



## PRODUCTION AND MARKETING OF WALNUT IN ÇAĞLAYANCERİT DISTRICT OF KAHRAMANMARAŞ PROVINCE

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**Abstract:** This study was conducted to evaluate the current situation of walnut production and marketing in Çağlayancerit district of Kahramanmaraş province, which has an important place in terms of walnut cultivation in Türkiye. Within the scope of the study, secondary source walnut production data of Turkish Statistical Institute (TURKSTAT) were used. In addition, verbal interviews were conducted with producer and NGOs. In the research, SWOT analysis was conducted by examining the secondary data of producer and NGOs. Walnut production in Çağlayancerit increased from 520 decares in 2004 to 35,000 decares in 2023. The increase in walnut production area between these years is calculated as 149%. According to 2023 data, approximately 6,750 tonnes of shelled walnuts was produced in 35,000 decares. With these values, Çağlayancerit is the district with the highest walnut production area and amount among the 11 districts of Kahramanmaraş. Interviews with professional chambers and local people revealed that the walnut genotype, which has been cultivated in the region for many years, was registered by selection breeding and included in the National variety list by the Central Directorate of Seed Registration and Certification of the Ministry of Agriculture and Forestry of the Republic of Türkiye in 2009 under the name of 'Maraş 18'. While 'Maraş 18' variety was known only by the people of the region before 2009, today it has become a variety known all over Türkiye and even the world. As a result of the SWOT analysis of the interviews with the NGOs and producers of the region; being in a good geographical location in walnut production, being in the position of walnut gene centre, carrying out production activities according to the land conditions, having academic experts in the region on walnut production and cooperation can be considered as strengths. When we look at the weaknesses; climate change, global warming, decrease in groundwater in recent years, deterioration of the ecological balance of the region, spread of plant diseases and pests, increase in input costs, decrease in the number of experienced farmers, lack of cooperatives and unions, insufficient promotion of the district walnut. For Çağlayancerit walnut production and marketing to gain momentum, it will be beneficial to increase the regional incentive investments by the state and private sector and increase the number of cooperatives/unions. The active use of the existing walnut processing and packaging facility will also contribute to the branding process of the walnut in the region. In addition, it is thought that the recognition of the region with this variety will increase by focusing on the advertising and marketing activities of the name 'Maraş 18' in the domestic and foreign markets.


**Keywords:** Çağlayancerit, Walnut, Production, Marketing

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### 1. Introduction

Walnut (*Juglans regia* L.) is one of the temperate climate fruits in the *Juglandaceae* family. There are approximately 60 different species of walnut worldwide, 21 of which belong to the genus *Juglans* (Ahmad et al., 2018). The origin of walnut is thought to be in the Ghilan region of Iran on the Caspian Sea coast. However, *J. regia*, which is native to Central Asia, grows naturally and is cultivated in a wide area from the southern parts of the former Soviet Union to China, the Eastern Himalayas, Southeastern Europe and the Caucasus (Britton et al., 2007). Today, walnut is widely grown all over the world except in tropical regions. It is believed that historical

migrations, trade caravans and natural spread have greatly contributed to the widespread distribution of walnuts as a fruit species (Budak, 2010).

According to the World Food and Agriculture Organization (FAO), 5.274.025 tonnes of shelled walnuts were produced from a total area of 1.604.593 hectares worldwide in 2022. In walnut production, China is the world leader with 1.400.000 tonnes of walnut in shell on 356.656 hectares. China (47%) and USA (23%) realize more than half of the world's walnut production. Iran ranks third with 12% production, while Türkiye ranks fourth with 11% (FAO, 2024).



