

TRENDS REPORT FOR THE AGRIFOOD SECTOR:

TOP TRENDS 2020



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 **PORTUGAL
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Atlantic meets Mediterranean

February, 2020

Observatório PortugalFoods | Knowledge Division

T: (+351) 220 966 021
geral@portugalfoods.org
www.portugalfoods.org

Cofinanciado por

**COMPETE
2020**

**PORTUGAL
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UNIÃO EUROPEIA
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[Contextualization](#)

[The Future of Nutrition, Health and Wellness: 2020](#)

[The Big Stories](#)

[In the Next Two Years](#)

[In Five Years and Beyond](#)

[Final Remarks](#)

Contextualization

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PortugalFoods presents itself as the entity in the entrepreneurial ecosystem whose goal is to help strengthening companies' competitiveness in the agri-food sector. It is achieved by increasing their technological index, through promotion of innovative knowledge production, transfer and valuation.

As part of its mission, PortugalFoods intends to empower the agri-food sector with higher awareness and qualification on new products and techniques. It also tracks technological progress and changing customer preferences.

Thus, PortugalFoods shares the sector's innovation trends every year, and promotes an open dialogue with multiple players. It is an opportunity to boost dynamism among companies and national entities in tech & scientific system, so that they may best direct their investigation efforts while knowing the yearly trends. The end goal is more competitiveness and a higher technological index.

Every year, Portuguese agri-food companies have played a strong role in the country's economic output, thanks to R&D efforts which allowed them to launch more innovative products. Also, they became more competitive and attractive both in Portuguese and international markets.

Therefore, this trend report presents added value for the companies and remaining entities in the national agri-food sector, as it empowers these companies and entities to strategically position themselves in a global context. Thus, the entrepreneurial ecosystem will adapt itself in accordance with market demand, through knowledge valorization and innovation output increase. This will be achieved by accessing key information from specialists and business intelligence entities.

The Future of Nutrition, Health and Wellness: 2020

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A look back and a look ahead

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1

The big stories

The growing awareness of mental health and wellbeing has helped boost their significance among consumers. Interest in holistic health made gut wellness paramount in 2019, with its broad health potentials. Rising cases of diabetes create opportunities for low-sugar and high-fibre food and drink, and low-calorie or low-carb diet plans.

2

In the next two years

Sustainability abounds in future innovations, with sustainable nutrition and practices at the top of people and brands' minds. Shortfalls of nutrition and naturalness of plant-based diets will be a priority for brands. Claims that combat other factors that may harm health, such as anti-pollution, oral and eye health, will emerge.

3

In five years and beyond

Technology-driven food supply chains are set to emerge in the future. Digitalisation will be the key for fresher, cleaner and safer foods. Food and agri-tech investments will continue to help deliver more healthy, sustainable food systems. Adopting heritage diets will weave authentic, simple and 'healthy-ageing' food and drink

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The Big Stories



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1

Mind the gap of mental health and wellbeing

Mental and physical health are becoming equally important in achieving overall wellbeing. It is now time for companies and brands to offer solutions that support the different areas of mental health, such as sleep, mood, cognitive performance and mental energy.

2

The power of the gut

Consumers' greater awareness and understanding of the importance of gut health for holistic health stirs up innovation around functional food and drink that help other areas of health beyond digestion. Immunity and cognitive health are the benefits to watch out for.

3

Deliver products for the management of diabetes

The high prevalence of type-2 diabetes will create opportunities for low-sugar and high-fibre food and drink products, as well as low-calorie or low-carb diet plans, that assist health and lifestyle needs for the prevention, management and remission of type-2 diabetes.

Mind the gap of mental health and wellbeing

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The growing awareness of the importance of maintaining mental wellness engages consumers in practices of self-improvement and optimising the way they live, particularly maximising their mental ability and productivity. Food and drink solutions that support consumers in maintaining mental health and wellbeing, such as focus, sleep, mood and mental energy will be in demand.



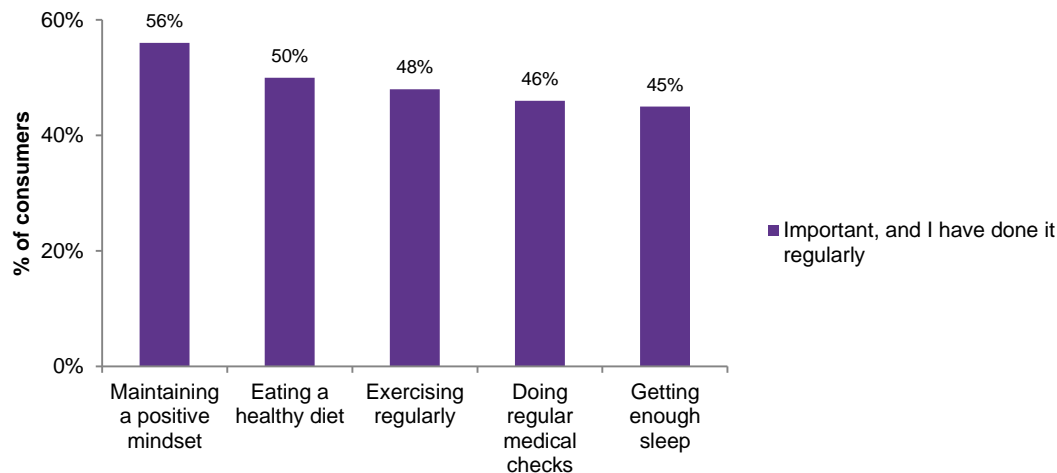
Mental and physical health are becoming equally important in pursuing holistic health

