

Foreign Trade and Production of Anise (*Pimpinella anisum* L.) in Turkey

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Abstract: In Turkey, which has rich species and plant diversity, has a great potential in terms of medicinal and aromatic plants with its high endemism and genetic diversity. Anise (*Pimpinella anisum* L.), which is among the cultivated medicinal and aromatic plants, has an important place with its export share and usage areas. Anise is an annual species belonging to the Apiaceae (Umbelliferae) family, which has been used for many years in the pharmaceutical, food and drink industries with the nutrients it contains. Anise seeds (fruits) which are included in medicinal and aromatic plants with their taste and usage form, and as a spice with their unique smell; with the active substance content is considered among the important drugs in pharmacology. General evaluation of production, yield, import and export data of anise in Turkey was aimed in current study. The data and statistical results were obtained from *International Trade Center (ITC)*, *United Nations Commodity Trade Statistics Database (UN Comtrade)* and *Turkey Statistical Institute (TSI)*. This evaluation was aim to understand the reasons of fluctuation in production and foreign trade of anise and discuss on possible solutions.

Keywords: Anise, medicinal and aromatic plants, production, import, export

Türkiye’de Anason (*Pimpinella anisum* L.) Üretimi ve Dış Ticareti

Özet: Zengin tür ve bitki çeşitliliğine sahip olan ülkemiz yüksek endemizm ve genetik çeşitliliği ile tıbbi ve aromatik bitkiler açısından büyük bir potansiyele sahiptir. Kültürü yapılan tıbbi ve aromatik bitkiler içerisinde yer alan Anason (*Pimpinella anisum* L.), ihracat payı ve kullanım alanlarıyla önemli bir yere sahiptir. Anason, içerdiği besin maddeleri ile uzun yıllardan beri ilaç, gıda ve içki endüstrisinde kullanılan Apiaceae (Umbelliferae) familyasına ait tek yıllık bir türdür. İçerdiği tat ve kullanım şekli ile tıbbi ve aromatik bitkiler içerisinde yer alan anason tohumları (meyveleri), kendisine has kokusu ile baharat olarak, etken madde içeriği ile farmakolojide önemli droglar arasında değerlendirilmektedir. Bu çalışmada, Türkiye’de anasonun, üretim, verim, ithalat ve ihracat verilerinin genel değerlendirilmesini yapmak amaçlanmıştır. İstatistiksel veriler, Uluslararası Ticaret Merkezi (UTC) ve Türkiye İstatistik Kurumu (TÜİK)’ndan elde edilmiştir. Bu değerlendirme ile anason üretimi ve dış ticaretindeki dalgalanmaların nedenlerini anlamak ve olası çözümleri üzerinde tartışmak amaçlanmıştır.

Anahtar Kelimeler: Anason, tıbbi ve aromatik bitkiler, üretim, ithalat, ihracat

Introduction

According to a study conducted by the World Health Organization, there are 21.000 kinds of plant species used for medical purposes in the world. While the number of herbal drugs that are widely used is 4.000, the number of plants traded as herbal drugs in Europe is 2.000. The number of species in Turkey exports and imports is made with 350

sub-species, there are 150 species made foreign trade (BAKA, 2012).

Anise is among the cultivated medicinal and aromatic plants, has an important place with its export share and usage areas. Anise (*Pimpinella anisum* L.) is an annual plant that has been used for spice and medicinal purposes which belongs to family of Apiaceae (Umbelliferae). Although origin of

anise is not exactly known, it has been a commonly found in Egypt, Syria, Cyprus, Greece, Crete Islands and Turkey. Anise is native of Eastern Mediterranean countries and it's widely cultivated in regions which have warm climatic conditions throughout the growing season such as Turkey, Spain, Italy, the Balkan countries, Central and South America, Iran and India (Davis, 1972; Melchior and Kastner, 1974; Ceylan 1997). Fruit of anise was first cultivated as a spice by ancient Egyptians and later by the Greeks, Romans and Arabs. It is commercially called "aniseed". The essential oil obtained from the seeds of the anise (Oleum Anisi) is one of the pharmacologically important drugs. It is used in food, medicine, cosmetic, pharmaceuticals and perfumery industries (Akgül, 1993; Baytop 1984; Ceylan 1987; Ross, 2001).