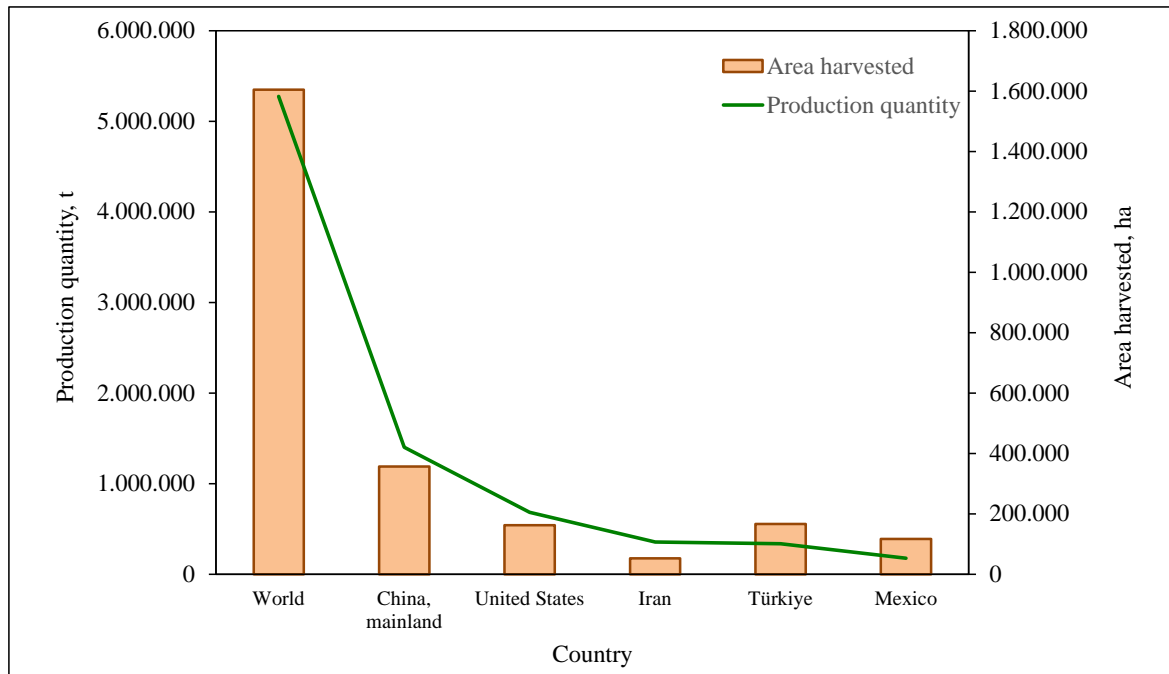


Figure 1. Production amount and area of 5 world walnut-producing countries (FAO, 2024).

Walnut is considered a dried fruit with high nutritional value (Güvenç and Kazankaya, 2019; Özcan et al., 2020, Arcan et al., 2021). Walnut kernel contains approximately 65% to 70% unsaturated fatty acids and 14% to 16% protein (Özcan and Sütyemez, 2019; Sütyemez et al., 2022). Walnut contains minerals such as iron, zinc, copper, magnesium, phosphorus and potassium (Yıldız and Sümbül, 2019). Walnut plays an important role in brain health, brain development and learning processes of children thanks to the silver ions it contains (Vural, 2021). Walnut is reported to prevent blood clotting, reduce the risk of coronary heart disease, reduce triglyceride and cholesterol levels, provide high energy and support metabolism by facilitating digestion. In addition, the green husk of walnut is used in the pharmaceutical and chemical industry (Şahin, 2005; Ketenci and Bayramoğlu, 2018; Anonymous, 2024a;b).

Different components of walnuts are used in various sectors. Both the shell and the wood of the walnut are utilized in various applications. Due to its hard, durable structure, walnut wood is a valuable timber material in furniture and parquet production. In regions such as Kahramanmaraş, walnut wood is especially used in the traditional art of carving. This art is considered as an important cultural heritage with its hand workmanship and detailed carving techniques (Çalış, 2014; Polat and Dindaroğlu, 2014). Walnut shells, kernels, and leaves are valuable raw materials. Walnut kernels are primarily used for walnut oil production, while walnut leaves find applications in the production of industrial products such as paints, paint solvents, and abrasives. Additionally, walnut leaves are known to have applications in traditional medicine due to their potential therapeutic properties.

In addition to being consumed as a snack, the kernel of

walnut is used in many dishes, salads and desserts. Many food products such as walnut ‘Sucuk’, ‘Pestil’, ‘Samsa’, ‘Köme’, jam, walnut bread, and cakes constitute a wide range of walnut use. Walnuts, especially used in baklava production, has become an indispensable component of traditional desserts in Türkiye (Özçağırın et al., 2007; Şen, 2011; Yücer, 2013; Bou Abdallah et al., 2016; Şimşek and Gürsoy, 2016; Vural, 2021; Öztürk et al., 2023).

In Türkiye, walnut was cultivated as a border marker in home gardens or field edges in the past years, but nowadays, interest in this species has increased and modern orchards have been established and conscious cultivation has started to be carried out (Sütyemez, 2000; Haskınacı, 2003). Walnut production is an important source of livelihood for people living in rural areas. Walnuts are also important as an export product for countries. Countries with significant shares in walnut exports can earn foreign currency by exporting walnuts and positively contribute to their foreign trade balance. Walnut cultivation can become a sustainable agricultural policy when it is managed properly (such as an orchard) with the support of experts in the field. Thus, high-yielding products can be obtained with a minimum cost ratio.

In terms of agricultural income source and local economic development, walnut is known as an agricultural product with high returns. For this reason, it economically contributes raw materials to different sectors, especially the agricultural sector. The processing of products obtained from walnuts (nut, timber, etc.) supports the development of local businesses and the service sector and strengthens local communities (Unions, Cooperatives, Professional Chambers, etc.). Thus, the national and international marketing of walnuts significantly contributes to the development of

the local economy (Hisarlı, 1989; Ketenci and Bayramoğlu, 2018).

The walnut production conditions of Kahramanmaraş province and its districts, which have an important place in walnut production activities in Türkiye, were examined in detail in this study. This study was conducted to identify the challenges faced in walnut production and marketing in the Çağlayancerit district of Kahramanmaraş, a key region for walnut production in Türkiye, and to propose potential solutions.

## 2. Materials and Methods

In this study, walnut production data for the year 2023 from the Turkish Statistical Institute (TURKSTAT) and walnut import-export data for the year 2022 from the Food and Agriculture Organization (FAO) were utilized. Additionally, secondary data from the producer and NGOs were examined and a SWOT analysis was conducted. Within the scope of the findings, the current and future status of walnut production and marketing in the Çağlayancerit district of Kahramanmaraş province was evaluated.

