Journal of Applied Sciences

ISSN 1812-5654

science alert

ANSInet
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http://ansinet.com

Journal of Applied Sciences 7 (5): 748-754, 2007
ISSN 1812-5654

Factors Affecting the Adoption of the Organic Dried Fig Agriculture System in Turkey

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Abstract: In this study the factors affecting the adoption of organic dried fig agriculture in Turkey were investigated. These factors were divided into three groups, these being social, structural and intellectual factors. The effect of these factors was established using the probit analysis method. It was found that, of the social factors, the education status, age and fig-growing experience of producers were important parameters in the adoption of organic dried fig agriculture. Meanwhile, among the structural/economic factors fig production amount stands out as an important parameter. As for intellectual factors, it was observed that the extent to which producers were conversant with subvention policies, kept up to date with dried fig export prices and/or were knowledgeable an the subject of aflatoxin were important parameters. As a result, in the diffusion of organic dried fig agriculture in Turkey education project about organic farming need to be increased. It was vital that producers be made aware of sustainable farming practices, quality and standards, export demand and expectations and the European Union and its practices. On the other hand, it is very important that producer be provided with financial support in the transition to organic farming and be given guarantees regarding the marketing of their produce.

Key words: Organic agriculture system, dried fig, Turkey, Probit analysis, agricultural techniques

INTRODUCTION

Turkey is one of the countries with a very high fruit production potential. It is in the position of being the gene centre for many fruit types and species. Of the approximately 140 fruit types found in the world, 80 are grown in Turkey. The fig is one of these fruits. Belonging too the type Ficus Carica Domestica, the fig is a fruit which has been able to spread in all Mediterranean countries and in the United States of America, Australia and Southwest Asia, which have similar climatic conditions. It is grown in sub-tropical and tropical regions and, to a certain extent, in the temperate zone.

In Turkey dried fig production has become concentrated in the basin of the Big and Small Meander rivers. The sarılop variety, which is the standard fig type used for drying, is produced mainly in the province of Aydin and Izmir.

In Turkey today the production carried out in practically all types of fruit, after meeting domestic demand, also contributes greatly to foreign trade. The fig, which from the point of view of Turkey occupies an important position among export of agricultural products, being a Mediterranean fruit, is produced in the western regions where ecological conditions are the most suitable for it, in particular in Izmir, Aydin and the surrounding area.

Amongst Turkey's traditional dried fruit exports figs come second after raisins in amount and in term of value is the third most important agricultural product after raisins and dried apricots. Approximately 80% of Turkey's dried fig production is supplied to export markets.

Turkey is the world's most important fig producing country. It realizes approximately 25% of world fig production. It plays an influential role in the world production and trade in dried figs. Turkey leads in global export of dried figs, comprising about 60% of the total amount (FAO, 2006).

Although Turkey is the world's number one exporting country of dried figs in recent years the amount exported has followed a static trend. The fact that EU countries constitute the leading importing countries of dried figs and that in terms of consumer demand for quality and healthy products EU countries are becoming increasingly discerning plays an important role for export.

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In the world markets, the importance laid on food safety and healthy food has increased. The regulation including the general principles and requirements of food law and establishing European Food Safety Authority came into force to guarantee a high level of protection of human life and health and to ensure food safety and healthy food in the EU countries (EC, OJ L 031, 2002). Commission of the EU imposed special conditions on the import of fig, hazelnuts and pistachios and certain products derived there of originating in or consigned from Turkey because of contaminant risks (EC, OJ L 034, 2002). The demands of countries have changed in this direction. There is particularly an increase in the demand for organic products. Aligned with this, the demand for organic dried figs is also increasing. For this reason, the diffusion of organic fig agriculture in Turkey is very important from two points of view. The first of these is the provision of healthy products to meet consumer countries' demands and the second is the development of export possibilities. In addition, the importance of organic farming in the framework of sustainable agriculture and in reducing to a minimum the harm caused to the environment by agriculture is well known.

In the diffusion of organic fig agriculture, it is very important to determine producer tendencies and the factors system. In this research study the factors which influence the decision of dried fig producers in Turkey to adopt an organic farming system have been examined. In the study, social, structural/economic and intellectual factors were investigated and it was attempted to determine their impact on the decision to give preference to an organic farming system.

