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Assessment The Agricultural Student's Attitudes Towards Organic Farming (Case of Iran)

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Abstract: A surveying research was conducted to study and recognize the knowledge and attitude of students toward organic farming at three universities of Iran in 2010. Our consumption patterns and environmental behaviors are rooted in long lived practices and habits. Social norms and values are among the factors that determine what we buy or what we think about organic products. As they are largely unconscious it is difficult to change them. Students are the agriculturist of tomorrow; therefore policies aimed at developing organic farming should address the needs of this group. To discover agriculturist's knowledge organic farming, a survey among 100 agricultural students was conducted. Questionnaire was used to examine students' knowledge regarding organic farming. Finding is shown that agriculturist's awareness towards organic farming are low, especially in Pests management and Organic product standards aspect. The result of factor analysis showed that nine factors named as concepts, Nutrient safety and security, Organic farming economic, Organic farming extension, Social issue, fertility, Pests management, Environment safety, Organic product standard explained 73.71% of total variance that the first factor accounts for 11.98% of the variance, the second 10.954%, the third 9.191%, the fourth 8.505%, the fifth 8.426%, the sixth 7.536%, the seventh 7.015%, the eighth 5.746% and the ninth 4.364%. In conclusion, to enhance student knowledge about organic farming, it is important that curriculum develops for familiar student with organic farming practices and concepts such as: ecological equilibrium, agro ecosystem sustainability, new technology and indigenous knowledge, nutrition value, human safety, favorite yield production, soil structure improvement, erosion reduces and etc.

Key words: Factor analysis, knowledge, organic farming, student

INTRODUCTION

Growing environmental awareness in combination with concerns over healthy and safe food have led to a higher level of consumption of organic produce, which is perceived healthier and better with respect to the environment as compared to conventional food (Schifferstein and Oude-Ophuist, 1998). Thus the number of consumers has increased by 35% between 2003 and 2006 about 87% of consumers buy organic food occasionally or more often and 77% would welcome a broader range of available organic products (AMA, 2007).

As far as preferences of consumers are concerned, consumption of organic food has been conceptualized as one aspect of high levels of positive attitudes towards the environment, or the other way round-environmental concern has "been found to be a major determinant of buying organic food (Grunert and Juhl, 1995). However, the number of organic food consumers who are environmentally aware and demonstrate solidarity with organic farmers is diminishing in favor of those who choose organic food out of a larger product range based on trade offs between price, time, and availability (Thomas and Grob, 2005).

The body of social science literature dealing with issues of organic farming has grown steadily since 1990: Vogt (Vogt, 2000), has compiled the history of organic farming, Thomas and Grob (Thomas and Grob, 2005) have assessed changes in principles of organic farming and its importance in politics and society. Other studies assess structures of how the organic sector is being organized (Schermer, 2005), its competitiveness compared to conventional agriculture (Dabbert, 1990), but also the attitudes of farmers towards organic farming and their changes in recent years (Oppermann, 2001; Padel, 2006; Vogel and Larcher, 2007). Further research subjects include the transition from conventional towards organic farming (Fischer, 1982; Bichlbauer and Vogel, 1993), as well as the impact of organic farming on rural development, or the rural society (Schermer, 2006). There is also a number of studies on motives for buying or not

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buying organic food, willingness to pay higher prices for organic food (Hamm, 1986; Fricke, 1996), as well as of markets, marketing and regional development (Hamm *et al.*, 2002; Hamm and Gronefeld, 2004; Schmid *et al.*, 2004) with respect to organic food. An assessment of the rapidly growing body of social science literature concerning the organic sector reveals that relatively little has been published on consumers' preferences. This is especially true for different social groups, such as students (Freyer *et al.*, 2005).

Williams and Dollisso (1998) advanced that the discipline of agricultural education (teaching and learning in agriculture) should become "an active partner in achieving the goals of a sustainable agriculture industry. Marshall and Herring (1991) believed that sustainable agriculture should be integrated into the curriculum. Integrating the technical and scientific elements of sustainable agriculture would help upgrade the high school agricultural education curriculum to meet the needs of students preparing to enter the work force of the 21st century food and fiber system (NCAE, 1995).

