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THE ROLE AND IMPORTANCE OF VEGETABLES IN THE GLOBAL ECONOMY AND TURKEY

Research Assistant Aybuke KAYA

Hatay Mustafa Kemal University, Faculty of Agriculture, Department of Agricultural Economics, 31060, Hatay/Turkey
ORCID: 0000-0002-6866-1951
(Corresponding Author)

Professor Dilek BOSTAN BUDAK

Cukurova University, Faculty of Agriculture, Department of Agricultural Economics, 01330, Adana/Turkey
ORCID: 0000-0001-6318-698X

ABSTRACT

Global agricultural trade is significant for developing countries. The global gains of agriculture and food trade liberalization seriously affect the agriculture sector. In this context, the insufficiency of policies the countries' causes trade problems. Agricultural issues draw attention in the evaluation of both global and domestic policies in the WTO negotiations. The study aims is to evaluate fresh vegetable production in world markets. It is also to reveal the potential of countries. According to FAO data for 2017, total vegetable production was 1.1 billion tons on an area of 58.2 hectares in the world. China, India, and the USA are the most important vegetable-producing countries. Turkey is fourth in the world vegetable production. The most produced vegetable is the tomato in the world. Among the vegetables produced it ranks first in Turkey, also. Turkey's tomato amount of production is 8.4 million tons. However, the amount of vegetable consumption is not known exactly. For this reason, the real changes cannot be demonstrated. The most important problem in vegetable production is the marketing of products. The competitive power of fresh fruit and vegetable in terms of price, quality, and reliability should be increased in global markets. Production should be made by consumer preferences. The products should be able to be substituted in the world markets. Thus, it will increase its contribution to the improvement and development of countries.

Keywords: Vegetable, production, marketing, trade, world.

1. INTRODUCTION

The fresh fruit and vegetable sector has an important role in human nutrition. Vegetables attract attention with their different usage areas and rich in nutrients. It also contributes to human health and is consumed fresh generally. It can also be used in frozen form.

Vegetables contribute considerably to the economy. Vitamins and minerals are abundant in vegetables (Vural et al., 2000; Günay, 2005; FAO, 2020). In addition to its nutritional contribution, it is an economic area of employment for many people (Şeniz et al., 2005). Vegetables can be grown in the field and undercover (greenhouse). In recent years, more than 80% of vegetable production is carried out in the field, while the rest is undercover (Abak, 2006). Also, vegetables are

grown both organically in Turkey in the world. In this context, the global organic food market is growing steadily. Those who want to get a share from this market increase their level of competition with new trends (Vatansever Deviren and Çelik, 2017). Marketing of grown products is very important. It is also the most important problem of farmers (Emeksiz et al., 2005; Güvenç and Kaymak, 2008). In this context, the balance between supply and demand is important.

Fresh fruits and vegetables subject to export are among the important issues. It must be produced in quality and quantity by the standards demanded in international markets. Production of demanded varieties should be expanded. It is important to eliminate problems related to harvesting, storage, and transportation. Product traceability and safety are issues that have gained importance recently (Gürbüz, 2008). Countries should continue production for export with the necessary precautions. As a result, vegetable trade is increasing. Competitor countries should be investigated for new markets. It is necessary to produce for the periods and products with market insufficiency (Engindeniz, 2009).

Fruits and vegetables pass through different marketing channels from the farmer to the consumer. It is possible to reach retailers and consumers through agricultural cooperatives. However, the longest of the marketing channels is the one in the form of "farmer-collector-broker (at the place of production)-wholesaler-broker (at the place of consumption) -retailer-consumer" (Yurdakul, 2002).

Vegetables to satisfy the domestic market demand in Turkey. It is an important agricultural product group contributing to export. It also provides raw materials to the industry (Güvenç, 2019; Gürbüz, 2008). Turkey is an important position that can be processed in the fruit and vegetable trade (Ataseven and Güneş, 2008).

