

Review

Cut flower production and marketing in Turkey

Mehmet Emin Baris* and Aysel Uslu

Ankara University, Faculty of Agriculture, Department of Landscape Architecture, 06110 Diskapi, Ankara-Turkey.

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Turkey is among the popular cut flower producing countries because of its suitable ecological advantages. Cut flower production in Turkey started during 1940's in Istanbul and its surroundings and then spread to other provinces. The study examine current status, marketing structure and policies pursued in the Turkish cut flower industry; which can be classified according to the technology used, as well as the structure and the ecological characteristics of production areas. Enterprises in this sector are further classified into two groups as enterprises with export oriented production (modern enterprises) and with domestic market oriented production (small-family enterprises). Turkish cut flower industry is heavily focused on the production of carnation. Almost 80% of the total cut flower production is meant for export and consists of spray carnations. Collectively spray and standard carnations constitute 88% of the total production. The cut flower segment has shown great improvements in Turkey during recent years despite the existence of some problems in the stages of production, marketing and transportation.

Key words: Cut flower, production, green house, marketing, Turkey.

INTRODUCTION

Cut flowers are one of the most globally produced commercial mass production items (Kendirli and Cakmak, 2007). Cut flower production in the world gained importance in the early 20th century, especially after the Second World War II. As a result of this, rapid developments and changes have occurred in the cut flower production, storage, classification and marketing. By means of this change, new techniques and technologies are used in the cut flower industry from production to consumption (Ozkan et al., 1997; Sayin, 2003; Boran, 2008).

Commercial cut flower production in Turkey started in the early 20th century in the Yalova region (formerly Istanbul's district) due to its proximity to Istanbul, which is the main consumption centre. The first production and marketing cooperative was established in 1946 in Istanbul to market the flowers produced in Yalova. At the beginning of the 1980s cut flower production, shifted to the Mediterranean (Antalya) and Aegean (Izmir) regions. Particularly Antalya province located on the southern coast in Turkey is the main centre of export oriented cut

flower production, where a favorable climate and rapid air transport to Europe gave Antalya a comparative edge. Hence Antalya province has become a major centre for export-oriented cut flower production in Turkey, where export-oriented cut flower industry heavily rely on the carnation (mainly spray) and cut flower production under plastic tunnels without heating (Ozkan et al., 1997; Titiz et al., 2000; Sayin, 2003; Babadogan, 2008; Doldur, 2008).

WORLD SCENARIO

The cut flowers world market is a \$5.7 billion market dominated by Netherlands which accounts for about 54% of exports in 2005. The other top exporters are Colombia (16%), Ecuador (6%) and Kenya (6%). The main import destinations for cut flower exports are to EU countries. The largest country destination is Germany (18%) followed by UK (17%) and the USA (16%) (Hornberger et al., 2007).

In recent years countries like Colombia, Equator and Kenya which have the advantage of ecological conditions and cheap labor have become the most important growers and exporters of cut flowers. In traditional centers productivity is increasing while lands used for production

*Corresponding author. E-mail: baris@agri.ankara.edu.tr, eminbaristr@yahoo.com. Tel: +90312 5961520 Fax: +90312 3176467

Table 1. The regional distribution of the cut flower production areas in the World (2007), (Anonymous, 2009)

Region	Area (ha)	Share of production (%)
Asia/Pacific	398.408	75
Europe	56.043	10
Middle/South America	47.860	8
North America	20.333	3
Africa	6.356	1
Middle East	3.973	1
Total	532.973	100

remains unchanged and even decreasing (Anonymous, 2009; Doldur, 2008).

It is known that cut flowers are grown in more than 50 countries. As of 2007, total area of production is about 533.000 ha and the major production areas in terms of size are located in Asia, Europe, Central and South America, North America, Africa and the Middle East. The Asian countries possess 75% of the total cut flower production areas (Table 1). Among Asian countries China and India are the major producers. China possesses 4% of the total cut flower production areas and makes 11% of the World production (Anonymous, 2009).

