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Outlook on Turkish Tomato Sector

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ABSTRACT: Tomato is a native tropical America and considered to have originated in the tropical coastal areas of Ecuador, Peru or Bolivia and portions of Northern Chile. Tomato is one of the most consumed vegetables in the world together with potatoes and onions. Although Turkey is the 4th producer of tomato, it remains 6th exporter of this commodity. Processing tomato production is intensive mainly in Marmara and Aegean Regions, especially in Bursa, Manisa and İzmir provinces. Investigations show that real prices which farmers receive from both tomato paste and fresh tomato constantly decline. Turkey is an exporter of tomato and 60.3% export share of total Fresh and frozen tomato is exported to Russia. In tomato yield, production and consumption, Turkey is above the world average. However, export proportion of total production is insignificantly observed. Export to EU countries should be raised to develop the current status of tomato sector in Turkey.

Keywords: Consumption, production, tomato, Turkey

Türkiye Domates Sektörüne Genel Bakış

ÖZET: Domates, patates ve soğan ile birlikte dünyanın en çok tüketilen sebzelerinden biridir. Türkiye domates üretiminde dördüncü sırada yer almasına rağmen ihracatta altıncı sıradadır. İşlenmiş domates üretimi Marmara ve Ege Bölgelerinde özellikle de Bursa, Manisa ve İzmir ilerinde yoğunlaşmıştır. Araştırmalar hem salçalık domateste hem de taze domateste çiftçi eline geçen reel fiyatın sürekli azaldığını göstermektedir. Domates ihracatçısı olan Türkiye ihracatının %60.3'ünü Rusya'ya yapmaktadır. Türkiye domates verimi, üretimi ve tüketiminde dünya ortalamasının üzerindedir. Fakat toplam üretim içerisinde ihraç edilen miktar oranı oldukça düşüktür. Türkiye'de domates sektöründeki mevcut yapıyı düzelmek için Avrupa Birliği ülkelerine olan ihracat artırılmalıdır.

Anahtar Kelimeler: Domates, tüketim, Türkiye, üretim

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INTRODUCTION

Tomato, *Lycopersicum esculentum* L., is an annual shrubby member of the Solanaceae family. In a protected environment, tomato is a short-lived herbaceous perennial. It is native to tropical America and considered to have originated in the narrow, dry and tropical coastal areas of Ecuador, Peru or Bolivia and portions of Northern Chile. It was introduced to Central America and Mexico it was used by the Aztec and Toltec people and native people around Vera Cruz and Puebla Mexico they were likely responsible for domestication. Seeds of tomato were taken back to Italy by the returning explorers as early as 1554, and the plant quickly found favor in the warm Mediterranean climate. From there, tomatoes moved to Northern Europe. The name of tomato is derived from the South American word *xitomate* or *zitotomate* and the Mexican word *tomati*. At first, tomato was grown in European countries as an ornamental plant, called "love apple", however, it was not widely accepted as a food. It was considered poisonous possibly because it is in the same family as deadly nightshade. Tomato leaves and immature fruits contain the toxic alkaloid tomatine. After finding out that it was not poisonous, tomato became a food crop and cultivation spread throughout the world, quickly. (Swiader et al., 1992; Decoteau, 2000; Peralta and Spooner, 2007; Welbaum, 2015).

Tomato is one of the most consumed vegetables in the world together with potatoes and onions (Ertürk ve Çirka, 2014). With worldwide production reaching almost 161 million tons in 2013 (FAO, 2015), moreover, tomato is the seventh most important crop species after maize, rice, wheat, potatoes, soybeans and cassava (Bergougnoux, 2014). In addition, while 20 years ago, Europe and the Americas represented the most important producers, today Asia dominates the tomato production (Bergougnoux, 2014). Furthermore, tomato was firstly started to be grown in Adana region, in the early of 19.th century and tomato owns important place in Turkey's economy (Aybak ve Kaygısız, 2004). According to recent statistics, although commercial production areas are Aegean and Mediterranean, tomato has been produced throughout Turkey with 11-12 million tonne annual production (TUIK, 2015). Additionally, Turkey is an important producer country like China, India and USA in the world (FAO, 2015; TUIK, 2015). Owing to the fact that tomato is one of the most consumed and versatile vegetables in the world and it has a common use as frozen, canned food, tomato paste, ketchup and pickle in terms of health and nutrition. In addition fresh fruits are used in salads, various culinary preparations, juices, or processed in the form of purees, concentrates, condiments and sauces (Razdan and Mattoo, 2007).

