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Factors Affecting Farmers' Perceptions towards Benefits of Organic Farming

Çiftçilerin Organik Tarımın Faydalarına İlişkin Algılarını Etkileyen Faktörler

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Abstract

This study analyzes the factors affecting the perceptions of organic farmers about the benefits of organic farming in Kilis. Data were collected by conducting a face-to-face survey of 279 of 445 farmers in Kilis who produce organic olive oil. The multivariate probit regression method was used for data analysis. According to the regression results, the increase in the age and experience of the farmer increases the possibility of considering the idea of preserving the organic components in the soil as the benefit of organic farming. On the other hand, being a woman increases the possibility of seeing the idea of protecting the organic component in the soil as a benefit of organic agriculture. The increase in income level and being a man bring the cost to the forefront as the benefit of organic agriculture. The independent variables used in the study have no effect on the variable of producing highly competitive products. Farmers who make a living from olive farming are more likely to adopt the idea of being environmentally friendly as a benefit of organic farming. The situation is the opposite for farmers who are members of the olive oil union. Compared to individuals with 10 years or less of farming experience, having more farming experience positively affects the likelihood of seeing health as a benefit of organic farming.

Jel Codes: *Q01, Q12, C31, O13, Q57, R11*
Keywords: *Kilis, Organic, Olive Oil, Farming, Probit*

Öz

Bu çalışma, Kilis ilinde organik üretim yapan çiftçilerin organik tarımın faydalarına ilişkin algılarını etkileyen faktörleri analiz etmektedir. Kilis'te bulunan ve organik zeytinyağı üretimi yapan 445 çiftçinin 279'una yüz yüze anket yapılarak veriler toplanmıştır. Verilerin analizi için çok değişkenli probit regresyon yöntemi kullanılmıştır. Regresyon sonuçlarına göre, çiftçinin yaş ve tecrübesindeki artış, organik tarımın faydası olarak topraktaki organik bileşenleri koruma fikrini düşünme olasılığını arttırmaktadır. Diğer taraftan, kadın olmak topraktaki organik bileşeni koruma fikrini organik tarımın faydası olarak görme olasılığını yükseltmektedir. Gelir seviyesindeki artış ve erkek olmak, organik tarımın faydası olarak maliyeti ön plana çıkarmaktadır. Çalışmada kullanılan bağımsız değişkenlerin rekabet gücü yüksek ürün üretmek değişkenini üzerinde etkisi bulunmamaktadır. Sadece zeytincilikle geçimini sağlayan çiftçiler, organik tarımın faydası olarak doğa çevre dostu olması fikrini daha yüksek olasılıkla benimsemektedir. Zeytinyağı birliğine üye olanlar çiftçilerde ise durum tam tersidir. 10 yıl ve altında çiftçilik tecrübesine sahip bireylere göre, daha fazla çiftçilik tecrübesine sahip olmak organik tarımın faydası olarak sağlığı görme olasılığını olumlu yönde etkilemektedir.

Jel Kodları: *Q01, Q12, C31, O13, Q57, R11*
Anahtar Kelimeler: *Kilis, Organik, Zeytinyağı, Tarım, Probit*

