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University Student Attitudes Toward Organic Foods

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1. Introduction

In the recent years, new food trends have emerged, among the most popular ones of which is the organic trend. Many food companies have begun offering organic products similar to many conventional products that have been stocked on grocery shelves. These organic foods have gained a share of two percent in the grocery store purchases. Soon after organic foods began to appear, natural foods have come into the spotlight. The labels of these products read “no preservatives”, “no artificial colors” or “no artificial flavors” (Solano, 2008).

Organic agriculture is not the same as natural agriculture; the former does not use fertilizers or agricultural pesticides. Organic agriculture is an ecological production method that increases and develops the value of biological activities and varieties. Organic foods are subject to a process during which no synthetic fertilizers, agricultural pesticides, chemical herbicides (that control harmful weeds), hormones, pigments, antibiotics or chemical metal packaging etc. are used (Shepherd et al., 2005).

Organic farming is carried out in at least 160 countries worldwide. The share of organic agricultural land in total agricultural land as well as the number of organic holdings is continuously growing. The organic products market is also growing not only in Europe and North America, where the largest markets are located, but also in many emerging economies and economies in transition. More than thirty-seven million hectares of agricultural land are managed organically by 1.8 million producers. About one-third of the world’s organic land –13.4 million hectares– is located in emerging markets and markets in transition (SIPPO, 2011). Top ten countries which give priority to the organic food production in the total agricultural land are Liechtenstein (26.9%), Austria (18.5%), Sweden (12.6%), Switzerland (10.8%), Estonia (10.5%), Czech Republic (9.4%), Latvia (9.0%), Italia (8.7%), Slovakia (7.5%) and Finland (6.6%) (Willer, 2011). In 2009 global sales of organic food products reached 55 billion US dollars, more than doubling in value from 25 billion US dollars in 2003. Europe was the second largest organic market in the world after the USA with a turnover of 26 billion US dollars in 2009. Germany had 5.8 billion euros, followed by France with 3 billion euros, the UK (2.1 billion), Italy (1.5 billion) and Switzerland (1 billion). These figures increase year by year and impressively illustrate the powerful development of the organic food production and market all over the world (SIPPO, 2011).

Organic farming in Turkey, as distinct from the developments in Europe, commenced as export oriented activities in 1986 in line with the requests of importing companies. At first production and exports were conducted suitable to the legislation of importing countries

relating to this subject but continued in line with the Regulations of the European Community after 1991. In the Commission Regulation (EEC) 94/92 dated 14 January 1992 as a supplement to Regulation No. 2092/91, detailed information was provided on compliance by countries that export organic products to the European Community, that these countries put into practice the legislation of these nations and a file containing various technical and administrative matters that were included within this legislation were made compulsory in export applications to the European Community.

In order to harmonize with these developments in the European Community, the Ministry of Food, Agriculture and Livestock, together with the cooperation of various organizations and corporations commenced with preparatory activities for a regulation and the “Regulation Relating to the Production of Agricultural and Livestock Products by Ecological Methods” came into force with its publication in the Official Gazette No. 22145 of 24.12.1994. Revisions were made to this Regulation in 1995 and subsequently a new Regulation was published in 2002.

The draft law relating to the production, consumption and inspection of organic products took place within the emergency action plan of the Government and “No. 5262 on Organic Farming Law” was published in the Official Gazette No. 25659 dated 03.12.2004. The “Regulation Relating to the Procedures and Implementation of Organic Farming” prepared in accordance with Law No. 5262 came into force with its publication in the Official Gazette No. 25841 of 10.06.2005. This regulation was revised three times bearing in mind harmonization with EU legislation and the conditions pertaining to each country.

The “Regulation Relating to the Procedures and Implementation of Organic Farming” that is harmonized with the new legislation of the EU came into effect with its publication in the Official Gazette No. 27676 dated 18.08.2010 (Anonymous, 2011a).

Ecological farming is a production activity that is subject to controlled and certification. Procedures involving control and certification on ecological farming activities in Turkey are conducted by private corporations authorized by the Ministry of Food, Agriculture and Livestock in accordance with Article 11 of the Organic Farming Law.

Based on this Article, domestic and/or foreign private and official organizations that wish to carry out control and certification procedures in Turkey must apply to the Ecological Farming Commission of the Ministry of Food, Agriculture and Livestock. Prior to this application, foreign organizations must obtain the appropriate work permit from the Prime Ministry Undersecretariat of the Treasury. The Ecological Farming Commission issues an ecological farming supervision and certification permit for a particular time period after reviewing and approving the organization in question.

Since organic farming is in the form of contractual farming, control is regular record keeping of production from start to finish, observing the production process, reporting the results of the observations and testing and supervising the organic qualities of the product through laboratory analysis.

The product obtained using organic farming methods by the supervised grower, determining whether it is of organic quality and registration of certification are undertaken by authorized supervision and certification organization. These organizations receive their authority from the Ecological Farming Commission of the Ministry of Food, Agriculture and Livestock.

Up to the present time, the authority to control and certify organic farming in Turkey on behalf of the Ministry has been given to 17 control organizations. While on the one hand

these organizations provide for organic production suitable to certain criteria, controlled at every stage and for these products to be of quality and certified, they are, on the other hand, in a position to conduct the necessary chemical, microbiological and all other types of analysis from samples and specimens taken from the place of production and after evaluating the results, to label them according to their suitability. All of these activities are carried out on behalf of the Ministry and thus, these organizations are accountable to the Ministry itself (Kirazlar, 2001). At present an accredited laboratory that can carry out these analyses is only present in Izmir. This laboratory is currently conducting activities to increase the number of active substances analyzed as well as accredited active substances (Anonymous, 2011b).

