YYÜ TAR BİL DERG
(YYU J AGR SCI)
2014, 24(1): 23-29

Geliş Tarihi (Received): 04.09.2013
Kabul Tarihi (Accepted): 28.12.2013

Araştırma Makalesi/*Research Article (Original Paper)*

Turkish Hazelnut Production and Export Competition

O. İnanç GÜNEY*

Çukurova Üniversitesi, Adana Meslek Yüksekokulu
*e-posta: iguney@cu.edu.tr, Tel: 0322 2264136, Fax: 0322 2264974

Abstract: In this study, production, marketing, competition and trade conditions in Turkish hazelnut sector were examined. Hazelnut is a characteristic agricultural product of Turkey and an important input for food industry globally. Due to the upgrade usage of hazelnut in food industry, especially for chocolate production, an increase on production and trade activities is been observed in recent years. For the reason that production of hazelnut can only be performed in limited areas of few countries, this fruit has a special position in the world market. Turkey generates 70% of total hazelnut production and exportation thus affects world hazelnut sector intensively through the national policies and applications. In this study, Revealed Comparative Advantage (RCA) index which was developed by Blassa (1965) was used to identify the specialization level and comparative advantage power of Turkey on international hazelnut market. In this context, average RCA index of Turkish hazelnut trade for 2009-2011 was calculated as 95 which represent a great comparative advantage power of Turkish exportation on international market. However, competitor countries are already increasing their hazelnut production they started to be a treat for the advantage and superiority of Turkey on the world hazelnut market.

Key words: Revealed Comparative Advantage, Hazelnut, Exportation, Policy, Turkey

Türkiye'de Fındık Üretimi ve İhracat Rekabet Gücü

Özet: Bu çalışmada, Türkiye'nin karakteristik tarım ürünlerinden ve gıda sektörünün önemli bir girdisi olan fındığın Türkiye'deki üretim, pazarlama ve ticaret koşulları ile bu ürüne ilişkin hükümet politikaları ve rekabet gücü incelenmiştir. Fındık, başta çikolata üretimi olmak üzere gıda sanayinde yoğun olarak kullanılmakta ve son yıllarda üretim ve ticareti dünya genelinde artış göstermektedir. Fındık üretiminin çok az ülkede ve kısıtlı alanlarda gerçekleştiriliyor olması bu ürünün üretimini ve ticaretini önemli bir duruma getirmiştir. Fındık üretiminin ve ihracatının yaklaşık %70'ini gerçekleştiren Türkiye bu konumu nedeniyle dünya fındık sektörünü yaptığı uygulamalar ve politik kararlarıyla yoğun bir şekilde etkilemektedir. Bu çalışmada, Türkiye'nin fındık ticaretindeki uzmanlaşma düzeyi ve mukayeseli üstünlük gücünü belirlemek amacıyla Blassa'nın (1965) geliştirmiş olduğu Açıklanmış Karşılaştırmalı Üstünlükler (AKÜ) endeksi kullanılmıştır. Bu bağlamda, 2009-2011 yılları Türkiye fındık ticareti ortalama AKÜ indeksi 95 olarak hesaplanmıştır. Bu durum Türkiye'nin uluslararası fındık ticaretinde çok yüksek düzeyde karşılaştırmalı üstünlüğe sahip olduğunu göstermektedir. Bununla birlikte, rakip ülkelerin hâlihazırda fındık üretimlerini arttırıyor olması bu alanda önümüzdeki dönemlerde daha yoğun bir rekabet ortamının olabileceğini işaret etmekte ve Türkiye'nin bu alandaki avantajlı konumunu tehdit etmektedir.

Anahtar kelimeler: AKÜ, Fındık, İhracat, Politika, Türkiye

Introduction

Hazelnut is a hard-shell fruit that has been known by people nearly for 5000 years. Although emergence of the fruit is China (B.C. 2830), it was first cultivated and spread out to the world by Black Sea Region. The hazelnut fruit preserved its importance for ages especially in Anatolia due to many reasons. Hazelnut is not only a nutritive and easy digestible fruit but also reduces the cholesterol and thus protects from cardio vascular diseases (Sobutay 2006). Besides, the shell of the fruit can be used as a fuel or for making some tools and instruments, and the green leafy cover is a good material for making fertilizers. Moreover, the surplus can be turn to account as edible oils and the oil cake of the fruit can be used as a supplement in the animal fodder sector.

