



Taking the measure of plant-based meat alternatives

Understanding new benchmarks for success

Rising from their roots in veggie burgers and tofu/tempeh, plant-based meat alternatives have perhaps been one of the most unlikely success stories in recent food and beverage product development — overcoming both widespread consumer taste perceptions, as well as upheaval from a global pandemic and related supply chain disruption.

Bolstered by rising consumer demand for products that are better for personal (as well as planetary) health, plant-based meat alternatives now stand poised for continued growth in 2023 and beyond.

To arrive at this point, brands in the two key plant-based categories — dairy alternatives and meat alternatives — responded to market demand for products that not only address health and sustainability goals, but also meet increasingly high expectations for taste and texture. In plant-based meat alternatives specifically, startups stepped up to create products that more closely represented what consumers expected to see from meat in both taste and appearance... and the rest is history. Their success is advancing new plant-based products across the meat-alternative spectrum, from the ubiquitous plant-based burger to plant-based versions of chicken, fish and pork alternatives. For brands today, it's essential to not only keep up, but also stay ahead of the game.

The next few years promise to be lively, as the plant-based meat alternative segment sees solid growth. According to data from Research and Markets, the global plant-based alt-meat market was predicted to reach \$7.9 billion in 2022, then nearly double in the next five years, with projections to reach \$15.7 billion in 2027 on a 14.7% CAGR.¹

In the United States, plant-based meat alternatives saw record growth between 2019 and 2021 to reach \$1.4 billion, with three-year growth at 74%, according to data from the Plant Based Foods Association (PBFA) and The Good Food Institute (GFI).² While growth was flat in 2021 (in part due to continued supply chain issues), plant-based meat alternatives still outpaced conventional meat, which saw a 9% unit sales growth over the past three years, compared to 54% for plant-based meat alternative sales over the same period.

Even more telling is that household penetration of plant-based meat alternatives reached 19% in 2021, with a repeat purchase rate of 64%.

Clearly, consumers are intrigued by plant-based meat alternative products. Interest in personal health, along with broader concerns about the environmental impact of industrial farming, as well as opinions about the need for a food system change have certainly propelled the trend.⁴ And these attitudes are reaching mainstream levels. For example:

79%

of consumers state that it is important for plant-based products to be made with familiar and well-known ingredients.

83%

of consumers who eat meat substitutes/replacements do so because they see them as better for the environment.

Source: FMCG Gurus. "The Growing Plant-Based Market – Meat Alternatives." June 13, 2022.

But the picture is not completely rosy. For instance, there is still a fair amount of skepticism regarding product taste and expectations.

67%

of global consumers who do not eat meat substitutes state the products lack taste.

82%

of consumers state that it is important for plant-based products to taste the same as conventional meat.

74%

believe both texture and appearance should be the same.

Source: FMCG Gurus. "The Growing Plant-Based Market – Meat Alternatives." June 13, 2022.

That said, consumers are becoming increasingly comfortable with new food technologies around plant-based meat alternatives, although they may lack deep knowledge about these innovations, which can impact product perceptions.

According to new research from The Hartman Group on food and technology, consumer thinking about these innovations is influenced by whether they think of the technologies as coming from “field,” “factory,” “lab” or “kitchen.” In other words, a perceived tension between nature and technology, coupled with a lack of knowledge, may raise questions – especially regarding factory- or lab-based technologies.⁵

Even so, brands are pushing the envelope with respect to innovations and technologies, especially as interest in more-sustainable crops and fermentation technology promise to deliver new proteins from a wide variety of sources, according to observations from Innova Market Insights. Cultured meat, which is produced by cultivating animal cells, is also generating interest, but it may be too soon for many consumers, especially health-conscious shoppers, despite the environmental advantages they might present.⁶

So while overall acceptance of plant-based eating has transformed the plant-based meat alternative space, there are still challenges to solve and new market opportunities. This will be helped along with a growing stable of ingredient solutions and an emerging body of expertise to address the challenges.

