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MARCH  
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INTERNATIONAL JOURNAL FOR THE FRUIT PROCESSING, JUICE AND SOFT DRINKS PRODUCING INDUSTRY



**Large scale apple growing in northern Sweden**

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**FRUIT**  
PROCESSING

# EDITORIAL

*Dear Readers,*

On page 78 the article „Waste not, want not”: processes for recovering and reusing waste streams from fruit juice processing“ presents a broad overview of several systems that some processors have installed to help close the loop within their juicing operations. Examples come from citrus, core-fruit, and tropical fruit waste streams.

Health, sustainability and unique multi-sensory product experiences: these are the trends for the beverage industry in 2020. Please learn more on page 82.

Brännland Cider produces ice cider, a sweet dessert wine cider, concentrated and elevated using the natural cold temperatures of northern Sweden using 100 % Swedish apples. With a new project the company starts off new sustainable agriculture and tries to create a unique terroir for ice cider. Please explore more on page 86.

Apple and pear harvest is in full swing in South Australia with growers reporting some of the highest quality crops in at least three years despite recent bushfires in South Australia. Please read more on page 88.

The latest inventions by a market-leading manufacturer include an adhesive that washes off PET bottles entirely in an alkaline solution, allowing them to be re-used 10 to 15 times over. Please learn more about this bio-based hot-melt adhesives on page 90.

A new study reveals that 100 % orange juice is just as good as sports drinks and water. Researchers conducted a five-day exercise study with 26 healthy young adults who were moderately trained for endurance exercise. Please enjoy the findings on page 92.

I would not like to end this editorial without addressing the top topic of our time today: Coronavirus<sup>1)</sup>. The virus grew from a distant threat to a looming presence. The COVID-19 pandemic is a global health and societal emergency that requires effective immediate action by governments, businesses and individuals. But it is also the time of solidarity and reflexion. I wish that all of us come through this recent crisis. Take care of yourself, rely on precaution, but don't panic.

Yours



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<sup>1)</sup> Key websites:

- [https://ec.europa.eu/health/coronavirus\\_en](https://ec.europa.eu/health/coronavirus_en)
- <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

### PROCESS TECHNOLOGY

**“Waste not, want not”: Processes for recovering and reusing waste streams from fruit juice processing. . . 78**

“Waste not, want not” is an old proverb. It means that if you use resources carefully today, then you will be better off tomorrow. For decades, smart fruit juice processors have taken steps at an operational level, and through the innovative use of processing technologies, to increase yield and minimise waste. Perhaps initially this was driven by economics, but as we all know, waste reduction is now imperative to minimise environmental impact as well ...



### TRENDS

**Trends for the food and beverage industry in 2020. . . . . 82**



Today’s consumers are used to on-demand services in their daily lives more than ever before. They work globally, can be contacted around the clock and have less and less time for healthy food, while expecting food and beverages to fit in with this non-stop lifestyle. Products need to be consumable at any time, taste good, provide added value for both body and soul, offer something special and stand out from the mainstream. Consumers also demand that raw materials are grown sustainably, processing and product packaging are conducted sustainably, and social standards are adhered to ...

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**RAW MATERIAL**

**Large scale apple growing in northern Sweden . . . . . 86**



Brännland Cider to establish 10 hectares of commercially viable and productive apple orchards in collaboration with farmers, regional governments as well as national and international stakeholders from academia and business. Bringing together these stakeholders within the agricultural sector has been ongoing since 2017 in parallel with Västerbotten-based ice cider producer Brännland Cider establishing its ciders in national and international markets. Preceded by trial orchards in the vicinity of the city of Umeå on the Baltic seaboard the company is now scaling up its ambitions ...

**Apple and pear quality up in South Australia despite bushfires . . . . . 88**

Apple and pear harvest is in full swing in South Australia with growers reporting some of the highest quality crops in at least three years despite recent bushfires. Pear harvest began in early February with apple picking beginning in earnest on about February 20. The Adelaide Hills produces about 80 per cent of the state’s 30,000-tonne annual apple crop and 93 per cent of its 5000-tonne pear crop annually ...

**LABELLING**

**Beardow Adams Green Team spearheading new environmental initiatives . . . . . 90**

Beardow Adams, a leading global specialist in hot-melt adhesive technology, has further strengthened its environmental credentials by not only pushing the boundaries when it comes to inventing new eco-friendly products and services but also looking inwardly at their own processes. The latest inventions by the market-leading manufacturer include an adhesive that washes off PET bottles entirely in an alkaline solution, allowing them to be re-used 10 to 15 times over, and an adhesive used for pallet stabilisation; the adhesive replaces expensive layer pads and reduces the need for an excessive amount of plastic pallet wrap ...

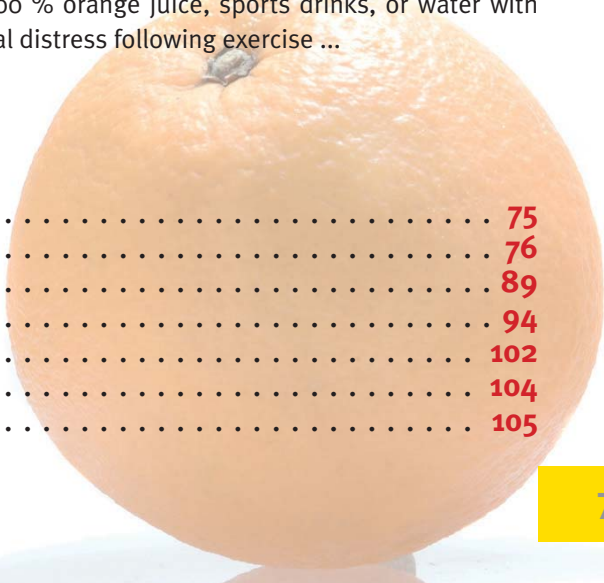
**SCIENCE & RESEARCH**

**New study reveals that 100 % orange juice is just as good as sports drinks and water for recovery after exercise . . . . . 92**

A new study published in the Journal of Nutrition and Health Sciences reports that drinking 100 % orange juice following exercise contributes to hydration equally as well as water and sports drinks, positioning the beverage as a viable alternative for post-exercise recovery. The study, conducted by researchers at the University of Kansas and funded by the Florida Department of Citrus, found no differences between 100 % orange juice, sports drinks, or water with respect to taste preference, thirst level, hydration, or gastrointestinal distress following exercise ...

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# “Waste not, want not”: Processes for recovering and reusing waste streams from fruit juice processing

| Citrus By-products | Citrus Extraction | Finisher | Sustainability | Waste Streams |

*“Waste not, want not” is an old proverb. It means that if you use resources carefully today, then you will be better off tomorrow.*

For decades, smart fruit juice processors have taken steps at an operational level, and through the innovative use of processing technologies, to increase yield and minimise waste. Perhaps initially this was driven by economics, but as we all know, waste reduction is now imperative to minimise environmental impact as well.

## Introduction

For many decades, Bucher Unipektin AG in Switzerland, its subsidiaries Bucher Alimentech Ltd in New Zealand, and Bucher Exzel S.L. in Spain have been developing and deploying various machines globally in a variety of fruit juice industries. These technologies are typically used in the main line of processing, but with adaption, many can also be combined and used to recover waste-streams from



Finisher

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processing. Some of these streams can be re-integrated into the process, thus improving yield, or marketed as an entirely different product that would otherwise have been wasted.

This article will present a broad overview of several systems that some processors have installed to help close the loop within their juicing operations. Examples come from citrus, core-fruit, and tropical fruit waste streams.

## Citrus extraction overview

There a number of techniques that extract juice from citrus fruit, however, the predominant technology is a “Cup Extraction System” such as those sold by Bucher Exzel S.L. Combining two opposing cups, and an extraction tube in the middle, the cups holding the fruit come together like many thin fingers on two opposing cupped hands. The juice is then squeezed out of a tube cut through the centre of the fruit, all in a fraction of a second. One extractor may process at least ten fruits per second. Orange oil is also extracted from the peel and recovered. Juice yield and quality is very high, but the remaining solid by-products – peel and the tubular core – can still yield additional value. The yield of the main “Prime Juice” from the extractor is typically around 50 % – i. e. 2 kg of oranges makes 1 kg of prime juice.

The prime juice, high in pulp and “rags” (juice sacs), then goes to a primary and secondary “Finisher”. “Finishers” are rotating equipment that pushes liquid through a tight screen, whilst retaining solids behind. When prime juice is ‘finished’, pulp level is reduced in the juice, and another by-product, the retained pulp, can be recovered for further processing.