The production of hazelnut is an important source of income for the people who live in the Black Sea region of Turkey where 400 thousand families work for the hazelnut sector and the daily allowance of nearly 2 million people depends on hazelnut (Aktaş et al. 2009).

Material and Methods

In order to analyze and measure the production, marketing, trade and competitiveness of Turkish hazelnut production all the data required was obtained from the Turkish Statistical Institute (TUIK), Black Sea Exporters Association (KIB) and Food and Agriculture Organization (FAO) data base. Data required for RCA calculations were obtained from UN Statistics Office and Food and Agriculture Organization (FAO) data base.

Revealed Comparative Advantage (RCA) Index is used in this study to evaluate the competitiveness of Turkey in global hazelnut trade. RCA is an index which was developed by Blassa (1965) to be used in international economics for measuring the relative advantage or disadvantage of a certain country in a certain class of commodities.

In calculation of the comparative advantages, due to the difficulty of measuring price and non-price variables for many commodities and countries, it is necessary to make calculations based on after trade data. In this context, RCA is one of the most used indexes for comparative advantage studies. To measure a countries comparative advantage on a certain commodity or industry, Blassa was created an index which gives the ratio of share of this certain commodity or industry on world exportation to the share of countries total exportation (Çakmak 2005).

On the assumption that the commodity pattern of trade reflects the inter-country differences in relative costs as well as in non-price factors, this is assumed to "reveal" the comparative advantage of the trading countries. The factors that contribute to movements in RCA are economic: structural change, improved world demand and trade specialization (Serin and Civan 2008; Batra and Khan 2005).

$$RCA_{ia} = (X_{ia}/\Sigma X_{wi}) \,/\, (X_{at}/\Sigma X_{wt})$$

X: Exports
i: Country
a: Commodity
t: Set of commodities

From the result of the calculation, if RCA takes a value bigger than unity, we can assume that the country has a relevant comparative advantage for the commodity argued. In other words, the share of exportation of this commodity in country's total exportation is bigger than country's total exportation in world exportation. If RCA is less than unity the country is said to have a comparative disadvantage in this commodity trade (Utkulu and Seymen 2004).
In more detail, we can classify RCA index in 4 degree to demonstrate the position of comparative advantage,

$0 < RCA \leq 1$: No comparative advantage
$1 < RCA \leq 2$: Poor comparative advantage
$2 < RCA \leq 4$: Medium comparative advantage
$4 < RCA$: Strong comparative advantage (Erkan 2012).

Results and Discussion

Although the hazelnut cultivation in Turkey first started in the East Black Sea region, due to the factors like support policies as guaranty purchase, the immigration factor and relatively inferior labor need, later it spread to the western part of the Black sea coast intensively (Deniz 2009). Today 35 cities in Turkey are producing hazelnut and the most commercially producer cities are Ordu, Giresun, Samsun, Sakarya, Trabzon, Zonguldak, Kocaeli, Artvin, and Düzce (DPT 2001).

In Turkey 17 varieties of hazelnut are grown, which can be clustered into 3 main groups. The Round Shaped Variety: Tombul, Palaz, Foşa, Çakıldak, Kalınkara, Kargalak, Uzunmusa, Micane, Cavcava and Kan varieties can be considered in this group and the main cultivation area is in Trabzon and Giresun cities. The Conic Shape Variety: İnce kara, Acı and Kuş are in this group and mostly cultivated in the Giresun Area. The Almond Shape Variety: Yuvarlak Badem, Yassı Badem and Değirmendere varieties; their cultivation is relevant in Düzce Area.

Table1. Hazelnut plantation in Turkey

City	Planted area (ha)	Share (%)
Ordu	230.397	32,3
Giresun	123.531	17,3
Samsun	89.616	12,5
Sakarya	70.079	9,8
Trabzon	65.475	9,1
Düzce	63.607	8,9
Other	70.725	10,1
Total	713.434	100,0

Furthermore, there is another classification according to the quality in most commercial, being the Giresun and the Levant type. Giresun is the oldest cultivation area of the Black Sea Region and the hazelnuts coming from this region are called as the Giresun quality. The oil ratios of these quality nuts are higher and mostly preferred for its shape and flavor characteristics. These quality type hazelnuts are also very suitable for processing because of their easy separation properties from the skin. All the hazelnuts other than the ones cultivated in Giresun are called as the Levant Quality. The oil ratio of this quality is lower, but it is very competitive for the flavor supremacy (Karpuz et al. 2007).

