

Current Presence of Apples (*Malus spp.*) in the World and in Türkiye

Ahmet Nuri ÖZDAĞ¹

Tarım ve Orman Bakanlığı, Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü, Meyvecilik Araştırma Enstitüsü Müdürlüğü, Eğirdir, Isparta, Türkiye

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*Corresponding author e-mail: ahmetnuri.ozdag@tarimorman.gov.tr

Abstract

Apples are a major fruit species produced in large quantities in various countries around the world. A 78% of the apple production is carried out by ten countries in the world. China and the USA rank first in apple production, while Türkiye ranks third with a production of 4.6 million tons. In terms of yield, the leading countries in the world are New Zealand (59.7 tons/ha) and Chile (50.8 tons/ha), followed by Switzerland, the USA, Libya and South Africa. Türkiye ranks nineteenth in terms of yield. A 62% of apple production in Türkiye takes place in ten cities. Isparta ranks first in apple production, accounting for 23% of total production in Türkiye. Isparta is followed by Karaman and Nevşehir. While Türkiye's per capita apple consumption is higher than the world average, Türkiye can export 9% of its apple production. This study aims to reveal the structural development of apple production in Türkiye and its place in world production, to determine its export potential, and to make predictions about the country's future apple production in light of the data obtained.

Key words: Apple, Production, Consumption, Export, Import.

Elma'nın (*Malus spp.*) Dünya ve Türkiye'deki Güncel Mevcudiyeti

Öz

Elma, dünyada farklı ülkelerde yoğun miktarlarda üretimi yapılan bir meyve türüdür. Dünya elma üretiminin %78'i on ülke tarafından gerçekleştirilmektedir. Çin ve ABD (Amerika) elma üretiminde ilk sırayı alırken, Türkiye ise 4,6 milyon ton üretim miktarı ile üçüncü sırada yer almaktadır. Verim bakımından dünyada önde gelen ülkelerin başında, Yeni Zelanda (59.7 ton/ha), Şili (50.8 ton/ha) gelmekte olup, bu ülkeleri İsviçre, ABD, Libya, Güney Afrika izlemektedir. Türkiye verim bakımından on dokuzuncu sırada yer almaktadır. Türkiye'de elma üretiminin %62'si on ilde gerçekleştirilmektedir. Isparta ili elma üretiminde ilk sırada yer almakta ve Türkiye üretiminin %23'ünü oluşturmaktadır. Isparta ilini, Karaman ve Nevşehir takip etmektedir. Türkiye'nin kişi başına elma tüketimi, dünya ortalamasından yüksek olmakla birlikte; elma üretiminin, %9'unu ihraç edebilmektedir. Çalışmanın amacı; Türkiye'de elma üretiminin yapısal gelişimini ve dünya üretimindeki yerini ortaya koymak, ihracat potansiyelini belirlemek, elde edilen veriler ışığında ülkenin gelecekte elma üretimi ile alakalı tahminlerde bulunmaktır.

Anahtar Kelimeler: Elma, Üretim, Tüketim, İhracat, İthalat.

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1. INTRODUCTION

The apple is a fruit species that has a very wide range of habitats around the world and can be produced in various ecological environments. Cultivable forms of apples were developed in the Tien Shan Mountains of Central Asia 4,000 to 10,000 years ago. The genus *Malus* is

thought to have originated in southeastern China, and its species have since spread throughout the world. *Malus sieversii* (Ledeb.) M. Roem., presumed to be the main ancestor of the cultivated apple, grew wild in the forests of Central Asia from Tajikistan to western China (Luby

2003; Özçağiran et al. 2004; Clement 2005; Hancock 2008; Zohary et al. 2012). According to genomic research conducted in the previous century, other species of the genus (*Malus*) contributed to the genome of the cultivated apple. These include *Malus sylvestris* (L.) Mill., which is distributed from Western Asia to Europe, and *Malus orientalis* Uglitzk, which grows in the forests of the Caucasus region (Özçağiran et al. 2004; Hancock 2008; Pereira-Lorenzo et al. 2009; Cornille et al. 2014). There are over 6500 apple varieties in the world. In Türkiye, this number reaches 460. Among these, only a small number of varieties are high-quality and high-yielding commercial cultivars. The most productive apple varieties are Starking Delicious, Golden Delicious, Granny Smith, Starkspur, Jonathan, Black Stoyman Improved and Amasya apples. The most widely produced apple varieties in Türkiye are Starking Delicious, Golden Delicious, and Amasya apples (Cenapaksoy et al. 2002; Soyly, 2003). A large portion of newly established apple orchards in Türkiye prefer new varieties such as Gala and Fuji group, Red Chief, Braeburn, Jonagold, Scarlet Spur, Summer Red, Red Star, Golden Reinders, Topred (Starking), Granny Smith and Pink Lady (Öztürk, 2012).