MATERIALS AND METHODS

The data obtained from a survey of dried fig producers form the main material of this research. The provinces of Aydin and Izmir in the Aegean Region, where fig growing is widespread, were chosen as the study area. The provinces of Aydin and Izmir achieve approximately 60 and 20%, respectively of Turkey's fig production value. Aydin and Izmir are also the provinces where most fig trees are concentrated.

In the province of Aydın a total of 11 villages attached to the towns with the most significant number of trees, namely Nazilli, Germencik and Bozdoğan, were included in the research project. In the province of Izmir 3 villages from the area of two most important towns, Tire and Ödemiş, were included. Altogether 14 villages in the provinces of Aydın and Izmir formed the population of the study. From this population a sample size was size was determined by the proportional sampling method, using the formula below. In order to obtain the greatest sample size possible, the proportion of producers who were knowledgeable with respect to export of products was accepted as 50% and that of those who were not knowledgeable as 50%. With this approach, using proportional sampling (Newbold, 1995) and with the aid of the formula below, a sample size was determined at a 95% significance level and with a 10% error margin. A total of 127 producers were interviewed.

$$n = \frac{Np(1-p)}{(N-1)\sigma_{px}^2 + p(1-p)}$$

n = Sample size
N = Population
p = Proportion of producers knowledgeable an the subject of export (0.50)
(1-p) = Proportion of producers not knowledgeable an the subject of export (0.50)
σ^2_p = Variance (for $\alpha = 0.10$ $\sigma_p = 0.05102$)

Interviews with producers were completed in 2001. The study was supported by The Scientific And Technical Research Council of Turkey (TUBITAK) as a part of Agriculture, Forestry and Food Technologies Research Grant Committee (TOGTAG-TARP) project No. 2574-10 with the title A Research on Exportation Opportunities of Turkish Dried and Fresh Figs within the Framework of World Trade Organization Agreements and from The Viewpoints of Free Trade Agreement and Possible Full-Membership of Turkey to European Union.

In the study it was found that out of 127 producers 20 practiced certified organic farming by contract with export companies, while 107 producers practiced traditional methods of fig-growing. The impact of social, structural/economic and intellectual variables between the two groups was analysed using the probit model, a type of dummy variable regression model.

As is known probit and logit models are used in order to remove the negative effects of linear probability models. In many studies investigating the factor influencing the adoption of agricultural practices use has been made of probit models (Mauceri *et al*., 2005; Hattam, 2006; Gradebroek, 2002). The characteristic feature of probit models is that the effect of independent variables on dependent variables is non-linear. It is a statistics model which aims to form a relation between P probability values and explanatory variables and to ensure that the probability value remains between 0 and 1.

If Y = 1, Pr (Y = 1) = P

If Y = 0, Pr (Y = 0) = 1-P

It is hoped to reveal by means of independent variables (X_i) why the organic dried fig agriculture system is adopted or not. The aim of the model is to predict the influence of variables (X) on the probability of adoption of organic farming (Y, dependent variables). According to this, in the probit model the likelihood of producer changing over to organic farming system is a non-linear function of variables.

$$Pr (Y = 1) = F (X\beta)$$

Definition of the probit model using normal distribution function;

$$Pr (Y = 1) = F (X\beta) = \frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\beta_1+\beta_2} e^{-t^2/2}dt$$ (Gujarati, 1995).

In this study three separate probit models were developed for social, structural and intellectual variables.

Social factors which it was considered might affect the adoption of organic agriculture were age of producer, education status, family size and experience in fig production. The social variables frequently examined in studies on the adoption of new farming systems are age, education, experience and family size. This can be seen in many studies (Burtan *et al*., 1999; Mauceri *et al*., 2005). Age and education status of the producer is included as independent variables in the models in all studies (Hattam, 2006; D'Souza *et al*., 1993). As structural or economic some factors farm size, area of olive production competing with fig-growing on farmland and the amount of figs produced were taken into account. As far as intellectual factors are concerned the situation of producers as to whether or not they were conversant with support policies, kept up to date with dried fig export prices, had contact to extension representatives, were members of the cooperative (TARIS), were knowledgeable concerning aflatoxin and, being aware of the negative effects of pesticides and fertilizers, reduces the amounts of these they used, was evaluated.

