

Locust bean gum's newfound success in food stymied by supply shortages

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Christopher Doering

Locust bean gum is a victim of its own success.

The ingredient, which comes from the locust bean tree, functions as a thickener, stabilizer, emulsifier and gelling agent while providing texture.

In addition to these applications, locust bean gum hits on a number of other attributes in demand with consumers, including the fact that it is plant based and natural. The tree, according to ingredient supplier International Flavors & Fragrances, also reduces soil erosion, restores carbon to the ground and requires little, if any, fertilizer or irrigation, making it a valuable tool when it comes to sustainability.

Together, these attributes have created a spike in prices for locust bean gum following a shortage in the market for the popular ingredient that is unlikely to end anytime soon.

"The limitation with [locust bean gum] is the supply is not increasing. There is not enough volume to satisfy the demand," said Jean-Baptiste Dufeu, a global business manager at IFF who is responsible for overseeing the ingredient at the company. "For the next few years, the market is going to remain close to what it is right now. We don't have enough product."

Dufeu said while the shortage has stymied the roll out of new products using the ingredient, food and beverage manufacturers are working to develop products using locust bean gum in preparation for when more is available.

"I'm convinced that this product will further develop," he said. "It's the type of product the consumers want to get in the ingredient list of the product rather than some of the others."

Chris Rivard, senior R&D manager at Ben & Jerry's who is responsible for overseeing the development of new flavors, said the Unilever-owned ice cream maker uses locust bean gum in its pint slices that need to withstand "a bit more abuse" like too-warm freezer temperatures and people holding them in their hands while eating them.

Ben & Jerry's nondairy ice creams, which the brand introduced in 2016, also use locust bean gum as one of the ways to help to provide stability and creaminess that typically is provided by dairy fat in traditional offerings.



Courtesy of Ben & Jerry's

"It's an important part of our toolbox," Rivard said. "It definitely suits the purpose that we need it for in the consumer space essentially."

Ben & Jerry's use of locust bean gum hits on two food and beverage products that depend on the ingredient the most: plant-based foods and ice cream. Many ice cream makers use it to provide a fatty mouthfeel and to reduce the size of ice crystals that form when the treat thaws before being frozen again. Other products using the ingredient include cream cheese, breads and bakery items.

The history of locust bean gum goes back thousands of years where it has been found in the wrappings of Egyptian mummies as well as in Pompeii from around 79 A.D. Locust bean gum is produced from the seeds of pods collected from the locust bean tree, or carob tree, which grows predominantly in Mediterranean countries such as Spain, Portugal and Morocco.

Some of the trees are more than 200 years old. An estimated 12,000 to 15,000 kilograms of locust bean gum are harvested annually.

The popularity of locust bean gum hasn't always been as robust as it is today, and that's a major reason behind the current shortage. Dufeu of IFF said that 10 to 15 years ago, there were many more trees. But with locust bean gum prices much lower at that time, farmers chose to remove the trees for cattle to graze or to make room to plant higher-value crops like olives or almonds.

As demand started to surge, farmers moved aggressively to take care of their existing trees. They planted new ones too, but it takes up to 10 years for the locust bean tree to start producing pods, so it will take several years before their supply infiltrates the market.

"We are confident that within three or four years, some significant volume will be available," Dufeu said.

Nesha Zalesny, a technical consultant at IMR International, said prices for locust bean gum are about as high as she can remember since her group started following the commodity in 1991. In the second quarter of 2020, Zalesny said locust bean gum averaged about \$24 a kilogram, and for years had averaged closer to \$14.

Recently, she said a manufacturer paid \$85 a kilogram on the spot market — unlike commodities like corn or sugar, where a user can hedge against increases in the price of an ingredient at some point in the future.

With prices up fourfold from a year ago, some companies are reportedly reformulating products. But doing so can be risky and costly. It can take significant time and money to replace an ingredient with another that produces the same attributes. And any changes to the label has the potential of scaring off consumers who demand a simple ingredients list.

Tara gum is often used as a substitute, but its supply is smaller, with an annual harvest roughly a third as large as locust bean gum. Other potential options like pectin, carrageenan or guar gum come with their own list of challenges in terms of their efficacy, need to be blended with other ingredients, or negative perception in the eyes of the consumer.

With these challenges and locust bean gum amounting to a small fraction of the total cost for a product, manufacturers so far appear to be willing to absorb the price increase for the ingredient.

"There's a couple other substitutions that you can do but each one of them brings their own problems to the table," Zalesny said.