

# Determining the Purchasing Power of Leader Tomato Exporter Countries

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## ABSTRACT

*Tomato is one of the most produced, consumed and traded agricultural products in the world. In an area of 4.84 million hectares in the world; 182.30 million tons of tomatoes are produced. World fresh vegetable production is 1.1 billion tons and tomato has a 16% share. Tomato trade in the world is increasing both in quantity and value. 7.45 million tons, which constitutes only 4.60% of the tomatoes produced in the world, are subject to international trade. China ranks first in the world tomato cultivation area and production amount, and Mexico ranks first in the world tomato export. In the research, it was aimed to determine the amount of input they could buy in the 2014-2019 period for 1 kg amount of tomato produced. For this purpose, 5 countries including Turkey, Netherlands, Mexico, Spain and Morocco were examined within the scope of the research. The competitiveness of the countries examined during the research period was compared with Turkey. Effective implementation of export-based government incentive policies and input support is very important in order to increase the competitiveness of the tomato sector in Turkey.*

**Keywords:** Tomato, Export, Parity, Purchasing Power

## INTRODUCTION

The homeland of tomatoes is the mountainous regions of Peru, Ecuador and Chile, which are South American countries. It was first cultivated by the Mexicans and spread to the world from there (Celikyurt and Zengin, 2014).

Tomato has a positive impact on human health, containing rich vitamins and minerals. 100 g fresh tomato 6 gmdry matter, 25 mg C vitamin, 1600 I.E.A vitamin, 0.08 mg B1, 0.04 mg B2, 0.3 Niacin, 0.40 mg carotene, 0.70 gm. cellulose, 30 mg calcium and 0.20 mg iron (Kacar and Katkat, 1999).

According to FAO (2017) data, the tomato has a 16% share with 182 million tons in world fresh vegetable production, which is 1.1 billion tons. In the world tomato production as of 2017, China ranks first with a production of 59.6 million tons, India ranks second with 20.7 million tons, Turkey ranks third with 12.75 million tons and the USA ranks fourth with a production of 12.6 million tons. Being the leader in the world, China meets 32% of the total world tomato production.

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Mexico ranks first in world tomato exports, while the Netherlands ranks second and Spain third. Ranking fifth, Turkey's share in exports increased by 1% from 525 thousand tons to 530 thousand tons in 2018. In tomato imports, with 1.8 million tons of imports, the USA ranked first with a share of 25.4% in world imports, while Germany ranked second with 731 thousand tons of imports, and Russia ranked third with 577 thousand tons of imports. Turkey's imports increased by 88% compared to the previous year and increased from 553 tons to 1041 tons.

Turkey, which does not take an important place in the world ranking in the amount of tomato imports, ranks fifth in the world with its share in the amount of exports (FAO, 2020). Tomato ranks first among the vegetable types produced under greenhouses in Turkey. In Turkey, greenhouse agriculture is carried out on a total area of 75,217 hectares. 47.21% of this area consists of plastic greenhouses, 25.45% of low tunnels, 15.94% of high tunnels and 11.40% of glass greenhouses. 3.82 million tons of tomatoes were produced under greenhouse in 2017. 62% of Turkey's greenhouse tomato production was obtained from Antalya and 14% from Muğla (Oztürk and Engindeniz, 2019).

According to 2017 data, more than 30 million tons of vegetables were produced in Turkey. Tomatoes constitute approximately 40-45% of the total vegetable production. 7.2% of the world's tomato production is produced in Turkey. About 4% of the total vegetable production amount is used for export. Turkey's total export of fresh vegetables is approximately 1.1 million tons. About 4% of Turkey's total vegetable production is exported (Guvenc, 2018).

In the research, it was aimed to determine the amount of input, which the producers in the leading countries in the tomato product market could buy, in the 2010-2020 period for 1kg tomato produced. For this purpose, 5 countries including Turkey, Netherlands, Mexico, Spain and Morocco were examined within the scope of the research.

## MATERIAL AND METHOD

In the study, to compare the leading countries in tomato export, secondary data covering the period of 2014-2019 were used. The main material of the study is the data from this period. Data were obtained from the Turkish Statistical Institute (TUIK) and FAO. Comparison of leading countries in export was compared with indexes. In the classification of the indices, more emphasis will be placed on the indices according to the number of covered items. These indices form the basis of the calculation of the domestic and foreign terms of trade. In the research, calculations were made by using simple indexes in the comparison of the countries. Simple indexes are ratios that measure relative changes in the price, quantity or value of a single good over time. The interpretation of simple indexes is based on a single variable. A simple index is a ratio that measures relative changes in the price, quantity, or value of a single good over time. (Gursakal, 2012).