In Turkey, according to the overall organic agricultural production data, the number of organic foods produced is 150 in 2002 while this number increased to 216 in 2010. In the recent years there has been a clear increase in the number of workers dealing with organic agriculture (from 12.428 people in 2002 to 42.097 people in 2010) as well as in the production space (from 89.827 hectares in 2002 to 510.033 hectares in 2010) (Anonymous, 2011c). The export rates in organic products show varieties throughout the years; in 2002 the export revenue was \$ 30.877.140 while in 2010 it receded to \$ 15.879.571 and the amount of export products decreased (Anonymous, 2011d) in spite of the increase in overall production. This can be interpreted as an increase in domestic consumption.

Although the internal market concerning organic products is not well established in Turkey, these products are sold in stands in big shopping malls. Furthermore, especially in big cities there are organic-only stores. The customer profile of these stores consists of persons with higher education, higher income, of middle and upper middle ages (Kaya, 2003). The increase in food and nutrition related health problems are directing consumers towards organic products. Due to the disparities in existing income levels in Turkey, the structure of consumption demand is adversely affected. According to estimates, the number of retail greengrocers that sell organic products in Turkey is close to one hundred. In addition to these greengrocers, certain supermarkets have organic product aisles. With consumer awareness and an increase in demand, these numbers are expected to increase. Certain hotels, motels and restaurants in touristic locations are showing signs of an increase in organic foods on their menus from natural and organic products. At present the organic domestic market in Turkey is very small but the production capacity for organic products is much higher than domestic market demand and the Turkish food industry has the adequate means, knowledge and experience on this subject (Atay and Sarı, 2007).

The researches conducted in different countries show that organic food consumers in general are educated women ranging between 30-49 years of age, with high incomes and children of six years of age or older (Davies et al., 1995; Essoussi & Zahaf, 2008; Tsakiridou et al., 2008). Makatouni (2002) states that values related to the health of one's self or family, the environment and the animal welfare are responsible for choosing organic foods. Baker et al. (2004) also claims that both German and British organic food consumers are concerned with "health, well-being and the enjoyment of life", but that the food attributes "achieving" this concern are different. For British consumers, "healthiness" and "non-genetically modified" attributes are important, whereas Germans seek "taste" and "quality". Schifferstein & Oude Ophuis (1998) find out that health was an important motivator for buying organic foods for "incidental" organic buyers in the Netherlands, whereas both health and environmental concerns were regarded by "regular" buyers. Perceptions about

organic foods remain the same; that they are healthy, beneficial for the environment and taste good or better than conventional foods (Lea & Worsley, 2005; Padel & Foster, 2005; Zhao et al., 2007).

Consumers interested in the organic food industry are also worried about pesticides and growth hormones in food. The organic food sector's main target is individuals aging from 18 to 29 years; however, this group of people does not consist of regular buyers. Tsakiridou et al. (2008) finds out that most college students do care about the environment and are interested in organic foods, but at this point in their lives they cannot justify spending higher prices on organic foods; while most organic food consumers have college degrees and are interested in the processing and handling of the food they consume. Younger generations are the original target but research has shown that women in their 30s to 50s form the majority of individuals buying organic products (Essoussi & Zahaf, 2008).

Many conventional products today have their organic equivalents. Lately natural foods have begun to appear on grocery shelves alongside conventional and organic products. However, it may not be clear to the average consumer what differences there are between these products. If consumers do not understand how these products differ they may be purchasing a product with attributes that they do not want to pay for. They may be paying a higher price than necessary (Solano, 2008). This study has been planned focusing on the assumption that education has certain effects on the individuals' behavior and attitude, and it was carried out among the university students in Ankara in order to determine their attitudes towards organic foods.

2. Methodology

2.1 Procedure

The center of the research was Ankara, Turkey's capital, and the research participants were the students attending Ankara University Faculty of Health Sciences. The reasons behind choosing this faculty as the site of research are that the researchers is working at the same faculty, and that the students attending may have more information on organic foods and answer the statements in the questionnaire more consciously thanks to the curriculum of their faculty. The faculty consists of six departments, namely the Department of Nutrition and Dietetics, Child Development, Midwifery, Nursery, Health Services Management and Social Work. The Department of Child Development is excluded from the research as there are only freshmen students attending the department. All of the departments in the faculty are four-year schools. In the Faculty of Health Sciences there are 399 freshmen students, 331 sophomores, 302 juniors and 216 seniors (Department of Child Development excluded), the total of which amounts to 1248 students. This number consists of 1025 female students to 223 male students. In the beginning of this research it was planned to include all of the students attending to the faculty. The questionnaires were handed out to everyone who had come to school that day and delivered to 879 people. 40 questionnaire forms are excluded from the research due to being filled incorrectly or incompletely. So, 849 students -145 of which are from Department of Nutrition and Dietetics, 226 from Department of Midwifery, 207 from Department of Nursery, 140 from Department of Social Services, 121 from Department of Health Services Management- have participated in the research.

The research data is collected through a questionnaire along with face to face interviews by researchers. Previous studies on the topic are utilized in preparing the questionnaire items

(Wen Chei Chan, 2008; Vanderkloet, 2008; Chen, 2007; Lawrence, 2007; Lockie et al., 2004). The questionnaire form is composed of two sections, the first of which contains general information items; the second part contains items related to the attitudes towards organic foods. The data was collected between April and May 2011.

