

DEVELOPMENT IN SOYBEAN PRODUCTION AND FOREIGN TRADE IN TURKEY

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Abstract

In addition to being essential both for human and animal diet and industrial applications, soybean is a cheap plant-based protein source with high yields per production field. Soybean consumption in Turkey has reached 1,8 million tons recently. The demand varies between years. Soybean production in Turkey was about 165 thousand tons in 2016. Consequently, only 9 % of the consumption is met by local production. Turkey has a significant potential for soybean production due to suitable climatic conditions. However, compatibility of soybean is low concerning alternative products due to high input costs. Subsequently, soybean production has not been able to achieve the desired target level. According to the Turkish Statistical Institution data, soybean production in Turkey is fluctuating depending on agricultural policies. Identifying problems and taking the necessary precautions will increase the contribution of soybean production both to the country and the regional economy.

This study examines development in plantation area, production amount and yield to evaluate the present situation of soybean production in Turkey between 2004 and 2016 and development in foreign trade price between 2000 and 2013 and price between 2003 and 2016. Soybean is projected to be grown in 15 of the 30 agricultural basins identified by the Turkish Ministry of Agriculture and Forestry. It was understood that if soybean farming becomes popular, soybean output will increase, and dependence on imports will decrease. In connection with the findings obtained, suggestions on how to increase soybean production and popularisation were provided.

Keywords: Soybean, Production, Foreign Trade, Price, Agricultural Basins

INTRODUCTION

The rapid development of soybean farming in the US during the twentieth century and its amazing variety of utilisation in the food industry have made the plant one of the world's most produced and consumed 5-6 plants. Soybean was introduced as an oil plant due to its 40-45 % high protein content. The closest vegetable product to milk and eggs which are accepted as full protein is the soybean (Nazlıcan, 2013).

Soybean growing had started in Turkey in the 1930s in the Black Sea Region, and currently, it is grown mainly as a second crop in the Mediterranean Region. It is being used as food, feed and industrial raw material.

In addition to its significance in terms of human nutrition, the soybean is the most preferred feed raw material in the rations of cattle, poultry and aquaculture due to its high fat and protein content and ease of digestibility. At the same time, the characteristics of this product, which is also used as raw material by many industries, have been examined in the USA in the 1980s and it has been manifested that it can be used as biodiesel fuel and its use together with renewable energy sources has been highlighted (Bayar and Yilmaz, 2005).

Due to the rising importance of soybean production and marketing, this study aims to overview the current status of soybean production in Turkey. Therefore, development in the cultivation area, quantity produced and yields accordingly were evaluated for 2004-2016. Besides, development in foreign trade between 2000 and 2013 and prices between 2003 and 2016 was examined in this study refers to secondary data.

MATERIAL AND METHOD

The study material consisted of data from the Ministry of Agriculture and Forestry, statistics from TURKSTAT and FAO. Furthermore, various research findings related to the subject have also been utilised. Tables, graphs and index calculations were used in the analysis of the secondary data withdrawn. The data for cultivation area, production amount and development in yield were based on the 2004-2016 period while foreign trade for 2000-2013

and developments in price was based on the data for 2003-2016. Indexes were calculated and compared according to baseline. Current prices were converted to real prices using TURKSTAT producer price index (2003 = 100).

RESULTS AND DISCUSSION

The soybean is mainly grown as a complementary crop in Turkey. Although Turkey is not ranked as a significant soybean producer in terms of cultivation area and production amount, Turkey holds a prominent position in the world regarding yield and is more competitive than many other countries.

According to the TURKSTAT data, soybean production in Turkey is not generally stable and infers inter-period fluctuations depending on agricultural policies. However, Turkish soybean cultivation area, which was 140,000 in 2004, has increased by 2.73 fold in 2016 with 381,804. Soybean production has increased 3.3 fold from 50,000 tons in 2004 to 165,000 tons. There has been a 21 % increase in productivity from 2004 to 2016 (Table 1).