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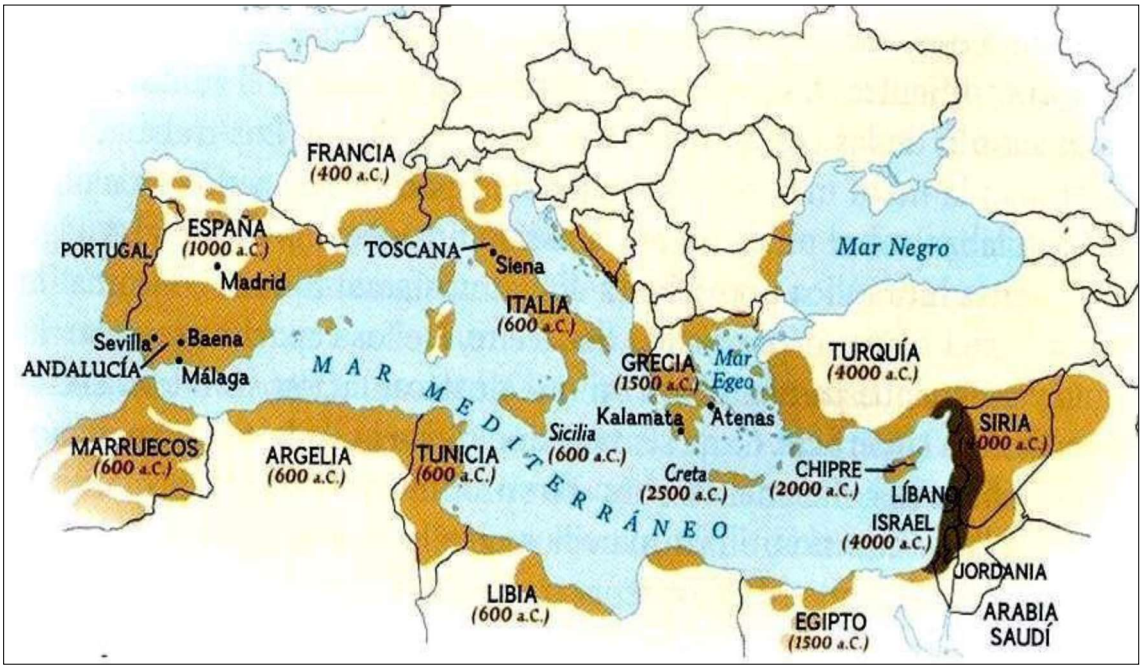
1. Introduction and background

Conditions such as the use of agricultural chemicals decrease in fertile lands, extinction of wildlife and beneficial insects, and decrease in limited plant nutrient reserves are the negative aspects of conventional agriculture (Bengisu, 2014: 39-40). In organic agriculture, synthetic fertilizers, hormones, GMOs, and pesticides are not used to increase efficiency (Bengisu, 2014: 39-40). Governments, international organizations, non-governmental organizations (NGOs), and voluntary organizations promote the spread of organic agriculture, organic food market, and trade to increase sustainable agriculture and development (Demiryürek, 2011: 30). From the first stage of production to the consumption stage, control is carried out at every stage and all organic products are certified. With this application, the reliability of the product is ensured by controlling the process from the producer to the consumer (Şenyüz, 2019: 3). Organic agriculture is named in different ways in countries such as biological agriculture, ecological agriculture, alternative agriculture, biodynamic agriculture, renewable agriculture, or sustainable agriculture (Bayram et al., 2007: 204). Germany, England, the Netherlands, and the USA are among the leading countries in organic agriculture in the world, and Turkey has come a long way in the field of organic agriculture in recent years (Okudum et al., 2017). According to the global organic agriculture statistics published by the Organic Agriculture Research Institute (FIBL) at the end of 2011 and 2015, while the organic agriculture market was 15.2 billion dollars in 1999, it increased to 50.9 billion dollars in 2008 and 81.6 billion dollars in 2015 (Willer & Klicher, 2009: 19; Willer & Lernoud, 2017: 23-28). In 2009, the market share of some countries in the organic product market was around 5.8 billion Euros in Germany, 3 billion Euros in France, and 2 billion Euros in the UK. The share of Denmark, Austria, and Switzerland in the organic market is 5% or more (Willer & Klicher, 2011: 24-29). The vast majority of organic products produced in Asia, Latin America, and Africa are for export (Willer & Lernoud, 2017: 23-28). The main reasons why consumers demand organic products at an increasing rate every year are that organic products are healthy, natural, and environmentally friendly, and contribute to the protection of agricultural areas, the development of biodiversity in the soil, and the increase of plant and animal diversity (Atış, 2004; Bayram et al., 2007: 204; İlbaş, 2009; Kutlu, 2016: 58-59; Okudum et al., 2017; Öztürk, 2012: 2-3; Yücesoy, 2018). For these reasons, consumers' demand for organic products has increased all over the world, and since the demand for production has not been met, new countries such as Turkey, which are suppliers in the field of export, have entered the market (Demiryürek, 2011: 29; Fidan, 2017: 5; Hatunoğlu Durmaz, 2010: 3; Duman, 2018; Karabaş, 2011: 28; Yücesoy, 2018). Turkey, Australia, Israel, Hungary, Argentina, and Switzerland are among the countries that export products to EU countries that demand the most organic products in the world (Durak Kılıçaslan, 2015: 20). In Turkey, where organic agriculture production was applied to an area of approximately 14,256 hectares in 1997, this area increased to 209.573 in 2004, 192,789 hectares in 2006, and 842,216 hectares in 2014 (Çelik et al., 2019: 3). There has been an increase in the number of producers, and the number of producers, which was 7414 in 1997, increased to 12428 in 2002, 14256 in 2006, and 14926 in 2008 (İpek & Yaşar Çil, 2010: 144). The number of products via organic farming increased from 150 products to 248 products from 2002 to 2018 (T.R. Ministry of Food, Aggriculture and Livestock, 2019).