A Likert type scale consisting of 59 statements was used to determine the perception of organic foods. There were 59 statements in the scale, including both negative and positive sets of sentences. The positive statements were scored as follows: "I strongly agree" (5), "I agree" (4), "Undecided" (3), "I don't agree" (2), and "I strongly disagree" (1). The scoring for the negative statements was exactly the opposite (statements no: 9, 17, 18, 23, 24, 26, 40, 44, 45, 47, 51, 52).

Whether the items in the questionnaire were able to measure the attitudes towards organic foods or not was tested by using structural validity analysis. The analysis determined the items that measured the repeating and different structures, and whether the items were included in a sub-structure or not was determined by examining the values for item factor loadings (Büyüköztürk, 2002).

Although loading values of 0.45 and above are recommended in the factor analysis, in practice, there has been some cases in which a loading value of 0.30 was also acceptable as the lowest loading value. In this study, too, the loading value of 0.30 or above for an item was accepted as adequate. The items with higher values were selected, and those with lower values were not included in the statistical analyses applied in the later stages of the study (18 items were removed) (Kerlinger, 1973; Tabachnick & Fidell, 1989).

For the reliability of the questionnaire, "Cronbach Alpha", the internal consistency coefficient is calculated, and the alpha value was found to be 0.93 (mean: 3.74, min: 3.13, max: 4.21). Accordingly, it is agreed that the "Attitudes towards Organic Foods" scale was a valid and reliable instrument.

The factor analysis conducted for the validity of the "attitudes towards organic foods" scale results in six factors: (i) Positive statements regarding organic foods (factor loadings 0.37-0.74); Negative statements regarding organic foods (factor loadings 0.53- 0.70); Statements regarding organic food production (factor loadings 0.60-0.70), Purchasing organic foods (factor loadings 0.54-0.68), Comparing organic foods with traditional foods (factor loadings 0.37-0.67), Organic foods and environment/chemical usage (factor loadings 0.49-0.73) (see Appendix).

When all the statements were replied, the grades obtained from the 'Positive statements regarding organic foods' part amounts to 60 points; the 'Negative statements regarding organic foods' and 'Comparing organic foods with traditional foods' parts, 40 points; the 'Statements regarding organic food production' and 'Purchasing organic foods' parts, 20 points, and the 'Organic foods and environment/chemical usage' part, 25 points, sum total of which is 205 points.

2.2 Statistical analyses

Data obtained as the result of the research were evaluated by the Statistical Package for Social Sciences (SPSS) software, by taking the "gender", "department", "grade" variables into consideration. In evaluating the organic food attitudes grades, "Independent- samples *T* test" for the gender variable, "One-way anova" analysis and "LSD test" for the other variables have been applied. Frequencies, averages and standard deviations were calculated (Kesici & Kocabaş, 1998).

3. General Information

3.1 Demographics

Seventeen point five percent of the students participating in the research are males while 82.5% are females. Seventeen point three percent of the students are from the Department of Nutrition and Dietetics, 26.9% from Midwifery, 24.7% from Nursery, 16.7% from Social Services, 14.4% from Health Services Management. Thirty two point eight percent of the students are freshmen, 32.9% sophomores, 24.7% juniors and 9.7% seniors. Forty nine point six percent of the students stay in the dormitories while 30.3% share home with their friends, 17.6% stay with their families and 2.5% live alone or with relatives.

3.2 Organic food consumption

When asked whether they make shopping for the household, 51.6% of the students answered "sometimes", 46.1% "always" and 2.3% "never". Fifty seven point four percent of the students stated that they eat organic food. Those who do not consume organic food gave the reasons that they cannot find the products everywhere (45.7%), the products are expensive (38.7%), they do not have the need for these products (15.7%). Fifty six percent of the students which claimed to eat organic food consumes these products occasionally, while 25.1% of them answered "frequently", 16.0% "rarely" and 2.9% "always". They completed the statement "If I could not find organic food at the store I go for shopping..." and 42.7% of the answers are "I would buy non-organic foods", 25.9% are "I would buy another similar organic food", 15.6% are both "I would go to another store that I possibly could find" and "I would postpone shopping". The statement "If the prices between organic foods and traditional foods are similar...", asked to determine the effect of the prices on students' preferences, is mostly (52.3%) answered with "I would buy as much organic food as I can". Twenty eight point four percent of the answers are "I would do whatever I am doing currently" while 19.3% are "I would buy more organic food than I do currently".

3.3 Attitudes towards organic foods

In Table 1 the students' answers to the statements regarding organic foods are shown in percent values. Although most of the students think that organic foods have better quality and are free of any unhealthy effects, they have shown ambivalence (46, 48, 55) or disagreement (29, 36, 38, 42, 49, 59) to certain statements. Among the positive statements presented, the one which has been disagreed most (55.3%) is "I would buy organic foods as I see many benefits in them (for environment, health and animal rights)". Those who strongly agree with the statement "I feel healthy when I eat organic foods" are the fewest (2.2%).

Nevertheless, the students show disagreement to all of the negative statements regarding organic foods. Most of the students participating in the research have correct knowledge about the production of the foods (that they do not contain additives, preservatives/artificial flavors, are not treated with hormones or antibiotics, and are not genetically modified). They mostly answer "I agree" to the statements in this section.

Although they find organic foods more expensive, the rate of those who think that more agricultural land and more space in the groceries should be given to organic foods and of those who would be glad to consume more organic food is higher. According to the statements given in the section in which organic foods are compared with traditional foods, the students find organic foods more reliable in terms of taste, nutrition, health, quality, safety and against the risk of illnesses. Except for the statement "Organic foods reduce soil contamination", the students mostly answered "I agree" to the statements related to organic foods and chemical usage.