## FINDINGS

The study is aimed at comparing the purchasing power of the leading countries in export. Tomato exports by country are given in Figure 1 (TEPGE, 2020). According to the data in 2018, the leading countries in the world are Mexico, Netherlands, Spain, Morocco and Turkey. Turkey has 7%, Morocco 7.1%, Spain 10.7%, Netherlands 14.3% and Mexico 24.2% export share.

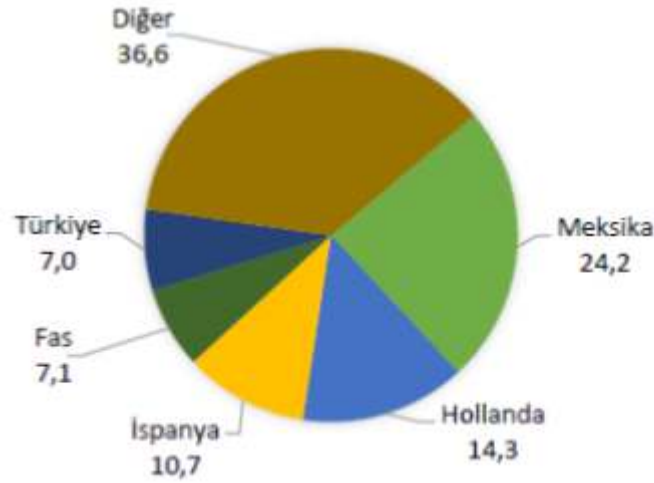


Figure1. Tomato export ratio by country (TEPGE, 2020)

The production amounts of Turkey, Mexico, Netherlands and Spain between 2014-2019 are given in Figure 1. A simple index was created based on the production quantities given in 2014. Compared to the index values created and 2014, the highest increase occurred in Mexico in 2018. The decrease in the amount of tomato production was experienced in Turkey in 2018. While Spain ranks first in tomato production in 2019, Turkey ranks second.

Table 1. Production Quantity (Tonnes)

Production	Turkey		Mexico		Netherlands		Spain	
2014	11850000	100,00	3536305	100,00	900000	100	4888880	100,00
2015	12615000	106,45	3782314	106,95	890000	98,88	4832700	98,85
2016	12600000	99,88	4047171	114,44	900000	100,00	5233542	107,04
2017	12750000	101,19	4243058	119,98	910000	101,11	5163466	105,61
2018	12150000	95,29	4559375	128,93	910000	101,11	4768600	97,53
2019	12841990	105,69	4271914	120,80	910000	101,11	5000560	102,28

Source: FAO (2020)

There has been a continuous decrease in the tomato harvest area in Mexico during the examined period. Compared to 2014, the highest increase in tomato harvested area occurred in 2018 in China (Table 1).

**Table 2. Area harvested by countries (ha)**

Area harvested	Turkey		Mexico		China		Netherlands		Spain	
2014	183029	100	95207	100	1003388	100	1780	100	54750	100
2015	193572	105,76	91989	96,61	1029608	102,61	1755	98,59	58134	106,18
2016	189371	97,82	93376	98,07	1039187	103,56	1775	99,71	62715	114,54
2017	187406	98,96	92993	97,67	1055326	105,17	1790	100,56	60852	111,14
2018	175137	93,45	90323	94,87	1071339	106,77	1790	100,56	56130	102,52
2019	181488	103,62	87917	92,34	1086771	108,31	1800	101,12	56940	104,00

**Source: FAO ( 2020)**

Tomato export values of Turkey, Mexico, Netherlands, Spain and Morocco are given in Table 3. The index was calculated based on the change in export values given in 2014. While Turkey's exports lost value in 2015, 2016 and 2018 compared to 2014, there was an increase of 20% in 2017 and 4% in 2019. Mexico experienced an increase in other years compared to 2014. Among the benchmarked countries, the highest increase in export value occurred in Morocco in 2019. Despite the decrease in export value in the 2014-2019 period, Spain ranks third among the countries compared to 2019.