Therefore, in this investigation the importance and the situation of Turkish tomato sector with new data to its production, price, foreign trade, domestic consumption and balance sheet are discussed.

The Turkish Tomato Sector

Tomato, as a consequence of being one of the vegetables which is mostly produced, consumed has one of the highest level on which subjects to trade, being irreplaceable for human nutrition and owning areas of usage like canned food, ketchup, paste, pickle is on the top of most important vegetables. Tomato is grown in many countries around the world, also Turkey is one of the most important country at producing tomato owing to the appropriate climate conditions (Keskin ve Dölekoğlu, 2004). Thus tomato production in Turkey consists one fourth of total fresh fruit and vegetable production (Anonymous, 2013)

Processing tomato production is intensified mainly in Marmara and Aegean Regions, and in particularly in Bursa, Manisa and İzmir provinces (Keskin, 2010). Approximately 20-30% of tomato which is produced in Turkey is processed in food industry, residual proportion is used for fresh consumption, 80% of processed tomato is used for paste production, 15% is used for manufacturing of canned food and residual for ketchup and juice etc. (Oruç, 2013).

Production

Based on 1995-2014 data, the Tomato sector has been outlooked in Turkey. Mainly, production, yield, foreign trade and consumption of the sector have been taken into consideration. Although in many provinces in Turkey produce tomato, many of these provinces produce very little amount of tomato in very limited areas. According to the 2014 data, 54.9 percent of whole tomato production in Turkey are produced in only five provinces (TÜİK, 2015), namely, Antalya, Bursa, İzmir, Mersin and Manisa (see Table 1). Fresh tomato is predominantly produced in Antalya and Mersin provinces. In contrast, paste tomato is extensively produced in Bursa and İzmir provinces.

Table 1. Main tomato producing regions in Turkey (2014)

Province	Fresh		Paste		Total	
	Production	**%**	**Production**	**%**	**Production**	**%**
Antalya	2 268 481	28.6	4 050	0.1	2 272 531	19.2
Bursa	290 559	3.7	1 230 395	31.4	1 520 954	12.8
İzmir	240 540	3.0	715 335	18.3	955 875	8.1
Mersin	890 796	11.2	0	0.0	890 796	7.5
Manisa	183 763	2.3	677 684	17.3	861 447	7.3
Muğla	593 174	7.5	1 107	0.0	594 281	5.0
Şanlıurfa	199 763	2.5	261 353	6.7	461 116	3.9
Balıkesir	57 328	0.7	362 252	9.3	419 580	3.5
Turkey	7 935 110	100.0	3 914 890	100.0	11 850 000	100.0

Source: TÜİK, 2015

Both production and yield increased between 1995 and 2014. Yield increased from 4 to 6.5 tonne (Figure 1).