	I strongly agree	I agree	Undecided	I don't agree	I strongly disagree
Factor 1 Positive statements regarding organic foods					
20. Organic foods have better quality. (n=835)	26.0	47.2	20.7	4.0	2.2
22. Organic foods are free of harmful effects. (n=829)	14.2	42.7	32.1	8.2	2.8
29. I feel healthy when I eat organic foods. (n=830)	2.2	10.0	26.4	40.8	20.6
36. I think organic foods are fresher. (n=838)	2.3	7.9	21.8	46.4	21.6
38. I would buy organic foods as I see many benefits in them (for environment, health and animal rights). (n=835)	1.4	7.8	17.8	55.3	17.6
42. If everyone consumed organic products, the world would be a better place. (n=831)	2.8	10.6	27.1	40.4	19.1
46. Organically produced food means completely reliable food. (n=824)	4.9	19.7	40.4	25.0	10.1
48. Infant foods with organic ingredients have more nutrients than traditional foods. (n=832)	4.1	14.2	38.1	31.2	12.4
49. I live longer if I consume organic foods. (n=831)	5.8	17.2	31.5	33.0	12.5
50. Consuming organic foods helps the prevention of obesity. (n=830)	2.8	12.8	28.6	40.4	15.5
55. I think organic food consumption has no risks. (n=830)	3.0	15.7	39.3	28.8	13.3
Factor 2 Negative statements regarding organic foods					
24. I am against my parents' or relatives' consumption of organic foods. (n=821)	3.0	4.9	7.9	46.2	38.0
26. I do not consume organic foods because I do not want to try foods produced by new technologies. (n=821)	4.0	8.9	19.0	47.1	21.0
40. Consuming organic foods are not amongst the actions I can take to protect the environment. (n=837)	5.0	14.7	24.4	43.5	12.4
44. Organic infant foods are not as healthy as traditional foods. (n=828)	5.9	12.7	35.1	34.1	12.2
45. Organic foods will bring harm to the society rather than benefits. (n=826)	3.4	6.5	18.5	47.8	23.7
47. As it modifies the foods we consume, it is dangerous to eat organic foods. (n=833)	3.7	11.3	26.2	42.1	16.7
51. I think the risks organic foods bring surpass their benefits. (n=827)	5.7	11.9	27.7	41.1	13.7
52. Regular consumption of organic foods is harmful for my health. (n=825)	3.0	7.2	22.3	48.1	19.4

Factor 3 Statements regarding organic food production					
14. Organic foods do not contain additives.	24.2	41.5	23.7	8.5	2.1
32. Organic foods do not contain preservatives or artificial colors. (n=823)	20.8	42.0	27.6	7.4	2.2
33. Organic foods are produced without using hormones or antibiotics. (n=830)	17.8	37.6	33.7	8.1	2.8
34. Organic foods are not genetically modified. (n=836)	21.9	39.6	28.6	7.3	2.6
Factor 4 Purchasing organic foods					
13. I would be glad to consume more organic food as long as I can find them. (n=826)	40.8	41.3	10.8	4.6	2.5
15. I think groceries should give more space to organic foods. (n=833)	40.2	44.1	9.1	4.7	1.9
16. I think more agricultural land should be spared for organic foods. (n=829)	42.3	43.4	7.5	3.7	3.0
21. Organic foods are more expensive. (n=830)	37.3	46.9	10.8	3.5	1.4
31. I am protecting the environment by consuming organic foods. (n=834)	17.3	47.7	26.4	7.0	1.7
Factor 5 Comparing organic foods with traditional foods					
6. Organic foods taste better than traditional foods. (n=825)	38.8	35.9	15.3	7.5	2.5
7. Organic foods are more nutritious than traditional foods. (n=824)	37.7	36.5	16.1	6.8	2.8
8. Organic foods reduce the risk of illnesses. (n=809)	40.8	40.5	12.0	4.7	2.0
9. The vitamin and mineral content of organic foods are not more than those of traditional foods. (n=824)	7.6	16.4	22.5	37.5	16.0
10. Organic foods are more reliable than traditional foods. (n=825)	32.4	40.2	19.5	5.8	2.1
17. I do not think there is any difference between organic foods and traditional foods. (n=830)	4.3	8.8	17.8	44.7	24.3
18. Organic foods do not have better quality than traditional foods. (n=821)	2.6	9.4	19.4	47.1	21.6
23. I think the consumption of organic foods is a trend. (n=828)	11.0	22.9	19.9	32.5	13.6
Factor 6 Organic foods and chemical usage					
1. Organic foods are not treated with any chemicals. (n=832)	22.2	45.0	19.5	10.5	2.9
2. No chemical fertilizer is used in the production of organic foods. (n=834)	19.2	37.3	26.9	12.6	4.1
3. Organic foods reduce soil contamination. (n=835)	2.2	4.0	20.7	47.2	26.0
4. Organic foods reduce the use of pesticides in agriculture. (n=800)	15.6	38.2	37.9	6.1	2.1
5. Organic foods secure the biological balance of nature. (n=821)	29.2	53.0	11.3	4.5	1.9

Table 1. Students’ attitudes towards organic foods (%)

3.4 Variables

The findings have been analyzed with respect to gender, department and grade variables.

3.4.1 Gender

In Table 2 average points related to the students’ attitudes towards organic foods are presented.

