A study on identifying the effectiveness of the beekeeping grants provided by IPARD program: examples of Erzurum, Kars and Agri provinces

Reception of originals: 03/13/2018
Release for publication: 09/20/2018

Adem Aksoy
Asst.Prof. in Agricultural Economics
Institution: Ataturk University, Department of Agricultural Economics, College of Agriculture
Address: Ataturk University campus, Erzurum, Turkey
E-mail: **aaksoy@atauni.edu.tr**

Nuray Demir
Asst.Prof. in Agricultural Economics
Institution: Ataturk University, Department of Agricultural Economics, College of Agriculture
Address: Ataturk University campus, Erzurum, Turkey
(corresponding author)
E-mail: **ipcioglu@atauni.edu.tr**

Abdulbaki Bilgiç
Asst.Prof. in Agricultural Economics
Institution: Ataturk University, Department of Agricultural Economics, College of Agriculture
Address: Ataturk University campus, Erzurum, Turkey
E-mail: **abilgic@atauni.edu.tr**

Abstract

In this study materials include surveys which have been applied 82 businesses that received grants from TKDK and 100 businesses that have not received any grants from TKDK in the Erzurum, Kars and Agri provinces. With this study we determine enterprises that have been reached or not reached their targeted purposes or goals with IPARD grants and what extent their purposes are realized in the Erzurum, Kars and Agri provinces. Treatment Effect Model was developed and used to determine the profitability of grants disbursed by TKDK. According to the survey results of the treatment effects of beekeeping enterprises, honey production in the field of beekeeping operators 2434 kg in a year when they receive grants, on the other hand it is estimated that if enterprises do not receive grants honey production will be 1572 kg in a year. This research will make an important contribution to the literature to measure the effects of grants on profitability of businesses. It is expected that the result of this research might give useful information to policy makers and the Ministry of Food, Agriculture and Livestock in Turkey.

Keywords: IPARD. Beekeeping grants. Treatment effect model

1. Introduction

Beekeeping is a livestock farming activity depending on nature both due to the life conditions of the honeybees and collecting the raw materials of the products from nature and live material production activity in terms of queen and cluster with products such as honey, beeswax, pollen, royal jelly, propolis and bee venom by using vegetative resources, bees and labor (Ören et al., 2010).

It has a privileged place within the agricultural activities thanks to its contribution to vegetative production, generating income within a short period of time, requiring lesser capital and that it can be carried out independent of land (Uzundumlu et al., 2011). The beekeeping provides employment, income and healthy nutrition to the rural population in developing countries with its low operating costs, requiring lesser manpower in comparison to other production branches, easy storage of products and that it can be sold in line with value pricing (Burğut and Kumova, 2007; Kizilaslan and Kizilaslan, 2007). Considering these features of beekeeping, Turkey has an advantageous position in beekeeping among the World countries thanks to its natural richness and geographical position, bridging between the Asia and Europe (Kekeçoğlu et al., 2007).

While beekeeping is carried out in Muğla, Ordu and Aydın provinces mostly as the main source of income by the families in Turkey, it may be carried out as a secondary income source along with other agricultural businesses (Parlakay et al., 2008). While the average honey yield is 14 kg/hive colony in Turkey, Ordu province takes the first place with 29.8 kg/hive colony for honey yield (Table 1).

Table 1: According to provinces the number of colonies, honey honey production and production

İl	Number of farmer	Hive number (Unit)	Honey production (ton)	Wax production (ton)	Yield (kg/hive)
Ordu	2 674	556 593	16 601	92	29.8
Muğla	4 947	995 102	15 206	893	15.3
Adana	2 465	481 272	9 763	381	20.3
Aydın	1 718	268 110	4 007	132	14.9
Mersin	2 012	262 601	3 493	222	13.3
Other	69 838	5 145 943	58 595	3 030	11.4
Turkey	**83 447**	**7 709 621**	**107 665**	**4 750**	**14.0**

Source: TUIK, 2016

Taking into account that agriculture industry has an important share in Turkish economy and major part of the population live in rural areas and that there is a significant

amount of developmental differences between the regions, we can say that regional differences may increase more within the European Union as a result of accession of Turkey to the EU. Therefore, Turkey has to place greater importance on the rural development policies both during pre-accession and post-accession phases (Ekim, 2006).

