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An overview on the evolution of worldwide fig production and harvested area

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Abstract The fig is the edible fruit of *Ficus carica* L., a species of small tree in the flowering plant family *Moraceae*. It is reported to be under cultivation from 3000-2000 BC in the eastern Mediterranean region and is now widely grown throughout the world, both for its fruit and as an ornamental plant. The aim of this paper is to show an overview of the worldwide fig production and harvested area and their evolution in the last decades. Total global fig harvested area reached 286,197 hectares and the fig production reached 1,315,588 tonnes in 2019 according to *FAOSTAT Database*. This is 6.9 % more than in the previous year and 13.1 % more than 10 years ago. Turkey was the world leader in the year 2019 with a recorded fig production of 310,000 tonnes, and a harvested area of 52,116 ha, followed by Egypt and Algeria. At European level Spain leads fig production with 51,600 tonnes and a harvested area of 14,600 ha recorded in the year 2019, followed by Greece and Italy. In Romania, fig production is limited to the South and South-West region of the country where the climate is favourable and the fig trees thrive. In Svinița village, in South-West Romania is the biggest fig orchard in the country, almost 1 hectare, privately owned, that produces up to 3 tons of figs annually. There are no statistical data recorded for fig production or cultivated surfaces in Romania.

Key words

Ficus carica L., worldwide production, harvested area, evolution

The fig has been cultivated as an edible commodity for thousands of years throughout the Middle Eastern and Mediterranean regions [11] Figs were domesticated around 11,400 years ago, roughly 1,000 years before the major staple crops [9]. Fresh and dried figs have become a staple of Middle Eastern and Mediterranean cuisine. Dried fruits have a shelf life of over a year, and can be shipped and stored easily [12]. Figs have been associated with health and prosperity since ancient times. They're symbolically linked to Demeter, the Greek goddess of agriculture and fertility, and were offered to the god Bacchus in ancient Rome [7]. Fresh figs are very nutritious as they are rich in calorie, protein, calcium and iron [10]. Fig has nutritive index of 11, as against 9 for apple and 6 for raisin [4]. The bulk of the fruit (about 80%) is consumed in the dried form [4]. The fruit is also credited with laxative and medicinal properties and is being applied on boils and for other skin infections [4]. There are a number of different edible fig varieties, most with an intensely bright fruit flavor, some with hints of berries or citrus in fresh form. Some varieties are self-pollinating while others require cross-varietal pollination via insects such as the fig wasp [12]. The importance of this crop is proven by the long history of cultivating and improving its cultivation technology, being suitable for growing in regions with a climate where most crops wouldn't manage to thrive. The purpose of this paper is to show, with data, over the last three decades, where in the world are the biggest fig producers, which are the Europe's most important fig producing countries and also to present the fig cultivation status in Romania.

Material and Method

The data used in the paper was retrieved from FAOSTAT Database [6], which provides both official and estimated numbers, as well as other relevant online sources, articles, cited throughout the paper's content. Statistical data about fig harvested area and fig production were used and presented in charts and tables. For this we used data recorded for a period of 30 years, starting with 1989 until 2019. FAOSTAT uses both estimated and official data.

Results and Discussions

Data regarding the global fig production and harvested area by continent, years 1989-2019, are presented in Table 1. Asia is the world's leader with a production of 514,255 tonnes and a harvested area of 126,981 ha, in 2019.

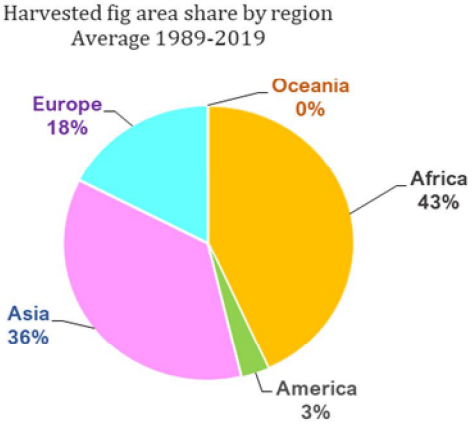
On the other end of the scale is Oceania with only 69 ha and 74 tonnes recorded in 2019 (Table 1.) Total global fig harvested area reached 286,197 hectares and the fig production reached 1,315,588 tons in 2019 [13] [15] This is 6.9 % more than in the previous year and 13.1 % more than 10 years ago [13] [15].

