

The importance and position of Manisa province in olive growing of Turkey

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Abstract: Olive, which is described as “the first of the trees, the sacred tree of the Mediterranean, the symbol of Peace and Honor, the source of healing”, is a subtropic fruit that has been cultivated in our country for centuries, where Mediterranean climate characteristics are widely affected. Mediterranean basin, Turkey has a climate which is one of 41 countries in the world with 174 million trees 4 is the presence of most olive producing countries. However, in Turkey olive cultivation, the quality is not at the desired level in processing and marketing. In this study, on data principles and statistical of Agricultural Sciences, world, olive condition, and Manisa, Turkey, Turkey general condition on the basis of and provinces olive yield and quality issues and their impact factors has been studied in comparison. In addition, the effects of the change of the demographic structure of the human labor force, which is the most important driving force of agriculture, which is a labor-intensive production activity, in the rural areas in which production takes place, on the agriculture and olive cultivation.

Keywords: Olive, Manisa, yield, production

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I. Introduction

Olive is a type of plant belonging to the genus *Olea*, which has many shrub forms and subspecies of the Oleaceae family. It is *Olea europaea* Linnaeus (Lavee, 1998; Turanoğlu, 2015) including the only type of olive with edible fruit. It is accepted that olive cultivation started with the first people and it is said that "Olive is the first of all trees". In addition, olives are one of the first cultivated fruit species. Archaeological and geological finds also include olive in BC. It shows that it has been used since 6000 (Çavuşoğlu and Çakır, 1988; Seyran, 2009).

B.C. Olive, which has been proved by archaeological studies that have been cultivated since 4000, has been a source of many legends in its historical development and has been included in inscriptions and holy books belonging to ancient civilizations. The homeland of olives is Upper Mesopotamia and South Asia, which includes the Southeastern Anatolia Region. Olives from all over the world from here, the first is Egypt and Tunisia; The second spread across Anatolia, mainly from the Aegean Islands, Greece, Italy, Spain, and the third through Iran, Pakistan and China (Özkaya et al. 2010; Turanoğlu, 2015).

Olive, which has been the symbol of many civilizations throughout history, represented hope and peace in different cultures and found an important place in shaping all civilizations established in the regions where it was produced. The olive tree and fruit have been considered sacred in many cultures and beliefs; olive leaf was seen as a symbol of victory, reason, and peace (Yıldırım et al. 2008; Turanoğlu, 2015). *Olea Europaea* L. is a fruit that plays an important role in the agricultural sector of the Mediterranean countries and has a high economic value. It is one of the most cultivated plants in the world due to its high adaptability to different environmental conditions, a valuable nutrient, as well as its evaluation as a table, its ability to be processed into oil and its importance for human health especially in recent years (Özer, 2018).

II. Materials and methods

In this study, the Turkey Statistical Institute (TUIK), the Food and Agriculture Organization of the United Nations (FAO) and has been utilized data from the various institutions of the Ministry of Agriculture and Forestry. In addition, various scientific reports and publications prepared by our universities and private sector institutions have been taken into consideration in our country and other countries.

III. Results and discussion

Olive cultivation in the World

Approximately 60% of world olive production and 80% of olive oil production are covered by European Union (EU) countries, Spain, Italy, Greece, Portugal, and France. Due to its geographical location and

the Mediterranean climate where the owner is Turkey, followed by Egypt's third production of table olives, olives for oil production in the country is the sixth-largest producer followed by Syria (Keser, 2011; Turanoğlu, 2015).

Olive production grown by 41 countries in the world has been 20875407 tons in an area of 10 804 826 ha. If the production area, production amounts, and yield values of the top 10 countries that produce the most in terms of olive cultivation in the world are examined, Spain ranks first with the highest production with 31.37% and Greece with the second place with 13.03%. Italy ranks third with 12.34%. Turkey highest in terms of production volume 4 countries, with the largest production area in terms of production of 2.1 million tons 6. the amount of olive production in the country has been producing 10,06's%. Except for its own production, the production amount of 31 countries in the world is more than a total (1632 520 tons). total 4 production quantity in the country where Turkey is located, corresponding to 66.81% of world production. (Table 1) (Anonymous, 2017a).

The average yield of olive in our country is 248,21 kg/da, which is quite higher than the world average of 193.20 kg/da and ranks 17th among 41 countries in the highest yield per decare. While the highest yield value in olive production in the world belongs to the USA with 1 197,32 kg/da, the lowest yield value belongs to Tunisia with 53,21 kg/da (Anonymous, 2017a).

Table 1. Olive production quantities, production fields and yield values of world countries

Countries	Production Quantities (ton)	Production Fields (ha)	Yield (kg/da)
Spain	6 549 499	2 554 829	256,36
Greece	2 720 488	871 892	312,02
Italy	2 576 891	1 325 451	194,42
Turkey	2 100 000	846 062	248,21
Morocco	1 039 117	1 020 569	101,82
Egypt	927 595	81 039	1144,63
Tunisia	896 807	1 685 301	53,21
Portugal	876 215	358 276	244,56
Syria	871 814	745 278	116,98
Algeria	684 461	432 961	158,09
Other Countries	1 632 520	883 168	184,85
Total	20 875 407	10 804 826	193,20

Source: FAO-2017

It is known that 42.9% of the table olives produced in the world are processed green, 30.6% black and 26.5% processed color-oriented; Spain green table olive production in the world, whereas the black table olive production, would not be wrong to state that the leader of Turkey (Ergun, 2003; Ekinci, 2010).

