

## An Overview of Hazelnut Markets and Policy in Turkey

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### ABSTRACT

Turkey is the biggest actor in the world hazelnut market with its production potential and policies. The aim of this paper was to assess the recent developments in the Turkish hazelnut market and policy. The time series data of hazelnut markets was taken from the internet databases of Food and Agriculture Organization (FAO), Turkish Statistical Institute (TSI), Black Sea Hazelnut Exporter Union (BSHEU), Ministry of Agriculture and Forestry (MoAF), Giresun Commodity Exchange (GCE) and Official Journal and Turkish Republic (OJoTR). Under the New Hazelnut Strategy, an area based payment has been provided to the hazelnut farmers in the authorized areas and a compensatory payment had been provided to the farmers in the unauthorized areas. Since 2001, while hazelnut areas and the export of Turkey had increased, hazelnut yield and production had decreased. Despite increases in hazelnut prices, Turkey could increase hazelnut export both in terms of quantity and value. While there is no need to limit hazelnut areas in high crop years, the government should establish a hazelnut buffer stock mechanism. The Turkish government should also create fair competition conditions for the actors in the hazelnut market with a more effective hazelnut policy.

### Research Article

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## Türkiye Fındık Piyasası ve Politikasının Genel Bir Değerlendirmesi

### ÖZET

Türkiye üretim potansiyeli ve uyguladığı politikaların etkisiyle dünya fındık piyasasındaki en büyük aktördür. Çalışmanın amacı, Türkiye'nin fındık politikası ve piyasasındaki son gelişmeleri değerlendirmektir. Fındık piyasasına ait zaman serisi Tarım ve Gıda Örgütü, Türkiye İstatistik Enstitüsü, Karadeniz Fındık ve Mamulleri İhracatçıları Birliği, Tarım ve Orman Bakanlığı, Giresun Ticaret Borsası ve TC Resmi Gazetenin internet veri tabanlarından temin edilmiştir. Yeni Fındık Stratejisi kapsamında yasal olarak izin verilen bölgelerdeki üreticilere alan bazlı destek sağlanırken, üretime yasal olarak izin verilmeyen alanlardaki üreticilere telafi edici ödeme yapılmıştır. Türkiye'nin 2001'den bu yana fındık alanları ile ihracatı artarken, fındık verimi ve üretiminde azalma meydana gelmiştir. Fındık fiyatlarındaki artışlara rağmen, Türkiye fındık ihracatını hem miktar hem de değer olarak artırabilir. Fındık üretiminin yüksek gerçekleşeceği yıllarda bile fındık alanlarının sınırlandırılmasına gerek olmamakla birlikte, fındık tampon stoku mekanizmasının kurulmasına ihtiyaç duyulmaktadır. Türkiye Hükümeti, fındık piyasalarındaki aktörler için daha etkili bir fındık politikası ile adil rekabet koşullarının oluşturmalıdır.

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### INTRODUCTION

Hazelnut is a popular nut and is the most commonly grown nuts after almonds in the worldwide. Hazelnuts

are plants with large fibrous root systems that are excellent for soil and water conservation (Tshering *et al.*, 2017). It has a high nutritional value of 10-20%

protein, 55-72% lipids, 3-9% glucose (Ashoori and Noorhosseini, 2013) and excellent source of vitamin E and B6 (Pulsipher and Josiah, 2001). Due to its high nutritional value, hazelnut has been traded commercially for 600 years.

Turkey is the biggest actor in the world hazelnut market with its production potential and policies. Turkey accounted for 66% of the world hazelnut production and 76% of total world exports (TGB, 2019). However, hazelnut has a strategic importance in Turkish economy. In Turkey, about 502 thousand farmers cultivated hazelnut in about 702 thousand hectares, and they produced about 403-805 thousand tons of hazelnuts during the last decade (TurkStat, 2017). The trade and industry especially in the Black Sea Region depends on hazelnut. Furthermore, hazelnut has the biggest share of the agricultural export revenue. In the last decade, Turkey exported 241-301 thousand tons of shelled hazelnut and provided a revenue of 606-2676 million USD (BSHEU, 2017). Excluding the period of 2003-2006, Turkish governments has supported hazelnut and growers though support purchasing and prices since 1964. Hazelnut production subsidies given by Turkish governments has had economic impacts on producers and consumers in domestic and export markets (Sisman, 2017). Since 2009, the government purchases over production to get market and price stability and, the Turkish treasury has had to finance the cost of over production. In last decade, extreme climate conditions prevented high crop yields and marketable hazelnut in the country. All these developments can affect both the domestic and international hazelnut markets.

The market is moving into a more competitive environment by changes taken place with globalization in recent years. The existence of competitive environment is increasing companies and countries efforts to obtain extra added value from international competition (Abdikoglu and Unakitan, 2016). Turkish hazelnut is known as highly competitive in the world markets (Akal, 2009). Turkey's competitiveness in the world hazelnut markets is declining in recent years and in some years and new suppliers like Georgia and Azerbaijan might have comparative advantages against Turkey (Abdikoglu and Unakitan, 2016). Unfortunately, the Turkish hazelnut sector faces many challenges in terms of sustainability such as low productivity due to old orchards (UTZ, 2016). Ramos Castro and Swart (2017) stated that there has been an increasing awareness of the sustainability issues in the hazelnut sector and found that there has been a potential to create a roundtable for sustainable hazelnuts in Turkey.