## 3. Results and Discussion

Walnut, which has a geographical history, distribution area and commercial importance, is widely produced in a

large part of Europe and Asia. Türkiye is among the gene centre's of walnut (Sütyemez and Eti, 2001; Ketenci and Bayramoğlu, 2020).

Türkiye is an important country with a large production area in walnut cultivation. Walnut production in Türkiye is carried out in almost all regions. Türkiye's walnut production area in 2019 was approximately 1 million 246 thousand decares and 225 thousand tonnes of production was realized. The walnut cultivation area is determined to be 1 million 741 thousand decares by 2023. There are approximately 30 million walnut trees in this area. 57% of these trees are bearing and 43% are non-bearing trees. In 2023, 360.000 tonnes of walnuts were produced in Türkiye (Figure 2). Although there has not been a great expansion in the production area of Türkiye over the years, it is seen that the increase in the amount of production is significant. The amount of walnut production is expected to increase significantly once the non-bearing trees reach maturity. However, Türkiye is still not self-sufficient in walnut production. For Türkiye, which is suitable for walnut cultivation, to become self-sufficient, proper planning is required. With this planning, we believe that we will be in a leading position in walnut production, just as we are with other fruit species such as cherry, hazelnut and apricot.

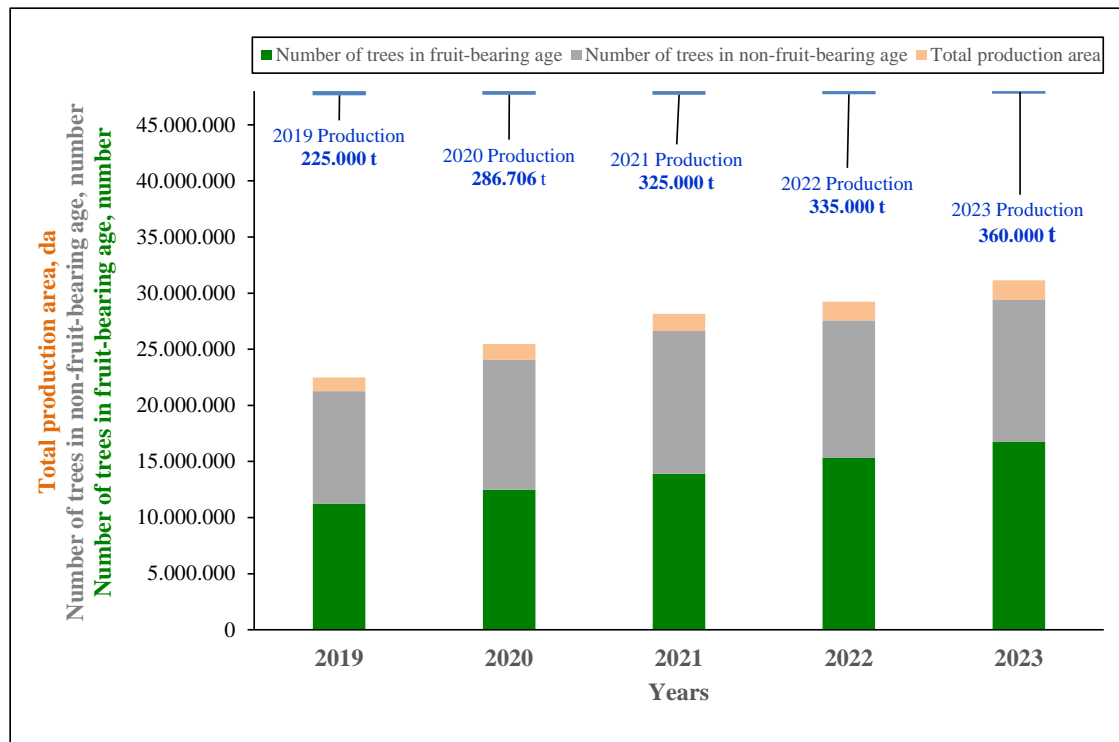


Figure 2. Walnut production values in Türkiye (TURKSTAT, 2024).

The density of walnut production by province in Türkiye for 2023 is shown in Figure 3, using color coding. When the map is examined, it is seen that walnut production is high in the Aegean, Marmara, Mediterranean, South Eastern Anatolia and Central Black Sea regions. At the provincial level, it is determined that 17 provinces

produce more than 6.818 tonnes of walnuts. The highest production is in Kahramanmaraş, which holds an important position in Türkiye with 18.330 tonnes of walnut production. Bursa follows Kahramanmaraş with 18.018 tonnes of production. Bilecik ranks third with 17.800 tonnes, Denizli ranks fourth with 15.083 tonnes

and İzmir ranks fifth with 14,785 tonnes (TURKSTAT, 2024). These data reveal that walnut cultivation is widespread in Türkiye and the intensive production in different provinces reveals the importance of the walnut

industry throughout the country. The concentration of walnut production in various provinces emphasizes the potential and diversity of the walnut industry in Türkiye.

