated with more favourable attitudes to organic farming (Table 4). These results suggest that the more information that extension workers are exposed to, especially via the internet and science research journals, the more positive will be their attitudes to organic farming.

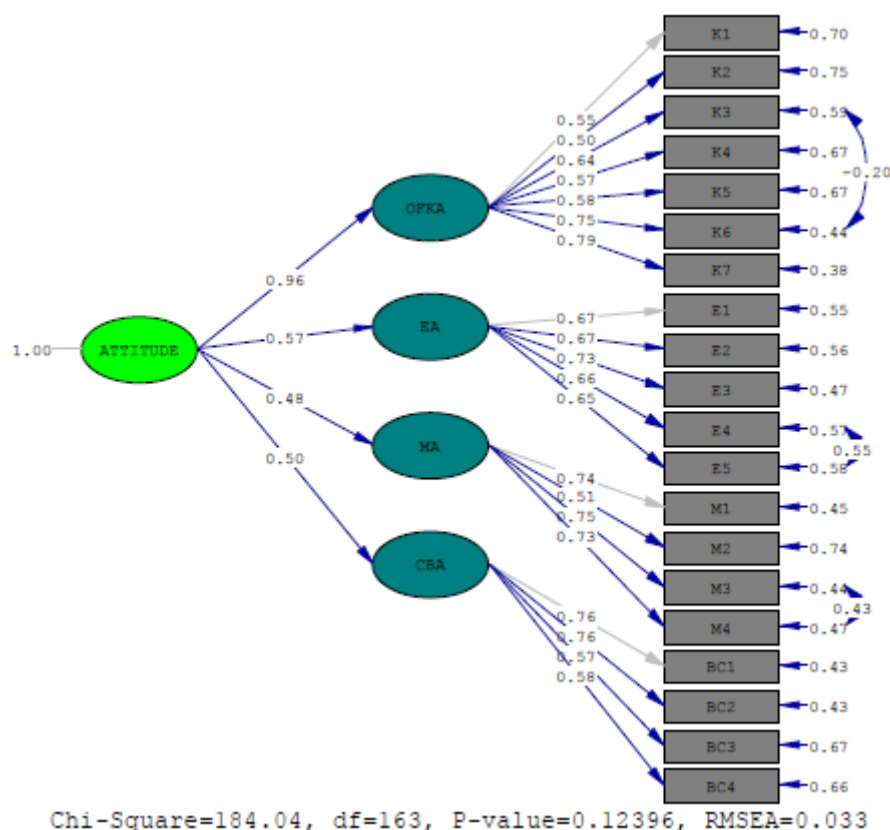
Table 4. The relation between the attitude of the respondents toward organic farming and the studied variables.

Variables	Attitude toward organic farming	
	r	Sig.
Age	-0.072	0.434
Work experience	-0.081	0.409
Number of data sources	0.434**	0.000
Internet usage	0.370**	0.000
Newspaper reading	0.150	0.110
Reading science magazines	0.286*	0.012
Reading scientific research journals	0.537**	0.000
Watching TV	0.224*	0.017

**p<0.01 and * p<0.05

3.5 Internal consistency of the model of attitudes toward organic farming

In order to determine the internal consistency of the measurement model of attitudes toward organic farming which consists of organic farming knowledge aspect (OFKA), environmental aspect (EA), marketing aspect (MA) and cost and benefit aspect (CBA), confirmatory factor analysis was applied by the use of LISREL software. The measurement model of attitudes toward organic farming with the standardized factor loads and fitting indices are presented in Model 1 with the significance levels presented in Table 5 based on the second-order confirmatory factor analysis.



Model 1. Measurement Model of Attitude toward Organic Farming.

Table 5. Significance level and Cronbach's alpha of attitude measurement constructs toward organic farming.

Constructs	Standardized coefficient	Standard error	Meaning level	Cronbach's Alpha
OFKA	0.96	0.19	5.02**	0.81
EA	0.57	0.18	4.32**	0.83
MA	0.48	0.17	3.76**	0.82
CBA	0.50	0.12	4.14**	0.76

** P<0.01

Based on the coefficients of standardized factor loads and fit indexes (Model 1) and the significance level of the indices (Table 5), it is concluded that there is appropriate

consistency among the data and the factor structure and the theoretical foundation of the measurement model of attitude toward organic farming can be accepted. It is concluded that the application of this model as an appropriate model investigate the attitudes of agricultural extension workers has validity in this study and even future studies.