Hazelnut markets and policies have been always subjected to investigations in Turkey and other countries. Thus; Tekin Bilbil (2012) examined how the hazelnut market works on the ground and the

interaction among the market agents and concluded that economizing uncertainty becomes a market device in production, exchange, circulation, pricing and policy making. Bozoglu (2005) evaluated the effects of Agricultural Reform Implementation Program on the hazelnut policy of Turkey and concluded that the program could not solve the current problems in Turkish hazelnut market. Yavuz *et al.* (2005) also investigated empirically the effects of hazelnut policies on Turkish markets and found that high support price policy caused an expansion in hazelnut areas and an oversupply before 2000s. Gonenc *et al.* (2006) assessed supply management approaches of Turkey and recommended that the most effective way to control supply was to differentiate income source of farmers to encourage them to reduce hazelnut areas. Demir (2016) analyzed the effects of transaction costs on the sizes of hazelnut farms in Turkey and concluded that higher land slope and variation in the amount of rain caused a reduction in the farm size. Fidan and Sahinli (2010) explored profit level and price fixing in hazelnut production of Turkey. Toktas (2017) examined the effects of short and long-term changes in real effective exchange rates on Turkey's hazelnut export to Germany. However, Bayramoglu *et al.* (2010) examined the impact of changes in Turkey's hazelnut policy on the world markets and found that decreasing hazelnut plantations and getting stability in hazelnut prices could increase Turkey's hazelnut export and competitiveness in international markets. Atici (2013) studied the interaction between regulation and export responses by examining the change in export flow from Turkey to the EU partners after food safety regulations of the EU. Bozoglu (2005) assessed the developments in Turkish hazelnut sector for the period of 1964-2003 and found that liberalization of Turkish hazelnut markets caused a decrease in the prices of domestic and international markets. Despite these literatures, the recent structure and developments in Turkish hazelnut markets has not been assessed yet.

The aim of this paper was to assess the recent developments in the hazelnut policy and market of Turkey. This article was given under 7 sub-sections. Material and method were described in the second section. The third section included the issue of policy, production, marketing, consumption, foreign trade and market balance. The last section was consisted of conclusions.

## **MATERIAL and METHOD**

The main material of this study was based on secondary data for Turkish hazelnut markets. The developments in the hazelnut market of Turkey since 2001 were evaluated under the sub-issues such as plantation area, production, yield, prices, domestic consumption, export and market balance. The main data of this study was derived from the internet

databases of FAO, TSI, BSHEU, MoAF and GCE. The developments in Turkish hazelnut market were assessed by tables and figures. To examine Turkish hazelnut policy, related legislations from OGoTR, literature and reports were examined.

## RESULT and DISCUSSIONS

### Policy

Due to the strategic importance of hazelnut for the national economy, the governments tried to regulate hazelnut markets through price supports between 1964-2008 (except for the 2003-2005 period). Thanks to the price support system and its attractive profitability, hazelnut plantations rapidly expanded both in the Eastern Black Sea Region and especially the Western Black Sea Region causing hazelnut oversupply in some years. These developments increased the need for support purchases for hazelnut and the support costs. Therefore, the hazelnut price support system was ended and the market was liberalized by the government during 2003-2005 time span. An area based direct income payment had been given to the farmers. Due to the farmers' pressures and high crops in the marketing years of 2006-2007, 2007-2008 and 2008-2009, the Turkish Grain Board (TGB) was authorized by the government as a buyer of hazelnut. In this period, the TGB bought about 694 thousand tons of hazelnut and paid 2.96 billion ₺ to the producers (TGB, 2017).

Because of hazelnut oversupplies, the government issued the law numbered 2844 entitled "*Planning Hazelnut Production and Determination of Hazelnut Plantations*" in 1983. This law aims to grow hazelnut

in suitable areas and direct hazelnut production according to the developments in demand. The law forbade both planting new hazelnut orchards without taking permission from the government and renewing the current hazelnut plantations, excluding the designated areas. This law also foresaw that, considering the needs of the country, hazelnut areas should be re-determined for every five years (OGTR, 1983). The first decision of the Council of Ministers numbered 93/385 was enacted in 1993 and determined 13 provinces and their listed districts as allowed hazelnut areas; these were (i) lands with an attitude up to 750 meters, (ii) 3<sup>rd</sup> class lands with a slope higher than 6% and (iii) 4<sup>th</sup> and higher-class lands. However, central and other districts of the Giresun, Ordu and Trabzon Provinces, Akçakoca district of the Bolu Province and Alaplı and Ereğli districts of the Zonguldak Province were out of the restriction stated in paragraphs b and c of the decision (OGTR, 1993). After this decision, the list of allowed production areas was updated 4 times. In 2001, hazelnut cultivation in the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> class lands with a slope less than 6% in all provinces and districts was legally forbidden (OGTR, 2002). With the Decision of the Council of Ministers numbered 2009/7253, the attitude criteria (a) was removed and hazelnut plantations were expanded to high altitude areas. In 2015, the last Decision of the Council of Ministry numbered 2014/7253 authorized 16 provinces and their listed districts as hazelnut areas (Table 1). This decision also determined the criteria for hazelnut cultivation as (i) 3<sup>rd</sup> class lands with a slope higher than 6% and, (ii) 4<sup>th</sup> and higher-class lands with a minimum slope of 12%.

