

Production Potential and Development Opportunities of Pistachio (*Pistacia vera* L.) Grown in Southeastern Turkey

Mikdat ŞİMŞEK¹

ABSTRACT: Turkey is the homeland of many nuts, such pistachio and walnut, as hazelnut, chestnut, and almond. Because Anatolia is the gene center of pistachio, the richness of our country on genetic variation of this species provides facility for achievement in breeding studies in a short period of time. Because this fruit is cultivated on some regions of Anatolia, it is extremely important to develop cultivars proper for some regions. The world has 1,023.000 tons of total pistachio production. According to 2015 statistics, Turkey has 144.000 tons of total pistachio production. Considering the total pistachio production by the regions in Turkey, Southeast Anatolia and Aegean regions rank first and second with 134.481 and 4.197 tons respectively as West Blacksea Region is the last with a production of 73 tons. In this context, Southeast Anatolia region has 93.39% of Turkey's pistachio production. Considering the provinces in Southeastern region, Gaziantep and Şanlıurfa rank first and second with 53.109 and 47.848 tons of pistachio productions respectively as Şırnak province comes last with a production of only 43 tons. In this study, through presenting the existing status of the pistachio production of Southeastern Turkey, it was aimed to increase the awareness and set light to decision makers for making use of and directing the existing potential in future plans in Turkey.

Keywords: Development opportunity, pistachio, production potential, Southeastern Turkey

Güneydoğu Anadolu'da Yetiştirilen Antepfıstığının (*Pistacia vera* L.) Üretim Potansiyeli ve Geliştirme Olanakları

ÖZET: Türkiye fındık, kestane ve badem kadar antepfıstığı ceviz anavatanıdır. Anadolu antepfıstığının gen merkezi olduğundan dolayı, ülkemizde bu türün genetik çeşitliliği üzerindeki zenginliği nedeniyle kısa sürede yetiştirme çalışmalarına başarı sağlama imkanı sağlamaktadır. Bu meyve Anadolu'nun bazı bölgelerinde yetiştirildiği için, bazı bölgeler için uygun çeşitlerin yetiştirilmesi son derece önemlidir. Dünya 1.023.000 ton toplam antepfıstığı üretimine sahiptir. 2015 istatistiklerine göre Türkiye toplam 144.000 ton antepfıstığı üretmektedir. Bölgelerdeki toplam antepfıstığı üretimi dikkate alındığında, Güneydoğu Anadolu ve Ege bölgeleri sırasıyla 134.481 ve 4.197 ton ile birinci ve ikinci sırada yer alırken, Batı Karadeniz Bölgesi 73 ton'luk bir üretimle son sırada yer almaktadır. Bu bağlamda, Güneydoğu Anadolu bölgesi, Türkiye'nin antepfıstığı üretiminin % 93.39'una sahiptir. Güneydoğu Anadolu Bölgesi'ndeki iller dikkate alındığında Gaziantep ve Şanlıurfa illeri sırasıyla 53.109 ve 47.848 ton antepfıstığı üretimi ile birinci ve ikinci sırada yer alırken Şırnak ili 43 ton'luk bir üretimle son sırada yer almaktadır. Bu çalışmada, Güneydoğu'nun Türkiye'deki antepfıstığı üretiminin mevcut durumu ortaya konularak, gelecekteki planmalarda mevcut potansiyelin kullanılması ve yönlendirilmesine yönelik bilinçlenmeyi artırmak ve karar vericilere ışık tutulması amaçlanmıştır.