	Male	Female	t	Sig
Positive statements regarding organic foods	41.0+8.20	42.6+7.21	2.300	0.022*
Negative statements regarding organic foods	27.2+5.83	29.0+5.34	3.460	0.001**
Statements regarding organic food production	14.0+3.65	14.7+3.20	2.223	0.027*
Purchasing organic foods	15.3+3.69	16.7+2.78	4.309	0.000***
Comparing organic foods with traditional foods	28.4+6.10	18.9+5.46	2.689	0.007**
Organic foods and chemical usage	17.1+4.33	29.8+3.45	4.307	0.000***
General attitudes	143.3+23.6	151.6+20.9	3.977	0.000***

*p<0.05, **p<0.01, ***p<0.001

Table 2. The results of t test towards organic food attitudes scale of students based on gender

In the general total, the average points of females (151.6+20.9) are higher than males (143.3+23.6). According to the statistical analysis results this difference is important (p<0.001). When the chart is evaluated regarding six different parts, except for the part “Comparing organic foods with traditional foods”, in each part the same pattern can be found although the magnitude scale shows differences.

3.4.2 Department

Table 3 shows the average points of the students’ attitudes towards organic foods for each department

	1	2	3	4	5	F	Sig	Difference
Positive statements regarding organic foods	41.4+6.24	43.5+8.07	43.0+6.49	40.9+8.05	41.6+7.79	4.025	0.003*	1-2, 2-4, 2-5, 3-4
Negative statements regarding organic foods	30.4+4.20	28.3+5.85	29.2+5.21	28.4+5.78	27.2+5.62	6.630	0.000**	1-2, 1-3, 1-4, 1-5, 3-5
Statements regarding organic food production	14.7+2.88	14.9+3.46	14.6+3.22	14.1+3.26	14.1+3.54	1.717	0.144	
Purchasing organic foods	16.9+2.33	16.7+3.06	16.7+2.74	15.8+3.22	15.5+3.51	5.994	0.000**	1-4, 1-5, 2-4, 2-5, 3-4, 3-5

Comparing organic foods with traditional foods	29.9±5.02	30.0±5.66	30.2±5.36	29.2±5.48	27.6±6.27	5.221	0.000**	1-5, 2-5, 3-5, 4-5
Organic foods and chemical usage	19.2±3.14	18.9±3.56	18.7±3.50	17.3±4.00	17.7±3.96	7.606	0.000**	1-4, 1-5, 2-4, 2-5, 3-4, 3-5,
General attitudes	152.8±18.5	152.5±23.0	152.5±19.4	146.0±22.6	143.4±22.8	6.212	0.000**	1-4, 1-5, 2-4, 2-5, 3-4, 3-5

1. Nutrition and Dietetics 2. Midwifery 3. Nursery 4. Social Services 5. Executive in Health Institutes
*p<0.01, **p<0.001

Table 3. The results of variance analyses of the attitude scales towards organic foods based on students’ departments

The department with the lowest score in the attitude scale towards organic foods is Health Services Management (143.4±22.8). It is followed by the points scored by the students in the Department of Social Work (146.0±22.6). According to the results of the statistical analysis results this situation is meaningful (p<0.001) and the difference is generally between these two departments and the rest. Other three departments have scored quite similarly, the highest of which belongs to the students in the Department of Nutrition and Dietetics.

3.4.3 Grade

Table 4 shows the average attitude points towards organic foods based on the students’ grade

	1	2	3	4		Sig	Difference
Positive statements regarding organic foods	38.9±6.97	38.5±6.75	37.7±6.53	40.2±7.79	2.963	0.031*	2-4, 3-4
Negative statements regarding organic foods	28.8±5.52	28.7±5.48	28.1±5.23	30.2±5.60	3.048	0.028*	1-4, 2-4, 3-4
Statements regarding organic food production	14.6±3.38	14.6±3.14	14.1±3.23	15.0±3.62	1.711	0.163	
Purchasing organic foods	19.9±3.56	20.5±3.19	19.6±3.65	20.8±3.59	4.052	0.007**	1-2, 1-4, 2-3, 3-4
Comparing organic foods with traditional foods	29.8±5.51	29.5±5.37	29.0±5.73	30.2±6.30	1.213	0.304	
Organic foods and chemical usage	18.7±3.45	18.2±3.58	18.4±3.78	18.7±4.35	0.866	0.458	
General attitudes	150.7±22.7	150.3±19.9	147.2±20.5	155.4±24.8	2.990	0.030*	3-4

*p<0.05, **p<0.01

Table 4. The results of variance analyses towards organic food attitudes scale of students based on grade

In the general total, third-grade students scored the lowest, and the difference of their score with senior students' score is considerable ($p < 0.05$). When all departments evaluated, the attitude scales of the fourth-grade students are always higher. The scores attained from the parts positive statements regarding organic foods ($p < 0.05$), negative statements regarding organic foods ($p < 0.05$) and purchasing organic foods ($p < 0.01$) show statistically considerable difference by grades. In general this difference can be considered as resulting from the scores attained by fourth-grade students.

4. Discussion

This study aims to determine future-consumer students' attitudes towards organic foods the production and consumption of which increase day by day. After the evaluations it is concluded that the students' attitudes are in general positive. In various studies, too, similar results have been obtained (Chryssoidis & Krystallis, 2005; Tarkiainen & Sundqvist, 2005; Lawrence, 2007; Arvola et al., 2008; Urena et al., 2008).