The European Union countries (EU) possess 10% of the cut flowers production areas in the World. Major EU producers are the Netherlands, Italy, Germany, United Kingdom and Spain. The EU is the region with the highest productivity per hectare. These countries have a share of 46% in World production of cut flowers though they possess only 10% of the production areas (Anonymous, 2009, 2007).

Seven percent of the world production of cut flowers is made by Central and South American countries (Table 2). Mexico, Colombia and Equator in the Central America and Brazil in the South America are important producers (Anonymous, 2009). Favorable climatic conditions and low-cost land and labor are the advantages to these countries. Thanks to favorable climate, foreign investments and accumulation of knowledge, Latin American countries have become important exporters to both American and European markets. The main advantages of this region with respect to production of cut flowers are climatic conditions, low-cost land and labor and proximity to the North American market. In recent years, Europeans have also made investments in cut flowers production sector in this region. In Africa, mainly Kenya, Tanzania, Zimbabwe, Uganda, Zambia and Ethiopia which are on the Equatorial Zone are important producers, thanks to suitable climate (Wijnands, 2005). In African countries, advantages like dependence of the economy on agriculture, favorable climate and low-cost labor have fostered development of the production of cut flowers. Production areas are operated by professional companies and comprise big scale nurseries owned by

Table 2. Cut flower production areas and the share of selected companies (2007), (Anonymous, 2009).

Countries	Area (ha)	Share (%)
China	286.068	54
India	65.000	12
USA	19405	4
Mexico	21129	4
Japan	17914	3
Brazil	10285	2
Thailand	8320	2
Italia	7976	1
The Netherlands	7884	1
Germany	7640	1
Colombia	7500	1
United Kingdom	6769	1
Spain	6140	1
Republic of Korea	7185	1
Australia	5400	1
Costa Rica	4500	1
France	5232	1
Ecuador	3441	1
Israel	2700	1
Kenya	2180	0,5
Austria	2171	0,5
Malaysia	2000	0,5
Belgium	1652	0,3
Turkey	1273	0,2
Zimbabwe	1100	0,2
Others	22.109	4
Total	532.973	100

foreign investors (Anonymous, 2007; Doldur, 2008).

Total world imports of cut flowers is about 6 billion Euros, 65% of which was made by the European countries in 2007 (Table 3) followed by American (15%) and Asian (8%) countries. According to 2007 data of world imports of cut flowers, the biggest importer is Germany followed by the United Kingdom and the United States (Anonymous, 2009).

In the same period, World exports of cut flowers are about 6.3 billion Euros, 50% of which is made by the European countries (Table 4). With its exports of about 1 billion Euros, Latin America is the second biggest region exporting cut flowers. Recently, African countries have also become an important region in exports of cut flowers (Anonymous, 2009).

Breaking down the World exports of cut flowers by countries reveals that the Netherlands is the biggest exporter on the basis of 2007 data. Of the South American countries, Colombia and Equator are important exporters. Their biggest export market is North America and the most important export item is rose. Kenya and Zimbabwe are important exporters among African

Table 3. Cut flower import values of selected countries (Anonymous, 2009)

Countries	Import value (million Euro)		
	2006	2007	Change (%)
Germany	850	784	- 8
United Kingdom	794	777	- 2
USA	608	608	0
The Netherlands	506	526	4
France	415	346	- 17
Japan	174	174	0
Italia	173	160	- 8
Switzerland	132	129	- 2
Other countries	2.084	2.496	20
Total	5.600	6.000	7

Table 5. Cut flower export values of selected countries (Anonymous, 2009).

Countries	Value (million Euro)	
	2006	2007
The Netherlands	2653	2.697
Colombia	770	813
Ecuador	354	293
Kenya	259	459
Israel	140	150
Ethiopia	90	90
Zimbabwe	80	80
China	77	274
Thailand	70	80
Italia	61	60
Belgium-Luxembourg	54	59
Spain	38	29
Germany	39	39
Canada	20	20
South Africa	20	20
Singapore	18	20
USA	18	25
Turkey	18	22
Costa Rica	10	20
Others	1.210	1.050
Total	5.750	6.300

countries (Table 5). These countries make exports especially to European market (Anonymous, 2009).

