

Country Study: an update on essential oil production in Turkey¹

The essential oil industry in Turkey splits into 2 major parts: the rose sector (based on *Rosa damascena*), and the other essential oils distilled from the herb and spice sector.

Rose sector

The rose sector is effectively confined to the maintainous areas in the Isparta, Afyon, Burdur and Denizli regions of SW Turkey, with Isparta being the most important area. Cultivation is dominated by family based small holders with 1 to 2 acre plots. It is thought that around 10,000 families are involved. Yields of rose oil are up to 1 kg rose oil from 3,500 kgs of fresh rose flowers. With good cultivation practices, 1 acre of roses can give up to 3,500 kgs of fresh flowers, although in other origins and with poor practices flower yields can be far lower than this.

The major companies involved in the production of rose oil are: Sebat-United; Gulbirlık; Robertet; IFF-Ercetin; and Biolandes. There are also a number of other small Turkish companies involved. Production estimates for the major producers of rose oil and concrete in 2014 were:

Company	Processing (tonnes)	Rose oil (kgs)	Rose concrete (kgs)	Rose absolute (kgs)
Sebat-United	1,745	245	2,575	1,020
Gulbirlık	800	160	300	
Robertet	940	140	1,400	
Ercetin-IFF	575	120	500	
Biolandes	560	75	650	
Others	1,275	200	1,500	
TOTAL	5,885	940	6,925	1,020

Source: LM Barbut: IFEAT 2014

Production of roses has been declining over the last few years and this decline is continuing. Production in 2015 was again low due to adverse weather conditions. Late frosts, and excessive spring (March/April/May) rainfall is depressing flowering, encouraging growth rather than flower production. Flower production capacity in a good season is estimated to be in the range 7,000 to 8,000 tonnes. With flower production in this range, rose oil production is in the range 1,500 to 1,600 kgs, and rose concrete in the range 7,000 to 8,000 kgs.

The volume and value of Turkish rose exports is shown in the Table below:

Product	Production volume	Price €/kg	Total export value €
Rose oil	1,275	7,000 – 7,200	8,925,000 – 9,180,000
Rose concrete	5,745	775 - 800	4,452,375 – 4,596,000
Rose absolute	1,000	1,500 – 1,700	1,500,000 – 1,700,000
TOTAL			14,877,375 – 15,476,000

Source: LM Barbut: IFEAT 2014

Production of organic rose oil has started, but production levels are still very low, a few hundred kgs.

The major challenges to the rose oil industry in Turkey finding the labour for cultivation and harvesting, and farming practices, particularly the growing use of pesticides. Roses are grown in small plots by village families. Increasingly the young do not want to continue in this work, but prefer to move to the towns and cities, or become involved in mechanized agriculture. Sourcing seasonal labour for the harvest is becoming an increasingly critical issue.

¹ Much of the data for this report came from: An Overview of the Essential Oils Industry in Turkey. L.M. Barbut. IFEAT 2014.

Herb and spice essential oils

The major spice seeds are cultivated throughout Turkey, but the bulk of the herbs harvested for distillation are wild harvested. The major herb and spice essential oils produced are:

- **Oregano oil.** The largest essential oil after rose. Turkey dominates the global support of oregano oil, supplying around 70% of global needs. Annual production in the range 15 to 20 tonnes. The oil is derived from a range of species: *Origanum*, *Thymus*, *Thymbra*, *Coridothymus* and *Satureja*. Most of the oil production is from wild harvested material. Principle areas are in the Aegean and Mediterranean regions, together with some production in Marmara region. *Origanum dubium* gives the highest oil yield, in the range 5 to 8%. Optimum harvest time for oil production is just as the flower buds form.
- **Laurel oil** (Bay; *Laurus nobilis*). Turkey dominates the global supply of laurel oil, supplying around 80% of global needs. Production comes totally from wild plants. The plants occur naturally along the coastlines of the Aegean, Mediterrean and Black Sea, although the high rainfall levels of the Black Sea area create difficulties for drying the leaves and obtaining a good quality product.
- **Cumin seed oil** (*Cuminum cyminum*). Annual production of cumin seed oil is in the range 3.5 tonnes. The crop is cultivated for both the seed trade and distillation of the essential oil. The principal areas of cultivation are in Anatolia, the Aegean, and the southeast regions around Konya, Ankara, Eskisehir, Afyon, Denizli, and Sanliurfa.
- **Sage oil** (*Salvia triloba*). Sage oil in Turkey is produced from *Salvia triloba* (not the *Salvia officinalis* of other Dalmatian and NW European origins). Annual production of sage oil is in the range 1.5 to 2 tonnes. The main component of the oil is 1,8-cineole, differentiating it from thujone rich *S. officinalis* cultivars. Due to the toxicity issues associated with thujone, low-thujone sources of sage leaf and sage oil are finding increasing market interest. Sage is harvested from both wild and cultivated sources.
- **Rosemary oil** (*Rosmarinus officinalis*). Annual production of rosemary oil is in the range 500 to 750 kgs/yr. It is harvested exclusively from wild plants in the eastern Mediterranean region. The crop is supplied both to the herb/spice trade, and to distillation sector.
- **Aniseed oil** (*Pimpinella anisum*). Annual production of aniseed oil is in the range 200 to 300 kgs/yr. The crop is cultivated along the Aegean, which has the hot humid climate required, and harvest is in August. Aniseed is also used to flavour the traditional raki liquor produced in Turkey.
- **Fennel seed oil** (*Foeniculum vulgare*). Annual production of fennel seed oil is in the range 250 to 350 kgs/yr. The main cultivation area is in the Denizli region.
- **Myrtle oil** (*Myrtus communis*). Annual production is in the range 200 to 300 kgs/yr. Harvesting is exclusively from wild plants that occur along the coastlines. The leaf is supplied both into the herb/spice trade, and for distillation.
- **Coriander seed oil** (*Coriandrum sativum*). Annual coriander seed oil production is in the range 200 to 250 kgs/yr. It is mainly cultivated in the middle Anatolia and Aegean regions. Seed production is small scale, and most of the local demand is met by imports.

Market prices for a selection of these oils during 2014 were:

Oregano	70-120 €/kg
Laurel	65-80 €/kg
Myrtle	140 €/kg
Cumin seed	80-120 €/kg
Aniseed	130-180 €/kg