

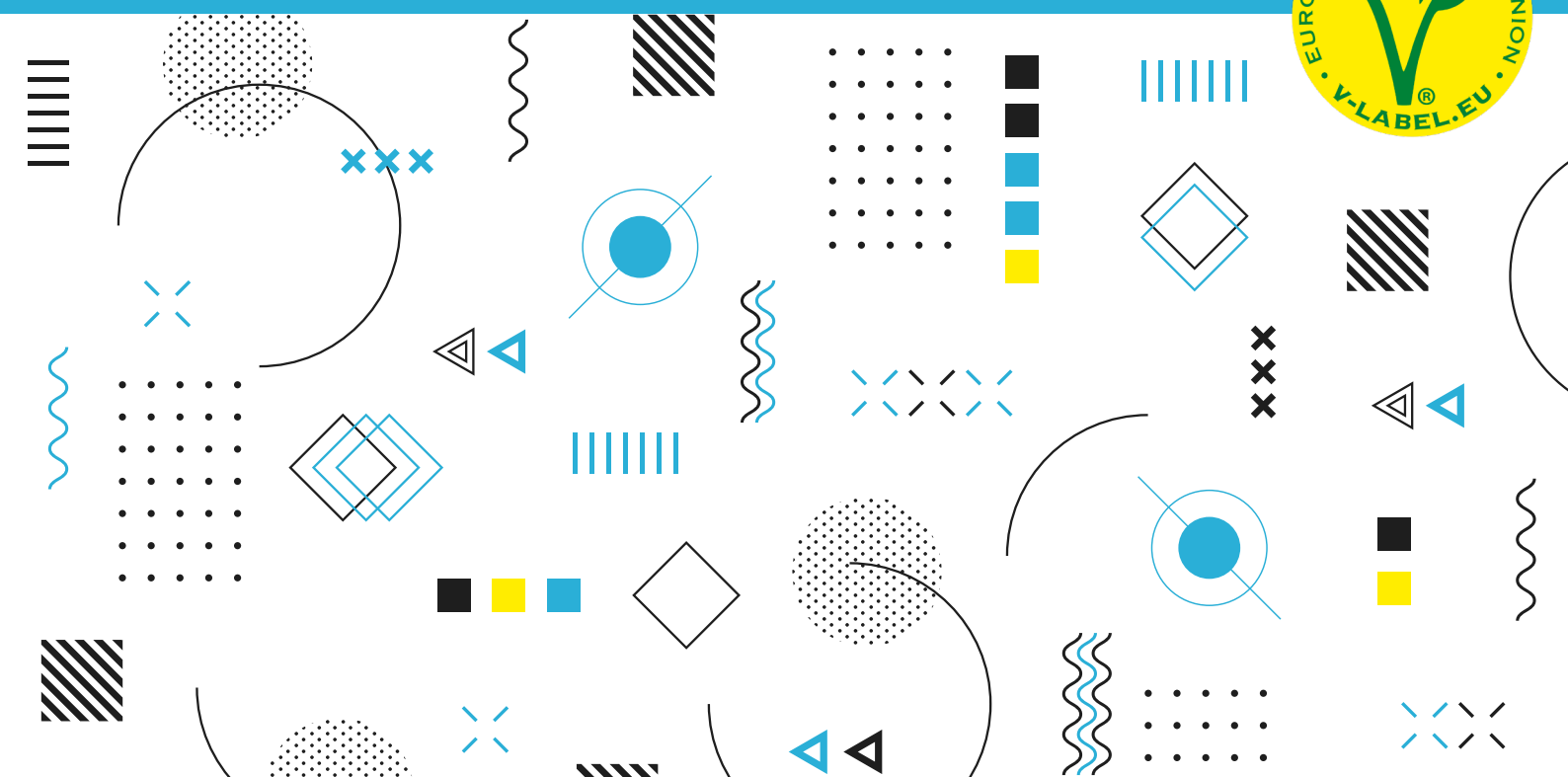


*V-Label Whitepaper*

*The future is tasty (and fair!): An overview of*

# INNOVATIONS IN PLANT-BASED DAIRY

*World's leading vegan & vegetarian trademark*





## PART OF THE **V-LABEL INSIDERS** SERIES

In this day and age, we often look for that one piece of wisdom that quality social media or articles can provide. And maybe it's just us, but often, a nudge is not enough. As change-makers, hand in hand with our partner organizations such as ProVeg International, Swissveg or Fundación Vegetarianos Hoy, we want to roll up our sleeves and get into the specifics. If you seek such content, keep your eyes on our White Paper series: something that's written for experts, by experts, and takes you from A to Z in a given niche without losing an inch of your attention.

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**The pandemic accelerated the shift in customer preferences;** many now seek to improve their health and opt for more plant-based alternatives. We can expect a lot of innovation and growth in this segment as companies solve the main problems such as taste, cost, and accessibility of their products, especially in the case of vegan cheese and non-dairy milk. **What innovations are currently happening in the industry? How exactly did customer preferences change? What are the obstacles the vegan “dairy” industry must overcome to succeed?**

## PLANT-BASED MILK BECAME A HOUSEHOLD STAPLE, BUT IT'S FAR FROM REACHING ITS FULL POTENTIAL

The global plant-based milk market is expected to hit \$21 billion by 2026, according to Global Market Insights, Inc. Plant-based milk now accounts for 14% of all dollar sales of retail milk in the US, with more than 40% of households regularly purchasing non-dairy versions. European plant-based consumption grew by 49% in two years, according to Nielsen data, reaching a total sales value of €3.6 billion.

### The history of plant-based milk is rich

Plant-based milk has truly entered the mainstream, no longer appealing to plant-based-diet followers alone but purchased by all kinds of consumers, European Consumer Survey by ProVeg International confirms. While it has experienced rapid growth in recent years, it's been consumed around the world for centuries. In Western countries, plant-based milk is seen as a substitute, while in other parts of the world, it's been traditionally consumed, especially due to higher rates of lactose intolerance. Research shows that up