Several factors affect the development of positive attitude towards any food. Various studies have shown that concerns about health and environment also bring about positive attitudes towards organic foods (Chryssoidis & Krystallis, 2005; Radman, 2005; Saba & Messina, 2003; Magnusson et al., 2003; et al., 1994; Davies et al. 1995; Wandel & Bugge, 1997). Chen (2007) states, in the study conducted in Taiwan, that the naturalness of the food, animal rights and protection of the environment are also among the sources of positive attitudes towards organic foods for the adults.

Regular consumers of organic products believe that organic food is healthier and has a better quality than factory or traditionally processed food (Vindigni et al., 2002). Bissonnette and Contento (2001) find out in their study that about three-quarters of the respondents agreed that organic foods are better for the environment (73.7%) and better for their personal health (74.8%). Radman (2005) deduces that Croatian consumers consider organically grown products as very healthy and of good quality. Another study conducted in Canada shows that the participants find organic foods healthier and more beneficial for the environment (The Nielsen Company, 2007).

Lawrence (2007) finds out that college students at Oklahoma State University agrees with many statements presenting organic foods as a healthy, non-risky, environmentally friendly food option. These students perceive organic foods to be completely safe to eat and are willing to serve organic foods to their friends.

The attitudes and thoughts of people towards organic foods have effects on buying decisions. According to a survey, 52.8% of Americans buy organic foods because they believe organic foods are better for their health and 52.4% buy them because they believe these foods are better for the environment (Whole Foods Market, 2005). Hughner et al. (2007) shows that consumers' main reason for purchasing organic food is health concerns. In a study conducted in Northern Ireland, it is found that the three main reasons for purchasing organic foods are health, environment and taste respectively (Davies et al., 1995).

Consumers believe that organic products have better quality; therefore, these products also will taste better (Roddy et al., 1996). Taste is a factor affecting customers' choice in purchasing organic products, but studies have shown that they detect no difference in taste when comparing organic meats to non-organic meats (McEachern & Willock, 2004). But Radman (2005) finds out that Croatian consumers consider organically grown products very

tasty. In our study, too, the participating students find these foods more delicious and healthy and think that their taste is better (Table 1).

Generally if one has a positive attitude towards something, this attitude is expected to reflect in the behavior later (Ajzen, 1991). In other words, if a person has a positive attitude towards organic foods, he/she is expected to buy them. However, Shepherd et al. (2005) found a disparity between attitudes and behavior - despite the majority of surveyed consumers holding positive attitudes towards organic foods, only 4-10% reported an inclination to choose the organic options next time. For organic foods are also thought to be expensive (Finch, 2005; Padel & Foster, 2005; Radman, 2005; Shepherd et al., 2005; Whole Foods Market, 2005; Anonymous, 2004) - a common barrier to their purchase (Finch, 2005; Fotopoulos & Krystallis, 2002; Lea & Worsley, 2005; Padel & Foster, 2005). In another study conducted in Turkey, the reasonability of the prices ranked highest among the attributes sought in organic products (Sarıkaya, 2007). There are also discouragements to buying organic food, mainly high price and low availability (Fotopoulos & Krystallis, 2002; Anonymous, 2004; Lea & Worsley, 2005; Padel & Foster, 2005; Tsakiridou et al., 2008). In our study, it is shown that the students find organic foods more expensive and they state that they would buy more organic food if they had a similar price with traditional food. Considering the per capita income in Turkey, these statements are reasonable. Resembling to our results, in the study conducted by Chrysoschoidis and Krystallis (2005), the participants state that they like organic foods better than traditional foods and they would prefer them if sold in similar prices.

There are several factors involved in the choice of organic foods: place of purchase, values, beliefs that they are healthier or better for the environment, positive attitudes, and sensory characteristics of the food. In addition to these factors, certain demographic characteristics, such as being female or young, may also contribute to a greater likelihood of buying organic food (Davies et al., 1995; Lockie et al., 2004; Onyango et al., 2007). Consumers of organic products are typically women in their late 30s to 50s, and normally these consumers are interested in their health and uncomfortable about food not organically raised; they generally have children and at least a bachelor's degree (Davies et al., 1995). These consumers are concerned with animal welfare, environmental issues and knowing how their food is raised (Bellows et al., 2008). Radman (2005), Storstad & Bjørkhaug (2003) and Davies et al. (1995) have shown in their studies that females buy more organic foods than males. In this study, too, female students give more positive answers to all statements about their attitudes towards organic foods than male student.

Bocchetti (2009) states that students, housewives, highly-educated people and those concerned with environment have positive attitudes towards organic foods. Some studies show that the young have positive attitudes towards organic foods, but the actual consumers consist of individuals of older age groups (Hughner et al., 2007; Magnusson et al., 2001). In our study, too, more than half of the participants claim to consume organic foods while only 2.9% of them are regular consumers. This low rate may be the result of certain circumstances such as the study group's consisting of students, their financial dependence on their families, and their residing in dormitories and eating the food presented there. In another study, similar to our results, one-third of respondents claim to buy organic foods "very often" or "often", and another 43 percent claims that their purchase of such products is "rare" (Radman, 2005). In another study, rare buyers score highest (58.3%) while regular buyers score lowest (6.0%) (Tarkiainen & Sundqvist, 2005). Another

research conducted with the young shows that they are not concerned about whether the food they consume is organic or not (71.8%), they attach importance to the taste (93%), price (78.7%), reliability (93.9%), healthiness (83.9%) as well as the appearance (75.3%) of the food (Bissonnette and Contento 2001). In a regular organic food consumer group, among the reasons behind their choices the most important for them is that organic foods do not contain chemicals, hormones or additives, while the reasons of taste, nutrition and price follow (Sarıkaya, 2007).