Table 1. Changes in Soybean Cultivation Areas, Production and Yield Amounts in Turkey

Years	Cultivation Area (decares)	Cultivation Area index (2004=100)	Production (Ton)	Production index (2004=100)	Yield (kg/ decares)	Yield index (2004=100)
2004	140.000	100	50.000	100	357	100
2005	86.000	61	29.000	58	337	94
2006	119.186	85	47.300	95	397	111
2007	86.747	62	30.666	61	354	99
2008	94.444	67	34.461	69	365	102
2009	105.210	75	38.442	77	366	103
2010	234.727	168	86.540	173	369	103
2011	264.209	189	102.260	205	387	108
2012	315.990	226	122.114	244	386	108
2013	432.600	309	180.000	360	416	117
2014	343.178	245	150.000	300	437	122
2015	367.323	262	161.000	322	440	123
2016	381.804	273	165.000	330	432	121

1 hectare = 0.1 decares

Source: TURKSTAT, 2018

The rise in soybean production in Turkey is due to the increase in cultivation areas rather than the yields. The Mediterranean Region is the leader in soybean production in Turkey with a share of 90,41%. This share is followed by the Western Black Sea Region and Southeast Anatolia Region with 7,22% and 2,07% respectively (Table 2).

Table 2. Soybean Cultivation Areas in Turkey, Breakdown of Production and Yield according to Regions (2016)

Regions	Cultivation Area		Production		Yield (kg/ decares)
	Decares	%	ton	%	
Mediterranean	334.692	87,66	149.172	90,41	446
West Black sea	30.513	7,99	11.911	7,22	390
South-eastern Anatolia	15.293	4,01	3.412	2,07	223
Aegean	1.001	0,26	390	0,24	390
West Anatolia	283	0,07	107	0,06	378
West Marmara	22	0,01	8	0,00	364
Turkey	381.804	100,00	165.000	100,00	432

Source: TURKSTAT, 2018

Adana province ranks first with a share of 60,87% in soybean production in Turkey. Mersin follows Adana with 23,48%, Samsun with 7,12%, Osmaniye with 3,70% and Kahramanmaraş with 2,18%. These five provinces achieved 97.35% of total production in 2016. Regarding provinces, Mersin has the highest yield (462 kg/da) followed by Adana (451 kg/da); these provinces have been determined to have a higher yield than the average in Turkey (Table 3).

Table 3. Distribution of Soybean Cultivation Area, Production and Yield Amounts of Important Provinces (2016)

Provinces	Cultivation Area		Production		Yield	
	da	%	tonne	%	kg/da	Index*
Adana	222607	58,30	100436	60,87	451	104,40
Mersin	83894	21,97	38747	23,48	462	106,94
Samsun	30083	7,88	11751	7,12	391	90,51
Osmaniye	16444	4,31	6105	3,70	371	85,88
Şanlıurfa	11094	2,91	2010	1,22	181	41,90
Kahramanmaraş	10785	2,82	3597	2,18	334	77,31
Mardin	2495	0,65	872	0,53	349	80,79
Diyarbakır	1107	0,29	310	0,19	280	64,81
Hatay	962	0,25	287	0,17	298	68,98
Other	2333	0,61	885	0,54	-	-
Turkey	381804	100,00	165000	100,00	432	100,00

* Comparison with the yield of Turkey

Source: TURKSTAT, 2018

Soybean and products trade in Turkey is mainly in the form of one-way imports because of inadequate levels of production and high demand in the domestic market. Turkey is a net importer regarding soybean. Soybean ranks in first place among imported oilseed plants. Turkey imported 1.074 tons of soybean in 2013 (Figure 1). Turkey imports soybean mainly from the US which is followed by Argentine, Brazil, the Ukraine and Paraguay. The main soybean raw oil imports are from the United States, Argentina and Israel (Top and Uçum, 2011).



Figure 1 Annual Soybean Imports of Turkey.

