



Sustainable sweetness

Consumer attitudes continue to evolve around products they consume and sustainability issues.

According to Cargill's proprietary 2021 Global FATitudes™ Survey, 55% of consumers now indicate that they are more likely to purchase a packaged product if it includes a sustainability claim, which is a four-point increase since the survey was last fielded in 2019.¹ The research noted that this growing awareness and emphasis on sustainability was most evident in countries like Brazil (74%), Mexico (66%) and the United Kingdom (51%). The United States comes in a bit lower at 37%.

Given these shifting attitudes, it is little wonder that manufacturers of alternative sweeteners, wanting to capitalize on sugar-reduction demands, are upping the bar on their sustainability practices. However, selecting a more sustainable alternative sweetener is no simple task – for several reasons, including sugar/calorie reduction, product functionality and sustainability measures.

It's not easy to make comparisons between alternative sweeteners' sustainability practices, due to variable global conditions regarding soil, farming methods and weather. While there is some information available, many products are limited by one or more of these attributes.

Because there is no single substitute for sugar – an ingredient that provides many functions in food and beverage formulation – replacing it may also require a blend of ingredients to reproduce the qualities that consumers demand, like sweetness, bulking and mouthfeel. This further complicates the sustainability picture.

The good news is that stevia-based sweeteners get high marks in all of these categories.

Cargill has spent more than

300,000

hours studying the sweetness qualities of the stevia leaf and the compounds called steviol glycosides that deliver its sweet taste.

Proprietary Cargill research noted that when compared to 12 other no- and low-calorie sweeteners, stevia leaf extract is considered to be most healthful.²

Raising the bar for stevia sustainability

Regarding sustainability, Cargill has pioneered a comprehensive Stevia Sustainability Agricultural Standard to add transparency while protecting both farmers and land where its stevia plants are grown. It requires grower-partners to adhere to 137 control criteria in 13 categories, including worker health and safety, labor practices and chemical handling, and third-party oversight.³ This is the most rigorous standard within the stevia landscape.

In recent years, Cargill zeroed in on two key glycosides, Reb M and Reb D, which are the sweetest components in the stevia leaf. The problem was, they are also found in limited quantities in the leaf, so producing them via conventional agriculture for a commercial ingredient was not realistic.

This prompted Cargill to create a joint venture with DSM called Avansya. They used the process of fermentation to reproduce Reb M and Reb D at scalable volumes to create EverSweet.® It was a win on several levels.



First, the sweetener provides sweet taste with a more rounded profile and faster sweetness onset, without the bitter/licorice aftertaste common in earlier Reb A stevia leaf extracts. EverSweet also allows product formulators to achieve significant calorie reduction and up to 100% sugar replacement in certain applications.

EverSweet also scores well on sustainability. To prove it, Cargill conducted a third-party verified life-cycle analysis (LCA) to determine the environmental impact of stevia-based solutions. The analysis determined that EverSweet offers a more sustainable profile than other sweetener solutions, including stevia from leaf-based Reb A, and leaf-based Reb M and Reb D produced using bioconversion (a process that uses enzymes to convert stevia compounds into Reb M, which requires the growth and harvest of stevia plants, extraction and purification of components, then enzymatically converting them into Reb M).

The fermentation-sourced Reb M, or EverSweet, was a clear sustainability success. Compared to the bioconverted Reb M, it produced a 60% lower carbon footprint, required 70% less land and achieved a 60% lower ecological footprint related to land use, ecosystem impact and water use, which equates to meaningful environmental benefits.⁴

Flavor modifiers are another way to sustainably replace certain qualities of sugar. They can be used at low quantities to replace large amounts of sugar and are considered a more-sustainable option. Cargill has taken

this concept to a new level with a solution that includes both EverSweet stevia sweetener and ClearFlo™ natural flavor. ClearFlo is a natural flavor with modifying properties which has beneficial qualities with EverSweet. Together, they enhance steviol glycoside performance and support product formulation with reduced sugar and calories. Food scientists had long struggled with low solubility performance in stevia leaf extracts, which presented limitations in certain applications. Cargill discovered that ClearFlo could boost EverSweet's solubility by 30% in addition to its flavor-enhancing capabilities.

The new product offers favorable label declarations in that stevia may be listed as a stevia sweetener, and ClearFlo as a natural flavor. Both should resonate well with sustainability minded consumers.

Inevitably, research will continue to unveil new sweeteners that meet rising standards for functionality and taste. Those that also meet demand for sustainability, via transparent supply chains, will likely set the benchmark for reduced sugar in the coming years.

Learn more about Cargill's stevia sustainability standards.

References

¹ Cargill Proprietary Research. "Research Finds More Consumers Weighing Sustainability Claims on Packaged Food Choices." Feb. 3, 2022. <https://www.cargill.com/2022/research-finds-more-consumers-weighing-sustainability-claims>

² Cargill Proprietary Research. IngredientTracker 2021.

³ Cargill. "Innovation that Sustains: Setting the Standard for Sustainable Stevia." <https://www.cargill.com/sustainability/sustainable-stevia>

⁴ Cargill. "Life Cycle Analysis Finds Cargill's EverSweet® Stevia Sweetener proves to be Sweeter to the Earth than other Stevia Options." May 24, 2021. <https://www.cargill.com/2021/life-cycle-analysis>

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