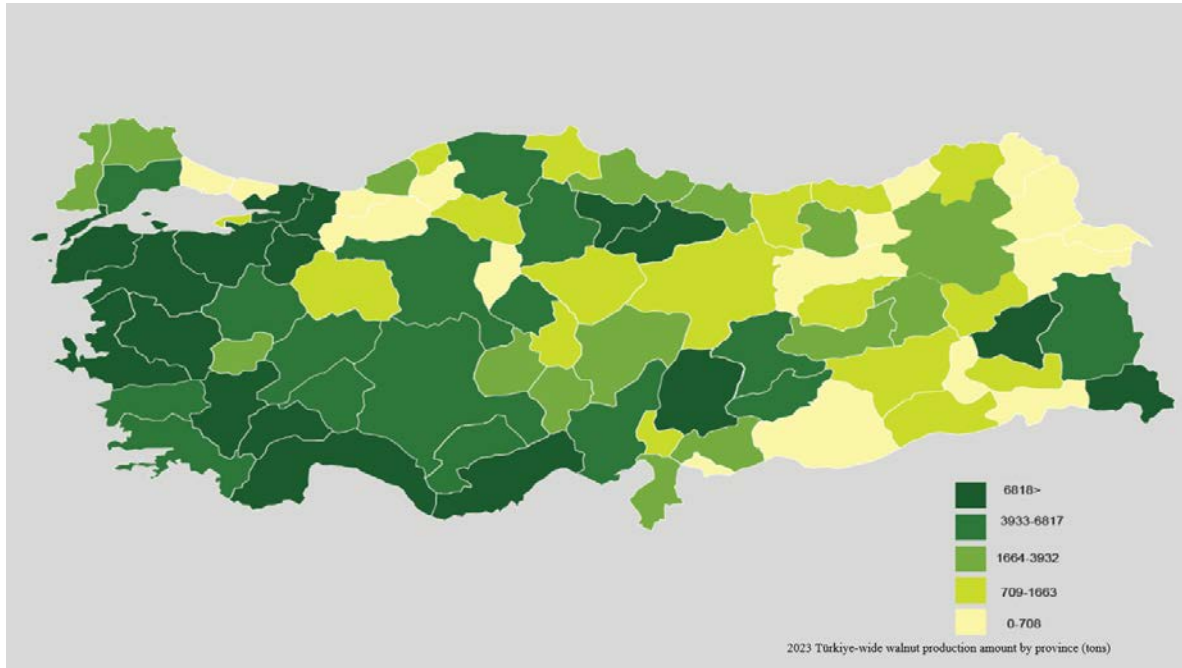


Figure 3. Walnut production map by provinces in Türkiye (2023).

World walnut export and import values in 2022 are presented in Table 1 and 2, respectively. The walnut trade in the world is carried out as nut and kernel nut. In 2022, approximately 528.000 tonnes of shelled walnuts were exported worldwide and a value of approximately \$1,5 billion was obtained (Table 1). The United States holds the highest share in global in-shell walnut exports by value and is the world leader in these exports. The shelled walnut exports of our country are almost non-existent and the exports are not regular. Türkiye exported around 19,5 tonnes of shelled walnuts in 2022 and obtained \$493.422.

Türkiye exports walnuts to countries such as Iraq, Azerbaijan, Syria, Egypt and Morocco. Türkiye is one of the largest markets for the USA, the world leader in

shelled walnut production. The main reasons why The United States is the world leader in exports are that it attaches importance to standard walnut diversity consisting of orchards and has established the first producer association under the name of ‘California Walnut Growers Association’ as a solution to marketing and profitability problems (Hardesty, 2009). Türkiye ranks first among the walnut-importing countries in 2022. This indicates that Türkiye is a leading supplier in the global walnut trade and the USA is a major walnut exporter. Trade data show that the walnut industry is an important economic activity on an international scale and that trade between various countries is intensive (Kadakoğlu et al., 2022).

Table 1. World walnut export values in 2022

Countries	Nut		Conturies	Kernel nut	
	Value (000 \$)	Production (tonnes)		Value (000 \$)	Production (tonnes)
USA	404514	11294766	Usa	882343	154002
Chile	261111	9048118	Mexico	465981	42261
China	188317	842032	Chile	213722	34891
UAE	153126	5851311	China	201038	44499
Mexico	61349	1333546	Ukraine	75308	20064
Türkiye	49396	1927393	Türkiye	54934	8228
World	1439422	52795930	World	2533093	420578

**Table 2.** World walnut import values in 2022

Countries	Nut		Countries	Kernel nut	
	Value (000 \$)	Production (tonnes)		Value (000 \$)	Production (tonnes)
Türkiye	160172	69779	Germany	348040	53134
UAE	145618	61464	Japan	114999	17997
Italy	86926	30527	Spain	140230	19414
Mexico	126254	31422	Korea	90402	14629
Iran	111717	38904	Netherlands	103549	16826
World	1077427	429463	World	1905327	330350

Türkiye’s low competitiveness in walnut foreign trade is thought-provoking. Although Türkiye has been in the top five in the world ranking in walnut production for many years, it is still not a self-sufficient country. This situation is the result of repeating the mistakes made for years in walnut cultivation and not taking precautions.