A higher educational level corresponds with more knowledge, a positive relationship between educational level with the knowledge and acceptance of organic food can be assumed (Stobbelaar et al., 2007). In the study conducted by Radman (2005), a positive correlation between education level and organic food consumption is detected. In this study, too, fourth-grade students' attitude scales are higher than the rest of the students. As people have more knowledge on a subject, they may develop better attitudes towards that subject. Considering the fact that the students participated are educated on health sciences, it can be stated that they develop positive attitudes towards these foods by evaluating them in terms of health.

Students did support organic food and stated that they would purchase more organic products if they were cheaper. Younger shoppers, in theory, support the organic industry, but this age group is unable to afford organic products (Essoussi & Zahaf, 2008). Similarly, our participants state that they would consume more organic products if they were cheaper or had similar prices with traditional foods. As stated above, the research group's consisting of students who are financially dependent on their families, namely their having less purchasing power, can be interpreted for their inability to buy organic products.

In the study carried out by Sarıkaya (2007), among the leading reason why consumers purchase organic products is environmental awareness. The study points out the lack of trust felt by consumers towards organic products. This situation also explains why organic products are not rapidly becoming widespread in Turkey. At the same time the study states that consumers make a point in obtaining information on control and supervision and think that non-organic products are harmful in terms of health. Consumers participating in the study consider it normal for organic product prices to be expensive and that they are ready to pay more compared to the alternatives to organic products. It has been determined that consumers have health concerns and for this reason are inclined to consume these products. The study points out that participants purchase these products mostly from supermarkets. While women compared to men give more importance to the supervision of organic products, women also find these products more reliable compared to men. As the level of education increases, the importance attached to environment friendly products also increases. It has also be noted that women pay attention to brand names when purchasing products.

Another study conducted in Turkey, they determined that factors, such as income, price, having information on organic foods, health and quality are also proven to influence purchasing behavior (Sanlier et al., 2011).

Although organic food production and consumption increase, organic foods in Turkey are still in the introduction stage and not widely prevalent, thus resulting in low familiarity with them among the general public. In a study conducted to determine the potential demand for organic products in Ankara, Turkey, this demand is investigated based on four products with different price levels (tomato, cucumber, chicken meat, egg). Thirty three point four percent of the families that have filled in the questionnaire correctly know what

an organic (natural and ecological) product is. Also, it comes to the fore that for the products in question (tomato, cucumber, chicken meat, egg) there is a consumer group willing to cover the price difference for organic products. According to these results, there is a considerable demand for the stated organic products (Koç et al., 2001). Consumers of organic foods are willing to pay more for their food to ensure the food has no growth hormones or that unnecessary chemicals and pesticides are not used during the production process (Bellows et al., 2008). As supported by the studies performed in these times in which the awareness about health gradually increases, there is a general demand for the production and consumption of organic foods. Although these products are comparatively expensive than other products, they have more demand and place in groceries as well as more organic-only stores. However, the consumption rate in our country is still lower than other countries. Therefore, these products should be made accessible to everyone spatially and financially by governmental regulations.

5. Conclusion

Environmental pollution appearing alongside with increasing technological progress also makes itself felt in the food chain. Especially, the widespread products with known or yet-unknown side effects for human health, such as genetically modified foods or foods with hormones, pose a serious threat to human health. For this reason, the demand for naturally produced organic products with no side effects increases day by day. As the education and income levels of the consumers rise, they have more awareness of and likewise show more demand for organic products (Sarıkaya, 2007). Nevertheless, despite the upturn in Turkey's domestic market, the percentage of organic agricultural production is still under 1%. Generally, consumers do not have enough knowledge about the features of organic products, such as their production techniques, their role in protecting the environment or health values (Sanlier et al., 2011). By this study, the attitudes towards organic products of students who use them and the factors affecting their preferences are tried to be presented. In general, it is found out that the students' attitudes are positive but their buying rates are rather low.

The research shows that the average of the organic foods attitudes scale level of all 839 students is positive (150.2 ± 21.6 , out of 205 possible points). The points received from the "Positive statements regarding organic foods" section (42.3 ± 7.42 ; out of 60 possible points) are lower than the points received from the "Negative statements regarding organic foods" (28.7 ± 5.47 , out of 40 possible points), and "Statements regarding organic food production" (14.5 ± 3.29 , out of 20 possible points), "Purchasing organic foods" (16.4 ± 3.00 , out of 20 possible points) "Comparing organic foods with traditional foods" (29.5 ± 5.60 , out of 40 possible points) and "Organic foods and chemical usage" (18.5 ± 3.67 , out of 25 possible points) sections.

With the results obtained, we try to understand to what extent the students in the organic food market have awareness about organic products. These results are thought to be helpful in related companies' decisions concerning organic products.

6. Limitations of the study

This study has examined university students' attitudes towards organic foods; however, the results are limited only to Ankara University students who have participated in this study.

The results of this study reflect the attitudes and ideas of the student participants attending Ankara University Faculty of Health Sciences and cannot be generalized to other population frames.

7. Significance of the study

This study will allow researchers to better understand university students’ attitudes towards organic foods. In addition, this research will allow researchers to better understand what health sciences students think when purchasing organic foods. University students are future buyers and will soon be making decisions on what food to purchase. Knowing how this group perceives organic foods will highlight areas for future research and education. Moreover, these students who are going to be working in health field will probably influence their consultants with their own perception of organic foods.