Many fruits and vegetables are traded in the market. However, only a certain number of products play an important role in this market. Turkey has an advantageous position in the world. Because there are fruit and vegetable production in almost every season and every region. However, certain regions have more shares in the production of these products (Akbay et al., 2005). There is limited research revealing their advantages in vegetable exports (Erkan et al., 2015).

Vegetables are of great importance in human nutrition. It is also important because of its contribution to the effective use of agricultural land. The study aim is to evaluate the fresh vegetable production potential in world markets. It also reveals the position of the countries.

2. MATERIALS and METHODS

Secondary data constitute the main material of the study. Data from databases such as FAOSTAT and TURKSTAT were used. Sector reports are also important for fresh fruit and vegetable. In this context, it has been benefited from the reports of the Mediterranean Exporters Union and the Eastern Mediterranean Development Agency. In addition, previous studies were also used. Major countries in the world fresh vegetable sector were examined using the simple index method. The cultivation area, production amount, the foreign trade of the countries were evaluated according to the products. The vegetables with the highest production are presented in the research (Turkey and the world). Turkey's position was evaluated in the world ranking and fresh vegetable sector. Also, the vegetable production potential of Turkey is evaluated by province.

3. RESULTS

Major countries and products in the world fresh vegetable sector were examined in order. It has also been evaluated in terms of production and foreign trade.

3.1. Vegetable production in the world

Vegetable production is applied in different ways in many countries. According to FAOSTAT 2017 data, vegetables were produced in 58.172.267 hectares of area in the world. A total of 1.094.343.707 tons of vegetables were produced in this area. Turkey's was indexed according to the area and production. Accordingly, it is under 20% of Russia's vegetable land of Turkey. It is seen that the production amount is 34% less (Table 1). Climatic conditions are considered to be effective in this case.

Table 1. Distribution of fresh vegetables by country in the world, 2017 (top 5 countries)

No	Countries	Area (ha)	Index	Production (ton)	Index
1	China	23.821.615	2925	554.290.578	2223
2	India	8.590.690	1055	127.144.323	510
3	USA	955.768	117	32.623.212	131
4	Turkey	814.360	100	24.933.078	100
5	Russia	650.877	80	16.405.843	66

Source: FAOSTAT, 2019

China is the country that produces the freshest vegetables in the world. It produced 554 million tons of production on 23 million hectares of land in 2017. India (127.1 million tons) and the USA (32.6 million tons) follow respectively. Turkey is a major vegetable farmer taking part in the ranks 4th in the world. It has approximately 25 million tons of production quantity in 2017 (Table 1). China's vegetable production is more than 20 times in Turkey.