The models were defined as seen below;

1st model, social variables model:

Y = f (AGE, EDU, FSZ, FEX)
Y = Dependent variable, adopt and non-adopt of organic agriculture system
AGE = Age of producer
EDU = Education status of producer
FSZ = Family size
FEX = Fig production experience

2nd model, structural/economic variables model:

Y = f (FMSZ, OLSZ, TFP)
Y = Dependent variable, adopt and non-adopt of organic agriculture system
FMSZ = Farm size
OLSZ = Olive production area size
TFP = Total dried fig production

3rd model, intellectual variables model:

Y = f (FSP, FEP, CEX, COM, KAA, RPF)
Y = Dependent variable, adopt and non-adopt of organic agriculture system
FSP = Following and non-following of support policy
FEP = Following and non-following of export prices in dried figs
CEX = Contact to extension
COM = Cooperative membership (Figs, Raisins, cotton and oil seeds, Agricultural Sales Cooperatives Union, TARIS)
KAA = Knowledge or absence of knowledge about aflatoxin
RPF = Reduction or non reduction of pesticide and fertilizer use as a result of knowing about their negative effects

The sample average and standard deviations related to the variables are given in Table 1 separately for organic dried fig producers and producers using conventional methods.

Of the independent variables included in the model age of producer, education status, family size, fig production experience, farm size, olive production area and amount of dried figs produced are continuously variables. The following of support policies and export prices by producers, contact to extension, cooperative membership (TARIS), knowledge about aflatoxin and reduction or non-reduction of amount of pesticides and fertilizer used, as a result of knowledge about their harmful effects, are binary variables.

In Table 1 it is seen that the producers adopting organic dried fig agriculture are on average the younger and more highly educated ones. At the same time the average dried fig production amount and production area of these producers are greater than those of conventional producers. In addition, the tendencies of organic dried fig subvention policies and export prices are also noticeable. In comparison with conventional growers these producers also have a high average with respect to knowledge about aflatoxin.

Table 1: Sample averages and standard deviation of variables investigated amongst conventional and organic dried fig producers

		Total n = 127		Conventional (y = 0) (n = 107)		Organic (y = 1) (n = 20)	
Variables	Unit	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
1st Model							
AGE	Years	51.756	(12.381)	52.776	(12.586)	46.300	(9.777)
EDU	Years	4.701	(1.985)	4.495	(1.983)	5.800	(1.642)
FSZ	Number	4.001	(1.757)	3.972	(1.740)	4.200	(1.881)
FEX	Years	30.858	(13.956)	31.374	(14.400)	28.100	(11.187)
2nd Model							
FMSZ	Decare	54.362	(60.739)	48.505	(42.008)	85.700	(115.730)
OLSZ	Decare	14.020	(27.357)	15.313	(29.329)	7.100	(10.228)
TFP	Ton	4.501	(10.647)	2.945	(2.756)	12. 828	(24.956)
3rd Model							
FSP	Dummy	0.283	(0.452)	0.224	(0.419)	0.600	(0.503)
FEP	Dummy	0.094	(0.294)	0.065	(0.248)	0.250	(0.444)
CEX	Dummy	0.165	(0.373)	0.159	(0.367)	0.200	(0.410)
COM	Dummy	0.260	(0.440)	0.262	(0.442)	0.250	(0.444)
KAA	Dummy	0.409	(0.494)	0.355	(0.481)	0.700	(0.470)
RPF	Dummy	0.283	(0.452)	0.234	(0.425)	0.550	(0.510)

RESULTS AND DISCUSSION

Prediction of the models were first of all studied according to the result of the likelihood ratio test 0.0025443<0.01 in the first, 0.000490<0.01 in the second and 0.000795<0.01 in the third model, respectively. In this case, in all three models the selected independent variables are able to predict the dependent variable. Secondly, the extent to which the model's independent variables used in prediction correctly predicted the dependent variable was investigated. This ratio was, found to be 84.3% in the first and third models and 83.5% in the second model. Thus the models developed may be said to be consistent and meaningful.