There is a further classification of hazelnuts according to their production areas. In Turkey hazelnuts are divided in 3 standard areas, as 1st, 2nd and 3rd.

1st Standard Area: This area covers the coastal parts of the Artvin, Trabzon, Rize, Ordu and Giresun cities. Although in this area the production is lower and fluctuating, the quality is superior. This area is concerned as the most important production area in Turkey. 2nd Standard Area: This area starts from the Terme district of Samsun and goes on till Kocaeli. With geographical conveniences the production spreads to the entrails. In this area the orchards are younger and the productivity is higher than the 1st area. This area covers Bolu, Düzce, Kastamonu, Kocaeli, Sakarya, Samsun, Sinop and Zonguldak cities. 3rd Standard Area: Outside the 1st and 2nd areas all the rest are defined as the 3rd area. The production of this area has not notable economic value and the yield is worth as the snacks for the domestic market (Aktaş et al. 2009; Sobutay 2006).

Although hazelnut production in Turkey is decreasing, still Turkey maintains 70% of the total world production. Ordu is the most important producer city and produces the 25% of the hazelnut production of Turkey. After Ordu, the other important producer cities are Giresun, Samsun, Sakarya, Düzce and Trabzon.

The yield loss problem which can be observed for almost every crop in Turkey, is also valid for hazelnut production. While the yield is about 2.250 kg/ha in USA and 2.550 kg/ha in Italy, it is 1000 kg/ha in Turkey. The low yield is depend on the factors below,

1- Hazelnut orchards are aged.
2- Deficiency of pollination and fertilization.
3- The production is spread to low land areas.
4- Problems related with maintenance (Sobutay 2006).

In Turkey, depend on the presence of orchards in high lands, the harvest season starts in August and ends by September. The harvested nuts are laid about 10-15 cm under the sun for wilting till the green leafy cover becomes brown. This is a pre-wilting process. After wilting the brown part is separated by

haymakers and the hazelnuts are left for a second wilting. This process continues for 15-20 days. After this threshing process, the producers immediately pass the product to the market. They sell their hazelnuts to traders, breakers or processors according to price level, cash payment facilities or debt situations bound to the brokers (Sobutay 2006).

Table2. Production and land sizes

	1st Standard Area				2nd Standard Area			
Year	**Production (ton)**	**Share %**	**Area (ha)**	**Share %**	**Productio n(ton)**	**Share %**	**Area (ha)**	**Shar e %**
2006	331.292	50,1	394.786	59,0	323.762	48,9	261.705	39,0
2007	268.775	50,7	391.046	58,9	255.373	48,0	262.600	39,5
2008	425.150	53,0	386.684	58,3	367.388	45,8	266.238	40,1
2009	236.125	47,0	367.506	57,1	255.766	51,0	265.057	41,2
2010	275.263	45,8	395.670	59,2	316.513	52,7	262.276	39,2
2011	212.484	49,4	423.855	60,8	208.615	48,5	262.227	37,6
2012	316.699	48,0	434.479	60,8	330.457	50,0	275.906	38,6

Table 3. Hazelnut production of Turkey by cities (tons)

City	**2008**	**%**	**2009**	**%**	**2010**	**%**	**2011**	**%**	**2012**	**%**
Ordu	215.649	27,0	117.751	23,0	141.714	23,6	99.881	23,2	145.353	22,0
Giresun	136.138	17,0	68.974	13,7	74.944	12,5	67.603	15,7	101.532	15,3
Samsun	117.886	14,3	66.617	13,3	83.830	13,9	52.087	12,1	88.392	13,3
Sakarya	114.547	14,6	79.041	15,8	108.150	18,0	74.537	17,3	118.057	17,8
Düzce	91.272	11,3	72.399	14,4	78.902	13,1	45.098	10,4	81.278	12,3
Trabzon	61.485	7,6	36.802	7,3	45.932	7,6	33.410	7,7	58.767	8,9
Total	733.977	91,8	441.584	87,5	600.000	88,7	372616	86,6	593.379	90,0

The main hazelnut marketing chains in Turkey are:

- Producer-Trader-Foreign Importer
- Producer-Trader-Exporter
- Producer-Breaker-Trader- Foreign Importer
- Producer-Breaker-Processor-Exporter
- Producer-Breaker-Processor-Retailer-Consumer
- Producer-Breaker-Processor-Wholesaler-Retailer-Consumer (Aydın et al. 2007).