Sustainable agriculture requires a long term perspective and continuing activities over several generations. Threfore, performance and behavior of current agricultural students as agriculturist and professionals will ensure the sustainability of agriculture in the future. In this context, since attitudes, norm and value are important determinants of human behaviors and performance, in long run; attitudes become especially important becouse they provide direction and purpose to behaviors and performance (Hyytia and Kola, 2005). Thus, a better understanding of students' attitude of organic farming would aid the development of teaching and learning initiatives in this area purposely. Regarding to this subjec, the following specific objectives were investigated:

- To find out attitude of students toward organic farming.
- To identify the most important components of the attitude of students toward organic farming.

MATERIALS AND METHODS

The population identified to participate in this study was agricultural students in agricultural colleges of university of Tehran, Mashhad, and Islamic Azad University, Karaj branch. A sampling formula indicated that a total of 220 subjects should be sampled from the population. A total of 220 students were randomly selected to represent the population. The panel of experts was used for assuring content validity. The instrument was pilot tested for clarity and reliability, the cronbach's alpha coefficient of internal consistency for the items measuring the students' perceptions toward organic farming was 0.75 showed that research tool is reliable. The instrument assessed the agriculture students' perceptions students toward organic farming. Students' knowledge was categorized with a score of 1 faded as low knowledge until 6 high, to measure students' perceptions on 32 items related to organic farming used in this study. Analyses of data were accomplished using factor analysis. Factor analysis was utilized to reveal the latent aspects behind the student' opinions. The results that follow are based on the response to the survey. The appropriateness of the data for factor analysis was evaluated using Bartlett' test of sphericity.

RESULTS AND DISCUSSION

Demographic characteristics: Of the 220 students surveyed, 43.6% was male and 56.4% female. They ranged between 18 and 28 years of age, with a mean age of 22 years. 48% of students were studying crop production and breeding, 31% were studying Animal Science and 21% were horticulture. 43.6% of them were student of Bachelor of Science; 36.7% were students of Master of Sciences; and 19.7% were Ph.D. students.

Knowledge about organic farming: To determine the knowledge of the respondents with regard to organic farming, knowledge was categorized with a score of <30 graded as low knowledge or unfavorable, 31-60 moderately knowledge or neutral and >61 high knowledge or favorable. The results in Table 1 indicated that a majority of the respondents, 48.6% had an unfavorable knowledge about organic farming, with 34.54% having a moderately knowledge and only 16.86% having a high knowledge.

Factor analysis: In this study exploratory factor analysis with data reduction approach was employed. The main objective of this technique is to classify a large number of variables into a small number of factors based on relationships among variables. For this purpose 33 variables were selected for the analysis. To determine the appropriateness of data and measure the homogeneity of variables on peasant farming system challenges from the viewpoints of extension personnel in the Ministry of Agriculture, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test measures were applied. These statistics show the extent to which the indicators of a construct belong to each other. KMO and Bartlett's test obtained for these Variables show that the data are appropriate for factor analysis as indicated in Table 2.

The Table 3 shows all the factors extractable from the analysis along with their Eigen values, the percent of variance of the factor and the previous factors. In present study, 33 components were significantly loaded into nine factors. Eigen values drive the variances explained by each factor. Sum of squares of factor's loadings (Eigen value) indicates the relative importance of each factor in accounting for the variance associated with the set of variables being analyzed. These factors explained 73.71%

Table 1: Summary of trichotomized attitudinal scores of students toward organic farming

Knowledge Score	Trichotomy	Frequency	%	Cumulative (%)
Unfavorable	<30	107	48.6	48.4
Neutral	3-60	76	34.54	83.0
Favorable	>61	37	16.86	100
Total		220	100	

Field survey (2010)

Table 2: KMO measure and Bartlett's test to assess appropriateness of the data for factor analysis

	Bartlett's test of Sphericity	
KMO	Approx. chi-square	Sig.
0.771	7911.717	0.000

Field survey (2010)

of total variance that the first factor accounts for 11.98%of the variance, the second 10.954%,the third 9.191%, the fourth 8.505%, the fifth 8.426%, the sixth 7.536%, the seventh 7.015% ,the eighth 5.746% and the ninth 4.364%. The varimax rotated factor analysis is shown in Table 4.In determining factors, factor loadings greater than 0.50 were considered as to be significant. As anticipated, the first factor accounts for 11.98% of variance and 4 variables were loaded significantly. These variables were presented in Table 4. A relevant name for this on loading's pattern is "concepts of organic farming".