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- The change in priorities show how important it is now for companies to play a role in supporting consumers in achieving mental health and wellbeing.
- In Canada, getting quality rest/sleep (42%), mental wellness (38%) and emotional wellbeing (37%) are the top health and wellness areas consumers place a lot of emphasis on.
- Growing concerns over stress and anxiety and interest in holistic health have boosted mental health's significance among consumers.

China: important things required to achieve a healthy lifestyle, 2019



In China, consumers are looking for holistic health and lifestyle, implying a balance between all things

Base: China: 3,000 internet users aged 20-49

Source: KuRunData/Mintel



Consumers are seeking mental health and wellbeing benefits in their diet and lifestyle

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Consumers are 'mindful' of their diet, with few products positioned towards mental health, and brands should offer more food and drink products that support mental wellness.

SOUTH AFRICA

51%

of South African consumers*
would ideally like their diet to help
maintain healthy brain function

JAPAN

42%

of Japanese consumers* prefer
to incorporate benefits that
could improve mood/wellbeing
(e.g. help to relax) into their diet

US

42%

of US consumers claim to currently
put a lot of emphasis on their
mental health (i.e. cognitive and
behavioural wellbeing)

Base: South Africa: 1,000 internet users aged 18+; Japan: 1,000 internet users aged 18+; US: 2,000 internet users aged 18+

Source: Lightspeed/Mintel; Rakuten Insight/Mintel



Look at multiple areas of mental health to cater to mindful consumers' needs

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Help consumers sleep and relax

Rest and sleep help repair the body's functions and impact overall mental health.

With mental states increasingly exposed to the pressures of today, there are opportunities for more food and drink manufacturers to incorporate adaptogens and nervines into products for stressed-out-consumers, helping them gain control over their stress.

Promote mental enhancement

More consumers are taking an active interest in their health and engaging in practices of self-betterment (i.e. wearing fitness trackers to monitor their health) and optimising the way they live.

Nootropics are an extension of this trend that could help consumers maximise their cognitive abilities and productivity.

Provide mental energy

Mental toughness and focus are as important as a physical energy boost for physical activities, sports and even esports.

There is an opportunity for brands to bring to the market more energy-boosting products that also offer mental focus. Consider the use of nootropics and adaptogens that enhance both mental and physical energy.

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Mental health and wellbeing products feature relevant and trending nutrition solutions

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Promote good night's sleep

Glico GABA Mental Balance Chocolate for Sleep (Japan).

Brands should capitalise on growing sleep deprivation issues by offering products that help consumers get restful sleep. Food and drink launches with sleep claims are just emerging.



Support mental health needs at every life stage

Best India Food Baby Vita Our Kids Health Mix Powder (India).

Maintaining good brain nutrition is essential to everyone. Target seniors for memory improvement, kids for mental development and adults for increased mental agility.



Provide both physical and mental toughness

Qualia Nootropic Energy All-in-one Clean Energy Shot (US).

The mind and the body are closely linked, and brands can tailor sports and energy products, with nootropics like B vitamins and choline, that enhance both mental and physical energy.

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The power of the gut

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Greater understanding and awareness of the importance of gut health for overall wellbeing provides fertile ground for innovation around functional food and beverages that support multiple areas of health. Promising new areas include immunity and cognitive health.



Source: [Nairs](#); [Uplift Food](#)

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Supporting a healthy gut microbiota has broad potential

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Utilise probiotics and prebiotics

Offer consumers ways to support the gut microbiota through functional products with probiotics or prebiotics. Natural sources of probiotics, such as lactofermented foods and other fermented products, will also appeal.

Tap into the growing postbiotics trend

Look to postbiotics for new ways to provide the benefits of probiotics without the technical challenges. Recent patent filings, social media mentions and niche product launches indicate this is the next microbiome-related trend to watch.

Explore opportunities beyond gut health

Immunity is an untapped opportunity for probiotic food and drink products. Looking forward, the gut-brain axis is another exciting research area that holds promise for future pre-, pro- and postbiotic products to provide brain and cognitive support.