Source: FAO, 2018

Turkey has included the soybean within the scope of state-supported purchases for many years to promote both complementary crop production as well as to eliminate the deficit in vegetable oil. However, it was excluded from the scope of support under the framework of economic stabilisation measures in 1994. Within the scope of changes in the structural reforms and support methods initiated in agriculture; the premium system, which was started in 1999 to ensure that both associations obtain products at world prices and to give a high price to producers is still ongoing. In 2016, it was decided to pay 0,6 TRL deficiency payments per kilogram to farmers who produce soybean within the scope of oilseed plants and industrial plants and 11 TRL for per decare for diesel and fertiliser. Furthermore, it was decided to pay 0,03 TRL support per kilogram in addition to the farmers who made contracted soybean production (Anonymous, 2017; 1US\$ = 3,02TRL for 2016 average). The amount of deficiency payments for soybean production did not change much from 2011 to 2016. The aim was to increase the production of soybean by implementing production planning with the basin-based production model implemented by the Ministry of Agriculture and Forestry. Soybean production is recommended in 15 out of 30 different agricultural basins which have been established. Soybean production has been planned in 15 basins, and soybean production has been included in the scope of support in these basins. There is considerable potential for soybean production in our country according to the established agricultural basins (Anonymous, 2016).

According to the basin-based production model, some measures must be taken in the short and long-term to increase the soybean cultivation areas in the basins. The main one is to increase the currently irrigated area across Turkey from around 5.0 million hectares to 8.5 million hectares. Furthermore, to increase soybean production in these basins, crops that may be an alternative to soybeans and which can be grown elsewhere should be shifted to other basins by reducing the support given to corn and other crops that can grow in other basins. Soybean production should be made more profitable than alternative crops by increasing the premiums paid for soybeans in these regions to increase soybean production in these basins (Anonymous, 2016).

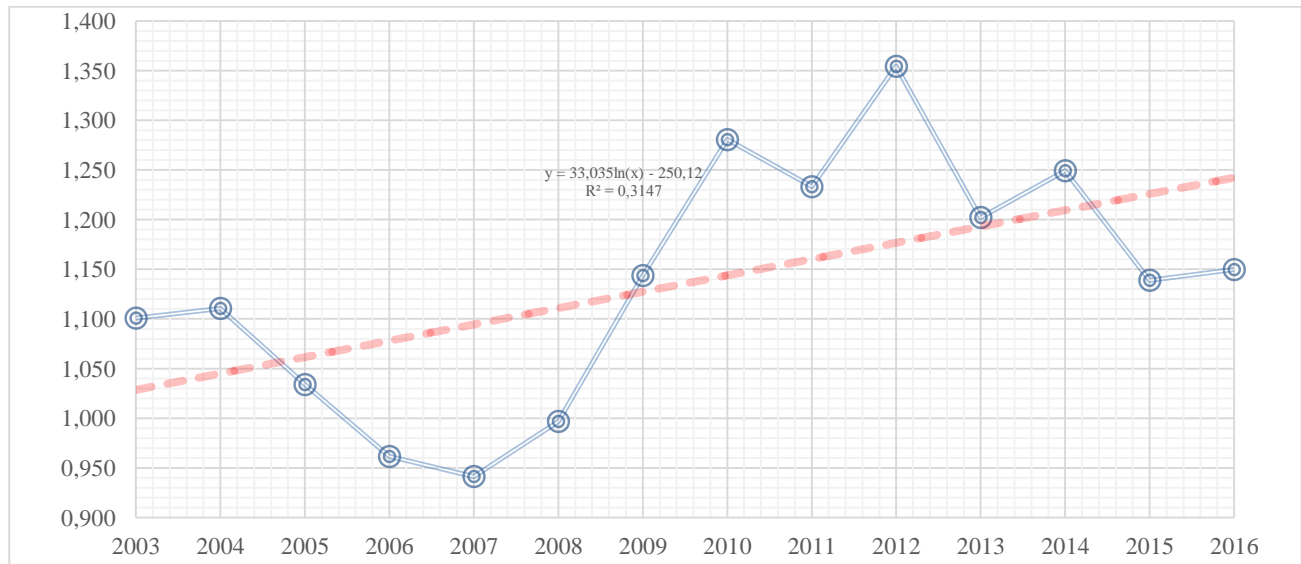


Figure 2 Annual Soybean Real Prices of Turkey (TRL per kg)