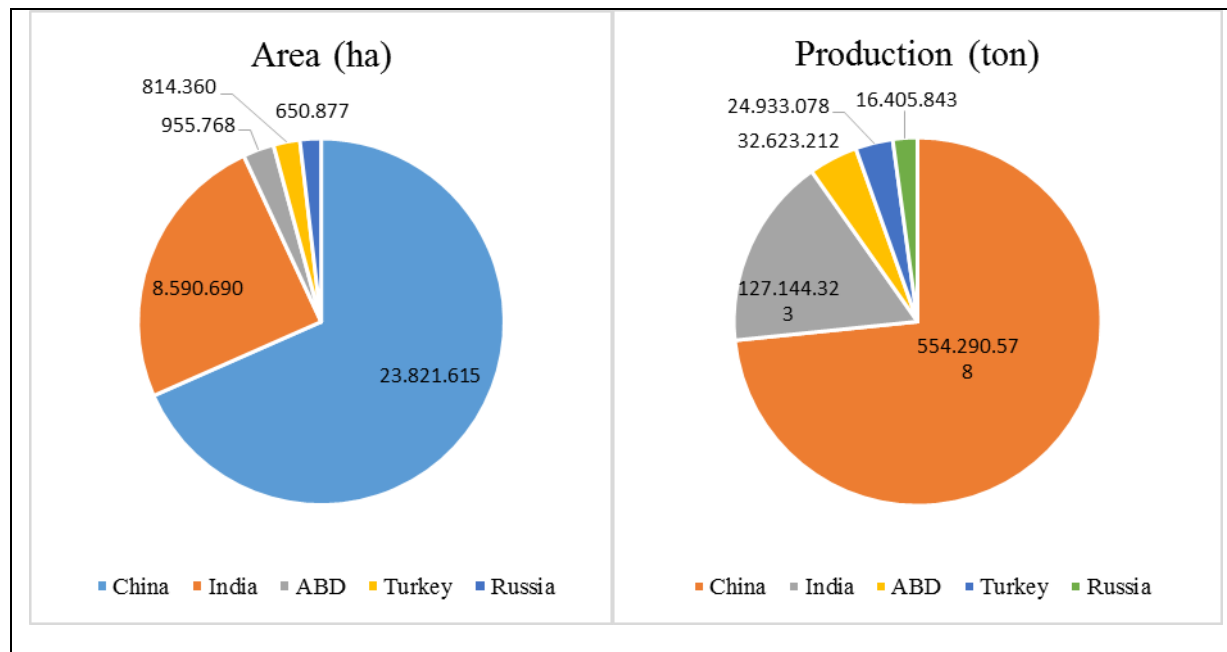


Figure 1. Distribution of fresh vegetables by country in the world

Tomato ranks first among the vegetables grown in terms of production amount in the world. According to FAO data of 2017, 182.3 million tons of tomatoes were produced on an area of 4.8 million hectares. Onion comes after tomato with a production of 97.9 million tons on an area of 5.2 million hectares. In the third place is cucumbers with 83.8 million tons of production on 2.3 million hectares of land. These products are followed by cabbage and eggplant, respectively. The countries where most of the tomato production are China (32,6%), India (11,4%) and Turkey (7%). Dried onion comes first with an area of 5.2 million hectares in fresh vegetable cultivation areas. Tomatoes are in the second place in terms of cultivation area after the onion with 4.8 million hectares (Table 2).

Table 2. The most grown fresh vegetables in the world, 2017

No*	Product	Countries (top 3)	Share in production (%)	Production (ton)	Area (ha)
1	Tomato	China	32.6	182.301.400	4.848.384
		India	11.4		
		Turkey	7		
2	Onion	China	24.8	97.862.931	5.201.590
		India	22.9		
		USA	3.8		
3	Cucumber	China	77.4	83.753.861	2.271.263
		Iranian	2.4		
		Russia	2.3		
4	Cabbage	China	46.8	71.451.137	2.513.709
		India	12.3		
		Russia	4.9		
5	Eggplant	China	62.9	52.309.122	1.858.251
		India	23.9		
		Egypt	2.5		
Total				1.094.343.724	58.172.273

Source: FAOSTAT, 2019 (Edited by DOGAKA)

* According to the production quantity.

MEA Turkey Fresh Fruit and Vegetable Sector Assessment Report of world fresh vegetable trade data have been analyzed for 2017. It is seen that the other vegetables group takes the first place. The other vegetables group has an export value of \$13.8 billion and an import value of \$14.2 billion. This group, with tomatoes; followed by onions, shallots, garlic, leeks and other onion-like vegetables and potatoes, respectively. According to the product groups of vegetables (fresh or frozen), the world total export value is \$45.139.730.000 and the total import value is \$46.761.516.000 (MEA,2019).

The Holland ranks first among the world exporting countries of fresh vegetables. Countries such as Spain, Mexican, China and the USA, France, Canada, Italy, Belgium, Morocco and Germany follow respectively. Turkey is ranked sixteenth with the export of fresh vegetables (Table 3).

The USA ranks first among the world importing countries of fresh vegetables. Countries such as Germany, United Kingdom, France, Canada, Holland, Russia, Belgium, Italy, Vietnam follow respectively (Table 3).

