



Novelty, nutrition
drive innovation in the
frozen dessert aisle

Frozen desserts have been around for centuries, but this just might be their Gilded Age... as product developers reimagine the category with gourmet flavors, novel textures and surprising ingredients, often inspired by global culinary trends.

From Thailand's rolled ice cream, to the surprisingly chewy Booza, with its roots in Eastern Mediterranean cuisine, manufacturers are drawing inspiration from around the globe – and consumers are the big winners.

“When it comes to frozen desserts, increasingly consumers expect more than a great-tasting, indulgent treat,” explains Christine Addington, Cargill Senior Technical Services Specialist and an expert in dairy applications. Some crave what Addington describes as “experiential eating;” others are drawn to products with a better-for-you edge. Either way, she says product developers and ingredient suppliers need to up their innovation game.



Innovation requires expertise

For Cargill, that meant investing in the Dairy Applications Center, a space where cross-functional customer teams can partner with Cargill's application scientists in freewheeling product development sprints or zoom in on formulation and production challenges. Located in Minneapolis, MN, the 200,000-square-foot facility is home to more than 200 Cargill application scientists and equipped with state-of-the-art dairy processing equipment, along with plenty of space for collaboration.

“The Dairy Applications Center brings so much expertise together,” Addington says. “It makes it easy to bring ideas and insights from other applications to the unique challenges of the dairy and frozen dessert aisle.” Take inclusions, which are notorious for causing formulation and processing headaches.

“Too often, inclusions become soggy or lose other sensory characteristics when they're added to frozen desserts,” Addington explains. But with ready access to specialists in cakes, cookies, confectionery and convenience foods, customers can tap into Cargill's vast ingredient knowledge to create premium inclusions that truly deliver on consumers' sensory expectations.

Homing in on plant-based trends

One of the hottest spaces in the frozen dessert aisle revolves around the exploding vegan and vegetarian offerings. While consumers may be drawn to these plant-based treats, Addington says they are rife with formulation complexities.

“Especially in the non-dairy frozen dessert space, many of our customers are aiming for a ‘health halo,’ and as part of that, they want to keep sugar levels in check,” she explains. “The challenge is that plant proteins create textural differences, impacting hardness and melting properties – attributes we’d typically manage with sugar.”

Even in frozen desserts with higher sugar levels, it can be difficult to get flavor and texture right. Milk proteins and milk fat bring a lot of flavor, texture and functionality to ice cream. When they are removed, they must be replaced with something that delivers a similar mouthfeel. Coconut oil is a common choice, but it brings along a coconut flavor. “Sometimes that’s great,” Addington says, “but with some flavor pairings, you need to mask the coconut or find a different solution.”

Protein-packed propositions

Plant proteins have even found their way into the traditional hard-packed ice cream space, as the proliferation of high-protein, lower-calorie options have made serious inroads on shelf space. Still, adding plant proteins to a frozen dessert can be tricky.

“Consumers have high expectations for textures in ice creams,” Addington reminds. “Even in a better-for-you product, shoppers still demand a creamy, indulgent experience.” As protein levels rise, it’s easy to end up with a gritty, sandy texture, especially when using less-soluble plant proteins.



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Then there’s flavor. Plant proteins have a reputation for off-notes, so it’s important to choose options with the most neutral profiles possible. (Addington says taste considerations were a key driver behind Cargill’s partnership with PURIS™, the largest North American producer of pea protein.) However, despite the drawbacks, plant proteins also bring distinct advantages to frozen dessert formulation. “Not only do they appeal to consumers,” Addington says, “they also contribute functional benefits like emulsification.

Dialing back sugar

Sugar reduction is another area of intense interest. Given that the average American consumes more than 23 pounds of ice cream annually,¹ it’s no surprise that shoppers are eyeing frozen treats with lower sugar levels. Innova Market Insights says products with a sugar claim (including no / low / reduced sugar and sugar-free) have been growing since 2016 with a CAGR of 13.5% (2016-2020). If only there were a simple, drop-in alternative to sugar.

“Often, our customers are working to achieve single-digit added-sugar levels,” Christine reveals. “This is a hard ask, because replacing sugar and maintaining the same flavor and texture is never easy.” In these applications, sugar is more than just a sweet taste; it impacts texture, ice crystal formulation, freezing point depression and even how a dessert melts on the tongue.

Stevia-based sweeteners are a good place to start, fully capable of replacing the sweetness lost from sugar reduction. It’s replicating all sugar’s other attributes that gets complicated. **Zerose® erythritol** often finds its way into these formulas. The zero-calorie sweetener helps round out stevia’s flavor profile, replaces sugar’s bulk and even aids with freezing point depression. Other ingredients that can be useful in reduced-sugar applications include maltodextrin for bulking and solid replacement; locust bean gum and carrageenan for water management; and emulsifiers like canola and sunflower lecithins.

High expectations reign

In a category intent upon pushing the innovation boundaries, what's next? According to Addington, look for continued exploration around flavor and texture. "It seems everyone wants to be a 'foodie' these days, looking for novel products to photograph and discuss," she says. "And it's all the better if they have a better nutritional aspect than standard products that gives shoppers 'permission' to indulge." Those options with lower sugar levels or added plant proteins might even open frozen treats to more occasions beyond dessert.

Still, Addington says in an increasingly competitive marketplace, novelty and nutrition aside, these products still have to deliver the right look, feel and taste. "Formulators can't lose sight that ice creams and frozen desserts are first and foremost indulgences," she emphasizes. "They have to deliver on consumer expectations for taste, texture and satisfaction to earn repeat purchases."



Cargill can help you create breakthrough frozen desserts.

Learn more at [cargill.com/dairyinnovation](https://www.cargill.com/dairyinnovation); contact us at 1-800-932-0544 or customerservice@cargill.com.

PURIS™ Pea Protein is a trademark of PURIS Foods, a Cargill strategic partner.

References

¹ International Dairy Foods Association. "Ice Cream Sales & Trends."
<https://www.idfa.org/news-views/media-kits/ice-cream/ice-cream-sales-trends>

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