85% of black table olives produced in Turkey, and 15% and the color turned green; 70% of the table olives produced in Spain are green, 26% are color-oriented and 4% are black; 73% of the table olives produced in Italy are black, 22% are green and 5% are color-oriented; In Greece, 65% of the table olives produced are processed and evaluated in black, 27% in green and 8% in color (Tunalıoğlu, 1995; Ekinci, 2010).

World olive oil export was realized as 887 thousand tons in 2017. In parallel with the production of olive oil, exports take first place in the EU countries, these countries follow Tunisia and Turkey (Anonymous, 2018).

Olive oil consumption in the first row of the producer countries of the EU countries while receiving steady but increased the annual per capita consumption of olive oil consumption is seen that Turkey stayed in a 2 liter (Anonymous, 2018).

Olive cultivation in Turkey

The Eastern Mediterranean region has a favorable climate and soil conditions for olive growing. In recent years, great advances have been made in regional olives. The establishment of the Eastern Mediterranean olive unity, the establishment of a new garden plant also the establishment of the olive mills in the region and to be initiated to modernize the existing olive oil factories, Turkey olive in the Eastern Mediterranean Region and even an indication of a future significant place in world olive (Gezerel, 2000; Ulaş, 2001).

One of the two main products obtained from olive cultivation is table olives and the other is olive oil. Olives are considered as tables and oil. Consumption of olive oil, which is the main component of the Mediterranean diet, can be used without refining, its unique taste and odor, as well as the unsaturated fatty acids preferred and contained in other vegetable oils, as well as the positive effects of antioxidant substances against

cardiovascular diseases and cancer, is currently increasing (Lipworth et al., 1998; Visioli et al., 1998a; Visioli and Galli, 1998b; Seyran, 2009).

Turkey's geographical location and the Mediterranean climate owned properties where Italy, Spain, Greece, and is one of the world's leading producer of olive oil with olives and other Mediterranean countries such as Tunisia. Turkey, the world's second production of table olives, olives for oil is the fourth-largest producer of olive oil production location (Karşlı, 2006).

There are 81 provinces and 922 districts in Turkey (Anonymous, 2019). Olive is grown in 41 of 81 provinces of our country and 318 districts of these provinces (Anonymous, 2017b). Thus, it is understood that olive cultivation is carried out in 50,62% of our provinces and 34,49% of our districts. Turkey's 32,808,797 25.79% olive cultivation in the area of orchards which are scheduled (Anonymous, 2017b). Turkey owned by the presence of fruit trees 900 306 940 Total 174 594 147 (19.39%) is the number of olive trees. 148 262 785 (84.92%) of olive trees are in production periods and participate in production (Anonymous, 2017b).

It is not correct to classify olives scientifically as oil and edible. This is a situation that only occurs in practice. In general, this distinction was made according to the meat/kernel ratio. The big ones are considered as oil and the small ones are table. Oil can be obtained from all kinds of olives. There is no genetically bad olive oil variety. However, the sensory qualities of each olive variety and oil vary depending on some factors. These are cultivars, ecological characteristics, harvest time, and oil extraction techniques (Efe et al., 2013).

Turkey's 2017 year agricultural area 233 465 984 dir. 33 481 004 (14.34%) of this area is fruity, 8 460 619 (25.27%) of fruits are olive groves, 2 264 912 (26.77%) of olive groves are table and 6 195 707 (73,23%) is also fatty (Anonymous, 2017b). Then for the table olive evaluated as the average of the olives in Turkey are evaluated for oil yield efficiency is higher. In this way, our farmers consider their preferences more economical in terms of processing their olives because of their economic preferences (Table 2).

Table 2. Quantity of olive production in Turkey and yield value of production area

Category	Production Areas (da)	Production Quantities (ton)	Yield (kg/da)
Table Olives	2 264 912	460 000	203,10
Growing Olives For Olive Oil	6 195 707	1 640 000	264,70
Total	8 460 619	2 100 000	248,21

Source: TÜİK-2017

Turkey between the years 2004-2017 fluctuated between 14 years in production quantities can be seen for the annual olive production data is possible to see traces of periodicity. Although the olive production area, production amount, the number of fruit-bearing trees have increased over the years, it is seen that the rate of increase in the production area has been decreasing. While the highest increase occurred in 2006 and 2007, this rate is quite low in other years (Table 3).