## Citrus by-products

**(1) Citrus pulp-wash:** Pulp wash, also known by some as WESOS (Water-extracted soluble orange solids) can contain up to 80 % juice. If this pulp passes through a single finisher, 50 % of the juice can be recovered (one



*When prime juice is 'finished', pulp level is reduced in the juice.*

finisher equals one stage). Two stages yield 63 %, three stages yield 75 % and 4 stages yield 80 %, which is the typical economic maximum (Kimball, 1999). The extract can then be enzyme-treated to eliminate pectin, and is further processed, including debittering. It is permitted to add up to 5 % into Prime Juice, provided it is non-NFC juice and added directly back into the process "in-line".

**(2) Citrus core-wash:** Cores from the extractor can be passed through a finisher. The resulting liquid extract contains high levels of hesperidin, a compound with health benefits, which can also assist in the formation of cloud complex used in drinks. However, the extract also contains very high levels of limonin bitterness (70-100 ppm). This is well above the taste threshold of 5 ppm, and so needs to be debittered. Enzymation, pasteurising and centrifugation allows optimal performance of the downstream debittering plant. The resulting debittered extract can then be concentrated and sold to beverage makers.

**(3) Citrus peel extract for beverage ingredient and clouding agent:** Peels from the extractor still contain high levels of soluble solids. When milled (to reduce particle size), it is more easily extracted in multistage finishers (as above). The high level of limonin and phenolics in the extracts means the product requires debittering before it is used for making orange drinks. It is very common for waste peels to then be dried and used as stock feed.

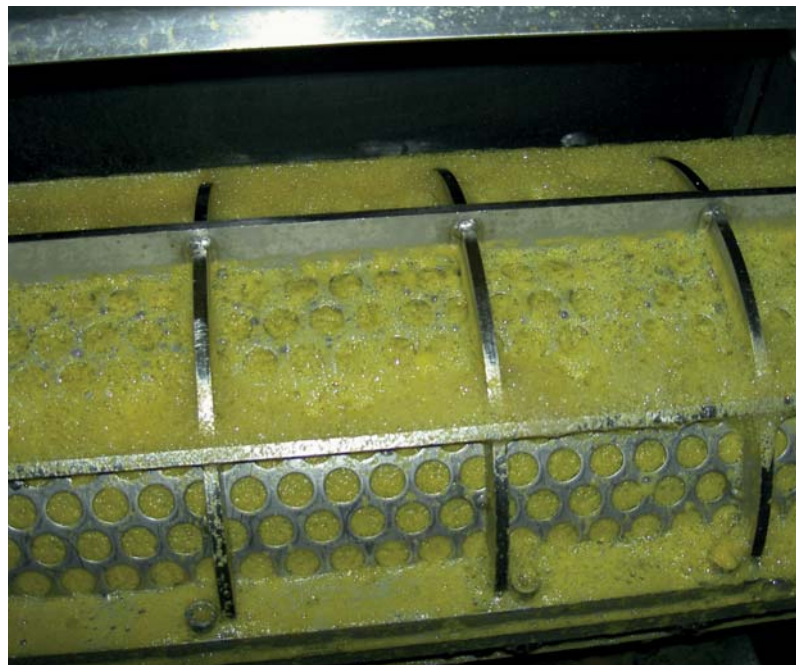
**(4) Citrus peel extract for fruit sugar solution:** An alternative way of handling peels is to enzyme, press (for example, using a hydraulic press), ultrafilter, and then use ion-exchange and adsorbent resin systems, to make a clear fruit sugar solution, which can be sold.

**(5) Citrus whole-fruit comminutes:** Surplus fruits can be processed whole by milling, extraction in multiple finishers, and then pulp-reduced before debittering. Again, this can be used as a drinks base.

### Other juice processes

**(6) Apple and pear – peel and core:** Many canned stone fruits are mechanically peeled, cored and sliced before being packed in fruit syrups and autoclaved. This provides a nutritious food that can be exported globally with a very long shelf life, enabling consumers to benefit all year round. Peel and cores are milled, enzymed, pressed, ultra-filtered, and then deionised or decolourised. The deioniser system, for example, consists of various types of adsorbent and ion-exchange resin that refine the waste liquid, which after further concentration, can be used as the canning syrup.

**(7) Pineapple skin – mill juice:** Almost nothing goes to waste in the pineapple industry. After the flesh is cut out as a hollow cylinder (for rings and chunks), excess from the core and inside the skin is scraped off for juicing. It doesn't end there. The waste skins from that process still have value. They are milled, enzymed, pressed, screened, centrifuged and ultra-filtered. This "Mill Juice" is then



*"Finishers" are rotating equipment that pushes liquid through a tight screen, whilst retaining solids behind.*

Feed Stock	Source	Separation/Recovery	Refining	Use
1) Citrus Pulp-wash	Pulp from Prime Juices Finishers	<ul style="list-style-type: none"> <li>- Counter-Current Extraction with Paddle Finishers</li> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Centrifugation</li> </ul>	<ul style="list-style-type: none"> <li>- Debittering Resin</li> <li>- Concentration</li> </ul>	Inline for juice addition (up to 5 % allowed by FDA), or Clouding Agent
2) Citrus Core-wash	Cores from juice extraction	<ul style="list-style-type: none"> <li>- Counter-Current Extraction with Paddle Finishers</li> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Centrifugation</li> </ul>	<ul style="list-style-type: none"> <li>- Debittering Resin</li> <li>- Concentration</li> </ul>	Clouding Agent for drinks
3) Citrus Peel-extract	Peel from Extractor, milled	<ul style="list-style-type: none"> <li>- Multistage Finisher</li> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Centrifugation</li> </ul>	<ul style="list-style-type: none"> <li>- Debittering Resin</li> <li>- Concentration</li> </ul>	Orange beverage ingredient
4) Citrus Peel-extract	Peel from Extractor, milled	<ul style="list-style-type: none"> <li>- Enzymation</li> <li>- Press, e. g. HP</li> <li>- Ultrafiltration</li> </ul>	<ul style="list-style-type: none"> <li>- Deionising Resins</li> <li>- Concentration</li> </ul>	Clear fruit sugar solution
5) Citrus whole-fruit comminutes	Whole fruit, milled	<ul style="list-style-type: none"> <li>- Multistage Finisher</li> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Centrifugation</li> </ul>	<ul style="list-style-type: none"> <li>- Debittering Resin, or Deionising Resins</li> </ul>	Orange beverage ingredient Clouding agent
6) Apple and Pear, peel and core	Milled from canning operations	<ul style="list-style-type: none"> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Decanter or HP Press</li> <li>- Enzymation</li> <li>- Ultrafiltration</li> </ul>	<ul style="list-style-type: none"> <li>- Decolourising Resin or Deionising Resins</li> <li>- Concentration</li> </ul>	Canning liquid on-site or fruit sugar ingredient
7) Pineapple skin	Milled skins from canning operation	<ul style="list-style-type: none"> <li>- Enzymation</li> <li>- Screw pressing</li> <li>- Screening</li> <li>- Centrifugation</li> <li>- Ultrafiltration</li> </ul>	<ul style="list-style-type: none"> <li>- Deionising Resins</li> <li>- Concentration</li> </ul>	Canning liquid on-site or fruit sugar ingredient
8) Mango skin and stone waste	Flesh recovered from skin and stone	<ul style="list-style-type: none"> <li>- Enzymation</li> <li>- Pasteurisation</li> <li>- Course separation</li> </ul>	<ul style="list-style-type: none"> <li>- Multi-function Resins</li> <li>- Concentration</li> </ul>	Natural mango drink ingredient

Table 1: Summary of processes used for fruit waste.



deionised. Whilst the working principle is similar to citrus or core-fruit deionising, the machine is configured differently to handle the challenges of this particular material.

**(8) Mango skin and stone waste:** To make pieces or slices of mango, the fruit is often hand-cut by a large labour force, which generates a lot of waste that still contains flesh on the surface. If mechanically recovered, the product can be enzymed, separated, and then treated with a multi-functional resin to improve flavour profile. This extract can be used in mango drinks.

### Conclusion

Sustainability and maintaining global competitiveness are just two of the many challenges facing businesses today, especially juice producers. Fortunately, technologies are available to help close the loop within the production process, reduce waste and increase yields.

So, finally, returning to the proverb; “Waste not, want not”. By using resources carefully today we will be better off tomorrow. Many of the world’s juice producers have

found that investments in innovative and well-engineered systems can reap both economic and environmental benefits. This can help sustain a healthy future.