to 90% of Asians are lactose-intolerant, while this is the case for only 5% of Europeans. Native Americans used to make infant formula from nuts, which has spread to Iberia (today's Spain) and across to Europe. Almond milk has been consumed in the Middle-East region since the 13th century, and soy milk has its origin in 14th century China. Coconut milk (and cream) can be traced to South and Southeast Asia, as it's been traditionally used in curries.





## It's time to innovate

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The biggest challenge for plant-based milk to become mainstream is in taste and texture. According to the FMCG Gurus report, **77% of global consumers claim taste to be the main factor when choosing an alternative to milk.** Some customers find that plant-based milk has an “off flavor” and isn't as creamy and textured as dairy milk. Researchers from the food science journal, Food, found that ultra-heat treatment (UHT) processes helped to extend the shelf life of products, but created the beany flavor that some customers found unpleasant. Additional processing measures, such as a two-phase UHT or vacuum application, could help resolve the issue. In search of a simpler solution, Elmhurst 1925 devised a process that allows the company to make a creamy dairy alternative using as few as two ingredients. The company implemented the “HydroRelease” method where nutritional components of nuts or grains are first separated using water and then reassembled into a thick substance without the need for added gums or emulsifiers.

## What can we expect in the future?

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As the plant-based milk industry grows, we are about to witness brands competing for their market share. Nestlé, the world's largest food company, was slower than rivals in following the trend. Danone, on the other hand, acquired WhiteWave for \$10 billion back in 2017, which is the company that originally owned the Silk and Alpro brands in the U.S. and Europe, respectively. A new major player, Wunda (by Nestlé), is making waves across Europe with its pea-based milk alternative and could threaten Danone's position. Nestlé is preparing to tackle Swedish competitor Oatly as it enters the US market. To name just a few of recent ProVeg Incubator graduates, we see a huge potential in Vly Foods, Blue Farm, Brannatura, Pläin, Update Foods, Kern Tec, Devon Garden, Formo, Remilk, The Live Green Co, and the list goes on.