The annual consumption of cut flowers in the world is worth US\$ 13,000 million. The main importers of cut flowers are the USA, Germany, France, UK, Switzerland, Sweden, Norway, the Netherlands, Denmark, Belgium, Italy, Australia and Japan. Germany is the largest importer now, followed by the US, France and Britain. Among the exporters of cut flowers, the Netherlands dominates the world trade (65%), followed by Columbia

Table 4. The regional cut flower export values and their share in the World (2007) (Anonymous, 2009).

Regions	2007	
	Value (million Euro)	Share (%)
Europe	3.188	51
America	1.261	20
Africa	729	12
Asia	619	10
Others	503	7
Total	6.300	100

(12%) and Israel (6%). (Thailand tartisilmadigina gore ozellikle bundan bahsetmek gereklimi?). At present western Europe alone consumes half of the flowers produced in the world and a large expansion in flower consumption is taking place in Eastern Europe, Japan, China, South Korea, Thailand and Indonesia (Gauchan et al., 2009).

Cut flower production in Turkey

Production and trade of cut flowers in Turkey has followed a process parallel to the developments in the World production and trade of ornamental plants. The most important development is the establishment of the "Sınırlı Sorumlu Çiçek Üretim ve Pazarlama Kooperatifi (Limited Liability Flower Production and Marketing Co-operative) (FLORA)" in 1945 by the producers. However, for long years production and trade of cut flowers were intended only for meeting the domestic demand. The first cut flower production areas were located in and around Istanbul (such as Yalova) where almost all of the consumers of these flowers were living (Cakiroglu et al., 2000; Anonymous, 2001; Doldur, 2008). Until 1950's, Istanbul remained as the only center where cut flowers were consumed. Economic and cultural developments resulting from the accelerating urbanization in those years are the most important factors in the increase in consumption of cut flowers entailing wide spread production to other regions.

Cooperation with international organizations has also contributed to the development of cut flowers sector in Turkey. In 1970's and 1980's FAO and the World Bank supported various research projects to promote production of ornamental plants. One of these focused on "Developing Floriculture in Turkey" and was carried out between 1973 - 76 in Yalova under sponsorship of FAO and leadership of Atatürk Horticulture Institute. In the following years, considerable research, training and publication activities were carried out under various projects designed by the Ministry of Agriculture and Rural Affairs and under sponsorship of the international organizations mentioned above. In this way, some new flower species were produced, modern production techniques were devised and production material requirements were met

Table 6. Cut flower production areas in Turkey by variety (Doldur, 2008).

Product	Seasons (ha)				
	2000 - 2001	2001 - 2002	2002 - 2003	2003 - 2004	2004 - 2005
<i>Carnation</i>	336	404	463	514	816
<i>Rosa</i>	50	107	143	150	198
<i>Gerbera</i>	50	19	80	102	132
<i>Chrysanthemum</i>	27	60	33	26	50
<i>Gladiolus</i>	131	165	166	146	48
<i>Lilium</i>	14	15	16,5	16	26
<i>Gypsophilla</i>	11	12	13	15	15
Others	139,2	254,5	231	229,8	85
Total	758,2	1.036,5	1.145,5	1.198,8	1.370

Table 7. Cut flower production in Turkey by production system and areas (Tascioglu and Sayin, 2005).

Production system	1999		2000		2003	
	Area (Da)	Share (%)	Area (Da)	Share (%)	Area (Da)	Share (%)
Glass house	382,8	2.4	395,6	4.8	622,9	5.8
Plastic house	9.487,8	62.1	5.270,0	64.0	7.033,1	61.4
Open area	5.429,7	35.5	2.566,8	31.2	3.800,6	32.8
Total	15.280,3	100.0	8.232,4	100.0	11.456,6	100.0

(Sayin, 2003; Anonymous, 2001; Doldur, 2008).

Production of cut flowers accounts for 48% of total production of ornamental plants in Turkey. According to 2004 data of the Provincial Agricultural Administrations, cut flowers are produced on a total area of 1.370 ha (Table 6). Cut flower industry provides important contributions to fertilizer and agricultural chemical industry since it is an intensive agricultural production activity by having short-term production, requiring intensive fertilizer and plant protection techniques. Packaging is one of the most important elements in post harvest processes for cut flower products. During supplying of products to market and for transport, lots of packaging material originated from cellulose and plastic is used, by this way cut flower industry also provides an important contribution to this industry. In addition, existence of cold chain in the cut flower export firms requires different techniques and application that creates employment opportunities. Transportation of flowers to importer countries also creates an important source of income for transportation industry (Anonymous, 2001).