Apples are of great importance in nutrition due to their mineral, nutrient and vitamin content. Fresh apples consist of 84% water. Dry matter contains carbohydrates, proteins, vitamins, pectins and minerals. Rich in antioxidant components, carbohydrates, essential minerals and dietary fiber, apples hold a significant place in terms of taste and nutritional content (Sadık et al. 2003; Wolfe et al. 2003). Vitamins A and C, along with elements like potassium, calcium, magnesium and sodium, combine to form various salts. When the organic components of these salts, namely organic acids are oxidized in the blood to provide energy, base-forming components remain. Thus, apples have a positive effect on the acid-base balance in the blood. Furthermore, the antioxidant content of apples is an important food source in the fight against cancer (Gardner et al. 2000; Wiseman 2001; Gorinstein et al. 2001; Van der Sluis 2005; Erdoğan and Demirci 2014).

Ten countries account for 78% of global apple production. China and the USA rank first in apple production, followed by Iran and Türkiye with 4.6 million tons. In terms of yield, New Zealand (59.7 tons/ha) and Chile (50.8 tons/ha) are among the leading countries, followed by Switzerland, the USA, Libya and South Africa. Türkiye ranks nineteenth in yield (FAO, 2025). The data on apple production, consumption, and

foreign trade in the world and in Türkiye for the last 10 years have been compiled from the records of various institutions, including the FAO (Food and Agriculture Organization of the United Nations) and the Turkish Statistical Institute (TÜİK). Based on the available data, predictions have been made regarding the future state of apple production, consumption, and import-export. This study aims to interpret the developments in the apple sector in past years and in the present and to make predictions about the situations that the sector may face in the future.

2. CURRENT SITUATION IN GLOBAL APPLE PRODUCTION

2.1. Current Status of World Apple Production and Consumption

The World's apple production area decreased from 5.8 million hectares in 1998 to 4.7 million hectares in 2006, and further to 4.6 million hectares by 2024. Looking at production quantities over the years, 56 million tons were produced in 1998, 59 million tons in 2000, 63 million tons in 2006 and 97.3 million tons by 2024. Apple yield varies from year to year, but averages 17.4 tons/hectare. Alongside the increase in production, apple consumption has risen due to worldwide population growth. While 49 million tons of apples were consumed in 1998, this figure rose to 50 million tons in 2000, 56 million tons in 2006, and reached 93 million tons in 2022. (Table 1; Oğuz and Karaçayır 2009; FAO 2025). While a large portion of the world's apple production is consumed fresh in producing countries, only a small portion is processed and used in industry (Taşcı, 2017).

Using data on apple production and consumption worldwide from 2010 to 2022, the apple production and consumption graph is given in Figure 1. World apple production and consumption show a steadily increasing trend over the years. From 2010 to 2022, apple production increased by 34% and consumption by 40%. These growth rates have moved in parallel and in a balanced manner (Figure 1). The fact that apple production areas decreased by 6% and yield per hectare increased by 40% during this period shows us that apple production areas have been used more effectively over the years (Table 1). In other words, it shows that more advanced agricultural techniques are being applied in existing orchards and that there is a transition to more effective, modern orchards.

Table 1. Apple Production, Consumption and Yield Values Worldwide between 2010-2022 (FAO 2025)

Years	Production (Ton)	Production Area (ha)	Yield (kg/ha)	Consume Quantity (Ton)
2010	71.186.067	4.867.488	14.625	66.464.000
2011	77.071.416	4.955.219	15.554	67.593.000
2012	78.596.414	5.034.511	15.612	69.361.000
2013	82.828.473	5.110.945	16.206	70.756.000
2014	85.344.326	5.088.916	16.771	71.778.000
2015	82.366.222	5.168.984	15.935	71.060.000
2016	85.093.152	4.855.277	17.526	76.647.000
2017	83.083.359	4.615.479	18.001	83.252.000

2018	85.837.296	4.610.494	18.618	82.575.000
2019	87.446.519	4.680.806	18.682	84.723.000
2020	90.610.775	4.682.875	19.349	85.957.000
2021	93.696.342	4.692.637	19.967	87.670.000
2022	95.610.870	4.652.317	20.551	93.012.000
Rate of Change Over the Years (%)	+34	-6	+40,5	+40