4 Conclusions

Results of the present study show that agricultural extension experts of Kermanshah Township in general do not have positive attitudes toward organic farming. This can negatively effect them in extending organic farming methods among farmers. The reason of this negative attitude toward organic farming can be a lack of knowledge toward organic farming (Wheeler, 2005).

This study found that better informed and more widely informed respondents have more positive attitudes towards organic farming. Those extension workers with education in a field other than agriculture, those who use a broader range of information sources, those who use the internet more, those who read more science magazines or scientific research journals all express more positive attitudes towards organic farming.

These results suggest that encouraging agricultural extension workers to study and read more widely (science magazines and journals, not newspapers) and research on the internet would favour organic farming. Educational courses and in-service training specifically targeted at disseminating organic farming knowledge would be a direct way of, at least, enhancing the received knowledge of extension workers. In the case of new recruitment a priority might be to recruit those with an education broader than just agriculture and who have demonstrated research skills.

Since the variables of reading science magazines and using the internet have been revealed here to be influential factors on the attitude of the experts of this study it is suggested to provide the extension workers with magazines including the introduction of latest agricultural innovations and modern methods of farming, and perhaps also establishing internet websites tailored to their need that would provide the experts with new articles in their fields for free, or at least make them well aware of the largest free depository and data base of organic agriculture research: <<http://www.orgprints.org>>.

References

- Abaidoo, S. & Dickinson, H. 2002. Alternative and conventional agricultural paradigms: Evidence from farming in southwest Saskatchewan. *Rural Sociology*, 67 (1): 114-131.
- Abdollahi, S. 2008. Study of Perspective of development of organic forming. Planning and Agricultural Economics Research Institute, No. 51, pp. 24-35.
- Akbari, M. & Asadi, A. 2005. Some of the modern agriculture in soil and environments. *Proceedings of Soil*, Karaj.
- Asadi, A. & Naderi Mehdiei, K. 2009. *Sustainable Agriculture*. Tehran: Payame-Nour University.
- Babaakbari, M. & Movahedian, M. 2006. Improvement fertilizer consumption with regard to country budget laws. *Proceedings of the 10th soil science in Iran*, Karaj.
- Baumgartner, H. & Homburg, C. 1995. Applications of structural equation modeling in marketing research: A review. *International Journal of Research in Marketing*, 13, 139–161.