In the farms which were examined it was found that in the application of an organic agriculture system from among the social factors age, education status and fig production experience were influential. However, family size has no effect. This situation is also theoretically to be expected (Table 2).

The influence of age on adoption of organic fig agriculture; the model shows that there is a negative relationship between age (AGE) and the likelihood of an organic farming system being adopted ($p<0.05$). The average age of farmers in the study is 51.76. The younger the producer's age, the greater the likelihood of his adopting an organic farming system. The average age of those practicing organic fig production is 46.3, while that of those using a conventional farming system is 52.78. It can be concluded that compared with older farmers the attitude of young farmers towards, certified organic farming systems in particular is more positive.

The influence of education on adoption of organic fig agriculture; education is seen as the most influential social factor in the adoption of organic agriculture.

Table 2: Probit analysis results related to the influence of social factors on the adoption of an organic fig production system

Variables	Coefficient	Std Error	t-value	p-value
Const.	-0.8816	1.1588	-0.7608	0.4468
AGE	-0.0716	0.0304	-2.3554	0.0185*
EDU	0.2542	0.1073	2.3682	0.0179*
FMSZ	0.0803	0.0921	0.8716	0.3834
FEXP	0.0601	0.0281	2.1409	0.0323*

Log likelihood = -47.111, McFadden R^2 = 0.15, Likelihood ratio test (LR): Chi-square (df 4) = 16.3857 (p-value 0.002543). Correctly predicted = 84.3%. * Significant at $p<0.05$

According to the results of the model there is a positive relationship between status of education (EDU) and adoption of an organic farming system ($p<0.05$). An increase in the length of the education period raises the probability of an organic farming system being adopted. The average duration of producers is 4.7 years. The education duration of those adopting organic agriculture is 5.8 years and that of non-adopting farmers 4.5 years.

Studies carried out on adoption also support the finding that age has a negative, whereas education status has a positive effect on adoption decisions (Hattam, 2006; D'souza *et al.*, 1993).

The influence of fig production experience on adoption of organic fig agriculture; the third most important of the social factors is fig production experience. There is a positive relationship between fig production experience (FEX) and adoption of an organic farming system ($p<0.05$). It can be said that greater experience increases the likelihood of adoption of organic farming. However, when averages for experience were examined it was found that the general average of producers was 30.9 years, that of those adopting organic agriculture 31.4 years and that of non-organic producers 28.1 years. While this situation appears contradictory, together with the other variables in the model the impact of experience emerges as a positive one.

In the study, several variables connected with the structure of farms were included in the models as structural/economic variables. These are variables such as farm size, size of fig growing area, number of trees, total dried fig production, top quality dried fig production, situation of land with regard to continuity, size of olive production area and size of chestnut production facilities. However, correlation was determined between some of these variables (farm size, size of fig production area, total production and top quality production amount). Others, meanwhile, were seen to be insignificant within the model. As a result, farm size, size of olive production area and total dried fig production were included in the model (Table 3). In farms producing dried fig, olives constitute the most important crop to compete with figs. In 115 out of 127 farms there are olive trees. From this point of view it was considered meaningful to include this in the model.

The influence of dried fig production amount on adoption of organic fig agriculture; of the structural factors related to farms a positive relationship emerged only between total dried fig production amount (TFP) and the tendency to adopt an organic fig agriculture system. Even if only slight, an increase in the amount of dried figs produced increases the likelihood of organic dried fig agriculture being adopted.

Although in the model it is significant $p>0.05$, a negative relationship between the olive production area (OLSZ) and adoption of an organic dried fig agriculture system is observed. This is an anticipated situation.

While there is a linear relationship between farm size (FMSZ) and adoption of an organic agriculture system statistically a significant result did not emerge.

Another subject which is important a producers' adoption of an organic farming system is the intellectual structure which may reveal the producer's approach to economic and technical phenomena. For this reason, in the third model factor such as the situation of producers as to whether or not they were conversant with subvention policies (FSP), followed dried Fig Export Prices (FEP), had contact to extension (CEX), were members of the cooperative (COM), were Knowledgeable about Aflatoxin (KAA) and reduced the amount of pesticides and fertilizer used as a result of knowing about their negative effects (RPF) were investigated as independent variables.

