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April 2020

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Can Frankenstein protein replace milk protein?

Yes and no



Roland Sossna
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international-dairy.com

A think tank named RethinkX based in the USA and UK predicts the collapse of the global dairy industry. One is tempted to dismiss all this as typical blah-blah that is constantly given by hosts of analysts of all kinds. Good sounding but meaningless nonsense, based more on assumptions, ideology and visions than on facts and luckily never ever becomes reality. But there are some facts in RethinkX's remarks that the dairy industry – producers and processors alike – cannot simply pass by.

In short, it is about the fermentative production of milk protein using genetically modified micro-organisms. The end products, casein and whey proteins, are exactly like their natural counterparts; on their own they do not come from the cow but from a tank. The functional properties of the retort proteins are exactly the same as those of its natural models. In principle, this opens the same doors for its use as native milk proteins. In principle. After all, it will hardly be a question of producing high-quality cheese. However, substitution is likely to take place, and in the B2B market. It would probably be better not to think here of children's food manufacturers, but of producers of special products aimed at athletes, for example, or the use of artificial milk proteins in clinical nutrition. As a result, casein, WPC and WPI could well lose market share.

It is also conceivable that fermenter protein could substitute milk protein in regions that are not so concerned with consumer protection and where still the basic needs have to be covered. If this were to happen, current dairy exporters would lose significant sales. After all, a fermenter can be installed almost anywhere, in a developing country as well as in an urban environment. This means nothing other than decentralisation of protein production. This, in turn, would jeopardise or completely jeopardise investments in milk processing locations. In addition – should RethinkX be right – the artificial proteins will be significantly cheaper to produce than original milk protein, while maintaining the same nutritional value.

A major disadvantage of the fermentation proteins is certainly their Frankenstein character. By far not all consumers will want to consume solids from fermentation. Moreover, the question of fat is still unanswered. Milk is and remains a mixture of hundreds of substances, so complex that it cannot be copied by biotechnology even in the long term.

At the end of the day, processing capacities are still needed to be able to produce consumer products from raw materials of any kind. Whether such a highly consolidated industry as the dairy industry will be able to take the lead here, or whether "everywhere" small production facilities for local supply will spring up out of the ground is an open question. If the dairy industry wants to hold the reins, it may also have to open itself up to the new proteins, similar to what it should currently be doing with plant-based alternative products, thinks Roland Sossna.



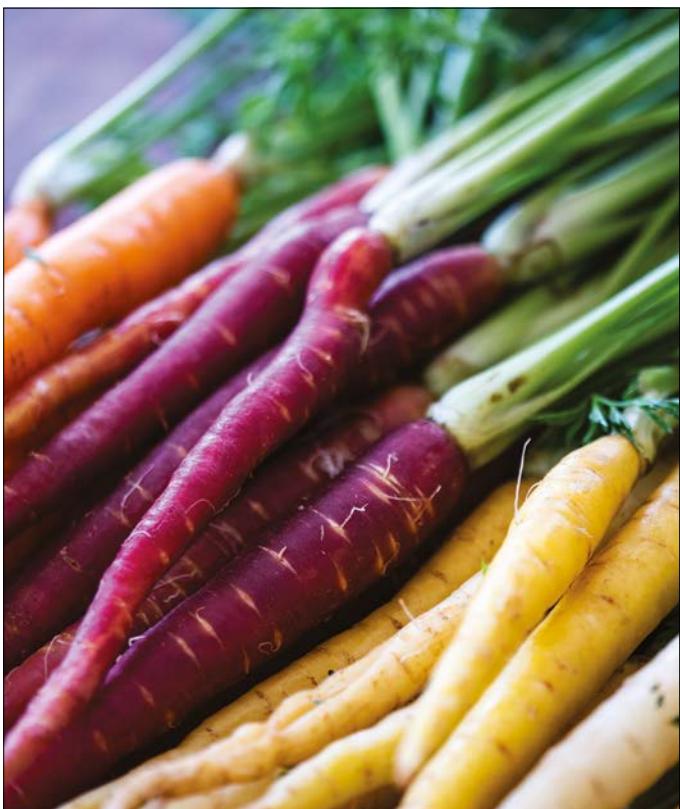
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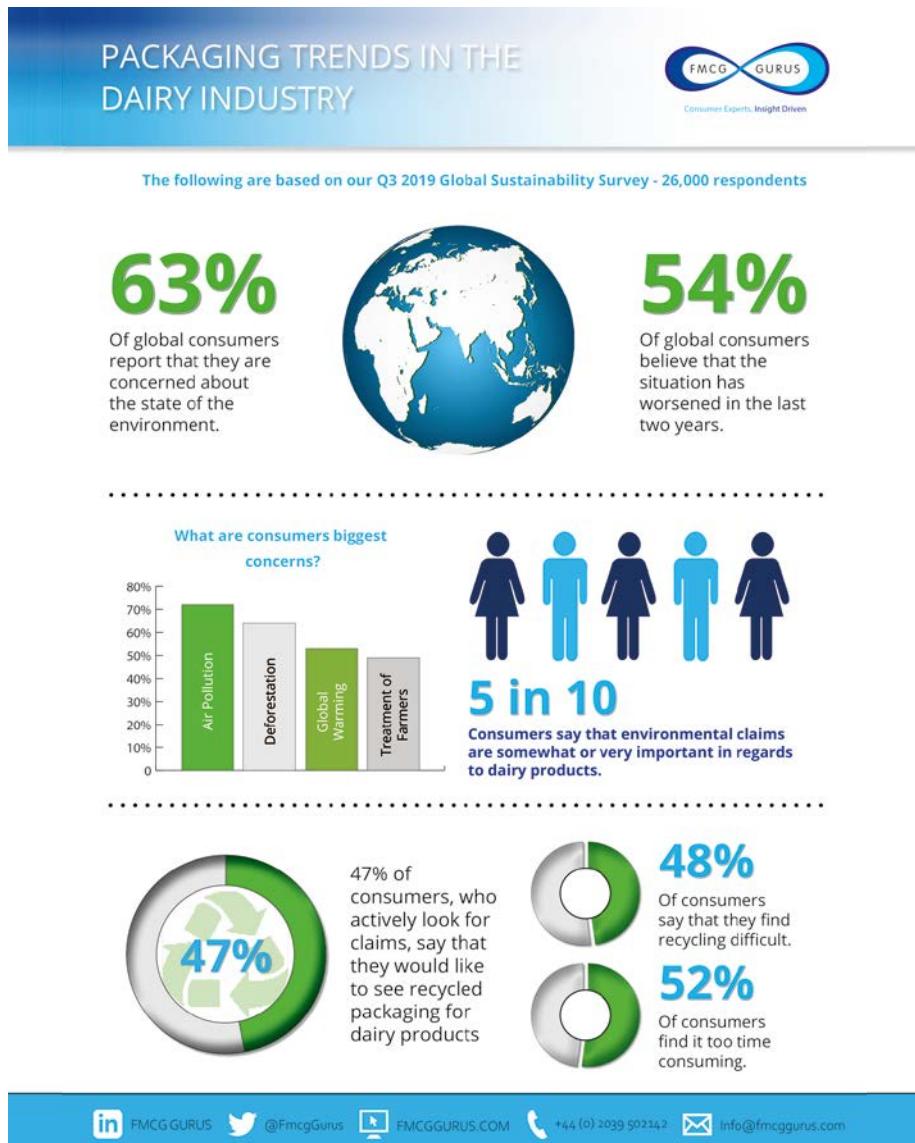
Consumer Insights

Packaging in the dairy industry



Author: Andrew Crofts, Senior Research Analyst at FMCG Gurus

This article is based on our Global Sustainability Survey 2019 and our 2019 Packaging Survey Series from Japan, Croatia, America, Norway, Nigeria, Canada, Australia, and China. For more info please contact FMCG Gurus at info@fmccgurus.com



In many ways, packaging is the most important part of a product for making an initial sale. Before a consumer has had the opportunity to smell, feel, or taste a product, they will have seen it on display, carefully framed within an expertly designed package, likely the product of much work and packaging research. As a result, it is a crucial area to perfect, to ensure that it has kept up with the latest market trends and consumer insights.

FMCG Gurus consumer research from the Global Sustainability Survey (2019 – 26,000 respondents) shows that 63% of consumers report that they are concerned about the state of the environment, and 54% believe that the situation has worsened in the last two years. Consumer insights show that there is a wide range of concerns on the subject, as well, with environmental and ethical issues both important. 72% of consumers say that their biggest concern is air pollution, with 64% worried about deforestation and 53% about global warming. 54% of consumers also have concerns about marine life going extinct, 51% about food wastage, and 49% about the ethical treatment of farmers. These consumer insights demonstrate that there is increasing awareness of the variety of issues that are a result of climate change, and understanding of the complexity of the problems at stake. As the scale

of the climate crisis intensifies, these concerns will only escalate, and consumers will be increasingly inclined to hold companies and manufacturers to a higher standard.

These concerns are also relevant to market trends in the dairy industry. 56% of consumers say that environmental claims are somewhat or very important in regards to dairy products, rising as high as 64% for yogurts. Packaging is a particularly relevant concern, with 47% of consumers, who actively look for claims, saying that they would like to see recycled packaging for dairy products, and almost a third indicating that they would like reduced packaging. Consumer research already shows that 48% of consumers say that they find recycling difficult, and 52% find it too time consuming, indicating a strong desire for improvement. As ecological issues continue to influence market trends and consumer attitudes, packaging research will need to adapt to these new need states and motivations.

Consumer insights from a random selection of consumer research surveys show certain market trends. Many countries find lightweight packaging desirable in the dairy industry, with FMCG Gurus research from the Packaging Survey series (2019 – 1,000 respondents per country) showing this: 54% of Japanese consumers, 59% of Croatian consumers, and 50% of American and Norwegian consumers saying that they believed it to be important in the yogurt category. Lightweight packaging in particular is an area that can appeal to consumers in a variety of ways, from a reduced environmental impact, to simply being easy to lift or transport.

FMCG Gurus research reveals that another issue that unites many consumers around the world is difficulty using packaging. 80% of Nigerian consumers said that they had problems getting into dairy packaging, along with 66% of Canadians, 67% of Australians, and 61% of consumers in China. Difficulty with accessing packaging is linked to other issues that consumers have, like a feeling that packaging is too complicated in general, or that there is too much used on some products. Stream-

lining and reducing packaging can result in an increase in consumer satisfaction across several different points of concern, whether ease of use, environmental friendliness, or a feeling that less packaging may lead to lower prices.

Obviously, packaging research and design is significantly more difficult than simply 'making the packaging bet-

ter'. Often there is a complex interplay of reasons that explain why packaging is constructed as it is, and it will always be important from a sales perspective to ensure that a product is as visually appealing as possibly. Despite these issues, however, it is important to focus packaging research on areas where consumers have concerns, particularly in regards to environmental issues.

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What you would have seen at interpack 2020

IDM presents important new developments despite the postponement of the trade fair

The interpack trade fair – the most important international event for the packaging industry and related process industries – originally scheduled to take place in Düsseldorf from 7 to 13 May 2020 has been postponed until next year. The new date is 25 February to 3 March 2021.

In itself, this would have meant that our pre-show reporting could have been omitted. However, companies in the packaging industry had prepared numerous new developments for the trade fair that are so interesting and important that we decided to draw attention to these innovations in this special, so that interested readers are not deprived of important impulses for their business.

