

# New Approaches to a Sustainable Vanilla Supply Chain

What solutions are available to industry as concerns grow about the traditional supply chain's sustainability?

Rick Brownell, Virginia Dare

The world's most popular flavor, vanilla, shows no sign of relinquishing that title anytime soon. Global consumption of vanilla beans has more than doubled since bottoming out in 2004 and is now well in excess of 2,000 metric tons per year. Yet, there are very real concerns about the long-term sustainability of this important food ingredient.

## Concerns about Sustainability in the Traditional Vanilla Supply Chain

The price paid to farmers for green vanilla beans has been so low in recent years that roughly 80% of the world's supply now comes from one country, Madagascar. With an average family income of about \$350 per year and few alternatives, the Malagasy farmers continue to grow vanilla beans despite receiving only about \$0.01 for every dollar spent on retail vanilla extract. Meanwhile, in growing regions such as Indonesia, India, Mexico and Papua New Guinea, farmers have largely abandoned vanilla for more lucrative endeavors. As a result, the vanilla industry is increasingly dependent on Madagascar.

In Madagascar, the traditional supply chain for vanilla is extremely complex and inherently unstable. Vanilla bean production is entirely based on a cottage industry. There are no plantations on which economies of scale can be utilized for better efficiency and lower costs. The industry is completely reliant on rural, impoverished farmers who have been marginalized. Lacking the knowledge and resources to transform green vanilla beans into cured beans ready for extraction, they have been reduced to selling green beans to collectors and traders at commodity prices.

This lack of curing knowledge leaves the farmer without any leverage. Once harvested, green vanilla beans must begin the curing process within a few days or they will rot and become worthless. Farmers have attempted to delay the decomposition of beans by burying them or sealing them in vacuum packaging.



*With an average family income of about \$350 per year and few alternatives, the Malagasy farmers continue to grow vanilla beans despite receiving only about \$0.01 for every dollar spent on retail vanilla extract.*

But these methods result in the formation of undesirable off notes, and these beans are generally rejected by knowledgeable buyers. As a result, the farmer is forced to sell green beans at whatever price the buyer is willing to offer, reasonable or not.

After the green beans leave the farm, they go through a series of intermediate steps in the supply chain before they are ready for consumer products. They are cured (a lengthy, labor-intensive process), packed, transported to ports, exported and, finally, extracted in countries where the end markets exist. These steps add significant increases to the ultimate cost of vanilla extracts and flavors. More importantly, traceability back to the farm becomes next to impossible within the traditional vanilla supply chain.

## New Approaches

Recognizing the vulnerability of this key ingredient, flavor houses have embraced the need for a new supply chain model to ensure the sustainability of vanilla. One area of innovation

## Read More on Vanilla

Find more marketing, technical and sustainability stories at [www.perfumerflavorist.com/magazine/pastissues](http://www.perfumerflavorist.com/magazine/pastissues).

- "The Starting Point: Vanilla Sustainability in Madagascar," p 30, August 2013
- A Marks-McGee, "Forward Thinking: Enchanted By Vanilla," p 40, August 2013
- P Dunphy, "The Role of Microorganisms in Vanilla Curing," p 24, May 2012



has been the introduction of accelerated curing methods to reduce the time and cost of curing vanilla beans. Typically, this involves chopping the beans for uniformity and drying them in some type of humidity and temperature-controlled oven. This avoids the labor-intensive, time-consuming method of traditional sun curing.

One major flaw in this approach is that the farmer continues to be marginalized. Instead of being encouraged to improve quality and add value, their products are increasingly commoditized. Accelerated curing essentially treats all green vanilla beans as the same. Further, the output of cured beans is extremely uniform. This eliminates the production of many traditional grades of quality, each with its own flavor, aroma and value.

Another recent innovation has been the extraction of green vanilla beans. As with accelerated curing methods, a higher vanillin content can be achieved with green vanilla bean extraction than that obtained with traditional curing. Vanillin is the most prevalent chemical compound in vanilla extract, but by no means the only one. Vanillin content has a limited value in the U.S. market, but in Europe, which accounts for roughly 25% of global vanilla consumption, it is actually part of the regulatory definition of vanilla extract. Higher vanillin content, achieved through nontraditional curing processes, could actually decrease the demand for vanilla beans in quantity terms, since fewer are needed to meet the European standard for vanilla extract. These approaches can thus hinder, rather than help, sustainability.

Extracting at source represents a third, relatively new strategy. However, the economics of this strategy really do not work. For every 1 lb of vanilla beans that would otherwise be shipped overseas, extracting at source results in 10 lbs of single-fold extract being shipped to end markets for consumption. Worse, it has to be shipped as hazardous goods since the alcohol content makes it highly flammable. The economics work better if the extract is converted to oleoresin at source. Unfortunately, the flavor and aroma character of vanilla oleoresin is generally considered to be inferior to those of vanilla extract.

Regardless of the economics or the sensory attributes, the farmer does not benefit from extraction at source. Extraction and concentration of vanilla is highly capital-intensive. It also requires large amounts of clean water and alcohol. Needless to say, the vanilla growers in Madagascar do not have the resources to make their own vanilla extract or oleoresin. Whatever the advantages of extraction at source may be, they do not accrue to the farmer.

## Threats to Vanilla Bean Sustainability

In order to ensure an ongoing supply of green vanilla beans, several alliances have recently been formed linking flavor houses directly to vanilla growers. Recognizing the importance of community health for sustainability, these alliances have often included financial assistance for building schools and health centers, planting alternative crops and purchasing rice, the staple of rural Malagasy diet. However, history has shown that “giveaways” are not sustainable, and for good reason.