## Does the world need another vegan milk?

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There are several new alternatives on the market including allergen-free and low carbon print potato milk, introduced



Nestlé's new pea-based milk alternative: Wunda



Alpro has launched a range for baristas



by Swedish company DUG. Ingredients such as pea, fava bean, hemp, sunflower seeds, chickpea, duckweed, algae, and mushroom, as well as ancient grains such as quinoa or amaranth, are increasingly in demand and brands are launching new plant-based milk alternatives that will fulfill this demand.

## **VEGAN CHEESE ALTERNATIVES STILL STRUGGLE TO COMPETE WITH THE REAL THING. BUT THERE IS HOPE!**

The plant-based cheese market is expected to grow at a CAGR of over 15% during the period 2018-2024 and is estimated to become a \$4.42 billion market. In 2020, dairy cheese sales in natural and multi-outlet groceries rose 21.2%, and increased 24.5% in regional grocery stores, according to SPINS.

### **Plant-based cheese as the youngest invention**

While plant-based milk has a rich history, vegan cheese options were historically scarce. A soy-cheese alternative was first invented in 16th century China and was made from fermented tofu, or whole soy. Homemade alternatives were created from soy flour, margarine, and yeast extract. We had to wait until the 1980s for the first commercially sold options that were low-quality, compared to today's products, with a waxy, chalky or plastic-like texture. Fast forward to the period between 2018 and 2020, when several new companies were founded to make animal-free cheese, including New Culture, Change Foods, Legendairy Foods, Better Dairy, or Bedda.

### **Cheesy innovations are on the way**

Creating an authentic alternative to dairy cheese proves to be a true challenge, but it also presents big opportunities. Each variety of cheese has its own range of textures and flavors which are very difficult to imitate with plant-based alternatives. In dairy cheese, these unique qualities are created during the fermentation process – caused by the reaction between casein (which makes up 80% of the protein in cow's milk) and culturing agents. Plant-based cheese can't achieve the same creamy and melting qualities, as the



sources react differently to the agents in the fermentation process. In search of a solution, companies are looking to fabricate plant-based versions of animal fats and proteins, as that seems to be the way to go.

Motif Foodworks, in collaboration with the University of Guelph, is researching how to create plant-based fats that imitate the way animal fats behave when cooked. Perfecting this aspect is a big step in creating a creamy and melty texture in cheese. A dairy startup, Perfect Day, uses microflora to produce proteins that make plant-based cheese genetically indistinguishable from dairy cheese, or so they claim. The team was able to produce the same proteins that are present in the milk by introducing the genetic code present in cow's DNA to a fungus. Then they ferment the fungi under strict conditions and the final result of this is proteins that are free from hormones and antibiotics that are present in cow's milk.

### Consumer demand rising in a society concerned about immunity

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Now more than ever, consumers are becoming more concerned about their basic health, such as their vulnerability to disease and ability to recover. According to FMCG Gurus Top Ten Trends for 2021 Report, **42% of global consumers are making day-to-day changes to their diets and lifestyles with long-term goals in mind.** 70% are actively taking steps to boost their immune health, compared to 53% who said this in 2020. "People will look to eliminate certain dietary evils from their eating and drinking patterns, whilst also placing greater attention to their cognitive health and mental wellbeing," the Report predicts.