ALPMA

Fresh, fresher, Fresh Pack

"Fresh Pack" is a new patented solution for butter packaging by ALPMA. In contrast to classic butter packaging, "Fresh Pack" offers full product protection. The all-round seal guarantees protection against manipulation and creates consumer confidence. In addition, the seal protects the butter from oxygen, which makes it much easier to retain the flavour in the product. When the packaging is opened, a fragrant experience is created. Convenient tabs make it possible to tear open the butter quickly and easily.



The new Freshpack offers significant advantages for butter packing (photo: ALPMA)

ALPMA has also developed a system that automatically inspects blocks of cheese and detects every flaw and every piece of foil. Thanks to modern camera technology and a self-developed algorithm, the system achieves amazing results. During tests in a pro-

duction plant, the ALPMA inspection device examined numerous cheese surfaces and achieved a hit rate of almost 100 percent. There were no false detections. The inspection is carried out on all six sides.

Further innovations in cheese making and process technology include the ALPMA FORMATIC cheese portioning system, the ALPMA Sulbana Pasta Filata technology and the CreamoProt "Bar". alpma.de

Weber

Innovations along the entire line

At interpack, system provider Weber would have present itself under the motto "we innovate along the line". The exhibited innovations in the fields of technology, service and digitaliza-



Weber highlight its competence for complete lines (fig.: Weber)

tion once again should have proven that Weber understands what the market evolves around.

Visitors were to expect two impressive line concepts exquisitely tailored to the specific requirements of slicing production. Weber was to present a versatile, high-performance and fully integrated line optimally designed for small batch production, that introduces a sustainable, novel packaging concept to the traditional thermoformer. Weber experts would have provided visitors with competent advice on materials and recyclability, as well as they would have presented innovative packaging solutions that meet all the requirements of recyclability and resource conservation.

For the first time, Weber decided to offer visitors daily live slicing and packaging demonstrations in the Weber open-air exhibition area. Three unique line concepts for different requirements and applications should have shown Weber's competence for complete line solutions and convince of Weber's innovative power. One of the planned highlights: A high-performance line for the processing of cheese. Due to the combination of innovations in the Weber portfolio in the areas of product preparation, transport and software, this solution is – amongst many other advantages – able to reduce empty packaging to a minimum.

In addition to digital service offers and the after-sales program Weber Guardian, Weber planned to present a newly developed maintenance management tool for the first time at interpack. With the help of this cloud-based program, maintenance and service assignments of lines and individual components can be planned and managed. This way production can be protected against unplanned downtime and a high line availability can be maintained. weberweb.com

Domino

Solutions for 'Factory of the Future'

Domino Printing Sciences (Domino), has developed smart, connected factory solutions for producing customised, on-demand, innovative products, while ensuring that customer safety, compliance, and waste reduction remain top priorities.

Domino's experts can explain to customers topics such as: using automated coding solutions to reduce errors on product packaging; adopting late-stage label customisation to improve production efficiency; and partnering with Domino to meet packaging sustainability targets.

Error-free coding

On modern production lines, handling multiple products for consumers world-

wide, accuracy is crucial. Errors in product identification and coding is one of the top reasons for product recalls – which can be costly for manufacturers, and harm brand reputation.

Utilising automated product coding solutions alongside code validation systems is the most effective way of ensuring that production lines are kept error-free. Domino's coding automation software can be integrated with existing ERP and MES systems to han-



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Domino focus on its smart, connected factory solutions (fig.: Domino)

dle product message changeover, and work in unison with external vision systems for message validation.

Late-stage customisation

Bringing all elements of production together under one roof is the ultimate goal of smart manufacturing. Domino's options for late-stage customisation offer increased control over product identification and coding, allowing manufacturers to easily adapt to smaller batch sizes, tighter lead times, and changing packaging concepts. domino-printing.com

er in the HFFS range. The SC+ planned for exhibition would have been producing 1-liter "doypacks" with corner cap at speeds of 280 pieces per minute, equipped with features as quick size changeover and the capability to run with recyclable material.

The SI platform, features all the internet 4.0 capabilities needed nowadays as well as the capability to run recyclable materials, will be present with the SI280 model, running in an integrated line with a RAJ cartoner and Flexlink's conveying and palletizing solution. volpak.com

Linx

Ink for retort applications

Linx Printing Technologies has introduced an ink (Linx Black retort ink 1077) specially formulated to resist moisture, colour change and transference. It is ideal for consistent coding through pouch and can retort applications where the contents are cooked in the packaging after they are coded.

Volpak

Sustainability and efficiency

Volpak's SC+ is what they call the best performing high-speed HFFS machine on the market, now available in a "sustainable ready" version.

The SC+ machine is a continuous high speed pouching machine and lead-

KHS

Intelligent palletizer control

KHS has developed future-oriented technologies in primary and secondary packaging. At the center is a new solution for can wrapping. With a further developed palletizer infeed, the full-service provider is also continuing its path to greater sustainability, efficiency, and process reliability in production. In the service area, smart solutions for the long and safe operation of plants are convincing.

An intelligently controlled KHS palletizer with pressureless pack infeed has advantages not only in terms of sustainability. Among other things, it optimizes processes and simplifies the work steps in production. In addition to its particularly gentle processing of packs, the elimination of railings makes format changeovers considerably easier and shorter. The system availability is thus noticeably increased. The palletizer is of particular interest to customers who specialize in the non-returnable palletizing of packs and cartons with different formats and who often use a single-, double- or triple-lane pack infeed alternately.

KHS is also continuing to expand its consulting expertise in the service sector, for example for "old machines" with discontinued components in order to extend the machine life cycle. In contrast to mechanical components, the service life of electronic components in the age





of Industry 4.0 is now reduced to just two years in some cases. khs.com

● Krones

Sustainable packaging

The LitePac Top secondary packages from Krones, e.g. as a cardboard clip for non-returnable PET containers or cans, reflect the development to a sustainable circular economy. During the production process, the LitePac series scores highly in terms of lower energy consumption and less wastage than with shrink-packs. A particular highlight: it is even possible to selectively orientate the cans so as to ensure prominent placement of the brand logo, for instance, or to form a consistently harmonised motif from several different can designs.

LitePac Top can be handled using the Varioline 2M packer. The Varioline series offers maximised flexibility with a combination of secondary and tertiary packaging. In all, more than 20 different packaging combinations can



Krones offers a solution for every single step in the closed plastics cycle (photo: Krones)

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be created on a single machine. By using encapsulated, lifetime-lubricated bearings, electric vacuum pumps or a drive system where the braking energy is recovered and re-used for acceleration, the Varioline additionally unites sustainability, efficiency and cost-effectiveness.

And for recovering the plastics involved, too, Krones has a solution in its portfolio. Because the MetaPure recycling systems not only enable PET bottles to be recycled into food-grade PET, but also plastic packages to be recovered and even upcycled. krones.com

Optima

High-tech for the high-care sector

Optima has developed an innovative solution concept for fully automatic



Optima EGS is a new machine combination for high-care powder filling (photo: Optima)

evacuation, gassing and sealing of baby milk powder containers. The machine named OPTIMA EGS is the result of an extensive market study. With the OPTIMA EGS and the OPTIMA FS filling machine, Optima now offers the heart of baby milk powder production lines from a single source. In conjunction with Optima's edge computing solutions, important production data can be

assigned to each container seamlessly, unambiguously and traceably in accordance with the track-and-trace principle throughout all processing steps. This also includes the documentation of all process parameters, which massively increases product and production safety in the area where the product is still unsealed – the so-called high-care area. optima-packaging.com

Startup offers digital marketplace Byprotex to facilitate B2B business

The startup Byprotex is a new digital independent B2B marketplace for trading in animal by-products (proteins and fats), plant materials and extracts, and dairy products. On one platform, buyers and producers meet directly and contribute to the reduction of food waste/losses/resource efficiency in the use of raw materials. The transaction process is largely auto-

mated. Byprotex wants to offer users the possibility to avoid brokers in order to achieve better prices. In addition, the platform allows for establishing new business relationships and opening up new markets. The platform considers itself a full-service provider that opens interfaces to other services. These are e.g. credit insurance, document generation, DMS, commissioning of

logistics companies including GPS tracking, upfront payment as well as other financial services, foreign VAT number check etc.

From Byprotex's perspective, there is currently no stock exchange or global marketplace for animal and plant by-products. The market is completely undigitalized, which, in addition to high communication costs, leads to non-transparent pricing. The majority of B2B trade and transaction processes are still carried out manually by telephone and e-mail. Therefore, all necessary processes for B2B transactions will be fully automated and digitized on byprotex.com, so that users do not lose any unnecessary time filling out commercial documents.

Byprotex's target groups on the seller's side are: Manufacturers / suppliers of animal by-products (fats/proteins), plant products and extracts as well as milk and dairy products. On the buyer's side are animal feed, biodiesel, energy, fertilizer, pharmaceutical, oleochemical and chemical industries.

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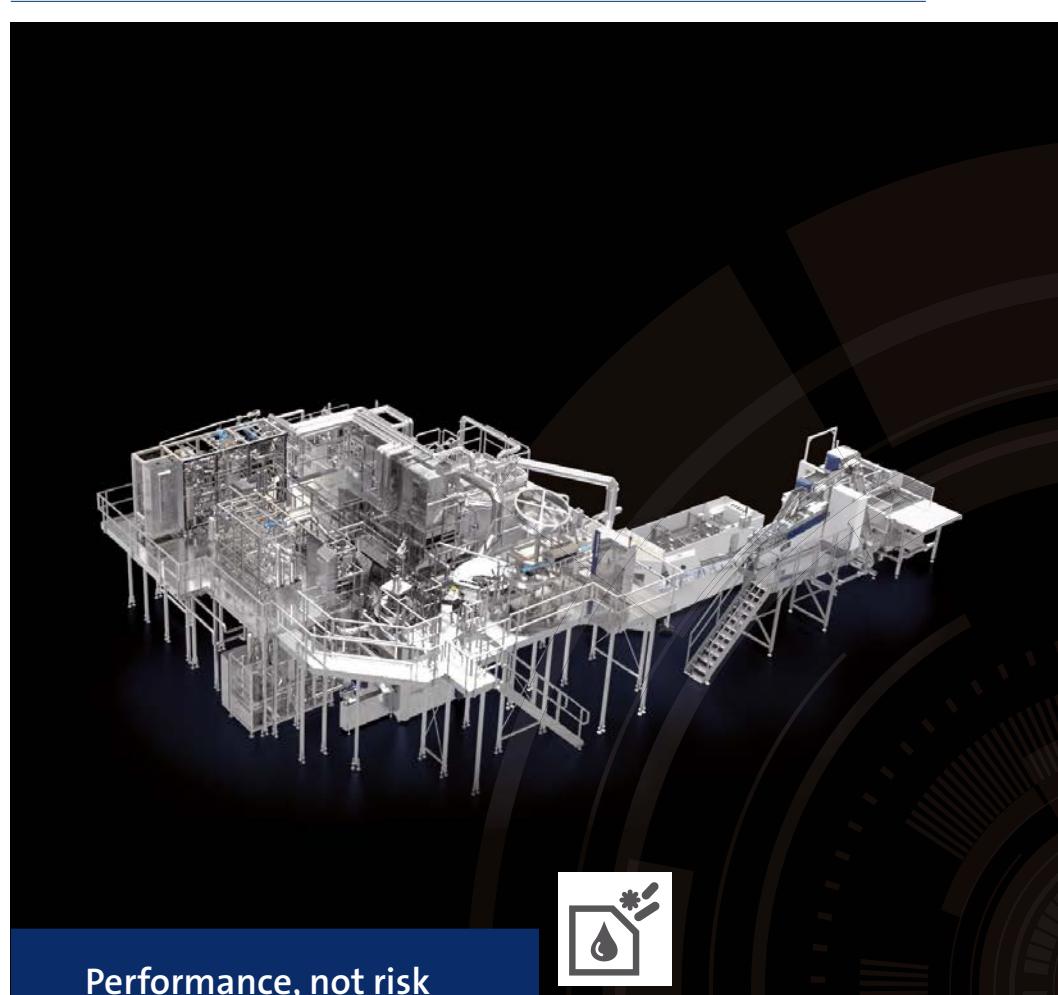


180 representatives from politics, associations and the dairy industry discussed sustainability and economics at an event organised by the German Dairy Industry Association MIV in Brussels on 20 February 2020 (Photo: IDM)

Green Deal for milk? Conference in Brussels

"Green Deal for Milk?" was the motto of the annual conference, traditionally organised by the German Dairy Industry Association (MIV) especially for representatives of the European political and association scene in Brussels. With around 180 participants, the event on 20 February was very well attended – after all, the Green Deal is currently on everyone's lips.