**Table 3. Export value (1000 US)**

Export Value	Turkey		Mexico		Morocco		Netherlands		Spain	
2014	426490	100	1794332	100	481422	100	1833614	100	1283581	100
2015	365279	85,64	1833864	102,20	437762	90,93	1674870	91,34	1070026	83,36
2016	239875	65,66	2105265	117,32	512007	106,35	1620560	88,38	1070517	83,40
2017	289219	120,57	19433161	1083,03	580522	120,58	1960552	106,92	1141347	88,91
2018	288349	99,69	2260996	126,00	685165	142,32	1932271	105,38	1097550	85,50
2019	301649	104,61	2163383	120,56	764876	158,87	1914152	104,39	1032690	80,45

**Source: FAO ( 2020)**

In Table 4, the yield of selected countries is given as hg/ha. While tomato yield increased in Turkey and Mexico in 2019 compared to 2014, it decreased in the Netherlands and Spain. Although there was a decrease in 2018 in Turkey compared to the previous year, there was no decrease in productivity in other countries.

**Table 4. Tomato yield (hg/ha)**

Yield	Turkey		-		Netherlands		Spain	
2014	647438	100	371433	100	5056180	100	892946	100
2015	651695	100,65	411170	110,69	5071225	100,29	831304	93,09
2016	665361	102,09	433427	116,69	5070423	100,28	834496	93,45
2017	680341	102,25	456277	122,84	5083799	100,54	848529	95,02
2018	693743	101,96	504786	135,90	5083799	100,54	849564	95,14
2019	707594	101,99	485903	130,81	5055556	99,98	878216	98,35

**Source: FAO ( 2020)**

Tomato producer prices (USD/tonnes) in the leading exporting countries are given in table 5, from 2014 through 2019. According to the tomato producer price index given, a decrease of 12.1% in Turkey, 1.72% in the Netherlands, 48.71% in Spain and 11.62% in Morocco was experienced in 2019 compared to 2014. Despite the decrease in the price index experienced in these countries, which are pioneers in exports, an increase of 9.44% occurred in the tomato price index in Mexico compared to 2014. While the price decrease in Turkey was the most in 2017, there was an increase in the price index in other countries in the same year. The highest price increase in Turkey occurred in 2016, with a value of 28.73%. Despite the price increase in Turkey in 2016, decreases in the value of the tomato price index occurred in other countries, except for Morocco.

**Table 5. Producer price (2014-2019) (USD/tonnes- Annual value)**

Producer price	Turkey		Mexico		Netherlands		Spain		Morocco	
2014	480,1	100,00	411,7	100,00	808,3	100,00	689,3	100,00	271,2	100,00
2015	395,7	82,42	420,3	102,08	804,7	99,55	361,1	52,38	172,1	63,45
2016	509,4	128,73	381,9	92,76	669,6	82,84	311,1	45,13	198,8	73,30
2017	299	58,69	388,1	94,26	827	102,31	439,2	63,71	209,5	77,24
2018	312,3	104,44	428,1	103,98	739,9	91,53	372,6	54,05	216,9	79,97
2019	274,8	87,99	450,6	109,44	794,4	98,28	353,6	51,29	239,7	88,38

Source: FAO (2020)

The 2015 base year consumer price index values, which occurred between 2014 and 2019 in Turkey, Mexico, Netherlands, Spain and Morocco, which are the leading countries in tomato exports, are given in Table x. The given index values have been converted using a simple index, taking 2014 as the base year, in order to enable comparison with other data. In Turkey and Mexico, there was an increase of more than 20% in the general consumer price index in 2019 compared to 2014. There was also an increase in other countries, but this increase remained below 10%.

While the highest increase in the price index was experienced in Turkey, Mexico, the Netherlands, and Spain in 2019, the highest increase was experienced in Morocco in 2018. No country fell below the index base value of "100" between 2014 and 2019 (except Spain/2015-2016). According to the index values obtained from FAO, the country with the highest consumer index is Turkey, while the lowest country is Spain (Table 6).