In general, there is a noticeable increase in organic farming areas and production amounts (Merdan, 2014: 78). When we look at the export values, the export amount, which was 19.3 million dollars in 1998, increased to 36.9 million dollars in 2003 and then increased to 69 million dollars in 2015 in Turkey (Hatunoğlu Durmaz, 2010: 61; Vatansever Deviren & Çelik, 2017: 676). Germany (37.3%), England (9.4%), Netherlands (7.7%), Switzerland (7.4%), France (6.8%), and Italy (5%) rank first among the countries which Turkey export to.

Apart from EU countries, Northern European countries, the USA, Canada and Japan are also among the countries with a potential for exports (ITO 2006, cited by İpek & Yaşar Çil, 2010: 146). Despite these figures, Turkey's share in the organic food market is quite low (Demiryürek, 2011; Merdan, 2014). Another product that Turkey cultivates organically is olive. Olive is an important agricultural product produced since the establishment of the Ottoman Empire and the Republic of Turkey (Yurtoğlu, 2019). The homeland of the olive is Upper Mesopotamia and Southern Asia, which includes the Southeast Anatolia Region of Turkey (Çelik, 2018). Since olive fruit is generally produced in countries in the Mediterranean Region, Mediterranean countries lead the way in exportation (Figure 1 and Table 1).

Figure 1: Olive Production in the World



Source: (TC Ministry of Customs and Trade, General Directorate of Cooperatives, April 2018)

Table 1: Top 10 Countries with The Highest Olive Oil Export in Thousand Tons

Countries	2014/15	2015/16	2016/17	2017/18 *	2018/19**
Spain	236.8	297.8	291.3	304.0	367.5
Italy	199.6	208.1	199.5	171.0	184.8
Tunisia	304.0	102.5	89.5	200.0	130.0
Turkey	30.0	15.0	45.0	65.0	55.0
Portugal	47.6	40.6	39.5	39.7	39.7
Morocco	25.0	17.0	9.0	15.0	20.0
Argentina	12.0	31.0	16.5	36.0	21.4
Greece	16.6	19.3	18.7	9.8	7.7
Palestine	6.5	4.5	4.0	4.0	4.0
Other	33.5	31.7	41.1	47.0	48.0
Total	929.0	788.5	780.0	910.2	890.5

Source: (T.R. Ministry of Commerce, General Directorate of Tradesmen, Craftsmen and Cooperatives, April 2019. * Forecast **Forecast)

Another important agricultural activity of Kilis province, located in the Southeastern Anatolia Region of Turkey, is olive cultivation. Olive and olive oil production is an important source of income for the regional economy. The cultivated area and production amounts of olive fruit in Kilis in 2019 constitute approximately 4%-5% of the cultivated area and production amount in Turkey (Table 2).