As MIV Chairman Peter Stahl (Hochland) emphasised, the association is once again a pioneer – it is the first industry organisation to publicly discuss the Green Deal in Brussels. This conversion to sustainability and climate neutrality will affect all sectors of the economy, including the dairy industry. If sustainability has now gained a presence in society and the media, this is the right thing to do, Stahl said, because the world can only be preserved if there is an overarching solidarity. Stahl spoke in favour of openness to technology, because changes of such magnitude as a Green Deal can only be managed with technological innovations. According to Stahl, consumers will hardly change their habits, so agriculture and industry must provide them with products that they can consume without worrying. Changes can only be made in accordance with the markets, but not against them.



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 KRONES

A closed cycle

Complete-line competence from Krones

Can plastic packages be sustainable? Yes, if they are resource-economically produced and kept in a closed cycle. Krones offers a solution for every step involved in the process. From material-minimised packaging design and energy-economical container production all the way through to the recycling of used plastics. The aim is to achieve a sustainable beverage factory with a closed PET cycle – a vision that's now within our reach. Because all the building blocks needed are already included in the Krones Group's portfolio.

For producing the preforms, every tenth of a second in cycle time and every tenth of a gram in weight are vital. There are plenty of potential savings. In order to use them, there are two preconditions: firstly, comprehensive knowledge of the properties and behaviour of the various preform materials; and secondly an in-depth understanding of the production processes involved – both during injection-moulding of the preforms and also when identifying the salient parameters for the stretch blow-moulding function. Based on its innovative hot-channel technology developed in-house, the Krones subsidiary MHT offers a sophisticated high-performance injection-moulding tool that even with a flakes content of over 70 per cent rPET achieves superlative results. In addition, it excels in term of particularly homogeneous temperature control of the melt, and natural balancing.

For the further path of the preform to a saleable product, Krones' portfolio includes an entire bandwidth of technical solutions.

With the Contiform stretch blow-moulding machines, preforms with a recyclate content of 100 per cent can be handled without any problems at very low energy



From the preform, then low-energy container production and packaging design, all the way through to the recycling of used plastics – Krones offers a solution for every step of the process. (photo: Markus Vogel, Krones AG)

and compressed-air consumption: Also at high speed. With the Contiform 3 Speed up to 2,750 bottles per cavity and hour can be produced. This version even undercuts by up to 15 per cent the in any case already very low energy and compressed-air consumption of the Contiform 3 Pro.

After the bottles have been filled, they can be innovatively closed using Flip Lid. This closure has been jointly developed by Krones and Aptar. It connects the lid to the bottle, thus preventing plastic waste from entering the natural environment. Commercial availability of Flip Lid is planned as from 2020.

For container decoration, Krones supplies the DecoType Select direct printing system, which offers high colour brilliance on both virgin and rPETt. The resource cycle is not interrupted, since the American Association of Plastic Recyclers has confirmed that the ink involved can be removed in its entirety.

In order to combine eco-friendliness with cost-efficiency for the packaging of beverage bottles, Krones has expanded its enviro sustainability programme to include enviro Design. This means that in future packaging solutions will be scrutinised for their environmental impact, such as greenhouse gas emissions or preserving the eco-system. One of the solutions, for example, is the LitePac packaging option.

In the shape of LitePac, Krones has created a secondary package that consumes up to 90 per cent less energy in the production process and even 70 per cent less waste than shrink-packs.

In order to close the cycle, Krones offers in the shape of MetaPure recovery systems that recycle containers made of PET to make food-grade PET and upcycle polyolefins for higher-quality re-use than hitherto. krones.com

Industrial scale Puro Minebea Intec

With the introduction of the new industrial scale Puro series, Minebea Intec's technologies are now available in an affordable range.

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The weighing solution Puro has a universally compatible menu layout, ensuring intuitive operation regardless of the device (photo: Minebea Intec)

seconds provides immediate weighing results, and the tactile buttons ensure intuitive operation. Depending on the requirement profile, there are models offering features such as a rear display enabling users to read from both sides, a traffic

light LED for checkweighing, and non-slip feet for use in challenging environments. The user interface is universally compatible, making handling easier for the user, regardless which model they are using. minebea-intec.com

Global Dairy Marketing Trends IDF Study

IDF has released a new report "Global Marketing Trends – Understanding Changes in Global Dairy Consumption". Now in its second edition, the 2020 report provides a global snapshot of marketing trends within the dairy sector. It highlights the impact of emerging trends and technologies on the future of dairy and covers a cross-section of product categories including liquid milk, butter and ghee, cheese, yoghurt, cream and ice cream, providing global insights and opportunities for dairy market to 2023.

The research, fielded and developed by CNIEL, the French Dairy Interbranch Organization, surveyed global dairy marketers across 23 countries, who shared key challenges currently faced by marketers within the dairy sector and anticipated future trends. Designed as a complement to the annual IDF World Dairy Situation Report, the publication serves as an additional tool to better understand the global dairy marketing picture and provides in-depth market insight.

The IDF report "Global Marketing Trends – Understanding Changes in Global Dairy Consumption" is available to purchase in the IDF E-shop. fil-idf.org



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3A Business Consulting



The global baby food (excluding IMF) market – a growing market driven by innovative product development



Authors: Tage Affertholt (photo) and Andreas Watson work at 3A Business Consulting in Denmark. This article is based upon their recent report Global Market for Baby Food (Excluding IMF) and dairy proteins 2019-2024

The industry for baby food excluding IMF is dedicated to satisfying the nutritional needs of babies by highly convenient products for everyday use or snacking. The market is segmented into three major categories, being prepared baby food such as products in cans, jars or pouches, none of which require any cooking preparation; dried baby food that requires the addition of water before consumption, and "other" baby food including any other product marketed for babies such as fruit juices, baby rusk and snacks.

The data and trends presented in this article are based upon the new study "Global Market for Baby Food (excluding IMF i.e. infant milk formula) and dairy proteins" published by 3A Business Consulting in December 2019, covering the global market for baby food excluding IMF 2019-2024. In this report, the latest estimates on market size and prospective growth by region, country and product category are analysed and presented. Furthermore, major consumer trends and key player profiles in the baby food industry are described. Finally, the report contains analysis and volume forecast for the whey and milk proteins used in baby food.

A real growth market

The global market for baby food amounted to around USD 18.5 billion in 2019 with Asia accounting for most of total sales. Several key growth drivers of the baby food market exist. The increasing number of working mothers driven by economic growth creating jobs that bring more women into the work force is a key driver of growth for the baby food market. Another key driver is the increasing number of middle-class households resulting from economic and population growth that can afford baby food products, which is especially the case in emerging markets. In general, the number of infants born is another important driver.

Dried baby food and "other" baby food are the fastest growing category, accounting for USD 5.8 billion and USD 3 billion in 2018 respectively. Both categories have reached annual growth rates of 8% from 2014 to 2018. Prepared baby food is the largest category, amounting to USD 8.5 billion in 2018 and reaching annual growth rate of 5% from 2014 to 2018. All the three categories include products of different price ranges depending on market and consumer segment.

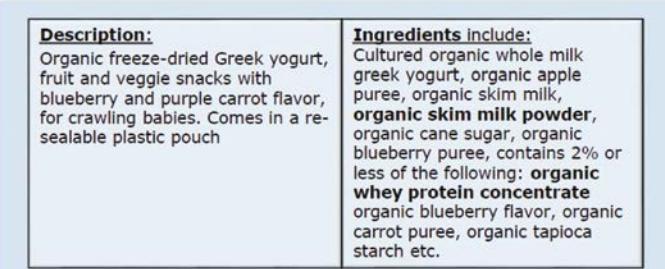
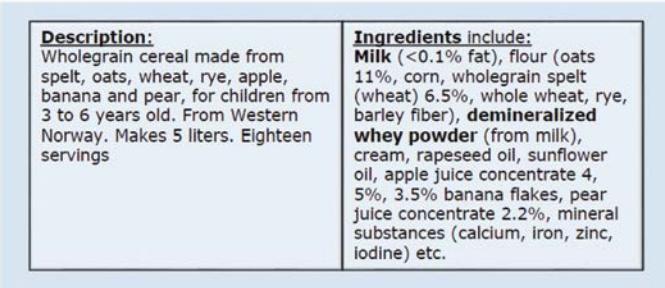
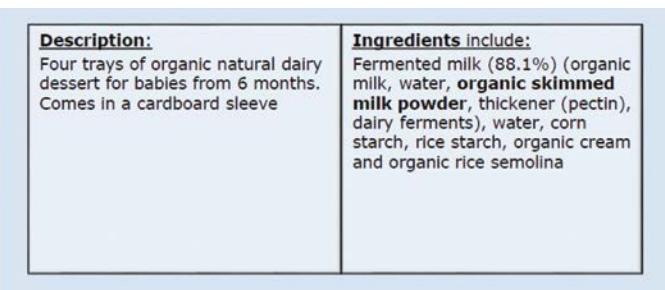
The Asian market is the largest within the industry, accounting for 29% of total baby food value in 2018. From 2014 to 2018, growth rates have reached more than 10% annually in all categories, reflecting the increasing interest from the Asian consumers. The development is mainly driven by China, a market comprising around 54% of the total Asian market and close to one-fifth of the global market. Apart from previously mentioned growth drivers, factors such as change in distribution channels, urbanization and abandonment of the one-child policy are also driving Chinese demand for baby food.

Surprisingly, Eastern Europe is the second-largest market, accounting for 24% of global sales value in 2018. Russia is by far the largest market, accounting for more than 80% of sales in Eastern Europe. Other notable markets include Ukraine, Poland, Czech Republic and Belarus, with Belarus showing the highest growth rate. The growth in Eastern Europe is especially within prepared baby food as products are increasingly healthier and more convenient.