Table 3. Olive production datas in Turkey by years

Years	Production Quantities (ton)	Production Areas (da)	Production Area Increase Rate (%)	Yields (kg/da)	Number of Fruit-Bearing Trees	Yield Per Tree (kg/number)
2004	1 600 000	6 440 000	-	248,45	94 950 000	16,85
2005	1 200 000	6 620 000	2,72	181,27	96 625 000	12,42
2006	1 766 749	7 118 428	7,00	248,19	97 773 234	18,07
2007	1 075 854	7 530 001	5,47	142,88	104 218 550	10,32
2008	1 464 248	7 743 701	2,76	189,09	106 138 896	13,80
2009	1 290 654	7 784 125	0,52	165,81	109 126 769	11,83
2010	1 415 000	7 840 313	0,72	180,48	111 397 831	12,70
2011	1 750 000	7 984 926	1,81	219,16	117 941 814	14,84
2012	1 820 000	8 137 650	1,88	223,65	120 820 948	15,06
2013	1 676 000	8 258 266	1,46	202,95	129 160 795	12,98
2014	1 768 000	8 260 915	0,03	214,02	140 712 286	12,56
2015	1 700 000	8 369 346	1,30	203,12	144 759 715	11,74
2016	1 730 000	8 455 420	1,02	204,60	147 403 130	11,74
2017	2 100 000	8 460 619	0,06	248,21	148 262 785	14,16

Source:TÜİK

Due to its genetic feature, olives show alternans (more than one year, less than a year). Although this is a common problem for all producer countries it is more pronounced due to be implemented sufficiently in the press of other cultural actions to be irrigation in Turkey. It is known that the excess or deficiency of the basic climatic factors (temperature + precipitation etc.) in the generative phase of the olive plant (flowering and fruit

set) increases the alternans (Anonymous, 2006; Çolakoğlu, 2009). As a matter of fact, in provinces such as Aydın where traditional olive cultivation is carried out (cultural processes are less applied), the difference in production varies between 50-80% (Anonymous, 2009a; Çolakoğlu, 2009). However, irrigation is one of the most effective cultural processes in modern cultivation methods preferred in some important olive producing countries of the world, and the difference in production varies between 10 and 20% between the years of no-exist (FAO, 2009; Çolakoğlu, 2009).

Turkey ranks fourth among olive producing countries in terms of the presence of trees and production. The yield per tree in our country is quite low compared to the rival countries. While the yield per tree in our country is around 13 kilograms, it is 25 kilograms in Spain and 30 kilograms in Italy. In addition to the variety of this situation, it is thought that the cultural processes such as pruning, spraying, fertilizing are inadequate and wrong applications during harvesting. Although our country is among the few countries in the world's olive market, the instability in production negatively affects its position (Anonymous, 2016b; Özer, 2018).

Yield per tree and low quality is an important handicap for the future of olive farming. From this point of view, cultivation of existing varieties with clones with superior features has been done and performed in our country with the thought that this problem will be a solution to this problem (Kaynaş et al., 1998, Gözel et al., 2008, Tutar 2010, Türkiye 2014; Özer, 2018).

Yield per tree is also significantly affected by the slope factor as well as genetic factors. In areas where the slope is between 0% and 2%, the yield per tree is highest and it is 24.3 kg. The yield per tree is 14.6 kg at a 15% slope; It is 8.0 kg at a 30% slope and 4.5 kg at a 45% slope. The relationship between elevation, slope, and olive yield varies according to latitude and climate conditions (Gökçe and Tunalioglu, 2002; Efe et al., 2013). The average slope of the olive groves in the Aegean Region is 28%. 30% of olive groves are found in areas with a slope of 26% and more. Yield per tree decreases by 33% in areas where the slope is 30% (Gökçe, 1994; Gökçe and Tunalioglu, 2002; Efe et al., 2013). 27% of the lands around İzmir, Aydın and Manisa are flat and nearly flat (0–5%), 22% are low slope (6–15%), 20% are medium slope (16-25%), 30% is also on very sloping (26% +) lands (Efe et al., 2013).

Years from the 2004-2017 production area changes the course of the area where olive cultivation areas in Turkey it is possible to talk about a continuous increase when examined, however, the decreasing rate increase takes place in this area. As of 2016, the rate of area increase has been decreasing since 2016, and the share of areas where olive cultivation is grown in fruit areas is also decreasing. In other words, while our producers decide their product pattern in their new garden facilities, they mostly prefer their preferences for other fruit types other than olives (Table 4).

Table 4. Status of olive growing in fruit growing in Turkey by years

Years	Total Area of Fruit Groves (da)	Total Area of Olive Groves (da)	Production Area Increase Rate of Olive Groves (%)	Share of Olive Groves in the Total Fruit Area (%)
2004	27 217 060	6 440 000	-	23,66
2005	27 764 560	6 620 000	2,72	23,84
2006	28 488 617	7 118 428	7,00	24,99
2007	28 648 793	7 530 001	5,47	26,28
2008	29 035 613	7 743 701	2,76	26,67
2009	28 944 228	7 784 125	0,52	26,89
2010	29 558 705	7 840 313	0,72	26,52
2011	30 330 433	7 984 926	1,81	26,33
2012	31 344 779	8 137 650	1,88	25,96
2013	31 686 656	8 258 266	1,46	26,06
2014	31 829 527	8 260 915	0,03	25,95
2015	32 176 973	8 369 346	1,30	26,01
2016	32 588 204	8 455 420	1,02	25,95
2017	32 808 797	8 460 619	0,06	25,79