Table 1. Authorized areas for hazelnut cultivation in Turkey

Provinces	Districts
Artvin	Arhavi, Borçka, Hopa, Murgul
Bartın	All districts
Bolu	Göynük, Mudurnu
Düzce	Central district, Akçakoca, Cumayeri, Çilimli, Gölyaka, Gümüşova, Kaynaşlı, Yiğilca,
Giresun	Central district, Bulancak, Çanakçı, Doğan kent, Görele, Güce, Eynesil, Espiye, Dereli, Keşap, Piraziz, Tirebolu, Yağlıdere
Gümüşhane	Kürtün
Kastamonu	Abana, Bozkurt, Cide, Çatalzeytin, Inebolu, Doğan yurt
Kocaeli	Kandıra
Ordu	All districts
Rize	Ardeşen, Fındıklı, Pazar
Sakarya	Akyazi, Ferizli, Hendek, Karapürçek, Karasu, Kaynarca, Kocaali, Adapazarı, Arifiye, Erenler, Geyve, Pamukova, Sapanca, Serdivan, Söğütlü, Taraklı
Samsun	Alaçam, Atakum, Asarcık, Ayvacık, Bafra, Canik, Çarşamba, İlkadım, Salıpazarı, Ondokuzmayıs, Tekkeköy, Terme, Yakakent
Sinop	Central district, Ayancık, Erfelek, Gerze, Dikmen, Türkeli
Tokat	Erbaa
Trabzon	All districts
Zonguldak	All districts

Reference: OGTR, 2015.

As a result of the desire and attempts to liberate hazelnut markets, the New Hazelnut Strategy was announced in 2009. According to this new strategy, an area-based payment to the farmers in the authorized areas and a compensatory payment to the farmers in the unauthorized areas for altering alternative crops by removing hazelnut orchards was given by the government. The government had provided area-based payment to the farmers in the authorized areas without fulfilling requirements such as attaining an increase in yield and quality of the hazelnut or protecting the environment, etc. (Bozoglu, 2015). After the new strategy, some districts in the unauthorized areas were determined as authorized areas to get benefit from the area-based payment.

In the 2009-2012 period, an area-based payment per decare of 150 ₺ was given to producers in the authorized areas. This area payment per decare was increased to 160 ₺ and it has been paid as 170 ₺ since 2014. The government targeted to give an area-based payment to 209 thousand farmers for 406 thousand ha of hazelnut areas, but this payment exceeded both the targeted farmers and areas. This area-based payment constituted an important part of the total agricultural support budget in Turkey. Thus, the government totally provided about 6 billion ₺ of area-based

payment to the hazelnut farmers in authorized area during the period of 2009-2016 (Table 2).

Under the compensatory payment program, the government targeted to give a compensatory payment to 81 thousand farmers if they removed hazelnut orchards and grew alternative crops for 176 thousand ha of hazelnut plantations. The government gave a compensatory payment per decare of 600 ₺ to producers in the unauthorized areas upon removal of their hazelnut orchards in order to grow alternative crops. For the producers who applied at the periods of 2010-2011 and 2011-2012, this amount was determined as 450 ₺ and 300 ₺, respectively (MCT, 2017). However, the amount of compensatory payment was considered to be unsatisfactory by the farmers in the unauthorized areas for removing their current hazelnut orchards. Thus, in the period of 2009-2014, only 1599 producers had removed 1765 ha of hazelnut orchards, and they had grown alternative crops by compensating them about 3.8 million ₺ (Table 3). Therefore, the government ended the compensatory payment program in the non-authorized areas. It can be concluded that the policy makers did not consider the conditions and expectations of the producers in the unauthorized areas and this caused the failure of uprooting hazelnut plantations in these areas.

Table 2. Area based payments for hazelnut in Turkey

Year	Number of farmers	Supported area (ha)	Support amount (1000 ₺)
2009	295575	432846	649269
2010	339565	471845	707767
2011	353531	471282	706923
2012	357462	476743	715114
2013	373500	491276	788000
2014	397193	492326	838628
2015	391539	491331	836939
2016	390350	488861	832727
Total	2898715	3816510	6075367

Reference: MCT, 2018.

Table 3. The compensatory payments for hazelnut in Turkey

Years	Number of farmers	Supported area (ha)	Support (₺)
2009	327	354	1064867
2010	526	597	1285911
2011	564	631	1042100
2012	13	18.6	56053
2013	76	74.1	194732
2014	93	90	165907
Total	1599	1764.7	3809570

Reference: MCT, 2018.

### Production

Turkey had the largest hazelnut plantation in the world. Hazelnut orchards especially in the Eastern Black Sea Region were planted in high slope land.

High slope and weather variation can increase the costs of monitoring the laborers, relocating inputs or outputs, limit the use of machinery reduce performance of labor contract (Demir, 2016). There were significant increasing trend in the hazelnut areas

of Turkey. Namely; during the period of 2001-2018, hazelnut plantations had increased from 555 thousand to 709 thousand hectares. Turkey's hazelnut production had fluctuated between 350 and 801 thousand tons during the period of 2001-2018 depending especially on weather conditions (Figure 1). Namely; frost incidents in March and April, and hot

and dry weather in June and July adversely affected hazelnut yield and production in Turkey. Developments in the hazelnut production of Turkey were affected by extreme climate conditions. While there was a decreasing trend in hazelnut production, demand for hazelnut had increased both in Turkey and worldwide.