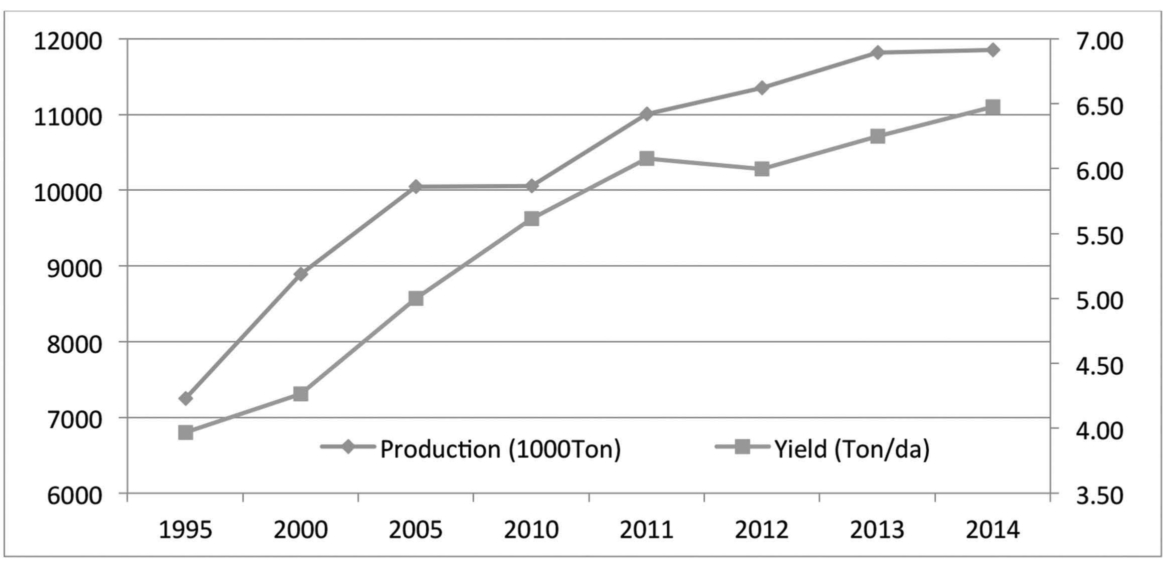

Figure 1. Annual production and yield of tomato in Turkey

Whereas in 1995, China and USA represented the most important producers, today Chine and India dominates the tomato production, followed in decreasing order by Turkey, Egypt, Iran, Italy, Brasil, Spain and Mexico (Table 2). Otherwise, the area dedicated to tomato culture is very small in Northern Europe. It is noteworthy that these countries produce most of their tomatoes under controlled greenhouse conditions (Bergougnoux, 2014).

Table 2. Tomato production shares in major tomato producing countries (%), and production of 2013 (1000 tons)

Country	1995	2000	2005	2010	2011	2012	2013	2013 (Ton)
China	15.1	20.2	24.4	30.8	31.2	29.9	30.9	50 664
India	6.0	6.7	6.8	8.2	10.4	11.6	11.1	18 227
USA	13.5	11.4	9.2	8.5	7.9	8.2	7.7	12 575
Turkey	8.3	8.1	7.8	6.6	7.0	7.0	7.2	11 820
Egypt	5.8	6.1	5.9	5.6	5.1	5.3	5.2	8534
Iran	2.7	2.9	3.7	3.5	3.5	3.7	3.8	6174
Italy	5.9	6.8	5.6	4.0	3.8	3.2	3.0	4932
Brasil	3.1	2.7	2.7	2.7	2.8	2.4	2.6	4188
Spain	3.2	3.4	3.7	2.8	2.4	2.5	2.2	3684
Mexico	2.6	2.4	2.2	2.0	1.5	2.1	2.0	3283
Others	**33.7**	**29.2**	**28.1**	**25.4**	**24.3**	**24.1**	**24.3**	**39 883**

Source: FAO, 2015

When Turkey is compared to EU, tomato production quantity of Turkey increased constantly in analyzed period. As EU production quantity has been steady, share of Turkey in the year 1995 was 35% whereas it reached 55% share of EU in the 2013 (Figure 2).

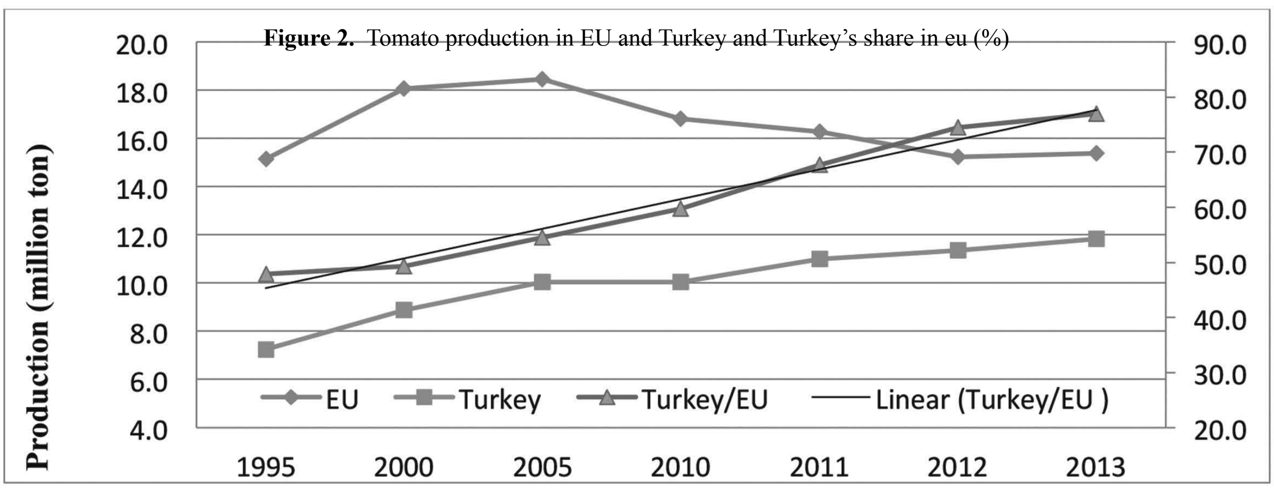

Figure 2. Tomato production in EU and Turkey and Turkey's share in eu (%)