According to Innova Market Insights, more than 19,300 new baby food products were launched between 2014 and 2018, peaking with annual launches of around 4,500 in 2018. Incumbents continuously develop new products to attract consumers by developing



A selection of baby food excluding IMF products illustrating the range in product development



A selection of product examples from each of the three baby food excluding IMF categories

on-the-go products that are highly convenient, and more healthy products that are a great nutritional addition to the baby's diet.

Industry dominated by multinational firms

The global baby food market has seen substantial consolidation, which has led to four multinational companies dominating the industry. These are different from the 'Big 4' (in IMF, the 'Big 4' are Nestlé, Danone, Abbott and Reckitt Benckiser) as Abbott and Reckitt Benckiser mainly offer infant formula. The market for baby food is dominated by Nestlé, followed by Danone, Hipp, Hero and Kraft Heinz. Nestlé is the market leader and present within all three categories, their largest brands being Gerber, Nestlé, Cerelac, Naturnes and Nestum. Danone and Hero are present with brands that offer competing products in all three categories, while Kraft Heinz possesses strengths in prepared- and dried baby food.

In China, the world's largest national market for baby food and IMF, the market is more fragmented as the five global dominating players meet a great deal of competition from especially small to large domestic companies. Domestic players competing for market shares include Yili, Yashili, Beingmate and Biostime. These companies are also important players in IMF. The most active baby food company in China is Kraft Heinz, launching more than 70 new products from 2014 to 2018. The top-6 most active companies between 2014 and 2018, only account for around one-tenth of total new product launches in China. Globally, the top-6 most active companies account for more than one-third of new product launches in the same period.

In contrast to the Chinese market, the Eastern European market is highly concentrated around a few companies. PepsiCo, Progress,

Danone and Nestlé hold the majority of shares in Eastern Europe while several other companies are only present in a few markets.

Outlook for the baby food market and dairy ingredients

On top of the value estimations, the report has estimated the total global consumption in volume terms for 2018 as well as for 2024. The overall estimated global consumption volume for baby food products in 2018 is broken down to estimate the respective volume shares for the different product categories as well as for protein ingredient volumes used in total and per product category. These calculations are done for numerous markets in all regions. Global protein ingredients demand from the baby food industry is estimated at approximately 2,200,000 MT in 2018. The dairy proteins used in baby food are mainly skim milk powder, whole milk powder, demineralized whey powder, whey protein concentrate/whey protein isolate, milk protein concentrate/milk protein isolate, and to a lesser extent caseinates/casein. Additionally, the report covers the use of galactooligosaccharides in baby food.

Looking into the next five-year horizon, the market for baby food is expected to continue its strong growth in value and volume. The challenge will be to keep up with the pace of the market, the continuously changing environment and increasing competition, and government regulations for ingredients and additives in baby food products. The market for baby food is growing and vibrant and is worth monitoring in the future.



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Respecting the environment, more ecology in food production, wider range of natural products, avoiding chemical additives – the consumers' list of requirements is extensive and could be extended. Moreover trade has demanded extremely long shelf lives for their products – and also for highly sensitive products of the dairy and food industry – for a long time. Such long shelf lives can only be achieved if the products are filled at a guaranteed high hygiene level and if procedures are used which reliably sterilise the packing materials (cup, bucket, lid and film) during the filling process.

GRUNWALD design engineers have been aware of these requirements for a long time as the development of dosing and filling technology has always been of great significance. Therefore a reliably high product safety and the adherence to statutory hygiene regulations are one of the most important issues at GRUNWALD for the development of new machines.

Ultraclean technology for higher demands

The mechanical engineering company from the Allgäu set new standards with regard to hygiene with the certified and peroxide-free sterilisation procedure developed 4 years ago. This ultraclean concept meets all requirements for observing maximum hygiene levels in the production of dairies and the food industry. Up-to-date machine technology guaran-

tees a reliably higher product safety and combines maximum possible flexibility with maximum performance and reduction of running costs on the basis of maximum hygiene standard at the same time. The hygiene concept developed does not use peroxide and therefore respects above all the health of the machine operators to a large extent.

The biggest advantage of this guaranteed reliable and certified sterilisation system is not using any chemicals which means it is free of peroxide and does not have any impacts on the environment and personnel. In addition the issue with the overdosing of chemicals has been solved! The pulsed light high-performance UV(C) sterilisation was tested by several independent German institutes and they also confirmed its effectiveness. They certified that this UV(C) sterilisation was an ultra-modern and efficient alternative sterilisation procedure which presents no health hazards and which gives reliable service without using peroxide and guarantees maximum sterilisation rates.

Ultraclean sterilisation for cups and buckets

The pulsed light high-performance UV(C) sterilisation rate for cup filling machines was well tried and tested over the past few years. It was developed further and it can also be used on rotary-type and inline bucket fillers for handling buckets up to 20 litres. A sterilisation rate of at least LOG4 is guaranteed for buckets from 1 to 10 litres. In addition this procedure can be generally applied for all standard cups and lids used by the food industry.

Peroxide-free machines since 2019

The advantages predominate and Grunwald is convinced that basically there is only one sterilisation system which can be thoroughly recommended: the pulsed light high-performance UV(C) sterilisation. The number of customers who made the decision for this ultramodern and efficient sterilisation system which presents no health hazard and who have used this successfully for a long time increases continuously. The reason for this is not only due to the fact that Grunwald has manufactured their cup and bucket filling machines exclusively with this peroxide-free hygiene concept confidently since January 2019 but that both machine supplier and customer consider the pulsed light high-performance UV(C) sterilisation system to be THE trendsetting technology of the future.



The next ultraclean (UC) machine generation: fully-automatic cup filling and closing machine GRUNWALD-FOODLINER 20.000UC in 10-lane design with integrated tray packer for dairy products (photo: Grunwald)

If the conditions for investment are focussed on the requirements for a modern and flexible production, the health of the machine operators and the reduction of the running costs, then an ultraclean machine with peroxide-free hygiene concept proves to be a future-proof investment.

The central point of the hygiene concept developed by GRUNWALD is the guaranteed reliable sterilisation system of pulsed light high-performance UV(C) sterilisation. It variably guarantees a sterilisation rate of at least LOG4 for cups, buckets and lids. With this procedure the packing materials are sterilised with pulsed UV(C) radiators and not with H₂O₂.



**1- to 2-lane rotary-type filler type
GRUNWALD-ROTA-
RY XXL; fully-auto-
matic bucket filling
and closing machine
in ultraclean design
for 1, 5 and 10 litre
buckets (photo:
Grunwald)**

The next ultraclean (UC) machine generation

When developing the ultraclean (UC) machines on the basis of the UV(C) packing material sterilisation another step forward has been taken.

GRUNWALD-FOODLINER 20.000 UC

The 10-lane inline cup filler – an intelligent production and processing machine

- in ultraclean (UC) design with peroxide-free hygiene concept
- maximum hygiene standard and at the same time maximum speed (sterilisation rate \geq LOG4 at 40 cycles/min.)
- fully-automatic tunnel cleaning
- highest possible flexibility without having a negative impact on the maximum dynamic of the individual stations
- up-to-date, fully integrated industry 4.0 solution guarantees maximum process reliability in order to entirely avoid production downtimes.

This machine as well as further innovations would have been shown at interpack exhibition 2020 in May for the first time. However, interpack exhibition had to be postponed to 2021. In addition the mechanical engineering company GRUNWALD stated that the delivery of the machine to the customer also had to be postponed and delivery could probably be effected in late summer. Until delivery this FOODLINER 20.000UC will be stored in their factory in Wangen and will be available for being viewed. Provided that the Corona pandemic will slow down and travelling will be possible again Grunwald is going to invite customers and potential customers to view this FOODLINER machine.

For further information or to arrange a viewing appointment please contact with Stefan Sacher, phone: +49 7522 9705-260, email: stefan.sacher@grunwald-wangen.de.

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Predicting creaminess of food

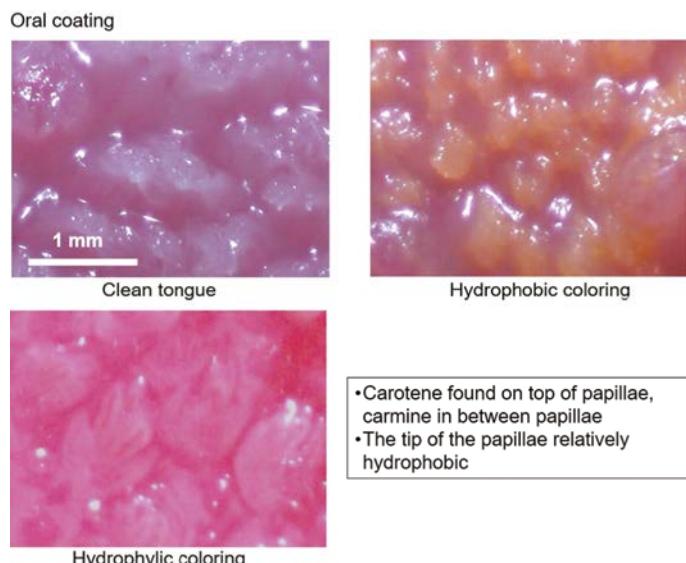
NIZO reports advances in laboratory methods

Hepling food manufacturers analyse products in the lab is one of NIZO's areas of expertise. A recent publication reporting research carried out as part of a NIZO/DSM collaboration provides encouraging results for a new surface material that can be used in devices that analyse the physical properties of food. In this study, a hydrophilic gel made from whey protein isolate (WPI) clearly discriminated between the friction behaviour of low and high fat yogurts. This makes WPI gel a promising material for use in predicting sensory mouthfeel and thereby speeding up product development.

To meet the increasing consumer interest in low-fat foods, food manufacturers are designing foods that contain less fat, but that nevertheless give the sensation of a full-fat product. However, any changes to the composition of a product alter its physical properties. In yogurt for example, the sensation of "creaminess" is due to the breaking up of fat globules. Without fat you therefore need to mimic this feeling in the mouth.

Assessing the acceptability of new products

But how do manufacturers know if a new yogurt still provides the sensation of creaminess? The most accurate way is to conduct taste tests using consumer testing panels. This is relatively expensive and time-consuming however: such tasters often need to be trained, and the training



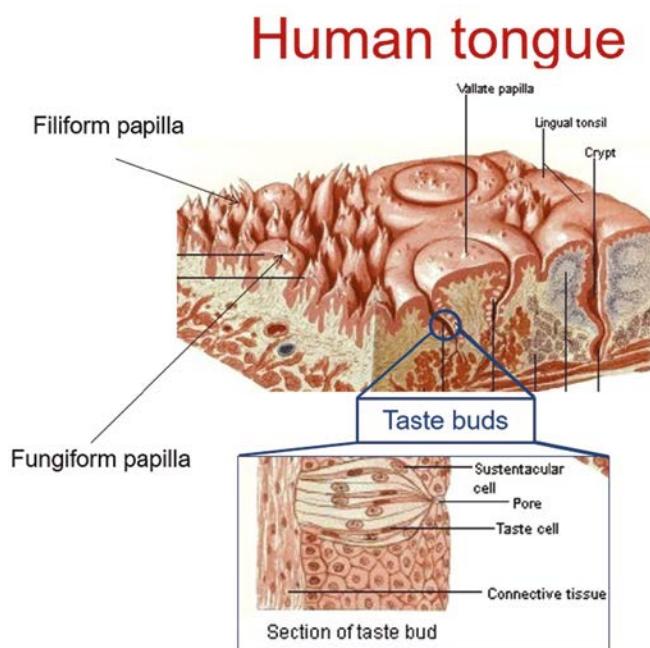
and testing process can take several weeks or even months. The use of panels is therefore not an ideal method at the early stages of product development, when scientists are assessing different types of changes to ingredients and how these changes will affect sensation in the mouth.