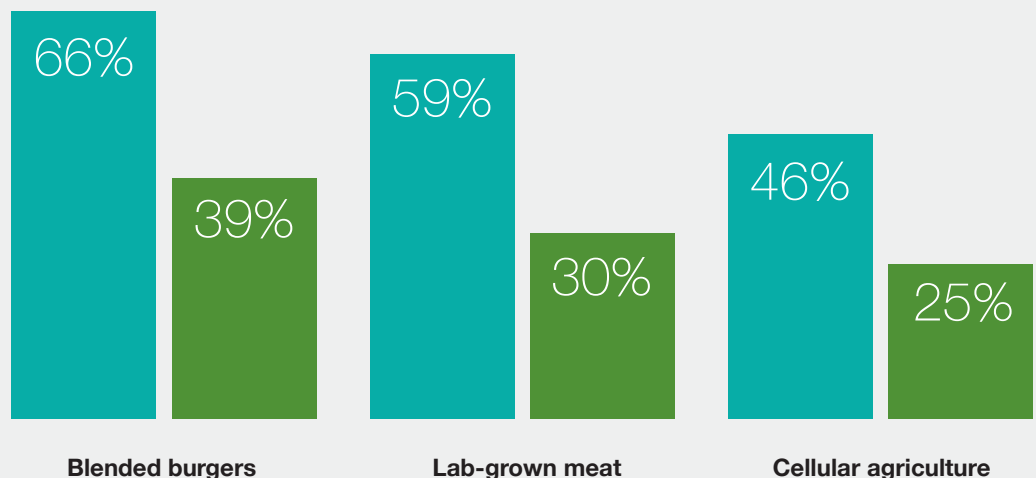
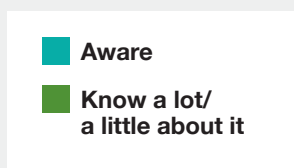
Soy and beyond

Textured soy protein and concentrates have long been go-to solutions for plant-based meat alternative products... and they are still commonly used, serving as cost-effective solutions in products like meatballs and plant-based chillis. But pea proteins are now emerging as an important resource in plant-based meat alternative applications. For example, pea proteins are high in protein content (containing about 80% protein), offer a neutral flavor and feature strong emulsification and water-binding qualities.

Pea proteins are also useful in the trending hybrid category: products that contain part plant protein and part animal protein. These products boast very similar texture and taste to conventional animal-based meats, while also appealing to health-conscious consumers with fewer calories and less saturated fat. These options work well for the growing number of flexitarian consumers who want to eat less meat for values-based reasons, but don't want to sacrifice taste.

Another challenge in plant-based meat alternative applications is replicating the appearance of muscle-like fibers, the marbling typical of beef, and the expected color of meats before and after cooking. While these issues are still incredibly difficult to address, formulation experts are using wet-moisture extrusion and cell technology to get closer to how consumers expect these products to look and taste.

Familiarity with innovative food production



Source: The Hartman Group. “Food and Technology 2022” infographic. September 13, 2022.

And it's not all about replacing beef. Consumers are also looking for plant-based versions of chicken and fish alternatives in a variety of formats, from frozen chicken nuggets to fish filets. Again, mimicking the texture, taste and appearance of these animal-based proteins is very difficult. As with beef, re-creating whole-muscle, plant-based chicken alternatives is much more difficult than producing a plant-based nugget. Consumers have more distinct expectations for the look and bite of a chicken breast or tender. Similarly, replicating the flaky texture of a fish like cod can be especially tricky with plant-based ingredients.

In all these cases, protein selection is critical and application-specific. If looking to recreate a light fish or chicken, pea protein, soy flour and soy protein concentrates offer the needed color and clean taste profile. For plant-based fish alternatives, a starch from potato or tapioca can also be helpful in mimicking color and flaky texture.

Ultimately, consumers are looking to reduce their meat consumption with plant-based products, as well as hybrids. The challenge for product developers will be to continue to elevate the taste and texture experience of these products, while also creating new products with "clean" labels and good value. Brands that continue to innovate in plant-based meat alternatives should be well-positioned to capitalize on the category's growing opportunities.

See how Cargill can help you sink your teeth into innovative new meat alternative products. cargill.com/plantprotein

¹ Research and Markets. "Global Plant-Based Meat Market Report, 2022–2027: Favorable Marketing and Correct Positioning of Plant-Based Meat Presents Growth Opportunities." August 5, 2022. <https://www.prnewswire.com/news-releases/global-plant-based-meat-market-report-2022-2027-favorable-marketing-and-correct-positioning-of-plant-based-meat-presents-growth-opportunities-301600736.html>

² Plant Based Foods Association/The Good Food Institute. "2021 U.S. Retail Sales Data for the Plant Based Foods Industry." <https://www.plantbasedfoods.org/2021-u-s-retail-sales-data-for-the-plant-based-foods-industry/>

³ Ibid.

⁴ FMCG Gurus. "The Growing Plant-Based Market – Meat Alternatives." June 13, 2022. <https://fmcggurus.com/blog/fmcg-gurus-the-growing-plant-based-market-meat-alternatives/>

⁵ The Hartman Group. "Food and Technology 2022: Familiarity with Innovative Food Production." Infographic. September 13, 2022. <https://www.hartman-group.com/infographics/914507339/food-technology-2022-consumer-familiarity-with-innovative-food-production-new-hartman-food-technology-study-explores-evolving-consumer-awareness-attitudes-usage-and-drivers-around-a-range-of-food-tech-innovations>

⁶ Innova Market Insights. "Plant-Forward: Evolving Consumer Demands Drive Innovation in Plant-Based Eating." September 29, 2021. <https://www.innovamarketinsights.com/press-release/plant-forward-evolving-consumer-demands-drive-innovation-in-plant-based-eating/>