

Walnut (*Junglans regia*) Agriculture and Economy in Turkey

Fatma TURAN KOYUNCU^{1*}, Onur KOYUNCU²

¹ Anadolu University, Faculty of Economics, Eskisehir, Turkey

² Eskişehir Osmangazi University, Faculty of Sciences and Letters, Department of Biology, TR-26040 Eskişehir, Turkey

*Corresponding Author

E-mail: faturan@anadolu.edu.tr

Abstract

In this study, we examined the production stages of walnuts in hard shelled fruits and the economic position of walnut in the world market has been determined. Due intense interest in recent years in Turkey to the walnut, increased the walnut tree and walnut production. Annual total production, export and import data were evaluated and their contributions to the national economy were revealed. The total number of walnut trees in Turkey is closer to 9 million. Turkey walnut production is around 210,000 tons annually according to TUIK data. Turkey walnut exports from the country that position in 1960, engaged in import of walnuts in the 2000s has become a country. When we consider that our walnut import amount is about 46000 tons, our country is more than walnut production amount of countries such as France, Spain and Greece, imports more walnuts. Walnut Turkey in the coming years is likely to be among the most important products for agriculture.

Keywords: Walnut, Agriculture, Economy, Turkey.

INTRODUCTION

One of the countries with which Turkey gene center and the homeland of walnut, walnut production in the past is a country in the world to have a say. However, today, unfortunately, in production and export is not located in the desired place [1-3].

Walnut production in Turkey is made up mostly walnut exhausted. That meet walnut consumption produced in Turkey are imported. Data in recent years almost import 50% of annual consumption. Especially with the increasing importance given to the issue of healthy living in recent years, consumption habits of people have also increased and demand for walnuts has increased significantly. Against this increasing demand, walnut import rates have increased gradually over the years [4-5].

World walnut production, which increases regularly every year, has reached approximately 2,300,000 tons. Walnut important world producers are China, the US, Iran and Turkey. China is the largest walnut producer in the world, with a production of about 980,000 tons. However, due to the population density in China, domestic demand is very high. Therefore, walnut production in China only meets domestic demand [3; 6-9].

Although China is the largest producer, the USA is the largest exporter. Because the developments related to the US walnut cultivation have been realized before and it can buy more products in less area. The market quality of the US walnut from other tariff area is higher. For these reasons, the USA remains the largest exporter country in the world. The USA realizes approximately 40% of the walnut export today [3; 6-9].

MATERIALS and METHODS

In this study, examining the stages of production within walnut nuts, the overall economic situation in Turkey and in the international market of walnut production in the years 2006-2018 has been demonstrated theoretically. In this study; walnut literature relating to the production and economy as well as compiled in Turkey Turkey's agriculture and walnut nut is intended to

contribute to the economy.

RESULTS and DISCUSSION

Agricultural Properties of Walnut

Walnut plant in the spring and summer months to normal growth and ripening to provide a temperature between 25-35 °C requires. Temperatures higher than 40 °C can cause burns in the green shell of the walnut and shrinkage in the walnut. On the other hand, walnut plant is generally damaged by cold temperatures exceeding -20 °C. In addition, temperatures below -1 °C during bud, -3 °C during full flowering and -10 °C during small green fruit can damage walnut [9].

Factors such as fall rate and duration play an important role in the damage of walnut from cold as well as the degree of low temperature. In terms of walnut cultivation, at least 500 mm of rainfall is sufficient annually, but it is very important that this rainfall is regular. In order for the fruits to grow normally, there should be sufficient water in the soil in summer. On the other hand, excessive rains and winds during flowering period may cause a negative situation especially in terms of pollination and fertilization [10-12].

Walnut plant has a strong root system that can go down to a depth of 2 - 4 m. Walnut is not a very selective plant species in terms of soil; water holding capacity of the soil is high, pH level is around 6-7 and there are no problems of alkalinity and salt [1-12].

In walnut, male and female flowers ripen at different times. This situation requires the planting of fertilizer varieties in the established walnut gardens. However, in order for mutual pollination and fertilization to occur, male and female varieties with the same flowering periods must be present (female flower+male flower). Pollination and fertilization problems in walnuts usually occur not because of incompatibility, but because male and female flowers open and become active at different times [1-13].

When planting walnut seedlings, male and female flowers must be matured at the same time, or the male and female flowers should be mixed with more than one kind of planting.

It is very important for walnuts to grow in spring, to grow fruit and to meet the water requirements during the filling period. Especially in June-July-August inadequate

irrigation can not be done, small fruit formation, shrinkage of the walnut interior, sunburn, darkening and staining causes. These situations reduce the quality of walnut and thus its efficiency considerably. One of the most important points to be considered while watering is to ensure that water reaches effective root levels [13-15].

Although walnut trees generally do not require much pruning, it is useful to remove dried and intertwined branches and pruning them so that light can easily enter the tree crown. When pruning, always take care to ensure that the thickness of the removed branch is thinner than the left [16].

The ripening period is important in walnut harvest; In the period when the walnut is ripe, the outer green skin leaves the fruit. This is called harvest. The average yield in the gardens established according to scientific methods is calculated as approximately 140 kg / sapling. Of course, climatic factor and maintenance are very important here. Then, in order to maintain the quality and increase the yield, the outer green shell should be taken from the hard shell as soon as possible [4].

General in Walnut Turkey and International Markets located in Economic Status of walnut tree nuts group is 3.5 million tons, ranking first in the world with production. It is followed by chestnut with 2 million tons, almond with 1.9 million tons, Pistachio with 0.9 million tons and hazelnut with 0.8 million tons. In the world, walnuts are found among the Central Asian mountain ranges, spreading to China, Iran and Anatolia and Europe and America [16].