Table 2: Olive Cultivated Area and Production Amount in Turkey and Kilis Province in 2019

	Kilis		Turkey	
Name of the product	**Cultivated Area (Decare)**	**Production amount (Ton)**	**Cultivated Area (Decare)**	**Production amount (Ton)**
Olives	266,736	50,500	6,544,561	1,073,472

Source: (www.tuik.gov.tr, 2020)

Conventional olive and olive oil production which uses chemicals in Kilis leaves its place to the production method via organic methods. Farmers have to follow a certain process to qualify for organic product certification. The application year for the organic olive oil production certificate is called transition 1, the second year is called transition 2, and the third year is called transition 3. At the end of the third year, the entrepreneur is entitled to receive an organic product certificate.

Table 3: Organic Olive Production Status and Area from 2015 to 2019 in Kilis

Years	Product Status	Production area (in)
2015	Pass 1	5852,651
	Pass 2	8412,249
	Pass 3	2963,527
	Organic	14577,25
2016	Pass 1	2974,756
	Pass 2	5010,116
	Pass 3	7984,353
	Organic	17260,49
2017	Pass 1	3404,6
	Pass 2	2855,333
	Pass 3	4708,615
	Organic	23708,62
2018	Pass 1	4139,529
	Pass 2	3264,572
	Pass 3	2671,339
	Organic	27106,41
2019	Pass 1	4440,823
	Pass 2	3570,817
	Pass 3	3051,27
	Organic	27584,98

Source: (Kilis Provincial Directorate of Food, Agriculture and Livestock, 2019)

According to Table 3, the organic status of olive production areas of Kilis province showed an increasing trend every year between 2015 and 2019. The number of people with organic olive oil certificates in Kilis province was 186 in 2015. This number has increased every year. It increased to 231 in 2016, 367 in 2017, 444 in 2018, and 445 in 2019. The number of studies examining the factors affecting the views of organic farmers on organic farming is limited. Çobanoğlu & Işın (2009) interviewed 67 dried fig producers in İzmir and Aydın. According to the analysis of the one-way analysis of variance method and the Analytical Hierarchy Process method, the most effective criteria in farmers' orientation to organic agriculture are marketing, price, sustainable agriculture environment, and cost. Being a member of the olive oil association increases the likelihood that the perceived benefit of organic farming is the environment (Li et al., 2020). According to the study conducted on organic vegetable and fruit producers in Canada in 2009 with descriptive statistical methods, health and safety concerns and environmental problems are the dominant reasons for conversion to organic agriculture, while economic reasons are less important (Cranfield et al., 2009).

In an article published by Karaman et al. (2013), a questionnaire was administrated to 110 organic agriculture producers in Kınık village of Pazaryeri district of Bilecik province. A 5-point Likert scale was used. Findings indicate that 52.8% of consumers preferred organic production because they found it beneficial for health of consumers.

Bahşi and Akça (2019) conducted a face-to-face survey of 400 organic agriculture consumers in the provinces of Şanlıurfa and Osmaniye. According to the survey, consumers state that organic products are generally produced in the village and therefore they are healthy (79.4%). In addition, 38.7% of consumers call organic agriculture a healthy product, while 32.1% call it products that do not use pesticides. According to the Kruskal Wallis H test results, while there is no significant difference between the opinions of consumers about organic agriculture and its products according to the city of residence, gender, age, education level, and occupation, there are differences in terms of using organic products according to income level. As a result, no study in the literature analyzes the factors affecting the perceptions of the farmers who produce this organic product, which is important for the industry, agriculture, and economy of Kilis. This study will analyze the factors affecting the perceptions of 445 organic olive oil farmers operating in Kilis province regarding the benefits of organic agriculture using the multivariate probit regression method. For this reason, this study is the first academic study in this field. For this purpose, data was collected by a face-to-face survey method, and the data obtained was analyzed using various statistical programs. The results of the study are as follows. In case of increasing age or experience of the farmers or if they are women, they see the benefit of organic farming as preserving the number of organic components in the soil. Compared to farmers with an income of less than 2000 TL, farmers with higher incomes are more likely to see cost reduction as a benefit of organic agriculture. According to gender, women are less likely than men to see cost reduction as a benefit of organic farming. The effect of the independent variables used in the study on the dependent variable of producing highly competitive products is statistically insignificant. Farmers who make a living only from olive cultivation are more likely to see nature as environmentally friendly as the benefit of organic agriculture, while the situation is the opposite for those who are members of the olive oil union. Compared to farmers with 10 years or less of experience, those with 21-25 and 26 or more experience are more likely to see health as the benefit of organic farming.