In this context, the main objective of this study is to identify whether the enterprises have reached the intended features with the grants executed under IPARD and unit impact and amount of the grants on the income of the agricultural enterprises and to what extent such targets have been reached.

In this context, the subject of the study is to identify if there is any difference between the beekeeping enterprises which receive grants by the Agricultural and Rural Development Support Institution in the provinces of Erzurum, Kars and Agri and those which do not by comparing them socio-economically and present how such grants improve the size, effectiveness, technology level, EU hygiene standards compliance of the enterprises.

We work on rural development policies and EU acquis harmonization in Turkey during the EU harmonization process (Elçi, 2007; Ulucan, 2007; Akın, 2008; Atak, 2009; Ağca, 2010; Işık and Baysal, 2011; Korkmaz, 2015) and contribute to the literature to identify the effectiveness of the grants provided through IPARD program (Çobanoğlu et al., 2016; Gülçubuk et al., 2016).

2. Materials and method

2.1. Materials

The main material of the study is the enterprises which received a grant from Agricultural and Rural Development Support Institution and those with the similar organization but which did not receive grants within Erzurum, Kars and Agri provinces. The secondary data of the study is obtained from Turkish Statistics Institution, websites and relevant studies.

2.2. Method

2.2.1. Determining the sample size

The survey is carried out through complete count method with grantee enterprises. In determining the enterprises which did not receive a grant, we determined the enterprises on which survey has been applied with Purposive Sampling Method. The number of the surveys to be applied on the producers that received a grant is determined as 82 enterprises in total; 31 of which between 3rd and 12th call period in Erzurum, 21 of which between 2nd and 12th call period in Kars and 30 of which between 9th and 12th call period in Agri.

The purposive sampling method has been used to have the best knowledge since the aim in selecting the enterprises that did not receive a grant is to have information by identifying the enterprises that have similar organization with the grantee enterprises, not to have the data that represents the entire enterprises within the rural region (Çiçek and Erkan, 1994).

For this purpose, it is identified through Purposive Sampling Method that the number of the enterprises that did not receive a grant is 100. Thus, carrying out 182 surveys in total has been planned. Table 2 shows the distribution of surveys by provinces.

Table 2: The number of questionnaires administered per province

İller	Receive grant	Non grant	Total
Erzurum	31	41	72
Kars	21	34	55
Ağrı	30	25	55
Total	**82**	**100**	**182**

2.2.2. Data Analysis

Treatment Effect Model (TEM) has been used in accordance with the purpose of the research. This purpose constitutes integral results in the other aspects of the project. Treatment Effect Model has been modeled in the limdep statistics software. Model (Madalla, 1983; Greene, 2012; Kasteridis and Yen, 2012; Aksoy et al, 2017) has been used.

The data has been assessed within the scope of the study for the enterprises which received and which did not receive the grant since the primary data are used for the Treatment Effect Model. Such data has been obtained from the questions to identify the production costs of the agricultural enterprises, therefore, production factors and their outputs during the production period of the farmers in the survey period. For the main objective of the study, it is aimed to present the impacts of the grants used by the agricultural enterprises on the gross

output value or gross profit especially from the economic aspects of the enterprise. In this context, the socio-demographic factors of the enterprise and its owner, as well as the status of the receiving grants that is a qualitative (dummy) variable, have been used as an independent variable within the system. As the enterprises do not keep accounting records in Turkey, the enterprises which did not receive a grant have been taken as a reference since we are not able to compare the period which the enterprises received or did not receive grant.

TEM has been used by assuming that grants will increase, decrease or do not change the profitability of the agricultural enterprise. Since this study is the first to research whether regional grant assistances in Turkey have an impact on the profitability of the agricultural enterprise, the value of the study increases still further.

3. Research Findings and Discussion

3.1. Descriptive analysis results

Being the sub branch of livestock farming, the beekeeping activity is an industry that has an important effect not only on the human life but also on the other plants and species (Kadirhanoğulları, 2016). In Turkey, while it was carried out to have extra income, this activity has started to become a main source of income as it is done professionally today (Köseoğlu et al., 2008).