Anahtar Kelimeler: Antepfıstığı, geliştirme olanakları, Güneydoğu Türkiye, üretim potansiyeli

¹ Mikdat ŞİMŞEK (0000-0002-6108-088X), Dicle Üniversitesi, Ziraat Fakültesi, Bahçe Bitkileri Bölümü, DİYARBAKIR, Turkey
Sorumlu yazar/Corresponding Author: Mikdat ŞİMŞEK, mikdat.simsek@dicle.edu.tr

INTRODUCTION

According to archaeological research, It has been known that many fruit species were grown in Anatolia a few thousand years ago (Gerçekcioglu et al., 2014; Şimşek, 2015; Gülsoy et al., 2016). In this context, Turkey is the homeland of many nuts, such as pistachio, walnut, hazelnut, chestnut, and almond (Sykes, 1975; Soyly, 1984; Köksal, 2002; Akça, 2009; Gülsoy et al., 2015) Pistachio nuts are conventionally produced in Turkey (Satil et al., 2003). The majority of pistachio (*Pistacia vera* L.) are grown in the Southeastern Turkey. Grafted pistachio on wild *Pistacia* species are also grown in different regions of Turkey (Kaska, 1995). Therefore, the production of pistachio nuts in Turkey has increased in recent years.

Pistachio is one of the most popular tree nuts in the World (Aldars-Garcia et al., 2016). This fruit is the richest source of heart-healthy fatty-acids, metals, phytosterols, phenolic and other compounds, and their consumption has become increasingly popular over the past decade (Dreher, 2012). Pistachios are served principally as salted nuts. A large percentage of pistachios are marketed in the shell for snack food. The food industry uses pistachios for biscuits, pies, candies, cakes, ice cream and pistachio butter. It is also used as the main ingredient of many Turkish desserts. This fruit contains 16% carbohydrate, 25% protein and 55% oil (Aktas and Polat, 2007).

Turkey has a large potential of fruit species and their production (Şimşek and Kara, 2016; Şimşek and Gülsoy, 2017). Turkey is one of the important pistachio producing countries with 14.08% of the world. The world has about 1.023.000 tons of total pistachio production. The largest producer of pistachio in the world is Iran with 480.000 tons.

After Iran, USA, Turkey, China and Syria produce 240.000, 144.000, 80.000 and 57.000 tons annually, respectively (FAO, 2015). According to 2015 statistics Turkey has 144.000 tons of total pistachio production. Considering the total pistachio production by the regions in Turkey, Southeast Anatolia and Aegean regions rank first and second with 134.481 and 4.197 tons of pistachio

productions respectively as West Blacksea Region is the last with a production of 73 tons (TSI, 2015).

Pistachio's wild trees are spread in almost all parts of Turkey. However, the majority of this species' trees are in the Southeastern parts of the country. Because the ecological conditions (climate and soil) of this region is quite suitable for growth of this species' trees or shrubs. Eventually this region is the most significant area for pistachio production although the annual precipitation is very low, the soils are poor, stony and calcareous, summers are very hot and dry and the winters are rather cold. So in a way pistachio trees are grown in Southeastern Turkey in marginal lands where no other fruit or even field crops can be grown economically unless some cultural measures such as irrigation, fertilization are taken.

In this study, through presenting the existing status of the pistachio production of Turkey, it was aimed to increase the awareness and set light to decision makers in Turkey.

Some Important Pistachio Cultivars in Southeastern Turkey

Turkey has about twenty pistachio cultivars. Pistachio cultivars such as 'Siirt', 'Uzun', 'Kırmızı', 'Halebi', 'Ohadi', 'Keten Gömleği', 'Beyaz Ben', 'Değirmi, Çakmak', 'Sultani', 'Vahidi', 'Mümtaz', 'Sefidi' and 'Hacı Şerif' are grown in Southeastern region and Anatolia. However, the most popular pistachio cultivars in both this region and our country are 'Siirt', 'Kırmızı' and 'Uzun' (TREM, 2013)

Pistachio Production of Southeastern Turkey

Southeastern Turkey has 144.000 tons of total pistachio production (TSI, 2015). Southeastern Region has 93.39% of Turkey's pistachio production. In this context, this region has 134.481 tons of pistachio production. Pistachio production is carried out in 40 provinces in Turkey. Considering the provinces in Southeastern Anatolia Region, Gaziantep and Şanlıurfa rank first and second with 53.109 and 47.848 tons of pistachio productions respectively as Şırnak province come last with a production of only 43 tons (TSI, 2015) (Table 1).