Table 3. Fresh vegetables foreign trade in the world, 2017 (top 20 countries)

No	Countries	Export value (1000 \$)	No	Countries	Import value (1000 \$)
1	Holland	6.884.165	1	USA	8.310.088
2	Spain	5.939.970	2	Germany	5.291.054
3	Mexican	5.880.920	3	United Kingdom	3.222.990
4	China	5.111.740	4	France	2.629.880
5	USA	3.032.704	5	Canada	2.623.218
6	France	1.822.264	6	Holland	2.242.760
7	Canada	1.654.780	7	Russian Federation	1.624.241
8	Italy	1.507.004	8	Belgium	1.528.723
9	Belgium	1.153.386	9	Italy	994.891
10	Morocco	1.070.322	10	Vietnam	914.352
11	Germany	792.153	11	Spain	887.941
12	India	682.257	12	Japan	861.634
13	Egypt	655.468	13	United Arab Emirates	767.814
14	Poland	614.555	14	Malaysia	728.507
15	Islamic Republic of Iran	593.521	15	Indonesia	705.145
16	Turkey	566.309	16	Poland	634.513
17	Peru	522.424	17	Austria	626.552
18	Jordan	369.308	18	Sweden	602.298
19	Israel	343.177	19	Swiss	560.701
20	Ethiopia	284.461	20	Czechia	509.171
Total		45.139.730			46.761.516

Source: MEA, 2019 (Edited by DOGAKA)

3.2. Vegetable production in Turkey

According to Turkey's 2018 crop data it has been examined vegetable production. It was determined that 30.032.827 million tons of vegetables were produced in a total area of 8.206.680 million decares in 2018. The provinces producing the most vegetables continue as Antalya, Bursa, Mersin, Adana and Izmir, respectively (Table 4).

Table 4. Fresh vegetables by province in Turkey, 2018

No	Province	Area (da)	No	Province	Production (ton)
1	Antalya	560.569	1	Antalya	4.606.070
2	Bursa	469.648	2	Bursa	2.299.562
3	İzmir	445.533	3	Mersin	2.232.156
4	Ankara	373.307	4	Adana	1.806.463
5	Adana	348.342	5	İzmir	1.782.978
6	Kayseri	347.181	6	Manisa	1.393.133
7	Mersin	341.489	7	Ankara	1.160.464
8	Manisa	321.254	8	Konya	1.084.894
9	Konya	300.170	9	Muğla	1.047.647
10	Hatay	260.438	10	Çanakkale	934.985
11	Samsun	257.140	11	Şanlıurfa	865.214
12	Balıkesir	254.081	12	Balıkesir	834.503
13	Nevşehir	230.506	13	Tokat	791.710
14	Çanakkale	204.306	14	Samsun	768.931
15	Şanlıurfa	201.977	15	Hatay	572.761
Total		8.206.680			30.032.827

Source: TURKSTAT, 2019 (Edited by DOGAKA)

Table-tomato ranks first among the vegetables produced in Turkey (8.4 million tons). Watermelon (4 million tons), sauceboat tomato (3,7 million tons), onion (1.9 million tons) and melon (1.75 million tons) come after table tomatoes (Table 5).

Table 5. Most vegetables grown by the amount of production in Turkey, 2018

No	Product (top 10)	Province (top 3)	Share in production (%)	Production (ton)
1	Tomato (table)	Antalya	29.8	8.414.920
		Mersin	11.0	
		Muğla	4.5	
2	Watermelon	Adana	25.0	4.031.174
		Antalya	12.4	
		Bursa	4.4	
3	Tomato (sauceboat)	Bursa	26.6	3.735.080
		İzmir	19.8	
		Manisa	18.8	
4	Onion (dry)	Ankara	26.4	1.930.695
		Amasya	12.9	
		Çorum	8.6	
5	Melon	Adana	11.5	1.753.942
		Konya	8.4	
		Denizli	7.7	
6	Cucumber (table)	Antalya	30.7	1.701.735
		Mersin	14.0	
		İzmir	7.1	
7	Pepper (sauceboat, Capia)	Çanakkale	19.3	1.128.060
		Manisa	11.4	
		Adana	9.4	
8	Pepper (long)	Mersin	29.9	930.349