Comparison of Production and Consumption Quantities

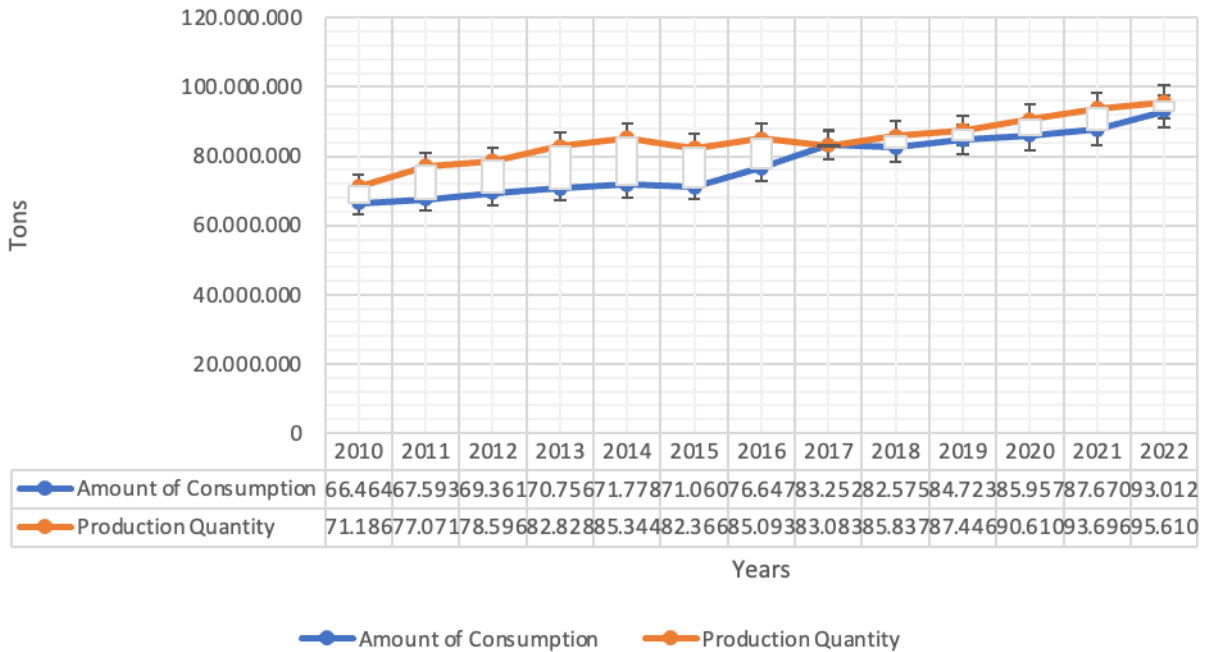


Figure 1. Apple Production and Consumption Values Worldwide between 2010-2022 (FAO 2025).

Ten countries account for 78% of global apple production. China and the USA rank first in apple production, while Türkiye ranks third with 4.6 million tons. These countries are followed by Poland, India, Italy, Iran, Russia, France, and Chile, respectively. In terms of yield, Türkiye is above the world average with a yield of

27.4 tons/ha. China's leading position in production is due to its larger production area. Leading countries in yield include New Zealand (59.7 tons/ha) and Chile (50.8 tons/ha), followed by Switzerland, the USA, Libya and South Africa. Türkiye ranks nineteenth in yield (Table 2; Figure 1).

Table 2. Apple Production Quantity, Area, and Yield Values of Countries in 2024 (FAO 2025)

World Apple Production, Consumption, and Yield Values			
Countries	Production Quantity (Ton)	Production Areas (ha)	Yield (Kg/ha)
China	49.601.700	1.996.450	24.845
America	5.151.680	120.233	42.847
Türkiye	4.602.517	167.437	27.480
India	3.892.700	304.000	9.460
Poland	2.876.000	150.000	25.950
Italy	2.267.750	54.080	41.930
Iran	2.177.337	106.345	20.474
Russia	2.083.191	201.388	10.344
France	1.894.440	53.800	35.212
Chile	1.475.950	29.006	50.884

1.2. Apple Export and Import Situation

Apples are a type of fruit suitable for the taste and income levels of almost all people worldwide. For these reasons, they have found a wide trade area. It is the most widely traded and produced fruit in the world, and its consumer demand changes rapidly. Meeting this demand is not difficult for countries around the world that carry

out their production with intensive cultivation methods in a given area (Soylu 2003; Aras 2015).

The global trade situation of apples shows that apple exports were 7 million tons in 2006, reaching 8.6 million tons in 2010 and 8.4 million tons in 2022. In the past 16 years, the global export volume of apples expanded by 20%. As of 2022, 79.60% of world exports were carried out by ten countries. In world apple exports (five-year

average), China ranks first with 1,038,608 tons, followed by Italy, Poland, America and France. Türkiye ranks third in production volume and ninth in export volume (Table 3; Oğuz and Karaçayır 2009). In the past, most countries

with a significant share in apple production also ranked first in terms of exports; however, Türkiye was not among them. Today, our ranking in both production and export volume in the world has improved (Table 3).