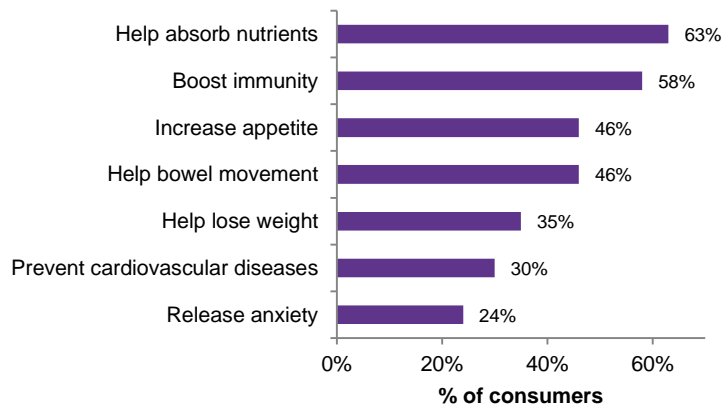
Mental and physical health are becoming equally important in pursuing holistic health

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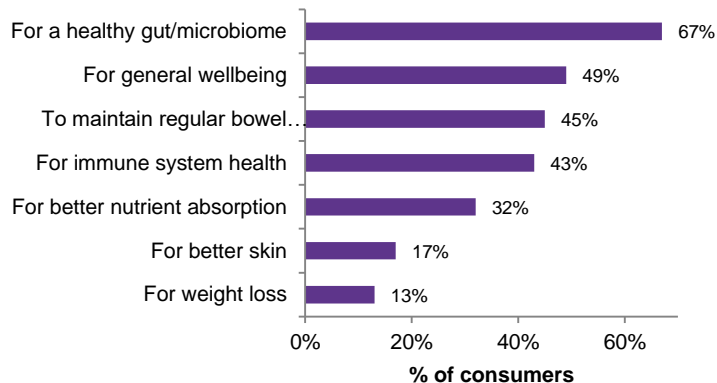
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Consumers want their probiotics to serve multiple needs, from improving gut health to boosting general wellness.

China: perception of probiotics, 2017



US: reasons for taking probiotics, 2018



Base: China: 3,000 internet users aged 20-49; US: 301 internet users aged 18+ who use probiotic supplements

Source: KuRunData/Mintel; Lightspeed/Mintel

Cognitive health is the next frontier for pro-, pre- and postbiotics

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Enhance mental health

85%

of US VMS users are interested in supplements that enhance mental health (eg improve memory, protect against depression)

Base: 1,698 US internet users aged 18+ who use vitamins, minerals or supplements

Source: Cipher/Mintel; Lightspeed/Mintel



Cognitive health is the next frontier for pro-, pre- and postbiotics

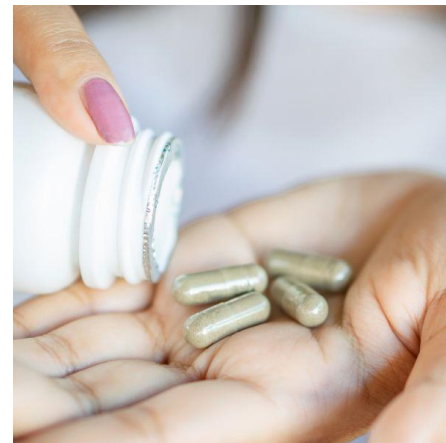
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Probiotics, prebiotics and postbiotics tailored to promote brain health will appeal to consumers who are interested in preventative care and supplements that help support their wellness goals. Psychobiotics, probiotics that affect the brain, may have potential to help people struggling with anxiety and depression.

Cognitive health via gut health emerges as a functional benefit in recent patent filings. Some notable patents include:

- Prebiotics for lactating mothers to reduce anxiety in their infant by Groupe Danone.
- Production of a composition of HMOs, which could be useful for the treatment of gut-brain disorders such as autism, stress, anxiety and depression, by Glycom.
- A mixture of probiotics for enhancing memory and/or reducing fear and/or pain by Battelle Memorial Institute and the University of California.
- Probiotic to alleviate mental health disorders by Morinaga Milk Industry.



Base: 1,698 US internet users aged 18+ who use vitamins, minerals or supplements

Source: Cipher/Mintel; Lightspeed/Mintel



Deliver products for the management of diet-related diseases like diabetes

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There is a need for solutions that help with the prevention, management and remission of type-2 diabetes. According to the World Health Organisation (WHO), the global prevalence of diabetes in the adult population rose from 4.7% in 1980 to 8.5% in 2014.

The increasing prevalence of type-2 diabetes will open opportunities for food and drink products (eg with low sugar and high fibre), as well as diet plans (eg low-calorie or low-carb), that support the lifestyle changes necessary for the prevention and management of type-2 diabetes.



Image: Freepik

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Opportunities for manufacturers to create personalised eating plans for type-2 diabetics

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At present, more US consumers manage diabetes by following their own self-created diet plan, rather than by using a plan from a health provider.

SELF-CREATED
NUTRITION PLAN

44%

of US consumers manage diabetes by following an eating programme/plan created by themselves

NUTRITION PLAN FROM
HEALTH SERVICES

16%

of US consumers manage diabetes by following a nutrition plan from health services (e.g. Nutrisystem)

EATING DIABETIC
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20%

of US consumers manage diabetes by eating foods specifically for diabetics (e.g. Glucerna Snack Bars)

Base: US: 632 internet users aged 18+ who have been diagnosed with diabetes, gestational diabetes or prediabetes

Source: Lightspeed/Mintel



Opportunities for nutrition claims that support the prevention and management of type-2 diabetes

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- Government advice in countries such as the UK states that people with diabetes should consume a healthy, balanced diet (as per national dietary guidelines) and do not require specialist diabetic foods labelled as 'suitable for diabetics'.
- Since July 2016, EU regulations prohibit the sale of products marketed as 'suitable for diabetics'. However, producers can deliver products and diet plans that support the prevention and management of type-2 diabetes.
- For example, FiberPasta Diet Durum Wheat Penne features 15% fibre and is low-glycemic index, which are beneficial for individuals with diabetes in helping them regulate their blood glucose and insulin levels. The product has been approved as a suitable meal for diabetics by the Italian Ministry of Health.