Table 1. Global fig harvested area and production 1989-2019 – data

Continent	Year	Harvested area (ha)	Production (tonnes)
Africa	1989	111.729	218.074
	1994	126.253	352.966
	1999	131.164	385.279
	2004	134.826	323.920
	2009	147.962	519.903
	2014	149.111	471.613
	2019	15.1226	522.556
America	1989	12.263	79.353
	1994	10.340	79.246
	1999	10.908	71.613
	2004	10.425	84.363
	2009	8.795	74.422
	2014	8.039	71.189
	2019	7.153	67.241
Asia	1989	112.582	418.736
	1994	110.584	479.557
	1999	115.361	477.777
	2004	121.213	492.228
	2009	116.289	452.970
	2014	126.981	514.255
	2019	98.909	593.884
Europe	1989	158.660	266.103
	1994	53.630	150.891
	1999	47.074	167.306
	2004	39.606	114.808
	2009	28.997	95.229
	2014	28.036	91.072
	2019	28.840	119.574
Oceania	1989	40	146
	1994	30	90
	1999	30	75
	2004	40	78
	2009	59	87
	2014	75	82
	2019	69	74

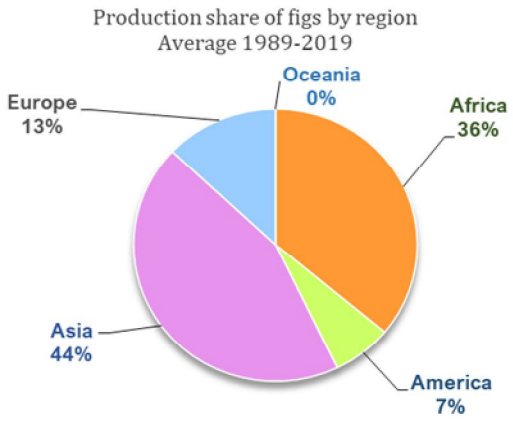
Source of the data: *FAOSTAT Database*

Figure 1. Harvested fig area share by region, average 1989-2019



Source of the data: FAOSTAT *Database*

Figure 2. Production share of figs by continent, average 1989-2019



Source of the data: FAOSTAT *Database*

Africa is the world leader with 43% of the total fig cultivated area, followed by Asia (36%) and Europe (18%) (Figure 1). Although Africa is on the top of the chart when it comes to harvested area, regarding fig production comes second with 36% of total global production. The Asian continent is the leader with 44% of total worldwide fig production (Figure 2).

Table 2. World's top fig producing countries and harvested area 1989-2019 – data

Country	Year	Harvested area (ha) Official data	Production (tonnes) Official data
Turkey	1989	57.725	279.000
	1994	48.967	279.000
	1999	47.148	275.000
	2004	50.500	275.000
	2009	47.662	244.351
	2014	49.464	300.282
	2019	52.116	310.000
Egypt	1989	13.862	39.000
	1994	18.100	184.000
	1999	25.316	203.005
	2004	27.521	160.124
	2009	31.969	286.682
	2014	28.501	176.105
	2019	26.931	215.450
Iran	1989	26.955	53.101
	1994	34.804	94.116
	1999	38.784	70.100
	2004	43.094	80.769
	2009	41.265	58.836
	2014	51.047	83.787
	2019	18.655	130.328
Algeria	1989	36.000	70.320
	1994	41.900	45.732
	1999	35.730	50.609
	2004	45.920	64.940
	2009	46.935	83.801
	2014	44.395	128.620
	2019	39.438	114.092
Syria	1989	14.700	36.200
	1994	10.700	38.004
	1999	10.729	41.815
	2004	9.800	36.696
	2009	9.663	53.724
	2014	9.433	35.301
	2019	9.435	43.015
United States of America	1989	6.840	43.545
	1994	5.900	51.700
	1999	5.949	42.910
	2004	5.180	46.357
	2009	3.764	39.689
	2014	2.833	30.300
	2019	2.487	28.030

