Sweet perspectives:

Expert insights on sugar reduction and the opportunities that EverSweet® presents.

Sugar reduction continues to trend. While beverages still dominate formulation efforts, new opportunities are opening up in applications such as sugar confectionery, dairy, and sports nutrition. At the same time, consumers are looking to reduce their intake of sugars without compromising on taste or label friendliness. That's why we are happy to introduce EverSweet® – the next-generation stevia sweetener¹.

To celebrate the upcoming European launch, we gathered a panel of Cargill experts to get their insights on the sugar reduction trend, and why this on-trend ingredient will help manufacturers meet them.



64% of European consumers are trying to avoid sugars.

Source: Cargill proprietary research, (November 2022; n=3081 interviews; France, Germany, UK)

Sugar reduction has been a major trend for some time, but how is this trend evolving?

Amber: I think there's a couple of factors at play here. Firstly, more label-friendly solutions are coming to market. In the past, sugar reduction was driven by artificials. Due to the increasing avoidance of artificial sweeteners, nature-derived alternatives, and most notably next-generation stevia solutions are coming to the fore.

It's also interesting to see which categories are focusing on sugar reduction. It was driven by beverages, with many beverage companies offering a sugar-reduced or sugar-free line. But now other categories are doing so too, including the more indulgent ones such as sugar confectionery.

Andrew: After Covid, the trend towards sugar reduction stalled somewhat. During that period, people were sometimes still opting for a sugar-reduced option but, generally most wanted to spoil themselves a little in whatever way possible. Now, I am seeing this trend truly kick back into gear, as more consumers look to reduce their sugar intake. The question then becomes, how do you do that? Do you just reduce the sugar or replace it with an artificial sweetener? People

nowadays are looking for something non-artificial and without calories – that's where stevia really fits in.

Manuj: Consumers are still attracted to front-of-pack claims around "less sugar." At the same time, however, they are scrutinizing how that sugar reduction is actually achieved on the back of the pack. In this way, they're discovering whether that means that lots more artificial ingredients are being added or not. Another way that manufacturers are responding is by reformulating for sugar reduction but not actively calling it out i.e. "silent reduction." Other still are instead drawing attention to the lower calorie content of the product as opposed to the reduced sugar level itself.

Andrew: It's also important to add that the cost of sugar has gone up significantly as a result of inflation. This is why many of our customers are looking to trim the sugar content of the products – even a 5-10% reduction can result in an optimal product cost for our customers. This is where our sweetener solutions can help too.

How has Cargill responded to the sugar reduction trend from an innovation standpoint?

Manuj: Cargill has made a conscious choice to offer a full toolbox for sugar reduction. But as we make this progress, we need to ensure that we help our customers achieve sugar reduction in a label-friendly way. Label-friendly sugar reduction is where we will continue to innovate as we see the market evolve in this direction.

Andrew: Ultimately, it's all about developing a toolbox. Sugar reduction isn't just about taking sugar out and putting another sweetener in. It's about mouthfeel and texture, or (in some applications) ensuring that the desired browning is maintained. So, in building that portfolio it is important for Cargill to have a high potency sweetener for the sweetness, and bulking agents to build back body in a food matrix.

Stevia is one ingredient that has trended when it comes to sugar reduction. How has this evolution played out?

Andrew: In 2008, Cargill pioneered stevia in North America by achieving GRAS [generally recognized as safe] status for Reb-A extract and launching it under the Truvia® brand name. It was launched in EU markets in 2011. At the time, Reb-A



Sugar reduction up to 3 SEV

S FSA 3.0 Silver benchmark

High purity Reb A

Cost-effective



- Proprietary blend of steviol glycosides
- Sugar reduction up to 6 SEV

EverSweet®

Stevia Sweetener

- Reb M and D from fermentation
- Sugar reduction up to 8 SEV
- Strong sustainability story!

Steviol glycosides from fermentation

Steviol glycosides from stevia

was the most prevalent and best-tasting steviol glycoside that could be produced at scale. Truvia[®], which is really built around the leaf origin of the product, continues to be an excellent solution as a tabletop sweetener and in applications such as flavored waters.

However, the industry generally lacked the knowledge to formulate with stevia at the time. This meant that a lot of products launching in the market did not have the optimal taste profile.

Philippe: Recognizing those technical issues, Cargill looked into other steviol glycosides that could be found in the leaf, beyond Reb-A alone. We tested the potential of different

steviol glycosides alone and in combination. These efforts resulted in ViaTech®, which is achieved by combining different steviol glycosides at an optimal ratio, in order to achieve better sweetness, less bitterness, and less linger.

During that work, Reb-M and Reb-D were found to be the best-tasting steviol glycosides in the leaf. However, they do not naturally occur at a high enough level in the leaf to allow for cost effective extraction and to scale production. That's where fermentation came into play with EverSweet®. Fermentation allows us to offer an ingredient solution that is scalable, great-tasting and more sustainable.²

EverSweet® is the latest step in the stevia evolution. What sets it apart in the marketplace?

Philippe: Achieving successful sugar reduction means cutting down on sugars while preserving the delicious taste. Traditional stevia sweeteners often had issues with an aftertaste at higher usage levels, limiting the extent of sugar reduction. However, with EverSweet®, we've optimized the taste profile, enabling us to achieve significant sugar reduction without compromising on flavor.

Andrew: The sustainability aspect is another feather in the cap. When compared to Reb-M produced through a bioconversion process from the stevia leaf, our lifecycle assessment shows that EverSweet® has advantages in terms of land use related impacts (-88%), water use (-92%), and carbon footprint (-76%). At the same time, there's concerns around ensuring that ingredients actually biodegrade after use. It's been shown that after steviol glycosides are consumed and digested they don't persist in nature.