The institutions determine the purchasing prices based on 50% efficiency level which means that the weight of the shell would be equal to the weight of the kernel. The measured efficiency variation reflects on the purchase price by the same percentage value (DPT 2001). For instance, if the efficiency is 51% of kernel, the purchase price is increased by 1%.

For nut processing, Turkey is up-to-date on what foreign markets are requiring: each level of the production process is physically, chemically and microbiologically controlled until automatic packaging (Deniz 2009). Nearly, there are 180 crushing plants with the capacity of 1.800.000 tons per year and 40 processing plants with the capacity of 350.000 ton per year in Turkey (Sobutay 2006).

Hazelnut is the highest foreign currency-inflow-provider agricultural product of Turkey, with the average annual exportation value of 1.5-2 million dollars. While approximately 15% of the total production is consumed domestically, the remaining 85% goes to exportation. Turkey has the leader position for exportation, providing 70-75% of the world's hazelnut market.

In 1970's, 90% of the hazelnut exportation was unprocessed; by the growth of the hazelnut processing industry, the share of processed hazelnut on the total hazelnut exportation increased to 40%. Anyway, the production of processed hazelnut is still y low, mainly due to the lack of supplier industry and high

dependency on the EU export market. These can be considered as limiting factors for Turkey to express its potential on the hazelnut sector. Turkey performed 5.688.709 tons of hazelnut exportation during 1978-2010 (first 9 months) period, with the revenue of 22.149.115.537 dollars (Yavuz 2007).

Table 4. Unshelled hazelnut exportation of Turkey by Countries

Exported Country	2008	2009	2010	2011	2012
			Germany		
Quantity (kg)	58.424.967	54.822.885	56.546.994	58.132.569	56.165.038
Value ($)	378.964.819	272.322.099	341.291.434	411.549.933	381.814.691
			Italy		
Quantity (kg)	53.056.911	48.219.320	43.393.298	44.546.190	50.229.146
Value ($)	288.681.651	284.786.249	262.313.459	331.119.283	325.941.727
			France		
Quantity (kg)	15.648.705	18.786.066	31.626.496	30.007.784	31.622.295
Value ($)	96.979.028	100.495.212	195.577.394	221.303.353	222.235.105
			Other		
Quantity (kg)	101.270.938	97.526.582	120.738.318	111.079.849	127.727517
Value ($)	643246165	514.994.186	745.603.421	795.189.744	872.471.384
			Total		
Quantity (kg)	228.401.521	219.354.853	252.305.106	243.766.392	265.743.996
Value ($)	1.407.871.663	1.172.597.746	1.544.785.708	1.759.162.313	1.802.462.907

As a result of the calculations RCA index is determined as 95, which indicates that Turkey has great a relevant comparative advantage on hazelnut exportation in the world. 05-Fruit and Vegatable production is one of the strogest commodity group on relevant comparative advantage for Turkey. Fort he years 1993-2009 avarega relevant comparative advantage of 05-Fruit and Vegatable production has calculated as 6,07 (Erkan 2012) . Hazelnut is the strongest commodity in this group for trade competition.
In the study RCA index of hazelnut trade for Italy, which is a competitor of Turkey, has calculated and founded as 2,7. This result shows that although Italy has relevant comparative advantage for hazelnut trade they are very far below to Turkey.

The policies that governments applied on hazelnut sector in Turkey can be summarized in 5 groups.

- Price support
- Restrictions on planted areas
- Payment for alternative crops and removals
- Direct payments as direct income payment and compensatory payments
- Promotional activities

Price support for hazelnut production started at 1938 with the establishment of Fiskobirlik (Union of Hazelnut Sales Cooperatives). Thus, Fiskobirlik begin to purchase hazelnut from producers with a base price which was determined over the market prices instead of small local cooperatives. In 2002 Fiskobirlik bought hazelnut for the last time on behalf of the government and continued as a purchaser with the credits supplied. But year by year fiscal position of Fiskobirlik started to go down and became ineffective in the sector. To compensate the lost of producers, from the year 2006 to 2009 an other governmental agency TMO (Agricultural Products Bureau) begin to purchase hazelnut from the producers on behalf of the government. In 2009 Turkish government decelerated the "New Hazelnut Strategy" and in the context of this strategy, TMO ended its purchase activity for hazelnut (Minister of Science, Industry and Technology, 2010; Yavuz et al. 2005). In 2013, Fiskobirlik again started to buy hazelnut from the producers and act as a player in the market.