Cut flower production in Turkey is classified in two groups with respect to climate, production technology and marketing characteristics. One of these groups is production for domestic market and the other one is the production for international markets. Production for domestic market is concentrated in the Aegean and Marmara Regions and production for international markets, in the Mediterranean Region (Tascioglu and Sayin, 2005). Cut flower production in Turkey is concentrated in three geographical regions where

Aegean Region (36.5%) is the most important production zone followed by the Mediterranean and Marmara Regions with their respective shares of 34.9 and 28.2%. Cut flower production is made in about 20 provinces in Turkey. As of 2003, 35.6% of total cut flower production area is in Izmir, 29.5% in Antalya and 15.2% in Yalova (Tascioglu and Sayin, 2005).

Mainly carnations are grown in Turkey which, as of 2005, account for 60% of the total production. Other important cut flowers are roses (14%), gerbera (10%) and narcissus (8%) (Babadogan, 2008; Anonymous, 2009). In Turkey, 73% production of cut flowers is made in greenhouses and 27% in open air. Most of the production made in greenhouses is for exports (Table 7).

Production of ornamental flowers, with its structural characteristics, is a labor-intensive agricultural production form and is a field where much jobs could be created with small investments. Operations making production mainly for domestic consumption are generally family businesses and create jobs for family members (Anonymous, 2009).

Imports and exports of cut flowers in Turkey

Cut flower imports of Turkey in 2008 amount to US\$ 328.735,00. Share of cut flowers in total imports of ornamental plants is very little (Table 8). The most important item of flower imports is orchid. While cut flower imports are little, considerable amounts of mainly plant materials, fertilizers, pesticides, post-harvest chemicals

Table 8. Cut flower import values in Turkey.

Products	2006		2007		2008	
	Quantity	Value (US\$)	Quantity	Value (US\$)	Quantity	Value (US\$)
<i>Rosa</i> (unit)	588.115	165.855	275.748	60.892	327.505	94.537
<i>Carnation</i> (unit)	395.000	10.098	68.500	10.459	306.590	16.390
<i>Orchids</i> (unit)	200.298	162.448	92.698	93.009	86.349	91.491
<i>Chrysanthemum</i> (unit)	16.500	1.639	2.849	1.952	11.930	2.823
Others (kg)	15.174	74.094	10.402	68.514	14.829	65.898
Cut flowers suitable for bouquet (kg)	2.177	17.599	1.619	9.601	6.464	57.596
Total		431.733		244.427		328.735

Table 9. Cut flower export of Turkey (Anonymous, 2009).

Products	2006		2007		2008	
	Quantity	Value (US\$)	Quantity	Value (US\$)	Quantity	Value (US\$)
<i>Rosa</i> (unit)	620.420	52.253	526.020	63.743	564.880	41.200
<i>Carnation</i> (unit)	315.643.904	20.563.640	316.512.130	23.408.318	293.477.362	21.386.821
<i>Orchids</i> (unit)	0	0	0	0	2.28	4.18
<i>Chrysanthemum</i> (unit)	71.84	4.92	27.30	12.98	6.500	643
Others (Kg)	1.084.06	2.660.55	1.159.63	2.560.75	1.016.58	2.584.15
Cut flowers suitable for bouquet (Kg)	120.25	124.93	271.28	537.35	266.52	333.63
Total		23.437.59		26.588.08		24.356.56

etc. used in the sector are imported. In particular, almost all of the production materials of cut flowers with bulbs, tubers and rhizomes are imported (Anonymous, 2001; Babadogan, 2008).

