

ESSENTIAL OILS

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ESSENTIAL OILS: TURKISH ROSE OIL

Essential oils are aromatics or odorous, oily liquids (sometimes semi-liquid or solid) obtained from parts of plants, such as flowers, buds, seeds, leaves, twigs, bark, herbs, woods, fruits and roots. Essential oils are mainly used in the food industry as flavouring agents, in the perfume industry for fragrances and in the pharmaceutical industry for adding taste or smell or suppressing the less desirable medicine taste.

Owing to Turkey's suitable climatic and ecological conditions, hundreds of medical and aromatic plants are cultivated or gathered from the nature. Turkey is one of the countries best suited for organic cultivation.

In Turkey, there are many plants from which essential oils are produced and rose is the most popular one.

What is Rose Oil?

Rose oil is steam distilled from the flowers of the Rose damascena. Rose oil, its extracts and derivatives are among the most important of natural perfume ingredients. They have remarkable diffusive power and are used in many types of perfume bases, blending particularly well with other florals.

Rose oil is a very expensive essential oil, partly due to the lack of quality natural and synthetic substitutes. The short flowering time of the Rose damascena is another reason for its high price.

History of the Turkish Rose damascena

Rose damascena was brought to Anatolia in 1870 by emigrants from Bulgaria. In 1888 cultivation of the rose was begun in Isparta and in 1892 the production of rose oil was accomplished by a person named " Müftüzade İsmail Efendi". For years, rose oil was produced in simple and primitive boilers which Muftuzade Ismail Efendi called "Siti". This method of production continued up to the year 1935 until Atatürk, the founder of Turkey, first came to Isparta and instructed the Minister of Economy to build a large industrial plant. Then the agricultural cooperative, "Gülbirlik-Gül Gülyağı ve Yağlı Tohumlar Tarım Satış Kooperatifleri Birliği", established the first rose oil plant in 1958 and other rose oil complexes in 1967. Today, rose oil production in Turkey, is realised mostly in industrial plants.

Production of Rose Oil

Rose cultivation mainly for rose oil production takes place in Isparta, in the south-west part of Anatolia in Turkey. The Turkish rose oil sector has important production and export capacity.

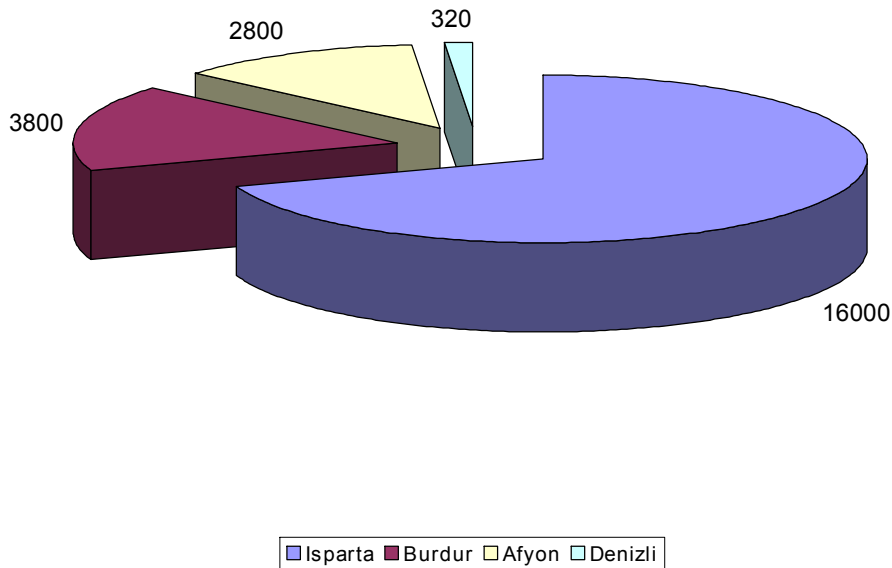
Turkey is among the top producers of rose oil in the world. World-famous "Turkish Rose Oil" is produced in large quantities in Turkey. Rose oil production has been realised for over 1,00 years in Isparta. That is why Isparta is called the "Rose District". Roses are also cultivated in the Afyon, Burdur and Denizli districts. Approximately 1.5 tons of rose oil and 7 tons of rose concrete are produced annually in Turkey.

