

Understanding and unlocking protein potential



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The plant-based market: An opportunity too big to ignore

Plant-based foods are booming around the world. In the U.S., plant-based food sales enjoyed double-digit growth in 2020, bringing the total market value to \$7 billion¹ while the European market is set to rise in value from €4.4bn in 2019 to €7.5bn by 2025.² The Asia-Pacific region, where plant protein-based foods such as tofu, tempeh and seitan have a long history, is expected to hold the largest share of the estimated \$21bn global market by 2025.³

Vegans and vegetarians make up just 4% and 6.4% of global consumers respectively, but 42% of people around the world are following a flexitarian diet by consuming more plant-based foods, according to recent Euromonitor data.⁴ With such a huge potential consumer base, the opportunities for food and drink manufacturers among this growing consumer group are clear.

Consumers perceive plant-based foods to be healthful and meet their interest in increasing nutrition from plant sources. ADM's in-house market research shows that personal health is the number one reason that global consumers choose plant-based, followed by nutritional benefits, environmental awareness, and – driven by the COVID-19 pandemic – food safety concerns.

Interestingly, despite the surge in demand for vegan and vegetarian foods, the claim 'plant-based' still has relatively low penetration across packaged food categories despite being inclusive and appealing to many consumers, according to Euromonitor.⁵ The opportunities for brands with exciting new cross-category products are therefore huge.



ADM: Edging out from the crowd in the protein arena

ADM's history of expertise in plant-based proteins goes right back to the very creation of the category itself: ADM helped formulate the original textured vegetable protein (TVP), which was invented by William T. Atkinson, in the early 1960s.

Since then, ADM has amassed decades' worth of experience in developing novel technologies, processing techniques and next-generation protein nutrition solutions, and today has a deep knowledge of protein functionality and characterization to innovate in nearly any food and drink application.

ADM is a partner to the world's major food companies – providing an edge with ingredient solutions, expert formulation, insights and speed to market designed to usher in the next wave of plant-based innovation.

"Creating outstanding plant-based alternatives is like putting together a puzzle. We must first look at the bigger picture to identify what we're aiming to develop, then we can get more granular, identifying the right protein solutions to optimize taste, nutrition and consumer experience."

Dina Fernandez, Director, Protein Nutrition Solutions

ADM's pantry of plant-based solutions is grounded in over 35 different ingredients that include soy, pea, wheat, beans, pulses, ancient grains, nuts and seeds, and all of these ingredients showcase ADM's ability to deliver a superior sensorial experience that integrates great taste, texture, color and nutritional attributes.

Recently, the company added NutriFlex™ systems to its lineup of protein-forward solutions designed to enable the quality and speed-to-market that manufacturers need to succeed with today's consumers. The NutriFlex™ suite of solutions benefits from the culinary acumen and formulation expertise that are needed to get to market fast with delicious and nutritious foods and beverages that consumers prefer.

What's more, ADM has a global reach that allows it to engage with customers wherever they are, with innovation hubs around the world that support manufacturers throughout the product development process. Its plant protein lab in Singapore, for instance, opened in 2021 and features sensory evaluation facilities, a customer innovation center, and a flavor analytic laboratory to help brands formulate vegetarian and vegan products tailor-made to suit specific regional palates.⁶

ADM has many partnerships around the world and the food companies that choose to create plant-based products using ADM's ingredients are as diverse as they are numerous from small, innovative startups such as India's Imagine Meats, which worked with ADM's innovation team to develop plant-based kebabs, biryani and curries, to globally renowned multinationals.

Marfrig, for instance, is one of the world's biggest meat companies that recently teamed up with ADM to create PlantPlus Foods.⁷ This joint venture will leverage both companies' scale, experience and expertise to bring an array of finished plant-based foods to North and South America.



Your partner for navigating current trends...

"Our integrated approach leverages technical expertise, consumer insights and a relevant, high-quality portfolio of solutions to help brands get to market quickly and successfully with plant-based foods consumers prefer."

"Our collaborative method of working across teams and ingredient portfolios allows us to create intriguing plant-forward solutions with mass-market appeal."

Wendy van Buren, Global Commercial Leader, Alternative Proteins

One of the biggest drivers of demand for plant-based foods today is the rise of flexitarian eaters: consumers who are trying to add more plant foods to their diet but also still enjoy meat and dairy.