No	Product (top 10)	Province (top 3)	Share in production (%)	Production (ton)
		Antalya	20.1	
		Bursa	10.0	
9	Eggplant	Antalya	22.7	836.284
		Mersin	20.4	
		Balıkesir	6.2	
10	Carrot	Konya	66.1	642.837
		Ankara	20.7	
		Hatay	9.1	
Total				30.032.827

Source: TURKSTAT, 2019 (Edited by DOGAKA)

As in production, table tomatoes (1.18 million da) take the first place in terms of cultivation area. Then, watermelon (863 thousand da) comes in the second place. The other vegetable with the most cultivation area is pumpkin (737 thousand da). The cultivation area of vegetables such as melon, onion, tomato and pepper is also high. (Table 6).

Table 6. Most vegetables grown by the amount of cultivation area in Turkey, 2018

No	Product (top 10)	Province (top 3)	Share in Turkey (%)	Cultivation Area in Turkey (da)
1	Tomato (table)	Antalya	16.8	1.175.095
		Mersin	7.9	
		Muğla	5.2	
2	Watermelon	Adana	16.8	863.610
		Antalya	9.7	
		Diyarbakır	5.1	
3	Pumpkin (seed)	Kayseri	44.0	737.891
		Nevşehir	28.7	
		Konya	9.0	
4	Melon	Ankara	12.5	735.176
		Denizli	6.3	
		Adana	6.0	
5	Onion (dry)	Ankara	18.4	527.133
		Amasya	10.9	
		Tokat	8.0	
6	Tomato (sauceboat)	Bursa	22.0	519.742
		İzmir	18.6	
		Manisa	16.9	
7	Bean (fresh)	İzmir	8.2	455.263
		Bursa	8.0	
		Mersin	7.6	
8	Pepper (sauceboat, Capia)	Çanakkale	18.0	346.248
		Manisa	9.9	
		Şanlıurfa	9.8	
9	Pepper (long)	Mersin	15.3	290.885
		Bursa	10.7	
		Antalya	9.6	
10	Cucumber (table)	Antalya	14.2	288.852
		Mersin	7.9	
		Hatay	4.9	
Total				8.206.680

Source: TURKSTAT, 2019 (Edited by DOGAKA)

Tomato ranks first in foreign trade as well as in production. It is the most exported product among vegetables both in 2017 and 2018. Other products with the highest export value are peppers, cucumber- pickle, pumpkin and potatoes, respectively (Table 7).

Table 7. Fresh vegetables exports by products in Turkey, 2018

*No	Product	Quantity (kg)	**Value (\$)
1	Tomato	538.585.972	291.903.059
2	Pepper	128.753.389	118.662.315
3	Cucumber, pickle	66.922.818	41.348.797
4	Pumpkin	67.714.499	40.418.846
5	Potato	258.169.993	26.387.573
6	Onion, Shallot	101.795.722	16.824.207
7	Eggplant	25.820.361	15.191.262
8	Carrot, radish	87.508.262	13.714.516
9	Mushroom	1.390.372	10.331.338
10	Other vegetables	3.172.665	4.618.899
Total		1.308.233.119	593.286.615

Source: MEA, 2019 (Edited by DOGAKA)

* According to the export value of 2018

**Export (FOB value)

Figure 2 shows the distribution of fresh vegetable exports by product. Tomato has an export share of 49.2% in all vegetables in 2018. Pepper (20%), cucumber-pickle (7%) and pumpkin (6.8%) are other exported products in Turkey (DOGAKA, 2020).