FiberPasta Diet Durum Wheat Penne
Enriched with Fibre (Italy)

Nestlé Health Science pilot OptiJourney, a low-calorie weight management programme for type-2 diabetes remission

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In June 2019, Nestlé Health Science announced they were piloting a clinically supported weight management programme, called OptiJourney, for people with type-2 diabetes and prediabetes, in six Tesco stores across England. The pilot was inspired by the DiRECT study lead by Diabetes UK.

The OptiJourney weight management programme is built around an intake of 800-850 calories a day, achieved by replacing all food with Nestlé Optifast shakes, bars and soups for 8-12 weeks and followed by a month of gradual reintroduction of normal food.

OptiJourney comprises three key stages:

- Phase 1: 8-12 weeks total diet replacement consisting of Optifast products providing 800-850 kcs/day.
- Phase 2: four-week phase for food reintroduction and reduction of Optifast products.
- Phase 3: weight maintenance phase.



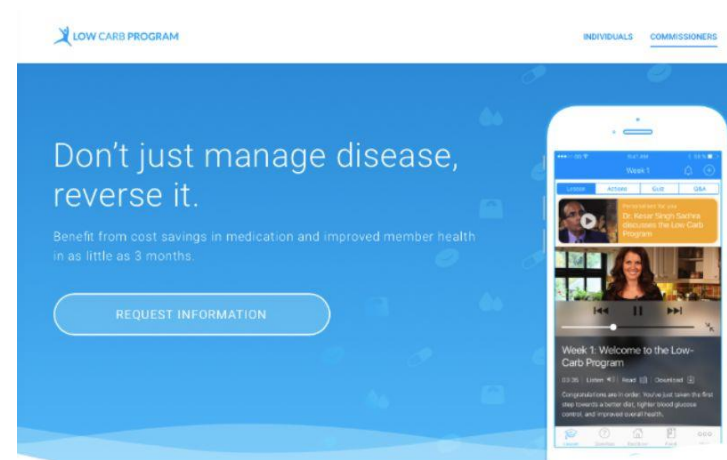
Nestlé Optifast products are consumed for the OptiJourney diet plan

Expect more attention to low-carb diet plans for people with type-2 diabetes

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- The UK National Health Service (NHS) has started to embrace 'low-carb' as a healthy diet for people with diabetes, a change from the previous recommendation of a higher-carb approach (as per current UK dietary guidelines).
- From January 2019, NHS healthcare professionals can officially prescribe the Low Carb Program, which is a 10-week, evidence-based programme that supports people with type-2 diabetes to manage their condition or put it into remission.
- The Low Carb Program also helps people with prediabetes to achieve healthy blood sugar and helps to prevent type-2 diabetes from developing.
- However, food and drink claims relating to carbohydrates are problematic in the EU. The European Food Safety Authority has not approved a low- or reduced-carbohydrate nutrition claim.



NHS-approved Low Carb Program for type-2 diabetes management

In the Next Two Years

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1

Make diets and food systems sustainable

Sustainable nutrition is becoming more significant to consumers. Brands will reformulate with ingredients that are better for consumers' health and the environment. Companies will implement sustainable practices in the entire supply chain through collaborations.

2

Focus on the shortfalls of plant-based diets

As plant-based dieting grows, plant-based alternative brands will start to target vulnerable groups, such as children and seniors, and highlight the health and nutritional qualities of plant-based diets while bridging the nutritional gaps with ingredients/nutrients like probiotics, vitamin B12 and complete protein.

3

Claims need to evolve with consumers' needs

As the importance of holistic health emerges, watch for the use of nutrition in prevention of other factors that may harm health, such as stress, pollution or an imbalanced microbiota.

Make diets and food systems sustainable

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Consumers are realising the impact of environmental issues on their lives, be it the bad air quality in Delhi, the bush fires raging in Australia, the melting of Greenland's ice sheet or the unseasonal rainfall that causes inaccessibility and escalation in the prices of foods.

As consumers become more conscious of these environmental issues, not only will they change their dietary habits and behaviours to adopt sustainable nutrition and practices, but they will also favour companies that champion ethical and environmentally responsible causes.

In line with Mintel 2030 Food and Drink Trend Change, Incorporated, both consumers and companies alike will need to commit to responsible sourcing, consumption and disposal of food, drink and foodservice items.

Sustainable nutrition: achieving healthy diets through sustainable food systems

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The world's population is growing, but Earth's resources are limited. Consumers are aware that they will have to be more responsible towards Earth's resources to ensure there is enough food and water for everybody. Accordingly, companies are now seeking solutions to efficiently integrate sustainability and nutrition in food systems. This has opened up a new dialogue on sustainable nutrition.