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## Experts in Beverage Processing



## Leading process technology for the beverage and food industry

# Trends for the food and beverage industry in 2020

| Clean Label | Energy Drinks | Multi-Sensory | Nutri-Score | Plant-Based | Smoothies | Tea Drinks |

*Today's consumers are used to on-demand services in their daily lives more than ever before. They work globally, can be contacted around the clock and have less and less time for healthy food, while expecting food and beverages to fit in with this non-stop lifestyle. Products need to be consumable at any time, taste good, provide added value for both body and soul, offer something special and stand out from the mainstream. Consumers also demand that raw materials are grown sustainably, processing and product packaging are conducted sustainably, and social standards are adhered to. Which trends can be expected for 2020 in light of this development, and how can manufacturers successfully comply with these complex market requirements?*

## Plant-based nutrition is attractive for consumers

Plant-based nutrition provides a balance between the intake of nutrients and calories, while simultaneously having a significantly more positive impact on the planet than animal-based foods. Global meat production will increase by around 240 million tonnes by the year 2050, with global milk production growing by around 463 million tonnes in the same period.<sup>1</sup> Today, around 80 percent of agricultural land is used for livestock farming, with a further 13 billion hectares of forest being cleared each year to gain further land.<sup>2</sup> Livestock farming is responsible for 18 percent of global greenhouse gas emissions – more than the entire mobility sector. It also accounts for around



Fig. 1: Which trends can be expected for 2020?

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37 percent of all methane gas emissions caused by humans, and thus has 23 times the impact on climate change than CO<sub>2</sub> emissions.<sup>3</sup>

72 percent of consumers worldwide identify with the term “plant-based”, while around 29 percent are actively attempting to increase their consumption of plant-based proteins.<sup>4</sup> Current consumer behaviour not only concerns non-dairy products, but is spread across all food categories and impacts further market segments, such as baked goods and chocolate confectionery. Manufacturers are often required to comprehensively reposition their product range in order to actively meet this development head on in their competitive environment.

### Excellent nutritional profile with plant-based nutrition

Over the past few years, it has been observed that ever more people are choosing to purchase plant-based products and checking whether products contain artificial additives or animal-based ingredients before buying. Recently, however, consumers have expanded their focus from solely plant-based foods to healthy plant-based foods that provide minerals, proteins and vitamins.

As a global producer, marketer and provider of technology-driven natural ingredients, ingredient systems and integrated solutions for the food and beverage industry, Doehler combines the latest findings from nutritional science with market and consumer demands in order to optimise the nutritional profile of both food and beverages accordingly. The focus is on healthy added value created through the combination of natural, plant-based and sustainable nutrition.

Doehler offers numerous natural, plant-based products to create diverse, high-quality product ideas and concepts, such as muffins, chocolate or panna cotta based on coconut milk. This enables diverse and delicious alternatives to be produced based on oats, coconut, almonds or rice, all of which provide an excellent nutritional profile at the same time. Doehler uses various plant-based protein sources such as beans, peas and chickpeas to ensure that these products are also an optimum source of protein. In combination with natural flavours, they ensure that the end product has both healthy added value and an excellent taste.

### Multi-Sensory Experiences® for pure indulgence – also as a non-alcoholic option

In the fast-paced world of today, consumers are looking for the unexpected in their food, and an experience which stands out from the day-to-day. Alongside taste, consumers pay attention to the colour, texture and smell of their



*Fig. 2: The energy drink market in particular enables Multi-Sensory Experiences® to be combined with the best possible functional added value.*

foods, are sensitised to Multi-Sensory Experiences® and want to be surprised and impressed by food and beverages. These products should also be healthy and delicious, while supporting the consumer’s sustainable lifestyle.

The energy drink market in particular enables Multi-Sensory Experiences® to be combined with the best possible functional added value, as popular flavours can be refined with unexpected designs and flavours. Combinations of cool and sour, hot and bitter with creamy-sweet, visual effects and intensive new fruit flavours appeal to the trend-conscious millennials and generation Z target groups in particular. Doehler provides a comprehensive range for energy drinks that provide exciting and authentic moments of indulgence, while simultaneously ensuring good taste, Multi-Sensory Experiences® and functional benefits.

Given the growing consumer focus on healthier nutrition, non-alcoholic beverages are also in greater demand – for example wine, beer, cider, cocktails and long drinks. The beverages aim to impress consumers with their authentic, ‘adult’ sensory taste profile and to be comparable to alcoholic beverages. With its comprehensive range of non-alcoholic fermented ingredients and natural extracts, Doehler also offers diverse solutions for the production of innovative and surprising product concepts in myriad different flavours, such as citrus fruits, garden fruits, red fruits, oakwood and juniper.

Consumers are open to trying new things and wish to experience combinations which do not appear to go well together at first glance, before being surprised and impressed by the taste and texture. Combinations that blur the boundaries between supposedly separate indulgence categories are especially good at generating

interest and attention, for example croissants with a cheese filling, or energy drinks with tea. Doehler therefore provides its customers with numerous options to meet the ever more complex demands of consumers and impress them with innovative product ideas.

### Clean label and healthy ingredients for even more naturalness

Consumers are looking to independently support their health in a positive manner through their nutrition. Clean labelling is therefore becoming increasingly important for manufacturers aiming to gain the trust of the consumers and create transparency. These products have a very reduced list of ingredients, which are processed as little as possible, while the natural origin of the products is clearly evident. Consumers are therefore able to make independent decisions on products, ingredients and origins.



Fig. 3: Fruit Infused Tea Drinks represent the next generation of natural refreshment.

To meet consumer demands for transparency, Germany has introduced the Nutri-Score – a voluntary assessment system for food and beverages, which has already been established in countries like France, Belgium and Spain. Doehler is working closely with its customers here and supports them in the development and reformulation of recipes to achieve an improved Nutri-Score value.

Infusions based on a few simple ingredients are important here, as they not only impress through their full taste and low processing, but can also be positioned as clean label products. Fruit Infused Water and Fruit Infused Tea Drinks represent the next generation of natural refreshment and an ideal concept for a healthy lifestyle. The especially fruity beverages are low-calorie and have an authentic taste created using real fruits and no added flavours.

Doehler also provides impressive natural ingredients for smoothies, helping its customers to implement innovative product ideas and use clean label positioning for these drinks. When it comes to selecting the ingredients for the

beverages, there are no limits to the diversity of colours or flavours. As a result, green fruit and vegetable smoothies are just as viable as berry mixes, passion fruit or colourful drinks made from “superfruits”. It is also possible to refine the drinks with fibre or vitamins, thereby ensuring they meet the consumer demand for healthy added value. Doehler works with its customers to develop unique recipes that precisely meet consumers’ tastes, and offers a comprehensive portfolio of natural ingredients to help ideas become reality. For snack drinks and smoothies, Doehler only uses NFC juices whose fruit and vegetable raw materials are pasteurised gently and processed as soon as they are pressed in the region of origin.

### Functional added value with natural powders

The new “Full Spectrum Powders” from Doehler enrich smoothies in a completely natural way. Created using numerous botanical raw materials, such as leaves, blossoms or roots, the powders contain the full range of naturally occurring substances in the raw material, such as minerals, secondary plant materials and vitamins – in their natural amounts and ratios.

Particularly gentle processing results in the creation of near-natural powders with minimal processing and no carrier materials. The claim of the powders is simple and easily understood by consumers, meets the growing demand for clean label products and sustainable production, and will therefore be an important part of corporate cultures in the future.

Ensuring greater solubility compared to traditional Full Spectrum Powders, the Optifine quality of Doehler powders helps them stand out from the crowd. This property enables the powders to be used in applications beyond food and beverage supplements, including highly viscous products such as smoothies, milk drinks and yoghurt drinks.

### Sustainability: from cultivation, to processing, to completion

Experts believe that, by 2025, corporate responsibility will be the yardstick by which the success of a company is measured. This is mirrored in consumer behaviour, as consumers are increasingly deciding whether or not to purchase a product based on ethical, environmental and health criteria.

At the same time, society as a whole is moving towards greater sustainability in day-to-day life. The concept of sustainability covers the entire life cycle of a product, from procurement of raw materials, to packaging designs and materials, up to disposal or reuse. Younger consumers in

particular state that they eat healthy snacks several times a day, all while taking care to ensure that the food is packaged in a sustainable manner. Many producers are breaking new ground to ensure they meet the demands of this sustainability concept, with super-markets now offering many plant-based products in biodegradable packaging. At the same time, consumers want their products to have diverse properties, such as natural taste, healthy functionality and a pleasant texture.