Table 3. Apple export quantities of Major Apple Exporting Countries in the World (FAO, 2025)

Countries	Years				
	2022	2021	2020	2019	2018
Italy	885.329	920.271	935.424	927.808	685.991
China	823.127	1.078.352	1.094.492	1039.846	1.157.222
Poland	732.729	921.862	657.310	973.806	794.317
Iran	722.795	985.443	884.750	746.440	424.942
America (USA)	697.836	752.737	808.118	833.087	928.834
South Africa	625.044	589.185	508.451	469.110	448.626
Chile	602.534	644.442	659.920	673.684	778.961
Türkiye	380.491	354.560	211.492	257.470	238.330
France	342.489	308.226	407.812	381.350	431.158
New Zealand	340.762	355.799	401.188	390.976	369.388
Moldavia	188.644	206.123	193.505	218.218	216.074
Netherlands	167.711	194.881	236.395	197.439	247.662
Belgium	163.286	126.326	154.049	194.936	122.183
Serbia	148.077	179.639	173.098	217.000	144.747
Lebanon	114.424	93.337	50.229	39.498	62.066
Spain	109.520	117.415	143.778	129.554	119.870
World Total	7.727.379	7.418.067	7.770.282	8.087.793	6.997.937

World apple imports increased from 6,967,882 tons in 2006 to 7,727,379 tons in 2022. Over the 16 years, the volume of global apple imports expanded by 11%. As of 2022, 39.02% of world imports were carried out by ten

countries. While the most important importing countries have changed over the years, as of 2022. They are Germany, Russia, Iraq, India, and Great Britain (Table 4).

Table 4. Apple import quantities of Major Apple Importing Countries in the World (FAO, 2025)

Countries	Years				
	2022	2021	2020	2019	2018
Germany	537.846	606.143	637.567	613.630	658.027
Russia	489.855	615.999	651.480	702.123	843.463
Iraq	395.367	282.910	305.000	138.451	273.734
India	392.483	436.194	215.538	242.713	280.094
United Kingdom (Bri.)	322.163	327.473	346.369	331.556	361.743
Mexico	295.183	315.766	250.627	252.223	278.859
Netherlands	224.711	300.964	282.294	248.390	305.997
Spain	222.569	204.532	201.567	218.454	186.416
United Arab Emirates	215.482	181.467	144.641	161.121	169.855
Vietnam	208.614	108.275	97.213	95.022	60.373
Bangladesh	208.125	262.300	255.981	252.621	201.518
Canada	203.251	196.265	198.304	204.640	219.208
Egypt	182.316	174.491	165.254	237.593	347.343
Taiwan	182.163	188.428	188.752	149.265	142.216
Indonesia	175.519	189.363	148.705	164.805	163.385
Saudi Arabia	169.429	176.926	188.838	185.240	187.414
France	142.559	224.054	137.017	161.621	177.190
Chile	136.314	386.148	377.733	480.461	379.722
Brazil	129.986	50.978	107.320	78.459	75.121
World Total	7.727.379	7.418.067	7.770.282	8.087.793	6.997.937