This consumer group is playing a key role in shaping plant-based trends and product development because flexitarians want plant-based products without sacrificing taste, texture, appearance and nutritional quality, and they will not purchase a product twice if it fails to meet at least some or all of these expectations.

However, an awareness of global macro trends, such as the rise of flexitarian eating, is not enough for a brand launch to be successful. A deeper understanding of market trend nuances and consumer profiles is also necessary.

ADM is tracking changing consumer perceptions thanks to its network of global trend spotters and its proprietary market insights, through Outside VoiceSM. By sharing this knowledge with its customers, brands can be laser-focused on creating products that meet specific consumer needs.

For instance, ADM's Outside VoiceSM research reveals that clean label ingredient lists are a moving attribute for flexitarians. Ingredient lists with numerous, unpronounceable entries may not be as desirable to these consumers as traditional burgers that have just one: beef.

A staggering 83% of flexitarians review product labels and 66% of consumers say they are looking for labels with the shortest ingredient list. Sixty-nine percent say simple, recognizable ingredients influence their purchasing decisions.⁸





Consumer preferences and concerns also vary depending on the region, and manufacturers should avoid taking a 'one-size-fits-all' approach to product development.

A common food industry adage is that 'taste is king.' However, ADM's Outside VoiceSM research reveals subtle regional differences that show this is not always the case. Seventy-two percent of Chinese consumers, for instance, believe nutrition is equally as important as taste, while 80% of Brazilians rate taste and nutrition of equal importance. These insights have significant implications for product developers.

ADM's privileged insights into what consumers around the world want, combined with brand understanding and concept creation, translate into consumer-winning propositions based on real-life, data-driven knowledge and product development expertise.

... And delivering on tomorrow's trends

Of course, it is not enough to have a finger on the pulse of today's trends. In the fast-paced world of food and drink, brands must be one step ahead of consumer expectations and clued-in to future trends.

"The protein market is headed in a variety of directions as formulators work to meet evolving consumer demands. As an example, there will be a greater need for protein-forward offerings to have additional functional claims, such as being fortified with fiber and gut microbiome-supporting ingredients. This is already true for alternatives to dairy products like yogurt and milks and will certainly be an opportunity in alternatives for meat and seafood."

"ADM research finds that globally over half of flexitarians are trying to incorporate more plant-based foods into their diets, and they're seeking emerging options that go beyond the bun. Ripe for growth are advancements in dairy alternatives, whole-muscle meat alternatives and specialized nutrition. Expect technologies like 3D and fermentation to push these categories and the plant-based space forward through inventive ingenuity."

Jacquelyn Schuh, Marketing Director, Global Protein Nutrition Solutions

ADM is not merely an observer of these next-generation trends and ingenious technologies; ADM is an active participant in making them a reality.

For example, its venture capital arm, ADM Ventures, is an investor in Air Protein, a startup that has pioneered a process to produce meat alternatives using the elements in air. Incredibly, one of tomorrow's solutions to the growing global protein deficit is, quite literally, made out of elements of the air.⁹

Air Protein's sustainable fermentation facilities can be built virtually anywhere and the ingredient can be grown in a fraction of the time taken to produce traditional proteins from animals or crops, making it both highly scalable and environmentally friendly. ADM's investment will help Air Protein finetune its R&D, accelerate product development and scale up commercialization, giving manufacturers an even greater choice of sustainable protein alternatives.

"As more consumers adopt a flexitarian lifestyle and experiment with alternate proteins, there's ample opportunity for innovation, differentiation and growth."

Juan Benitez Garcia, President, Global Savory

By working with ADM, you get a partner that understands the desires and concerns of consumers around the world and is carefully tracking the emergence and evolution of market trends. With its vast selection of ingredients and technologies, ADM ensures the best formulation potential for all your plant-based products, today and in the future.



Success you can trust:

Plant-based alternative to a whole chicken breast

Recreating the texture of whole muscle-cuts using plant-based ingredients has been described as the 'Holy Grail' of plant-based product innovation. ADM is leveraging new techniques that allow it to move beyond ground meat-style formats and create pulled, shredded and diced meats as well as whole-muscle cuts, such as fillets and steaks.