In order to meet all these demands, Doehler provides a pioneering portfolio of sustainably produced raw materials, certified by Fairtrade, Rainforest Alliance and UTZ, among others, as well as being SAI/FSA certified. The company works closely with local farmers when procuring its raw materials, and develops concepts to ensure that these products can be cultivated sustainably and under fair conditions. For Doehler, sustainability does not stop at the sustainable procurement of raw materials, but means ensuring fair conditions for the workers when creating the raw materials and products, working on concepts for better processing methods for the raw materials (e.g. lower water consumption), and keeping the impact on the planet as low as possible.

With its comprehensive portfolio of natural ingredients and product solutions, Doehler is supporting a sustainable future. In line with the company slogan “We bring ideas to life.”, and as a provider of complete ingredient systems and integrated solutions, Doehler therefore develops innovative and sustainable concepts with its customers – from the idea, to implementation, to the supermarket shelf.



*Fig. 4: Doehler provides impressive natural ingredients for smoothies, helping its customers to implement innovative product ideas and use clean label positioning for these drinks.*

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# Large scale apple growing in northern Sweden

## 12.000 apple trees the start of new sustainable agriculture

| Cider | Climate Resilient Agriculture | EIP-agri | Sustainable Agriculture |

Brännland Cider to establish 10 hectares of commercially viable and productive apple orchards in collaboration with farmers, regional governments as well as national and international stakeholders from academia and business.

Bringing together these stakeholders within the agricultural sector has been ongoing since 2017 in parallel with Västerbotten-based ice cider producer Brännland Cider establishing its ciders in national and international markets. Preceded by trial orchards in the vicinity of the city of Umeå on the Baltic seaboard the company is now scaling up its ambitions.

In December 2019 the Swedish Board of Agriculture granted funding to the project “Commercial productive apple growing in a northern climate – innovation for new climate resilient agriculture in northern Europe” within the framework of EIP-agri, the European innovation partnership for productivity and sustainability within agriculture.

This is a major step in creating an entirely new and unique terroir for ice cider in northern Sweden but of course also opens up a large scope of opportunities for farmers in the north to diversify with positive implications for agriculture, regional food production, tourism and the larger sustainability issues our society as a whole faces. The project aligns to the ambitions highlighted in the EU Green Deal and 2030 UN Sustainability Development Goals, says Andreas Sundgren Graniti, founder of Brännland Cider.

The project is set to run between 2020 and 2023 and will combine traditional cultivation models with more conventional methods, trial a wide base of apple varieties to create an opportunity for northern farmers to diversify, optimize land use, decrease transports and water usage in the region and create a new branch of climate resilient sustainable agriculture. The long term aim also includes stream-lined product development partnerships from the individual farmer to local, regional and global markets.



Andreas Sundgren Graniti

© Johan Gunséus

This project will expand on and put into practice, on a commercial scale, the positive experiences Brännland Cider has made so far in our trial orchards in Burträsk 100 km north of Umeå and at Röbbäcksdalen just outside Umeå. It's not just about growing apples where none have been grown before for the purpose of creating a product of singular quality; we want to see our region blossoming and this is a huge step towards achieving that goal, continues Sundgren Graniti.

A strong team has formed around the mission. The project will be led by Daniel Pacurar from Boreal Orchards who up until now has been instrumental in contributing practical experience and academic knowledge to the trial orchards that have formed the basis for the project. Daniel is a horticultural engineer with a PhD in Agronomy and long experience in R&D and in leading large and ambitious projects within biotech, horticulture and forestry.

We are honored to partner with Brännland Cider in the pioneering work of establishing apple growing in Northern Sweden. It will be an exciting journey. We are going to learn new ways of growing apple trees, creating new terroir expressions for ice cider and generate knowledge that will benefit future generation of apple growers in the north and elsewhere. We are laying the path as we walk it. I am confident that the team's compounded experience and expertise will secure the successful completion of this project. Brännland Cider is arguably making the best ice cider on the planet. Together we are now laying the foundation of what is going to be an evolution of that fantastic achievement, says Daniel Pacurar, Boreal Orchards.

#### About EIP-agri

The European Innovation Partnership for Agricultural Productivity and Sustainability, EIP-agri, is a new policy instrument for more stakeholder and demand-driven research & innovation in agriculture.

#### About Brännland Cider

Brännland Cider produces ice cider, a sweet dessert wine cider, concentrated and elevated using the natural cold temperatures of the landscape using 100 % Swedish apples. The company is situated in the northern Swedish county of Västerbotten, not far from the arctic circle.

#### Brännland Cider

[www.brannlandcider.se](http://www.brannlandcider.se)



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# Apple and pear quality up in South Australia despite bushfires

| Adelaide Hills | Apple & Pear Harvest | Ceravolo Orchards | Grower |

Apple and pear harvest is in full swing in South Australia with growers reporting some of the highest quality crops in at least three years despite recent bushfires. Pear harvest began in early February with apple picking beginning in earnest on about February 20.

The Adelaide Hills produces about 80 per cent of the state's 30,000-tonne annual apple crop and 93 per cent of its 5000-tonne pear crop annually.

Although apple volumes look to be down by up to 10 per cent this year, growers say the absence of widespread hailstorms that severely damaged the 2018 and 2019 had resulted in a high-quality crop. The size of the pear crop is about average.

The December 20 Cudlee Creek fire, fire burnt through 25,000 hectares of Adelaide Hills land including five apple orchards totalling 25ha in the Lenswood, Woodside, Cudlee Creek and Lobethal areas.

There are almost 1000ha of apple and pear plantings in the Adelaide Hills. Apple & Pear Growers Association of SA CEO Susie Green said the fires were just one of a number of factors for the reduced crop this season.

"We actually had a really cold spring around flowering time and for some varieties that meant that the fruit didn't set perhaps as well as we would have liked," she said.

"Then the long hot, dry weather meant that some of the fruit hasn't grown as big as it could have and obviously the bushfires have had some impact as well so it's a combination of lots of little things."

The national apple crop is forecast to be down across Australia this year due to a number of factors including

drought in Queensland, hail in Victoria and the bushfires in SA and NSW.

Hailstorms in South Australia ahead of the 2018 and 2019 harvests severely impacted quality, reducing prices for affected growers and forcing many sell their apples for juice.

Green said the good quality of fruit this year would attract much better prices and lead to increased revenues for most growers despite the slightly lower volumes.



© Alex Rudzinski

"Generally the national apple crop is likely to be down so prices might be up a little bit this year and that leads to better returns for the growers, which makes a huge difference," she said.

"Certainly it's pretty important to get the message out that there is going to be some really

great fruit coming out of the Adelaide Hills this year and it's a great opportunity to support the local industry after a couple of tough years."

The pear harvest in South Australia is likely to finish by mid-March. Apple picking will continue through April and into May, fuelled by late maturing varieties such as Pink Lady and Sundowner.

Ceravolo Orchards has about 300ha of apple, pear and cherry trees in the Adelaide Hills. It also has an associated juice brand Ashton Valley Fresh, which sells a range of fresh juices and supplies juice to a range of craft cider producers. The juice business has grown significantly in recent years to reach production of 4.8 million litres in 2019.

The family's two largest apple orchards are near the Adelaide Hills towns of Woodside and Nairne and Joyce





Joyce Ceravolo says her family's Adelaide Hills orchards were lucky to escape the Adelaide Hills bushfire undamaged. © James Knowler

Ceravolo said it was sheer luck that no trees were lost in the fire.

She said while she was pleased the quality of this year's crop, the reduced volume and absence of hail-damaged juicing fruit meant they would potentially need to buy in fruit for juice from interstate.

"Because we're a primary producer and a juicer we see both sides of it," Ceravolo said.

"As a grower you don't really want your fruit going to juice but at the same time we're happy when we do have extra juicing fruit available because it does make things easier.

"We take all the juicing fruit available to us in the Adelaide Hills and once we've exhausted that supply we look else-

where, which we haven't had to do in the past couple of years but I think that will be back on the cards this year."

There has been much talk about the potential impact of smoke taint on grapes bound for Adelaide Hills wine production following the December fire.

Ceravolo said this only presented a potential problem for apple and pear juice earmarked for cider as the smoky characteristics only showed through the fermentation process.

However, she said any juicing fruit thought to be at risk of smoke taint would not be used to fill cider orders.

Green said she although it had been a tough summer for those growers directly impacted by the fires, they had not had a huge impact from a broader industry perspective.

"Visually the fruit looks good and from what I've eaten so far it's tasting pretty good too," she said.