According to the results of the model a positive relationship was detected between the tendency to adopt organic fig agriculture and the independent variables related to producers' situation as to whether or not they were conversant with subvention policies (FSP), followed dried Fig Export Prices (FEP), were cooperative members (COM), were knowledgeable on the subject of aflatoxin (KAA) and reduced the amount of pesticide and fertilizer used as a result of knowing about their harmful effects (RPF), whereas a negative relationship was found between adoption and contact to extension (CEX). The effect of the FSP and KAA variables was found significant at a level of $p<0.10$, while the effect of the FEP variables is significant at a level of $p<0.05$ (Table 4).

Effect of following or not following support policies on adoption of organic fig agriculture; it is noted that producers who are conversant with subvention policies show a greater tendency towards organic farming. Producers who follow policies are aware that policies are aware that policies aimed at supporting agriculture in Turkey have decreased. The absence of subvention buying in the dried figs sector may be said to have caused producers to carry out higher quality production. These producers are those practicing organic agriculture. Keeping informed about subvention policies and being aware that they have been reduced increases the tendency of producers to adopt organic dried fig production aimed at export sales. In addition, producers who follow support policies are those who are aware that there are certain subsidies available in the field of organic agriculture. This is one of the factors encouraging producers to take up organic agriculture.

Effect of following or not following dried fig export prices on adoption of organic fig agriculture; there is also a positive relationship between whether or not dried fig export prices are followed and the tendency to adopt an organic dried fig agriculture system. Following export prices increases the tendency to adopt organic agriculture. This situation can be explained thus;

Table 3: Probit analysis results related to the influence of structural factors on adoption of an organic farming system

Variables	Coefficient	Std Error	t-value	p-value
Const.	-1.5953	0.0296	-5.3836	0.0000
FHSZ	0.0070	0.0065	1.0769	0.2815
OLSZ	-0.0203	0.0127	-1.6011	0.1094
TFP	0.0001	5.24E-05	2.1027	0.0355*

Log likelihood = -46.118, McFadden R^2 = 0.16, Likelihood ratio test (LR): Chi-square (df 3) = 17.7728 (p-value 0.000490), Correctly predicted = 83.5%; * Significant at $p<0.05$

Table 4: Probit analysis results related to the influence of intellectual factors on adoption of organic agriculture system

Variables	Coefficient	Std Error	t-value	p-value
Const.	-1.9019	0.3178	-5.9840	0.0000
FSP	0.6467	0.3350	1.9306	0.0535**
FEP	1.0172	0.4346	2.3406	0.0193*
CEX	-0.3269	0.4235	-0.7719	0.4402
COM	0.1082	0.3642	0.2971	0.7664
KAA	0.6231	0.3209	1.9416	0.0522**
KFP	0.4821	0.3632	1.3272	0.1844

Log likelihood = -43.803, McFadden R^2 = 0.21, Likelihood ratio test (LR): Chi-square (df 6) = 23.0037 (p-value 0.000795), Correctly predicted = 84.3%; * Significant at $p<0.05$, ** Significant at $p<0.10$

producers who follow export prices are aware that high quality, contaminant-free organic figs are advantageous from the point of view of export.

Therefore, it can be said that following export prices increases the tendency to adopt an organic dried fig agriculture system. The same evaluation can be made for producers who are knowledgeable on the subject of aflatoxin.

In the model a positive relationship emerged between knowledge or lack of knowledge about aflatoxin and the tendency to adopt an organic farming system. Knowledge of this subject increases the tendency towards adoption.

CONCLUSIONS

When the presence or absence of organic farming practices amongst the dried fig producer in the study and also their attitudes to this subject were evaluated, it was observed that organic production is not widespread. Organic fig production was found to take place in 15.75% (20 producers) of the dried fig producing farms which were studied. However, producers had no knowledge about the control and certification institution, but believed their products were being sent for export. Producers also stated that they conformed to the restrictions on pesticide and fertilizer use. However, they did not know how and at what stages their products were certified. They explained that these procedures were organized by the export firms for which they had contracts to produce.