2. Method

2.1. Data and descriptive statistics

The study was carried out in the province of Kilis, located in the Southeastern Anatolia Region of the Republic of Turkey. The data sets were collected by direct face-to-face survey method using multiple choice questions September 2022. The questionnaire used in the research included questions about the demographic and socioeconomic characteristics of organic olive oil producers. There are also questions about farmers' views on the benefits of organic farming. The question of this research is to examine the demographic and socioeconomic determinants of differences in farmers' ideas about organic olive oil production. In this study, 279 of 445 farmers producing organic olive oil in Kilis were examined. In this context, 19 neighbourhoods, 3 districts, and 63 villages were visited. The fact that the farmers were not at their addresses at the time of the survey and their refusal to conduct the survey are among the main reasons for not surveying all farmers. Dependent variables consist of five dummy variables. These are protecting the organic component in the soil, reducing the cost, producing highly competitive products, and producing natural and environmentally friendly products

and health. If the respondent replied that protecting the organic component in the soil is the benefit of organic farming, the dummy variable takes the value one and takes the value zero for other cases. The other 4 dependent variables were constructed similarly. Descriptive statistics about dependent variables are as follows. 12% of the farmers stated that organic agriculture preserves the organic component in the soil and that 50% reduces the cost. On the other hand, 14% of the respondents say that organic agriculture produces highly competitive products. Less than half of the respondents, 43%, say that natural and environmentally friendly products are produced with organic farming. The vast majority (66%) of those who answered the questions highlighted the health benefits of organic agriculture.

Descriptive statistics are shown in Table 4. The age-independent variable consists of four categories in total. When the sub-categories of this variable are analyzed, it is seen that almost 86% of the organic farmers are over the age of 40 and the majority of the farmers are over the age of 50.

Table 4: Descriptive statistics

Dependent and explanatory variables	Number of obs.	Mean	Std. Dev.	Min.	Max.
Dependent variables					
Benefits of organic farming					
Preserving organic components in soil	279	0.115	0.319	0	1
Reducing cost	279	0.495	0.501	0	1
Producing highly competitive products	279	0.143	0.351	0	1
Natural and environment friendly	279	0.427	0.495	0	1
Health	279	0.663	0.474	0	1
Explanatory variables					
Age					
30 <	279	0.039		0	1
Between 31-40	279	0.075	0.264	0	1
Between 41-50	279	0.254	0.436	0	1
>51	279	0.631	0.399	0	1
Experience (years)					
1-10	279	0.075		0	1
11-15	279	0.061	0.240	0	1
16-20	279	0.108	0.310	0	1
21-25	279	0.197	0.399	0	1
26 and over	279	0.559	0.497	0	1
Number of people in the household					
2 or less than 2	279	0.129		0	1
3	279	0.140	0.347	0	1
4	279	0.244	0.430	0	1
5	279	0.194	0.396	0	1
6 or more	279	0.294	0.456	0	1
Income					
2000 TL or less	279	0.229		0	1
2001-3000 TL	279	0.470	0.500	0	1
3001-4000 TL	279	0.211	0.409	0	1
4001 TL or more	279	0.090	0.286	0	1
Education					
Literate	279	0.330		0	1
Primary school	279	0.376	0.485	0	1
Middle school	279	0.122	0.328	0	1
High school or higher	279	0.172	0.378	0	1
Marital status					
Single	279	0.086	0.367	0	1
Gender					
Woman	279	0.122	0.281	0	1
Income source					
Only olive farming	279	0.129	0.336	0	1
Union membership					
Member of the olive oil association	279	0.778	0.416	0	1