Source: TURKSTAT, 2018

The average market price of soybean was given in Figure 2. In the period, the average soybean market price in Turkey followed an increasing trend with a slight fluctuation between the years 2003 and 2016. While there was some declination between 2004 and 2007, the price per kilogram exceeded 1 TRL. While the kilogram price in 2002 was 1.101 TRL, it has increased by 23 % and reached to 1,354 TRL in 2012. After that, this price was decreased and reached to 1.15 TRL in 2016 (1US\$ = 3,02TRL for 2016 average).

Soybeans which are one of the most planted crops in the world has failed to find its rightful place in the agricultural practices of Turkey regardless of its unique superior characteristics which are paralleled by significant direct and indirect losses to the country's economy. Therefore, soybean cultivation should be extended and supported in suitable agricultural areas. In order to achieve this, it is vital that production plans should be determined very well throughout the country, and production forecasts should be made due to import and export potential. The increasing demand for soybeans and the transfer of foreign exchange in large quantities over the years has been the clearest indication of how important it is in this regard (Anaç and Ertürk, 2003).

CONCLUSION

The central soybean producing countries in the world can be listed as the USA, Brazil, Argentina and China. Although the importance of soybeans has been primarily understood in the United States in recent years for utilisation in biotechnology and biodiesel in recent years, they do not contribute enough to the economy in our country. Almost all of the soybeans which are a significant imported raw material for Turkey after mineral fuel, oils and petroleum are consumed either directly or indirectly. Even though soybeans are used in many fields of the industry in the world from food to petroleum derivatives, they are mainly used in the feed industry in our country.

It is vital to prioritise soybeans as an alternative product that can be planted instead of excessively produced products, promote contracted production, extend integrated soybean processing plants, promote and advertise the consumption of soybean products, establish product stock exchanges. Products such as sunflower and corn are protected by high import tariffs whereas the soybean is not, which generates negative perceptions among producers. In this context, the lack of tax on the import of the product would reduce production and cause imports. Therefore it is necessary to raise the tariffs, equalise the rates with corn and sunflower and ensure that the premium amounts are determined before the sowing season and paid on time.

REFERENCES

- Anaç, H., Ertürk, Y.E., 2003. Soybean (in Turkish). Tarımsal Ekonomi Araştırma Enstitüsü (TEAE) Bakış, Sayı 2, Nüsha 6.
- Anonymous, 2016. I. National Soybean Workshop (in Turkish). I National Soybean Workshop Papers Book, 20-21 February, Antalya.
- Anonymous, 2017. Decisions on agricultural supports in 2016. (in Turkish). Official Gazette, Web page: <http://www.resmigazete.gov.tr/eskiler/2016/05/20160505.htm>, Access Date: 11.07.2017.
- Bayar, R., Yılmaz, M., 2005. The Soybean and its Importance in Turkey (in Turkish). Uluslararası İnsan Bilimleri Dergisi, 2(1), 1-12.
- FAO, 2018. Food and Agriculture Organisation, Statistical Data, <http://faostat3.fao.org/home/E>, Access Date:11.07.2018.
- Nazlıcan, A.N., 2013. The Frustrated Journey of the Miracle Plant Soybean in Anatolia (in Turkish). AGROSKOP Tarım-Gıda-Hayvancılık Dergisi, Sayı:24.
- Top, B., Uçum, İ., 2011. The Sunflower and the Soybean 2011/2012 Status and Forecast Report (in Turkish). Tarımsal Ekonomi ve Politika Geliştirme Enstitüsü Yayınları, TEPGE Yayın No: 199.
- TURKSTAT, 2018. Turkish Statistical Institute. Web page: <http://tuikapp.tuik.gov.tr/bitkiselapp/bitkisel.zul>, Access Date: 08.03.2018.