Anise fruits contain 1.5-5% essential oil. The main component of the essential oil is trans-anethole which is a phenylpropanoid (Tabanca et al., 2005). The unique smell and sweet taste of anise is originated from trans-anethole. Another important compound of essential oil is methyl-cavicol (estragol), which smells anise but contains bitter taste. Essential oil of anise as medicine has antimicrobial properties in addition to their use carminative, expectorant, urine enhancer (diuretic) (Bown, 2001; Kreydiyyeh et al., 2003). It has a therapeutic effect on stomach disorders (nausea, shortness of breath, asthma) (Zeybek and Zeybek, 1994). In addition to medicinal use, anise fruits and essential oil are used in food industry; bread, cookies, sugar, flowers and leaves can be added salad, furthermore in the cosmetic industry, it is used by joining products such as toothpaste, soaps, lotion and skin cream, also essential oil anise is used in certain alcoholic beverages to obtain the special flavor, e.g. Turkish drink: Raki, Greek drink: Ouzo and French liqueur: Anisette, Pastis and Pernod. The oil is used tobacco manufacture due to aromatic properties (Sengul, 1994; Ozguven, 2001; Ozguven, 2005).

Because of its pesticidal properties, aniseed essential oil is used against three important species (*Anopheles stephensi*, *Aedes aegypti*, *Culex quinquefasciatus*) of

mosquito in their larval and ovulation periods (Prajapati et al., 2005). Anise oil has a lethal effect against red spider (*Tetranychus cinnabarinus*) and cotton aphids (*Aphis gossypii*) (Tunc and Sahinkaya, 1998).

Foreign Trade and Production of Anise in Turkey

In this study, production and yield of anise plant in Turkey, the current value of imports and exports according to *International Trade Center (ITC)*, *United Nations Commodity Trade Statistics Database (UN Comtrade)*, and *Turkey Statistical Institute (TSI)* which was prepared using the statistical data obtained, were used as materials.

There is limited information about trade of medicinal and aromatic plants (MAPs). Some MAP trade figures is from the COMTRADE database compiled by the UN Statistics Division This database contains foreign trade figures of about 180 countries since 1962 (United Nations Commodity Trade Statistics Database, 2019). In the database goods are classified according to various classification systems. For MAPs the two most important ones are the Standard International Trade Classification (SITC) and the Harmonized Commodity Description and Coding systems (HS). For instance classified of aniseed; HS4: 0909 and were given a special subdivision HS6: 090910.

Aniseed which is among the cultivated medicinal and aromatic plants, has an important place with its export share and usage areas. Although anise production and planting areas in Turkey do not follow a stable course from year to year, most of anise is produced in Burdur, Denizli, Antalya, Muğla, Afyon, Bursa, Antalya, and lesser amounts in Konya, Balıkesir, Eskişehir, Uşak, İzmir, Kütahya and Ankara. For other countries aniseed is produced in India, Spain, Italy, Egypt, Iran and Syria. Although anise is widely produced in Turkey, there is not any improved variety in anise, yet. The production area, production quantity and yield value of anise in Turkey was obtained from the database *Turkey Statistical Institute (TSI)* for the years 2008–2018, and is presented in Figure 1.