Source of the data: *FAOSTAT Database*

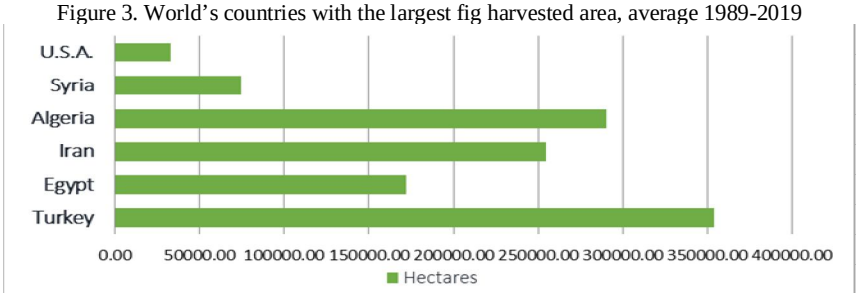
Turkey is the world leader in fig production and consumption. With a production of 310.000 tonnes in 2019 (Table 2), the country is responsible for more than 20% of global fig output and more than half of the world's dried fig output [13]. Aydin province of Turkey accounts for 75% of fresh and dried fig production in Turkey, followed by Hatay, Mersin and Adana [2], [3].

Based on a comparison of 50 countries in 2019, Turkey ranked the highest in fig production and a harvested area of 52,116 ha, followed by Egypt [13], [15] (Table 2). Egypt is the largest fig producing country in the Middle East, with 215,450 tonnes produced in 2019 and a recorded harvested area of 26,931 ha, followed by Iran (130,328 tonnes and

18,655 ha) and Algeria (114,092 tonnes and 39,438 ha) (Table 2). North Africa is also a major player in the fig industry, with Algeria, Tunisia, and Morocco producing a combined total of roughly 175,309 metric tons annually [14].

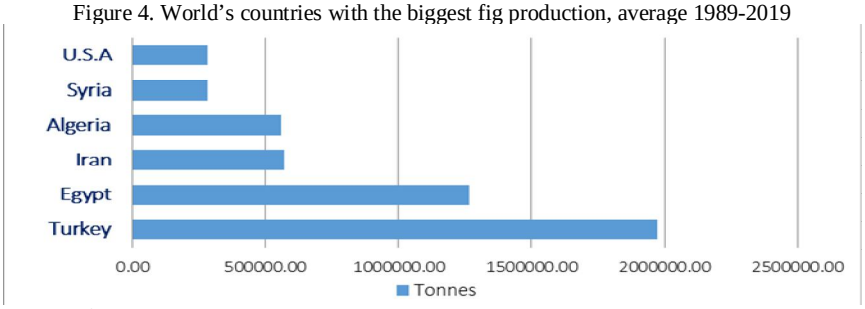
The United States ranks eighth in global fig production [14], recording 28,030 tonnes in 2019 and a harvested area of 2,487 ha (Table 2). However, it is interesting to note that nearly all of US figs are grown in California, where the fruit was introduced less than 250 years ago [14].

