

The Story in the Bottle: Supporting Natural F&F Ingredients

Fragrance and flavor botanicals comprise a niche segment of agriculture. How can they be protected?

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Bordered by Thailand, Myanmar, China and Vietnam, northern Laos comprises a mountainous landscape of jungle shrouded in fog. For centuries the ridges protected the region from both invasion and outside influence. The medieval Lao capital of Luang Prabang might as well be in another universe; it takes more than seven hours of driving on bumpy country roads to reach this city of magnificent temples and old royal palaces. Today, the high plateaus are home to hill tribes that practice small-scale agriculture using traditional methods, but their role in the fragrance and flavor industry is profound.

The northern regions of Luang Prabang, Phongsali, Houaphan and Oudomxay supply the bulk of the benzoin used in the perfume and flavor manufacture. Benzoin (FEMA# 2132, CAS# 119-53-9) is a balsamic resin obtained from the genus *Styrax*. The Laotian resin, tapped from *Styrax tonkinensis*, is considered to be of the highest quality, given its unique blend of vanilla, cinnamon and almond facets. In perfumery, benzoin can be found all over the fragrance wheel, from citrus colognes to orientals. Classics like Chanel *Égoïste* and Guerlain *Shalimar* rely on its velvety accent, while the addictive richness of this balsamic note is important for the caramel and chocolate flavors in ice creams and pastries.

About 200 wild-cropped botanicals used by the fragrance and flavor industry face a precarious supply chain.

Although benzoin is essential for the perfumer's palette, the supply chain for this aromatic, as with many key flavor and fragrance naturals, is extremely fragile. Increasing population pressure, poor educational facilities, inadequate healthcare and weak support for agriculture create incentives for rural exodus in Laos. As whole families move to the cities, they abandon traditional farming, along with benzoin collection. If the market prices for benzoin drop, the incentives to shift to other more profitable means of income increase further. The consequence to the fragrance industry is the loss of an important material.

When Givaudan started its Innovative Naturals program in Laos in 2009, it immediately became clear that to protect the supply of benzoin, the company had to offer long-term guarantees and address the pressing concerns of the farming communities. Givaudan's initiative entailed long-term investment in processing equipment and the construction of a secondary school in



The collection of benzoin is not a complicated process—the incision is made in the bark of the trees from April to July, and the benzoin gum is harvested during the winter months; however, knowing which trees to tap and how to shift the cultivation cycle makes a difference in yield and quality. (Photos courtesy of Givaudan.)



Phongsali province to counteract one of the incentives for rural exodus. With the guarantee of stable income and support, benzoin producers have more incentives to maintain production and to involve the younger generation in the trade.

A Global Challenge

Benzoin is not the only material with a fragile supply chain; about 200 wild-cropped botanicals used by the fragrance and flavor industry are in similar or worse situations.

Urbanization, food crop pressures, new plant diseases and regulatory issues create challenging conditions for the production of high-quality raw materials. Moreover, fragrance and flavor botanicals form a niche area of agriculture. In contrast to the staggering 50 million tons of palm oil being produced annually, essential ingredients like lavender, geranium, vetiver and ylang-ylang are produced in volumes of just a few hundred tons.

“It’s the duty of the fragrance industry to protect its raw materials,” says Hervé Fretay, marketing director for specialty ingredients at Givaudan. “If the producers of vetiver, patchouli or iris switch to growing wheat or coffee, nobody else would care, but it would have a devastating impact on the fragrance industry.”

Even more significant is the impact on the producing regions in the long run, in terms of both economic and social indicators. Many communities, in particular the most economically vulnerable ones, depend considerably on the cash income generated by the sale of wild cropped botanicals like benzoin resin in Laos, olibanum gum in Somaliland or immortelle flowers in Montenegro. Reggio Calabria, historically one of the poorest regions in Italy, has improved its economic situation over the past decade thanks to bergamot production; it derives 30% of its income from citrus oil production, and supplies 90% of the bergamot oil used in fragrance and flavor formulations.

Loss of Specialized Knowledge

The diminishing production of raw materials also leads to the loss of traditional know-how and skills, another important factor

with wide-reaching consequences. The collection of benzoin is not a complicated process—the incision is made in the bark of the trees from April to July, and the benzoin gum is harvested during the winter months. However, knowing which trees to tap and how to shift the cultivation cycle makes a difference in yield and quality.