Schools need teachers and books. Health centers require doctors, nurses, medicine and supplies. All are in extremely limited supply in Madagascar, and a building alone does not provide a complete solution. Alternative crops have their own issues, most notably the clear-cutting of natural forests. By

comparison, vanilla is extremely environmentally friendly since it is a climbing vine that relies on other trees for support and a forest canopy for shade.

Finally, these initiatives fail to account for other critical threats to vanilla sustainability. One such threat is disease, in particular, *Fusarium*, an opportunistic root fungus. Another is the centralization of vanilla bean production in a very small geographic region, specifically the northeast corner of Madagascar known as the SAVA, named for the key towns of Sambava, Antalaha, Vohémar and Andapa. A third is the development of non-vanilla-bean-based flavorings that mimic the flavor and aroma of vanilla extract.

Naturally derived vanillin made from rice hulls and other non-vanilla-bean-based materials are increasingly being marketed as “natural vanilla flavors,” despite the U.S. Food and Drug Administration’s ([www.fda.gov](http://www.fda.gov)) position that they should not. More recently, so-called synbio (synthetic biology) technology is being developed to produce vanillin by genetically programming yeasts at laboratory and, ultimately, industrial scale. Widespread utilization of these products in foods and beverages could have a devastating impact on the livelihood of vanilla bean growers and their families.

The development of non-vanilla-bean-based flavorings does not result simply from the efforts of biotechnologists engineering new pathways to chemical structures. Rather, it is driven by the quest to provide consumers with foods and beverages at competitive (i.e., lower) prices. Ultimately, the consumer has to decide whether or not to accept the costs associated with sustainability. To date, that hasn’t always been the case.

## New Approaches to a Sustainable Vanilla Supply Chain

While the traditional vanilla supply chain does not foster sustainability of vanilla bean production, there are other approaches that may provide better solutions than those discussed above. Virginia Dare, like a number of other vanilla suppliers, has formed an alliance with an association of rural farmers and private companies in Madagascar to produce vanilla beans in a manner that ensures sustainability of not only the product, but also the livelihood of the growers and the natural resources in their local environment.

## Improving Curing

Recognizing that value is added to vanilla primarily in the curing process, the alliance is aimed at providing vanilla growers with the tools and training to cure vanilla beans themselves. An extensive network of field workers has been employed to provide curing supplies and knowledge to farmers and their cooperatives. While rudimentary in nature, proper curing of vanilla beans nevertheless requires a significant amount of expertise and experience. Historically, farmers have lacked this knowledge and were forced to sell green beans within a few days of harvest, or risk them becoming worthless. By learning to cure properly, the farmer not only adds value, but also gains leverage in the market.

Proper curing of vanilla beans includes a lengthy conditioning phase in secure warehouses in which they can be protected from rain and theft. Virginia Dare has provided assistance in building secure storage facilities, which can be used for storage of vanilla beans and rice in between periods of harvest. Funding

for rice purchases is provided by the increased revenue earned by farmers from the value added through curing their own vanilla beans.

## Establishing Quality Guidelines

Beyond curing, the alliance is helping to establish quality guidelines for vanilla beans and instructing farmers how to achieve them through better practices in cultivation and curing. Traditionally, loosely defined grades of cured beans have been sold, despite the fact that, historically, quality grades have not been formally implemented or recognized at the farm level. Quality specifications will help minimize the commoditization of green vanilla beans and maximize their value.

## The Potential of Price Supports

Prior to 1994, the Madagascar government tightly controlled the vanilla industry. Despite the objections of the World Bank and the International Monetary Fund, the government’s involvement went a long way toward maintaining the availability and quality of vanilla beans at very stable prices. Since deregulation, the industry has been subjected to wide swings in availability, pricing and, to a lesser extent, quality, which pose a significant threat to the sustainability of vanilla. Short of a return to regulating the industry, there are other actions that could be taken to enhance sustainability.

Many agricultural products throughout the world are assisted by various supports and subsidies. Conceived and managed properly, price supports would be a boon for vanilla growers. Unfortunately, this might depend on whether or not the Madagascar government can overcome its current dysfunctional state. Another approach could be the maintenance of an industry-sponsored, -funded and -managed strategic supply of vanilla beans. From a practical standpoint, either of these approaches is eminently feasible, because cured vanilla beans have a very long shelf life under proper storage conditions.

## An Investment in the Future

In general, sustainability of agricultural products involves striking a balance among the sometimes disparate requirements of consumers, natural resources, and the livelihoods of farmers, their families and their communities. The related requirement for traceability helps to ensure sustainability by allowing verification that appropriate practices and controls are in place. The complexity of the traditional vanilla supply chain has historically made traceability difficult and largely nonexistent. However, new initiatives and approaches, like those outlined above, offer real solutions for traceability and sustainability.

The ideas outlined above are not without associated costs. However, those costs should be viewed as investments in training, infrastructure, supplies and support, which will ultimately lead to greater efficiencies and/or value creation. Implemented and managed properly, once the initial investment has been made, the ongoing costs of sustainability can actually be lower than those in an unsustainable environment. Hopefully, consumers will ultimately view an investment in the future of vanilla farmers as an investment in their own futures as well.

---

To purchase a copy of this article or others, visit [www.PerfumerFlavorist.com/magazine](http://www.PerfumerFlavorist.com/magazine). 