"I've even eaten apples from a tree this week that was half burnt and they were tasting fine.

"The cider is a little bit of an unknown quantity at the moment so it might be a case of wait and see."

### Andrew Spence

The Lead South Australia

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# Beardow Adams Green Team spearheading new environmental initiatives

| Adhesive Technology | Bio-Based | Eco-Friendly | Hot-Melt | PET Bottles |

Beardow Adams, a leading global specialist in hot-melt adhesive technology, has further strengthened its environmental credentials by not only pushing the boundaries when it comes to inventing new eco-friendly products and services but also looking inwardly at their own processes.

The latest inventions by the market-leading manufacturer include an adhesive that washes off PET bottles entirely in an alkaline solution, allowing them to be re-used 10 to 15 times over, and an adhesive used for pallet stabilisation; the adhesive replaces expensive layer pads and reduces the need for an excessive amount of plastic pallet wrap.

Beardow Adams' Green Team acts as a working party within the organisation. It was created to help drive environmental awareness across the business and builds upon their existing accreditation to the ISO 14001 environmental management system.

With the industry continuing to look for eco-friendly adhesive products, Beardow Adams is keen to place itself at the forefront of 'green' protagonists, hence the requirement of the Green Team.

The company's Chief Operating Officer, Lesley Sheldon, who leads the Green Team stated that, "sustainability, in terms of both materials and processes, is a key part of our agenda; we're taking a 360° approach to this issue."

A significant part of the product range at Beardow Adams is already based on the use of bio-based materials. This fact is good news for customers, who are increasingly requesting bio-based hot-melt adhesives to help support them with environmental certification for their own products.

As an example of a Green Team initiative in this area, it was decided to definitively assess the percentage of bio-based materials used at the company's Milton Keynes manufacturing plant.

"Just over 30 % of our raw materials are from renewable sources, which is actually quite high – and quite impressive – giving us an excellent platform to build upon," says Beata Abram Eugenio, Head Development Chemist. "We would like all of our customers to be aware of this and to know that we are already focused on getting to the next

level, and how we might achieve 40 % or 50 % overall. In fact, we have already formulated a number of products that individually hit these percentages. It's about continuous improvement, which, as a company we are committed to."

Within the R&D department at Beardow Adams there is an emphasis on using bio-based materials whenever a new product is up for development. Here, detailed dialogue takes place with the supply chain regarding the latest polymers and resins, and whether they are sustainable. In addition, the team is currently evaluating several existing products to see if there is any potential for reformulation involving



Fig. 1: The latest inventions by Beardow Adams include an adhesive that washes off PET bottles entirely in an alkaline solution. © all Beardow Adams



Fig. 2: A significant part of the product range is already based on the use of bio-based materials.

more bio-based raw materials, without impacting performance or quality.

Beyond product-based initiatives, the Green Team has been tasked with scrutinising internal manufacturing processes across multiple production sites, exploring opportunities to reduce waste, cut emissions and minimise the company's impact upon the environment. Indeed, Beardow Adams has already invested heavily in equipment that enables it to manufacture adhesive products in an environmentally friendly way.

“The manufacturing process at Beardow Adams is under constant review,” says Lesley Sheldon. “Water use is closely monitored for example, as are waste levels, which incidentally are very low. As a process, the blending of materials to make hot-melt adhesives produces almost zero waste. Virtually 100 % of the materials used by the process emerge as 100 % useable product.”

The hot-melt adhesives produced by Beardow Adams offer an inherent environmental advantage over solvent-based counterparts. Hot-melt adhesive is 100 % solid as a

material, so there is no waste or extraction processes that occur as part of the user's manufacturing process. In short, supplying one ton of hot-melt adhesive means the customer can use one ton of functional product.

Packaging is another area of focus for the Green Team. Increasing numbers of customers will only accept deliveries of adhesives in paper sacks, rather than plastic ones. Beardow Adams has responded to this trend by making the necessary paper packaging available as part of a structured plastic reduction scheme.

“Our policy at Beardow Adams is to operate the entire business with integrity and recognise that protecting the environment is a key responsibility,” concludes Lesley Sheldon. “The company is committed to minimising the environmental impact of its activities, and to developing new products which do not harm the planet. In fact, we are currently in the process of establishing a core range of bio-based products for the company's focus markets, the details of which will be made available shortly.”



Fig. 3: Within the R&D department there is an emphasis on using bio-based materials whenever a new product is up for development.

**Beardow Adams**

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# 100 % orange juice is just as good as sports drinks and water

| Hydration | Orange Juice | Recovery | Sports Drinks | Study | Water |

*A new study<sup>1</sup> published in the Journal of Nutrition and Health Sciences reports that drinking 100 % orange juice following exercise contributes to hydration equally as well as water and sports drinks, positioning the beverage as a viable alternative for post-exercise recovery. The study, conducted by researchers at the University of Kansas and funded by the Florida Department of Citrus, found no differences between 100 % orange juice, sports drinks, or water with respect to taste preference, thirst level, hydration, or gastrointestinal distress following exercise.*



*Drinking 100 % orange juice following exercise contributes to hydration equally as well as water and sports drinks. © Lifestyle Stock*

Researchers conducted a five-day exercise study with 26 healthy young adults who were moderately trained for endurance exercise. Each day they cycled on a stationary bike for 80 minutes and then consumed approximately eight fluid ounces of commercially available 100 % orange juice, orange-flavored water, or an orange-flavored sports drink. Participants rated the taste of the beverages, thirst levels,

and measures of gastrointestinal distress such as reflux or intestinal cramps immediately after the exercise, after drinking the beverages, and after one hour of rest. The researchers measured participants' hydration status immediately after exercise and after a one-hour rest period.

These findings suggest that 100 % orange juice is a viable post-exercise rehydration strategy, with the beverage receiving positive palatability ratings from study participants when used as a post-exercise rehydration beverage. Additionally, 100 % orange juice was able to satisfy thirst while helping to achieve or maintain hydration following exercise without causing gastrointestinal distress.

“The study showed that people consuming 100 % orange juice were hydrated as well as the participants consuming a sports drink or water. There were no symptoms of serious GI distress with the orange juice despite the carbohydrate content and acidity of the beverage. The results indicate that people can drink orange juice to aid in their rehydration and recovery after exercise,” said Dr. Dawn Emerson, Assistant Professor at the University of Kansas and principal investigator on this study.

An eight-ounce serving of 100 % orange juice provides carbohydrates and is a good source of potassium, an electrolyte, that may provide rehydration and recovery benefits post-exercise. The naturally occurring sugar in 100 % orange juice keeps good company with these and other vitamins, minerals and the antioxidant properties that are all part of the nutrition package 100 % orange juice delivers.

According to the U.S. 2015-2020 Dietary Guidelines for Americans, one cup of 100 % orange juice counts as a fruit serving<sup>2</sup> meaning the naturally sweet taste of 100 % orange juice can contribute to an overall healthy diet. Just one-in-ten Americans meet their daily fruit intake as recommended by the Dietary Guidelines, missing out on important nutrients.<sup>3</sup> A glass of 100 % orange juice can help close that gap in a convenient, quick way, while also serving as a viable option for post-exercise rehydration.

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**PepsiCo to acquire Rockstar, expanding presence in fast-growing energy category**

PepsiCo, Inc. announced that it has entered into an agreement to acquire Rockstar Energy Beverages (“Rockstar”), the popular energy drink maker, for \$3.85 billion.



Ramon Laguarta  
© PepsiCo

“As we work to be more consumer-centric and capitalize on rising demand in the functional beverage space, this highly strategic acquisition will enable us to leverage PepsiCo’s capabilities to both accelerate Rockstar’s performance and unlock our ability to expand in the category with existing brands such as Mountain Dew,” said PepsiCo

Chairman and CEO, Ramon Laguarta. “Over time, we expect to capture our fair share of this fast-growing, highly profitable category and create meaningful new partnerships in the energy space.”

Rockstar, founded in 2001, produces beverages that are designed for those who lead active lifestyles from athletes to rock stars. Rockstar products are available in over

30 flavors at convenience and grocery outlets in over 30 countries. PepsiCo has had a distribution agreement with Rockstar in North America since 2009. In addition to Rockstar, PepsiCo’s energy portfolio includes Mountain Dew’s Kickstart, GameFuel, and AMP.

“We have had a strong partnership with PepsiCo for the last decade, and I’m happy to take that to the next level and join forces as one company,” said Russ Weiner, Rockstar’s founder and creator of the world’s first 16oz energy drink. “PepsiCo shares our competitive spirit and will invest in growing our brand even further. I’m proud of what we built and how we’ve changed the game in the energy space.”