8. Appendix

Factor 1 Positive statements regarding organic foods	Factor loadings
20. Organic foods have better quality.	0.39
22. Organic foods are free of harmful effects.	0.37
29. I feel healthy when I eat organic foods.	0.60
31. I am protecting the environment by consuming organic foods.	0.42
36. I think organic foods are fresher.	0.49
38. I would buy organic foods as I see many benefits in them (for environment, health and animal rights).	0.54
42. If everyone consumed organic products, the world would be a better place.	0.62
46. Organically produced food means completely reliable food.	0.54
48. Infant foods with organic ingredients have more nutrients than traditional foods.	0.59
49. I live longer if I consume organic foods.	0.74
50. Consuming organic foods helps the prevention of obesity.	0.69
55. I think organic food consumption has no risks.	0.53
Eigenvalues:11.828 Variance explained by single factor:11.628 Alpha:0.86	
Factor 2 Negative statements regarding organic foods	
24. I am against my parents’ or relatives’ consumption of organic foods.	0.54
26. I do not consume organic foods because I do not want to try foods produced by new technologies.	0.54
40. Consuming organic foods are not amongst the actions I can take to protect the environment.	0.53
44. Organic infant foods are not as healthy as traditional foods.	0.54
45. Organic foods will bring harm to the society rather than benefits.	0.70
47. As it modifies the foods we consume, it is dangerous to eat organic foods.	0.68
51. I think the risks organic foods bring surpass their benefits.	0.64
52. Regular consumption of organic foods is harmful for my health.	0.69
Eigenvalues:2.902 Variance explained by single factor:21.194 Alpha:0.80	

Factor 3 Statements regarding organic food production	
14. Organic foods do not contain additives.	0.60
32. Organic foods do not contain preservatives or artificial colors.	0.69
33. Organic foods are produced without using hormones or antibiotics.	0.70
34. Organic foods are not genetically modified.	0.70
Eigenvalues:2.153 Variance explained by single factor:29.813 Alpha:0.85	
Factor 4 Purchasing organic foods	
13. I would be glad to consume more organic food as long as I can find them.	0.68
15. I think groceries should give more space to organic foods.	0.63
16. I think more agricultural land should be spared for organic foods.	0.67
21. Organic foods are more expensive.	0.54
Eigenvalues:1.732 Variance explained by single factor:37.558 Alpha:0.77	
Factor 5 Comparing organic foods with traditional foods	
6. Organic foods taste better than traditional foods.	0.53
7. Organic foods are more nutritious than traditional foods.	0.59
8. Organic foods reduce the risk of illnesses.	0.41
9. The vitamin and mineral content of organic foods are not more than those of traditional foods.	0.44
10. Organic foods are more reliable than traditional foods.	0.53
17. I do not think there is any difference between organic foods and traditional foods.	0.65
18. Organic foods do not have better quality than traditional foods.	0.67
23. I think the consumption of organic foods is a trend.	0.37
Eigenvalues:1.386 Variance explained by single factor:45.051 Alpha:0.79	
Factor 6 Organic foods and chemical usage	
1. Organic foods are not treated with any chemicals.	0.49
2. No chemical fertilizer is used in the production of organic foods.	0.60
3. Organic foods reduce soil contamination.	0.70
4. Organic foods reduce the use of pesticides in agriculture.	0.73
5. Organic foods secure the biological balance of nature.	0.62
Eigenvalues:1.319 Variance explained by single factor:51.999 Alpha:0.78	
Items that have been removed	
11. Organic foods look worse than traditional foods.	-
12. Organic foods have less shelf-life.	-
19. I do not buy organic foods as they are more expensive than traditional foods.	-
25. I do not consume organic foods because I cannot find them where I do my shopping.	-
27. I am not sure whether organic foods are really produced organically.	-
28. If I had thought they were really organic, I would have bought these foods.	-
30. Consuming organic foods means spending more money.	-
35. If organic foods were sold packaged and labeled, I would buy them.	-
37. I think that organic foods have better quality for they are sold in higher prices.	-
39. I think that traditional foods are as healthy as organic foods.	-

41. The companies producing organic foods are only after more profits.	-
43. Consuming organic foods is a political decision.	-
53. I think that organic food production is actively controlled by the government.	-
54. The government supervises the food industry in terms of organic foods.	-
56. I think that people are not informed enough about organic foods.	-
57. It takes time to get information about organic foods from the media.	-
58. An organic food can be presented to the market as a classical product.	-
59. Mandatory labeling regulation should not be preferred as it would increase the cost of organic foods.	-

The items and the factor loadings of this study

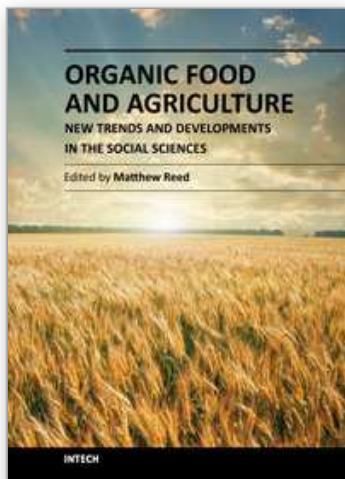
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The global phenomenon of organic food and farming, after three decades of progress, faces new challenges as markets mature and the impacts of the global recession start to change consumers and farmers' expectations. This global survey of the organic food and farming considers how the social sciences have come to understand in what way consumers make their choices as they shop, and how new national markets evolve. It also surveys how established organic sectors in North America and Europe are changing in response to the changes, that in part, the organic movement has created. Moving from a wide range of social science disciplines, methodologies and perspectives, this book represents an excellent starting place for new readers, and offers innovation to those already familiar with the literature.

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