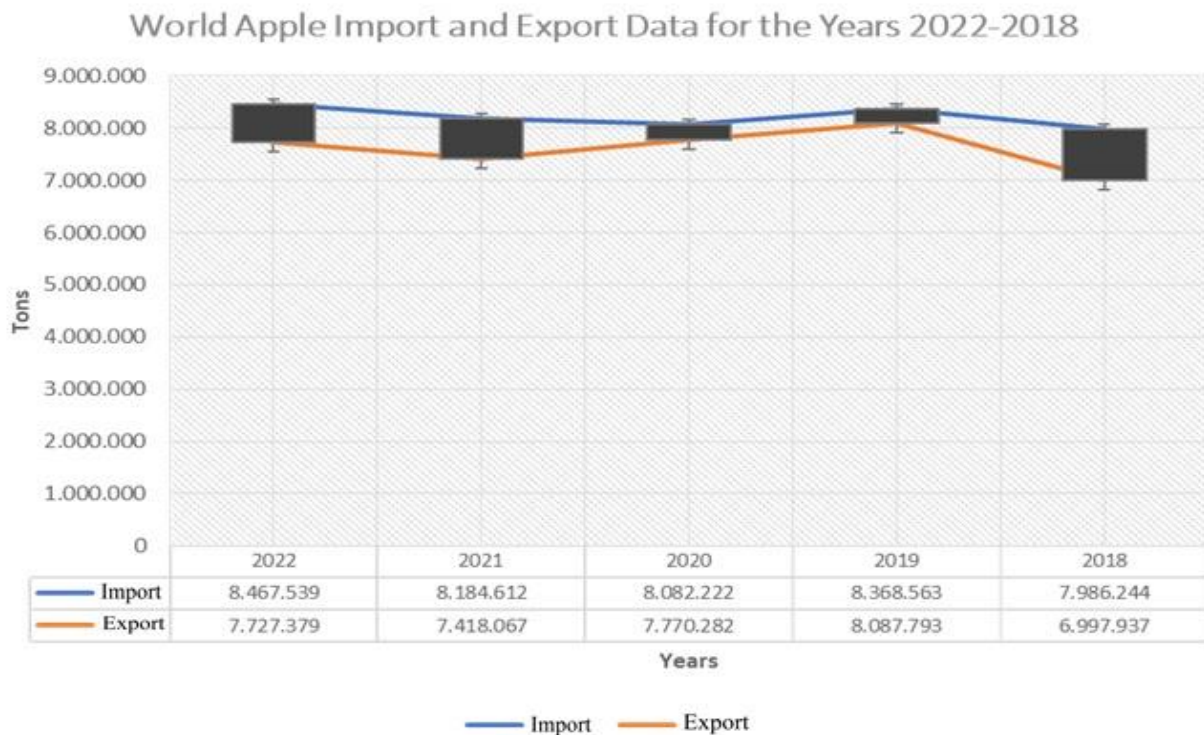


Figure 2. World apple import and export quantities from 2018 to 2022. (FAO 2025)

Generally, import intensity is high in developed countries and regions where apple cultivation is not possible. Looking at Figure 2, especially since 2018, the goal has been to consume fresh fruit within the country's borders and to limit its export as much as possible (Akin et al., 2020; Kayabaşı, 2020; Çakır et al. 2025). This has resulted in export and import trends remaining stable and not undergoing significant changes.

Worldwide apple prices were examined in terms of export and import prices for the period between 1998 and 2022. While the export price was \$515/ton in 1998, it rose to \$618/ton in 2006, \$928/ton in 2012 and \$984/ton in 2022. Looking at world apple import prices, we see that they increased from \$604/ton in 1998 to \$695/ton in 2006, \$956/ton in 2012 and \$1012/ton in 2022 (Niyaz 2011; Anonymous 2026; Table 5).

Table 5. World import and export quantities and values for the years of 2013-2022 (FAO 2025; Anonymous 2026)

Years	Import (Ton)	Import (1000 \$)	Export (Ton)	Export (1000 \$)
2022	8.612.658	8.475.214	8.584.796	8.028.152
2021	8.679.017	7.827.493	8.831.349	7.631.926
2020	9.533.274	7.509.273	9.556.385	7.072.302
2019	8.985.927	7.590.767	9.384.104	7.385.217
2018	9.385.845	8.127.893	9.655.668	7.791.172
2017	8.467.539	8.223.411	8.355.768	7.727.379
2016	8.184.612	7.596.465	9.082.801	7.418.067
2015	8.082.222	8.029.803	8.719.212	7.770.282
2014	8.368.563	8.640.587	9.089.026	8.087.793
2013	7.986.244	8.649.625	8.273.602	6.997.937
Rate of Change Over the Years (%)	+7,84	-2	+3,76	+14,72

3. APPLE PRODUCTION SITUATION IN TÜRKİYE

3.1. Production and Consumption Situation in Türkiye

Fruit production in Türkiye is a significant activity for feeding the population, supplying raw materials to fruit processing industries and contributing to foreign trade. A 16% of Türkiye's agricultural land is used for fruit, olive and vineyard production, yielding approximately 28

million tons of fruit annually. Pome fruits constitute 38% of this production, with apples accounting for 41% of pome fruit production. Apples are the fruit with the highest production value in Türkiye after grapes and olives (TÜİK 2025; Karakaya and Kızıloğlu, 2022; Anonymous, 2021). From 1998 to 2007, the number of fruit-bearing apple trees in Türkiye increased by 19.8%, while the number of non-fruit-bearing trees increased by 47%. From 2010 to 2024, the number of fruit-bearing trees increased by 96%, and the number of non-fruit-bearing trees increased by 39%. During the same years,

yield per tree decreased by 14.7%, while the production area increased by 0.14% (Table 6; TÜİK 2025)

Table 6. Number and Yield of Apple Trees with total production quantities in Türkiye between 2015-2024 (TÜİK, 2025)

Years	Number of Fruit-Bearing Trees	Number of Non-Fruit Bearing Tree	Total Number of Trees	Yield (kg/Tree)	Production (ton)
2015	52.272.199	18.423.511	70.695.710	50	2.569.759
2016	55.584.623	17.834.785	73.419.408	53	2.925.828
2017	55.771.140	18.951.942	74.723.082	53,4	3.032.164
2018	61.288.452	15.004.981	76.293.433	58,6	3.625.960
2019	64.558.375	14.826.378	79.384.753	57,6	3.618.752
2020	66.475.351	14.456.361	80.931.712	66,6	4.300.486
2021	72.320.753	14.295.869	86.616.622	63,2	4.493.264
2022	75.913.129	14.165.156	90.078.285	64,4	4.817.500
2023	80.308.767	16.015.581	96.324.348	60,8	4.602.517
2024	81.128.573	18.003.726	99.132.299	59,2	4.420.185
Rate of Change Over the Year (%)	+55,2	-2,2	+40,2	+18,4	+72

Türkiye is one of the leading apple-producing countries in the world. Apple cultivation is carried out in almost every region. Examining the data from the last 10 years, although there are fluctuations in apple production in Türkiye, the average can be said to be 3,840,642 tons. The apple production area is 165,319 hectares and the production quantity is 4,420,185 tons in 2024 (Table 6). The average yield per hectare is 26.7 tons/ha, which is above the world average (FAO, 2025).