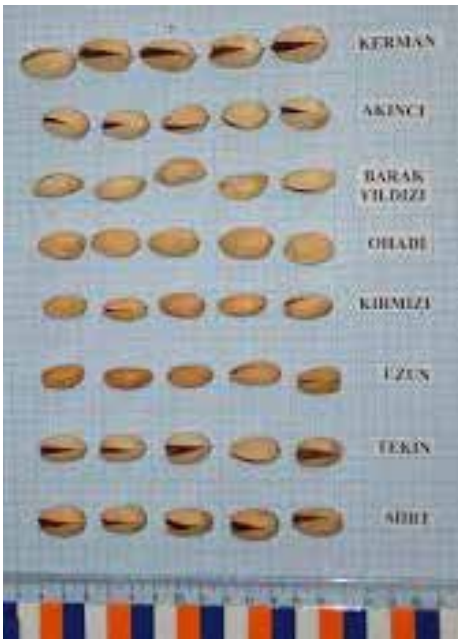


Figure 1. Some Pistachio Cultivars (Anonymus, 2017a).



Figure 2. Some Pistachio Cultivars (Anonymus, 2017a).

Table 1. Pistachio trees's numbers and production of southeastern turkey

Provinces	Area covered by bulk fruit (hectars)	Production (tons)	Average yield per tree (kilogram)	Number of fruitful trees	Number of unfruitful trees	Total number of trees
Gaziantep	1.299.203	53.109	3	16.412.510	3.575.368	19.987.878
Adıyaman	254.397	15.368	4	4.209.355	862.476	5.071.831
Kilis	59.477	2.271	3	713.724	237.908	951.632
Şanlıurfa	968.629	47.848	4	12.843.690	4.348.102	17.191.792
Diyarbakır	4.384	1.408	10	139.980	78.005	217.985
Mardin	10.021	1.659	9	178.157	138.516	316.673
Batman	20.670	1.654	5	340.335	255.802	596.137
Şırnak	2.493	43	4	10.160	61.777	71.937
Siirt	190.663	11.221	4	2.742.800	1.219.000	3.961.800
Southeastern Turkey	2.809.937	134.581	4	37.590.711	10.776.954	48.367.665
TURKEY	2.914.179	144.000	4	40.597.427	11.632.973	52.230.400

Development Opportunities of Pistachio in Southeastern Turkey

Pistachio producers in Southeastern Turkey need to develop policies to get the expected profit from

shell nuts together with production plans for domestic consumption and exports. These producers need to make regular cultural processes to reduce profit inefficiency. Authorized institutions need to reform nut subsidy purchases and subsidy pricing policies. Pistachio yield

and quality will increase in case of more contribution to scientific research and will make a positive contribution to the economy both the nut producers.

The pistachio's fruits are in the group of risky products in terms of Aflatoxin. Therefore, the fruit's storage conditions should be emphasized. It is necessary to speed up the breeding works to develop new pistachio varieties to be suitable for different climatic and soil conditions. Necessary measures should be taken and timely and regularly done to prevent diseases and

harmful. Technical and scientific studies must be done to reduce input cost in pistachio production.

CONCLUSION

Pistachio grows in all provinces of Southeastern Turkey. Therefore, pistachio production potential is very important for this region. Pistachio producers should act in cooperation with other institutions and organizations, for example, agricultural faculties, and other colleges, the universities and Ministry of Food, Agriculture and Livestock.