**Table 6. Prices General Indices (2015=100//January)**

Consumer Prices	Turkey		Mexico		Netherlands		Spain		Morocco	
2014	89,6	100	96,4228	100	98,15	100,00	99,959	100,00	98,293085	100,00
2015	96,1	107,24	99,378	103,06	98,15	100,00	98,64068	98,68	99,85605	101,59
2016	105	109,57	101,9757	105,75	98,71	100,57	98,35625	98,39	100,116544	101,85
2017	115	109,21	106,7872	110,74	100,35	102,24	101,2823	101,32	102,200496	103,97
2018	127	110,34	112,7095	116,89	101,82	103,73	101,8641	101,90	104,396486	106,20
2019	153	120,35	117,6299	121,99	104,05	106,01	102,8621	102,90	103,76346	105,56

Source: FAO (2020)

The ratio of the producer price index of the leading exporting countries to the general index is given in Table 7. The given rate is an indicator of the amount of goods and services that producers operating in leading countries can purchase with a unit of product they produce. In all benchmarked countries, in 2014, a producer can purchase more than one unit of goods and services with a unit of product, while in 2019, the producer can purchase less than one unit of product with a unit of product in all countries.

Producers were able to purchase more than one unit of goods and services in Turkey in 2014 and 2016, in Mexico in 2014 and 2015, in the Netherlands in 2014, 2015 and 2017, in Spain and Morocco in 2014, with a unit of product they produced.

**Table 7. Producer Price Indices/Prices General Indices**

Producer price /prices indices	Turkey	Mexico	Netherlands	Spain	Morocco
2014	1,11607143	1,03709911	1,0188487	1,00041017	1,017366
2015	0,85764828	1,02718912	1,01426388	0,53101824	0,635415
2016	1,226	0,90962847	0,83922602	0,45884222	0,732147
2017	0,51034783	0,88269006	1,01953164	0,6290339	0,755769
2018	0,8223622	0,92254868	0,8989393	0,53060892	0,766022
2019	0,57509804	0,9303757	0,94454589	0,49862875	0,851745

Source: FAO (2020)

Purchase of parity, which is one of the indicators of welfare, decreased at most in Turkey and Mexico in 2017, in the Netherlands in 2016, in Spain in 2019 and Morocco in 2015.

## RESULT

The study is aimed at determining the purchasing power of the producers by comparing the data of Turkey, Mexico, Netherlands, Spain and Morocco, which are the leading countries in tomato export. Another aim of the study is to reveal the tomato export competitiveness and current situation of these countries with Turkey.

Mexico is the country with the largest share in tomato exports. Mexico is behind Turkey in terms of tomato production amount, yield and planted area. The tomato producer price index in Mexico is 63.97% higher than in Turkey. The general consumer price index is 45.29% higher in Turkey than in Mexico. The high price index in Turkey also affected the purchasing power of the producers. While a producer in Mexico can purchase 0.93 units of goods and services with one unit of product produced in 2019, this rate is 0.57 in Turkey.

According to the 2019 value of tomato producer price index, Spain comes first, followed by Turkey. According to the general consumer price index value, Turkey ranks first. In all benchmarked countries, in 2014, a producer can purchase more than one unit of goods and services with a unit of product, while in 2019, the producer can purchase less than one unit of product with a unit of product in all countries. The purchasing power of the producers in the leading countries in tomato export compared to 2019, respectively; Netherlands, Mexico, Morocco, Turkey and Spain.

## BIBLIOGRAPHY

1. Celikyurt, M. A. and Zengin, S.,2014. West Mediterranean Agricultural Institute Bulten. Review of Agricultural Researches, 33.
2. FAO, 2017. Trade indices, <http://www.fao.org/faostat/en/#data/TI>.
3. FAO, 2020. FAOSTAT Selected indicators, <http://www.fao.org/faostat/en/#data/QC>.
4. Gursakal, N. 2012. Description Statistics, Dora Publishing, Bursa, 520 s.
5. Güvenç, İ. 2019. Tomato production, foreign trade and competitive power in Turkey. Journal of Agriculture and Nature, 22(1), 57.
6. Kaçar, B. and Katkat, V.A. 1999. Fertilizer and fertilizer techniques report (Gübreler ve Gübreleme Tekniği), Vipaş, A.Ş. (In Turkish).
7. Ozturk, G. and Engindeniz, S. 2019. Analysis of Tomato Production Economic Analysis in Mugla Province. Ege University Journal of Agricultural Faculty, 56(3), 345-358.
8. TEPGE, 2020. Tomato and agricultural products market data report, Ankara. <https://arastirma.tarimorman.gov.tr/tepge/Belgeler/>