

Expert insights: From ice cream complexity to competitive advantage

A roundtable conversation on balancing indulgence, affordability and performance in ice cream, and the role for sensory design in product success.



The ice cream category is evolving – but not always in obvious ways. While indulgence remains at the heart of the category, manufacturers today are facing new pressures. Rising ingredient costs, improved sugar content, and shifting consumer expectations are creating a complex innovation landscape.

The challenge is no longer simply to create great-tasting products. It's about delivering super

sensorial, indulgent experiences while optimizing cost, improving nutritional profiles, and maintaining performance across the full product lifecycle.

To explore how manufacturers can navigate this complexity, we brought together a panel of Cargill experts. Together, they discuss what's really shaping innovation in ice cream – and how manufacturers can turn today's challenges into opportunities.

Our experts:



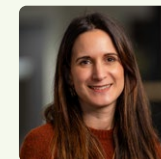
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Efficiency

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Health

Matthieu, if you look at the market today, what are the main forces shaping ice cream development?

Matthieu: What we're seeing across the market is a growing tension between **three key drivers: affordability, indulgence, and health optimization.**

On one hand, cost pressure is very real. Ingredients like cocoa butter and dairy are significantly impacting margins. On the other, consumers still expect a highly indulgent experience – with rich textures, surprising flavor combinations, and premium positioning.

At the same time, there is increased interest to reduce sugars and optimize nutrition. But importantly, in ice cream this often happens in a subtle way. It's not usually about making bold claims – it's often about silent reformulation that maintains the expected consumer experience.

So manufacturers are no longer optimizing one single factor. They're balancing a system.

Caroline, from a formulation perspective, how difficult is it to balance these priorities?

Caroline: It's quite complex, because in ice cream everything is interconnected. If you change one parameter – let's say reduce fat or sugars – it will impact texture, melting behavior, stability, and overall perception.

For example, when manufacturers reduce dairy fat or replace it with vegetable fat to improve affordability, it's not a direct substitution. You need to rebuild the structure of the product. Similarly, reducing protein or milk solids might help with cost, but it will affect body and mouthfeel too.

So the challenge is not just making a change – it's **rebalancing the full formulation** to maintain performance.

Affordability clearly comes through as a major theme.

Where are you seeing the biggest opportunities to optimize cost?

Matthieu: There are several levers.

One key area is in **coatings and inclusions**. With high cocoa butter prices, many manufacturers are exploring alternatives – either partially replacing chocolate or moving toward compound-based solutions that use different fat systems. These can offer similar sensory experiences while improving cost efficiency.

Another area is the **ice cream base** itself. We're seeing requests to move from dairy fat to vegetable fat, such as coconut oil, which can reduce cost, and in some cases support different positionings, such as nutritional claims.

But what's important is that cost optimization is rarely about a single swap. It's about rebalancing the full formulation – from fats to sweeteners to total solids – to find the right compromise between cost and experience.

Elodie, how does this balancing act play out in fruit inclusions?

Elodie: We're seeing an interesting shift where some manufacturers want to take more control of their ingredients – particularly in areas like **fruit ripples and sauces**.

Instead of sourcing them externally, they want to produce them in-house. This can be a way to manage cost more effectively, but it also introduces technical complexity.

For example, in a fruit swirl or sauce, sugars are not just about sweetness – they play a critical functional role. It controls water activity and freezing behavior. If you reduce sugars too much, the sauce can freeze, which is not desirable, because consumers expect the sauce to remain fluid inside the ice cream.

So we support customers by helping them understand these technical constraints and guiding them through formulation choices – such as selecting the right glucose syrup, polyols and stabilizer systems.

For ripples and sauces, a **pumpable, flowable texture and a glossy shine** are key. This is where our pectin solutions come into play. For example, our UniPECTINE® OF series developed to deliver a consistent short, flowable texture, and smooth and shiny appearance, while our Lygomme® OR range of functional systems truly delivers when it comes to ensuring texture consistency.





You mentioned sweeteners. Matthieu, where does sugar reduction fit into this picture today?

Matthieu: In ice cream, sugar reduction is real – but it's often done in a non-visible way.

We're not seeing huge demand for “no added sugar” claims in mainstream products yet. Instead, manufacturers are gradually reducing sugars to optimize nutritional profiles without changing the consumer experience.

That's where solutions like our new **C★Sweet® 01401 low sugars glucose syrup** come into play.

Ok. So how does this glucose syrup support silent reformulation?

Matthieu: C★Sweet 01401 is designed to reduce declarable sugars while maintaining the sensory experience.

What makes it particularly effective is that it behaves very similarly to traditional glucose syrups in terms of sweetness and freezing point depression – which are both critical in ice cream.

This means it can often be used in a one-to-one replacement in the formulation, enabling a silent sugar reduction of around 5-10%, without noticeable changes to taste or texture.

But the real value comes when we combine it with broader formulation expertise and our unique syrups blending concept. By blending this new solution with fructose-containing syrups, we can customize the functional and sweetness properties further to the desired individual customer needs. This can potentially save the customer time and bring convenience.

Clémence, from a sensory perspective, how important is it to maintain that experience when reformulating?

Clémence: It's critical. Consumers may not always consciously notice small changes, but they will react if the overall experience is not right.