REFERENCES

- Akça Y, 2009. Ceviz Yetiştiriciliği. Anı Matbaası. Ankara., 371s.
- Aktas T, Polat R, 2007. Changes in the drying characteristics and water activity values of selected pistachio cultivars during hot air drying, *Journal of Food Process Engineering*, 30, 607–624.
- Aldars-García L, Ramos AJ, Sanchis V, Marín S, 2016. Modeling the probability of growth and aflatoxin B1 production of *Aspergillus flavus* under changing temperature conditions in pistachio nuts, *Procedia Food Science*, 7, 76–79.
- Anonymus, 2017 a https://www.google.com.tr/search?q=Ohadı+C3%A7e%C5%9Fidi&safe=active&tbm=isch&source=iu&pf=m&ictx=1&fir=1ibex7_f4FJWbM%253A%-252Co-4hUVmXIZX5HM%252C_&usg=__InrpVAvQr-93nHJDjt77HL2F5dd0%3D&sa=X&ved=0ahUKEwig-8YOIzbTXAhXCmLQKHdgnCFQQ9QEINzAD#imgrc=MM-l0iq6YgTcoM: (Accessed: 10.10.2017).
- Anonymus, 2017b https://www.google.com.tr/search?safe=active&tbm=isch&sa=1&ei=TusFWuSUI4rXwQKaya-oBg&q=antepf%C4%B1st%C4%B1%C4%9F%C4%B1+Uzun+C3%A7e%C5%9Fidi&oq=antepf%C4%B1st%C4%B1%C4%9F%C4%B1+Uzun+C3%A7e%C5%9Fidi&gs_l=psy-ab...555293.573863.0.576749.17.17.0.0.0.156.1979.0j16.16.0...0...1.1.64.psy-ab..1.5.666..0i7i30k1j0i8i13i30k1.0.NmmR4CxKv5I#imgrc=d3hApIMW8U2UhM: (Accessed: 10.10.2017).
- Dreher ML, 2012. Pistachio nuts: composition and potential health benefits,” *Nutrition Review*, 70, 234-240.
- Ertürk YE, Geçer MK, Gülsoy E., Yalçın S, 2015. Antepfıstığı Üretimi ve Pazarlaması. *İğdir Üni. Fen Bilimleri Inst. Der. / İğdir Univ. J. Inst. Sci. & Tech.* 5(2): 43-62,
- FAO, 2015. Food and Agriculture Organization (FAO). <http://www.fao.org/faostat/en/#data/QC> (Accessed: 10.10.2017).
- Gerçekcioglu R, Bilgener S, Soylu A, 2014. General orcharding (Principles of Fruit Growing). NOBEL Academic Publishing, Improved 4th Edition, Istanbul, 498 p. 2014.
- Gülsoy E, Kaya T, Şimşek M, Pehlivan M, 2016. Selections of walnut (*Juglans regia* L.) in Iğdir district. *İğdir University Journal Institute Science & Technology*, 6, 25-30.
- Kaska N, 1995. Pistachio Nut Growing in Turkey. *Acta Horticulturae*, 419, 161-164.
- Köksal İ, 2002. Türk Fındık Çeşitleri. Fındık tanıtım Grubu Yayınları, Ankara. 136s.
- Satıl F, Azcan N, Baser KHC, 2003. Fatty Acid Composition of Pistachio Nuts in Turkey. *Chemistry of Natural Compounds*, 39, Number 4.
- Soylu, 1984. Kestane Yetiştiriciliği ve Özellikleri. Atatürk Bahçe Kültürleri Araştırma Enstitüsü, Yayın No: 59, Yalova, 1984
- Sykes JT, 1975. The Influence of Climate on the Regional Distribution of Nut Crops in Turkey. *Economic Botany*. Vol. 29, No. 2, April-June, pp. 108-115.
- Şimşek M, Kara A, 2016. Diyarbakir fruit growing potential an overview. *International Diyarbakir Sempodium*, 2-5 October 2016, Diyarbakır-Turkey (in press).
- Şimşek M, 2015. A research on almond growing in Turkey and the state of selection studies. *DUFED*, 4, 95-100.
- Şimşek, M, Gülsoy E, 2017. A Research on pomegranate (*Punica granatum* L.) production Potential of Southeastern Anatolia Region. *İğdir University Journal Institute Science & Technology*, 7, 131-141.
- TREM, 2013. Turkey Republic's Economy Ministry (TREM). Pistachio. file:///C:/Users/ziraaat/Downloads/antep_fistigi-sektor-raporu-293.pdf (Accessed: 10.10.2017).
- TSI, 2015. Turkish Statistical Institute (TSI). <http://www.turkstat.gov.tr/Start.do> (Accessed:10.10.2017).