Other botanicals require much more intricate farming methods, or a more nuanced experience in evaluating characteristics like the hue of ylang-ylang petals or the feel of perfectly cured vanilla beans. As the younger people leave for the cities, the knowledge of traditional practices dies with the older generation.

The current debate on agriculture pits issues like sustainability against genetic modification, the higher prevalence of plant diseases against the negative consequences of pesticide use, and other pressing challenges. The latest recommendations of the United Nations Environment Program (www.unep.org) emphasize intercropping and diversity, shifting away from the monoculture focus of the 1970s.

In this light, perfumery materials have the hallmark features of sustainable agricultural products. They are a valuable crop,

IFRA Highlights “Innovation in Every Sense”

The fragrance industry supports social, scientific and market innovations throughout Europe and the globe via direct investments in sustainable jobs—this was the message the International Fragrance Association (IFRA), sponsored by MEP Marielle Gallo of France, delivered recently to the E.U. Parliament.

IFRA’s exhibit, “Innovation in Every Sense,” highlighted the essential oils of Calabria, Italy, displayed by the Capua family, which supplies bergamot oil. The ingredient’s complex citrus notes, IFRA explains, are found in about 1/3 of all masculine fine fragrances and 1/2 of all feminine fine fragrances. Capua Srl cooperates with the local community on education and distribution projects with a focus on mutual benefit.

The exhibit also showed the fragrance industry’s fine chemistry expertise in recreating the olfactory facets of rare and expensive naturals such as ambergris. The material, expelled digestive juices and mucus of sperm whales, can fetch €150,000 at auction.

Finally, “Innovation in Every Sense” evoked the setting of the Paris Metro at rush hour to highlight the well-being and hygienic effects of fragrance in consumers’ everyday lives. These innovations, developed between fragrance houses and brand owners, leverage technologies such as encapsulation systems and specifically designed, emotionally targeted scents.

The event provided visitors with tangible insights into the innovations driving growth in the industrial and creative sectors throughout Europe and beyond.

—Editor



Calabrian citrus.



IFRA exhibit at the E.U. Parliament.



Community, a perfume created by Christophe Laudamiel for IFRA’s exhibit and presented alongside its complete formula.



*Benzoin “tears” being sorted in Laos; the resin, tapped from *Styrax tonkinensis*, is considered to be of the highest quality, given its unique blend of vanilla, cinnamon and almond facets. (Photo courtesy of Givaudan.)*

and many are native. Since many materials are wild-grown and don't require fertilizers or rich soil, they don't compete with food crops. Another important element is that many fragrant plants are easy to process on site, allowing growers to add value to their product. By contrast, cash crops like palm oil or coffee are processed outside of their growing regions, in which case farmers retain a much smaller fraction of the final value.

Sustainability Solutions

Some of the elements of sustainable agriculture can be observed in the benzoin case study. In northern Laos, benzoin production is integrated with upland rice grown under shifting cultivation. *Styrax* seedlings grow alongside the rice paddies, and once the rice is harvested and the field is left fallow, the *styrax* plants take over. Traditionally, the fallow period averages seven to 10 years—the optimal time during which the nutrient content of soil is regenerated. Seven years is exactly the time required before the benzoin plants are mature enough to be tapped. This integrated process allows communities to generate additional income from the land, which otherwise would have been unproductive, as well as maintain mountain ecosystems. Thus, securing the precious resources can create a situation with high revenues both for the industry and local communities.

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For example, Firmenich started a sustainability program in 2007 with a Ugandan vanilla trading company, which now produces a superior raw material. The vanilla farmers involved in the program have a guaranteed buyer, a system that cushions them against the volatilities of global market prices. Even more significant is the creation of social programs designed to help farmers address critical issues in their community, whether it's the lack of agricultural training or inadequate healthcare.

In France, meanwhile, International Flavors & Fragrances is successfully working with narcissus farmers in Lozère by investing in mechanized equipment and creating other incentives to maintain this unique plant.

Telling the Story

Today, the fragrance industry faces strong pressures from consumer groups and regulatory bodies to adhere to evolving ethical and environmental benchmarks. In the traditional media, perfume is often portrayed as an expendable luxury, and even a dangerous one. Because the account of fragrance creation does not reach the consumers, media and regulators, there is often little understanding of how perfume is composed. It's a missed opportunity. The story is already in the bottle. In many cases it starts when a farmer in Laos makes an incision into a *styrax* plant.

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