Table 3: Number of extracted factors, eigen values and variance explained by each factor

Factors	Eigen value	% of variance	Cumulative % of variance
1	4.073	11.98	11.98
2	3.724	10.954	22.934
3	3.125	9.191	32.125
4	2.892	8.505	40.630
5	2.865	8.426	49.057
6	2.562	7.536	56.592
7	2.385	7.015	63.607
8	1.954	5.746	69.353
9	1.484	4.364	73.717

Field survey (2010)

Eigen value of this factor is 4.073, which is placed at the first priority among the knowledge about organic farming in students. The second factor is associated mostly with the variables related to nutrient safety. Thus this factor can be named as "nutrient safety and security". The

Table 4: Factor analysis with varimax rotation

Factors	Items	Factor loading
Concepts	Organic farming is voucher ecological equilibrium and agro ecosystem sustainability	0.917
	In organic farming should be used incorporation of new technology and indigenous knowledge	0.851
	Organic farming didn't disagree with use of up date technology that gets by mankind	0.923
	Management of organic farming is complex and it needs high technical knowledge	0.887
Nutrient safety	Organic produces is rich in nutrition value and have necessary components for human safety	0.947
and security	With organic farming currency dwindle biological grandiose and its dangers for human safety	0.955
	Regard to population accelerate growth, organic farming can support global alimentary	0.944
	Organic products for public use wholly safe and have no danger	0.910
Organic farming	Goal of organic farming is favorite yield production (and not extreme) in long term	0.893
Economic	Increase in consumer tendency to organic products occasion this method utilization	0.884
	People acquaintance with organic farming premium increases organic farming demand and extension in country	0.773
	Not demand for organic products is most important factor in don't spread that in countries like Iran	0.701
Organic farming	Organic farming extension is necessary regard to negative effects of chemical and artificial inputs use	0.615
Extension	Organic farming extension in our country confront with problem because of worry of organic farming unsuccessful	0.554
	Existence some oppositions in organic farming adoption is natural because this system is new	0.812
	All agriculture experts disagree with organic farming extension and should	0.804
	Public mediums have most important role and duty in introduced people with organic farming premium	0.855
Social issue	Organic farming extension in developing countries is lesser than developed countries	0.600
	Attention Rate to organic farming in every society is appropriate index for society safety	0.789
	Organic farming growth in world shown its adoption high percentage between farmers	0.777
	Developing countries knowledge like Iran, about organic farming is little and shallow	0.556
	Existence and performance environment laws in every society will expanse organic farming	0.786
Fertility	Organic farming make soil structure improvement and erosion reduce	0.874
	Organic farming improve soil biological activity, because of don't use artificial inputs	0.770
	Important way for plant needs support, in organic farming, is nutrients circle reclamation in soil	0.840
Pests management	Biological control with pests in organic farming, lessen naught un goal organism	0.903
	Pests resistance process against control method slow down With organic farming extension	0.914
Environment safety	Organic farming create least water, soil ,and air pollution into other agriculture methods	0.693
	Organic farming extension lessen energy use per area unit and non-renewable resources destruction	0.731
	Organic farming extension lessen ozone destruction speed and rate of nocuous radiation	0.579
Organic Product	Standards Labels on organic produces increase consumer confidence of its safety	0.633
	In order to organic farming extension, would be establish some support and supervision organization	0.793

Field survey (2010)

eigenvalue for this factor is 3.724 which explain 10.954 per cent of the total variance. The name assigned to the third factor is "organic farming economic". This factor with Eigen value of 3.125 explains 9.191% of the total variance of knowledge about organic farming of students. The fourth factor contains 5 variables relating to "organic farming extension". These variables explain 8.505% of total variance. The fifth factor is associated with the variables related to social issue. Thus this factor can be named as "social aspect" The Eigen value for this factor is 2.865 which explain 8.426% of the total variance. The sixth factor contains 3 variables relating to "fertility". These variables explain 7.536% of total variance. The seventh factor is associated mostly with the variables related to pests' management. Thus this factor can be named as "pests' management". The Eigen value for this factor is 2.385 which explain 7.015% of the total variance. Eighth factor represents environment safety of organic farming and contains 3 variables. These variables explain 5.746% of total variance. The Eigen value for ninth factor is 1.484 which explain 4.364% of the total variance that relating to "organic product standards.