That's why our work focuses on understanding what truly drives liking. It's not just about taste – it's about texture, sweetness, creaminess, and how the product evolves during consumption.

In our recent work we looked at vanilla ice cream in detail, by collating the responses of almost 1,100 consumers in four large European countries: Germany, Poland, France, and Italy. One of the biggest surprises was that **texture can be more important than flavor in driving preference.**

That's interesting. Can you explain more?

Clémence: Yes – while vanilla flavor is important, we found that elements like creaminess, density, and melting behavior are often stronger differentiators.

We identified different consumer segments – for example:

- Consumers looking for creamy, soft, indulgent textures with sweetness.
- Consumers preferring firmer textures and more natural flavor cues.
- Others open to plant-based or alternative concepts



So there is no one-size-fits-all solution. The key is understanding which sensory profile you are targeting and designing the formulation accordingly.

How does this sensory insight translate into product development applications?

Matthieu: It reinforces the idea that formulation must always be approached holistically.

Texture, fat level, sweetness, air incorporation, and

stabilizers all interact. If you want to target a premium segment, you will design a dense, rich product. If you are looking to address affordability demands, the formulation will be very different.

What sensory research allows us to do is guide these decisions more precisely – so we're not relying on trial-and-error, but on clear drivers of consumer preference.

Indulgence still plays a major role in ice cream. How is this evolving in the category?

Elodie: Indulgence today is more about experience than just richness. It's about **combining textures** – creamy ice cream, smooth sauces, crunchy inclusions, and coatings. These layers create a more engaging product.

We're also seeing continued interest in **multi-texture concepts** – like coatings combined with caramel layers or inclusions – to deliver that indulgent experience.

And even with cost pressures, manufacturers still need to deliver that experience – it's non-negotiable in this category.

Are there cases where cost pressures directly impact indulgence positioning?

Caroline: Yes, definitely. For example, we've seen cases where manufacturers consider removing coatings to reduce cost. But this creates new challenges – because coatings also contribute to structure and sensory experience.

Without a coating, the product may melt faster or behave differently during consumption. So again, it's about finding the right balance and adapting the formulation accordingly.

What about emerging formats like water-based or fruit-based concepts?

Elodie: Fruity indulgence is definitely taking a step forward, instigated by the recent all-time high cocoa ingredient prices. We're seeing manufacturers develop more fruity propositions, incorporating more fruity flavors, real fruit juice and surprising fruit sauces. With temperatures in Europe expected to remain high or become even higher due to climate change, they are seeing a revived interest as they deliver a refreshing, **fruity treat at low calorie content**.

Water-based products and fruit concepts are also interesting because they are often perceived as lighter or more refreshing.

However, they still require careful formulation. For example, in water ice or fruit lollies, texturizers like pectin or other stabilizers are important to avoid an overly icy texture and to improve mouthfeel.

Even in these simpler formats, achieving the right texture remains key to consumer acceptance.



If each of you had to summarize, what should manufacturers focus on to stay competitive?

Matthieu: Manufacturers need to think in terms of **systems**, not individual ingredients. Success comes from balancing cost, sensory experience, nutritional profile, and processing & shelf-life performance. And doing all this quickly and efficiently.

Clémence: I would add that **staying close to the consumer** is essential. Understanding what drives preference – especially in terms of texture and experience – can unlock new opportunities and help differentiate in a crowded market.

Caroline: From a formulation perspective, it's about **managing trade-offs**. Every change has an impact. The goal is to design products that deliver across multiple dimensions – not just optimize one at the expense of others.

Elodie: And finally, let's not forget that **collaboration** is key. The more we work together with customers – sharing expertise across ingredients, applications, and processing – the faster we can develop solutions that work in real life. ■

Let's co-create the next generation of ice cream!

Ice cream innovation today is defined by complexity. Balancing affordability, indulgence, and health optimization requires more than incremental changes – it demands a holistic approach to formulation, that is guided by deep sensory insight. By combining expertise across ingredients, applications, and consumer understanding, manufacturers can turn that complexity into a competitive advantage.



Matthieu Rouvillain, Ice Cream R&D Lead started at Cargill 12 years ago in R&D Chocolate and has previously also held R&D positions at Häagen-Dazs for 10 years. Matthieu is partnering with our customers to develop the ice creams of the future.



Elodie Dupire, R&D Senior Application Specialist Fruit has been working as project manager for the Cargill Food Fruit Application team since 2007. She supports customers with technical assistance, helps develop new solutions adapted to customer needs, as well as elaborates new concepts and innovations.



Caroline Delabrousse, R&D Senior Application Specialist Dairy & Dairy Alternatives, is a seasoned expert in product development and innovation with nearly 25 years of experience in dairy and ice cream R&D. Based at the R&D Innovation Hub in Baupré, France, since 2016, she supports a wide range of customer and innovation projects in ice cream, while also contributing to broader dairy applications. Caroline has extensive expertise in texturizers and sweeteners, with a strong focus on the development of “white mass” products.



Clémence Léotard, Sensory Consumer Experience Designer, with more than 15 years of experience in Sensory & Consumer Science for various FMCGs. Clémence is responsible in Cargill to proactively generate technical consumer insights, provide insights to customer-facing teams and support communication to customers and critical new launches.

More information: cargill.com/food-beverage/emea/category/ice-cream