Source:TUIK

Olive cultivation in Turkey by region

The olive tree (*Olea Europea*) is a long-lasting plant that reaches economic efficiency in a long time. The most productive climatic conditions for the olive tree are the summers with warm summers and mild winters. Because the olive tree is required to grow, light, sun, the temperature of 15 °C per day and above and at least 220 mm of precipitation per year are required. The olive tree is generally grown in some microclimate areas at an altitude of 400-800 m, sometimes 1000 m above the sea (Anonymous, 2006; Çolakoğlu, 2009). Olive ripening is a slow and long process that takes months. The length of this process essentially depends on the geographical location of the place where the olives are grown, agricultural activities, and the type of olives (Bravo, 1991; Boskou, 1996; Gündoğdu, 2011). Turkey, of course (the location of the region, landforms, climate, and vegetation, etc.), Human and economic characteristics (population quantity, distribution of the population structure of the population, settlement, economic activities, the distribution of the region's national income and cultural factors, and so on.) for 7 It is divided into the geographical regions.

If we examine the olive cultivation of our country in terms of geographical regions, it is seen that our region with the highest production amount and production area is the Aegean Region, followed by the Mediterranean and Marmara Region. While our region, which has a high yield value among the regions in terms of yield per decare, is our Black Sea Region, it is followed by the Mediterranean, Marmara, and Aegean regions. Aegean Coast of Turkey 54.35% of the olive production alone, the Mediterranean Region 22,45%, and 21.08% also meets the Marmara Region. Almost the entire production is carried out by the three regions of Turkey (97.88%) (Table 5).

Table 5. Olive cultivation in Turkey by regions

Regions	Production Quantities (ton)			Production Areas (da)			Yields (kg/da)		
	Table Olives	Growing Olives For Olive Oil	Total	Table Olives	Growing Olives For Olive Oil	Total	Table Olives	Growing Olives For Olive Oil	General
Aegean Region	233 917	907 501	1 141 418	1 060 743	3 470 407	4 531 150	220,52	261,50	251,90
The Mediterranean Region	61 069	410 436	471 505	436 503	974 437	1 410 940	139,91	421,20	334,18
Marmara Region	155 220	287 533	442 753	673 464	1 003 806	1 677 270	230,48	286,44	263,97
Southeastern Anatolia Region	6 312	34 020	40 332	72 311	743 166	815 477	87,29	45,78	49,46
Central Anatolia region	2 264	510	2 774	19 149	3 891	23 040	118,23	131,07	120,40
Black Sea Region	1 218	0	1 218	2 742	0	2 742	444,20	-	444,20
Eastern Anatolia Region	0	0	0	0	0	0	-	-	-

Source:TUIK-2017

In Turkey, Aegean, Mediterranean, Marmara, Southeastern Anatolia, including our 6 Region Central Anatolia and the Black Sea are scheduled to olive cultivation. There are 900 306 940 trees in our country, 39.14% of this tree asset is the Black Sea, 16.07% Aegean, 14.62% Mediterranean, 11.73% Marmara, 10.22% It is located in Southeastern Anatolia, 5.86% in Central Anatolia and 2.36% in Eastern Anatolia Region 86.94% of the tree assets of our country consist of trees that bear fruit (Table 6) (Anonymous, 2017b).

If we look at the percentage shares of the populations of the fruit trees by regions, 43,42% of the Black Sea, 15,62% Aegean, 13,15% Mediterranean, 12,30% Marmara, 8.57% It is seen that they are located in Southeastern Anatolia, 4.76% in Central Anatolia and 2.19% in Eastern Anatolia Region. Our region with the highest average olive yield per tree is the Mediterranean Region with 15, 68 kg/da, followed by the Aegean with 15,34 kg/da and Marmara regions with 15,25 kg/da (Table 6) (Anonymous, 2017b).

Table 6. Total fruit tree presence, olive tree presence and yield per tree values in Turkey by regions

Regions	Total Fruit Tree Presence in the Region (number)	Total Fruit-Bearing Tree Presence in the Region (number)	Olive Tree Presence at a Fruitless Age (number)	Presence of Olive Tree at the Age of Fruiting (number)	Total Olive Tree Presence (number)	Production Quantities (ton)	Yield Per Tree (kg/number)
Aegean Region	144 695 178	122 254 700	10 250 567	74 410 755	84 661 322	1 141 418	15,34
The Mediterranean Region	131 660 025	102 952 531	11 558 388	30 070 838	41 629 226	471 505	15,68
Marmara Region	105 563 687	96 232 361	1 763 006	29 034 052	30 797 058	442 753	15,25
Southeastern Anatolia Region	91 988 240	67 040 302	2 523 614	14 334 347	16 857 961	40 332	2,81
Central Anatolia region	52 766 937	37 265 009	202 071	269 463	471 534	2 774	10,29
Black Sea Region	352 399 568	339 814 305	33 716	143 330	177 046	1 218	8,5
Eastern Anatolia Region	21 233 305	17 130 353	0	0	0	0	0

Source:TUIK, 2017

Table 7 lists the top 10 provinces where olive production is most common. The most commonly made by our province Aydin Province of olive production to generate the 21.68% of Turkey's production, it Manisa with 12.7%, with 12.10% in Balikesir, the Mugla and 9.02% to 10.10% Izmir has followed our city. The highest value in terms of general efficiency value is formed in Antalya province (446,45 kg/da), Mersin (371,34 kg/da), (310,26 kg/da) Balikesir, (296,55 kg/da) Aydin and (269,44 kg/da) Our city of Manisa follows. The amount of production that makes our province's 10 Most productions, Turkey constitutes 90.68% of its production (Anonymous, 2017b). There are 91 varieties of olives have been registered in Turkey (Demir, 2018).