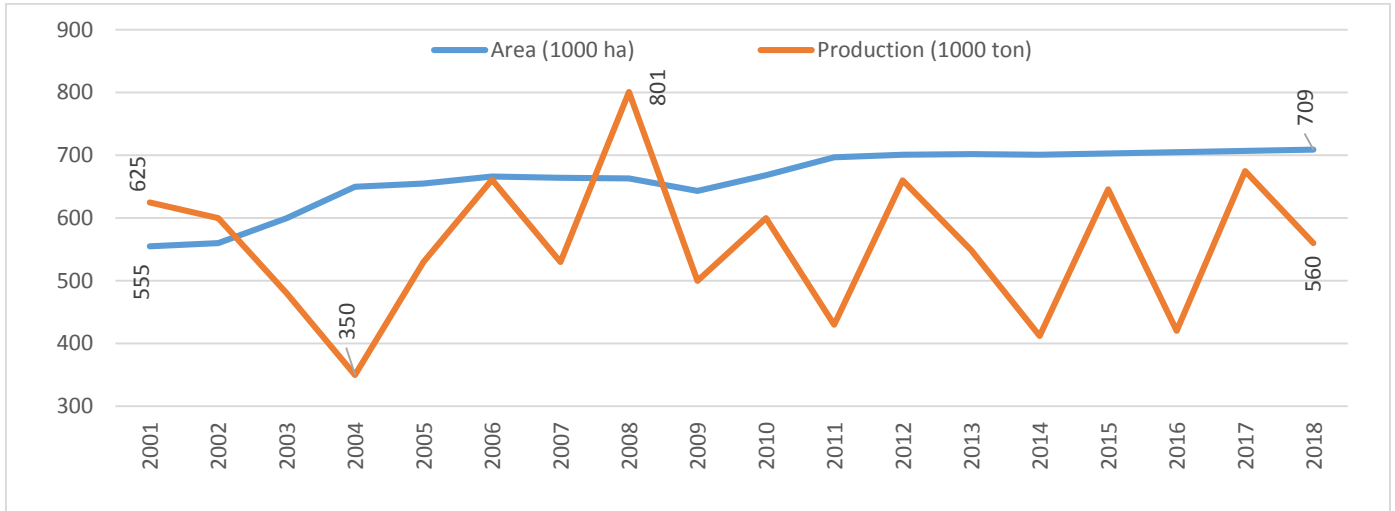


Figure 1. Hazelnut surface and production in Turkey (MCT, 2018; GTB, 2019)

Furthermore, while there was a very small increase in the hazelnut areas of Italy and USA, there has been a high decreasing trend in the hazelnut areas of Spain since 2000. Thus; the hazelnut areas in Spain decreased from 29570 ha to 13591 ha during the period of 2000-2014. On the other hand, Germany, Italy and USA would like to create alternative hazelnut producer countries such as Georgia, Azerbaijan, Chile, Argentina, Bhutan, etc. against Turkey. These countries increased their hazelnut areas and productions greatly. Thus; while the total of the hazelnut areas of these countries was 41223 ha in 2000, such areas increased to 120584 ha in 2014 (FAO 2017). Nowadays, Georgia, Azerbaijan and Chile can produce 60, 45 and 20 thousand tons of hazelnuts, respectively.

While the hazelnut areas in Chile was 100 ha until 1990, it increased to 13000 ha in 2011 (Ellena *et al.*, 2014). It is expected to increase hazelnut plantations in Chile about 1000-1500 ha per year over the next years. Hazelnut areas of Chile is targeted to increase to 20000-25000 ha by 2020 and 60000 ha by 2050. Chilean hazelnut yields range between 2000 and 3500 kilos per hectare, eclipsing countries such as Turkey and Italy that produce only 850 - 1500 kilos per hectare. This means that Chile could increase hazelnut production to 40-87.5 thousand tons by 2020 and 120-210 thousand tons by 2050. Chile's advantages over other producers has no commercial risks or sociopolitical effects that affect the price of hazelnut as it does in Turkey. There are also no weather hazards, and despite climate change. Bhutan has been

encouraged to expand hazelnut orchards. Hazelnut growing is comparatively profitable than other crops and creates a higher income of 60% for the farms. Although the area of hazelnut orchards is very small, it reached to 14.82 ha (Tshering *et al.*, 2017). In the future, the hazelnut areas and production in Bhutan are also expected to have a very rapid increase.

Despite the fact that Turkey is the biggest hazelnut producer, the average hazelnut yield of Turkey was lower than the other countries. However, there had been a significant fluctuation and decreasing trend in the hazelnut yield of Turkey. The yield per hectare had fluctuated between 540 kg and 1210 kg during the examined period. The average yield per hectare in the examined period was 846 kg (Figure 2). Climate change, aging of hazelnut orchards especially in the Eastern Black Sea Region, lack of necessary cultivation practices and insufficient input use by producers had decreased the yield of hazelnut. Whereas, according to the average of the 2001-2017 period, the yield of hazelnut was higher in USA (2751 kg), Greece (2449 kg), Georgia (1809 kg), China (1802 kg), Italy (1599 kg) and Azerbaijan (1180 kg) than Turkey (FAO, 2019). Low yield performance could decrease the competition power of Turkey especially against the new hazelnut suppliers.

The estimation of the hazelnut harvest in Turkey is a repeated debate every year among the stake holders in the hazelnut sector. Thus; the hazelnut harvest is estimated by various organizations or institutions such as the MARA, the BSHEU and Chamber of Agriculture etc. via different approaches.

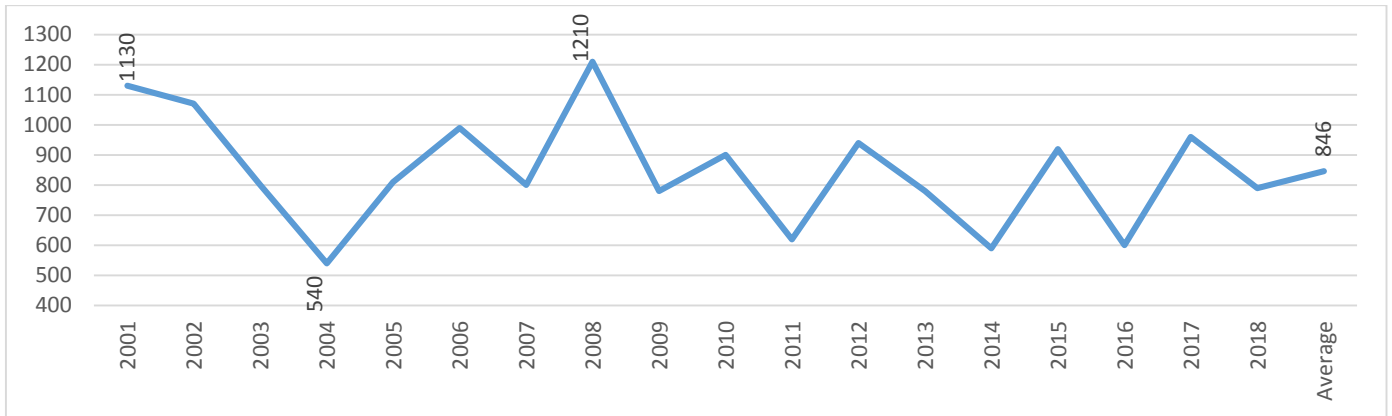


Figure 2. Hazelnut yield in Turkey (tonne/ha) (MCT, 2018).