- Beus, C. & Dunlap, R.E. 1990. Conventional versus alternative agriculture: the paradigmatic roots of the debate. *Rural Sociology*, 55 (4): 590-616.
- Busch, L. & Lacy, W. 1983. *Science, agriculture and the politics of research*. West view Press Inc, Boulder.
- Chouichom, S. & Yamao, M. 2010. Comparing opinions and attitudes of organic and non-organic farmers towards organic rice farming system in North-Eastern Thailand. *Journal of Organic Systems*, 5 (1): 25- 35.
- Dahlberg, K.A. 1986. *New Directions for Agriculture and Agricultural Research: Neglected Dimensions and Emerging Alternatives*. Rowman & Allanheld Publishers, New Jersey.
- Dimara, E., Petrou A. & Skuras, D. 2003. The socio-economics of niche market creation: A social ecology paradigm for the adoption of organic cultivation in Greece. *International Journal of Social Economics*, 30 (3): 219-235.
- Feder, G. & Slade, R. 1984. The acquisition of information and the adoption of new technology. *American Journal of Agricultural Economics*, 66 (3): 312-320.
- Fishbein, M. & Ajzen, I. 1975. *Belief, Attitude, Intention, and Behavior: An introduction to theory and research*. J. Wiley and Sons: New York, USA.
- Fuglie, K. & Kascak, C. 2001. Adoption and diffusion of natural-resource-conserving agricultural technology. *Review of Agricultural Economics*, 23, (2): 386-403.
- Gangadharappa, H. V., Pramod, K.T.M., & Shiva, K.H.G. 2007. Gastric floating drug delivery systems: a review. *Indian J. Pharm. Ed. Res.* 41, 295-305.
- Grossman, M. 1972. On the concept of health capital and the demand for health. *Journal of Political Economy*, 80 (2): 223-255.
- Harp A. & Sachs C. 1992. Public agricultural researchers: Reactions to organic, low input and sustainable agriculture. *Agriculture and Human Values*, 9 (4): 58-63.
- Hatirli, S. A. Ozkan, B. and Fert, K. 2005. An econometric analysis of energy input/output in Turkish agriculture. *Renewable and Sustainable Energy Reviews*, vol. 9, 608-623.
- Khaledi, M. Gray, R. Weseen, S., & Sawyer, E. 2007. Assessing the barriers to conversion to organic farming: an institutional analysis. Submitted to: *Advancing Canadian Agriculture and Agri-Food Saskatchewan (ACAAFS)*.
- Kings, D. & Ilbery, B. 2012. Farmers' attitudes towards organic and conventional agriculture: a behavioural perspective. *Organic Food and Agriculture - New Trends and Developments in the Social Sciences*, Dr Matthew Reed (Ed.), ISBN: 978-953-307-764-2, In Tech, Available from: <http://www.intechopen.com/books/organic-food-and-agriculture-new-trends-and-developments-in-the-socialsciences/farmers-attitudes-towards-organic-and-conventional-agriculture-a-behavioural-perspective>
- Krejcie, R. V. & Morgan, D. W. 1970. Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Kiyani, G.H.. & Liyaghati, H. 2007. Analysis of economic conditions current agricultural conversion to organic farming by using dynamic linear programming model. 2nd National Congress of Ecological Agriculture, Gorgan, Iran.
- Kromm D. & White S. 1991. Reliance on sources of information for water-saving practices by irrigators in the high plains of the USA. *Journal of Rural Studies*, 7 (4): 411-421.
- Marsh, S. Pannell, D. & Lindner, R. 2000. The impact of agricultural extension on adoption and diffusion of lupines as a new crop in WA. *Australian Journal of Experimental Agriculture*, Vol. 40, pp. 571-583
- Mafi, H. 2008. *Organic Farming*. Available at: www.crop.blogeky.com

- Morgan, K. & Murdock J. 2000. Organic vs. conventional agriculture: knowledge, power and innovation in the food chain. *Geoforum* 31 pp. 159-173.
- Mohammadi, M. 2007. Organic farming. Available at: <http://ea-nazer.blogfa.com>
- Paull, J. 2011. The uptake of organic agriculture: A decade of worldwide development. *Journal of Social and Development Sciences*, 2(3), 111-120.
- Pourjavid, S. Alibaygi, A. & Zarafshani, K. 2011. Predictors of teaching efficacy secondary vocational agricultural schools teachers in Kermanshah Township. *Agricultural Education Administration Research*, No. 17, 67- 80.
- Ramesh, P., Singh, M. & Subba Rao, A. 2005. Organic farming: Its relevance to the Indian context. *Current Science*, 88: 561-568.
- Shook, C. L., Ketchen, D. J. Jr., Hult, G.T.M. & Kacmar, K.M. 2004. An assessment of the use of structural equation models in strategic management research. *Strategic Management Journal*, 25, 397–404.
- Van den Ban, A. & Hawkins H. 1988. *Agricultural Extension*, Longman Scientific & Technical, Essex.
- Wheeler, S. 2005. Factors influencing Agricultural professionals' Attitudes Towards Organic Agriculture and Biotechnology.
- Wheeler, S. 2008. What influences agricultural professionals' views towards organic agriculture? *Ecological Economics*, 65: 145-154.
- Willer, H., & Lernoud, J. (Eds.). (2014). *The World of Organic Agriculture: Statistics and Emerging Trends 2014*: Frick, Switzerland: Research Institute of Organic Agriculture (FiBL) & Bonn: International Federation of Organic Agriculture Movements (IFOAM).
- Yadav, D. S., Sood, P., Thakur, S. K., & Choudhary, A. K. (2013). Assessing the training needs of agricultural extension workers about organic farming in the North-Western Himalayas. *Journal of Organic Systems*, 8(1), 17-27.