Table 7. Top ten provinces which performs most olive production in Turkey

Provinces	Production Quantities (Ton)			Production Areas (da)			Yields (kg/da)		
	Table Olives	Growing Olives For Olive Oil	Total	Table Olives	Growing Olives For Olive Oil	Total	Table Olives	Growing Olives For Olive Oil	General
Aydin	63 182	392 196	455 378	253 430	1 282 169	1 535 599	249,31	305,88	296,55
Manisa	121 066	145 666	266 732	644 055	345 889	989 944	187,97	421,14	269,44
Balıkesir	32 764	221 436	254 200	129 180	690 143	819 323	253,63	320,86	310,26
Muğla	15 929	196 180	212 109	34 526	949 040	983 566	461,36	206,71	215,65
İzmir	24 752	164 756	189 508	105 174	865 582	970 756	235,34	190,34	195,22
Hatay	7 640	139 554	147 194	90 891	418 835	509 726	84,06	333,20	288,77
Mersin	37 391	105 478	142 869	123 827	260 908	384 735	301,96	404,27	371,34
Bursa	92 706	51	92 757	435 938	788	436 726	212,66	64,72	212,39
Antalya	3 845	70 290	74 135	56 028	110 028	166 056	68,63	638,84	446,45
Çanakkale	7 703	61 722	69 425	17 507	304 889	322 396	440,00	202,44	215,34

Source:TUIK-2017

Olive growing in Manisa province

Manisa, Turkey in most olive cultivation in the regions which in the Aegean region and situated region after Aydin is the most olive cultivation in the second province in the position where, 17 own districts, central district, and county elevation values along with other districts 43 m to 850 It is a province ranging from m. Manisa 30,614,929 pieces of fruit tree presence in Turkey with the largest number of trees being located in 12.sıra ranking. 71.29% of the assets of fruit trees (21,826,577 units) constitute 12.5% of the olive tree is the presence of this amount Turkey olive tree. 85, 56% of the owned tree assets are in the age of yield. The cultivation of olive fruit 48,20's% of the area being area, 14.28 kg per tree/olive yield which, 14.16 kg per tree/unit is greater than the average in Turkey (Anonymous, 2017b).

Table 8. Comparison of Manisa province and Turkey presence of olive trees, production quantities and yield per olive tree

	Number of Olive Trees in the Yield Period	Total Number Of Olive Trees	Production Quantities (Ton)	Yields (kg/tree)
Manisa	18 674 379	21 826 577	266 732	14,28
Turkey	148 262 785	174 594 147	2 100 000	14,16

Source:TUIK-2017

Manisa 2017 187.97 kg / the table as 203.10 the efficiency of evaluation olive kg / Turkey, which appeared not to be below the average of the evaluated olive production in oilseed 264.70 kg/da are very over 421.13 kg Turkey average It appears to be in. This data shows us that olive varieties owned by Manisa are more suitable to be evaluated as an oil (Table 9) (Anonymous 2017b).

Table 9. Comparison of Turkey-Manisa in olive production of the processing method and yield

	Table Olive Production Area (Da)	Growing Olives For Olive Oil [Production Area (Da)]	Table Olive Production Quantities (ton)	Growing Olives For Olive Oil [Production Quantities (ton)]	Table Olive Yield (kg/da)	Growing Olives For Olive Oil [Yield (kg/da)]
Manisa	644 055	345 889	121 066	145 666	187,97	421,13
Türkiye	2 264 912	6 195 707	460 000	1 640 000	203,10	264,70

Source:TUIK-2017

Within the framework of the basin-based support model, Olive, which is one of the products supported in Manisa, exported from Manisa in 2017 to 2 937 tons. Turkey Exporters Assembly of the monetary value of agricultural exports takes place from Manisa according to data from the year 2017 537 167 000 dollars has been (Anonymous, 2019c).

When olive cultivation data of Manisa is examined on the basis of districts, the highest production among the districts is made in Akhisar district, followed by Kırkağaç, Soma, Saruhanlı, Salihli districts. Although generally oil production is preferred, it is seen that table production is dominant in some districts. When the yield values are examined, the highest yield value is reached in Turgutlu district and it is followed by Soma, Kırkağaç, Gölarmara, and Sarıgöl Districts (Table 10) (Anonymous, 2017b).