Türkiye is one of the few countries in the world with a very high potential for cultivating horticultural crops and is recognized as the gene center for many fruit species (Kaşka et al., 2005).Walnut, which has an important place among these fruits, has important populations in various ecological regions of Türkiye (Bayazıt and Sümbül, 2012). However, although Türkiye is the gene center and homeland of walnut worldwide, it is not at a sufficient level in terms of production and export. The products produced cannot meet the domestic market consumption. In recent years, in addition to the incentives given by the state, the establishment of the orchards, the provision of consultancy services to farmers with experts on walnut production and the investment of the private sector in walnut cultivation

have made walnut production more important (Özçağiran et al., 2007; Şen, 2011; Yücer, 2013; Ketenci and Bayramoğlu, 2018; Güvenç and Kazankaya, 2019).

In Kahramanmaraş, there are approximately 1 million 453 thousand walnut trees in an area of 110.385 decares as of 2023. While 62% of these walnut trees are fruit-bearing trees, 38% are non-fruit-bearing trees. In 2023, 18.330 tonnes of walnuts were produced in Kahramanmaraş. This value constitutes 5% of Türkiye’s walnut production. The walnut tree area in Kahramanmaraş constitutes 6% of the total area of Türkiye. The average walnut yield per tree in Kahramanmaraş was determined as 20 kg/tree. This value is slightly below the average of Türkiye (22 kg/tree) (Table 3). The main reasons for Kahramanmaraş’s walnut production being below the average in Türkiye are the high rate of sapling planting, the presence of young trees that have not yet produced fruit, insufficient maintenance in the orchards and some unconscious agricultural practices.

**Table 3.** Walnut production amounts by provinces in 2023 (TURKSTAT, 2024)

Provinces	Production amount (tonnes)	%	Production area (da)	%	Bearing (Number)	Non-Bearing (Number)	Yield per tree (kg/tree)
Kahramanmaraş	18330	5	110385	6	899350	553600	20
Bursa	18018	5	93779	5	671458	860430	27
Bilecik	17800	5	58043	3	671514	256257	27
Denizli	15083	4	127707	7	998894	977895	15
İzmir	15043	4	36262	2	412560	144078	36
Mersin	14785	4	36740	2	393012	126743	38
Çanakkale	14711	4	45062	3	531448	256651	28
Balıkesir	14332	4	101616	6	763726	909844	19
Tokat	12266	3	44754	3	565557	447736	22
Manisa	10338	3	113922	7	705421	1160939	15
Antalya	9681	3	24919	1	325839	127836	30
Burdur	9126	3	42488	2	413794	240009	22
Sakarya	8677	2	32804	2	330992	195640	26
Hakkâri	8147	2	25877	1	378845	241298	22
Amasya	7230	2	26644	2	287007	192405	25
Bitlis	7036	2	51240	3	258455	270370	27
Kocaeli	6849	2	20582	1	259525	83918	26
Van	6817	2	29719	2	222660	221120	31
Adana	5887	2	14814	1	246000	66148	24
Adıyaman	5711	2	25365	1	234802	73573	24
Total Province	225867	63	1062722	60	9570853	6245551	
Türkiye	360000	100	1740796	100	16777339	12627698	



Kahramanmaraş has 11 districts, two of which are in the center. Walnut cultivation is carried out in the agricultural lands of all districts. However, Çağlayancerit district has a different position from other districts in walnut cultivation. Because almost only walnut is grown in all orchards in the region. Almost all of the walnuts grown in the district are of a single variety (Maraş 18). According to TURKSTAT data of 2023, there are approximately 410.000 walnut trees in an area of 35.000 decares in Çağlayancerit. Of these walnut trees, 89% are fruit-bearing and 11% are non-fruit-bearing trees. In 2023, 6.750 tonnes of walnut was produced from this area. Çağlayancerit accounts for 37% of Kahramanmaraş walnut production and 32% of total planted walnut

areas. The average walnut yield per tree in Çağlayancerit (18 kg/tree) is below the average of Kahramanmaraş (20 kg/tree) and Türkiye (22 kg/tree).

According to TURKSTAT data in 2023 (Table 4), Çağlayancerit district has the highest ratio in terms of the number of bearing trees and production area (da) compared to other districts of Kahramanmaraş. However, this situation is different in terms of production and yield per tree. It was determined that yield per tree (kg/bearing) ratios were higher in Andırın and Afşin districts. It is predicted that these regions will make significant contributions to walnut production in the future. Nurhak district of Kahramanmaraş has the lowest production compared to other districts.

**Table 4.** Walnut production values of Kahramanmaraş districts in 2023 (TURKSTAT, 2024)

Districts	Production amount (tonnes)	Bearing (Number)	Non-Bearing (Number)	Production Area (da)	Yield per tree (kg/tree)
Çağlayancerit	6750	365000	45000	35000	18
Andırın	3559	110000	137000	9000	32
Dulkadiroğlu	2499	135150	50000	16335	18
Onikişubat	1372	87300	123010	15600	16
Pazarcık	1317	75000	29500	7800	18
Ekinözü	928	45650	13500	4050	20
Afşin	744	23000	37100	5500	32
Elbistan	536	29000	29000	6000	18
Türkoğlu	322	15150	24190	3000	21
Göksun	211	9100	56800	7100	23
Nurhak	92	5000	8500	1000	18

Information on walnut production (tonnes), the number of bearing and non-bearing trees (number), area of collective orchards (da), and yield per tree (kg) in Türkiye, Kahramanmaraş, and Çağlayancerit are provided in Table 4. When evaluated over the years, walnut production has increased both in Türkiye as a whole, in Kahramanmaraş province, and the Çağlayancerit district. While 126 thousand tonnes of walnut was produced in Türkiye in 2004, this figure increased to 360 thousand tonnes in 2023. Similarly, the amount of walnut production in Kahramanmaraş province, which was 4.836 tonnes in 2004 and 497 kg in Çağlayancerit district, has increased significantly in 2023. These rates have increased to 18.330, 6.750 tonnes in Kahramanmaraş and Çağlayancerit, respectively (Table 4).