Rose Oil Production Areas: Isparta, Afyon, Burdur, Denizli



The areas of rose cultivation had expanded and cultivation had begun in Afyon and Denizli in 1989 in addition to Isparta and Burdur.

Rose Oil Production Areas in Turkey (Unit: da)



Source: The Provincial Directorates of the Ministry of Agriculture and Rural Affairs

“Gülbirlik - Gül Gülyağı ve Yağlı Tohumlar Tarım Satış Kooperatifleri Birliği” is the main producer of rose oil. Gülbirlik was established in 1954 as the union of nine founder cooperatives. At present it consists of 6 cooperatives, 8,000 members, 4 rose oil factories in 3 separate locations and 2 rose concrete factory. Gülbirlik processes 3,00 tons of rose flower daily in its factories according to Turkish and world standards and it is the largest manufacturer and exporter in this field both in Turkey and in the world. Gülbirlik recently started to manufacture various value added rose oil products such as rose oil based cosmetics and rose oil flavoured sweet. There is another cooperative in Afyon, namely “Başmakçı Gül Kooperatifi” which has 3,000 members. The cooperative produce ecologically certified rose oil. There are also 8 medium and small size private companies in the sector. Two of them are French originated firms and make production mostly for their parent companies. Besides, there are various family owned workshop scale production places in the villages of Isparta and in the other provinces.

Roses are gathered during the 40-day flowering season which is in May and June. The humidity and cloudiness during the season have an effect on the yield and quality of rose oil.

There are two methods for Turkish rose oil distillation, the traditional but slowly disappearing village-type distillation using log-fired crude copper boilers known as “Imbeks” and the modern factory production method using hydro-steam distillation in boilers called “Kazans”. Both methods have distinctive characteristics but the quality of rose oil produced by these two methods is the same.

Physical and chemical characteristics of Turkish rose oil:

Odour Description	: Strong and sweet rosaceous character
Appearance	: Liquid
Colour	: Light Yellow - Green
Specific Gravity	: 0.844-0.868 (25 C)
Refractive Index	: 1.4520 - 1.4630 (25 C)
Optical Rotation	: -3.3to -5.9 (25 C)
Flash Point	: Not determined
Solubility	: In Alcohol 90 %
Purity	: 100 % Natural
Intended Use	: Perfumery – Flavour production

Turkish Rose Damascena products can be grouped in four categories:

Rose Oil

Rose oil is produced by steam distillation of Rosa damascena M., the pink, light red rose and Rosa Alba L., the white rose flowers. 3,000 liter boilers (siti in Turkish) made of copper are used for distillation. Rose oil is a blend of decante-direct-oil and water oil which are obtained in two steps by distillation.

Rose oil is the most important and the most expensive raw material of the perfumery and cosmetic industries. The best quality rose oil, in accordance with world standards, is produced from the rose flowers which are grown in Isparta and the surrounding area at a level of 1,050 m or more above sea level during May and June.

Rose Concrete

Rose concrete is a waxy product produced by extraction from rose flowers with volatile solvents such as hexane and subsequently by evaporation of the solvent in a vacuum. It is used to produce rose absolute, which is one of the raw materials used in the perfumery and cosmetics industries.

Rose Water

Rose water is a by-product obtained during the distillation of rose flowers. It is natural rose smelling water which is obtained by mixing pure, clean hot water with oil water in the ratio of one to one during the production of rose oil. Then it is filtered several times and bottled. It is used as an aroma for some foods and sweets, and also to clean make-up and the body since it is natural and pure.