Philippe: All in all, EverSweet® is a nature-derived solution that optimizes costs, meets consumer demands for reduced sugar and calories, and offers a sustainability bonus, which customers may be able to reclaim in their carbon credits.

Where do you see the biggest opportunities for EverSweet® in terms of applications going forward?

Andrew: It's clear that beverages will remain the #1 category when it comes to sugar reduction. But I would also call out dairy and sports nutrition as other categories holding potential. You might be looking for something that's a little indulgent, but without those extra calories. This is exactly where EverSweet® can help!

Philippe: I agree with Andrew. EverSweet® is a game changer, enabling significant sugar reduction and the creation of sugar-free or no-added-sugar beverages without relying on artificial sweeteners. This innovation is perfect for various types of beverages, fruit yogurts, cocoa drinks or sports nutrition.

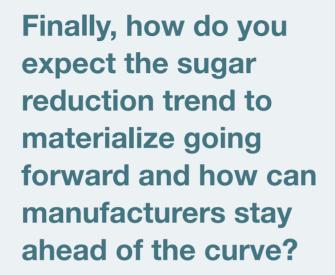


EverSweet® has...

÷	-92%	Lower water* use compared to bio-converted Reb M
H	-81% -76%	Lower carbon footprint lower than beet and cane sugar Lower carbon footprint lower than bio-converted Reb M
*	-88%	Reduction in land use related impacts compared to bio-converted Reb M

Manuj: It's also important to note the potential for synergies with other ingredients from our sugar reduction toolbox. For example, formulating a combination of EverSweet® with our own bulking agents, polyols and texturizers positions Cargill as an effective solutions provider.

When combining our own ingredients, with our knowledge and expertise we will work with you on achieving the best possible formulation featuring an ingredient like EverSweet®. Our dedicated application specialists will work with our full toolbox of complementary ingredients to find the correct dosages for your success.



Amber: I think this trend is going to continue with a lot more categories going down the sugar reduction route. Besides consumers wanting to have less calories and increasingly focusing on their health, the whole regulatory aspect is perhaps even more pressing.

The ongoing global trend around health has prompted greater governmental intervention, including reformulation incentives, taxes, and front-of-pack labeling schemes like Nutri-Score in the EU and the traffic light system in the UK.

I also think that more education is required about the difference between artificial and natured-derived high intensity sweeteners. But these sweeteners are actually quite different at a molecular level – in fact recent studies have shown that stevia can have a positive effect on your appetite³.

Andrew: I think it's important to differentiate between stevia and artificial high intensity sweeteners. Too often they are put in the same bucket, but in reality, it's not even like comparing apples and oranges – it can be like comparing cats and oranges! Cargill has invested the time to reflect safe and effective stevia for people of all ages, including diabetics.

It doesn't affect your gut microflora and may be able to actually help you lose weight when replacing sugar⁴.

These things are important to consumers and this distinction needs to be communicated.

Manuj: I think there is room for manufacturers to still develop their expertise on formulating with high intensity sweeteners, and how to combine them to really deliver on taste, texture and eating experience. That's of course where Cargill experts are happy to help!



³ Stevia Beverage Consumption prior to Lunch Reduces Appetite and Total Energy Intake without Affecting Glycemia or Attentional Bias to Food Cues: A Double-Blind Randomized Controlled Trial in Healthy Adults - ScienceDirect

⁴ Kwok, David et al. "Comparison of a Daily Steviol Glycoside Beverage compared with a Sucrose Beverage for Four Weeks on Gut Microbiome in Healthy Adults." The Journal of nutrition vol. 154,4 (2024): 1298-1308. doi:10.1016/j.tjnut.2024.01.032; Higgins, Kelly A, and Richard D Mattes. "A randomized controlled trial contrasting the effects of 4 low-calorie sweeteners and sucrose on body weight in adults with overweight or obesity." The American journal of clinical nutrition vol. 109,5 (2019): 1288-1301. doi:10.1093/ajcn/nqy381

Meet our panel:



Amber HermanSweetness Marketing Specialist, Cargill

Amber Herman joined Cargill in 2020 as part of the European Graduate Program and is now the Sweetness Marketing Specialist for Europe. She supports new product launches, positioning and segmentation, marketing and customer communications, and insights with regards to sweetness and sugar reduction.





Philippe Chouvy
Business Development Manager
Sweetness, Cargill

Philippe Chouvy joined Cargill in 2017 as Business Development Manager Sweetness Europe. This follows a previous 25 years of experience at a Global FMCG company in product development & procurement, and strategic sourcing. Philippe's role is to lead the business development of Cargill's portfolio in Europe of full caloric, medium caloric & non-caloric sweeteners.



Manuj KhannaProduct Line Manager, Cargill

Manuj Khanna joined Cargill in 2019 after 10 years of experience in sales, pricing and project management. He has been part of the Sweeteners team for over 4 years, starting as Business Development Manager and moving on to his current role as Product Line Manager for sugar reduction solutions such as soluble fibers, high-intensity sweeteners and erythritol.



Andrew Ohmes
Chief Executive Officer Avansya, a joint venture of Cargill and dsm-firmenich

With more than 24 years of specialty food industry experience, Andrew directs a global team, spanning 4 continents, focused on delivering high quality natural sweetener products to the global market. Andrew has a broad range of experience across various functions including quality assurance, ingredient research, process development, supply chain management, manufacturing and commercial activities.

For more information:

www.cargill.com/food-beverage/emea/sweeteners/eversweet