About 60% of the farmers have 25 years or more of experience, while 20% of them have between 21 and 25 years of experience. While the rate of those with an income of less than 2000 TL is 23%, the farmers with an income of 4000 TL or more make up only 9% of the total farmers. While 33% of the farmers who answered the questionnaire state that they are literate, almost 38% of them are primary school graduates. 29% of the respondents are secondary or high school graduates. Women make up 12% of farmers. While 13% of the farmers meet their income only from olive cultivation, the majority of these farmers are members of the olive oil cooperative (78%).

2.2. Model

In this study, the multivariate probit analysis method was used. The reason for this is that the dependent variables are not continuous variables such as age and income, but a binary dummy variable. In this case, the probit regression method is preferred to the Least Squares Method. What is important in this analysis method is the state of the dependent variable. Whether the independent variables are categorical or continuous does not affect the analysis method used. The study directly collects data from farmers who are registered and not registered in the organic olive oil cooperative and who produce organic olive oil, by survey method. In the probit regression method, 10 observations are needed for each independent variable (Hosmer & Lemeshow, 2000). Considering the subcategories of the independent variables in this study, a total of 21 independent variables were used. Therefore, a total of 210 observations are needed. Since the number of people responding to the questionnaire is 279, the number of observations is sufficient for the multivariate probit analysis method.

The Maximum Likelihood method is the analysis method underlying the probit model. In the probit method, the dependent variables are coded as zero and one category. In this method, it does not matter what the name of the dependent variable is in its category. Researchers can set one or zero categories as they wish. However, 1>0 is for the latent, unobservable dependent variable.

The variable Y explained in the probit analysis method is continuous but unobservable, Y^*(the opinion about the benefits of organic farming). If it were possible to directly observe, we could assume that is a linear function of the relevant explanatory variables and prefer the Ordinary Least Squares Method (Model 1).

$$Y^* = \beta_1 X_1 + \ldots\ldots\ldots\ldots\ldots\ldots + \beta_k X_k + \varepsilon_i \qquad (1)$$

On the other hand, the answers given by the participants to the questions about their ideas about the benefits of organic olive oil depend on some observed and unobserved reasons. That is, it was used as an indicator variable for variable Y. The relationship between the categories and the unobservable variable of Y is modelled as follows (Model 2):

$Y = 0 \; if \; Y^* \leq \mathbf{0}$

Y= $1 \; if \; Y^* > \mathbf{0}$ $\qquad Prob\left(Y_i = \frac{1}{x}\right) = 1 - \Phi(-(x_i'\beta)/\sigma), \sigma \equiv 1 \qquad 2$