Finally, according to equation, $\varepsilon_1 = w_1x_1+w_2x_2+ \ldots w_px_p$ that $\varepsilon_1,\varepsilon_2,\ldots,\varepsilon_p$ are the principle components and $w_1w_2\ldots w_p$ are the weight of the variable for the principle component, factor model is as below:

$\varepsilon_1 = 0.917x_{11}+0.851x_{12}+0.923x_{13}+0.887x_{14} = 11.98\%$
$\varepsilon_2 = 0.947x_{21}+0.955x_{22}+0.944x_{23}+0.910x_{24}+0.893x_{25} = 10.954\%$
$\varepsilon_3 = 0.893x_{31}+0.884\ x_{32}+ 0.773x_{33}+0.701x_{34} = 9.191\%$
$\varepsilon_4 = 0.615x_{41}+0.554x_{42}+0.812x_{43}+0.804x_{44}+0.855x_{45} = 8.505\%$
$\varepsilon_5 = 0.600x_{51}+0.789x_{52}+0.777x_{53}+0.556x_{54}+0.786x_{55} = 8.426\%$
$\varepsilon_6 = 0.874x_{61}+0.770\ x_{62}+ 0.840x_{63} = 7.536\%$
$\varepsilon_7 = 0.903x_{71}+0.914\ x_{72} = 7.015\%$
$\varepsilon_8 = 0.693x_{81}+0.731\ x_{82}+ 0.579x_{83} = 5.746\%$
$\varepsilon_9 = 0.633x_{91}+0.793\ x_{92} = 4.364\%$

CONCLUSION AND RECOMMENDATIONS

Sustainable agriculture may still be more of a philosophy, advocating economic, environmental, and social benefits, than a knowledge base featuring approved farming practices. The food and fiber system is in the beginning stages of responding not only to what humanity needs today but also to what future generations will require. Despite a growing body of social studies on various aspects of organic farming, preferences of different consumer groups have not yet received full attention. This is especially true for students. Our literature review revealed that only a few studies have been conducted to explore the attitudes of the young generation towards organic farming (Leitner *et al.*, 2005; Freyer *et al.*, 2005).

Agricultural students play an important role in helping to create and develop innovations. Given the importance of their role, it is important to try and understand what student's knowledge is towards organic farming.

Results of this study indicated that respondents rated themselves as having limited knowledge of organic farming practices. In this regard, the ratings of their awareness about organic farming were relatively high for environmental and social dimensions, but less so for food security and economic aspects. Students' valued organic farming Factor analysis indicated that 73% of variance in students' awareness of organic farming was determined by the 9 factors. To compare knowledge Components about organic farming determined factors, the following conclusions were drawn:

- Factors of concepts, nutrient safety and security and organic farming economic have cognitive and believe essence, in this context, students believed organic farming is voucher ecological equilibrium and agro ecosystem sustainability and in organic farming should be used incorporation of new technology and indigenous knowledge.
- Organic farming economic, social aspect and organic farming extension were identified as other factors that are shown student awareness surface. Finally factors of fertility, pests' management, environment safety, and organic product standards are other aspects that determined by student and explain least variance rate
- As a result, to enhance students' knowledge about organic farming, it is important developing curriculum to familiar student with organic farming practices and concepts such as: ecological equilibrium, agro ecosystem sustainability, new technology and indigenous knowledge, nutrition value, human safety, favorite yield production, soil structure improvement, erosion reduces and etc.
- Develop Farm-to-School FTS programs that have garnered the attentions and energies of students in a diverse array of social location in the food and agricultural systems and are serving as a sort of touchstone for many in the alternative agri-food (Allen and Guthman, 2006).
- Develop programs of community gardens that have the potential to positively influence dietary behaviors and enhance environmental awareness and appreciation (Lautenschlager and Chery, 2007).
- It is worth mentioning that the guideline results in meeting the needs of students for preparing to enter the work force of the 21st century food and fiber system.

Findings in this study may have implications on the curriculum agricultural communication faculty would

teach. Agricultural communication faculty could teach students how to write persuasive messages or design campaigns that influence farmers' attitudes toward adopting a farming practice such as organic farming. Knowing the barriers to adopting a farming practice would help students tailor the messages. Commodity professionals could use the data about barriers to adopting organic farming to improve the farming technique.

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