Those who are in beekeeping industry usually carry out other works, as well. While the rate of those whose main source of income is beekeeping is 29.1%, and the rate of those who work in agriculture along with beekeeping is 35.2 %, those who do business other than agriculture is 22% in Table 3. Those who carry out beekeeping and have an occupation other than agriculture is as high as 30.9% in Agri province.

Table 3: According to the manufacturer of the source of income distribution

İncome source	Erzurum		Kars		Ağrı		Total	
	N	%	N	%	N	%	N	%
Beekeeping	22	30.6	19	34.5	12	21.8	53	29.1
Farm	5	6.9	10	18.2	10	18.2	25	13.7
Mixed	35	48.6	13	23.6	16	29.1	64	35.2
Others	10	13.9	13	23.6	17	30.9	40	22.0
Total	**72**	**100.0**	**55**	**100.0**	**55**	**100.0**	**182**	**100.0**

As the work field is geographically at the gene source of the Kars Caucasian race, the producers mostly work with Caucasian race (83.5%). The rate of Caucasian race was found to be 74.5% in a study conducted in 2011 in TRAII Region in Turkey (Sezgin and Kara, 2011). There is an increase in Carniolan race in the region recently and the rate of this race is 7.7%. Erzurum is the province that works most with the Carniolan race, which is a German race, at a rate of 18.1 %. In the research region, 8.2 % rather consists of hybrid race (Table 4).

Table 4: Beekeepers bee races of their work

Breeds	Erzurum		Kars		Ağrı		Total	
	N	%	N	%	N	%	N	%
Kafkas	52	72.2	54	98.2	45	83.6	152	83.5
Karniol	13	18.1	0	0.0	1	1.8	14	7.7
İtalyan	1	1.4	0	0.0	0	0.0	1	0.5
Others	6	8.3	1	1.8	8	14.5	15	8.2
Total	**72**	**100.0**	**55**	**100.0**	**55**	**100.0**	**182**	**100.0**

While the number of the hives of the grantee enterprises is 191.2, the number of hives of those enterprises which did not receive a grant is 149.5. The grantee enterprises produce more honey, depending on the number of the hives in terms of honey production. The grantee enterprises sell honey with a higher price. While the grantee enterprises generate an income of 62.841 TL/ year out of beekeeping, those who did not receive a grant generate an income of 56.537 TL / year (Table 5).

Table 5: Some economic indicators related to beekeeping business

Değişkenler	Receive grant	Non grant	Average
Hive number	149.5	191.2	167.1
Honey production (Kg)	1571.9	2434.3	1936.8
Honey sale price (TL/Kg)	36.6	41	39
Total revenue (TL)	56 537	62 841	59 204

We can observe that beekeeping is not sufficiently subsidized when we examine the sub-industries of the agriculture. When we look at the subsidies in 2015, the beekeepers only received beehive (10 TL / unit) and bumblebee (60 TL / colony). Regional manufacturers can only benefit from beehives support. It has been identified that 84.4 % of beekeepers received subsidy. 44.5 % of 182 beekeepers, whom the survey has been applied, stated that they are not content with the support at all (Table 6). However, there are no producers who are not content

with the grants. While 2.2 % of the participants of the survey are very satisfied with subsidies, the rate of those who are satisfied with the grants is 13.0 %. 51.9% of the 77 grantee beekeepers stated that they are content with the grants.

Table 6: The distribution of cases to be satisfied with the support given to beekeepers and grants

Memnuniyet	Support		Grant	
	N	**%**	**N**	**%**
Non pleasure	81	44.5	0	0.0
Low pleasure	51	28.0	25	32.5
Undecided	8	4.4	2	2.6
Pleasure	38	20.9	40	51.9
High pleasure	4	2.2	10	13.0
Total	**182**	**100.0**	**77**	**100.0**

Table 7 presents how 77 grantees are informed of the grants. 20.8% of the beekeepers primarily learn about the grants at the meetings, 20.8% of the beekeepers learn through promotional material and 20.8% learn through other facilities (Beekeepers Association). We can see that printed press, radio and television have a lesser significance in learning about the grants.