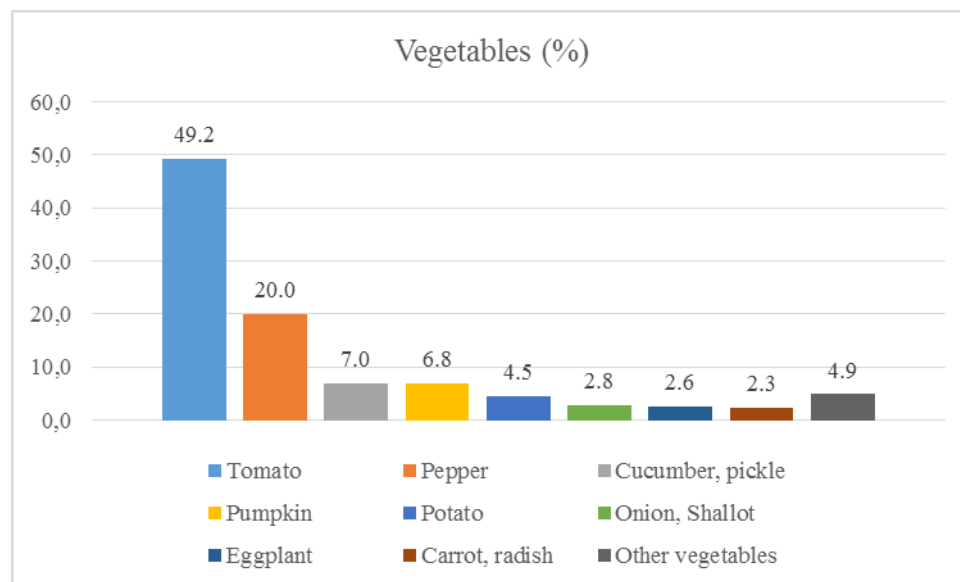


Figure 2. Distribution of Products in Fresh Vegetable Export in Turkey, 2018

Turkey has carried out most of the country's fresh vegetable exports Romania, Russia, Germany, Bulgaria and Ukraine in 2018. In 2018, the highest income from fresh vegetable exports was obtained from Romania (Table 8).

Table 8. Turkey's fresh vegetables exports by country, 2018

No	Countries	Quantity (kg)	Value** (\$)
1	Romania	95.103.692	85.699.958
2	Russian Federation	102.219.465	72.302.579
3	Germany	46.874.900	52.198.144
4	Bulgaria	74.065.594	39.903.630
5	Ukraine	73.195.110	37.943.100
6	Iraq	289.965.730	37.777.664
7	Belarus	54.326.863	30.149.965
8	Israel	50.140.007	29.595.117
9	Saudi Arabia	86.123.891	26.179.207
10	Georgia	92.109.471	25.654.346
11	Syria	128.656.730	18.712.630
12	Poland	19.975.873	18.362.967
13	Holland	15.937.991	16.499.492
14	Moldavia	14.839.591	11.257.368
15	Austria	8.497.806	8.538.756
16	United Kingdom	5.577.228	6.647.010
17	Bosnia and Herzegovina	12.728.907	6.065.471
18	Azerbaijan- Nakhichevan	31.839.152	5.725.840
19	France	3.291.428	5.226.743
20	United Arab Emirates	12.121.240	4.412.212
Total		1.308.233.119	593.286.615

Source: MEA, 2019 (Edited by DOGAKA)

* According to the export value of 2018

** Export (FOB value)

4. CONCLUSION

Agricultural products and trade are among the priority issues at all times. They are essential needs that have a say in global markets. China, which stands out in many areas in the world, also draws attention to vegetable production. The production potential of the products also changes according to the usage area and frequency. Tomato, onion, cucumber, cabbage, and eggplant rank first in the world fresh vegetable sector. However, fresh fruits and vegetables have a marketing problem. Rapid decay and inability storage are among the main reasons. In spite of, there is a foreign trade capacity of approximately \$100 billion in the world, recently. The vegetable is done widely in Turkey. It provides serious contributions to the country's economy with its export potential. As it does the vegetable trade with neighboring countries; It also exports vegetables to European countries such as Germany, Poland, France, Holland, and Austria. In terms of climate, it is more common in coastal provinces such as Antalya, Bursa, İzmir, and Mersin. In terms of climate in Turkey, it is more common in coastal provinces such as Antalya, Bursa, İzmir and Mersin. In addition, vegetables can be used both frozen and fresh. Its economic contribution can be raised by increasing added value.

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