Figure 3. World's countries with the largest fig harvested area, average 1989-2019



Source of the data: *FAOSTAT Database*

Figure 4. World's countries with the biggest fig production, average 1989-2019



Source of the data: *FAOSTAT Database*

Table 3. Fig production and harvested area in European countries 1989-2019 – data

Country	Year	Harvested area (ha) Official data	Production (tonnes) Official data
Spain	1989	24,900	49,064
	1994	20,252	59,600
	1999	19,446	63,570
	2004	11,953	41,297
	2009	20,252	29,120
	2014	19,446	28,896
	2019	11,953	51,600
Albania	1989	9,250	20,300
	1994	900	11,000
	1999	1,000	12,100
	2004	1,200	15,000
	2009	1,500	19,517
	2014	1,543	19,350
	2019	1,489	22,024
Greece	1989	21,000	112,650
	1994	7,332	32,908
	1999	7,259	29,449
	2004	6,490	21,545
	2009	6,240	20,838
	2014	4,665	20,023
	2019	3,990	19,730
Italy	1989	12,564	36,750
	1994	9,078	39,482
	1999	8,019	45,200
	2004	3,593	21,226
	2009	2,539	12,106
	2014	2,408	10,788
	2019	2,150	11,830

In Europe, Spain leads fig production with 51,600 tonnes and a harvested area of 14,600 ha recorded in the year 2019, followed by Albania (22,024 tonnes) and Greece (19,730 tonnes) (Table 3). Italy is also a big producer with a cultivated recorded harvested surface of 2,150 ha in 2019 and a fruit production of 11,830 tonnes (Table 3). Spain is the largest fig producer in Western Europe and, by region; Extremadura is leader in area and cultivation of fig trees [5].

By analyzing the data in tables (Tables 1-3), it has been observed that the cultivated surfaces decreased in the last decades, but the fig production quantities still remained high. In most cases this fact is due to the modernization and improvement of fig cultivation technology that makes it possible to obtain big productions on smaller surfaces.

In Romania, even though there have been identified many fig genotypes in different regions of the country, the majority of them are cultivated in home gardens [8]. In the climatic conditions of Romania, the fig tree can only be cultivated if protected during winter with different materials or sheltered close to a building [8]. Even so, fig cultivation in Romania developed in specific regions, where the climate is milder and more suitable, such as the south of Banat and Oltenia, Dobrogea and around the cities of West and South Romania. Here are grown Adriatic type local varieties because the wasp that pollinates the fig cannot survive in the country [8]. The most favorable areas in Romania for fig growing are Mededinți County (Drobeta Turnu Severin, Svinița, Simian, Orșova), Dolj County, in the areas around Danube River, Dobrogea and in the west part of the country. Svinița (44°30′00″N 22°06′17″E) is a commune in Mehedinți County, Romania, located on the Danube (in the area of the Banat known as Clisura Dunării) [1] and it is best known for its numerous fig trees, being the most established area for fig growing in the country. Some sources say that there are around 5000 fig trees in the village [16]. The biggest fig orchard in the area (Figure 5-6), has a surface of 1.400 square meters and produces approximately 3 tonnes of figs annually, according to the owner.

Figure 5. Fig orchard in Svinița village, Mehedinți county

Source: Personal collection

Figure 6. Fig orchard in Svinița village, Mehedinți county

Source: Personal collection

Conclusions

Regarding the worldwide fig production in the last decades, the Asian continent is the leader, followed by Africa and Europe. Fig productions have increased over the years, as well as harvested area. In some cases the harvested areas became smaller but the production remained the same, due to the modernization and improvement of cultivation technology in fig growing. North Africa is also a big fig producer, with Algeria, Tunisia, and Morocco producing a combined total of roughly 175,309 metric tons annually [14] The United States ranks eighth in global fig production [14], recording 28,030 tonnes in 2019 and a harvested area of 2,487 ha (Table 2). Turkey remains the country with the largest cultivated area and the biggest fig production in the world. In Europe, Spain is the leader, followed by Greece, even though in 2019, Albania produced 22.024 tonnes, more than 19.730 tonnes produced by Greece (Table 3). Romania is far from becoming a place in the Europe's top fig producing countries, but it has the potential to produce high quality figs that could sustain the demand of fresh figs in the country. It is known that the demand of fresh figs in Romania is higher that the offer and this could represent a starting point for growers to turn their efforts into cultivating this very valuable crop.

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