The contribution of the scientifically identified/proven brand variety is very important in the acceleration of walnut production area and amount in Çağlayancerit in the last 10 years. A local genotype (Maraş 18) grown in the center and southern districts of Kahramanmaraş was selected by fruit breeder Prof. Dr. Mehmet SÜTYEMEZ at Kahramanmaraş Sütçü İmam University and adaptation studies were carried out for many years. This local genotype was registered as 'Maraş 18' in the national variety list by applying to the Seed Registration and Certification Centre Directorate of the Ministry of

Agriculture and Forestry of the Republic of Türkiye in 2009. With this important step, the local genotype of Kahramanmaraş was taken under protection and became a variety known all over Türkiye. In addition to the existing orchards established with this variety in Çağlayancerit, new ones were established rapidly. The reasons for the preference of 'Maraş 18' walnut throughout the district are that the shelled fruit weight is approximately 13-15 g, the kernel weight is 7-9 g and the kernel percentage is between 53-57%. In addition, the fact that 'Maraş 18' nuts have a unique flavor is the most important feature that distinguishes the variety from other varieties. The variety is resistant to pests and the kernel is easily separated from the shell (Sütyemez, 2016).



Registration Year	2009		
Breeding Method	Selection		
Breeder	Mehmet Sütyemez		
Some Plant Characteristics			
Tree Crown Structure	Semi-upright		
First Leafing	Medium		
Flowering	Protoandry		
Yield	Intermediate		
Harvest Time	Early		
Leaf Fall	Early		
Some Fruit Characteristics			
Nut Weight	13-15g	Kernel Weight	7-9g
Fruit Size	Extra	Kernel Percentage	53-57%

Figure 4. Characteristics of Maras 18 variety (Sütyemez, 2016)

Walnut production in Çağlayancerit increased from 520 decare in 2004 to 35.000 decare in 2023 (Table 4). It is calculated that there is a 149% increase in walnut production area from 2004 to 2023. When the number of bearing trees (number) is analyzed, there has been an increase in Türkiye (average 10.594.993), Kahramanmaraş (average 521.018) and Çağlayancerit (average 167.561). However, the number of non-bearing trees did not show a similar increase. The important reasons for this situation can be listed as the decrease in the areas where new orchards will be established in the region, extreme heat with climate change, the negative effects of drought, not finding enough irrigation water, and the increase in the presence of diseases/pests. In general, there have been fluctuations in walnut production in Türkiye, Kahramanmaraş and Çağlayancerit district. When the yield per tree (kg/tree) ratios are analyzed, there have been changes according to years (Table 5).

In the study conducted by Aytakin et al. (2022), as a result of the survey conducted with 90 walnut producers in the Çağlayancerit, 88,90% of the producers stated that they did not receive any training on walnut cultivation, 53,33% were members of a producer organization, 54,44% benefited from agricultural supports and 95,56% did not have agricultural insurance. In the same study, almost all of the producers (95,56%) stated that they benefited from the foreign labor force in walnut production and that they were satisfied with walnut prices (98,90%), and it was stated that the most important reason for the producers to produce walnut was the price and market advantages (77,78%). It was concluded that 44,44% of the producers sell their walnuts in the neighborhood market and 35,56% of them sell them through traders. The most important output of this study is that walnut is produced and marketed informally in the region. This situation causes a lack of accurate information about the real walnut potential of the region.

Marketing is defined as a set of processes and an organizational function for managing customer relationships, creating, promoting, and delivering value to customers in a way that benefits the business and its stakeholders (Gundlach and Wilkie, 2009). Philip Kotler defines marketing as a social and managerial process by which individuals and groups obtain what they need and want by creating, offering and exchanging valuable products with others (Akhmadi, 2018). In other words, marketing is the process of planning and executing the pricing, promotion and distribution of products/services to create exchanges that satisfy individual and organizational objectives. Marketing is the process of exchanging products and services between two parties, aiming to meet the needs and desires of customers while benefiting both parties (Girma and Abebe, 2019).

Agricultural marketing, on the other hand, is defined as all activities involved in the process starting with the quantity and quality of agricultural products to be produced by the farmer, preparing the products for market conditions, standardizing them according to market requirements, storing them properly, transporting, and ultimately delivering them to the consumer (Atay and Kartal, 2020). In other words, agricultural marketing brings together all the processes involved in transporting the products produced by farmers or producers from farms to final consumers and the people or institutions involved in the fulfillment of these processes. In this way, agricultural marketing constitutes one of the cornerstones of the economy.