Still, 56% of global consumers say that they have made more comfort food purchases over the last year. Dairy, cheese, and butter specifically still hold a reputation of being borderline (un)healthy, and so having a variety of plant-based options that bring long-term benefit for the body will definitely find its audience! **Two thirds of respondents (65%) want to see more plant-based cheese in supermarkets** because they think that there are too few options at present, a survey conducted by ProVeg International shows. The comparatively low penetration of this segment, as well as not nailing the taste/consistency ratio just yet in most products available,





make it attractive for companies to innovate in. There is no reason why plant-based cheese could not follow in the footsteps of plant-based milk.

## Taste First, Think Second

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Indulgence remains the primary reason consumers choose certain products, with reward and escapism being the key motivations - especially in a pandemic. FMCG Gurus report elaborates saying that consumers expect products to challenge their sensory perceptions and offer them genuine experiences, even when it comes to everyday, low-cost items. Another interesting fact is that brand loyalty is on the decline as people shop around to obtain the best value.

## What's happening in the industry now?

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As more customers adopt flexitarian eating patterns – adding more plant-based options in their diets while still eating meat, dairy, and eggs on occasion – the demand will grow, and the initial investment in creating high-quality plant-based cheese will pay off. When it comes to the plant-cheese segment, there are many new players appearing on the market.

In the last few years, Violife, Good Planet, Loca Food, Parmela Creamery, and Vevan have joined longtime segment leaders including Daiya, Follow Your Heart, Field Roast, Kite Hill, and Miyoko's Creamery. Big players in the plant-based segment have introduced vegan-friendly lines: Danone launched So Delicious and Tofurky founded Moocho. Numerous promising start-ups have also entered the market, namely Mondarella, Cheese the Queen, Cashewbert, No Mo Moo, Serotonina, who are all successful graduates from the ProVeg Incubator.

## PLANT-BASED YOGURT, THE INDUSTRY'S UNDERDOG THAT'S RISING INTO THE SPOTLIGHT

The plant-based yogurt market is estimated to reach \$8.22 Billion by 2026, growing at a CAGR of 14.51% during the forecast period 2021-2026. According to research, Europe held the largest share with 31.04% in 2020 due to customers' growing demand for healthier food options, combined with





individuals' increasing disposable income. Asia-Pacific is estimated to be the fastest growing segment during the forecast period 2021-2026, which is due to the prevalence of lactose intolerance (90% of the population) and lactose sensitivity. In addition, the awareness of the health benefits of a plant-based diet is rising rapidly in this region.

## The history of plant-based yogurts

The origins of plant-based yogurt are traced back to the early 1900s, France, and the process was invented by Chinese scientist Li Yu-ying. The first commercially-sold soy yogurts were introduced in 1977, Soyogurt, and were developed and launched by Robert Brooks and Mary Pung of Swan Foods Corporation / The Soybeanery in Miami, Florida. Europe's first modern soy yogurts were launched in August 1985, Sojasun, by Laiteries Triballat of Noyal-sur-Vilaine, France. It wasn't until recent years that plant-based yogurts became a staple item in our fridges. We are seeing a rise in options and innovation in products, such as the introduction of plant-based kefir, launched just last year by Biotiful Dairy.



Velike! from Black Forest Nature GmbH has launched several oat-based vegan products including milk, ice-creams, and yoghurts.



## Challenges and innovations

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The biggest hiccup in plant-based yogurt production is the fluctuating price of ingredients. This limits the innovative product launches by the key players and is one of the major factors that is estimated to reduce the growth of the non-dairy market. Another big challenge for innovators is ensuring the plant-based products meet the same functional demands of dairy yogurts. When it comes to recent innovations and releases, a great example is Nancy's Probiotic Foods plant-based probiotic soy yogurt line or So Delicious Dairy Free's cultured coconut yogurt line with toppings. Both of these innovations serve as a functional food and convenient, pre-packed option that meets customer demand.