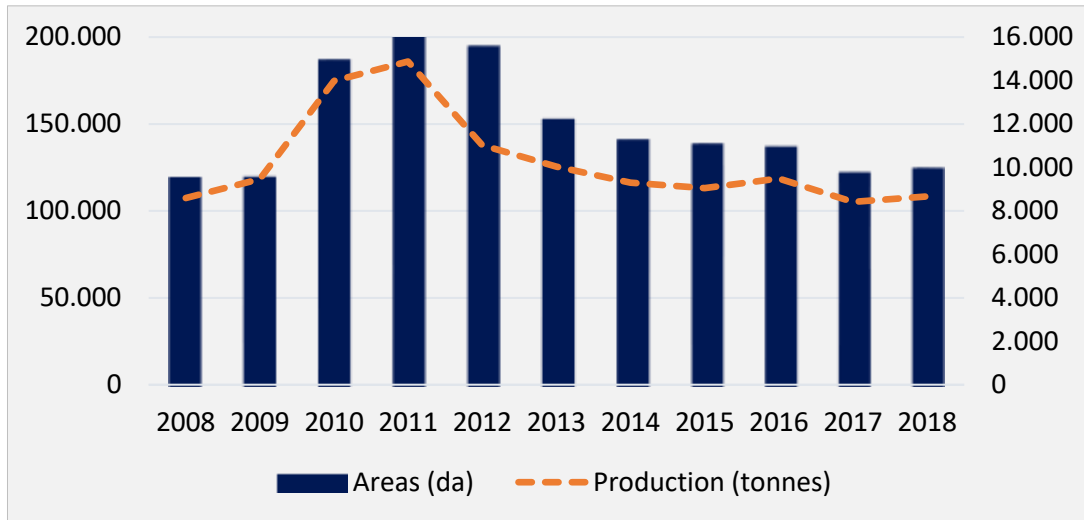


Figure 1. Production amount and areas of aniseed in different years

As you can see in Figure 1, there was a substantial variation between the years in terms of production area and quantity of anise. In 2011, the increase in the amount of production and the cultivation area is remarkable. When production values of anise are analysed by years, maximum value of anise production, which was 14.879 tons in 2011, while was minimum value 8.418 tons in 2017. The cultivation area of anise

decreased by 41% (from 211.542 decares to 124.455 decares) from 2011 to 2018 (Figure 1).

In Turkey, Burdur, Denizli and Muğla provinces have the first rank the first among the provinces anise production (Figure 2). Burdur, Denizli and Antalya provinces have the highest values in terms of the production areas in between the years of 2016, 2017 and 2018 (Figure 3).

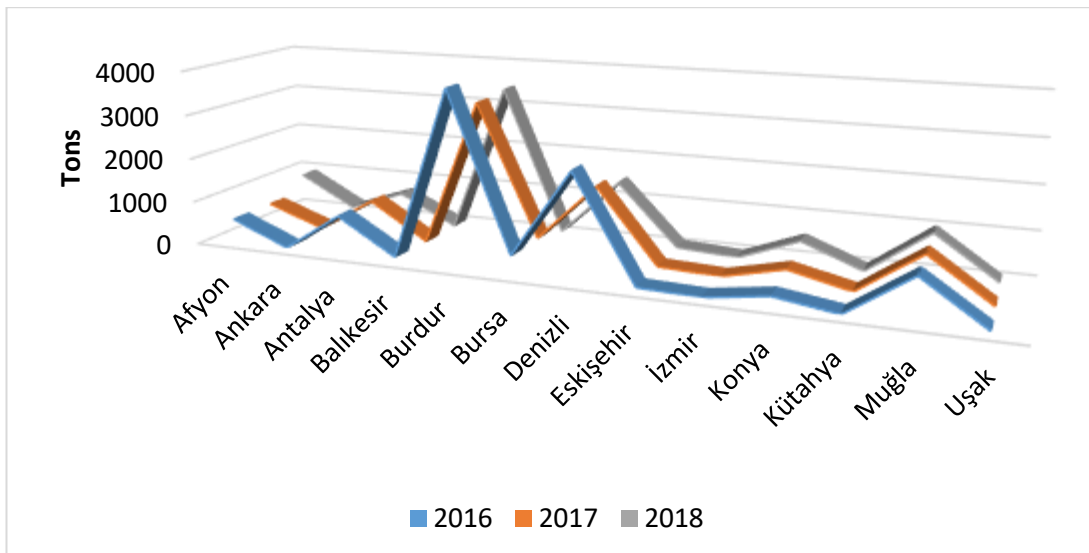


Figure 2. Anise production quantities by provinces in Turkey (2016, 2017 and 2018)