**Table 5.** Comparison of Çağlayancerit walnut production (TURKSTAT, 2024)

	Years	Çağlayancerit	% Change	Kahramanmaraş	% Change	Türkiye
Production amount (tonnes)	2004	497	10.28	4836	3.84	126000
	2009	4060	38.64	10507	5.93	177298
	2014	4176	68.39	6106	3.38	180807
	2018	3835	36.47	10515	4.89	215000
	2020	3020	23.17	13036	4.55	286706
	2021	7250	37.69	19237	5.92	325000
	2022	7888	41.39	19059	5.69	335000
Bearing (Number)	2023	6750	36.82	18330	5.09	360000
	2004	9450	6.49	145700	3.47	4200000
	2009	29000	14.64	198025	3.81	5191724
	2014	74420	24.38	305250	4.36	7000897
	2018	116620	27.04	431270	4.37	9875068
	2020	151000	25.95	581850	4.66	12488338
	2021	290000	36.93	785300	5.65	13899362
Non-Bearing (Number)	2022	305000	37.13	821400	5.36	15327219
	2023	365000	40.58	899350	5.36	16777339
	2004	2800	8.59	32610	1.48	2200000
	2009	18000	38.39	46886	1.47	3200279
	2014	31236	20.09	155501	2.89	5374456
	2018	30725	8.25	372276	4.18	8896575
	2020	53500	12.02	445031	3.84	11579246
Collective orchards area (da)	2021	80000	14.37	556700	4.38	12719106
	2022	75000	12.87	582800	4.76	12245863
	2023	45000	8.13	553600	4.38	12627698
	2004	520	44.44	1170	0.70	168000
	2009	3600	56.40	6383	1.74	366736
	2014	6552	30.24	21670	3.12	693947
	2018	14527	24.85	58468	5.23	1117749
Yield (kg/ bearing)	2020	21000	26.73	78577	5.54	1417899
	2021	30000	30.92	97020	6.32	1535204
	2022	32000	30.06	106450	6.39	1664949
	2023	35000	31.71	110385	6.34	1740796
	2004	53	160.61	33	110.00	30
	2009	140	264.15	53	155.88	34
	2014	56	280.00	20	76.92	26
	2018	33	137.50	24	109.09	22
	2020	20	90.91	22	95.65	23
	2021	25	104.17	24	104.35	23
	2022	26	113.04	23	104.55	22
	2023	18	90.00	20	95.24	22

In the Çağlayancerit district of Kahramanmaraş province, it has been observed that farmers prefer walnut cultivation as an agricultural product because of the continuation of a habit from the past. In addition, in terms of cultivation/production techniques, having experienced individuals in the family who are interested in walnut production provides an important advantage. The favorable environmental conditions of the region for producing quality walnut fruits have also contributed to the increased cultivation of this species. The demand for walnuts from the local population, the ease of marketing the product, and the sales guarantee are other important factors. In addition, the walnut processing and packaging facility, which was supported by the Eastern

Mediterranean Development Agency (DOGAKA) and became operational in 2022, is of great importance for the district. When the walnuts produced in the garden are brought to the facility and processed (separated from their shells, dried and sorted according to their quality), the added value will increase in the marketing of the product (Anonymous, 2024b). Therefore, the increase in the profit margin to be obtained can be considered as an opportunity for producers.

The preferred and cultivated walnut variety in Çağlayancerit is 'Maraş 18' by 99%. In addition, this variety is one of the European Union geographical indication registered products of Kahramanmaraş as Çağlayancerit Walnut (Anonymous, 2024c). Thanks to



'Maraş 18', it is expected that its competitiveness will increase both within the country and with international recognition, domestic demand and export potential will be strong, and it will be effective in the regional economy and employment.

In the walnut production and marketing process, it is known that the walnut sales made by small producers or women with their own resources significantly affect the official production data. Small producers and women usually grow walnuts in small quantities and sell them to their neighbors, families and tradesmen in local markets. However, these sales are usually not officially recorded. This shows that small producers and women play an important role in walnut production and are influential in non-market sales. Therefore, to improve production and marketing statistics and to obtain more accurate results, the role of small producers and women in walnut production should be supported and various policies, supports and plans should be developed. In addition, it is understood that the quantities of walnuts used during the production of products (sucuk, samsa, etc.) obtained from walnuts and called as syrup in the region are not recorded. The high amount of walnuts, which has an important place in the nutrition of the people of the region, is also allocated to households. Considering these circumstances, it is a fact that there was more production in the region than the records.

Vural (2021) reported that, although efforts have been made to increase walnut production, Türkiye is still not self-sufficient and imports have been increasing in each period as production cannot fully meet the demand.

Güvenç and Purlu (2022) examined walnut production in Türkiye and future production and demand forecasts. In the study, based on walnut production and demand data in Türkiye from 1999 to 2019, the production and demand for 2020-2045 were predicted. According to the results, an increase in walnut production and demand is expected between 2020 and 2045, and Türkiye is projected to become self-sufficient in walnuts during this period. In the study, based on walnut production and demand data in Türkiye between 1999-2019, the production and demand for the period 2020-2045 were predicted. According to the results, it is predicted that an increase in walnut production and demand is expected between 2020-2045 and Türkiye will become a self-sufficient country in walnuts in this period.

