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# A Research on Production Potential and Development Opportunities of Pistachio (*Pistacia vera* L.) in Turkey

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***Abstract*:** *Pistachio is one of the oldest cultivated agricultural products called as 'Green Gold' in Turkey. Anatolia is the gene centre 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 of pistachio productions respectively as West Blacksea Region is the last with a production of 73 tons. Considering the total pistachio production of the provinces in the our country, Gaziantep and Şanlıurfa provinces rank first and second with 53.109 and 47.848 tons of pistachio productions respectively as Erzincan and Afyon provinces come last with a production of only 1 ton. 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 for making use of and directing the existing potential in future plans.*

***Keywords:*** *Development opportunity, Pistachio, Production potential, Turkey.*

## 1. Introduction

Pistachio nut (*Pistacia vera* L.) is one of the most popular tree nuts in the World [1]. This nut tree *belongs to the family A*nacardiaceae and dioecious and deciduous native species [2]. This fruit is the richest source of heart-healthy fatty-acids, metals, phytosterols, phenolic and other compounds and therefore their consumption has become increasingly popular over the past decade [3].

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 cakes, biscuits, pies, candies, ice cream and pistachio butter. It is also used as the main ingredient of many Turkish desserts. This nut contains 25% protein (mainly essential amino acids), 16% carbohydrate (mainly sucrose) and 55% oil (80% unsaturated fatty acids) [4]-[5].

Turkey has a large potential of fruit species and fruit production [6], [7]. Anatolia 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 [8].

It is a gene centre for many fruit species such as pistachio, apricots, figs, hazelnuts, almonds, walnuts, pomegranates, apple and cherry. According to archaeological research, It has been known that many fruit species were grown in Anatolia a few thousand years ago [9]-[13].

Pistachio's wild trees are spread in almost all parts of Anatolia. However, the majority of this species's trees are in the South Eastern part of the country. Because the climate of this region is quite suitable for growth of *Pistacia* trees or shrubs. Eventually this region is the most important area for pistachio nut production although the annual precipitation is very low (300–500 mm), the soils are poor, stony, calcareous and summers are very hot and dry and the winters are rather cold. So in a way pistachio nut is grown in 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.

## 2. Some Important Pistachio Cultivars in Turkey

Turkey has about twenty pistachio cultivars. Pistachio cultivars such as Siirt, Halebi, Ohadi, Uzun, Kırmızı, Keten Gömleği, Beyaz Ben, Değirmi, Çakmak, Sultani, Vahidi, Mümtaz, Sefidi and Hacı Şerif are grown in Turkey. However, But, the most popular pistachio cultivars in our country are Siirt, Kirmizi and Uzun [14].


Fig. 1: Kırmızı Cultivar [15].


Fig. 2: Siirt Cultivar [16].

## 3. Turkey's Pistachio Production

Turkey has 144.000 tons of total pistachio production [17]. 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. Pistachio production is carried out in 40 provinces in Turkey. Considering the total pistachio production of the provinces in the our country, Gaziantep and Şanlıurfa provinces rank first and second with 53.109 and 47.848 tons of pistachio productions respectively as Erzincan and Afyon provinces come last with a production of only 1 ton (Table 1).

TABLE I: Pistachio Trees's Numbers and Production of Turkey's Provinces.

| Provinces | Area covered by bulk fruit (decare) | Production (tons) | Average yield per tree (kilogram) | Number of fruitful trees | Number of unfruitful trees | Total number of trees |
|---|---|---|---|---|---|---|
| Erzincan | 10 | 1 | 3 | 360 | 12 | 372 |
| Malatya | 569 | 198 | 6 | 30.770 | 955 | 31.725 |
| Elazığ | 20 | 78 | 7 | 10.610 | 2.140 | 12.750 |
| Tunceli | 121 | 20 | 6 | 3.200 | 1.090 | 4.290 |
| Bitlis | 76 | 26 | 4 | 5.850 | 4.650 | 10.500 |
| Hakkari | 80 | 29 | 7 | 4.200 | 350 | 4.550 |
| 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 |
| Balıkesir | 67 | 101 | 3 | 31.040 | 25.895 | 56.935 |
| Çanakkale | 4.711 | 691 | 2 | 377.076 | 14.060 | 391.136 |
| İzmir | 6.680 | 1.179 | 5 | 242.935 | 58.817 | 301.752 |
| Aydın | 3.924 | 384 | 2 | 164.140 | 44.395 | 208.535 |
| Denizli | 348 | 403 | 3 | 145.670 | 3.475 | 149.145 |
| Muğla | 1.515 | 172 | 2 | 82.095 | 10.500 | 92.595 |
| Manisa | 10.500 | 1.825 | 3 | 615.956 | 253.767 | 869.723 |
| Afyon | 38 | 1 | 1 | 862 | 0 | 862 |
| Kütahya | 2.171 | 149 | 3 | 47.925 | 51.080 | 99.005 |
| Uşak | 147 | 79 | 4 | 18.565 | 5.630 | 24.195 |
| Bursa | 0 | 14 | 4 | 4.000 | 200 | 4.200 |
| Eskişehir | 51 | 13 | 5 | 2.715 | 390 | 3.105 |
| Ankara | 0 | 15 | 1 | 15.500 | 13.000 | 28.500 |
| Konya | 100 | 44 | 3 | 14.023 | 10 | 14.033 |
| Karaman | 950 | 324 | 4 | 90.000 | 2.000 | 92.000 |
| Antalya | 82 | 18 | 10 | 1.800 | 900 | 2.700 |
| Isparta | 40 | 5 | 2 | 2.800 | 0 | 2.800 |
| Burdur | 33 | 6 | 1 | 7.250 | 1.400 | 8.650 |
| Mersin | 5.224 | 1.156 | 4 | 261.784 | 80.783 | 342.567 |
| Hatay | 0 | 9 | 4 | 2.500 | 100 | 2.600 |
| Kahramanmaraş | 66.603 | 2.197 | 3 | 798.000 | 237.150 | 1.035.150 |
| Nevşehir | 10 | 4 | 14 | 290 | 400 | 690 |
| Sivas | 56 | 205 | 18 | 11.400 | 42.000 | 53.400 |
| Karabük | 90 | 21 | 12 | 1.800 | 0 | 1.800 |
| Çorum | 26 | 52 | 4 | 11.600 | 870 | 12.470 |
| TURKEY | 2.914.179 | 144.000 | | 40.597.427 | 11632973 | 52.230.400 |

## 4. Development Opportunities of Pistachio in Turkey

Pistachio producers need to develop policies to get the expected profit from shell nuts together with production plans for domestic consumption and exports. The production 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 made a positive contribution to the economy both the nut producers and the country. The species's fruits are in the group of risky products in terms of Alfatoxin. Therefore, The nut'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 ecological conditions and breeding systems. Necessary measures should be taken and timely and regularly done to prevent diseases and harmfuls. Technical and scientific studies must be done to reduce input cost. The nut's producers have to make agricultural insurance for the loss of natural disasters.

## 5. Conclusion

Pistachio grows in 40 provinces of Turkey. Therefore, pistachio production potential is very important for our country. This nut producers should act in cooperation with other institutions and organizations, for example, agricultural faculties, and other colleges and the universities's institutes and Ministry of Food, Agriculture and Livestock.

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