Table 10. Olive production datas of Manisa's districts

District	Production Quantities (Ton)			Production Area (Da)			Yield (Kg/Da)		
	Table Olive	Growing Olives For Olive Oil	Total	Table Olive	Growing Olives For Olive Oil	Total	Table Olive	Growing Olives For Olive Oil	General
Akhisar	72 996	0	72 996	441 379	0	441 379	165,38	-	165,38
Kırkağaç	18 827	37 994	56 821	50 224	60 154	110 378	374,86	631,61	514,79
Soma	3 893	36 202	40 095	19 696	46 886	66 582	197,65	772,13	602,19
Saruhanlı	3 038	23 566	26 604	29 740	88 586	118 326	102,15	266,02	224,84
Salihli	11 220	12 061	23 281	38 150	36 532	74 682	294,10	330,15	311,74
Köprübaşı	988	9 045	10 033	8 435	22 911	31 346	117,13	394,79	320,07
Turgutlu	481	7 411	7 892	984	11 621	12 605	488,82	637,72	626,10
Şehzadeler	1 679	4 202	5 881	6 401	14 066	20 467	262,30	298,73	287,34
Ahmetli	554	4 954	5 508	3 773	15 733	19 506	146,83	314,88	282,37
Gölarmara	3 223	2 253	5 476	9 355	4 689	14 044	345,26	480,49	389,92
Sarıgöl	1 111	2 154	3 265	4 259	4 828	9 087	260,86	446,15	359,30
Gördes	1 112	2 013	3 125	13 492	9 776	23 268	82,42	205,91	134,30
Alaşehir	580	1 098	1 678	7 048	9 141	16 189	82,29	120,12	103,65
Yunusemre	152	1 252	1 404	2 117	9 677	11 794	71,80	129,38	119,04
Demirci	787	499	1 286	5 909	6 225	12 134	133,19	80,16	105,98
Kula	207	760	967	1 970	3 591	5 561	105,08	211,64	173,89
Selendi	218	202	420	1 123	1 473	2 596	194,12	137,14	161,79

Toplam	121 066	145 666	266 732	644 055	345 889	989 944	187,98	421,14	269,44
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Source:TUIK-2017

Olive groves, which are generally grown in Manisa, have been established with fruit trees belonging to Gemlik (Trilye), Edremit, Sarı Yaprak, Domat, Uslu, Tekir, Arbequina, Memecik, Kalamata, and Manzalina olive varieties, and mostly to the region where the most cultivation is carried out. An adapted olive cultivar is Gemlik (Trilye) and cultivated in 88% of the cultivation areas. 5% of olive groves are built with Edremit and the remaining 7% are grown with olive trees of other varieties.

IV. Conclusion and recommendations

In olive farming, regular and desired standards of production will be possible by improving the care and harvesting techniques, showing less periodicity, including clones with high adaptability and efficiency, and selection studies. Olive gardens consisting of productive varieties that can be adapted/adapted to our geographical regions should be established especially for breeding development studies. For example, the varieties that are currently grown and adapted to the region in Manisa, one of the olive regions of the Aegean Region, are suitable for evaluation as oil, and by increasing the cultivation areas, we will be able to produce for both domestic consumption and export by developing new varieties that will adapt to the region.

It is seen that sloping lands are also preferred in the facility of olive groves, but as the slope of the land increases, the yield and quality per tree decreases due to lack of nutrition. When the statistical data are analyzed, it is seen that the ratio of olive groves in the newly established fruit orchards has decreased. Our producers tend to other fruit types instead of olive growing. Among the reasons for this, undoubtedly, are the shortage of productivity per tree and the quality of the product, as well as the shortage of workforce that occurs when the segment of the young and middle-age category, which will carry out cultivation and harvesting operations, has moved away from the villages. Agricultural techniques such as care, feeding, facility, processing techniques, improper storage conditions, harvest criteria, disease, and pest management, which are the factors that directly affect the quality of olives and olive oil, are improved. will be interested.

With the support of our Universities, Public Institutions, and Organizations and Non-Governmental Organizations, our farmers should be made aware of olive cultivation in a way that covers all agricultural issues from seedlings to marketing. In order to increase the yield and quality in our country's olive flora, which consists of mostly old trees, our farmers should be made aware of pruning techniques, and they should focus on rejuvenation pruning in olive gardens. Again, manufacturers should be encouraged to establish associations and cooperatives to build facilities capable of processing olives and olive oil. With land consolidation, profitability should be increased by reducing unit costs. It is important to develop and encourage drip irrigation facilities where irrigation is limited, in order to achieve the desired yield and quality.

