The global rise in consumer demand for plant-based foods is opening up new markets for oils and fats which are used to add flavour, moisture and texture to the meat alternatives on our shelves

Gill Langham

Plant-based foods are a growing business with food manufacturers ranging from start-ups to leading global agribusinesses entering the market.

Consumers are seeking options beyond traditional animal protein – whether for reasons of health, animal welfare, sustainability or simply variety.

One of the main goals of many alternative meat supporters is to cut down on livestock farming, which is linked to a range of environmental issues, and accounts for nearly 15% of yearly greenhouse gas emissions worldwide, according to the United Nations' Food and Agriculture Organization (FAO).

The growing popularity of alternative proteins is evident on store shelves and confirmed by consumer research. In 2019 the plant-based meat category in the USA was worth US$939M – a year-on-year growth of 18% – with more than 208M units sold, according to the Good Food Institute (GFO), an organisation that advocates plant-based substitutes.

Of all US households, 14% purchased plant-based meat, which equates to approximately 18M households.

Latest retail sales information released by wellness-focused data company SPINS on 3 March 2020, shows that sales of plant-based foods that directly replace animal products have grown 29% in the past two years to US$5bn.

Plant-based meat sales have been boosted by an increase in offerings from food manufacturers such as California-based start-up Impossible Foods to global agribusiness giants including Cargill and ADM. In Asia, Phuture Foods is catering for alternative meat tastes.

With plant-based products growing in popularity and investment in laboratory-created products on the rise, meat manufacturers including Tyson and Smithfield are also investing in the sector.

"When companies like Tyson and Smithfield launch plant-based meat, that transforms the plant-based meat sector from niche to mainstream," said Bruce Friedrich, who runs the GFO.

"They have massive distribution channels, they have enthusiastic consumer bases, and they know what meat needs to do to satisfy consumers."

Target audience

Impossible Foods says the term 'meat-free' does not apply to its products. The company makes 'plant-based meat' and is keen to point out that its target consumer is the meat eater.

About 95% of people who eat the Impossible Burger eat animal-derived products on a regular basis, explains Jessica Appelgren, the company's vice president of communications.

"We are not targeting the population that already consumes a plant-based diet free of animal-based products. Instead, we are going after the much larger population that loves meat from animals.

"That market – the meat-eating population – is expanding very quickly and that expanding market is driving our international strategy. Demand for meat is growing faster in Asia than anywhere else on the planet – and satiating the continent's demand has global implications.

"The greatest growth in demand for animal products will come from the Asian market, with a growth rate of more than 70% over the next couple of decades," adds Appelgren.

China consumes 28% of the world's meat, according to the FAO and the OECD (the Organisation for Economic Co-operation and Development). That is about twice as much as the USA, according to US agriculture department estimates.

The company's goal is to make many categories of meat, fish and dairy products from plants and following the success of its plant-based Impossible Burger, it also launched a range of pig-free pork.

Designed to replicate ground meat from pigs, the main protein in Impossible Pork – like its predecessor – is soya. This is combined with sunflower and coconut oil and the soya-derived heme protein. Heme is a molecule derived from plants that gives the 'meat' its flavour and its signature blood colour.

Taste and texture

Both the Impossible Burger and Impossible Pork made from plants contain coconut oil and sunflower oil.

"The fat content is a large part of what differentiates one meat from another. For example, in part due to pork's subtle flavour, a lot of the characteristic flavour

Photo: Adobe Stock

Consumers are seeking options beyond animal protein for health, animal welfare and sustainability reasons – as well as for simply variety

in pork has to do with its fat," says Appelgren.

"Pork has a different fat composition to beef and we incorporated that difference in our ground pork product by replicating the delicious flavour of pork and also the juicy, fatty mouthfeel that it brings. As a result, coconut oil and sunflower oil play an important part in replicating the cooking process and taste of animal meat."

Impossible Foods do not currently sell their products in the UK but its plan is to sell plant-based meat in every region of the world and, in 2019, it filed paperwork with the European Food Safety Authority, the EU agency that provides independent scientific advice regarding the food chain.