Türkiye is self-sufficient in terms of apple resources but has also reached its natural limits in terms of apple cultivation areas. Although the increase in apple production in Türkiye is no longer dependent on the production area, it may increase again depending on the yield. Considering that consumption amount will increase in direct proportion to the population, alternative ways to reduce the need for apple consumption should be sought in addition to increasing the yield per unit area of apples (Kayabaşı, 2020; Doğan, 2020).

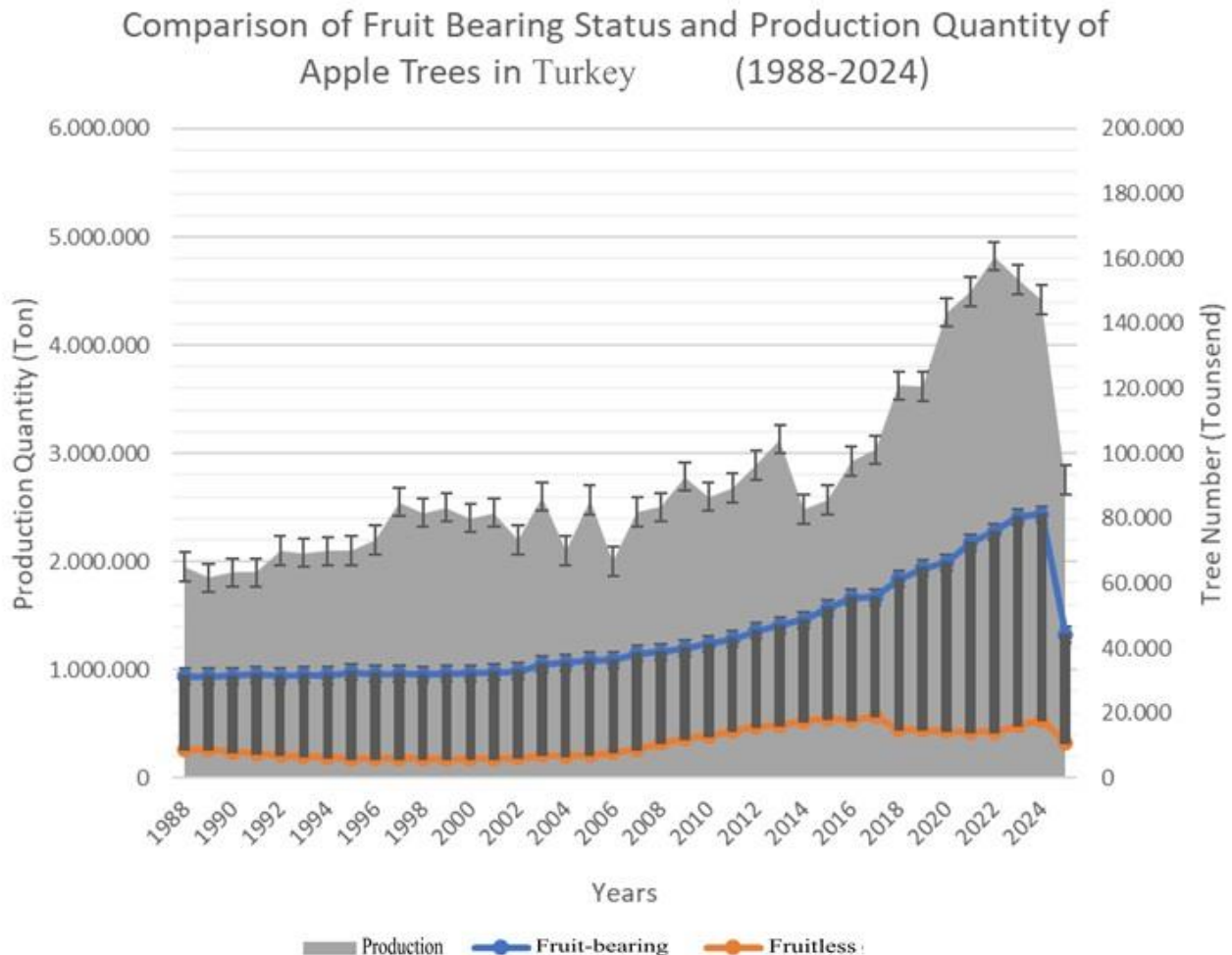


Figure 3. Fruit-Bearing Status and Production Quantities of Apple Trees in Türkiye

Apple cultivation is carried out in all cities of Türkiye, but it has become concentrated in certain regions, especially in recent years. Businesses engaged in commercial apple production aim to obtain more yield per unit area by applying new techniques and technologies. According to 2023 data, 78% of apple production in Türkiye takes place in ten cities. Isparta

city ranks first in apple production, accounting for 23.1% of Türkiye's total production. Karaman city, although varying due to seasonal factors, ranks second after Isparta with an apple production potential of over 686,889 tons, accounting for 15.0% of Türkiye's total apple production (Table 7; TÜİK 2025).

