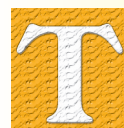


Navigating the cocoa crisis: Chocolate production's new age of innovation and sustainability

From a luxury food to the cocoa crisis and its impact on chocolate



The history of chocolate is millennial. The cacao tree was already cultivated 3,000 years ago in Central America, where its beans held great value among the Mayans, Toltecs, and Aztecs—not only as currency but also in the preparation of sacred beverages. In some civilizations, cacao was even designated as the “food of the gods.”

Chocolate made its way to Europe in the 16th century, initially used in savory dishes. Over time, recipes evolved, and around the 19th century, chocolate began to resemble the sweet product we know today, largely thanks to advances that made its trade and production more accessible.

Since the mid-20th century, chocolate's popularity has soared, bringing its cultivation to a critical point as global demand continues to grow.

Nowadays, the chocolate industry is facing a crisis as deteriorating environmental conditions, aging cocoa trees, and market speculation strain cocoa production. Prices are climbing, creating challenges for manufacturers and consumers who are reluctant to see this cherished indulgence become unaffordable. Chocolate, for many, is not just a treat — it's part of daily life, a source of comfort, and a familiar pleasure. But with supply dwindling and costs rising, manufacturers must find creative solutions to keep chocolate affordable and sustainable.

Innovation is more important than ever to mitigate the cocoa shortage and ensure that this product will remain available for the years to come.

A difficult balance: Ensuring quality amid rising costs

At the heart of this challenge is the need to source sustainable, high-quality cocoa, a necessity for the integrity and flavor consumers expect. However, rising costs throughout the supply chain make this increasingly difficult. Cocoa scarcity requires manufacturers to make tough choices: innovate to reduce cocoa dependence, seek alternative ingredients, and find ways to retain quality without sacrificing affordability.

Producers face the delicate task of adapting to an ever-shrinking cocoa supply while still delivering the products consumers love. This balancing act is reshaping the chocolate industry, turning what was once a simple pleasure into a battleground for innovation.



Creative solutions at a crossroad

While long-term solutions like sustainable farming and fair-trade practices may eventually offer stability, immediate solutions are critical. Here are a few strategies that manufacturers are exploring to reduce reliance on pure cocoa without sacrificing taste or texture:

- **Partial Cocoa Replacements:** Carob, fava bean and chicory are plant-based alternatives that can approximate cocoa's flavor and mouthfeel. Carob has a naturally sweet, chocolate-like taste that helps cut down on added sugars, while chicory, though more bitter, adds depth when used sparingly. Fava beans introduce a more earthy nuttiness and a umami flavor that can also be interesting in dark chocolate.
- **Milk Powder as a Cocoa Substitute:** For milk chocolate, using milk powder is an effective way to reduce cocoa content while enhancing creaminess. Although not suitable for lactose-intolerant or vegan consumers, milk powder balances milk chocolate's flavors and texture.
- **Increasing the Sugar Content:** Another simple yet risky approach is to add more sugar, which can mask the reduction of cocoa in the recipe. However, excessive sweetness may dissuade health-conscious consumers, so manufacturers must tread carefully.
- **Replacing Cocoa Butter with Vegetable Fats:** Cocoa butter is expensive, and some companies are substituting it with vegetable fats like palm oil or shea butter. Although this replacement affects mouthfeel and isn't always sustainable, it offers a cost-effective solution in the short term.
- **Using Artificial Flavors:** Some companies are experimenting with artificial flavors to replicate cocoa's rich taste. While this can help reduce cocoa content, the use of artificial additives may, once again, discourage consumers seeking natural ingredients.

A European Twist: Innovation with Plant-Based Ingredients

Considering these challenges, some manufacturers are exploring European-grown grains and plant-based options to reimagine chocolate's composition. With growing interest in plant-based

diets, using ingredients like oat and millet powders offers a sustainable, vegan-friendly alternative to milk powder.

- **Oat Extract to Enhance Bitterness:** Oat extract can complement chocolate's natural bitterness, giving it a nuanced, slightly earthy flavor profile that appeals to dark chocolate lovers.
- **Millet and Rice Extracts for Creaminess:** Millet and rice extracts contribute a creamy, rich texture that reduces the need for added sugar. They also offset some of chocolate's inherent bitterness, making them ideal for creating a smooth, balanced taste. All of those cereal extracts can also aid in reducing the end-product's sugar content.
- **Complementing Flavors:** Introducing flavors like sesame, orange, or almond alongside these grain-based extracts can help create a unique chocolate experience, enhancing depth in each bite.

By embracing local, sustainable ingredients, manufacturers can offer an affordable and more eco-conscious product that meets the rising demand for healthier and plant-based options. This shift not only supports European agriculture but also opens the door to novel flavor combinations that appeal to modern consumers.

The future of chocolate as a functional product

The idea of "functional foods" has broadened in recent years, going beyond the conventional health-conscious goods like protein bars, energy drinks, and wellness candies. Once thought of mainly as a decadent pleasure, chocolate is increasingly being recognized for its additional health advantages. In line with contemporary health trends, functional chocolates are being created with a variety of wellness-promoting components, including antioxidants, vitamins, minerals, and adaptogens (such as reishi mushroom



or ashwagandha). This trend reflects a change in consumer tastes, as more individuals seek out ways to enjoy their favorite foods while simultaneously gaining medicinal or nutritional advantages. Businesses hope to reach a new market of health-conscious consumers who desire indulgence without sacrificing their health objectives by fusing the joy of chocolate with the promise of functional wellness. Innovations in chocolate as a functional product might include chocolates designed to boost immunity, elevate mood, increase energy, or even encourage relaxation — all while maintaining the delicious flavor and texture that chocolate fans enjoy.

Understanding consumer trends and preferences

Consumer preferences remain central to the industry's evolution. According to recent research, taste is the primary reason people consume chocolate worldwide. Additionally, chocolate serves as a form of self-reward, a source of relaxation, and an occasional indulgence. Research shows that nearly two-thirds of the global population has purchased chocolate in the past year, with over half consuming it at least once a week. This strong demand underscores chocolate's place in daily life.¹

Interestingly, the highest consumption rates are not limited to traditionally chocolate-loving

regions. Growing demand in Asia and the Middle East² signals new market opportunities, with consumers in these regions eager to embrace both traditional and innovative chocolate flavors. As chocolate becomes increasingly viewed as a functional food, these trends suggest a bright future for low-sugar, health-conscious options.

In both Europe and the USA, consumers are increasingly gravitating towards ethical and clean-label products. Greater awareness of poor farming practices in recent years has driven people to make more mindful purchasing choices, especially when it comes to chocolate. Additionally, there's a growing preference for natural ingredients, reflecting a broader trend toward minimally processed, transparent products that align with personal values and health-conscious lifestyles.

Conclusion: Embracing innovation in a shifting market

The cocoa crisis has pushed the chocolate industry into a period of rapid change and innovation. From substituting cocoa with locally sourced grains to exploring the potential of natural sweeteners, manufacturers are stepping up to meet both environmental and consumer challenges. At the intersection of tradition and innovation, the chocolate industry is poised to adapt, maintaining its beloved flavors while reducing its environmen-

tal impact.

As the demand for chocolate continues to grow, particularly in emerging markets, the industry faces an exciting yet uncertain path forward. By embracing sustainable practices and developing new plant-based ingredients, chocolate producers can ensure that future generations will continue to enjoy this timeless indulgence — sustainably, naturally and affordably.

References:

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