This expression is equal due to symmetry: $\Phi(x_i'\beta)$

3. Regression Results

Table 5: The Benefit of Organic Agriculture

	The Benefits of organic agriculture				
Explanatory variables	Preserving organic components in soil	Reducing cost	Producing highly competitive products	Natural and environment friendly	Health
Ages 31-40	3.679***	0.642	-0.827	0.474	-0.787
	(0.684)	(0.531)	(0.756)	(0.550)	(0.509)
Between 41-50 years	4.483***	-0.628	0.060	-0.059	-1.015**
	(0.715)	(0.554)	(0.660)	(0.576)	(0.516)
Age 51 and over	4.731***	-0.670	-0.060	-0.061	-1.444***
	(0.747)	(0.572)	(0.702)	(0.578)	(0.515)
Between 11-15 years	5.658***	-0.107	0.207	0.566	0.647
	(0.697)	(0.473)	(0.529)	(0.457)	(0.448)
Between 16-20 years	5.768***	0.212	-0.919	0.336	0.532
	(0.531)	(0.432)	(0.657)	(0.460)	(0.416)
Between 21-25 years	5.702***	0.628	-0.033	0.523	0.906**
	(0.524)	(0.427)	(0.555)	(0.468)	(0.420)
Over 26 years	5.105***	0.653	-0.006	0.585	0.959**
	(0.502)	(0.419)	(0.552)	(0.441)	(0.399)
3 people	-0.368	0.308	-0.362	0.402	-0.061
	(0.461)	(0.336)	(0.405)	(0.316)	(0.341)
4 people	0.134	-0.158	-0.282	0.383	-0.065
	(0.400)	(0.299)	(0.327)	(0.286)	(0.301)
5 people	-0.388	0.259	-0.370	0.228	-0.392
	(0.466)	(0.325)	(0.361)	(0.313)	(0.321)
6 and above	0.456	-0.069	0.104	0.183	-0.462
	(0.381)	(0.281)	(0.308)	(0.279)	(0.291)
Between 2001-3000 TL	-0.437	1.059***	-0.256	-0.442**	0.031
	(0.279)	(0.245)	(0.270)	(0.213)	(0.219)
Between 3001-4000 TL	0.165	1,363***	-0.045	-0.374	-0.174
	(0.322)	(0.289)	(0.316)	(0.257)	(0.251)
4001 TL and above	0.338	1,367***	0.590	0.151	0.532
	(0.451)	(0.399)	(0.374)	(0.358)	(0.366)
Primary school	0.157	0.026	0.249	0.178	-0.034
	(0.306)	(0.231)	(0.279)	(0.219)	(0.225)
Middle school	0.039	-0.162	0.079	-0.030	-0.857***
	(0.464)	(0.305)	(0.430)	(0.304)	(0.308)
High school and above	0.840**	-0.720**	0.404	0.033	-0.156
	(0.384)	(0.330)	(0.344)	(0.295)	(0.302)
Single	-0.146	-0.153	-0.756	-0.154	0.114
	(0.365)	(0.351)	(0.543)	(0.316)	(0.318)
Woman	0.623*	-0.470*	0.001	-0.152	-0.127
	(0.326)	(0.265)	(0.322)	(0.252)	(0.252)

Only olive Farming	0.617**	0.287	0.080	0.428*	-0.219
	(0.313)	(0.252)	(0.269)	(0.251)	(0.245)
Member of the olive oil association	0.366	-0.296	0.240	-0.393*	0.205
	(0.367)	(0.232)	(0.314)	(0.228)	(0.231)
Constant	-11,836***	-0.554	-1,108	-0.444	1,098*
	(1,219)	(0.626)	(0.772)	(0.621)	(0.631)
Number of Observations	279	279	279	279	279

Robust Standard Errors are shown in Parentheses.
*** p<0.01, ** p<0.05, * p< 0.1

The marginal effect coefficients of the factors affecting the farmers' perceptions of the benefits of organic agriculture are given in Table 5. The marginal effect coefficients can be interpreted as the coefficients in the linear regression method. The interpretations of the coefficients are as follows. All age categories are more likely to see the organic component in the soil as protection and a benefit of organic farming compared to the reference category, the group under 30 years old. The coefficients of these age groups are also significant at the 1% level. This also applies to experience. Farmers with more years of experience are more likely to see the benefit of organic farming as preserving the organic component in the soil, compared to those with 10 years or less of experience. These coefficients, like age categories, are significant at the 1% level.

On the other hand, the effect of the number of people in the household on the dependent variable, the protection of the organic component in the soil as the benefit of organic agriculture, is statistically insignificant. The effect of income groups is statistically insignificant, as is the effect of the number of people in the household. In comparison to farmers with less education, the farmers with more education consider the benefits of organic farming as preserving the organic component in the soil. This coefficient is statistically significant at the 5% significance level. Women are more likely to consider the benefit of organic farming as preserving the organic component in the soil. This effect is statistically significant at the 10% level. Farmers who make a living only from olive cultivation see the organic component in the soil as the benefit of organic agriculture compared to farmers with more than one income source, and this effect is significant at the 5% significance level.