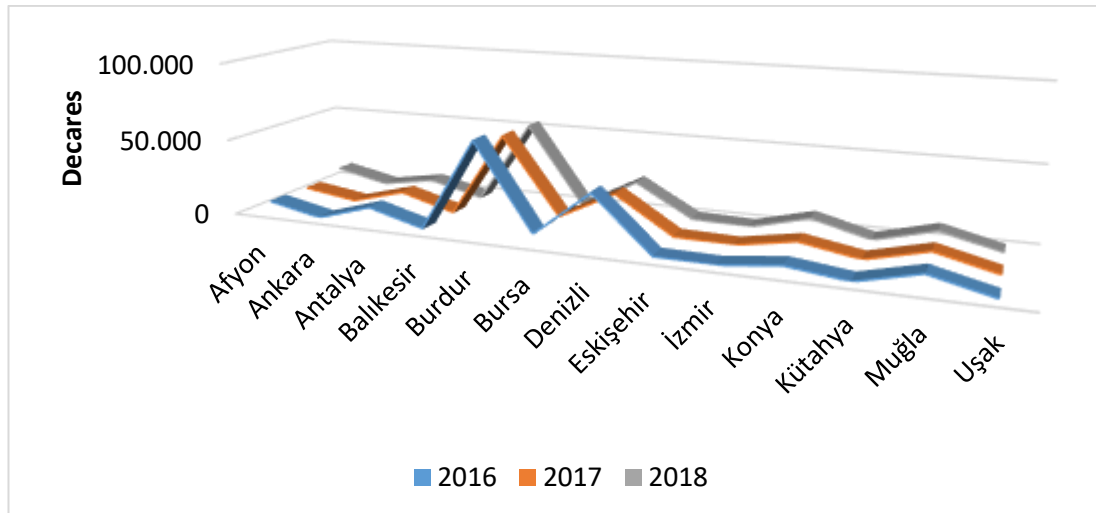


Figure 3. Anise production areas by provinces in Turkey (2016, 2017 and 2018)

In Turkey, the production of anise is done mainly by using the anise populations. In addition there are difficulties in providing certified seeds with good quality and high yield and farmers do not have sufficient knowledge about farming practices (production technique, fertilization etc.) in anise cultivation. All that reasons are main factors, which are effective in reducing the production of anise in Turkey (Bayram, 1992).

A majority of anise produced in Turkey, is used in the production of alcoholic beverage called "raki". It is purchased by the

manufacturer (TEKEL), the main recipient of the anise is using it in the production of raki. The company, was sold in 2004, and it is another factor played a role in decreasing the production of anise (Çetin, 2008).

Turkey is an important anise manufacturers which export to about 40 countries in worldwide. Approximately 70% of the produced anise is exported. Although anise export have not change significantly in between 2012 and 2018, the money earned from increased by 64.8% in values and increased from 6.323 thousand USD to 10.420 thousand USD (Figure 4).