Table 7: The distribution of the severity of the effective factors in being informed of the grant of beekeepers

Faktörler	**1. derece**		**2. derece**	
	N	%	N	%
Radio and television	6	7.8	8	10.4
Internet	8	10.4	9	11.7
Billboard	12	15.6	10	13.0
Meeting	16	20.8	13	16.9
Printed publication	3	3.9	12	15.6
Promotional materials (brochure, signboard)	16	20.8	16	20.8
Others	16	20.8	9	11.7
Total	**77**	**100.0**	**77**	**100.0**

50% of the grantee beekeepers state that they do not agree with the problem of the inability for people over 60 years old to receive grants and inability to benefit from the grant when there is an over capacity in the city and Incentive Certificate (Table 8). 61% of the beekeepers agree on the problem of bureaucratic procedures (official documents being

obtained in a long time) and 46.8 % of the beekeepers think that consultant companies are uninformed and insufficient. In a similar study, 57% of the enterprises stated that consultant companies are insufficient (Koç and Giray, 2016).

Table 8: The distribution of the problems faced by the businesses receiving grants (%)

	1	2	3	4	5	Total
Low number and inadequacy of consulting firms	16.9	1.3	6.5	28.6	46.8	100.0
Cash strap	33.8	11.7	10.4	14.3	29.9	100.0
Long-term bureaucratic procedures and official documents	2.6	7.8	6.5	22.1	61.0	100.0
İklim koşulları	14.3	7.8	7.8	36.4	33.8	100.0
Beneficiaries older than 65 years can't benefit from the grant	63.6	9.1	16.9	6.5	3.9	100.0
Incentive Certificate (Not to benefit from double financing)	57.1	5.2	15.6	11.7	10.4	100.0
Inability to benefit from grant when there is more capacity available	67.5	7.8	15.6	3.9	5.2	100.0

1 = I never agree. 2 = I participate in large measure. 3 = Undecided. 4 = I strongly agree. 5 = I fully agree

3.2. Model results

Table 9 presents the descriptive statistics of the variables, belonging to the beekeeping enterprises used in the TEM. Annual gross profit of the enterprises is calculated as 55.500,79 TL. While 42.3 % of the producers, to which a survey has been applied, has received a grant, and 92.9% of the enterprises are the members of the Beekeeping Association, 80.8% of the producers stated that they do another work other than beekeeping. Around 75% of the beekeepers make use of internet, relatives and friends rather than agricultural institutions and organizations about beekeeping. 66.5% of the producers expressed that they change the queen in two years or less. VIF values are calculated, the values of variables have been found to be within acceptable limits.

Table 9: Descriptions and descriptive statistics of the beekeeping business variables

Variable	Average	St. Dev.	VIF
Dependent variable			
Gross profit	55 500.79	63 891.96	
Independent variables			
Grant status (Receive grant=1, Non grant=0)	0.423	0.495	
Number of individuals in the family	5.665	2.495	1.22

Membership of beekeepers association (Membership=1, Non =0)	0.929	0.258	1.08
Cooperative membership (Membership=1, Non=0)	0.258	0.439	1.09
Another job with beekeeping (Yes=1, No=0)	0.808	0.395	1.39
Hive Numbers	167.093	138.328	1.38
Bee breeds (Kafkas=1, Others=0)	0.835	0.372	1.23
Information sources used for beekeeping (Agricultural District Directorate, Agricultural Adviser, Veterinary and Cooperative = 1 Others = 0)	0.253	0.436	1.09
Erzurum (The distribution of the questionnaires according to the provinces was taken Ağrı İli control group Erzurum = 1 Others = 0)	0.396	0.490	1.92
Kars (Kars=1 Others=0)	0.302	0.460	1.67
Educational status (Years)	9.439	4.287	1.48
Share of income from beekeeping in total income (%)	46.467	28.337	1.69
Number of deceased hives	9.681	20.956	1.11
Farmer's age	48.846	10.950	1.62
Queen bee change frequency (Less than 2 years =1, Others=0)	0.665	0.473	1.24
Experience of farmers (years)	18.632	13.377	1.69

Log likelihood value in the Beekeeping Enterprises Treatment Effect Model is -327.015 (σ) and Sigma has been found significant as 1.157. Rho (p) value, which identifies how the factors that are out of the system affect another model, has been found as p-0.916***. That p value is found significant and negative shows that this model can be solved within a system, if it is negative, it increases one of the models and decreases the other one.