Price of Tomato

Real prices which farmers get from both paste tomato and fresh tomato in investigated years constantly declined. The decrease in fresh tomato price is relatively more (Figure 3). In 1995, when fresh tomato price was quite more than paste tomato, it went down more than paste tomato in 2003. Furthermore, small proportion of the price which consumers pay, comes to farmer's hand owing to longness of marketing chain. Thus, this situation causes resellers to earn more rather than farmers. Marketing marge of vegetable production is 45% in Turkey (Güneş, 1970; Akbay ve ark., 2005; Kaymak ve Aksoy, 2009). As fruit and vegetable producers have small share of sale value owing to the fact that marketing chain in Turkey is very long and labor force is needed too much, whereas consumers expressed that they have to pay so much for these products.

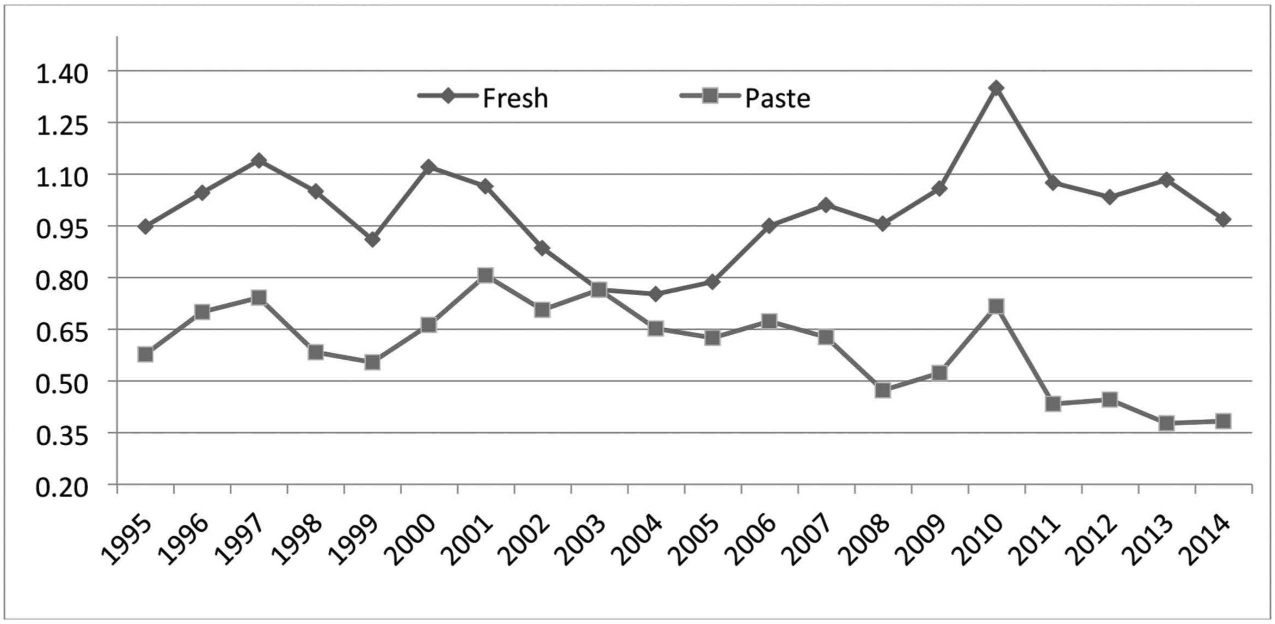

Figure 3. Annual producer real prices

As the real producer price of countries which have significant share on tomato production is viewed, it is seen that the lowest price occurs in Egypt (Table 3). As producer price of tomato in Egypt is 266 \$ tonne^{-1}, this price is 690 \$ tonne^{-1} in USA and 926 \$ tonne^{-1} in Italy. The most increase trend was caught in USA in 1995-2012 period. When tomato price was 123 \$ tonne^{-1}in 1995, it increased to 690 \$ tonne^{-1} in 2012.