Sustainable nutrition, also known as sustainable dieting or 'eco-dieting', has recently sparked conversations among consumers and brands about the need to change to more sustainable dietary patterns that reduce humanity's burden on the environment.

There is currently no official consensus on what constitutes a sustainable diet, but the EAT-Lancet Commission has published the Planetary Health Plate – the first science-based diet that tackles sustainable nutrition, requires huge cuts in red meat consumption and recommends doubling global consumption of plant-based whole foods like vegetables, fruits, whole grains, nuts, seeds and legumes.

Indeed, sustainable nutrition is one of the buzzwords among global organisations (such as World Health Organization and International Food Information Council Foundation), who help people to understand the principles of healthy and sustainable diets and sustainable food system development.



Sustainability in food and drink is starting to matter to consumers

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To add value to product offerings, innovations should be influenced by sustainable efforts like improving soil health and supporting animal and farmer welfare.

SAVING THE PLANET

40%

of Indian adults* agree that food/drink that supports conservation of the environment is an important factor

PRIORITY IN SUSTAINABILITY

53%

of Saudi Arabian adults* agree that sustainability in their food and drink choices is very important

ETHICAL TREATMENT OF ANIMALS

45%

of UK consumers said that high animal welfare is the most important factor when making food and drink purchasing decisions

Base: India, Saudi Arabia: 1,000 internet users aged 18+; UK: 2,000 internet users aged 16+

Source: Dynata/Mintel; Lightspeed/Mintel



Consumers' openness to 'sustainable nutrition' will lead manufacturers to continuously promote sustainable and plant-based products

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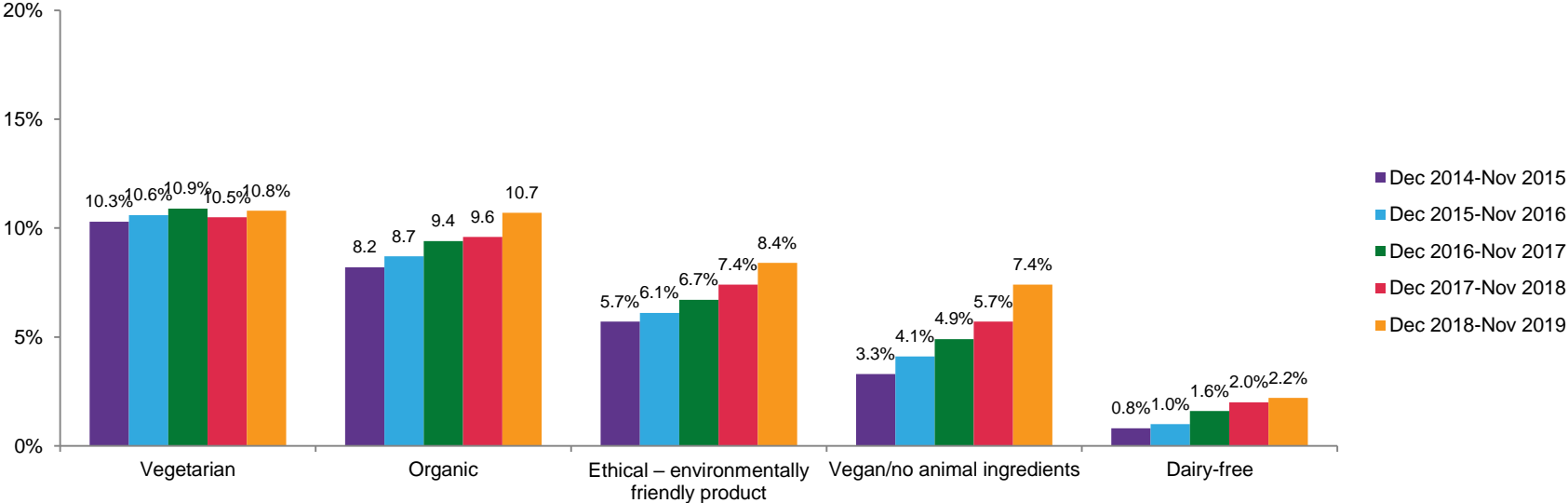
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- Consumers want to reduce their intake of animal proteins and prioritise plant-based options, and more manufacturers should promote food and drink that centres on the sustainable nutrition concept.
- Claims linked to sustainable nutrition such as dairy-free, vegan, vegetarian, and ethical/environmental considerations are rising in global food and drink innovation.
- To date, dairy-free and vegan/no animal ingredients grew by 164% and 124%, respectively.



Consumers' openness to 'sustainable nutrition' will lead manufacturers to continuously promote sustainable and plant-based products

Global: share of food and drink launches, select sustainable nutrition-related claims, Dec 2014-Nov 2019



Source: Mintel GNPD



Collaboration and reformulation will fuel the shift in innovation towards sustainable nutrition and food systems

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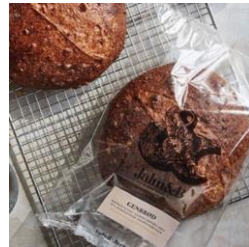
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Agri-tech firm partnerships could secure sustainable food production while formulating with upcycled ingredients, and could sustainably add value in products.