As a result of the selective model, the number of hives, training period, age of the enterprise and frequency of queen change have been statistically found significant. The increase in the number of hives of the enterprise and changing the queen in every two years and below improve the gross profit. The increase in the training period and higher producer age decreases the gross profit. When we examine the log (gross profit) model results, the constant, the number of hives, income and the status receiving a grant have been statistically found significant (Table 10).

Table 10: Beekeeping business model of treatment effects estimation results

Variable	Selective model		Log (gross profit) model	
	Coefficient	t-value	Coefficient	t-value
Constant	-0.306	-0.29	9.527***	12.70
Number of individuals in the family	0.055	1.06	-0.049	-1.31
Membership of beekeepers association	0.583	1.18	-0.219	-0.68
Cooperative membership	-0.345	-1.31	0.329	1.42
Another job with beekeeping	0.355	1.03	-0.292	-1.03
Hive Numbers	0.002*	1.91	0.003***	2.64
Bee breeds	0.380	1.22	-0.224	-0.84

Information sources used for beekeeping	0.129	0.51	-0.028	-0.13
Erzurum	-0.259	-0.84	0.089	0.37
Kars	-0.212	-0.75	0.290	1.02
Educational status	-0.070**	-2.08	0.009	0.34
Share of income from beekeeping in total income	-0.005	-1.04	0.007*	1.73
Number of deceased hives	-0.002	-0.42	0.001	0.12
Farmer's age	-0.014*	-1.85		
Queen bee change frequency	0.475***	2.77		
Experience of farmers			0.002	0.23
Grant status			1.673***	6.54
σ	1.157*** 10.59			
ρ	-0.916*** -15.84			
Log likelihood	-327.015			
Estimation based on N=180, K=32				
Inf.Cr.AIC	718.0			
AIC/N	3.99			

,,***, respectively 0.10, 0.05ande 0.01 at significant.*

Table 11 presents the impacts of the treatment effects in the beekeeping enterprises on the gross incomes in the enterprises which received a grant and which did not. Considering the treatment effect values, they are 52.745 TL in the non-grantee enterprises while they are 17.602 TL in the grantee enterprises. Treatment effect parameter results have been found statistically significant. Treatment effect amount in the Treatment Effect Model has been found as - 35.142.8 TL. It has been determined that the status of receiving a grant decreases the gross profit around 35.000 TL when it is compared with non-grant status. It has been observed in the period during the survey that the farmers applied for the grants to buy a tractor rather than beekeepers. The tractor expenses within the grants received creates an important amount. The enterprises, the main source of income of which is beekeeping, express that it will be more useful to have pickup truck rather than tractor within grant items.

The enterprises that participated in the survey have received 53.315 TL grant on average per enterprise. Considering the parameters in Table 11, when we divide grant difference to average grant per enterprise, we will obtain the income generated from 1 TL grant (-35 142/53 315 = -0.659).

Table 11: Beekeeping business of treatment effects values

	Treatment effect parameter	t- value	%95 confidence limits	
Expected average income level of non grant receiver	52 745.1***	7.68	39 276.1	66 214.1
Expected average income level of	17 602.3***	7.43	12 961.5	22 243.1

grant receiver				
Mean difference	-35 142.8***	-7.62	-44 185.7	-26 099.8

,,***, respectively 0.10, 0.05ande 0.01 at significant.*

4. Observation and Interview Results

As a result of face to face meetings with beekeepers, we observed the following problems. These problems are;

- Marketing problem of the products,
- So many migratory beekeepers in the region,
- Insufficient and scarce colonies,
- Winterization problem (The beekeepers usually take the bees to Hatay, Iğdır and Aydın for winterization. High winterization fees and distance to these cities create a problem),
- Insufficient technical information resources about beekeeping,
- Existence of unhealthy honey in the market and sales of such honey in the market without any supervision,
- The consumers do not trust the honey for there is a lot of fake honey in domestic market and international market such as Iran and consequently, they cannot distinguish the difference between the good and poor produce
- The difficulty experienced during the geographical indication application and in obtaining geographical indication.