Table 3. Producers prices in main tomato producing regions (\$ Ton^{-1})

Country	1995	2000	2005	2010	2011	2012
Egypt	104	113	81	164	261	266
Iran	160	225	108	210	253	290
Mexico	224	406	405	518	446	352
Turkey	281	296	320	664	459	444
China	131	100	312	486	445	507
USA	123	677	917	1067	816	690
Spain	373	591	650	924	612	693
Brazil	412	271	386	724	846	819
Italy	477	481	644	809	905	926

Source: FAO, 2015

Foreign Trade in Tomato

When we look at the exports of the tomato producing countries in 19 years period (1995-2013), it is explicitly seen that Mexico is the only leading exporter with 20.2 percent market share in 2013, Nederland has share 14.0 percent in 2013. On the other hand, Spain has lost its share dramatically from 21.3 percent in 1995 to 12.4 percent in 2013. This picture shows that how Turkish tomato sector share has been increased during that time period and from 2.9 percent to 7.7 percent (Table 3).

Table 4. Tomato exports by country (%)

Exporters	1995	2000	2005	2010	2011	2012	2013
Mexico	21.2	18.2	18.0	21.3	19.5	20.2	20.1
Netherlands	21.3	14.1	16.0	13.3	14.5	14.0	14.4
Spain	21.3	22.6	18.7	10.4	12.5	12.4	13.1
Jordan	4.0	5.1	0.0	5.2	5.7	5.7	8.0
Turkey	2.9	3.2	5.0	8.1	7.5	7.7	6.3
Morocco	4.6	4.4	4.3	5.3	6.1	6.1	6.0
Belgium	5.9	4.6	4.0	2.7	2.6	2.9	3.1
France	1.9	2.1	2.4	2.7	2.8	3.1	3.1
India	0.0	0.0	0.1	0.3	3.0	2.4	3.0
Others	17.0	25.7	31.5	30.7	25.7	25.6	22.9

Source: FAO, 2015

There is no dominating tomato importing country in the world. Except for USA with 21.0 percent share, all other tomato importing countries have less than 12 percent market share. Hence, Russian Federation comes second after USA with 11.7 percent, followed by Germany, France, UK and Pakistan with 10.1, 7.6, 5.7 and 3.6%, respectively (Table 5). Germany has decreased its import share dramatically from 17.5 percent in 1995 to 9.8 percent in 2013. On the other hand, Russia has increased its tomato imports from 3.3 percent in 1995 to 11.7 percent in 2013.

Table 5. Tomato imports by country (%)

Importers	1995	2000	2005	2010	2011	2012	2013
USA	20.1	20.2	19.0	22.2	21.4	21.9	21.0
Russian Federation	3.3	2.8	7.0	10.1	10.5	11.4	11.7
Germany	17.5	17.3	13.5	9.9	10.1	9.8	10.1
France	10.9	10.2	8.8	7.2	7.4	7.9	7.6
United Kingdom	8.1	7.8	8.4	5.6	6.0	5.7	5.7
Pakistan	0.0	0.0	0.0	1.7	2.5	3.5	3.6
Netherlands	8.0	6.2	4.2	2.6	3.6	3.6	3.4
Canada	5.0	4.8	3.5	2.8	2.8	2.8	2.7
United Arab Emirates	2.2	2.0	1.8	1.8	1.9	2.3	2.2
Others	24.7	28.7	33.8	36.2	33.8	31.1	31.8

Source: FAO, 2015

Turkey is an exporter country in tomato sector, 60.3% export share of total Fresh and frozen tomato is exported to Russia (Table 6). The second country which tomato is exported most is Iraq with the share of 7.4%. As the proportion of tomato export to Romania was 10.4% in 2002, it declined 3.5%. As the total tomato export share of EU from Turkey was 21.6%, it declined %10.9 in the year 2014.

Table 6. Tomato (fresh or chilled) export in Turkey (%)

Regions	2002	2004	2006	2008	2010	2012	2013	2014	2014 (Ton)
Russian Fed.	37.2	53.4	55.0	59.3	52.7	60.9	65.8	60.3	352820
Iraq	0.0	0.1	0.3	1.9	1.9	7.9	3.8	7.4	43481
Ukraine	0,1	0.1	0.4	5.0	5.9	6.3	7.8	6.4	37627
Bulgaria	0,3	1.1	2.0	8.4	11.4	3.5	3.9	4.3	24967
Romania	10,4	7.5	9.0	7.4	7.8	3.1	2.4	3.5	20524
Georgia	0,2	0.2	0.5	0.8	1.1	1.1	2.0	3.5	20455
Belarus	0.0	0.2	2.1	1.4	1.0	1.2	1.4	2.9	16986
Moldova	1.0	2.8	6.5	2.4	1.3	2.7	3.6	2.8	16571
Others	50.7	34.5	24.1	13.3	16.9	13.2	9.2	8.9	52047
EU 28	**21.6**	**19.2**	**20.7**	**20.7**	**27.7**	**10.3**	**8.5**	**10.9**	**63822**