Ally with agri-tech firms to hit sustainability goals

Tyson Foods has collaborated with agri-tech firms MyFarms and Farmers Business Network to pilot agriculture practices that could maximise farmer profitability and reduce greenhouse gas emissions in its supply chains by 30% by 2030.



Add value with repurposed ingredients

Carlsberg's Jacobsen Brewery and Danish bakery Jalm&B have created a tasty and uncompromising product. 'Genbrød' is a sustainable sourdough bread baked with upcycled hazelnuts from Jacobsen's production of its nutty Winterbrew ale.



Exhibit circular view of sustainable gastronomy

Culcherd, a plant-based Canadian dairy company, recently attained organic and vegan certification, released new sustainable packaging and launched new vegan butter – "It's Not Butter" – which can be used as a 1:1 replacement.



Focus on the shortfalls of plant-based diets, specifically nutrition and naturalness

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Most consumers are aware of the potential benefits of plant-based diets, but less so about the potential risks. The protein provided by plants is usually of a lower quality than animal proteins due to it 'missing' essential amino acids.

The 'ultra-processed' image that plant-based products often hold is also of concern to consumers. Producers will need to satisfy a broader range of consumers' interests in nutrition and naturalness.

Plant-based alternatives are also starting to target potentially vulnerable groups, such as children and seniors.

Producers can help to educate these consumers about how to consume a balanced and nutritious plant-based or vegan diet.

As plant-based dieting grows, it will face more scrutiny from consumers and health professionals alike

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Plant-based dieting is often linked to health; however, mass-market consumers will need education about how to consume healthy and nutritious plant-based diets.

NUTRITION

21%

of Chinese consumers strongly agree that we cannot get enough nutrition by only eating plant-based food

PROTEIN INTAKE

only 15%

of US consumers strongly agree that plant-based foods can provide all the protein they need

TOO PROCESSED

31%

of UK consumers agree that meat-free foods are too processed to be healthier than milk

Base: China: 3,000 internet users aged 20-49; US: 2,000 internet users aged 18+; UK: 2,000 internet users aged 16+

Source: KuRunData/Mintel; Lightspeed/Mintel



Consumers often link health with naturalness (as well as nutrition), and producers should expect further attention to processing

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- In addition to the potential nutritional shortfalls of plant-based diets, a further area of concern for consumers may be the 'over-processed' image that dairy and meat alternative products often carry.
- 41% of Northern Irish consumers think that dairy alternatives are more heavily processed than standard milks, for example.
- Producers should consider delivering clean label attributes in such products, specifically in higher-price point, premium products.



Although scarce, Siga scores are starting to appear on social media



Innocent Unsweetened Coconut Dairy Alternative
'Just 5 ingredients'

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Highlight health and nutritional qualities of plant-based products that are a match to their conventional counterparts

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Producers of plant-based meat and dairy alternatives can bridge the health and nutritional gap for ingredients/nutrients with probiotics, vitamin B12 and complete protein.



'Contains all essential amino acids'

Califia Farms Unsweetened Vanilla Übermilk contains 8g of plant protein, all essential amino acids and a complementary blend of oat, pea and sunflower proteins (US).



'30mg of EPA and DHA omega-3s per serving'

Gardein Golden Fishless Filets. These vegan soy protein-based fish substitutes contain DHA from algal oil. Oily fish such as mackerel is a good source of omega-3 (New Zealand).



Fermented and contains probiotics

Danone Silk Apple-Spice Flavored Yogurt Alternative. This almond-based product is fermented and contains probiotics. Dairy yogurts are fermented and typically contain live bacteria – qualities that plant-based products can match (Mexico).

Plant-based dairy and meat producers should educate consumers about how to eat a well-balanced and nutritious vegan or plant-based diet

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- 13% of German, 10% of French and 5% of UK consumers say it is not important for their kids to drink cows milk.
- Parents who wish to feed their infants plant-based or vegan diets are likely to need educating on meal planning to ensure their infants receive a healthy, balanced diet.
- Producers are starting to develop plant-based products targeting potentially vulnerable groups, such as children and seniors.



Children: Ninho Banana/Strawberry Oat Dairy Alternative Drink (Brazil)



Senior: Perennial Drink 'smartly crafted for body and brain over 50'

Claims need to evolve with consumers' needs

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Use nutrition to combat external and environmental factors that may have a negative effect on health, such as stress, pollution or an imbalanced microbiota. Mintel Trend Total Wellbeing highlights that consumers are treating their bodies like an ecosystem and seeking solutions that complement their evolving personal health needs. Emerging areas to target include eye, brain and oral health.

