

Vanilla: Anything but Plain

Mike Fasano outlines the complexities and nuances of vanilla extracts

“**V**anillin, on its own, is one-dimensional, but vanilla flavor is highly complex,” said Mike Fasano (David Michael & Co.) during a presentation at the recent joint meeting of the Chemical Sources Association and Society of Flavor Chemists.^a The complexity of vanilla is derived from the ~400 components identified in the extract to date, including sulfur compounds. While advanced analytical work continues to decode the components of vanilla, its standard of identity in the United States remains unchanged. This standard, Title 21—Food and Drugs, Section 169.175, states in part:

[V]anilla extract is the solution in aqueous ethyl alcohol of the sapid and odorous principles extractable from vanilla beans. In vanilla extract the content of ethyl alcohol is not less than 35 percent by volume and the content of vanilla constituent, as defined in 169.3(c), is not less than one unit per gallon. The vanilla constituent may be extracted directly from vanilla beans or it may be added in the form of concentrated vanilla extract or concentrated vanilla flavoring or vanilla flavoring concentrated to the semi-solid form called vanilla oleo-resin.

Interestingly, Fasano noted, under this standard of identity vanilla is not a flavor, but rather a food. Under this standard, only two species are recognized: *Vanilla planifolia* and *Vanilla tahitensis*. (There are 100-plus non-commercialized varieties.) *Vanilla tahitensis* “is a hard sell in America,” said Fasano, who noted that it is tenacious and particularly good in yogurts.

Vanilla growing regions include Uganda, Indonesia, India, Mexico and, predominantly, Madagascar. One of the dominant methods of cure, Bourbon, is popularly identified with Madagascar, Reunion and the Comoros, but Fasano noted the method is employed in many of the other growing regions. However, he cautioned, when a



Attendees smelled a variety of vanilla extracts, including Bourbon and Tahitian, in addition to high and low pressure extracts.



Mike Fasano (David Michael & Co.) presenting during the fall meeting of the Chemical Sources Association in Newark.

customer requests Bourbon vanilla, they really mean they want vanilla from Madagascar, Reunion and the Comoros. Fasano went on to post annual vanilla production estimates (not all could be confirmed, he noted):

- Madagascar: 13,000 metric tons
- Uganda: 180 metric tons
- India: 150 metric tons
- Indonesia: 120 metric tons
- Papua New Guinea: 50 metric tons
- Comoros: 50 metric tons
- Tahiti: unreliable data; some estimates claim ~10 metric tons
- Mexico: unreliable data; some estimates claim ~10 metric tons

Vanilla extracts can be produced using hydroalcoholic maceration, hydroalcoholic percolation and, for higher folds, vacuum distillation. Producers may use ethyl

^aLook for more photos and coverage in the December issue of *Perfumer & Flavorist* magazine; www.perfumerflavorist.com/subscribe.

alcohol as a solvent, or hexane, though the latter material has fallen out of favor due to what Fasano characterized as “chemophobia.” Extracts can also be produced using critical and supercritical CO₂ processes. Ethyl alcohol and CO₂ extracts can have solubility issues, Fasano noted.

Next, Fasano outlined the flavor characteristics of various vanilla types. Bourbon was described as:

- Balsamic
- Beany
- Brown
- Creamy
- Phenolic
- Prune
- Resinous
- Rummy

Fasano pointed out that terms like beany and phenolic are difficult to interpret and define, making communication with customers a complicated process.

Indonesian vanilla was described as:

- Astringent
- Clove
- Phenolic
- Resinous
- Smoky
- Spicy
- Woody

Tahitian vanilla was described as:

- Almond
- Anisyl
- Cherry
- Fruity
- Tobacco

Mexican vanilla was described as similar to Bourbon, though perhaps woodier. Any differences could be attributed to differing soil chemistries.

Today’s customer, Fasano noted, is looking for new and novel flavor types and “signature flavors” (“I don’t know what it is, but I know it when I see it”). Paradoxically, he added, customers are reluctant to move too far away from products already on the market. In addition, tight product development timelines can result in under-researched concepts that don’t clearly define consumer preference. At the same time, product research is very expensive and R&D bears a disproportionate share of funding cutbacks in tough times.

Yet vanilla is versatile, and a “feel-good” flavor. Not all of its possibilities have been fully explored. Fasano explained that vanilla is a sweetness enhancer and a heat modifier that continues to find use in sweet, dairy and other categories, while making inroads in savory and spice flavor profiles. Vanilla is anything but plain.