Rose Absolute

Rose absolute is obtained by the extraction of rose concrete with alcohol. The alcoholic solution is distilled under a vacuum to remove the alcohol.

Turkey produces many other essential oils

In addition to rose oil, which is a traditional product, other essential oils are also produced in large quantities in Turkey. The most popular ones are laurel leaf oil, organum oil, lavender oil and mint oil. The other essential oils produced are myrtle oil, fennel oil, anise oil, cumin seed oil, sage oil, juniper oil, rosemary oil, melissa oil, pennyroyal oil, styrax oil and vitex oil.

Two species are important commercial sources of styrax. Styrax oil is extracted in Turkey from *Liquidambar orientalis* which is a tree of 15-20 meters tall. This species is native to eastern Mediterranean Europe and the Near East and is the source of styrax oil known as Asian styrax. The only country in the world for this type of styrax oil is Turkey. Production is made in limited amounts by using traditional methods in workshop scale places. The production takes place particularly in the Mediterranean and the Aegean Regions. The other species is *L. styraciflua*, a tree native to the southeastern United States, Mexico and Central America. It is the source of essential oil called American styrax.

“Laurel leaf oil”, which is famous worldwide is produced in large quantities in Mersin, Antakya and its surrounding regions.

Parallel to the increases in both domestic and world demand, the amount of essential oils produced is increasing every year.

Exports of Essential Oils

Turkish essential oil exports are showing an increasing trend depending on world prices and cultivation. The exports of essential oils, their by products and resinoids reached US \$ 21 million in 2009. The major part of Turkish essential oil exports consisted of rose oil. Rose oil has been a traditional export item, followed by, stearopten oil, vetiver, organium and orange oil.

Essential oils were mainly exported to the European countries. Major destinations for essential oils were France, China, Germany, the USA and the UK. These countries accounted for 90 % of total Turkish essential oils exports in 2009.

The Turkish rose oil industry is highly competitive worldwide. Foreign trade of Turkish rose oil has very old and traditional roots. The exports started very long time ago. It is known that the majority of rose oil exports between 1920-1921 were destined for France and the USA.

The value of rose oil exports reached US \$ 8 million in 2009. The exports were directed to 20 countries. The majority of exports were directed to the European countries, the USA, Bahrain, India and Saudi Arabia which are all major processors of essential oils.

Rose Oil Exports of Turkey by Year

Years	Value (US \$ 1,000)
2000	5,871
2001	6,009
2002	8,068
2003	9,784
2004	7,393
2005	7,174
2006	7,594
2007	9,383
2008	11,210
2009	8,492

Source: Undersecretariat for Foreign Trade

Turkish Essential Oils Exports, (Value: US \$ 1,000)

HS No.	Products	2007	2008	2009
330112	Orange oil	11	30	10
330113	Lemon oil	3	11	44
330119	Other citrus fruit oils	15	30	15
330124	Mentha piperita oil	0	0.5	0.3
330129	Other essential oils	17,758	23,087	19,908
330130	Resinoids	231	258	1
330190	Terpenic by products of essential oils	1,331	1,222	1,175
	TOTAL	19,348	24,638	21,152

Source: Undersecretariat for Foreign Trade

Turkish Essential Oils Exports by Countries (Value: US \$ 1,000)

Countries	2007	2008	2009
France	8,896	13,067	8,588
China	76	0	4,650
Germany	2,827	3,545	4,416
USA	1,080	1,858	696
United Kingdom	796	1,146	652
Canada	289	159	461
Switzerland	1,974	1,148	241
Bahrain	246	186	230
Hungary	36	17	169
India	0	9	160
Saudi Arabia	67	0	131
Greece	236	351	98
Netherlands	74	55	92
Spain	75	134	67
Poland	74	70	59
Oman	0	0	58
Israel	48	51	57

Source: Undersecretariat for Foreign Trade