### 3.1. SWOT analysis

#### 3.1.1. Strengths of walnut production in Çağlayancerit

1. In walnut production in Çağlayancerit, the local people can easily cultivate walnuts due to the district's geographical location, high altitude, and favorable weather conditions.

2. Walnut production in Çağlayancerit dates back to ancient times. Therefore, having elderly and experienced individuals in walnut production within the family is a great opportunity for future generations. Transferring experiences from father to son and from grandfather to

grandson on walnut production,

3. Contributing to the economy by planting walnuts in idle areas based on the mountainous geographical structure of the district and experiences from the past,

4. The existence of incentive supports given to farmers by the state,

5. In recent years, private sector companies in Çağlayancerit and prominent farmers of the district have taken steps to invest in walnut orchards, and the interest in the orchard system has increased,

6. In Çağlayancerit, there is a walnut processing and packaging facility supported by DOGAKA and located in the district center,

7. In recent years, farmers have started to use modern technological tools (fertilization, spraying, irrigation, roasting machine),

8. People in the region market their walnuts as a known variety (brand) using the name 'Maraş 18',

9. Kahramanmaraş Sutcu Imam University can be listed as having academicians who are experts in walnut production and marketing at the Faculty of Agriculture, as well as advising farmers.

#### 3.1.2. Weaknesses of walnut production in Çağlayancerit

1. In recent years, due to climate change and global warming, the decrease in all water resources, especially underground water resources, and inadequate irrigation of walnut production areas,

2. Rapid spread of diseases/pests due to intensive walnut cultivation in the region and disruption of ecological balance,

3. Although walnut cultivation has been carried out in the region for years, some farmers do not have sufficient information about production and marketing and do not receive support from experts in the field to obtain information,

4. Producers do not follow the developments in modern walnut cultivation and continue traditional cultivation,

5. Failure to get support from experts in the fight against diseases/pests seen in walnut in the region and spraying activities with ancestral methods,

6. The yield per tree in the region is below the average of Türkiye. Producers do not have sufficient knowledge about plant nutrition,

7. Decreases in fruit quality due to improper harvesting time and drying processes,

8. Harvesting is generally done by hitting the tree branches with a pole and the yield losses are high as a result of damage to the shoots,

9. High input costs (diesel, fertilizer and labour prices) from production to marketing,

10. Since only one variety ('Maraş 18') is grown in the region, the same harvest time disrupts the supply and demand balance of the product. Therefore, this situation leads to price differences,

11. Exorbitant price applied to the product by the producer due to the long storage period,

12. Walnut gardens are scattered due to the rugged

structure of the region. The low number of orchards,

14. Although walnut cultivation is intensively carried out in the region, producers cannot gather under a single roof of organizations such as unions and cooperatives and therefore cannot form a power union,

15. It can be listed as an inability to provide a price unity due to the intensity of unregistered sales in the region.

## 5. Conclusion

Although Türkiye is one of the leading countries in world walnut production, walnut production in the domestic market does not meet the need. In other words, there is a walnut production deficit of almost twice as much as the walnuts produced in Türkiye. Unfortunately, a significant part of this production deficit is tried to be closed through imports. In Kahramanmaraş, one of Türkiye's leading walnut-producing provinces, support should be provided to producers and marketers in walnut-producing provinces and districts through both state and private sector enterprises.

Festivals play an important role in the promotion and marketing of walnuts. Especially cultural festivals organized by municipalities are of great importance for the promotion of walnut products. These festivals provide a platform for both local people and external visitors to introduce various uses and flavours of walnuts, to exhibit and sell the products. In addition, the cultural and economic importance of walnuts is emphasized through festivals, thus increasing the marketing and awareness of the product. Therefore, cultural festivals organized by municipalities in cooperation with walnut producers are seen as an important tool to increase the competitiveness of walnuts in the local and national markets. In addition, international participation in these festivals will have an important place in the promotion of this important variety abroad.

As a result; to increase walnut production/market share in Kahramanmaraş Çağlayancerit district and to compete in the market, it will be beneficial to establish cooperatives or producer unions and to improve the existing ones. In addition, it is important to support private sector investments and regional producers by the state. Providing necessary training and information to producers and farmers by experts in their fields from walnut cultivation to marketing will contribute to solving the problems. The number of covered garden facilities should be increased and walnut cultivation should be encouraged. In addition, activities such as advertising and marketing should be given more importance in presenting the produced walnuts to the market and branding should be accelerated.

## Author Contributions

The percentages of the authors' contributions are presented below. All authors reviewed and approved the final version of the manuscript.

	Z.A.	A.Ö	M.A
C	30	40	30
D	40	30	30
S	20	40	40
DCP	50	30	20
DAI	40	30	30
L	40	40	20
W	50	30	20
CR	20	40	40
SR	40	30	30
PM	30	40	30
FA	50	30	20

C= concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

## Conflict of Interest

The authors declared that there is no conflict of interest.

## Ethical Consideration

Ethics committee approval was not required for this study because there was no study on animals or humans.

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