The pandemic influenced customer behavior in seeking healthier options, and questions were raised about the amount of sugar that is used to compensate for the lack of lactose. Researchers at the Technical University of Denmark (DTU) may have found a solution to this problem. DTU invented an alternative starter culture optimised for use in the production of plant-based yogurts. They extracted the lactic acid bacteria found in plants and used it to successfully acidify a sample of soy milk, which produces a result similar to dairy yogurt. The discovery of this ground-breaking method means that manufacturers can better replicate the qualities of a dairy yogurt without the need for added sugars, oils, and stabilisers. Scientists believe that this method could scale effectively and succeed commercially in time. Another innovation has been achieved by company Lavva for the use of the pili nut, which has a high-fat content that helps to create the smooth texture found in dairy yogurts.

## Major players in the market

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Similarly to other plant-based products, we are likely to witness major shifts in market share by key players and a rise of start-ups competing for customer loyalty. Among the biggest players are Danone SA, Nestle SA, The Hain Celestial Group Inc, Valio Ltd, Chobani LLC, Daiya Foods Inc, Stonyfield Farm Inc, Whitewave Foods Company Inc, Springfield Creamery Inc, General Mills Inc, and numerous others.



## WE ALL SCREAM FOR ICE CREAM, EVEN VEGANS

The global plant-based is anticipated to grow at 9.3% CAGR between 2021 and 2031 and is expected to reach \$1.2 billion by 2025. A study conducted by GQ Research (April 2021) found that, with 38.4% of the market, North America dominated non-dairy ice cream sales. Europe was the highest contributor to the global plant-based ice cream market with \$188.6 million in 2019. Asia-Pacific is expected to grow at a higher CAGR during the forecast period. What has caused all the spike in sales of plant-based ice creams? During the COVID-19 pandemic, customers looked to guilty-free treats to ease anxiety yet still remain conscious of their health. We've seen an increase in the consumption of fruit bars, non-dairy desserts, and keto ice cream cakes.



Ben & Jerry's has several Non-Dairy flavors



## How did it all begin?

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Soy ice cream is largely a US-centered phenomenon, and that's why its origins can be traced there. In 1899, Almeda Lambert published her Guide for Nut Cookery, the world's earliest known recipes for non-dairy ice creams – made of almond or peanut cream. Interestingly, the automobile mogul Henry Ford also had an interest in soy ice creams and commissioned his researchers to make some.

Later on, companies like Heller's Non-Dairy Frozen Dessert, Ice Bean, Ice-C-Bean, Soy Ice Bean came up with their own takes on dairy-free ice creams. In the 1980s, two big players still known today entered the game: Tofutti and Rice Dream. Purely Decadent Soy Delicious, the first "premium" vegan ice cream, entered the market in 2001 and three short years later became the best-selling brand of ice cream — dairy or otherwise. In 2005, the company was renamed to So Delicious Dairy Free. Plant-based ice cream entered a golden age in recent years as we see a steep rise in dairy-free options for vegans and flexitarians alike.

## A closer look at the market

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Big companies are popularizing plant-based options, and demand grows as customers become used to consuming healthier options. Some of the most prominent players include Unilever with Ben & Jerry's or Magnum, General Mills, Danone and their Alpro, Booja Booja, Tofutti Brands, Inc., Happy Cow Limited, Bliss Unlimited, LLC, Eden Creamery LLC., Over The Moo, Swedish Glace, Dream, NadaMoo, Van Leeuwen, and Trader Joe's.





## GET IN TOUCH TODAY

Transparency is in our DNA. If you have any questions about V-Label, schedule a free call now.



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## GET CERTIFIED

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### ABOUT V-LABEL

Across the globe, more than 40,000 products from more than 3,500 licensees now carry V-Label.

V-Label is an internationally recognised, registered seal for labelling vegan and vegetarian products and services established in Switzerland in 1996. It is a reliable, go-to shopping guide for consumers.

With more than 25 years of experience labelling products and engaging experts in quality management, food technology, chemistry, cosmetology and marketing, we are the frontrunners of a global movement. As such, we cooperate with businesses, retailers, consumers, and campaigners.

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