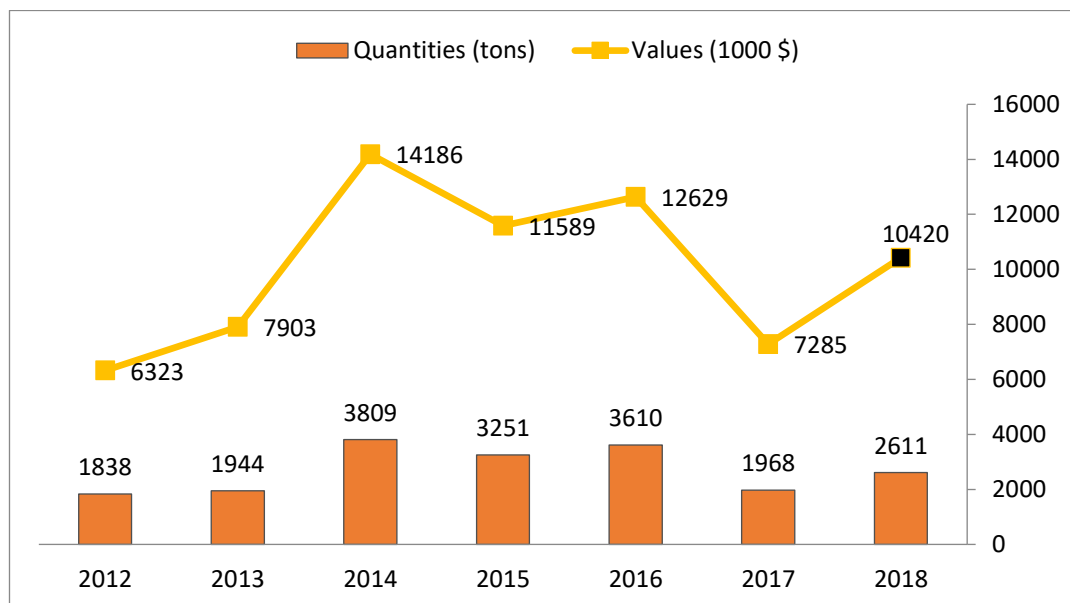


Figure 4. Turkey's anise export quantities and values by the years (2012-2018)

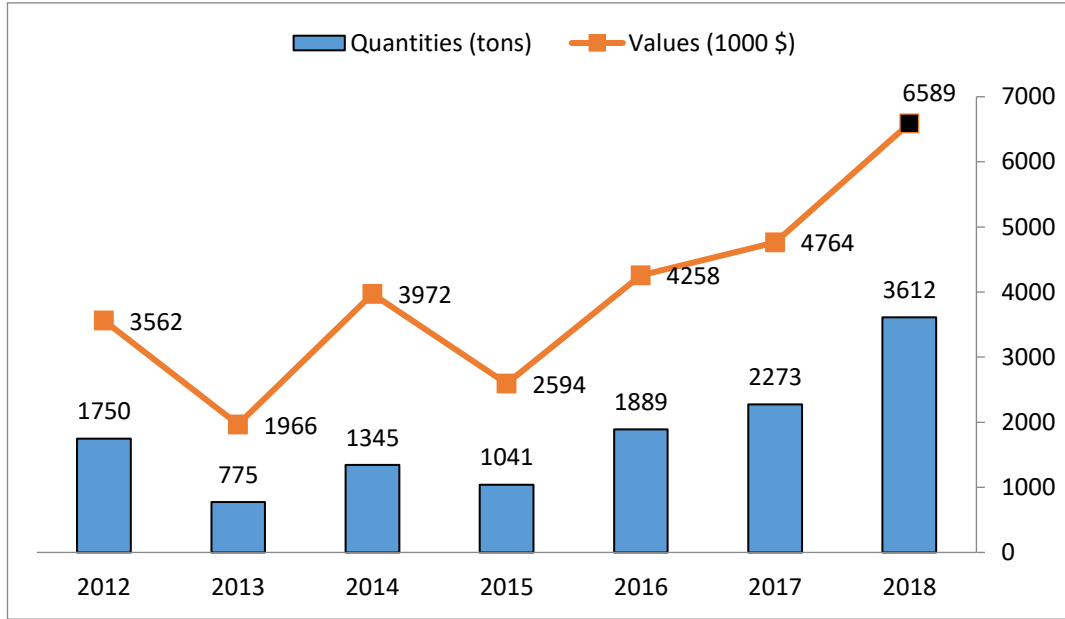


Figure 5. Turkey's anise import quantities and values by the years (2012-2018)

Germany, USA and Netherlands are the major exporters of Turkey, Turkey is exporting 816 tons (10.2 million USD), 358 tons (1.3 million USD) and 269 tons (1.2 million USD) respectively in 2018 according to trade statistics.

Import of anise increased by 106.4% (from 1750 tons increase to 3612 tons) from 2012 to 2018 (Figure 5). Most important country in the anise import is Syria because of it with the largest portion of anise import compared to other countries in the last decade.

In 2018, anise imported from Syria (68.2%), Egypt (24.2%) and Macedonia (4.3%). It was imported 2.464 tons (6.5 million USD), 876 tons (4.7 million USD) and 156 tons (1 million USD) respectively.

Conclusions

In Turkey, anise is an important export plant among the medicinal and aromatic plants trade. But there is no registered variety in Turkey, yet. The production of anise is mostly done using anise ecotypes. To prevent fluctuations in production and increase the market portion, in the research should focus on the breeding efforts and developing of the new varieties.

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