Twin-screw high-moisture extrusion, for instance, is a game-changing technology that can recreate the fibrous, meaty texture of whole chicken breast. ADM uses proteins from its PurelyNature® branded product range to optimize the potential of twin-screw high-moisture extrusion. These ingredients have exceptionally functional properties, particularly for muscle-cut applications that require high solubility, gelling capacity, elasticity and, in accordance with consumer demands, a nutritional profile to rival meat.

ADM combines the protein bases with Colors From Nature® colorings and CulinaryCraftedSM vegan flavors to round out the full sensorial experience of tender chicken breast in a plant-based product that satisfies discerning flexitarian eaters.

Plant-based alternative to fish and seafood

In 2020, plant-based fish and seafood accounted for just 0.01% of the entire U.S. seafood market.¹⁰ However, this is expected to rise significantly in coming years.¹¹ ADM's in-house research reveals that more than one-third (34%) of U.S. plant protein consumers would like to try plant-based shellfish while over a quarter (26%) are interested in trying plant-based fish.¹²

Formulating plant-based fish and seafood is more challenging than meat applications, and requires specific knowledge of complex food matrices and ingredient interactions. Color profiles need to be more nuanced and textures more delicate, and fish alternatives must have the long, soft flakiness that consumers expect after cooking while shrimp alternatives should change color from white to a pink color during cooking and have a pleasing, semi-firm bite.

ADM's product developers know what it takes to meet this challenge and can choose the best plant protein ingredients from its extensive ingredient portfolio for fish and seafood applications.

ADM's PurelyNature™ wheat proteins, for instance, have a clean taste and clean color base as well as optimal water absorption and hydration rates that enhance processing efficiency. Brands looking to create a more allergen-friendly product may prefer to use ADM's textured pea proteins that are available in two versions: pea & chickpea and pea & navy bean. These gluten- and soy-free blends offer a higher protein content, better water absorption, cleaner taste and more neutral color base than other pea proteins currently on the market. Blending different plant proteins in this way can also improve the nutritional profile of the product and ensure an optimal amino acid score.



ADM case studies

'Plant-forward' bean meatball

Demand for authentic plant-based alternatives has led to advanced processing techniques yielding products that closely imitate all of the sensory aspects of meat and dairy. However, there is also a growing consumer demand for wholesome 'plant-forward' products that are tasty and nutritious but made with beans, pulses and other vegetables that have undergone less processing.

When asked about their preferred way to incorporate more plant-based eating into their diets, U.S. consumers' top answer is – consistent with previous years – 'eat more vegetables' and the number of people who want to eat more beans and pulses is also on the rise.¹³

ADM's ingredient portfolio is a one-stop-shop that includes everything brands need to create plant-forward products that are packed with wholefood ingredients, such as quinoa, pinto beans, navy beans, chickpeas, pumpkin seeds and peanuts.

ADM's clean-label specialty ingredients, such as natural flavors and binders, ensure the product's authenticity and functionality while nutrition-forward fruit and vegetable powders – bursting with vitamins, minerals, and microbiome-supporting ingredients like fiber – can be added to boost the product's nutrient profile in a label-friendly way.

ADM's Peruvian-spiced garden and grain vegetarian meatball product concept is made with black beans, soy and quinoa to demonstrate how brands can successfully leverage this growing plant-forward trend that also meets consumers' interest in regional flavor combinations.

The meatballs are made with soy crumbles and soy flour that work as binders; NutriStem® whole black beans, black bean grits, and red quinoa for a burst of wholesome nutrition; and chipped pepitas for texture. A roast pork-type flavoring adds depth and authenticity while a specially formulated Peruvian roasted spice paste meets rising interest in global flavors that consumers see as exciting, flavourful and adventurous, according to Mintel.¹⁴



Key takeaways

- The rise in plant-based eating is a global phenomenon that has long-term potential.
- Although it is a global trend, regional differences can be marked and brands should be aware of how consumer preferences vary by country or region.
- Flexitarians demand plant-based products that closely mimic the taste, texture and appearance of meat and dairy, and clean-label ingredient lists are a growing priority.
- 'Plant-forward' products made with minimally processed, wholesome bean, pulse and vegetable ingredients will continue to increase in popularity.
- Protein blends are an ideal way for brands to improve the nutritional profile of plant-based products while making emerging niche protein ingredients seem more familiar to consumers.
- From soy to almond and pea to quinoa, each protein source has its own functional benefits and consumer perception that brands should carefully consider before formulating a new product.



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