The perception of fat-related attributes such as creaminess is known to involve the friction forces sensed in the mouth. Fortunately, these friction forces can also be measured in the laboratory using devices that attempt to mimic the movement of food against the tongue. These devices – known as tribometers – can be used to predict whether a product is likely to give more or less friction against the tongue, and therefore whether the product's so-called mouthfeel is likely to be acceptable to the consumer.

Pig's tongues versus artificial surfaces

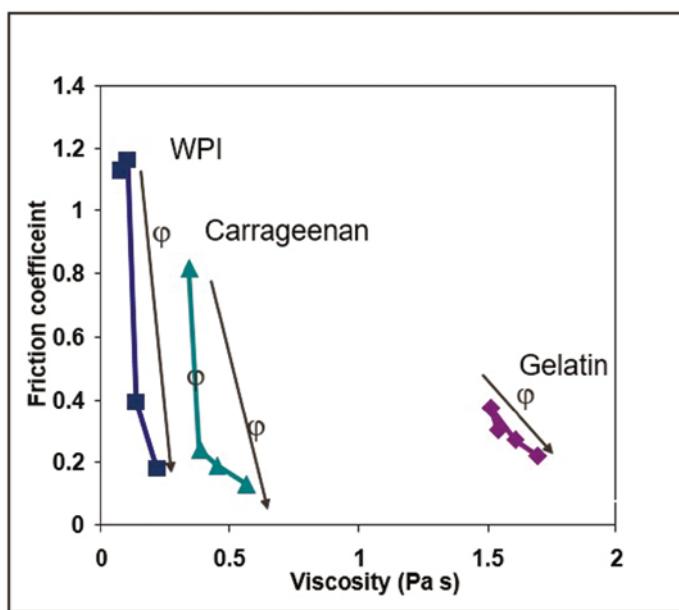
There are several different types of tribometers as well as several types of surfaces used to mimic the tongue. Pig's tongues have been used at NIZO, as their surface characteristics are similar to those of a human tongue. Pig's tongues have several disadvantages however, including their limited availability, rapid degradation of the tissue, and variations between different tongues.

Artificial surfaces have therefore been developed, and commonly used materials include silicone rubber and polydimethylsiloxane (PDMS). These materials are shaped into plates which can then be placed in a tribometer. The main advantage of PDMS is that the degree of surface roughness can be changed by changing the degree of polymer crosslink-



Friction coefficient of different gels containing fat

Volume fraction fat $\phi = 0, 5, 10, 20$ wt% oil



Chojnicka et al., Food Hydrocolloids (2009), 23, 1038-1046

ing. It is also robust and therefore easy to use and to manipulate. However, PDMS is hydrophobic and needs to be treated with chemicals to make it hydrophilic like the human tongue. Given the effect of these chemicals is only temporary, it is a challenge to ensure PDMS has good "wettability" – so that any liquids applied have maximum contact with the surface – and therefore make it more like the tongue.

These problems with the wettability of PDMS can be avoided by using materials that are naturally hydrophilic. One such material is a gel made from whey protein isolate (WPI). Previous tribometer measurements comparing plates with surfaces made from different materials have indicated that WPI may be more accurate than PDMS in imitating the conditions in the mouth. To test whether or not WPI gel is more suitable than PDMS for measuring friction forces in food, researchers from DSM and NIZO have now compared the two materials in terms of their ability to predict the creaminess of yogurt.

WPI gel better than PDMS

In this new study, the researchers first selected nine supermarket yogurts ranging in fat content from 0 to 4.1% and asked a trained test panel of 12 subjects to score them in terms of creaminess. They then used a tribometer to analyse the yogurts using both WPI gel plates and commercially available PDMS plates. They looked at the ability of the surface materials to discriminate between the yogurts as well as the repeatability of the experiments. Their results showed that WPI gel was consistently better than PDMS at discriminating between the yogurts in terms of friction behaviour. Besides determining the correlation between friction and creaminess, they also determined the optimal range for the sliding speed of the tribometer at which the method using WPI gel plates can best discriminate between the different products.

Innovative food product development

The researchers hope this new application of WPI gels can now be developed further for wider use. Given that different types of tribometers make use of different plates, standard WPI gel plates will

need to be developed for different devices, and although WPI gel is flexible and naturally hydrophilic, preparation of the gel sheets still requires further optimisation. NIZO would therefore be interested in hearing from potential industrial partners interested in collaborating on a project to continue developing this technique.

Finally, looking more widely at innovative food product development, this publication provides a prime example of how products can be screened in the lab for mouthfeel defects, thereby helping to speed up product development. We anticipate that such screening methods and materials can also be used to screen for other physical properties of food such as astringency.

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Colouring tastes

Exploring the top trends in dairy colours and flavours

Author: Dejan Trifunović, Business Intelligence Manager, SVZ

Complete food and beverage experiences that combine engaging colours and delicious flavours are a developing trend (photo: SVZ)

The start of a new decade is always a good time to take stock of the developments the industry has seen over the past few years and look ahead to the trends that will shape 2020 and beyond. From the sugar backlash and clean label movement, to the rise of Greek yoghurt, quark, skyr and kefir, the dairy landscape is more diverse than ever, especially when it comes to colours and flavours. Beyond classic cream colours and sweet taste profiles, consumers are craving bolder, more exciting experiences that can stand out in an increasingly varied, digitally driven marketplace.

Here we take a look at the current top trends for dairy colours and flavours, and explore how – through innovation and creative NPD – brands can truly engage their customers in 2020.

The bolder, the better

In today's market, where a product's appearance matters more than ever before, social media platforms such as Instagram are driving a trend towards bolder, more vivid food colours. With consumers exposed to so much content on a daily basis, both online and on increasingly crowded supermarket shelves, products that offer an immediate visual appeal with vibrant or unusual colours are more likely to catch attention and are gaining popularity as a result. Today's health-conscious consumers are not however looking for colour at any cost – the rising appeal of clean label and plant-based diets mean buyers are demanding the use of more natural food colours and colouring foods, which deliver appealing colours without the need for chemicals or additives.^[1]

The combination of consumer desire for vivid natural colour and 'Instagrammable' food is set to make blue and purple the 'shades to watch' for food this year. Associated with superfoods such as acai berry and blue spirulina, according to research by Mintel, blue and purple foods are considered to be both 'rare' and naturally healthy, making them perfect for sharing on social media.^[2] Producers like Trader Joes and Magnolia have tapped into the trend with their ube (sweet purple

yam) flavoured ice creams, but beetroot, blueberry and even purple carrots have also become popular choices for adding natural violet colour. For a more unique and nutritious take on the trend, dairy manufacturers could also consider less common purple fruits and vegetables, for example, the honeysuckle (also known as haskap berry). This sour-sweet violet-coloured berry delivers double the amount of vitamin A and four times the vitamin C found in blueberries, meaning it can lend an attractive natural purple colour to yoghurts, ice creams and beverages along with a great taste and potential health benefits.

Keeping it interesting

According to research by the University of Washington, daily use of social media has effectively rewired buyers' brains – shortening attention spans while also broadening tastes, as an already growing number of adventurous consumers seek to replicate the constant stimulation they experience online in their offline lives.^[3] In order to stand out therefore, companies should be constantly innovating to produce new and exciting flavour profiles that can engage busy consumers with more eclectic tastes. This drive towards offering unconventional, social media 'shareable' flavours, coupled with the recent backlash against added sugar, means that bitter, sour and even spicy flavours are growing in popularity.

European brands have started to tap into this trend for unusual flavours with Müller launching 'Marrakech Creamy Yoghurt with Orange and Ginger' in

Italy and Activia releasing 'Probiotic Smoothies' featuring turmeric, ginger, chia and hemp seeds. Other brands have been experimenting with more bitter, fruity flavours such as Fage's blood orange split pot, and Longley Farm's gooseberry, rhubarb and mandarin offerings.

Making healthier, tastier

2019's major trends of high-protein content and gut health are also set to

evolve this year, spurred on by consumers' growing preference for less-indulgent, functional dairy products. Consumers are more aware than ever of the link between diet, health and wellbeing and are accordingly seeking products which help them reach their personal goals – without compromising on taste.

Arla's kale, mango and lime 'Protein Greens' yoghurt for example mixes bitter, sweet and sour flavours while offer-



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Where consumers in general aim for a healthy lifestyle with matching nutritional habits, now more than ever, they look for balance and moderation. When in the past a "diet" label on the Front-Of-Pack would be enough, today's buyer takes a more holistic approach of health and wellness. People look for simple solutions and focus on familiar ingredients and inherent goodness. Brands can gain consumers' loyalty by being open about their ingredients. Improve your product's nutritional content with the naturally sourced, functional ingredients from BENEOP.

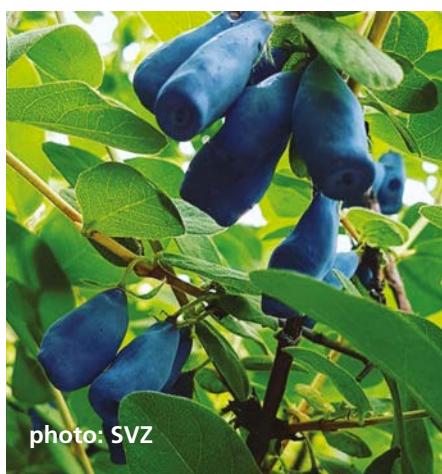


photo: SVZ

ing 20g of protein per serving and zero percent fat. Popular sour-tasting Kefir yoghurt drinks are similarly transitioning into new formats and being combined with more traditional flavours, with Biotiful Dairy for instance launching spoonable kefir-quark yoghurts with layers of fruit puree in flavours such as strawberry-rhubarb, blueberry and sour cherry. As consumers strive to maintain healthy lifestyles in 2020, manufacturers will need to ensure that taste isn't compromised – and they can do this with delicious combinations of fruit and vegetables.

Embracing experiences

Complete food and beverage experiences that combine engaging colours and delicious flavours are also a developing trend, particularly amongst the younger consumers. Millennials are more likely to invest in 'experiences' rather than one-off purchases, and are taking the same approach to their food choices, seeking out multi-dimensional food and drink products that elicit emotional reactions while also being satisfying and nutritious.^[4] One way dairy brands can engage buyers on a multisensory level while still keeping their labels 'clean' is by choosing ingredients that add flavour, colour and a unique texture all at the same time.

SVZ's new chunky puree range, for example, is an ideal choice for such applications, combining the great taste and vibrant colour of premium fruit ingredients with the authentic, rustic feel of homemade puree. Offering sweetness without the need for added sugar, chunky puree is a sustainably sourced and convenient solution for artisanal ice creams, yoghurts and dairy smoothies that can help producers tap into the hot trends of 2020 with just one all-natural ingredient.