PepsiCo has also entered into an agreement, which will provide approximately \$0.7 billion of payments related to future tax benefits associated with the transaction, payable over up to 15 years. PepsiCo does not expect the transaction to be material to its revenue or earnings per share in 2020. The transaction is subject to customary closing conditions, including regulatory approval, and is expected to close in the first half of 2020.

**With a larger orange harvest in Brazil, juice inventories should be higher in June 2020**

As orange production is higher this season (2019/20), orange juice inventories should increase again until the end of the crop. According to a report from CitrusBR (Brazilian Association of Citrus Exporters) released on February 18, ending stocks of Frozen Concentrate Orange Juice (FCOJ) Equivalent should total 412.83 thousand tons at the processing plants from São Paulo by June 30, 2020. This is the highest volume registered in five seasons (since 2014/15), considering CitrusBR’s historical series.



Oranges  
© CEPEA

If this volume is confirmed, it would account for a 63 % increase compared to that in the 2018/19 season (253.18 thousand tons). This scenario was already expected, since orange production in the citrus belt (São Paulo and the Triângulo Mineiro) increased 34.6 % between the last season and the current one, according to Fundecitrus (Citrus Defense Fund).

Of the total volume produced, still according to CitrusBR, 59.7 million boxes (40.8-kilo box) will be allocated to the in natura market and 325.17 million, to processing. The average crop yield is estimated at 270.1 boxes for a ton of

FCOJ Equivalent, and the total juice production is forecast at 1.2 million tons.

In August/19, Cepea calculations had pointed to the possibility of inventories to increase at processors to levels similar to that estimated by CitrusBR, at 400 thousand tons.

REFLEXES IN 2020/21 – Although estimates point to a recovery in the volume stocked (the last four seasons closed with lower volumes), the effects on juice inventories in 2020/21 will depend on the amount to be produced in the coming season. However, since citrus growers expect next crop to be at least 30 % smaller than the 2019/20, inventories should decrease to lower levels in June/21.

If production decreases, the prices paid to growers by the industry may rise, since demand should remain firm in this segment, despite the high inventories. In the in natura market, quotes may be favored by low supply, since processors should try to purchase the largest possible amount of fruits, to prevent inventories from decreasing to critical levels in June/2021.

## Witt celebrates anniversary

### 75 years of gas safety and performance optimization

A world market leader from Germany is celebrating its birthday – for 75 years now, the Witten-based company Witt-Gasetechnik has been setting the standard for safety and efficiency in the use of industrial gases. Gas mixers and analysers, pressure regulators and valves – Witt products can be found in industrial applications all over the world. And just in time for the company anniversary, the manufacturer is working on the next milestone in the company's history under the banner "Witt 4.0".

Did you know? Flashback arrestors for welding applications, used worldwide ever since, were first introduced to the market in 1945 by the German manufacturer Witt. Company founder Paul Witt revolutionised the handling of flammable gases with this small but immensely important component. These safety devices remain a globally demanded part of the Witt product portfolio. The manufacturer also offers a comprehensive range of valves for industrial gas applications, such as safety relief valves, gas non-return valves and pressure regulators.

However, the company has long since developed into other niches in the field of gas technology, and with its 200+ employees continues to set new standards. The range of gas mixers is unrivalled internationally and the gas analysers and leak testers also enjoy an excellent reputation.

But even after three quarters of a century, Witt is still young and modern. Its R & D team is constantly improving and expanding the product range, thus responding to changing requirements, and developing game-changing innovations.

### Witt 4.0 – smart gas technology

A current example is the shift to digital solutions for networked manufacturing in Industry 4.0 – a change that does not stop at gas technology. Witt is one of the pioneers: Dr. Richard Benning has been driving development forward for years. "Witt 4.0" is what the managing partner, who is the third generation to head the family business, calls this project, thus giving a name to the next revolution from Witt.

The technological breakthrough was achieved two years ago. Witt presented the first prototypes of "smart" fittings: safety devices that can record and transmit important parameters such as pressures and temperatures via sensors. Witt's engineers managed the feat of integrating the electronics directly into the fittings. Fully integrated valves offer real commercial added value: real-time data

from a single device, little space required, quick installation, easy maintenance. In other words, performance and cost advantages compared to piecemeal solutions.

Smart dome pressure regulators that can measure gas pressure and temperature, calculate flow rates and transmit them to a network are now an integral part of the product catalogue. Soon further "smart" fittings will be added. But that is not all.

### Data anywhere and anytime

Witt has also long since equipped gas analysers and gas mixers with electronic control systems specially developed for this purpose. All relevant data is recorded, evaluated and output. In this way, these systems, parallel to the smart fittings, are seamlessly networked in the production process and can be controlled "intelligently".

All components are interconnected via the local network, and can also be read and controlled over the internet. The data converge in real time at the control station controller. Via PC or tablet, the right people have all information available at all times. If something goes wrong or needs to be reset, they can intervene immediately: The networked gas technology thus also stands for more precise process control and minimum rejects, i.e. for maximum efficiency.

### Global company with local presence

Witt 4.0 is another important building block for the company to maintain and expand its leading market position. The manufacturer has always worked meticulously on its portfolio and is consistently expanding it. The Witten-based company has long been regarded as a "one-stop shop" for everything relevant to the safe handling of gases.

The products are manufactured in a state-of-the-art production facility in Witten. Quality management is comprehensive, all relevant standards are met and are validated by external accreditations.

Also to know, Witt generates well over half of its sales outside Germany. Through subsidiaries and sales partners, the company is represented on all continents and offers its customers local advice and service.



Headquarter

© Witt

## Tetra Pak launched first virtual marketplace for food and beverage manufacturers



First virtual marketplace for beverage manufacturers.

© Tetra Pak

Tetra Pak unveiled the food and beverage (F&B) industry's first full-scale virtual marketplace. The new platform, created using Mirakl SaaS Marketplace solutions, will bring convenience and ease to the industry by making

purchasing of products faster, more convenient and simpler for producers.

The collaboration is the first time Mirakl will work within the F&B sector, providing a service that will change how buyers and sellers operate. The marketplace will initially host more than 300,000 spare parts and consumables from Tetra Pak, adding an additional 200,000 products for maintenance, repair and operations from vetted sellers, providing customers with access to a large variety of products.

The launch dramatically expands what Tetra Pak offers to its customers. The marketplace, available 24/7, will host several vendors selling products within Safety & Security, Industrial Supplies, Cleaning Solutions and other vital areas for F&B production. The number and variety of products will continue to grow as more vendors join the marketplace.

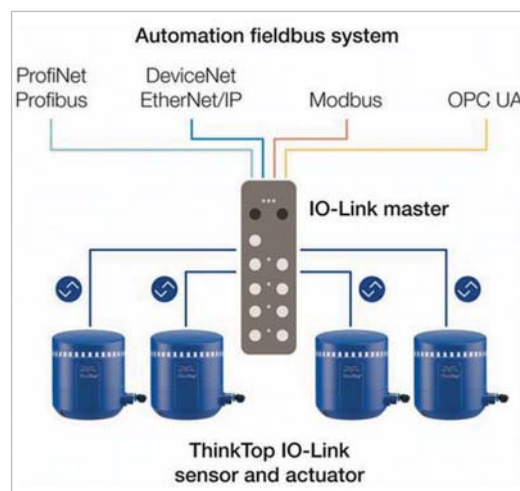
## The next-generation ThinkTop V50 and V70 hygienic valve control units now speak the IO-Link language

Let the new Alfa Laval ThinkTop® IO-Link enhance communication between your hygienic valves and Industry 4.0 automation systems. The point-to-point IO-Link communication protocol connects sensors and actuators—regardless of fieldbus—to your automation systems. This enables real-time data exchange, improving diagnostics and simplifying configurability and control. ThinkTop IO-Link is perfect for use in the dairy, food, beverage, pharmaceutical and home-personal care industries.

“Suddenly it’s easier to capture, store, analyze and act upon meaningful data,” says René Stietz, Global Portfolio Manager for Automation at Alfa Laval. “You get all the finesse of the newly reengineered Alfa Laval ThinkTop—plus valuable benefits like more data, higher productivity and higher yields.”

### Why the ThinkTop IO-Link?

Benefit from shorter installation time due to convenient M12 connectors and automatic recording of the hygienic



The point-to-point IO-Link communication protocol connects sensors and actuators, regardless of fieldbus, to your automation systems.