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References

- [1]. Anonymous 2007. Güneydoğu Anadolu Bölgesinde Zeytinde Adaptasyon, T.C. Tarım ve Köyişleri Bakanlığı, Tarımsal Araştırmalar Genel Müdürlüğü, Antepfıstığı Araştırma Enstitüsü Müdürlüğü, Yayın No:23, <https://arastirma.tarimorman.gov.tr/afistik/Belgeler/Taranan%20yay%C4%B1nlar/gda%20zeytin%20adaptasyonu%20yay%C4%B1n%20no%2023%20001.pdf>, erişim tarihi: 09.06.2019
- [2]. Anonymous 2009a. Aydın Tarım İl Müdürlüğü Kayıtları.
- [3]. Anonymous 2016b. <http://www.gemlikzeytini.net> (Erişim Tarihi: 05.12.2016).
- [4]. Anonymous 2017a. Food and Agriculture Organization of the United Nations, <http://www.fao.org/faostat/en/#data/QC>
- [5]. Anonymous 2017b. Türkiye İstatistik Kurumu, <http://tuik.gov.tr/Start.do>
- [6]. Anonymous 2017c. <https://www.aydinlik.com.tr/tarimda-igucu-1-ozguruluk-meydani-ekim-2017>, erişim tarihi: 09.06.2019
- [7]. Anonymous 2018. T.C. Gümrük ve Ticaret Bakanlığı, Kooperatifçilik Genel Müdürlüğü, 2017 Yılı Zeytin Ve Zeytinyağı Raporu, <http://koop.gtb.gov.tr/data/5ad06f17ddee7dd8b423eb2e/2017%20Zeytinya%C4%9F%C4%B1%20Raporu.pdf>, erişim tarihi: 10.06.2019
- [8]. Anonymous 2019. <https://www.e-icisleri.gov.tr/Anasayfa/MulkiIdariBolumleri.aspx>
- [9]. Anonymous 2006. Zeytin Yetiştiriciliği. Tarım ve Köyişleri Bakanlığı Zeytincilik Araştırma Enstitüsü Müdürlüğü, Yayın No.61. Sy:76, İzmir.