SVZ's portfolio of premium fruit and vegetable ingredients is designed to help dairy manufacturers cater to the increasingly high expectations of today's consumers. Whether you're looking for a naturally vibrant colouring food that will stand out on social media feeds, or an exciting, authentic flavour, take your food and beverage products to the next level with the highest quality purees, juices and concentrates.



SVZ's new chunky puree range combines the great taste and vibrant colour of premium fruit ingredients with the authentic, rustic feel of homemade puree (photo: SVZ)

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Complete lines for the cheese sector iXAPACK GLOBAL

iXAPACK GLOBAL is a French family owned designer and manufacturer of weighing, cutting, packaging and overwrapping equipment for the food and beverage industries. Completely autonomous in the creation and development process of their solutions, the company provides turnkey lines to the dairy sector and cheese manufacturers. In the past few years, they commissioned dozens of equipment to the bluechip companies such as Laita, Lactalis, Domalait, Vergeer Holland, Friesland Campina, Entremont, Long Clawson Dairy, Starodoubski, Proujani, Arla Foods...

Last year, iXAPACK GLOBAL provided to a customer a complete fixed weight ultrasonic high speed cutting and packaging line, composed of different equipment adaptable to their products and dimensions, for more flexibility. The line consists of:

- Fully automated dividing line for cheese wheels: This equipment divides the wheels into fixed weight angular portions, which drop directly onto the flow wrapper infeed conveyor or direct into Thermo Trays. Fully automated, the machine takes care of the entire cutting process from the wheel input to fixed weight portions (80/minute).
- Portioning line for cheese blocks: In parallel of the dividing machine, a block cutter and a portioning machine were installed at this customer's premises, to manage the Euro Blocks arrival on the line. First, these 15 kg cheese blocks of dimensions 500x300 mm are processed by a block cutter to be cut into loins. Then, a portioning machine takes over to cut the loins into portions, measuring 100x75mm.



Fully automated dividing line for cheese wheels, installed by iXAPACK GLOBAL

- Flow wrapping machine: After being cut, the portions are sent to conveyors to be wrapped. Thanks to a new flow wrapping machine 'Fresh & Packed', it is now possible to individually pack products while maintaining their freshness by gas injection into the bag. This machine, which can reach a speed up to 150 products per minute, is one of the companies newly launched equipment.
- Weighing-labelling module allowing the weight control of the portions as well as the application of a top and bottom label on them. Overweight products are ejected by an ejection module. To ensure the conformity of each product, a metal detector was added to the line to check the presence of ferrous, non-ferrous and stainless steel elements.



In 2019 Volpak installed the first SC+ continuous pouching machine, achieving 99% efficiency only after a few weeks. The SC+ produces 400 ppm (photo: Volpak)

Technology and sustainability Volpak

Volpak, part of Coesia, is specialized in the design and manufacturing of horizontal form-fill and seal pouching machines for flexible packaging. 2019 has been a key year from a technology innovation perspective, with major developments in the areas of high speed and sustainability solutions as well as new services to that improve machine availability and efficiency.

In this context, the opening of Volpak's Pouch Lab in the spring of 2019 is milestone for the industry, offering an unique place where customers as well as material manufacturers can study the evolution and the behaviour of different types of packaging material, while also gathering data on packaging performance, thanks to the testing equipment infrastructure provided. Pouch Lab can help develop solutions to increase the efficiency and structural integrity of the pouch by adopting specific components based on the type and the shape of the package, making the reclosing systems more convenient for the consumer and resistant to transportation.

VEG WORLD

DAIRY ALTERNATIVES MARKET – 4CHOICE: THE PLANT-BASED ALTERNATIVE SOLUTION

The market of dairy alternative products is now confirmed as a real trend movement that is increasing yearly, involving not just non-dairy consumers who are following this kind of trend, but also many other consumers defined as "flexitarians", who choose to include plant-based products in their normal weekly diets.

This great success story is attributed to the real and perceived benefits.... Plant-based meals offer many nutritional benefits such as reducing cholesterol levels, improving cardiovascular health, and assisting with the control of diabetes. These choices are also closely related to the growing awareness of the negative health implications linked to the consumption of artificial ingredients.

Therefore, consumers are becoming more attracted to different and alternative food products with flavours, ingredients, textures, and product-based origins driving them to the selection, and in this category, plant-based products offer many different alternatives for experiencing these different characteristics.

In terms of numbers, the market of dairy alternatives is expected to grow from USD 17.3 Billion in 2018 to USD 29.6 Billion by 2023, with a yearly increase (CAGR) of 11.4% (Source Markets and Markets)

The Global Non-Dairy Yogurt Market

In the dairy alternative yogurt market, a similar trend is emerging, involving the expectations of flexitarians as the new customer leaders, and they are driving this category's product consumption. The non-dairy yogurt market accounts for 6% of the entire industry of dairy alternative products.

According to Innova Market Insights, Europe, with 66% of the market share, is the

leading region for spoonable non-dairy yogurt launches during 2019. Spoonable non-dairy yogurt accounts for a 2% share of the total dairy category. The fastest-growing claims related to these products are GMO-free, indulgent, premium, and traditional. Exotic flavours like passion fruit, mango, key lime, pea, mocha coffee, and pina colada, are all contributing to the growing consumer consumption.

Currently, the most used base ingredients are almonds, soybeans, and coconuts. Government agencies in several countries are encouraging the adoption of plant-based diets as they are rich in fibre, antioxidants, vitamins A, C, and E, and many other beneficial plant-based compounds.

Soy used to be the most popular alternative ingredient, with 80% of the global dairy-free yogurt launches in 2011, but product developers and customer demand have since changed this pattern. Ingredients such as coconut and almond milk are now increasing in demand faster than soy milk, and many other ingredients are following close behind.

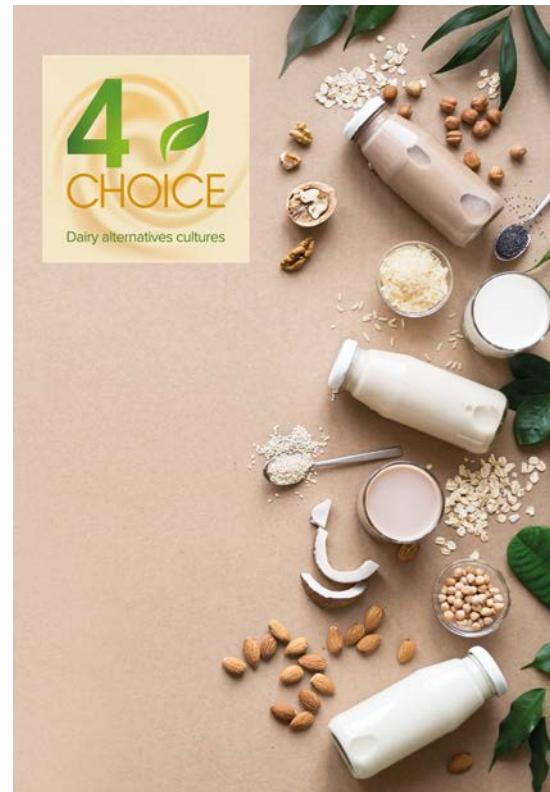
Indeed the "next generation" now includes products made from other legumes, nuts, seeds, and grain milk. Also prominent are the launch of new products made from bases such as oats, flax, peas, and cashews too.

Considering the highlights above, the global non-dairy yogurt market is expected to reach USD 1.53 Billion by 2023, at a CAGR of 17% during the forecast period 2018-2023 (Source: Technavio).

Reasons behind Plant-Based Milk Alternatives

Different preferences influence customer demand, as well as perceived health benefits and ethical reasons.

Many people worldwide suffer from lactose intolerance, diabetes, cardiovascu-



lar issues, and cholesterol. Nowadays, they have the opportunity to experience tasty products that are healthy, low in fat, and that contain much more nutritional value that is beneficial to our health than before.

The Flexitarian – the new kid on the block... This new group represents many consumers of the population worldwide, and potentially every one of us could be considered a flexitarian since we have an innate curiosity to discover and try something new. So these product developers devote a lot of time and resources into including as much creativity in these plant-based products as possible considering many different mixtures of ingredients and packages useful to satisfy every kind of palate for every kind of daily situation.

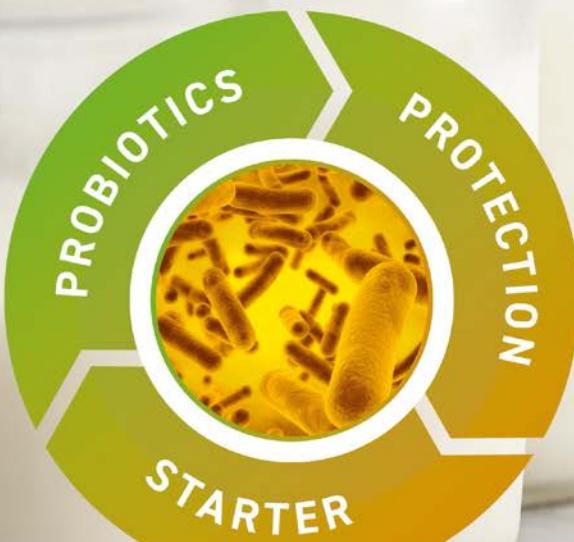
The main reasons related to dairy alternative products consumption are listed below:

- Nutrition: plant-based products are low in fat, rich in protein, vitamins, and other nutritional compounds.
- Taste and texture – many different alternatives in terms of taste, texture, package, and becoming one of the most creative food industry branches.
- Environmental impact – low environmental impact during the process of manufacture, and the use of natural resources.

In the end, the real winner is the customer and their innate disposition to try new products

4 CHOICE

THE PLANT-BASED ALTERNATIVE SOLUTION



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Special cultures designed for those looking for plant-based fermented products

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and tastes. Taste becomes the medium that feeds their curiosity and satisfies it. However, this cyclical process will always bring something new. Plant-based products have one significant advantage on their side...there are numerous bases from which to choose and they are all unique in profile, resulting in a wide variety of options to discover and taste.

Sacco Srl, a member of Sacco System, is a biotech company that since 1934, has positioned itself in the international market as a producer and partner in research areas, scale-up, production, and packaging of selected frozen and freeze-dried microbial food cultures. Sacco's extensive knowledge and expertise supports the fermented food industry in the production of healthier foods and trending new consumer needs.

A COMPLETE RANGE FOR PLANT-BASED FERMENTED PRODUCTS

Paying attention to new trends, Sacco has developed its latest range for plant-based fermented products: 4Choice, special cultures designed for the manufacturing of non-dairy based products. The demand for fortified dairy-free food and beverage products is increasing; the boom of non-dairy milk and yogurt products (soy, almond, rice, oat, coconut, hemp) is evident as well as the increase of global plant-based consumption.

4Choice is designed to provide health benefits to everyone – consumers are looking for natural food, less processed, and made with familiar and healthy ingredients. 4Choice is designed to provide better taste, optimal texture, and improved nutritional profile solutions.

The focus is on clean labels, greater transparency, and more artisanal values. No "additives" is still the top claim on new products launched globally and now the "no list" is the main trend, for example, no sugar, no colourants, and no artificial flavour.

4Choice is a new dairy-free cultures range, composed of pure and controlled hypoallergenic cultures, free of any known allergen as well as animal-derived products.

They are the perfect cultures for soy, coconut, oat milk, and any other plant-based fermented products, which ensure a good fermentation time, texture, flavour, and aroma development.