Considering their economic benefits, while one party of the sector may show the harvest to be high, other party may show it to be low. As a result, the prediction of hazelnut harvest can be very different and the parties of the sector can make their decisions according to their own predictions and benefits. In fact, it can be said that the intentions and efforts of the parties to create market prices according to their expectations determined their different prediction declarations. Because of such asymmetric information, the sellers and buyers may make wrong decisions and go bankrupt and the importers may lose their confidence in the Turkish exporters.

**Marketing**

Hazelnut marketing channel in Turkey is shown in Figure 3. In Turkey, there has been a long hazelnut marketing channel. Thus, farmers generally sell their hazelnut independently and directly to the merchants. Hazelnut exchanges have been taken in the place of buyers. In high crop years, farmers can sell their hazelnut to TGB or Fiskobirlik through the Hazelnut Sale Cooperatives. The share of Fiskobirlik has been very low since it was made financially freedom and governance autonomy from the government. In oversupply years, the government may authorize

Turkish Grain Board (TGB) to buy hazelnut from farmers. In order to get market balance and stability, TGB stores hazelnut oversupply and sells its stocks to cracking or processing plants, wholesalers and Fiskobirlik depending on the market needs. There has been no substructure for hazelnut stock exchange or competition conditions for especially hazelnut sellers yet. The buyers are more organized and stronger than the farmers. However, farmers generally borrow money from hazelnut merchants to pay especially the wages of harvest workers. This made the farmers weak in face the buyers, and they had to sell their hazelnut for low prices. Merchants sell their hazelnut to the cracking or processing plants and wholesalers. Wholesalers sell processed hazelnut to the retailers and the retailers sell hazelnut to domestic consumers. The plants crack or processed hazelnuts and sell to the importers or domestic wholesalers. There had been 180 hazelnut cracking plants with an annual capacity of 1.8 million tons and 40 hazelnut processing plants with a capacity of 350 thousand tons (BSHEU, 2017).

The price of hazelnut has been determined under the market mechanism in Turkey. However, the government could decide to buy the oversupply from the hazelnut market in high harvest seasons.

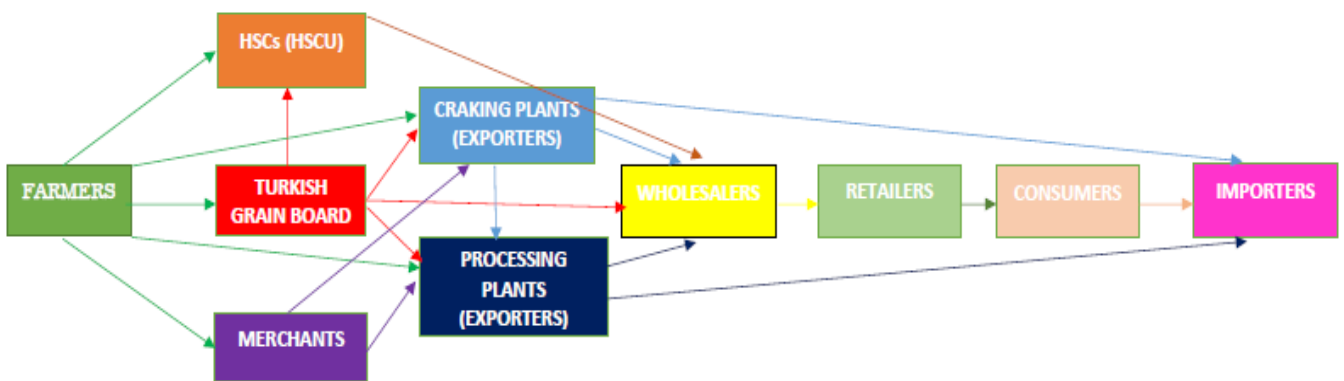


Figure 3. Hazelnut marketing channels in Turkey

Because of the high harvest in 2017, TGB announced hazelnut intervention prices per kilogram for Levant and Tombul quality as 10 ₺ and 10.5 ₺, respectively. This shows that in high crop years, the government would intervene the domestic hazelnut market and not let the hazelnut prices decrease drastically due to the oversupply. While hazelnut demand in Turkey had been stable, hazelnut production had fluctuated by years. These fluctuations caused volatility in hazelnut prices. Hazelnut nominal prices per kilogram (in shell basis) had fluctuated between 1.02 and 6.22 USD during the period of marketing seasons. However, the hazelnut domestic prices showed an upward trend until 2014-2015 marketing season and then the prices had decreased (Figure 4).

### Domestic Consumption

Hazelnut consumption in Turkey is still insufficient. While at the first half of 2000's the amount of domestic consumption was below 80 thousand tons, this amount increased to over 130 thousand tons during the period of 2011-2012 and decreased again to 80 thousand tons since 2014 (Figure 5). The most important constraint to increase hazelnut consumption is high retail prices. Thus, in the current domestic market, the hazelnut retail price in kernel basis changed from 12 to 21

USD/kg. High hazelnut prices, on the one hand, encourage farmers to sell their hazelnut, but on the other hand, limit the consumers from raising their hazelnut consumption in Turkey.