Approximately 90% of the world walnut production is carried out by eight countries. China, the US, Iran, Turkey, Mexico, Ukraine, is situated between the main producer countries Chile and Uzbekistan. On the other hand, it can be said that China and the USA constitute about three quarters of global walnut production. According to FAO (UN Food and Agriculture Organization) data for 2016, China ranks first in walnut production with an area of 487,000 hectares in the 1,200,000 hectares of agricultural walnut area in the World [8].

According to FAO's 2013 data, approximately 3.5 million tons of walnut production is made in the world and half of this production is 1.7 million tons in China. China with 0.45 million tons in Iran, with 0.42 million tons in the United States and Turkey, followed by 0.21 million tons [8].

China ranks first with 46.8%. This country of 15.1% compared to the US, followed by 13% compared to 5.3% compared Iran and Turkey. Turkey taking about 190 thousand tons of walnuts with a 6% share of world manufacturing production, China ranks fourth after Iran and the United States [1-4].

The first four countries of world production is located in 6% Turkey's exports has met the about 22 million dollars and about 174 million dollars and our imports are to find.

Table 1. Production amounts and production areas of walnut producing countries, 2013 [17]

No	Country	Production (tons)	Country	Area (ha)
1	China	1.700,000	China	425,000
2	Iran	450,000	USA	113,120
3	USA	420,000	Turkey	108,767
4	Turkey	212,140	Mexico	72,563
5	Ukraine	556,117	Iran	57,386
6	Others	3.458,045	Others	222,245
	Total	3.458,045	Total	999,081

Table 1 shows that walnut production is carried out on a total area of 999.081 ha in the world. 43% of this production area in China, 11% in the US, Turkey also has 10%.

Turkey's most important agricultural walnut goal is to reduce imports in the last decade, increasing production.

On the other hand Turkey walnut exports from the country that position in 1960, engaged in import of walnuts in the 2000s has become a country. When we consider that our walnut import amount is about 46000 tons, our country is more than walnut production amount of countries such as France, Spain and Greece, imports more walnuts. Walnut Turkey in the coming years is likely to be among the most important products for agriculture.

Although it is not important enough in walnut production in Turkey, Walnut Action Plan was prepared by the relevant ministry in order to contribute to the country's economy by establishing walnut forests in our country as in the past and to contribute to the country's economy by bringing degraded forest areas to production. During the action plan, 5 million walnut seedlings will be brought to the soil and walnut forests will be established for the first time in our country for the production of timber walnuts. With this action plan, walnut, which has wide usage possibilities, will have high economic added value due to its lumber and fruit with high nutritional value, as well as other properties used in medicine and cosmetics [1; 17-20].

Table 2. Turkey's walnut production, consumption, imports and exports (2015-2017) [17]

Year	Production (tons)	consumption(tons)	Imports (tons)	Exports (tons)
2007	172,572	200,165	39,572	2,915
2008	170,897	193,203	35,018	3,859
2009	177,298	207,560	46,004	6,383
2010	178,142	192,290	31,076	7,309
2011	183,240	206,394	46,338	13,711
2012	203,212	220,914	40,009	11,998
2013	212,140	217,996	30,479	14,171
2014	180,807	197,489	34,285	8,407
2015	190,000	235,531	63,800	7,917
2016	195,000	242,205	66,008	8,167
2017	210,000	268,553	77,382	7,185

Looking at the table, in order to increase the coconut production in Turkey in recent years, it is seen that in a significant improvement.

Walnut production increased from 172 thousand tons in 2007 to 210 thousand tons in 2017. Turkey has been about 1:20 fold increase in the production of walnuts walnut production in 2007 compared to 2017 (Table 2) [8].

Walnut production in the last 20 years there have been many important developments in Turkey. Supports provided in walnut production The area of walnut production has increased from about 200 thousand decare to about 800 thousand decare in recent years. However, this increase in the waiting areas did not bring the expected increase in the product [18].

It can be clearly seen in the light of these data; Turkey needs to import to meet its consumption of walnuts.

Turkey to close the supply and demand gap, to increase the coconut production and imports must take strong measures to compensate for the deficit.

In this context;

* It should be revealed why the production amount does not increase despite the increase in the production areas.

* Walnut cultivation should be supported and encouraged.

* In order to increase the yield of walnuts, scientific methods should be put into use and cooperation with the farmer should be done.

* Farmers should be supported more and more decisions should be made in favor of farmers.

* Walnut amount produced by Turkey itself is not

enough. Therefore, it has to urgently give the necessary importance to walnut production.

* Turkey's foreign trade export walnut continuous increase in the amount of the, export volume has decreased correspondingly.

* In this case, production of the nut to meet the needs of Turkey's domestic consumption must be increased at least about 40%.

* Today, Turkey is not the place it deserves in walnut production. By following the walnut policies of countries such as China, USA and Iran, we can find solutions to the problems of our country related to walnut cultivation.

* Turkey's walnut production has increased steadily in recent years. However, because they made the leap Important walnut exporter in the world today, countries with walnut exports of close to 1% in Turkey, can only be welcomed.

* In this case, Turkey's foreign trade in terms of competition and that adequate measures are unnecessary you indicate that you need to take.

* Walnut in demand in Turkey and other countries should be investigated scientifically and real and should be taken accordingly.

* In particular, walnut biology, ecological requirements and very well researched and knowledge should be evaluated in agricultural areas.

* Walnuts are a very important nutrient today, especially if the food scarcity is taken into consideration, it is understood how important this is.

* Clearly; walnut farm for Turkey is moving towards becoming one of the major products in the future [1-2; 17-18].

Turkey is an agricultural country and provides a lot of opportunities for Turkey's ecology walnut production. This should be converted into an opportunity for coconut cultivation in Turkey. Thus, important contributions will be made to the economy of our country.

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