Ornamental plants sector is a small sector, but its trade potential is big. Export of ornamental plants which only has a past of 20 years is today at a point far beyond the dates it began. Exports of cut flowers constitute 54% of the exports of ornamental plants. The most important items in this group are carnations and gerbera daisies. Exports of other cut flowers including species like *Gypsophilla*, *Lilium*, *Chrysanthemum*, *Ranunculus* and *Lisianthus* have also begun gaining importance. The most important reason of the increase in the cut flowers exports of Turkey are the promotional activities carried out in foreign markets (Anonymous, 2009).

High quality cut flowers has been exported from Turkey since 1985. However, export value increased from US\$ 10 to US\$ 13 million during 90s. Decline trend in Turkish cut flower export in terms of both amount and value from 1997 to 2000 ended in 2001 and was transformed into a progressive trend. Cut flower export has reached US\$ 23.482 million in 2006, US\$ 26.588 million in 2007 and US\$ 24.356 million in 2008 (Table 9) (Babadogan, 2008). Today Turkey exports cut flowers to about 50 countries

(Table 10) including United Kingdom, Ukraine, Russian Federation, Romania, the Netherlands and Bulgaria (Babadogan, 2008; Anonymous, 2009).

PROBLEMS OF THE CUT FLOWERS SECTOR

The capacity of the cut flowers businesses sectors in Turkey is insufficient. Cut flowers are mostly produced in greenhouses by small family businesses, which range between 2 to 3 hectares. The existing greenhouses have the lack of insulation and planning to provide a suitable heating. These are the main reasons of the inadequate cut flower production. Additionally, lack of an "Organized Agricultural Zone" which would bring together both producers and exporters is a big shortcoming for the sector (Anonymous, 2009).

Dependency to foreign countries for production materials especially for export oriented cut flower production is an important problem. This dependence is naturally reflected in the costs. As a matter of fact, the cost of production materials, with its share of 30%, is second in line in total production costs (Ozkan et al., 1997).

The businesses do not place enough importance on selection of kinds in line with the demand of the market,

Table 10. The quantity and value of Turkish cut flower export by countries (Anonymous, 2009).

Countries	2006		2007		2008		2007-2008 Change	
	Quantity (Piece)	Value (US\$)	Quantity (Piece)	Value (US\$)	Quantity (Piece)	Value (US\$)	Quantity (Piece)	Value (US\$)
UK	114.603.717	10.680.720	76.923.553	8.869.506	76.188.530	8.114.554	- 1	- 9
Ukraine	46.105.664	2.484.294	56.138.845	3.343.051	56.440.010	3.898.948	1	17
Russian Fd.	37.224.157	3.092.389	47.942.964	3.410.882	45.461.007	3.887.076	- 5	14
Romania	33.167.514	1.001.201	58.951.117	3.054.719	63.160.107	3.181.830	7	4
Netherlands	28.030.978	3.186.602	21.285.813	3.273.713	13.378.206	2.250.070	- 37	- 31
Bulgaria	6.367.473	312.364	15.832.635	768.585	16.357.274	788.059	3	3
Greece	27.594.360	700.439	17.634.887	909.145	10.727.902	602.724	- 39	- 34
Germany	3.586.328	597.182	4.239.267	953.813	2.067.657	509.268	- 51	- 47
Japan	3.528.840	524.001	4.039.178	676.059	1.757.420	304.662	- 56	- 55
Moldova	1.761.112	89.177	4.042.951	243.973	3.431.961	260.446	- 15	7
Cyprus	925.710	83.547	1.144.850	126.327	1.680.043	180.578	47	43
Hungary	9.452.188	385.764	7.314.226	506.702	3.524.000	179.229	- 52	- 65
Serbia	387.333	66.499	964.930	139.681	426.862	79.354	- 56	- 43
Latvia	10.000	1.100	439.804	62.050	272.741	30.180	- 38	- 51
Georgia	0	0	77.759	7.786	178.191	28.154	129	262
Others		217.128		141.014	331.221	61.433		- 56
Total		23.482.357		26.588.081		24.356.565		- 8

market, compatibility of these kinds with the conditions of the area of production and the growing techniques which affect the quality. Inability to provide diversity in production of cut flowers in Turkey is one of the major problems with respect to access to foreign markets. Consequently, dependence of the production of cut flowers on just one kind and that of exports on a single market stands out as a distinctive feature. In fact, many kinds of flowers are grown in Turkey; however, these kinds are presented to the domestic market since the production cannot reach a capacity enough to meet foreign demands. Therefore, it is important to stimulate consumption by rearranging the domestic channels of marketing.