© Alfa Laval

valve stroke duration. Smarter time adjustments are enabled by the ability to assign priority to critical data. Flexibility is enhanced as a result of the capability to change data and process parameters from a remote automation system. Experience better daily operations due to enhanced data storage, availability and analytics.

### Other notable features:

- Clearly visible LEDs with customizable colours and flashing-light ‘wink’ function eases valve identification on the automation system to the factory floor
- Optimized valve cleaning using a remote programmable logic controller to switch between standard time-based seat lift cleaning and burst seat cleaning
- A pressure shock counter for nearly instant detection of valve movements

Exploit the power of Industry 4.0 and demand more from your valves by putting the Alfa Laval ThinkTop IO-Link to work for your process lines.



## Hygienic Enclosures for vacuum pumps ensure highest hygiene standards

For consumers and the government, a maximum of safety and quality in the production of food is essential. In order to ensure the highest standards of hygiene, food producers and processors are obliged to clean their machinery regularly via washdowns. To guarantee that vacuum pumps are effectively protected from the used aggressive cleaning media, Leybold has developed a series of Hygienic Enclosures. The vacuum specialist offers users these stainless steel housings in seven different sizes, tailor made for each vacuum pump.



*Hygienic Enclosures for vacuum pumps*

© Leybold

### Risk of contamination eliminated

In the food industry, vacuum pumps are often placed directly next to the processing and packaging lines and thus not implemented in the equipment. On the one hand, this leads to a higher vacuum performance because, losses in pumping speed over longer pipelines are avoided. A direct positive consequence of this, are shorter process cycles and a better product quality. On the other hand, unprotected pumps are directly exposed to aggressive cleaning media during the rinsing processes. Over time, this leads to corroded vacuum pumps, shorter life cycles, higher costs and ultimately even to food contamination.

### Effectively protected in stainless steel enclosures

In order to counteract these risks, Leybold has developed a new protection concept with the Hygienic Enclosures. Encased by these stainless steel enclosures, the vacuum pumps can be positioned near machines and systems without any problems. „On the basis of the protected Leybold vacuum pumps we can create better and more robust solutions for the demanding food applications“, emphasizes the responsible product manager Niels Gorrebeek. „Of course, this applies all the more to applications such as stuffers, tumblers and of course packaging machines, where the machines and systems are cleaned and disinfected particularly frequently and intensively,“ the product manager explains.

### Tailor made & easy to install

Gorrebeek explains that these stainless steel enclosures are tailor made for each vacuum pump. As a result each enclosed pump can run constantly on every working pressure. The only limitation is the maximal ambient temperature for the enclosure. Nevertheless, the normal working temperature in F&P environments are around 10 °C, we qualified most enclosures up to 25 °C. Further all the enclosures are offered as a Do It Yourself kit and can be as well installed as commissioned by the user themselves without great effort. „These properties make of the Hygienic Enclosures a cost-effective, sustainable solution. In the end, Hygienic Enclosures makes investments in expensive piping obsolete and at the same moment they offer a better pumping speed performance“, argues Niels Gorrebeek.

### Sustainable solution

Incidentally, this also applies not least with regard to future packaging concepts. Gorrebeek believes that the industry is also well equipped for this with the new enclosures: „Regardless of which solutions will prevail, food applications can be operated from today more hygienically, ergonomically as well as flexibly. Leybold can successfully accompany these processes into the future with our holistic solution approaches.“

Please provide your **press releases** or **news alerts** to [editorial@fruit-processing.com](mailto:editorial@fruit-processing.com).

## Ball achieves global first with aluminium sustainability certification

Ball Corporation announced that it has earned the Aluminium Stewardship Initiative (ASI) certification for all 23 of its Europe, Middle East and Africa (EMEA) beverage can plants. This accomplishment is a major sustainability milestone for the company and Ball is the first beverage can manufacturer to meet ASI's environmental, social and governance principles.

The certification accompanies a commitment to significant carbon reductions by Ball, which is now covering all of its operations in the European Union, Serbia and the UK with renewable energy. Ball previously announced agreements for 100 % renewable energy covering all of its North America operations by 2021.

ASI is a multi-stakeholder initiative that provides assurance of responsible production, sourcing and stewardship of aluminium throughout its value chain. As consumers demand greater sustainability across packaged goods, the Aluminium Stewardship Initiative's scheme aims to do for aluminium what the Forestry Stewardship Council



© Ball

(FSC) did for paper and wood, making sustainability performance a mainstream, visible issue.

Ball has achieved both ASI's Performance, and Chain of Custody (CoC) Standard certifications.

**The ASI Performance Standard** is a measure of how much effort Ball is making across its plants to assess, manage and disclose its environmental, social and governance impacts. These include issues such as life-cycle thinking, recycling, greenhouse gas emissions, water and waste management, biodiversity, business

integrity and the human rights of both workers and local communities.

**The ASI CoC Standard** sets out requirements for the creation of a Chain of Custody for material that is produced and processed through the value chain. In Ball's case, it links verified practices – certified under the ASI Performance Standard – from mining and remelting to casting, rolling, can manufacturing and filling.

## Turkey to drive cold canned coffee segment in 2020 and beyond

### Crown well-positioned to help local, regional and international brands capitalize on this growing market

For centuries, Turkish culture has had a powerful connection with coffee. Hot, strong coffee was and still is offered as the first drink when entertaining, including at engagement ceremonies and weddings, where all conversations begin with a Turkish coffee tasting. Cold coffee began gaining ground with younger consumers in the country in the mid-2000s with the arrival of international retail chains. These retailers experienced fast growth, encouraging Turkish brands to expand their own portfolios to capitalize on the trend. Today, it is estimated that the local coffee market is being driven by over 61 chain companies.

These developments had a significant impact on coffee packaging in the region. The younger population spends most of its time away from home, whether at work or in social gatherings, and cold coffee is seen as the healthiest way to achieve an energy boost throughout the day while on-the-go. The beverage can has become the most popular package for this type of drink in Turkey because of its portability, its "cold" feeling to the touch and its recyclability.

Over the last three years, Turkish co-packers have invested more than US\$20 million in cold coffee filling infrastructure. Crown Turkey became the first local producer to adapt its cans to the cold coffee market, supported by its research and development capabilities and engineering expertise. When filling a new product in cans, Crown conducts a series of thorough tests to ensure the package will be shelf stable and compatible with any product inside. The cans are exposed to temperatures above 100 °C during a retort process, effectively sterilizing the coffee within, supporting food safety and ensuring a stable product shelf life. Trials are completed on Crown's own lines before receiving final validation at the beverage manufacturer's facility.

Cold coffee products command a premium price on retail shelves, making it an attractive growth market for local, regional and international brands. In fact, the Turkish cold coffee market is expected to register a peak growth in 2020, driven by higher disposable incomes of local consumers along with demand for the product in neighbouring Middle Eastern countries.

**Happy gut, happy life**

**SternLife launches three powdered dietary fibre supplements for food and beverage enrichment**

SternLife has developed three new fibre-rich prebiotic powder supplements which are ideal for product concepts targeting the gut health trend. The “Heart”, “Slimming” and “Fibre Plus” variants deliver the most important ingredients for a healthy gut by combining soluble and insoluble dietary fibres. They can be used to fortify foods as well as beverages. “Heart” and “Slimming” contain special prebiotic dietary fibres for which health claims can be made, while “Fibre Plus” is a pre- and probiotic, as it not only includes prebiotic dietary fibres but also probiotic bacterial strains.

More and more consumers know that dietary fibre plays a key role in gut health and well-being. The immune system, in particular, benefits from a healthy intestine. However, few people are able to eat enough fibre-rich food every day to keep their gut in good condition. Food and beverage manufacturers can bridge this nutritional gap with high-quality, functional products that are fortified with dietary fibres.

**All the best for a healthy heart**

A portion of SternLife’s “Heart” prebiotic supplement supplies 34 percent of the recommended daily fibre intake. Prebiotics are indigestible food components that nourish the gut flora and help to shift the balance towards the “good” intestinal bacteria. As the supplement contains beta-glucans, thiamine and mango powder too, it enables manufacturers to target the heart health market. Beta-glucans support normal cholesterol levels, while thiamine contributes to normal heart function. In addition, the patented mango fruit powder can have a positive impact on blood circulation in the capillaries.