The effect of age, experience, and the number of people in the household on seeing the benefits of organic farming as cost reduction is statistically insignificant. Compared to the farmers with an income of less than 2000 TL, the farmers in the high-income group are more likely to see cost reduction as a benefit of organic agriculture. This effect is significant at the 1% level for all income groups. According to the "literacy" reference category, those with high school or higher education are less likely to see cost reduction as a benefit of organic agriculture. This effect is statistically significant at the 5% level. Women are less likely to think of cost reduction as the benefit of organic farming. This effect is statistically significant at the 10% level.

The effect of the independent variables used in this study on the dependent variable "producing highly competitive products is statistically insignificant. The effect of age, experience, and the number of people in the household on the perception of nature and

environment-friendly as a benefit of organic farming is statistically insignificant. Compared to the farmers with an income of less than 2000 TL, the possibility of seeing "nature and environment friendly" as the benefit of organic agriculture is lessened by having an income of "2001-3000". The effect of other income variables on nature and environmental friendliness is statistically insignificant. On the other hand, making a living only with olive cultivation increases the possibility of seeing "nature and environment friendly" as the benefit of organic agriculture, and the effect of this variable is statistically significant at the 10% level. Being a member of the olive oil association negatively affects the possibility of seeing nature and environmental friendliness as a benefit of organic olive oil production. The coefficients are statistically significant at the 10% significance level.

Compared to the reference category aged 30 and below, being in the higher age categories negatively affects the likelihood of seeing health as a benefit of organic farming. The coefficients are statistically significant in the 5% to 1% significance level range. Compared to farmers with 10 years or less of experience, having "21-25" or "26 and more" years of farming experience increases the probability of seeing health as a benefit of organic farming by 5%. Farmers with secondary school education think less about health as a benefit of organic farming than farmers who are “illiterate or illiterate”. This coefficient is statistically significant at the 1% level.

4. Conclusion

Conventional agriculture is a production method that uses chemicals, aims at product abundance, and threatens human and environmental health. Organic agriculture, on the other hand, is a production method that does not use chemicals and protects human and environmental health. For these reasons, the number of people who prefer organic products is increasing day by day. Organic olive and olive oil product is also important agricultural product that affects both human health and the economies of countries. Since the olive is a Mediterranean plant, it has an important place among agricultural products produced in Turkey. Although the organic olive oil sector has developed in Turkey in recent years, it has lagged behind the leading countries of the sector such as Spain and Italy in the world in terms of production, export, and branding.

The main purpose of the research is to examine the factors that determine the perceived benefit of organic farmers from this production. In other words, the relationship of the dependent variable with various factors such as age, experience, number of people in the household, income status, education level, marital status, gender, income source, and union membership were examined. In the analysis of the data, the multivariate probit Regression method was used. According to the results of the analysis, the idea of preserving the number of organic components in the soil as a benefit of organic farming increases as the age of the farmers' increases. Farmers with 10 or more years of experience or women are more likely to see the benefit of organic farming as preserving the number of organic compounds in the soil. Compared to farmers with an income of less than 2000 TL, farmers with higher incomes are more likely to see cost reduction as a benefit of organic agriculture. According to gender, women are less likely than men to see cost reduction as a benefit of organic farming. The

effect of the independent variables used in the study on the dependent variable of producing highly competitive products is statistically insignificant. Farmers who make a living only from olive cultivation are more likely to see the benefit of organic agriculture as being "natural and environmentally friendly", while the situation is the opposite for those who are members of the olive oil union. Compared to farmers with 10 years or less of experience, those with 21-25 and 26 or more experience are more likely to see health as the benefit of organic farming.

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