Flower auction places in Turkey are not yet so

effective. This is a major cause of the lack of diversification. Flower auctions are very important for development and production of new kinds. Seeing the new kinds, their prices and sales during auctions is an important criterion in terms of regular production of these kinds. Today, there are over 1000 kinds of cut flower in the World. Provision of product diversity in exports and emphasis on the production quality will be possible with establishment of auction places for exports.

On the other hand, high costs of energy used in heating and cooling during production have great role in the increases of production inputs. Mainly electricity, coal, diesel fuel etc. are used for heating and cooling since natural gas which is more cost effective than other sources of is energy is

energy is not yet available (Anonymous, 2009).

Another important bottleneck of the cut flowers sector is the high transportation costs to foreign markets. The best means of transportation of cut flowers which are very delicate goods is airplane. However, airfreight costs are high and therefore the sector has tended towards transportation by land which causes a decrease in quality and vase life of the flower. According to the results of a research made with the exporters, transportation is the biggest cost item (35%) in the production costs of carnation (Ozkan et al., 1997; Anonymous, 2009).

Producers' organizations in the agricultural sectors are mainly set up for marketing of products. Likewise, main activity of the cooperatives existing

in the cut flower sector is mainly marketing.

Besides these, lack of an effective organization in marketing, non-professional way of action, price discounts due to increasing competition and non-respect of product quality by some businesses can be considered as important problems of marketing and organization.

PROBLEMS AND SUGGESTIONS

Developments in the World show that production and trade of cut flowers will continue to develop rapidly as a promising sector particularly for the developing countries. Cut flowers sector, with the export income and the value it creates have become an important sector for Turkey, as well.

A range of measures is needed to foster development of the cut flower sector and to increase exports and global market share. Ensuring product diversification and increasing the number of the kinds of cut flowers are among the most important measures to this effect. For this purpose, new species of cut flowers with high market value other than carnations and relevant production and marketing techniques must be introduced to producers and exporters. With the increase in product diversity, establishment of auction places will become inevitable.

Product diversification will also increase the chances of introduction to new markets. For this purpose, professionalism must be well established in production and marketing and exports must be increased using divers marketing channels. In presentation of the cut flowers from the producer to the consumer, cold store chains must be established and the cold conditioning created by the producer must be maintained to avoid temperature fluctuations which are very harmful until the products are delivered to the consumer. However, cold stores with necessary equipments, frigorific vehicles and airplanes are insufficient and their quantities and qualities must be increased. Transportation must be well organized and driver's incentives must be used to decrease cost of airfreight in order to increase competitiveness in foreign markets.

Transportation is one of the most important issues affecting the marketing of cut flowers. High airfreight costs make the exporters tend towards transportation by trucks which takes long time and cause deterioration of quality and appearance of the cut flowers which are very delicate and can easily degrade. To avoid this, cargo planes which can make inexpensive transportation are needed. Furthermore, airfreight charges must be lowered to the levels existing in the competitor countries.

It is also important to establish flower exchanges. These exchanges would disciplinize the flower market, cause production of export-oriented quality goods, avoid unfair competition and minimize tax losses. Therefore, efforts must be increased to set up flower exchanges.

Modern auction places must be set up in big production centers where ornamental plants are heavily produced.

Such places must have cold stores, controlled atmospheric rooms and packaging units and must be able to provide technical services with their quality control and research laboratories. Usage of computers and internet must be encouraged in these places for purposes of e-trade of flowers.

Measures must be taken to improve the structural characteristics of the businesses and the infrastructural investments and extension of the scales of the businesses must be encouraged. Lack of qualified labor in the cut flower sector is another factor hindering improvement of production activities. For this purpose, professionalism must be well established in production and marketing and training activities must be increased to fill the gap of technical knowledge.

Turkish cut flower sector has a promising potential if the problems arising from production, marketing and issues related to exporters are solved. It could reach the position and export level it deserves with a new image in the foreign markets.

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