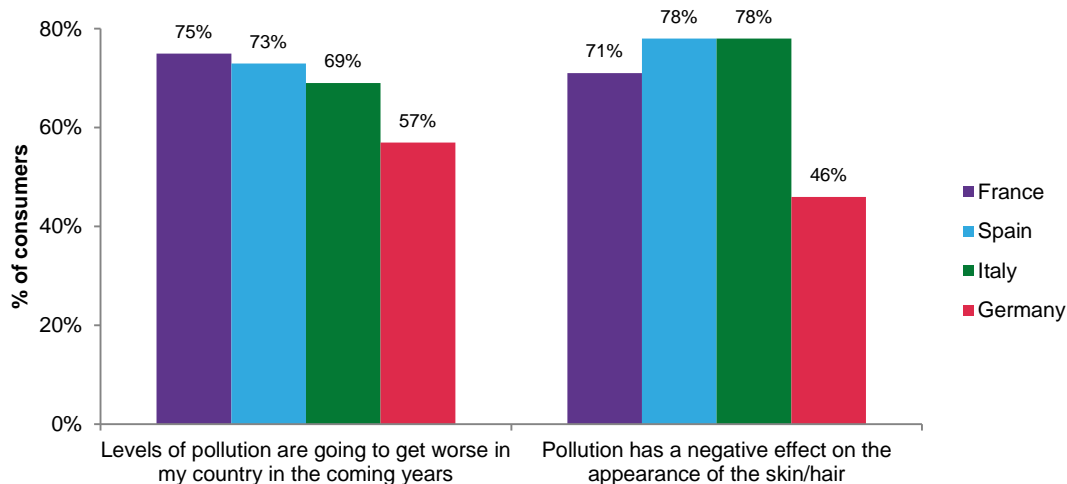


The 'anti-pollution diet' will be the next Mediterranean diet

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Select European markets: attitudes towards pollution, 2018



- Air pollution is a growing concern in many regions, especially in Europe and Asia. As discussed in Mintel Trend Airpocalypse Now, consumers recognise the dangers of air pollution and are looking for ways to protect themselves.
- Anti-pollution diets, rich in antioxidants and anti-inflammatory foods, have been featured in media in the UK and India, and will bring more attention to the role that nutrition can play in protecting people from pollution.

Base: 1,000 internet users aged 16+ in France, Spain, Italy and Germany

Source: Lightspeed/Mintel



Exposure to blue light and the negative consequences on our vision will create demand for food/drink that protects our eyes

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- Like the rest of the body, the brain and the eyes require good nutrition to function properly. Bring attention to the importance of nutrition in better vision and cognition, and pair nutrients that are beneficial for the brain and the eyes. Outside of the baby food category, very few food and drink products make functional claims for eye health.
- Colourful fruits and vegetables are great for eye health. Build a connection between healthy eyes and the nutrients from fruits and vegetables. In the US, 27% of fruit consumers look for fruit with antioxidant properties.
- Lutein and zeaxanthin are sometimes described as 'internal sunglasses', as these concentrated pigments in the macula help protect the retina from blue light. Because the retina and the brain are both comprised of neural tissue, emerging research is investigating the role lutein plays in cognitive function too.



Mango Milk Candy with lutein
to enhance contrast
sensitivity (Japan)

MINTEL

The future of gut health starts in the mouth

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- The oral microbiome is a thriving area of research with potential to cross over to other areas of digestive wellness. Patents for oral health with potential food and drink applications have shown a sharp increase over the past three years, especially in antibacterial and anti-inflammatory formulations.
- Understanding of the link between a healthy oral microbiome and a healthy digestive system is growing. Preliminary research suggests an imbalanced (also referred to as 'dysbiotic') oral microbiome may subsequently lead to an imbalanced gut microbiome.
- Oral health food and drink products can build off the success of the digestive health trend and appeal to consumers who are already seeking ways to support a healthy microbiota. Younger consumers in the US are a clear target, being most likely to be interested in probiotics in oral care, as well as take probiotics for digestive health.



Yogurt with Reuteri Lactic Acid
rebalances oral microflora gum health

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In Five Years and Beyond

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1

Claiming heritage for optimal health

In the coming years, healthy traditional diets, like the African Heritage diet, will potentially emerge due to authenticity, simplicity and healthy ageing attributes. The rise of plant-based eating and further pushes for sustainable nutrition will be the catalyst for brands to focus and leverage the beneficial elements of such diets.

2

Technology is power in food, health and nutrition

The use of technology to improve food, nutrition and health will be a growing opportunity. Investments in food and agri-tech firms will continue to help deliver food security and nutrition for all, and sustainability from farm to consumer. Anticipate more advancement and efficacy validations in personalised nutrition.

3

Get food safety and quality digitalised

Food safety is vital for good health. In the future, more companies will rely on technological capabilities such as Artificial Intelligence (AI) in testing devices to help them manage food safety risks more efficiently and accurately, leading to fresher, cleaner and safer produce for consumers.

A diet rooted in heritage is a potential roadmap to achieving optimal health and comfort

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- The African Heritage Diet could create positive nutrition in products as the popularity of plant-based eating rises and further pushes for sustainable nutrition.
- Oldways, a US-based non-profit organisation, has launched food pyramids specific to traditional diets like African Heritage Diet, which consists of mainly plant-based foods and less sugar, sodium and animal products, while supporting an active lifestyle. It conveys a sense of authenticity, cultural connection and simplicity, which resonates with consumers.
- As consumers proactively use nutrition to help prevent future illness, such diets' traits can be used to inspire healthy ageing products, focusing on heart health and diabetes management. Studies to validate such health benefits of the diet are still lacking, so more research is advised.