### Foreign Trade

On kernel basis, hazelnut export quantity of Turkey had changed from 200 thousand tons to 300 thousand tons since the marketing season of 2000-2001. However, there had been an upward trend in the hazelnut export quantity of Turkey. Turkey's revenue from hazelnut export could reach 2.8 billion USD in some years (Figure 6). The levels of production and prices determined the hazelnut export amount of Turkey. Turkey accounts for about 80% of the world's hazelnut trade, and the European Union (EU) had been the main market of Turkish hazelnut. The most important countries in Turkish hazelnut export were Germany (24.7%), Italy (22.4%), France (9.4%) and Poland (4%), respectively (FAO, 2017). While the share of Italy in Turkish hazelnut export had increased, the share of Germany showed a downward trend during the last two decades. The Turkish government gave an export aids per tons of 125 ₺ for pure and pastry hazelnut in 2017 (OGTR, 2016).

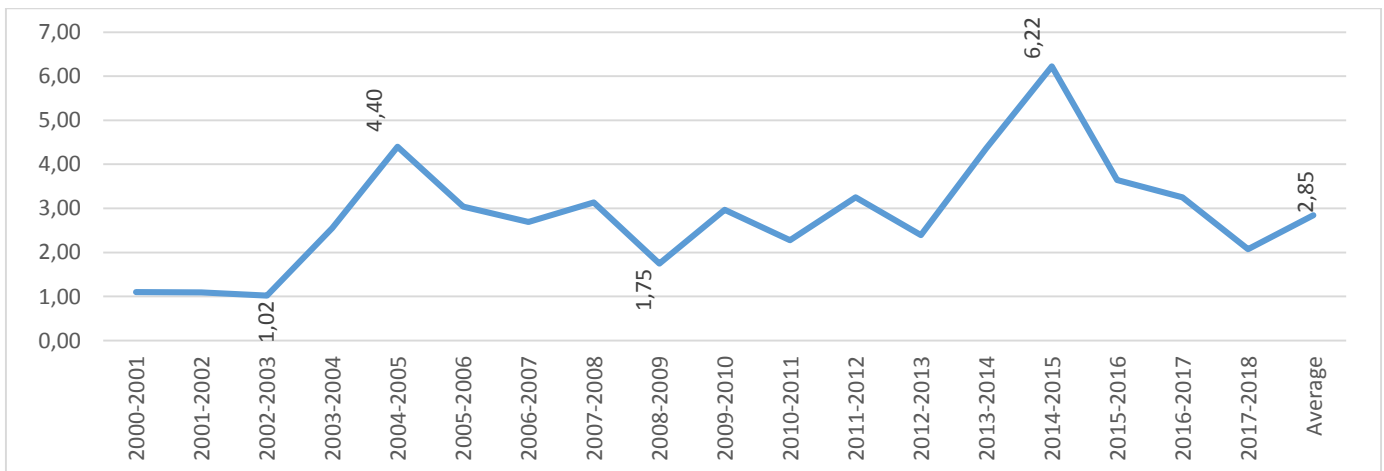


Figure 4. Nominal market prices of hazelnut in Turkey (USD/kg, in-shell basis) (GTB, 2019)

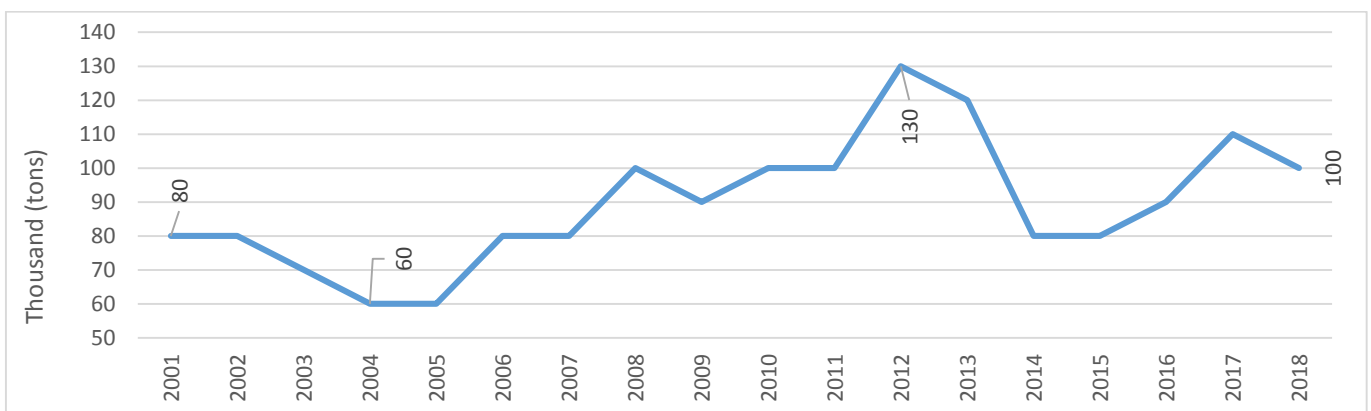


Figure 5. Domestic consumption amount of hazelnut in Turkey (tons, in-shell basis) (MCT, 2018)