The 4Choice range ensures a uniform and controlled production of drinkable, set and

stirred soy, rice, oat, almond, cashew nut, coconut and tarwi based fermented products. The cultures are available as a freeze-dried (Lyofast) and frozen (Cryofast) solution.

The 4Choice product range comprehends different cultures for every desired finished fermented plant-based product:

DAIRY-FREE STARTER CULTURES

4Choice starter cultures range is designed to ensure a uniform and controlled production of traditional drinkable, set and stirred soy, coconut, and rice fermented products. The renewed range has been developed to improve the viscosity level, gives a good fermentation performance, and guarantees a mild or traditional flavour depending on the selected plant-based matrix.

DAIRY-FREE MILD STARTER CULTURES

4Choice mild starter cultures range is designed to ensure a uniform and controlled production of plant-based fermented products with less added sugar and a better taste. This solution allows for sugar reduction without losing sweetness. The range has been developed to allow a low post-acidification during shelf life.

DAIRY-FREE TEXTURIZING CULTURES

4Choice texturizing cultures range is an effective solution for improved creaminess, thickness, and mouthfeel of plant-based fermented products.

This solution is designed to support the product developers of plant-based fermented products, providing a versatile ingredient that allows the use of fewer stabilizers with high shear resistance in a cost-effective way.

DAIRY-FREE MESOPHILIC STARTER CULTURES

4Choice mesophilic cultures range is the best way to expand your plant-based fermented products portfolio, allowing you to be a trend-setter in your market. Thanks to the range of our mesophilic cultures, you can tailor the taste of your products depending on the matrix and the technologies you are using. The dairy-free ingredients solution to customize and balance your products' flavour.

4 PROTECTION DAIRY-FREE CULTURES FOR PLANT-BASED FERMENTED PRODUCTS

4Protection Special Protective Food Cultures range helps to control and preserve

the final product from alterations, fighting in a completely natural way any possible undesirable microorganisms and thereby maintaining a "clean label" product.

4Protection Special Protective Food Cultures adds an extra hurdle to prevent the growth of unwanted microorganisms, protecting the final product quality, ensuring food safety, and also contributes to the reduction in food waste.

Sacco's technologists are committed to working alongside our customers to find the best solutions and production process, working together with clients offering a product and a customized service.

The 4Protection line is compatible and complementary to all Sacco's starter cultures and they can be applied via direct inoculation or surface treatment practices like spraying.

Dairy-free 4Protection Special Protective Food Cultures guarantee the shelf life extension without the addition of preservatives or negatively altering the organoleptic characteristics of your products.

DAIRY-FREE CULTURES FOR NUTRITIONAL VALUE IMPROVEMENT

Our 4Choice culture SYHB4 for nutritional value improvement can help to improve nutritional properties and sensory profiles of your fermented soy-based and legumes-based products.

HYPOLALLERGENIC PROBIOTICS FOR PLANT-BASED FERMENTED PRODUCTS

Following the new trend and need for a healthier and balanced diet, probiotics can be the perfect solution for a functional product that will help consumers to enjoy a better and happier lifestyle.

CERTIFICATIONS

4Choice range is certified for safety and compliance with the demand for:

- dairy and lactose-free
- non-animal origin
- allergen-free
- soy-free
- GMO-Free according to the VLOG "Ohne Gentechnik"

To discover the full range and for further information: info@saccosystem.com
www.saccosystem.com

COVID-19

EU dairy & crisis management: what went right, what went wrong so far?



Author: Alexander Anton, EDA Secretary General

We're not yet at COVID-19 peak in Europe, but our crisis protocols and procedures are in place and operational, so let's dare a first and still foggy view – from a purely dairy crisis management perspective! – on what went right and what went wrong so far:

Milk & dairy have been categorized as "essential" goods with privileged rules (transport, workforce) at a rather early stage by the competent authorities, both at EU and at national level. Our authorities only needed a light nudge to get there. In non-safety related fields, authorities show the necessary flexibility (packaging use and labelling).

It did not come as a surprise that milk & dairy products have been acclaimed by citizens across Europe as vital for their families: we had a hard time keeping milk & dairy shelves stocked, when people rushed into supermarkets to buy the essentials for their families. We will make sure that these messages will be loudly echoed in the future whenever new food legislation at Union or at national level will be drafted.

At international level, IDFA President Michael Dykes together with EDA President Michel Nalet initiated an international dairy COVID-19 cooperation with an intensive exchange in 'real time' on best practices and problem tackling between the 'situation rooms' of the European and the U.S. dairy sectors. Post-COVID-19, we will for sure build on this experience and jointly take stock on the dairy lessons to be learnt.

Our strong and dairy-inherent food safety culture within our 'lactosphère', including robust contingency plans, has proven shock resistance and our workforce at all levels has lived up to our common societal responsibility: even in the European COVID-19 'hotspots' (like Northern Italy), milk collection, processing and distribution continued without significant disruption (other 'essential' sectors have experienced signs of strike movements across the Union).

European dairy is mobilizing all its forces and energy to continue to be a reliable and stable supplier of essential and vital milk & dairy products, and to keep shelves and fridges stocked across the Union and beyond.

Now, what went wrong so far...

While processors and retailers underlined the importance of free movement of food across the Union especially in times of extraordinary pressure on the supply lines, far too many politicians did not resist to heat up calls for 'food-chauvinism'. 'Celebrating' the prolongation of national origin labelling schemes during such a vital crisis is simply inadequate and irresponsible.

On top of that: retailers misuse the market impacts of the crisis situation (losses of market outlets like Horeca and export that are not compensated by any increase of sales to consumers) to push for lower prices and longer payment delays. We all know about the tight cash flow and liquidity situation of dairy businesses – and we knew before the

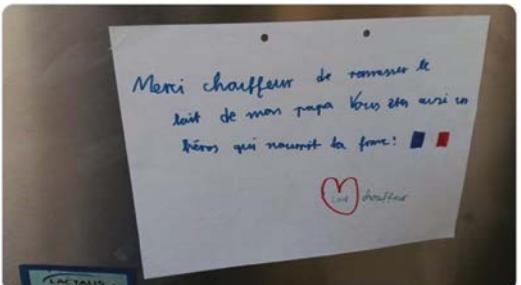
bankruptcy of Dean Foods and Borden Dairy. Therefore, retailer behaviour in this crisis period has the potential to trigger disastrous economic consequences.

While dairy is facing these heavy economic headwinds, European and national authorities are very strong in publicly applauding the dairy sector for its commitment and performance, but they turn rather silent when it comes to concrete actions, like activating market support schemes or including specific support measures for dairy in the national 'stimulus' programmes.

That is another message we will voice in the future at both, Union and national levels. Today's most important message can be summarized in one of our tweets:

 European Dairy Association
@EDA_Dairy

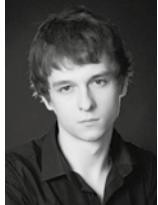
#MilkHeroes – "Thank you, dear milkorry driver, for collecting daddy's milk, you too are a hero nourishing France" reads poster on farm milkcontainer-a huge Thank You to all the #MilkHeroes across 🇫🇷 🇩🇪 🇮🇹 🇪🇸 @cniel @FNIL75 @ANIA_FRANCE @FoodDrinkEU @jwojc @EUAgric @dguillaume26



1:35 PM - Mar 23, 2020 · Twitter Web Client

Russia

Efforts to achieve self-sufficiency on dairy products



Author: Vladislav Vorotnikov, Moscow

New restrictions against imported dairy products and expanding state funding under the import-replacement program are on the way in Russia, as the government is discouraged with the recent dynamics in self-sufficiency rate in dairy products in 2019.

Russian dairy imports have been growing throughout 2019. In the first 9 months of the year, the country imported 87,200 tons of butter, 197,500 tons of cheese, 135,900 tons of condensed milk and cream, 10.3%, 20.9% and 36.4%, respectively, more than during the same period of the previous year, the Russian Federal Customs Service estimated.

Overall, Russia imported 5 million tons of dairy products in milk equivalent, 16% more than during the same period of the previous year, Russian consulting agency MilkNews reported. This is believed to be the highest level since the introduction of the 2014 food embargo, when almost all dairy products from U.S. and the European Union (EU) origin were wiped out from the local market.

"The Russian government would continue state support to the domestic dairy industry until the self-sufficiency on the market is reached", Elena Fastova, deputy Russian Agricultural Minister announced during a press-conference in Moscow in November 2019. "As of today, the self-sufficiency level we have is 84.9%, while the level we need is 90%," she added.

This is a major pivot as previously government officials have been promising to abandon

or at least significantly cut state aid to the dairy industry from 2020.

Russia has failed to meet the targets of the Food Security Doctrine adopted in 2010, when the self-sufficiency level on the domestic dairy market was estimated at 77%. The hike in dairy imports in 2019 pushed down the self-sufficiency level from 84.2% to 82.4%, Russian State Statistical Service Rosstat estimated.

"In 2019, we were able to increase milk production by 1.5% to 31.1 million tons. In 2025, Russia would be able to produce 34 million tons and at that point the self-sufficiency on dairy products could be finally reached," Kharon Amerkhanov, director of the livestock department of the Russian Agricultural Ministry forecasted.

The import-replacement on the Russian dairy market is tightly linked to the food embargo. Speaking recently, Russian Prime Minister Dmitry Medvedev said that there was a group of Russian companies who were asking the government to introduce sanctions without



Russian consumers are completely dissatisfied with the food embargo



Dairy products get more expensive in Russia, while their quality remains low

expiration date, in order to make the domestic industry more confident in its future.

"The agricultural companies are very happy, and when they are visiting the government [meetings], they ask us, under no circumstances to abandon those restrictive measures," Medvedev said, adding, however, that there a lot of people, who on the contrary were not happy enough with the sanctions.

New tools

In addition, the government has recently recognized that the import-replacement program is not working in the same way in all segments of the Russian dairy market. The most discouraging picture is seen on the infant milk formulas, according to the Russian vice Prime Minister Alexey Gordeev.

In November of 2019, Gordeev instructed Russian Agricultural Ministry to consider limiting IMF imports into Russia, including through introduction of some sort of quotas. The demand for IMF in Russia is estimated to be close to 40,000 per year. This category of dairy products was not subjected to the food embargo, but the government was encouraging import-replacement in this segment through a broad range of state support measures nonetheless.

The introduction of any import restriction in this segment would become a catastrophe for the Russian market, Russian newspaper Komsomolskaya Pravda said, citing its own sources in the Russian dairy industry.



The quality of the Russian dairy products is still not comparable with that of import products

luggage. Viktor Linnik, president of the Russian major food manufacturer Miratorg said that "the citizens need to think about developing of their own country, and not about parmesan or Iberian ham".

Officially, the Russian food companies were concerned over the possible spread of the food products of animal origin containing some diseases, but there is a widespread opinion that in this way the companies want to increase their sales by closing the last legal loophole of how European dairy products, in the first place cheese, could land on the tables of the Russian customers.

On average 5 to 10 million Russian tourists visit the European Union every year, and they are allowed to take up to 5 kg of food products back home with them. Russian citizens use that option quite often, although it is not clear what products and in what quantities are imported this way in Russia. There is no final decision on the proposal yet.