Serving Asia

Joining the growing range of start-ups worldwide, Malaysia's plant-based meat company Phuture Foods has developed a variety of products for the Asian market which includes a vegan 'pork'.

A plant-based alternative for ground pork, the Phuture Mince 3.0 product is made of more than 20 ingredients, including shiitake mushrooms, chickpeas, soyabeans, peas and rice and can be used in any recipe that includes ground pork.

The company's products include extra virgin olive oil and coconut oil, which have less saturated fat and cholesterol than animal fats and give the additional mouthfeel quality.

Phuture's technology incorporates rice into the blend, which is created by micro-emulsion through interactions with the proteins and fats in the product. Mimicking the building blocks of meat, this creates the fatty, juicy mouthfeel.

Currently available in Singapore, Phuture Foods has ambitions to roll out its meat-free products across Asia, particularly in China.

Vital ingredients

As the plant-based meat sector expands, it is also a vital and growing market for oils and fats. For example, Cargill's portfolio includes a range of sources for the meat alternatives space.

Fat and oil sources provide different functions when developing plant-based meat alternatives, explains Cargill's marketing manager Jana Mauck.

"Fat sources are used for food fortification or adding essential nutrients, creating succulence and replicating the 'juicy' experience you have with animal proteins, as well as adding to the texture. Oil sources are included to add moisture and lubricity to replicate the mouthfeel of animal proteins."

The launch of Cargill's own range of plant-based hamburger and ground 'meat' products earlier this year underlines the company's commitment to the sector.

Its patties and ground products, made from soya and pea protein, are designed to be made into tacos, spaghetti sauce or other dishes. Retailers can also sell the products under their own labels.

Edible oil giant ADM is also a major supplier of ingredients to the sector and Michelle Peitz, technical sales, refined oils – ADM Oilseeds, says: "Coconut oil is used extensively in the plant-based protein market, but oil blends can provide significantly improved functionality at low temperatures.

"Blends also offer a more solid fat at mouth temperatures so that flavour release is delayed for extended enjoyment. Selection of an oil or oil blend should be tailored to the specific application to ensure optimal performance."

The plant-based sector is one that ADM expects to expand rapidly in the next few years.

"Modern customers are interested in supporting their holistic health by consuming foods that offer nutritional benefits, particularly foods from plant sources. ADM anticipates growth in the plant-based sector as more and more consumers are demanding food choices aligned with their sustainability and wellness values," Peitz says.

Plant-based fats

Global speciality oils and fats supplier Bunge Loders Croklaan (BLC), part of Bunge Ltd, has also introduced a range of plant-based fats designed to replace meat fats.

The palm and shea-based systems feature melting profiles tailored for use as fat ingredients in meatless burgers.

BLC says its palm-based fat mimics the fat bubbles and pocket characteristics of animal fat in hamburgers and is easier to process than liquid oils or waxy fats such as the more commonly used rapeseed oil or sunflower oils.

Additionally, both its fats are non-hydrogenated and *trans* fat free, and can improve parameters such as firmness, cohesiveness and springiness, potentially reducing the need to add emulsifiers and gum-based texturisers, it says.

"Fat, especially derived from beef, is the key contributor to flavour. We succeeded in recreating this sensory experience with high-quality plant-based fats," explains BLC Europe marketing director Feike Swennenhuis.

Meat suppliers are also developing new products, for example, US global food company Smithfield Food launched a plant-based protein portfolio under the Pure Farmland brand in 2019. The company's simply seasoned burger patties, for example, contain coconut oil, canola oil and sunflower oil.

'Growing' meat and fats

As well as launching new plant-based products, companies have also been developing cultured or 'clean' meat grown from cells. Tyson Foods, one of the largest meat processors in the USA, has been working with Future Meat Technologies to do just this. Other firms have been developing 'cultured' fats derived from animal cells to mimic the richness and juiciness provided by animal fats in meat (see p42). The future is definitely looking plant-based. ●

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