The other instrument that Turkish government utilizing for the improvement of the hazelnut sector is the restriction on planted areas. This instrument first applied in 1989 by considering the altitude, slope and

soil quality (1st, 2nd quality) of the land. With the plantation restriction strategy, in 1995 it is desired to support the producers who begin to cultivate alternative crops to hazelnut. Because of the economic impossibilities, this strategy couldn't be applied well (Yavuz et al. 2005).

Direct payment is another support policy utilized for the sector. Obviously, IMF agreements and Uruguay Tour provisions forced Turkey for this application in 2000. In this scope, 78,000 hazelnut producers with total area of 115,839 ha in 21 pilot villages benefited 5, 8 million dollars from this support. In 2001, the government decided to use compensatory and removal payments system instead of direct income payment in the area (Gönenç et al. 2006; Yavuz et al. 2005).

In 2001 the Ministry Council of Turkish Government decided to encourage and support the farmers who will start to cultivate "alternative crops" in the determined areas. It was decided to pay 200 dollars per ha. for the first year and 135 dollars in fallowing years. The result of the application was not satisfactory; only 340 producers with the area in total 400 ha applied the removal (Minister of Science, Industry and Technology 2010).

In 2009 "New Hazelnut Strategy" entered into forced in Turkey. In this context, it s decided to utilized land based income support for the orchards which has licence, and for the unlicensed orchards, it is decided to use compensatory payment. With this decision, it is decided to pay 150 TL/da. each year once for the years 2009, 2010 and 2011. Besides, for the farmers who shift to alternative crop production, it is decided to pay 600 TL/da. total for 3 years for the ones who applied in 2009-2010 and 450 TL/da. in total for 2 years for the ones who applied in 2010-2011 and 300 TL/da. who applied in 2011-2012 (Minister of Science, Industry and Technology 2010).

All but the supply control, Turkey also applied a strategy based on demand control. In this context "Hazelnut Promotion Group" has been established in 2009. The main objective of this group is, to introduce the Turkish hazelnut using promotional materials like generic advertising programs and so to increase the demand for hazelnut in the country and abroad. As a result of the promotional activities, %30 demand increase was provided in the new markets for the first year. To realize this promotional activities there is a found called promotional found for hazelnut which is financing by % 0.3 holding from the FOB price of exported hazelnuts of Turkey (Gönenç et al. 2006; Dölekoğlu T. 2002).

Conclusion

Hazelnut fruit is a special product that could be cultivated only in the limited geographical areas of the world. Among the hard shelled fruits, the hazelnut fruit stands at the second position after almond for production and consumption in the world and Turkey realizes 70% of the world's total production and exportation by itself.

Although Turkey is leading the hazelnut sector, a productivity problem exists in the country. The hazelnut production in Turkey is realizing by small scaled traditional farmers. The average farm sizes are 1.4 hectares and 86% of the total farms are smaller than 5 hectares. Besides, these small scaled farms are single product dependent and still practicing traditional production methods on rough land structure with old orchards. The hazelnut yield of Turkey per hectare is nearly 50% percent lower than the other world major producers.

Today the low gains are the most important problem for the Turkish hazelnut producers. The low level of producer prices are combining with increases in input costs and producers are being pourer year by year. To raise the producer prices and exportation gains, supply based policies must be fallowed. Although Turkey is the biggest producer and the exporter country in the world it has no impact on determining the price in the world market. The reason for this situation is due to the lack of global hazelnut policy of the country. In this respect, the most effective way is to improve the storage facilities by applying a new stocking and marketing programme. Especially licensed warehousing system is an important and useful instrument to control the supply surplus. Moreover, with the licensed warehousing system, Hazelnut Stock Exchange must be established to controls the price in the sector.

With the New Hazelnut Strategy adopted in 2009, the government want to move away from the intervention mentality and create free market conditions. In this context, it was determined to leave

support purchase while to preserve the producers gains decoupled land base supporting was targeted. With this new strategy, it is also determined to pay compensatory payment for the farmers who will leave hazelnut production and start alternative product programme. But the desiring results couldn't be achieved from this new strategy yet.