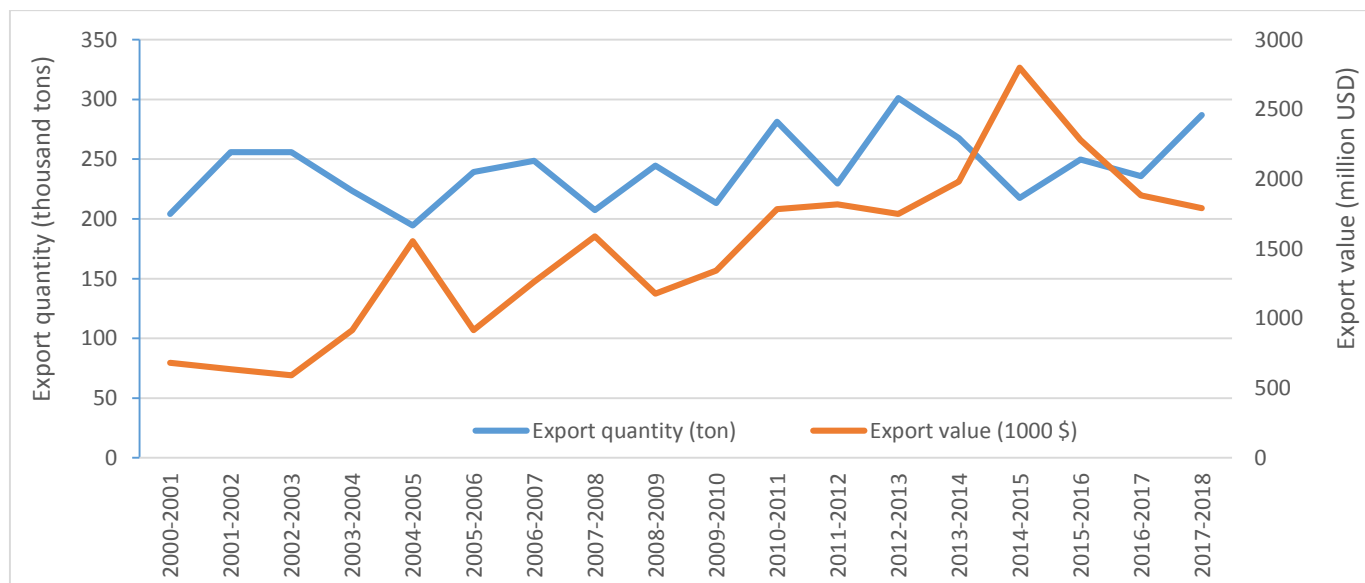


Figure 6. Hazelnut export quantity and value of Turkey (tons, shelled basis) (BSHEU, 2019)

Turkey exported hazelnut kernel (56.7%), processed hazelnut (16.8%), advanced processed hazelnut (26.5%) and hazelnut shell (0.04%) (BSHEU, 2017). It can be said that the share of kernel hazelnut in the export is still very high. Turkey can increase her export revenue by increasing the share of advanced processed hazelnut in total.

Turkey’s hazelnut export prices showed an increasing trend since 2000’s. Thus, the hazelnut export prices per quintal in shell basis had fluctuated between 232 and 1287 USD (Figure 7). These price increases, on the one hand, had encouraged other countries to expand their hazelnut plantations, but on the other hand, pushed the importers to seek substitute goods against hazelnut.

Thanks to the developments in quantity, food form and prices of hazelnut export, Turkey also increased her revenues from hazelnut export. Thus, while Turkey

could get about 600 million USD from hazelnut export at the beginning of the 2000, this revenue increased to 2.8 billion USD in the marketing season of 2014-2015. Azerbaijan, Georgia, USA, China and Iran export hazelnut cheaper than Turkey. In the future, the share of Turkey in the international hazelnut markets could decrease because of the price disadvantage of Turkey. Toktas (2017) stressed that unlike the short term, the long term increases in the real effective exchange rates affected negatively Turkey’s hazelnut export.

Turkey’s hazelnut import changed from 498 to 2438 tons during the period of 2001-2016 (FAO, 2019). Some Turkish firms imported hazelnut with cheaper prices especially from Georgia and Azerbaijan (CAE, 2016) and then re-exported it. In order to protect the domestic market, Turkey applied a tariff rate of 43.2% for unshelled and shelled hazelnut import (EU, 2017).

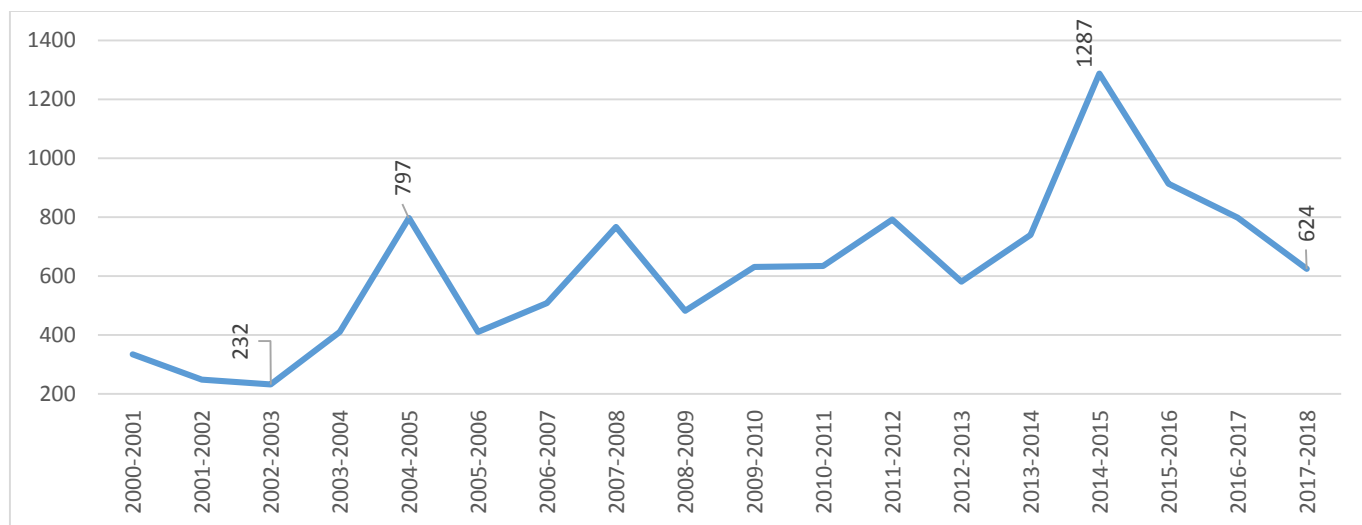


Figure 7. Hazelnut export prices in Turkey (USD/quintal, shelled basis) (BSHEU, 2019)



