The Future of Lavender

Agricultural challenges meet growing consumer demand.

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France produces more than 30% of the world's lavender; visitors flock to the south of the country each summer to see the lavender fields.[a] However, the industry has been facing many challenges over the last 10 years, and there are growing fears about the plant's future. Drôme, in particular, has seen production reduced by 15%, due to a number of environmental, plant health and climatic issues. Nevertheless, consumer demand for lavender remains high, and the industry is making progress to ensure a consistent and reliable supply.

Steeped in History

Lavender is the common name for a flowering plant of the genus *Lavandula*, which consists of 39 species. Originating in Southern Europe, the Mediterranean, Southwest Asia, Southeast Asia, Northern and Eastern Africa, and the Cape Verde and the Canary Islands, lavender grows particularly well in hot climates. It is grown as an ornamental plant and commercially for the extraction of essential oil.

To produce lavender essential oil, the harvested lavender plants are first placed in a distillation tank. As the tank is loaded, steam travels through the plants and drains out the essential oils. The steam is then cooled in a condenser, whereby the mix of water and essential oil becomes a liquid. The mix is separated in a Florentine vase; the oil floats to the surface of the vase and is collected.

Organic fine lavender is a sought-after quality. It delivers flowery, fruity notes with aromatic tones. The main chemical components of organic fine lavender oil are shown in **T-1**.

Lavender oil is popular among consumers thanks to its anti-inflammatory and antiseptic properties. The plant has been used for these medicinal purposes for more than 2,500 years, with the Romans using the strong, sweet-smelling herb for bathing, cooking and scenting the air.

T-1. Main chemical components of organic lavender oil

Chemical Name	Levels
Linalyl acetate	25.0–45.0%
Linalool	25.0–38.0%
Camphor	0.0–0.5%
Total ocimene	5.5–16.0%
Terpinen-4-ol	0.1–6.0%
Cineole	0.0–1.0%

Source: Earthoil

Growing Pains

Lavender, along with other fragrance, aromatic and medicinal plants, is well-adapted to the geographic and climatic conditions of the South of France, thanks to its Mediterranean setting. An important industry within the region, it brings both tourists and revenue to the area. In 2000, lavandin—a hybrid between fine lavender and spike lavender (*Lavandula latifolia*)—made up 80% of fragrance plants in the area, with lavender accounting for 20%. While lavandin and lavender are part of the same genus, their differing chemical compositions mean that lavandin has a stronger, medicinal smell, which is less refined than lavender. Manufacturers may prefer to use lavender in their products, thanks to its more classic aroma.

By 2009, however, lavandin made up nearly 90% of fragrance plants, to the detriment of lavender. The industry became extremely concerned as a result of the diminishing availability of lavender, which has caused prices to increase significantly.

Lavandin 'Grosso' (*Lavandula x hybrida*), the main variety of lavandin, represented 85% of its growth. Lavandin 'Grosso' is an extremely hardy variety. It provides camphoraceous, aromatic notes, with some flowery and amber notes. **T-2** depicts the main chemical components of lavandin 'Grosso.'

Climatic Instability

France would be well placed to continue to provide a high-quality lavender yield, thanks to its warm Mediterranean weather. The impact of climate change, however, has caused a decline in rainfall over winter, which has affected the quality of the lavender yield. Rainwater is an important part of the irrigation process for aromatic plants—and lavender, in particular. While aromatic

[a]For a perfumer's view of formulating with lavender, see: N Urbanowicz, Lavender: a Perfumer's Perspective. *Perfum Flavor*, 38(8) 36-39 (2013); *www.perfumerflavorist.com/magazine/pastissues/*

T-2. The main chemical components of lavandin 'Grosso'

Chemical Name	Levels
Linalyl acetate	25.0–38.0%
Linalool	24.0–37.0%
Camphor	6.0–8.5%
Total ocimene	0.5–2.5%
Terpinen-4-ol	0.3–5.0%
Cineole	4.0–8.0%

Source: Earthoil

plants can grow in hot conditions with little rainfall, a decreased level of irrigation can reduce overall yield.

A common misconception in the flavor and fragrance industry is that frost is the main cause of the decline in lavender production. In reality, it is the extremes in temperature that are the root of the most significant problems. From 2003–2008, for example, the region experienced its hottest and driest weather to date. If the climatic conditions are too hot, the plants cannot retain enough moisture to survive over winter. Lavender is particularly susceptible to changes in weather conditions, and this has led to a decline in vegetation.

Disease

Another reason for the decline in the number of lavender plants is the Stolbur phytoplasma, which is transmitted by the *Hyalesthes obsoletus* insect, and has affected most of the lavender species. These insects are resistant to the recommended insecticides, and stronger chemicals are not permitted for use against them. Lavender farmers are therefore faced with the challenge of keeping them at bay. The farming industry is attempting to control the situation using indirect anti-pest methods.

Looking to the Future

The damaging effects of the climate and pests have led to farmers having to uproot lavender plots across France in order to save the remainder of the crop. As a result, lavender plants are being replanted to offset the loss. However, efforts to replant the crop have not yet surpassed the rate of decline of the plants, which reached 15% between 2000 and 2009 in Drôme. This is due to the high costs of replanting, and the resulting loss in profitability for farms.

In spite of increasing prices in the lavender market, high consumer demand for lavender products and essential oil means that manufacturers will continue to seek supply. Although the French lavender industry is currently faced with several challenges, France does benefit from a strong supply chain, ensuring that farmers can guarantee supply to local customers. With good agricultural practices and the right environment for growth, it is clear why the country is the leading lavender and lavandin supplier. Lavender is a favorite essential oil among consumers and, as long as fragrance suppliers continue to support production, the future of the plant is secured, and end user demand will remain satisfied.

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