Of the 127 producers included in the study 32.28% (41 producers) stated that they knew about organic agriculture. On the other hand, 67.72% of producers said that they had insufficient knowledge as to what organic farming was and how it was carried out. It is concluded that dried fig producers do not have complete and sufficient knowledge on the subject of organic fig agriculture. This is seen as an important problem. When producers were asked where they acquired their knowledge about organic agriculture, export companies were listed first. Of the dried fig producers with knowledge on this subject the answer received from 41.46% was that they acquired information from merchants or export companies. Meanwhile the proportion of farms considering taking up organic fig growing in the future was found as 30.71% (39 farms)

According to the results of model, in this study the most important social factors influencing the adoption of organic dried production were found to be age, education status and fig production experience.

The fact that in the study the average age of fig producers is over 50 and the low level of education is seen as an important problem from the point of view of propagation of the organic agriculture system. Producers who adopt organic farming are young and have a higher level of education. Of the structural factors concerning the farms, size of farm and product pattern of the farm, in particular the presence of olive production were not found to be influential in the adoption of organic farming. However, the effect of dried fig production amount was observed. It can be said that this situation shows the tendency of economically strong producers with a large production amount and therefore a high sales income towards organic agriculture.

Of the factors described as intellectual the situation regarding the following of support policies, whether or not export prices are followed and the presence or absence of knowledge about aflatoxin were found to be influential on the tendency to adopt an organic agriculture system. Following subvention policies and export prices and knowledge about aflatoxin increase the tendency to adopt organic agriculture.

When these variables are taken into account it can be concluded that young producers whose production amount is large, who have a greater level of education and more knowledge and who up to date with new developments turn to organic dried fig agriculture.

In conclusion, in order for organic dried fig production to become more widespread in Turkey, it is necessary above all that educational schemes on the subject of organic agriculture be increased. Producers need to be made aware of sustainable agricultural practices, quality and standards, export demand and expectations, as well as the European Union and its practices. At the same time it is very important that producers be provided with financial support in the transition to organic agriculture and given guarantees regarding the marketing of produce.

ACKNOWLEDGMENT

This research was supported by The Scientific And Technical Research Council of Turkey (TUBITAK) as a part of Agriculture, Forestry and Food Technologies Research Grant Committee (TOGTAG-TARP) project number 2574-10. We are grateful to The Scientific and Technical Research Council of Turkey (TUBITAK) for their financial support in the carrying out of this study. We also thank the farmers who answered our questions.

REFERENCES

Burtan, M., D. Rigby and T. Young, 1999. Analysis of the determinants of adoption of organic farming horticultural techniques in the UK. J. Agric. Econ., 50: 47-63.

D'souza, G., D. Cyphers and T. Phipps, 1993. Factors affecting the adoption of sustainable agricultural practices. Agric. Resour. Econ. Rev., 22: 159-165.

EC, OJ L 031, 2002. Regulation (EC) No. 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. Official J. L 031, 01.02.2002, pp: 1-24.

EC, OJ L 034, 2002. 2002/80/EC: Commission Decision of 4 February 2002 imposing special conditions on the import of figs, hazelnuts and pistachios and certain products derived thereof originating in or consigned from Turkey (Text with EEA relevance) (notified under document number C(2002) 386). Official J. L 034, 05/02/2002, pp: 26 - 30.

FAO, 2006. faostat, (www.fao.org)

Gujarati, D.N., 1995. Basic Econometrics. 3rd Edn., McGraw-Hill, Inc., Int. Edn., pp: 540-583.

Gradebroek, C., 2002. Farm-Specific Factors Affecting The Choice Between Conventional and Organic Dairy Farming. Xth EAAE Congress, Exploring Diversity in the European Agri-Food System, Zaragoza (Spain).

Hattam, C., 2006. Adopting Organic Agriculture: An Investigation Using the Theory of Planned Behaviour. Poster paper prepared for presentation, International Association of Agricultural Economics Conference, Gold Coast, Australia.

Mauceri, M., J. Alwang, G. Norton and V. Barrera, 2005. Adoption of Integrated Pest Management Technologies: A Case Study of Potato Farmers in Carchi, Ecuador. Agricultural Economics Association Annual Meeting, Providence, Rhode Island.

Newbold, P., 1995. Statistics for Business and Economics, Prentice Hall Int., USA., 1995.