5. Conclusion and Recommendation

As a result of the study, it is concluded that even though the climate and ecological structure of the region allow for a qualified honey production, this potential has not been sufficiently utilized. The real beekeepers could not benefit sufficiently from the grants facilitated by the Agriculture and Rural Development Support Institution. Beekeepers require van, truck, pickup truck and similar vehicles to use for transport and daily activities. Failure to provide such vehicles instead of tractors within the scope of the grant led to the application by the farmers to the grants rather than real beekeepers. This paves the way for inability to ensure intended impact.

Turkey needs to develop strategies for future by learning from the experiences and identify the problems of the beekeeping industry accurately in these days when EU process is

extensive and its effects on agriculture are discussed. In a world where there is great demand for natural foods, the economic value of beekeeping, which is a system that produces pure and natural food will grow in years to come. Model practices that will solve problems such as low productivity, failure to use modern techniques, queen bee, care, and nutrition, fighting against the diseases, migratory beekeeping and accommodation that the region are still not able to solve should be encouraged.

The results of this study are of importance to shed light on the practices in the similar areas in Turkey. It is useful for policy makers to benefit from this study that measures the effectiveness of the grants received in the rural areas in Erzurum, Kars and Agri provinces.

6. References

AKSOY, A.; DEMIR, N.; BILGIÇ, A. AND YILDIRIM, A. Determination of the effectiveness of cattle grants disbursed under the IPARD program: case study in Eastern Turkey. *Custos e @gronegócio on line*, v. 13, p. 44-261, 2017.

AĞCA, M. Türkiye'de uygulanan tarımsal destekleme politikalarındaki gelişmeler. Yüksek Lisans Tezi, Çukurova Üniversitesi Fen Bilimleri Enstitüsü, Adana, 2010.

AKIN, S. Avrupa Birliği'nde kırsal kalkınmaya yönelik mali yardımlar, değişimler ve türkiye'nin uyum çalışmaları. Yüksek Lisans Tezi, Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Ankara, 2008.

ATAK, B. Avrupa Birliği'nde yapısal fonlar: türkiye ile üye ülkelerin karşılaştırılması üzerine bir inceleme. Yüksek Lisans Tezi, Trakya Üniversitesi Sosyal Bilimler Enstitüsü, Edirne, 2009.

BURGUT, A.; KUMOVA, U. Çukurova bölgesi ve gezginci arıcılığa uygun bir kovan tipinin geliştirilmesi, kovan tipi ile gücünün kışlatma, koloni gelişimi ve bal verimi üzerine etkileri. *V. Ulusal Zootekni Bilim Kongresi*, p:66, Van, 2007.

ÇIÇEK, A.; ERKAN, O. Tarım ekonomisinde araştırma ve örnekleme yöntemleri. Gaziosmanpaşa Üniverstesi Ziraat Fakültesi Yayın No: 12, Tokat, 1994.

ÇOBANOĞLU, F.; CANKURT, M.; TUNALIOĞLU, R.; YILMAZ, H.İ.; BOZKIRAN, S.; NALBANTOĞLU, A.; YILDIZ, H. Kırsal kalkınma yatırımlarının desteklenmesi programının etkisinin değerlendirilmesi, sorunlar ve olası çözüm önerileri: Antalya ili örneği. *XII. Ulusal Tarım Ekonomisi Kongresi*, p. 1013-1022, Isparta, 2016.

EKİM, R.M. Avrupa Birliği kırsal kalkınma politikaları ve Türkiye'nin uyumu. Yüksek Lisans Tezi, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü, İzmir, 2006.

ELÇI, S. Avrupa Birliği yapısal fonları. AB Uzmanlık Tezi, T.C. Tarım ve Köyişleri Bakanlığı, Dış İlişkiler ve Avrupa Birliği Koordinasyon Dairesi Başkanlığı, Ankara, 2007.

GÜLÇUBUK, B.; KÖKSAL, Ö.; ATASEVEN, Y.; GÜL, U. AND KAN, M. kırsal kalkınma desteklerinin ulusal düzeyde etkileri: tarım ve kırsal kalkınmayı destekleme kurumu (TKDK) projelerine ilişkin araştırma sonuçları. *XII. Ulusal Tarım Ekonomisi Kongresi*, p. 1039-1048, Isparta, 2016.