Yummitry African Dish with Brown Rice
Amarantus Tomatoes Cumin (Poland)

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Refine food safety and nutrition quality through digitalisation

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In China

85%

of Chinese consumers* describe themselves as 'putting a lot of thought into what they eat'

Base: China; 1,000 internet users aged 18+

Source: KuRunData/Mintel; World Health Organization

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- Food safety is essential for better health and nutrition. According to the World Health Organization, over 200 diseases are caused by unsafe food containing harmful bacteria, parasites, viruses and chemical substances. Consumers are health-conscious and paying close attention to the food they eat due to scares surrounding foodborne illnesses and product recalls.
- The entire food supply chain from farm to consumer should undergo stricter food safety measures and monitoring at every stage in order to guarantee safe and optimal nutritional quality food and drink.
- Digital solutions will play a vital role in mitigating the risks of product faults and will be a growing opportunity going forward. The use of AI, the Internet of Things (IoT) and other testing devices will help manufacturers manage food safety risks more effectively and accurately, and maintain traceability.



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Base: China: 1,000 internet users aged 18+

Source: KuRunData/Mintel; World Health Organization

Food safety solutions will become more advanced, convenient and affordable for fresher, cleaner and safer foods

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- Japan's Kewpie Corporation applies Google's AI-based TensorFlow machine to identify anomalies present in food coming from farms. The tech is currently limited to Kewpie's baby food.
- Israel FoodTech start-up Inspecto detects food contamination in real time using Raman spectroscopy, resulting in a reliable, quantified measurement of selected contaminants. All results are stored on a cloud, recorded and analysed within minutes.



Inspecto makes lab testing in food quick, accurate and affordable



Kewpie uses AI-based TensorFlow to ensure safety and purity

Investments and acquisitions will be at the forefront of an effective and efficient food and agricultural system

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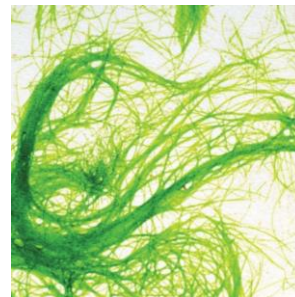
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Companies will continue collaborating with food and agri-tech start-ups to achieve food security, nutrition and sustainability, from sourcing to packaging.



Investments for digitising taste and smell

Aromyx, Inc., a US big data start-up, has unlocked a \$250k investment and a custom acceleration program from Radicle Growth, which will enable them to transform a digital representation of taste and smell in a digitised olfactory biosensor.



Developing business opportunities with agtech firms

About 31% of French biomarine company Algaia's shares were acquired by agro business Sapec. The agri-tech company sees significant potential in algae-based products as market demands for more natural and sustainable solutions.

Technological advances, clinical trials and active patents in personalised nutrition will thrive, making it more accessible and credible

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Effective and low-cost DNA-based dieting

- In the coming years, expect more clinical trials and active patents in DNA-based nutrition services, to provide proof of efficacy and credibility.
- To date, there is no solid evidence that eating a certain diet based on your specific genes will make you healthier.
- Patent activity related to DNA-based dieting has risen; however, only a few food companies have any currently active patents for DNA-based dieting.
- Companies will also work on the cost, as this has been a barrier for consumers taking DNA tests.

3D printing for personalised nutrition

- Personalisation can be heightened with 3D-printing technology, which will allow the customisation of food production for specialised dietary needs, especially for individuals who require distinct nutrients and to enhance the overall presence of healthy ingredients.
- The current 3D-printed nutrition patent activity suggests that, in the coming years there will be more collaboration between food and ingredient suppliers, commercial kitchens, manufacturers of personal kitchen equipment and tech companies.

Base: 1,704 internet users aged 18+ who have not taken an at-home DNA test

Source: Lightspeed/Mintel; Cipher/Mintel



Final Remarks

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Final Remarks

It is intended that innovation trends for 2020 may inspire and direct innovation processes in the agri-food sector towards customer's demands.

Indeed, companies which have a deep knowledge on the various innovation trends boost the markets and are more adaptive to changes that might occur in the trends themselves. Therefore, the incorporation of several trends improves likelihood of success of a new product in the market. Consequently, this allows companies to improve their competitiveness in both national and international markets.

It is our goal that this document guides the entrepreneurial network, by offering it the information and tools required to promote and strengthen its innovation efforts. The support to the agri-food sector allows an improvement in the value chain, with new products and services launched, and/or improvements to the ones already available.

Naturally, there are several challenges to the application of innovative trends. Still, it is hoped that these challenges become a key engine to stimulate cooperation between academia and enterprises, in order to conquer more markets and business opportunities.

Considering the implicit efforts associated with knowledge's implementation and economic valorization, PortugalFoods is available to dutifully cooperate and support innovation in the national agri-food sector, so that it achieves success.

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For any question or feedback, please contact: knowledge.division@portugalfoods.org

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