The RCA index of Turkey for hazelnut exportation shows that Turkey still has a great comparative advantage but countries like Italy, Georgia, Chile and Azerbaijan increased their hazelnut production in last year's and they started to be a certain treat for Turkish superiority on world hazelnut trade. Besides, Turkey faces a relevant issue on the share of the export markets. The non-producer countries like Germany, Netherlands, The Czech Republic, Austria and Belgium are also exporting hazelnuts. For this re-export these countries generally buy the product from Turkey and sell it to other markets. This situation indicates the weakness of Turkish hazelnut sector in the exportation of processed hazelnut. Turkey is still exporting its larger amount of hazelnut in the unprocessed form (75%) with missing the added value and gains. Moreover, Turkish hazelnut supply is affected by dependency on the buyer. Indeed, Turkey is exporting a significant portion of hazelnuts (60%) to a few European countries like Germany, Italy, and France.

References

Aktaş AR., Öztürk E, Hatırlı SA (2009). Dünya Fındık Piyasasında Türkiye'nin Rolü, Süleyman Demirel Üniversitesi Vizyoner Dergisi, Cilt 1, Sayı 1, Isparta.

Batra A, Khan Z (2005). Revealed Comparative Advantage: An Analysis for India and China, ICRIER Working Paper No. 168

Black Sea Exporters' Union, Hazelnut Statistics, URL: http://www.kib.org.tr/tr/istatistikler-findik-istatistikleri.html [Access: 14 February 2013]

Çakmak Ö (2005). Açıklanmış Karşılaştırmalı Üstünlükler ve Rekabet Gücü: Türkiye Tekstil ve Hazır Giyim Endüstrisi Üzerine Bir Uygulama, Ege Akademik Bakış, Ege Üniversitesi İ.İ.B.F., 5(12):65-76.

Deniz E (2009). European Commission, Enterprise Europe Network, Hazelnut Sector Report, Competitiviness and Innovation Framework Programme, Avrupa İşletmeler Ağı-Karadeniz,

Dölekoğlu T (2002). Türkiye'de Fındık, TEAE-Bakış, Sayı 1-3.

DPT (2001). Sekizinci Beş Yıllık Kalkınma Planı, Gıda Sanayii Özel İhtisas Raporu, DPT: 2634 - ÖİK: 642, ISBN 975 – 19 – 2889-3, Ankara.

Erkan B (2012). Ülkelerin Karşılaştırmalı İhracat Performanslarının Açıklanmış Karşılaştırmalı Üstünlükler Katsayılarıyla Belirlenmesi: Türkiye-Suriye Örneği, ZKÜ Sosyal Bilimler Dergisi, 8-15.

Fiskobirlik, URL: http://www.fiskobirlik.org.tr/default.asp?sayfa=icerik&cat=subpage&id=99&lang=tr, [Access: 05 February 2013]

Food and Agricultural Organization, URL: *www.fao.org/corp/statistics/en/. [Access: 10 February 2013]*

Gönenç S, Tanrıvermiş H, Bülbül M (2006). Economic Assessment of Hazelnut Production and the Importance of Supply Management Approaches in Turkey, Journal of Agriculture and Rural Development in Tropics and Subtropics, Volume 107, No. 1.

Karpuz F, Öztürk İ, Savaş D (2007). Türkiye'de Üretilen Tarım Üürünleri ve Ekonomik Yararları, İstanbul Ticaret Odası Ekonomik Araştırmalar Şubesi, İstanbul.

Minister of Science, Industry and Technology (2010). Hazelnut Report 2010.

Serin V, Civan A (2008). Revealed Comparative Advantage on Competitiveness: A Case Study for Turkey towards EU, Journal of Economic and Social Research, 10(2), 25-41.

Sobutay T (2006). İstanbul Ticaret Odası Dış Ticaret Şubesi Uygulama Servisi, Fındık Sektör Araştırması, İstanbul.

Turkish Statistical Institute, URL: http://tuikapp.tuik.gov.tr/bitkiselapp/bitkisel.zul. [Access: 07 March 2013]

Utkulu U, Seymen D (2004). Revealed Comparative Advantage and Competitiveness: Evidence for Turkeyvis-a-vis the EU 15, European Trade Study Group 6th Annula Conference, Nothingam.

Yavuz GG (2007). Fındık, Tarımsal Ekonomi Araştırma Enstitüsü, T.E.A.E.-Bakış, Sayı 9, Nüsha 8, ISSN 1303–8346 Ankara.

Yavuz F, Birinci A, Peker K, Atsan T (2005). Econometric Modeling of Turkey's Hazelnut Sector: Implications on Recent Policies, Turkish Journal of Agriculture and Forestry, No. 29.