Table 7. Apple Quantity by Province and Production Shares in Türkiye in 2024 (TÜİK, 2025)

Cities	Production Quantity (Ton)	Türkiye Production Ratio (%)
Isparta	1.019.904	23,1
Karaman	686.889	15,0
Niğde	619.371	14,0
Antalya	461.468	10,0
Kayseri	262.835	6,0
Konya	201.513	4,5
Mersin	145.940	3,2
Denizli	115.216	2,6
Çanakkale	99.706	2,2
Kahramanmaraş	84.339	1,9
Total of Ten Cities	2.750.920	62,2
Total	4.420.185	100,0

3.2. Apple Export and Import Situation in Türkiye

A 9.13% of apples produced in Türkiye are exported. While Türkiye ranks 9th in the world in apple production, the export ratio within its production volume may seem low; however, it is in a very good position compared to other countries' exports. Although it varies from year to year, apple imports into Türkiye are very

low. As of 2023, the amount of apple imports was 367 tons and its value was \$195,000 (Figure 4). Table 8 indicates the fluctuations in Türkiye's apple imports and exports in terms of both quantity (tons) and monetary value (\$1000). While the amount of exports and imports in Türkiye was below the world average in the past, it is currently well above the world average.

Table 8. Apple Import and Export Quantities and Values in the Türkiye (FAO 2025)

Years	Import (Ton)	Import (1000 \$)	Export (Ton)	Export (1000 \$)
2019	1.731	945	257.471	90.404
2020	1.146	622	211.493	110.912
2021	998	465	354.560	178.718
2022	765	299	380.492	166.488
2023	367	195	370.836	175.377

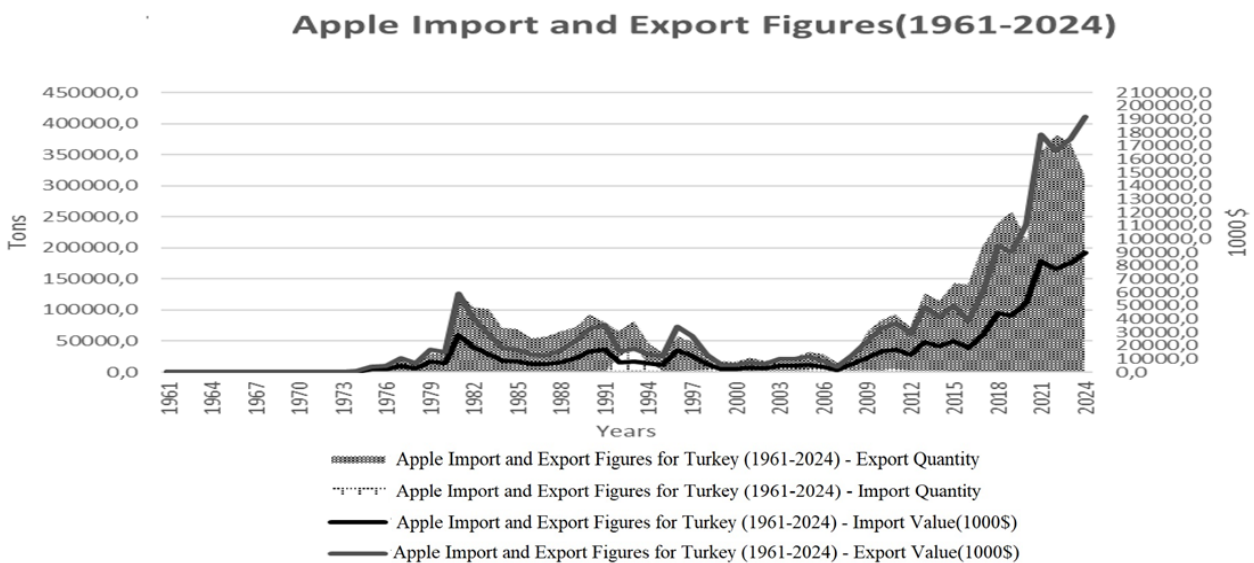


Figure 4. Current Status of Apple Exports and Imports in Türkiye (FAO 2025)

3.3. Apple Production Status in Karaman City

Of Türkiye's 46 million hectares of agricultural land, 3.8 million hectares are used for fruit production. Karaman city accounts for 40,674 hectares of this area. According to 2024 data, total fruit production in Karaman is 793,987 tons (TÜİK 2025).