GÜNBEY, V.S. Van ili gezginci arıcılık hareketlerinin belirlenmesi. Yüksek lisans Tezi, Yüzüncüyıl Üniversitesi Fen Bilimleri Enstitüsü, Van, 2007.

GÜRER, B. Adana ilinde arıcılık faaliyetinin ekonomik analizi. Tarımsal Ekonomi Araştırma Enstitüsü. Yayın No:178, Ankara, 2010.

GREENE W.H. Econometric analysis. 7th Edition, New York: Prentice Hall, 2012.

IŞIK, N.; BAYSAL, D. Avrupa Birliği'ne uyum sürecinde Türkiye'de kırsal kalkınma politikaları: genel bir değerlendirme. *Cukurova Üniversitesi İktisadi ve İdari Bilimler Dergisi*, v.12, n. 1, 2011.

KADİRHANOĞULLARI, İ.H. Iğdır ilinde arıcılığı ekonomik analizi. Yüksek Lisans Tezi, Iğdır Üniversitesi Fen Bilimleri Enstitüsü, Iğdır, 2016.

KASTERIDIS, P.P.; YEN, S.T. Smoking cessation and body weight: evidence from the behavioral risk factor surveillance survey. *Health Service Research*, v. 47, n. 4, p. 1580-1602, 2012.

KEKEÇOĞLU, M.; GÜRCAN, E.K.; SOYSAL, M.İ. Türkiye arı yetiştiriciliğinin bal üretimi bakımından durumu. *Tekirdağ Üniversitesi Ziraat Fakültesi Dergisi*, v. 4, n. 2, p. 227-236, 2007.

KIZILASLAN, H. AND KIZILASLAN, N. Factors affecting honey production in apiculture in Turkey. *Journal of Applied Sciences Research*, v. 3, n.10, p. 983-987, 2007.

KOÇ, A.; GİRAY, F.H. Süt sığırcılığı işletmecilerinin IPARD proje desteklerine ilişkin düşünceleri. *XII. Ulusal Tarım Ekonomisi Kongresi*, p. 975-984, Isparta, 2016.

KORKMAZ, V. Tarım ürünlerini destekleme politikaları: Türkiye ve AB karşılaştırması. Yüksek Lisans Tezi, Adnan Menderes Üniversitesi Sosyal Bilimler Enstitüsü, Aydın, 2015.

KÖSEOĞLU, M.; YÜCEL, B.; SANER, G.; DOĞAROĞLU, M. Türkiye arıcılığının güncel durum analizi. *Hasat Yayın Dergisi*, v. 281, p. 52-61, 2008.

MADDALA, G.S. Limited-dependent and qualitative variables in econometrics. Cambridge, MA: Cambridge University Press, 1983.

PARLAKAY, O.; YILMAZ, H.; YAŞAR, B.; SEÇER, A; BAHADIR, B. Türkiye'de arıcılık faaliyetinin mevcut durumu ve trend analizi yöntemiyle geleceğe yönelik beklentiler. *Uludağ Üniversitesi Ziraat Fakültesi Dergisi*, v. 22, n. 2, p. 17-24. 2008.

SEZGIN, A.; KARA, M. Arıcılıkta verim artışı üzerinde etkili olan faktörlerin belirlenmesine yönelik bir araştırma: TRA2 Bölgesi Örneği. *Harran Üniversitesi Ziraat Fakültesi Dergisi*, v. 15, n. 4, p. 31-38, 2011.

TUİK. Türkiye istatistik kurumu İnternet Sayfası, www.tuik.gov.tr. 2016.

ULUCAN, B. IPA kırsal kalkınma ajansının akreditasyonu. Uzmanlık Tezi, Tarım ve Köyişleri Bakanlığı, Ankara, 2007.

UZUNDUMLU, A.S.; AKSOY, A.; IŞIK, H.B. Arıcılık işletmelerinde mevcut yapı ve temel sorunlar; Bingöl ili örneği. *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*, v. 42, n. 1, p. 49-55, 2011.