Source: Anonymous, 2015

Domestic Consumption and Balance Sheet

Per capita consumption of tomato was given on Table 7. It is viewed that Libya is on the first level with 108.9 kg per capita consumption. This country is followed by Turkey with 94.1 kg capita^{-1}. One of the countries which have a significant share of tomato production, Egypt has 91.3 kg average consumption of per capita, in US this number was identified as 37.8 kg per^{-1} capita. Average of EU is 27.4 kg per^{-1} capita (Table 7). According to TUİK (2015), average tomato consumption in Turkey was computed as 114.6 kg per^{-1} capita in 2011-2012 period.

Table 7. Per Capita Consumption of the Tomato by Country (kg)

Regions	1995	2000	2005	2010	2011
Egypt	74.1	92.2	94.8	98.6	91.3
Greece	136.0	138.5	108.5	93.9	76.9
Italy	55.5	78.8	68.9	40.4	39.5
Jordan	43.3	25.5	18.0	42.9	38.3
Libya	84.8	102.8	66.1	95.0	108.9
Turkey	78.7	87.3	92.1	84.2	94.1
USA	42.7	42.8	38.8	40.6	37.8
EU28	26.3	31.3	31.0	29.0	27.4
World	**13.6**	**15.9**	**17.8**	**19.9**	**20.3**

Source: FAO, 2015

Turkey is a self-sufficient country in the production of tomato (Table 8). While usable tomato production quantities were 11 447 thousand tonne in the 2013-2014, domestic consumption was 10 187 thousand tonne. In sector tomato, rate of self-sufficiency is over more than 110 percent in 2009-2014.

Table 8. Tomato fruit balance sheet in Turkey (1000 tonne)

	2009-10	2010-11	2011-12	2012-13	2013-14
Production	10 746	10 052	11 003	11 350	11 850
Harvest losses	376	352	385	397	415
Supply	10 380	9713	10 630	10 964	11 447
Usable production	10 369	9700	10 618	10 953	11 435
Imports	10.2	12.4	11.8	11.0	11.3
EU 28	2.3	4.1	5.1	6.7	4.6
Domestic use	9111	8672	9513	9849	10 187
Human consumption	8200	7805	8562	8864	9169
Losses	911	867	951	985	1019
Exports	1268	1041	1117	1115	1259
EU 28	488	320	341	336	407
Human consumption per capita (kg)	113.0	105.9	114.6	117.2	119.6
Degree of self-sufficiency (%)	113.9	112.0	111.7	111.3	112.4

Source : TUIK, 2015

CONCLUSIONS

Total quantity of tomato production is around 161.3 million tons in the world. China is on the top of tomato production, having 30.9% shares and followed by India, having 11.1%.

Turkey is on the fourth place with 7.2% share. When Turkey's leading provinces are viewed, it is seen that Antalya is on the top with 19.2% share, respectively followed by Bursa (12.8%) and İzmir (8.1%) and 33% of produced tomato in Turkey is utilized for making paste and residual is for fresh consumption.

Mexico takes the first place with 20.1% share on tomato export and followed by Netherland with 14.4% shares. As USA is the biggest tomato importer with share of 21.0%, Russia takes the second place with share of 11.7%. Though USA takes the third place on the rank of production, being on the first rank of import draws attention.

In this paper, real price which farmers get declined in the years was remarked. In addition, it is not discussed that there is an efficient organization which covers tomato production and marketing. As declined in Ok, (2009) and Erdal, (2005), tomato price is occurred depending on product supply under open market conditions and tomato producers are exposed to significant price risk were expressed.

In general, tomato yield, production and consumption of Turkey are more than world average. However, export proportion of total production is less than the other exporter countries. Export to EU countries should be raised for developing the current status of tomato sector in Turkey. Despite the fact that tomato production in Turkey is high, low quantity of export shows that tomato is consumed predominantly in Turkey. Policies for gaining production must be taken place in Turkey where suitable soil and environmental conditions for tomato production, to increase the export.

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