### Market Balance

Turkey faced more extreme climate conditions recently causing significant instability in hazelnut markets. In favorable climatic conditions, the hazelnut production could be over 800 thousand tons. However, in adverse climatic conditions, hazelnut production could lower to 330-380 thousand tons.

The total hazelnut demand of Turkey was around 500-

700 thousand tons. Thus, about 100 thousand tons was consumed domestically and 400-600 thousand tons was exported. These data show that, in the upcoming years, about 200-300 thousand tons of supply or demand excess or deficit would be experienced in Turkey (Figure 8). This amount of market unbalance in Turkey necessitates the hazelnut buffer stock mechanism in hazelnut markets.

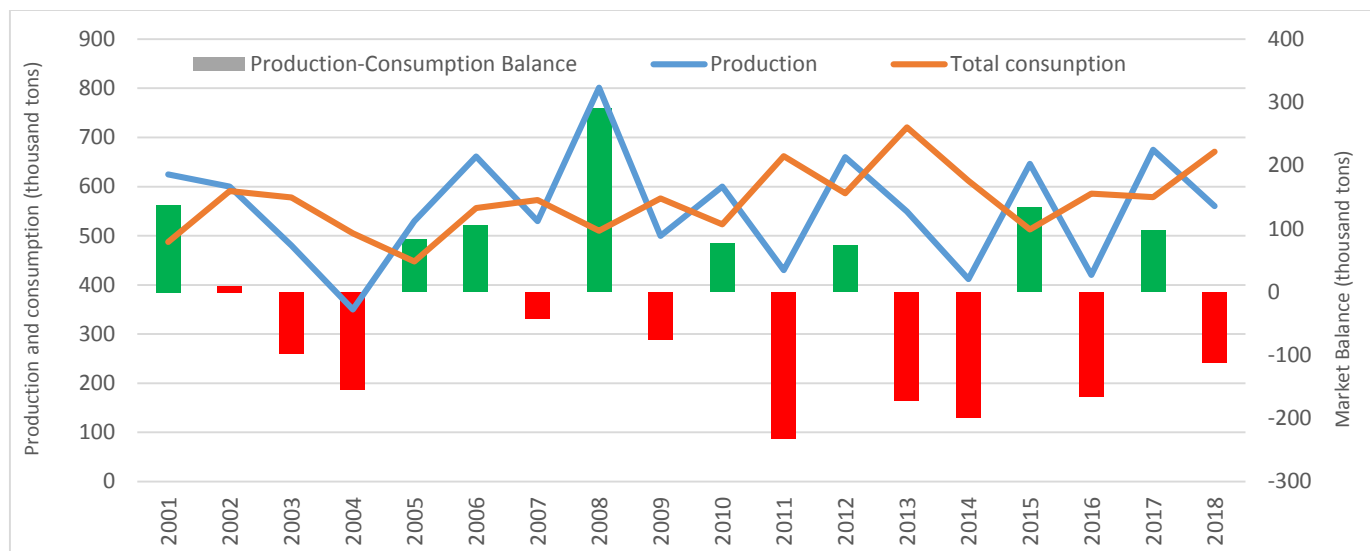


Figure 8. Hazelnut production-consumption balance in Turkey (in-shell basis)

### CONCLUSIONS

This paper assessed the recent developments in the hazelnut policy and market of Turkey. Nowadays, the Turkish hazelnut policy has three main instruments: (i) area limitation, (ii) area-based payment and (iii) price support. While the area-based payment contributed the hazelnut farms in the authorized areas, unfortunately it could not have an effective contribution on the farm structure, quality and yield of hazelnut. The area-based payment should contribute on increasing the competition power of the sector. In this context, this support should be guaranteed to the farmers who fulfill some requirements such as rejuvenating hazelnut orchards, planting standard orchards, increasing hazelnut yield and quality, cooperating under a farmer organization and marketing their hazelnut directly through farmer organizations.

In the mid and long terms, there had been a balance in the Turkish hazelnut market. Therefore, there was no need to limit hazelnut areas in Turkey yet. However, when the production reaches or exceeds 700-800 thousand tons in favorable climate years, there can be a necessity to withdraw hazelnut oversupply from the market and increase hazelnut prices. Therefore, there is a need to establish hazelnut stock mechanism in high crop years. While buyers were more powerful and effective in hazelnut markets, the producers could not adequately protect their economic benefits.

Establishing an efficient cooperation among the farmers could enable farmers to buy inputs and market hazelnut directly with better prices.

Despite increases in hazelnut prices, Turkey could increase hazelnut quantity and quality in export. However, Turkey's hazelnut export depends on kernel hazelnut and a few European countries. Thus, about half of the hazelnut export of Turkey had been as kernel to the EU countries such as Germany, Italy and France. Turkey should export hazelnut as final product and diversify its export countries. The high increase and validity in hazelnut prices should also be stabilized by Turkey as a main producer and exporter. Also, the future studies should be focused on the evaluation of social, environmental and economic sustainability of hazelnut farming at regional or national level.

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