Comparing Notes: Perfectly Natural

From violet leaf to *Periploca sepium*, traditional and emerging naturals alike drive creativity in perfumery

As raw material sourcing has become globalized, the south of France, still a vibrant hub of perfumery, is increasingly marginalized in the agricultural production of naturals. Far from Provence, the majority of the cultivation, harvest and initial extraction of these materials comprise an industry that spans the globe and employs thousands of people. Yet Firmenich continues its commitment to a select group of locally sourced ingredients in France, including fir needles, mimosa, *rose de mai* and violet leaf. During a recent visit to Firmenich's extraction site in Tourettes, France, the company displayed its devotion both to traditional local materials and emerging naturals from around the world.

On this day, the warehouse is carpeted with violet leaf, first cut, which is spread thin to avoid fermentation. In the air is a distinct green smell. Vincent Nayel, marketing director for Firmenich Naturals, explains that each successive cut (there are three) is incrementally less olfactively ideal, and so the material is processed and, depending on the varying needs of the perfumery team, blended to create standardized products. As with other naturals, the amount of biomass required to produce a finished product is staggering. Nayel notes that five tons of violet leaf is required to net a 2.8 kilo pack of concrete. In total, the company processes 40 tons of violet leaf. The leftover biomass will later be used for fertilizer.

A layer of first-cut violet leaf is spread evenly across the floor to avoid fermentation.

Boet Brinkgreve, vice president, naturals business unit, adds that on-site staff represent the second or even third generation of family to work with naturals. "Working with naturals, they know how to assess the quality … and they know how to make sure that the quality is always good," he says. "That's the big difference: with a synthetic you always have the same quality. You do the same synthesis and it gives you the same molecule. Here you need these kinds of people who do this for so many years and [over] so many generations who translate this [biomass] into the perfect natural."

In the next room, a still is filled with *rose de mai*, a personal favorite of Firmenich master perfumer Jacques Cavallier. He explains that he favors flowers because of his background, which is steeped in perfumery—his mother, for one thing, was an assistant to the great perfumer Edmond Roudnitska.

Rose de mai can cost up to 10 times as much as roses of Turkish or Bulgarian origin, but Cavallier declares it "the best, richest" rose with an animalic quality that works well with patchouli. By comparison, he says *Rosa damascena* is fruitier, alcoholic, less roselike and more volatile. The quality of the ground, he adds, makes the difference.

The extraction of the *rose de mai* and violet leaf will eventually be conducted with hexane. The duration of the washes, hexane-biomass ratios and temperature settings have all been refined over time to produce the most refined natural ingredients.

These and other activities are conducted by Firmenich's naturals business unit, which was founded in 2009 to "further develop sustainable sourcing of raw materials and leverage technology to enhance natural flavor and fragrance solutions." The unit, says Brinkgreve, works with sufficient biomass each year to feed a portfolio of some 500 ingredients: 200 perfumery materials, 250 flavor materials and 100 dual-use materials. In support of these ingredients, the naturals group is focused on four basic pillars: source, science, sustainability and supply. Managing these four aspects, Brinkgreve notes, allows for ongoing improvements in ingredient quality,

From left, Firmenich's head of natural products innovation, Xavier Brochet; director of purchasing and management of natural ingredients, Dominique Roques; and vice president, naturals business unit, Boet Brinkgreve, during a tour of the company's Tourettes, France, site.

Firmenich master perfumer Jacques Cavallier declares rose de mai *"the best, richest" rose.*

Far right, Jacques Cavallier during a presentation of natural materials.

price control and ethics, not to mention the discovery of new, signature naturals. For example, the company has worked to found an industrial patchouli plantation that will allow for ethical sourcing and stable supplies.

Notes from a Smelling Session

Later, a smelling session led by Cavallier displays a range of natural ingredients—from traditional materials to new captives. The master perfumer begins with rose *centifolia* absolute from the south of France, which is intended for fine fragrance only. Then, in addition to a jasmine supercritical fluid extract (SFE; commercialized under the SoftAct trademark) from Egyptian flowers, he presents jasmine *sambac* SoftAct from Indian flowers. Cavallier finds the latter material orange flowerlike, with a Mediterranean impression, pure floralcy and petally effect on top. Next, the master perfumer considers an orange flower SoftAct from Tunisian flowers and a tuberose SoftAct from Indian flowers. The low-color tuberose is very powerful, meaning perfumers use less to make an impression in formulations. Orris SoftAct organic is Ecocert-certified from Moroccan material and represents a material that finds use both in fragrance and flavors, such as berry. Iranian galbanum is the source material for an SoftAct fractionation that is green, spicy and lacks an aggressive note on top.

Next, Cavallier presents a sweet apple distillate for perfumes and cosmetics and a passion fruit cold concentrate for flavors, followed by a red berry SoftAct that has a pepperlike note and is, according to the company, present in up to 40% of feminine fine fragrance scents and 30% of masculine fine fragrance scents. A ginger clear SoftAct from Indian and Nigerian source material comprises the heart of one fraction and imparts a woody, dusty impression. This is followed by two captives: *Periploca sepium* distillate, a 1% dilution of an extract developed in China, and evodia essential oil from the flowers of *Evodia daniellii*, which possesses a tagetes impression.

Following a reconstitution of Fireco tree moss containing no moss, Cavallier presents rum SoftAct with a saffron, rum and orris top note that works well with patchouli. (Four tons of rum is required for one kilo of the material.) Considering a SoftAct absolute of *Vanilla tahitensis*, the perfumer explains that this particular iteration of the material was originally developed for flavorists due to its candy effect, but has been embraced by Firmenich's perfumers. The presentation then closes with an olibanum essential oil produced via pyrogenation. The non-sticky material, says Cavallier, is good for leather notes and red fruits and, in the master perfumer's opinion, adds "deepness and mystery and richness" to fragrance.