The establishment of economically valuable apple orchards in Karaman province began in the 1995s and in parallel with developments in the world and in Türkiye. It has rapidly increased in recent years with new varieties, rootstocks and innovations, becoming a source of livelihood for Karaman farmers. After 2000, the old

classical system was completely abandoned and it is observed that fully dwarf and semi-dwarf apple orchards were established with apple varieties accepted in Türkiye and world markets, such as Starking Delicious, Grammy Smith, Karaman Yeşili, Starkspur, Golden Delicious, Elshof, Starkrimson, Braeburn, Mondial Gala, Gala, Topred, Pnova, Jonaa, Summerred, and Vistabella (Oğuz and Karaçayır 2009). In apple production, Starking has the largest share (47%), followed by Granny Smith (32%) and Golden delicious (13%). According to 2024 data, with 15 million fruit-bearing apple trees and 686 thousand tons of apple production, Karaman is a major player in Türkiye's apple production (TÜİK 2025).

Table 9. Apple Tree Population and Production Quantity in Karaman City (TÜİK 2025; Anonymous 2025)

Years	Number of Fruit-Bearing Trees (Number)	Product (ton)
2020	9.421.453	492.353
2021	10.145.515	535.350
2022	12.977.948	752.045
2023	12.824.225	713.190
2024	12.790.320	686.889
Rate of Change Over the Year (%)	+35,7	+39,5

Looking at apple production figures for 2022, a significant decrease in production is observed in 2023. During these years, frosts caused by climate change severely damaged flowers and buds, resulting in lower yields and financial losses. Fruit farming is an agricultural activity that requires considerable labour and knowledge. Training programs for producers on cultivation techniques are becoming increasingly important. Agricultural extension, through collaboration between producers, extension workers, researchers and the private sector is an indispensable solution to ensure producers practice informed farming. While the internet has become more accessible for information, significant doubts about the accuracy and timeliness of online information lead us back to the fact that information obtained from experts is more beneficial.

4. CONCLUSION AND RECOMMENDATIONS

The demands of the agricultural and food sector in Türkiye have changed over the years. Thirty years ago, economic development prioritized the production of larger quantities of higher-quality products suitable for export; however, especially after the pandemic and quarantine period, the focus shifted to self-sufficiency, the planned and sustainable production of limited resources. Similarly, apple cultivation has also benefited from this transformation. Thirty years ago, apple cultivation was seen as a sector aimed at increasing development and prosperity, with primary goals such as increasing production areas, increasing the amount of product obtained per unit area and generating more income per unit of product through export. These goals were largely achieved during that period. However, as with food and agricultural products, the demands in the apple sector have changed in the post-pandemic period. Instead of expanding apple production areas, the goal is

to achieve planned production that will yield more product per unit area, sufficient for the country's own consumption. The main aim behind these shifts in goals stems from the strategy of countries to provide sufficient products to their populations with limited resources without relying on external inputs, given their rapid population growth. The country's fundamental strategy is to be independent of external dependencies in the event of any quarantine or war within the current global order.

Especially for apples, which consume a lot of water and require large production areas, has become the general strategy by producing enough apples to meet the needs of the country's population in smaller areas and consuming with less water. Developed countries produce vital products domestically, export water-intensive products to other countries and some even resort to long-term land leasing and production from other countries for agricultural purposes.

During this process, Isparta, Karaman, Niğde and other cities in Türkiye, which are important apple-producing regions, have undergone agricultural changes. Especially in Isparta city, which has positioned its apple production on the Lake Eğirdir and its surroundings, the shrinking area of the lake basin has led to a tendency towards alternative products that require less water (Anonymous 2016b; MGM 2026). Niğde city, with its high rainfall regime and climate structure, has focused on apple production, but the recent decrease in rainfall signals a change in crop type for the future (Anonymous 2016c ; MGM 2026). Karaman city has based its development primarily on industry (food, packaging etc. sectors) and packaged grain products; fresh, unprocessed agricultural products have remained in the background as an economic sector. It has modern apple orchards built in recent years, where cultivation is easier in the agricultural areas within its borders (KTS 2026a; KTS

2026b). At the same time, the presence of Göksu River and its surroundings, which provides irrigation support to the Konya Zone and the fact that Karaman city is continuously supplied with fresh moisture from the Mersin-Mut Zone with its Mediterranean climate via the Sertavul Galleon, means that even with a low rainfall regime, it has been a region that is constantly supplied with water due to its continental climate rainfall regime (Anonymous 2016a; MGM 2026). This has made Karaman city suitable for apple cultivation both socio-economically and climatically. Furthermore, by creating modern orchards and implementing conscious production methods, the high-quality standards of the products have led to the majority of apples from Karaman city being considered as export products (Ataseven et al. 2022).

Based on the data and statistical figures obtained, it is foreseeing that apple cultivation in Türkiye will continue in this direction.

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