Insecurity instead of security

Russia is spending enormous amounts of money to achieve import-replacement on the domestic food market. In 2018 alone, investments totaled Rub600 billion (\$9.5 billion), Russian President Vladimir Putin estimated, speaking at a press-conference in Moscow in 2019. "A price hike on some products, including food, was one of the negative impacts of sanctions. And it is only now when the prices stabilized," Putin said.

All marketing studies indeed indicate that the Russian food embargo cost the average Russian consumer a lot, and in spite of the original intentions of the Russian government food insecurity is growing. In 2018, Russian citizens on average were spending 34.3% of their wages on food, as compared to 27.7% in 2013, prior to the food embargo, Rosstat estimated.

This is an extremely high figure, as in the countries with high living standards this share is not exceeding 10% or 15%, commented

Pavel Sygal, vice president of the Russian non-commercial organization Opora Rossii. As a result, 64% of the Russian citizens were trying to spare money on food in 2019, a marketing study conducted by the Russian biggest bank Sberbank showed.

"In past, Russian dairy products were more expensive than imported ones, and the main expectation of the import-replacement campaign was that it would make high-quality dairy products more affordable, but this has never happened. Basically, the quality of the products of the Russian origin remained rather low, at least lower than that of European products, while the prices have been constantly rising," commented a source on the Russian dairy market who wished to not be named.

In 2019, the main suppliers of dairy products to Russia were New Zealand, Argentine, Uruguay and some other countries in Latin America, according to the Federal Customs Service. New Zealand has nearly doubled supplies, so now it accounts for roughly 10% of the overall Russian dairy imports.

"One of the main reasons why imports have been seen growing is the weak operations of Russian dairy products manufacturers. It is difficult for them to compete with importers pricewise. Due to the high price of raw milk and poor efficiency of milk processing in Russia, the cost of finished products is on the rise," Russian Union of Dairy Producers Soyuzmoloko estimated.

On this background, the Russian scientific center Skolkovo, the Russian Academy of Science and a group of retailers filed a petition to the Russian government asking to revise the Food Security Doctrine, making the main emphasis on reducing costs and improving quality on dairy products.

"Now that doctrine raises concerns that food supplies to Russia could be stopped because of some political issues. But in peaceful times this happens rarely. Besides, any barriers in trade with one country could be compensated with the increase trade with other countries," the authors of the petition said.



The Russian dairy production is not growing

COVID-19

Collaboration within the dairy sector is more important than ever



Author: Caroline Emond, IDF Director General



Dairy, whilst more essential than ever as an important source of nutrition, has not gone unscathed by the COVID-19. The global dairy sector is committed to managing both the short and long-term impacts of the crisis.

Billions of people around the world rely on dairy for nutrition day to day. Consumers recognize that dairy products are nutrient dense foods, supplying significant amounts of energy, protein and micronutrients, including calcium, magnesium, selenium, riboflavin, and vitamins B5 and B12. People around the world rely on dairy every day so it is vital that we do all we can to help maintain the integrity of the dairy supply chain.

As a staple food and an excellent source of nutrition, it is unsurprising that there has been strong demand for dairy products. However, the milk supply chain has seen major disruptions that are preventing dairy farmers from getting their products to market. Mass closures of restaurants and schools has created a shift from wholesale food-service markets to retail grocery stores. Added to this is the issue of health and welfare while helping to ensure sustained production of safe food as well as minimising the risk of transmitting COVID-19 between dairy workers.

In these troubled times, international collaboration within the dairy sector and with the international organizations and national governments is more important than ever to ensure food safety, food security and nutrition and consequently public health. The members of the International Dairy Federation (IDF) have been working hard to manage the dairy chain and keep milk on shelves.

The IDF community, including farmers, dairy processors, producers, service providers and suppliers and industry specialists together with others in the supply chain have been working tirelessly to keep the milk flowing, with several also donating to food banks and persons in need during the crisis.

Maintaining a constant flow of information within the global dairy sector with regards to actions taken, practical support and best practice has also never been more important. Steps taken by members of the IDF include the issuing public statements for con-

sumers on the safety measures put in place and commitment of the actors of the dairy chain, information for farmers on how to meet coronavirus challenges, information on protocols milk collection, suppliers and storage.

Other resources by the IDF include links to specific COVID-19 safety protocols for employees and crisis planning tips. Further practical guidance includes how to milk cows while maintaining social distancing; how to manage staff coming on and off farm; address supply issues that may disrupt operations for farms and factories; protocols for managing milk collection; specific biosecurity considerations for Covid-19 and questions consumers may have regarding the safety of dairy operations, including evidence on the safety of dairy foods.

IDF continues to engage with intergovernmental organizations and sectoral organizations. For example, on 3 April, IDF participated in a webinar organized by WHO on the protection of work forces in food industry and retail and will continue to be part of the conversation at an international level.

"The challenges that the global dairy sector is facing in order to produce, process and deliver dairy products at present should not be underestimated. Everyone involved in the dairy supply chain is working tirelessly to ensure there are enough nutritious and safe dairy foods for people to eat particularly in these times of crisis. As the leading source of scientific and technical expertise for all stakeholders of the dairy chain, IDF brings the global sector together to ensure that everyone has access to the resources they need to deliver nutritious dairy foods in these unprecedented circumstances."

As information continues to evolve quickly, communications available from the IDF are being continually developed, and COVID-19 situation will be closely monitored so we do our part to ensure the safety and availability of dairy products throughout the world during this time of emergency. For relevant information and resources on COVID-19 and dairy, please visit www.fil-idf.org

New show date drinktec 2021

Messe München will organize the International Motor Show (IAA) for the first time in September 2021. As a result, drinktec is changing its event calendar: the world's leading trade fair for the beverage and liquid food industry will be held three weeks later from October 4–8, 2021, at the Munich exhibition grounds.

Volker Kronseder, head of the drinktec Advisory Board, said: "Of course, at first we were not thrilled about having to reschedule. We then got together in the advisory board, which represents a cross-section of all areas of the industry, and discussed various optional dates. We eventually found an alternative date that was supported by a broad consensus."

Richard Clemens, Managing Director of the Food Processing and Packaging Machinery Association of the German Engineering Federation, said: "Following this intense and constructive discussion with all market experts, we were able to find a new date for drinktec that really underscores

drinktec

its importance as the world's leading trade fair for the beverage and liquid food industry."

Preparations for drinktec 2021 are moving forward on schedule. Interested companies may continue to register online at www.drinktec.com.

New date – important information for exhibitors

All companies that have already completed the online registration process (for exhibitors) for the old date (September 13–17, 2021) do not have to do anything. The drinktec team will send individual stand proposals to them by the end of June 2020 along with a reminder about the new trade fair date. A registration for the new date (October 4–8, 2021) will become binding when a company accepts the stand proposals.

The project team will be happy to answer exhibitors' questions. Its members can be reached at +49 89 949-11318 or at drinktec.exhibitor@messe-muenchen.de.

Go West!

GEA hygienic centrifugal pumps launch in USA

"Go West" is the slogan for GEA's range of pumps, which aims to conquer the US market in 2020. This is a tough market, according to GEA experts Martin Zickler and Dave Medlar, where it is better to start planning from the back in order to make everything right from the beginning. That's why they first built up the service network and a local assembly and then made a promise: GEA pumps will bring a new level of quality, efficiency and hygiene to the US dairy, pharmaceutical, food and beverage markets.

The GEA centrifugal pumps have a unique impeller design that sets them apart from normal centrifugal pumps. The impeller is pushed towards the front making it more efficient and the mechanical seal easier to cool. The pump is easy to clean and can handle a wide range of liquids. In addition, GEA pump housings are manufactured by deep drawing, not casting. This provides a much higher quality surface finish without blow holes in which bacteria can collect.

GEA sees perhaps the greatest immediate opportunity for GEA pumps to be in the dairy industry.
gea.com



GEA built the service network before approaching customers with the new pump series (photo: GEA)

New lactase

Improving the nutritional profile of dairy products

Novozymes is launching Saphera Fiber, a new lactase enzyme to increase the content of fibers while also reducing sugar in fermented and non-fermented dairy products. According to a recent study, 59% of consumers are more likely to buy dairy products with higher fiber content, and 38% of them are willing to pay more for a higher content of fiber in their dairy products.

The new lactase enzyme works by converting lactose contained in the milk into GOS fibers (galactooligosaccharides). It does so without reducing the natural sweetness of dairy products. GOS fibers derive from the lactose in cow's milk and is often associated with improved digestive health.

Saphera Fiber is a beta-galactosidase (lactase) enzyme that converts 45% of the lactose contained in fluid milk into GOS, and 25% is GOS Fiber. 1,2% GOS fiber is formed in fluid milk allowing fiber claim and 25% sugar reduction. novozymes.com



Cheese cutting machines



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Cheese cutting machines



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The business IT solution for your entire enterprise

find hot news from the suppliers' industry
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→ international-dairy.com



(photo: Bosch.IO)

Sourcing data from milk tanks in real-time
Technology/IT



EU joint project BIOntop
Packaging



(photo: InvertRobotics)

Container inspection, safe and efficient
Technology/IT



Complete-line competence
Packaging

(photo: Krone)

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Call for applications!

Dairy Technology Award

Deadline for applications 30 October 2020

Supported by the dairy trade publications IDM International Dairy Magazine and molkerei-industrie and the Society of German Dairy Engineers (Ahlemer Ingenieure), the Dairy Technology Award aims at highlighting successful innovations in dairy and food technology. The prize has been awarded since 2009 to companies in the dairy and supplying industry and relevant service providers.

The Dairy Technology Award focuses on processes, equipment, complete production units and problem solutions that are of benefit to the overall dairy industry.

Awards will be made in these field

- Process & Automation Technology
- Packaging & Filling Technology
- Environment & Sustainability Improvement (saving of energy and resources)
- Process Management & IT
- Logistics
- Food Safety.

Jury

Applications will be judged and awardees will be selected by a jury consisting of these renowned experts:

- Prof. Dr.-Ing. Jörg Hinrichs, Dep. Soft Matter Science and Dairy Technology, University of Hohenheim
- Prof. Dr. Ulrich Müller, Dep. of Life and Science Technologies, University of Applied Sciences Ostwestfalen-Lippe
- Dipl.-Ing. Klaus Schleiminger, KSI Engineering, Krefeld
- Prof. Dr.-Ing. Saskia Schwermann, University of Applied Sciences and Arts Hannover, Faculty of Mechanical and Bioprocess Engineering
- Prof. Dr.-Ing. Matthias Weiß, University of Applied Sciences and Arts Hannover, Faculty of Mechanical and Bioprocess Engineering



Awarding

The prize winning developments will be presented at the trade show Anuga FoodTec in March 2021.

Awardees will receive a certificate, the winning developments will be presented to an international readership in the magazines IDM International Dairy Magazine and molkerei-industrie as well as on Twitter and the websites international-dairy.com and moproweb.de.

How to apply

Only in digital form, a condensed application is requested first. It should include:

- a) Reason for application
- b) Description if company/innovator with a short portrait of the applicant and its professional background.
- c) Title of the application and area of development
- d) Description of the innovative project/the innovation on max. 3 pages A4 incl. illustration (photos, graphs, tables, sketches) centering on the special innovative development and, if applicable, quoting sources.
(After checking, the jury might ask for further documentation or an on-site inspection)

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Email: sossna@blmedien.de. Questions will be answered by email or phone: +49 2590 94 37 20, +49 170 418 59 54 .