- [10]. Boskou D., 1996. History and Characteristics of the Olive Tree. In: Boskou, D., Eds. *Olive Oil. Chemistry And Technology*. AOCS Press, Champaign, Illinois. 1-6.
- [11]. Bravo, 1991. Boskou, Bravo J., 1991. *Zeytinyağı Kalitesinin İyileştirilmesi. Zeytinin Olgunlaşması. Zeytinin Hasadı*. Aracılar Matbaacılık, İzmir. 6-14.
- [12]. Çavuşoğlu, A., Çakır, M., 1988. Modern Zeytincilik. Tarım Ve Köyişleri Bakanlığı Mesleki Yayınlar No.1, 303s. Ankara.
- [13]. Çolakoğlu, C.A., 2009. Aydın ilinde zeytin üretimi ile iklim verileri arasındaki ilişkilerin belirlenmesi, T.C. Adnan Menderes Üniversitesi, Fen Bilimleri Enstitüsü, Tarım Ekonomisi Anabilim Dalı, Yüksek Lisans Tezi
- [14]. Demir, G., 2018. Yöresinde Yetiştirilen Zeytin Çeşitlerinin Pomolojik Ve Biyokimyasal Özelliklerinin Belirlenmesi, T.C. Ankara Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Yüksek Lisans Tezi
- [15]. Efe, R., Soykan, A., Cürebal İ., Sönmez S., 2013. Dünyada, Türkiye’de, Edremit Körfezi Çevresinde Zeytin Ve Zeytinyağı, Edremit Belediyesi Kültür Yayınları No: 7, https://www.academia.edu/4050533/D%C3%BCnyada_T%C3%BCrkiye_de_Edremit_K%C3%B6rfezi_%C3%87evresinde_Zeytin_ve_Zeytinya%C4%9F%C4%B1, erişim tarihi 01.06.2019
- [16]. İkinci, E. 2010. Gökçeada Zeytininin, Önemli Zeytin Çeşitleriyle Morfolojik, Pomolojik Ve Genetik Özellikler Bakımından Karşılaştırılması, T.C. Çanakkale On Sekiz Mart Üniversitesi, Bahçe Bitkileri Anabilim Dalı, Yüksek Lisans Tezi
- [17]. Ergun, 2003, Ergun, M. E., 2003. Sofralık Zeytin İşletmelerinin Yapısı ve Sorunları” Gemlik Zeytin Paneli, 13 Eylül 2003, Gemlik, Bursa, Türkiye.
- [18]. FAO, 2009. (www.fao.org) Erisim Tarihi: 20.05.2009.
- [19]. Gezerel, 2000, Gezerel Ö., Toplu C., Ulaş M., 2000. Çukurova Bölgesinde Son Yıllarda Zeytin Yetiştiriciliğindeki Gelişmeler ve Sorunları. Türkiye I. Zeytincilik Sempozyumu 6-9 Haziran 2000. Bildiri, Bursa
- [20]. Gozel, H., Karadag, S., Aktug, Tahtacı., S., Dogruer, N. 2008. Clone Selection on Nizip Yağlık and Kilis Yağlık Olive (*Olea europaea* L.) Varieties. Acta Horticulturae:791, *International Society for Horticultural Science (ISHS)*, 157-160.
- [21]. ve Tunalıoğlu, 2002, Gökçe, O.; Tunalıoğlu, R. 1997. Türkiye Zeytinciliğinin Ayrıcalıklı Bir Sorunu”, Tabiat ve İnsan Dergisi, Ankara.
- [22]. Gökçe, 1994. Türkiye’de Orman Zeytin İlişkileri, Sorunları ve Çözüm Yollarına Yönelik Yeni Yaklaşımlar, Türkiye I. Tarım Ekonomisi Kongresi 89 Eylül 1994 Bildiri Kitabı, İzmir.
- [23]. Gündoğdu, M.A., 2011. Bazı Yerli Ve Yabancı Zeytin Çeşitlerinin Fenolojik Ve Pomolojik Özellikleri İle Zeytinyağı Bileşenlerinin Aylık Değişimlerinin İncelenmesi, T.C. Çanakkale On Sekiz Mart Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Yüksek Lisans Tezi
- [24]. Karlı, İ.E., 2006. Trakya Ve Kuzey Ege’de Organik Ve Konvansiyonel Yağlık Zeytin Üretim Ekonomisi Ve Pazarlaması, T.C. Trakya Üniversitesi, Fen Bilimleri Enstitüsü, Tarım Ekonomisi Anabilim Dalı, Yüksek Lisans Tezi
- [25]. Kaynaş ve ark. 1998, Gözel ve ark. 2008, Tutar 2010, Türkay 2014, Kaynaş, N., Yalçınkaya, E., Sütçü, A.R., Fidan, A.E. 1998. Gemlik Zeytin Çeşidinde Klonal Seleksiyon. Sonuç Raporu, Atatürk Bahçe Kültürleri Merkez Araştırma Enstitüsü, Yalova, Türkiye.
- [26]. Keser, 2011, Keser, T. 2011. İzmir İlinin Bazı İlçelerinde Zeytinciliğin Durumu ve Organik Zeytin Yetiştiriciliğinin Yapılabilirliği Üzerine Bir Araştırma. Ege Üniversitesi Bahçe Bitkileri Anabilim Dalı. Yüksek Lisans Tezi, İzmir.
- [27]. Lipworth, L., Martinez, M. E., Angell, J., Hsieh, C. C., Trichopoulos, D., 1997. Olive oil and Human Cancer: An Assessment of the Evidence. Preventive Medicine 26: 181-190.
- [28]. Özer, K., 2018. ‘Gemlik’ Zeytin Klonları Ve Bazı Melez Tiplerin Morfolojik Özelliklerinin Belirlenmesi, T.C. Uludağ Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı
- [29]. Özkaya ve ark. 2010, Özkaya, M.T., Tunalıoğlu, R., Eken, G., Ulaş, M., Tan, M., Danacı, A., İnan, N. ve Tibet, Ü. 2010. Türkiye zeytinciliğinin sorunları ve çözüm önerileri. Ziraat Mühendisliği VII. Teknik Kongresi, (11-15 Ocak 2010), pp.515-537, Ankara.
- [30]. Seyran, Ö., 2009. Silifke Yağlık, Sarı Ulak Ve Gemlik Zeytin Çeşitlerinin Meyve Gelişim Sürecinde Gösterdikleri Bazı Fizyolojik, Morfolojik Ve Biyokimyasal Değişimler, T.C. Mustafa Kemal Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Yüksek Lisans Tezi
- [31]. Tunalıoğlu, 1995, Tunalıoğlu, R., 1995. Önemli Zeytin Üreticisi Ülkelerin Zeytinciliği ile Türkiye Zeytinciliğinin Bazı Yönlerden Karşılaştırılması” Doktora Tezi. T.C. Başbakanlık. EİBGS. Yayın No:1. İzmir. Türkiye.
- [32]. Turanoğlu, İ.M., 2015. Şanlıurfa Koşullarında Yetiştirilen Ayalık Zeytin Çeşidinin Morfolojik, Fenolojik, Pomolojik ve Biyokimyasal Özelliklerinin Araştırılması, T.C. Kahramanmaraş Sütçü İmam Üniversitesi, Fen Bilimleri Enstitüsü, Bahçe Bitkileri Anabilim Dalı, Yüksek Lisans Tezi
- [33]. Tutar, M. 2010. Erkence Zeytin Çeşidinde Farklı Tiplerin Belirlenmesi. EÜ Fen Bilimleri Enstitüsü, *Doktora Tezi*, Bahçe Bitkileri Anabilim Dalı, İzmir.
- [34]. Türkay, C., Yılmaz, C., Toplu, C., Gür, E. 2014. Clonal Selection of Sarı Ulak Olive in Mersin and Adana, International Balkan Agriculture Congress, 8-11 Eylül 2014, Edirne.
- [35]. Ulaş, M., 2001. Çukurova Bölgesinde Yaygın Bazı Sofralık ve Yağlık Zeytin Çeşitlerinin Morfolojik, Fenolojik ve Pomolojik Özelliklerinin Belirlenmesi, T.C. Çukurova Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi
- [36]. Visioli, F., Bellomo G., Gali, C., 1998a. Free radical scavenging properties of olive oil polyphenols. Biochemical Biophysical Research Communications, 247: 60-64.
- [37]. Visioli, F., Gali, C., 1998b. Olive oil polyphenols and their potential effects on human health. Journal of Agricultural and Food Chemistry, 46: 4292-4296.
- [38]. Yıldırım, F., Yıldız, M., Ezeli, H., Kılıç, A., Tutam, M. ve Özkan, A. 2008. Tarım ve Köy İşleri Bakanlığı Manisa İl Müdürlüğü, s.154, Manisa.

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