**A healthy weight to feel good**

With its appealing mango-orange flavour, the ready to use “Slimming” powder just needs to be mixed with water and enjoyed before a meal. “Slimming” includes glucomannan, which triggers a feeling of satiety before meals and contributes to weight reduction as part of a low-calorie diet. Extracts of green tea and green coffee both give an extra boost to the metabolism. The supplement also has a

prebiotic effect, and one portion supplies approximately 29 percent of the recommended daily fibre intake.<sup>1</sup>

**For added wellbeing**

In addition, SternLife has developed “Fibre Plus”, a high-fibre pre- and probiotic. Its neutral taste means that “Fibre



*More and more consumers know that dietary fibre plays a key role in gut health and wellbeing.*

© SternLife

Plus” can be added to various foods, such as cereals and yogurt, as well as beverages. It contains probiotic *Lactobacillus acidophilus* bacteria, which promote healthy gut flora, and its prebiotic dietary fibres supply 26 percent of the recommended daily intake.<sup>1</sup> A patented plant extract from *Perilla frutescens* (Shiso) additionally ensures that the dietary fibres are well-tolerated and thus contribute to good digestion and overall wellbeing.

Astrid Pomrehn, Product Developer at SternLife, explains: “Since public awareness of the gut and its importance for health, the immune system and general wellbeing has grown, pro- and prebiotic foods are quite literally on everybody’s lips. A growing number of consumers want to maintain a healthy intestinal flora and supply it with the right nutrients. Our new high-quality, powdered fibre supplements offer lots of possibilities for interesting applications and product positionings.”

<sup>1</sup> D-A-CH standard value: 30 g dietary fibre per day

## iCACTUS! The Desert Hydrator™

**iCACTUS! Organic Cactus Water: Nature's way to hydrate under hottest conditions**



© iCACTUS!

iCACTUS! Organic Cactus Water, a new line of plant based functional waters powered by Nopal cactus leaf juice, provides consumers seeking healthy hydration, refreshment and recovery with nature's way to hydrate under the hottest conditions. The iCACTUS! formulation contains a cactus hydrocolloid that boosts hydration, absorption and retention. iCACTUS! is an excellent source of Vitamin C and contains additional antioxidants, electrolytes and amino acids including taurine. Low calorie and with only 5 g sugar (agave), iCACTUS! is available in delicious organic Papaya, Lime and Watermelon flavors, in recyclable 12 oz/355 ml aluminum sleek cans.

"I created iCACTUS! to bring the hydration secret of the desert to consumers everywhere," said iCACTUS! founder Sarita Lopez. "While it makes intuitive sense that water from a hot, dry region would provide especially effective hydration, the science backs it up. Inside every Nopal

cactus paddle is a unique hydrocolloid that absorbs and retains moisture – so the cactus can survive the desert heat. iCACTUS! contains the same hydrocolloid. That's why it's so well absorbed and retained in the body, and why it hydrates so well."

While "plant based waters" are relatively new, iCACTUS! is rooted in traditional wisdom. "For generations, Latin American folk healers recommended cactus leaf juice for colds, coughs, skin conditions and stomach ailments," said Lopez. "Today's research shows cactus leaf juice may promote muscle recovery, combat oxidative stress linked to inflammation, and may even help reduce the effect of hangovers."

The iCACTUS! brand reflects Lopez's personal experience and her focus on sustainability. Cactus leaf juice cleared up her eczema when nothing else worked. As a result Lopez decided to create an organic cactus water made with cactus leaf juice. The cacti used to make iCACTUS! are grown via natural rainfall, using no irrigated water. Select paddles (leaves) are harvested, not the entire plant. (The paddles quickly regenerate). The whole paddle is used, for maximum nutrition and minimum waste. And iCACTUS! aluminum sleek cans are both recycled and recyclable to a far greater degree than aseptic or cardboard containers.

## New Fever-Tree range

Fever-Tree launched Soda Collection, a brand-new range of delicious flavoured sodas, expertly crafted from the finest naturally sourced ingredients.

Each soda is low in calories and uses no artificial colours, sweeteners or preservatives, making them perfect for creating delicious yet simple spritz drinks.



© Fever Tree

verbena oil to create White Grape & Apricot Soda.

### Italian Blood Orange

Juicy blood oranges from Sicily meet an iconic herbal blend to create Italian Blood Orange Soda. This complex and sophisticated mixer pairs perfectly with Italian liqueurs, bitters and premium vodka.

### Raspberry & Rose

Raspberry and Rose Soda is made with delicately perfumed Damask rose petals combined with the juicy sweetness of late-harvest raspberries to create a unique and delicious soda that's perfect for mixing with pink gin or premium vodka for a refreshing summer spritz.

### White Grape & Apricot

Wonderfully tart white grapes and sweet apricots from Italy are balanced with the subtle floral notes of French

### Mexican Lime

Mexican Lime Soda is made with Tahiti lime from Mexico's fertile groves in addition to pressed oil extract from the wonderfully floral Japanese yuzu to create a low-calorie soda that's perfect for mixing with premium vodka or tequila for a mouth-wateringly zesty summer spritz.

The range will be available throughout the UK across pubs, bars, restaurants and hotels from March 2020 before launching in retail in the run-up to Easter 2020.

## Fruit pomace market to reach US\$ 4,155.6 Mn, exhibiting a steady rise between 2018 and 2027, finds Future Market Insights study

The global fruit pomace market is expected to show a steady 4 % CAGR between 2019 and 2027. The market's valuation in 2019 was US\$ 3,028.7 Mn, finds recent study. The increasing focus on weight management, stoking dietary supplements sale is expected to bolster growth in the market. According to the report, the fruit pomace market is expected to reach US\$ 4,155.6 Mn by the end of 2027. The report offers in-depth insights into the market, covering prevalent trends, hidden opportunities, and potential threats. It is intended to help stakeholders get an executive-level blueprint of the market.

### Key takeaways

- Eastern Europe emerged dominant in 2019. Through the course of the forecast period, it is expected to remain an attractive market for fruit pomace.
- In terms of form, liquid/ paste segment held the leading share in the market in 2019. It is expected to grow at a steady pace over the report's assessment period.
- Among key segments based on application, the market is expected to witness increasing use in the dairy products segment. In addition to this, the demand from dairy supplements, food processing, beverage processing, and other segments will rise steadily in the coming years.
- The rising health awareness among consumers has emerged as a chief market driver.
- Food pomace is a cost-effective ingredient that can be used in foods and beverages to up their nutrient content. Spurred by this, the use of food pomace is expected to rise significantly in the food and beverages industry.

"Fruit pomace, otherwise a byproducts of the food processing industry, has found use across diverse applications. It contains seeds, pulp, and peels, which if disposed of irresponsibly, can cause pollution. With government authorities across the world taking crucial steps to curb pollution, the increasing use of fruit pomace in dietary supplements, dairy products, beverage and food processing, and other industries will ensure environmental sustainability," said a lead report analyst.

### Demand for cost-effective ingredient to ensure higher nutrient content in food products creates sales opportunities

Rising penetration of the internet and increasing awareness regarding health and wellness have rendered consumers more conscientious than ever before. There-

fore, a food product to get successfully sold across the market must fulfil the nutrient expectation of consumers. A key point to consider here is, high prices will can restraint sales. Therefore, manufacturers are looking for healthier yet cost-effective nutrient to incorporate in their food products. Fruit pomace offers exactly that, which has guaranteed the market's steady rise over the years. Furthermore, it is easier to obtain fruit pomace at a lower price from the food processing industry. Spurred by this, the fruit pomace market is forecast to exhibit a steady growth over the course of the forecast period.

### Extra cost incurred on processing fruit pomace, may lead to it getting discarded as waste

In order to get distributed across various industries, fruit pomace may require additional processing. This needs to be carried out by fruit processing companies. This could incur additional cost for them. Because the price of fruit pomace is less, the cost incurred on additional processing is often not covered by sales. Therefore, a lot of time pomace generated by fruit processing is often discarded as waste, rather than selling it to various end-use industries. Once discarded, no value is left to fruit pomace, which may negatively affect its sales.

### Who is winning?

To strengthen their foothold in the fruit pomace market, leading companies are experimenting with various strategies. While some are focusing on research and development, a few others are aiming at expanding their product portfolio to expand their footprint. Still there are others who concentrate on forging strategic collaborations to stay ahead in the competition.

Some of the leading players operating in the fruit pomace market are Lemon Concentrate S.L., LaBudde Group, Inc., Citrusuco S.A., Sucocitrico Cutrale Ltd, Agrana Beteiligungs-AG, Marshall Ingredients, LLC, Louis Dreyfus Company B.V., Polyphenolics Inc., FruitSmart Inc., Pacific Coast Fruit Products Ltd., GreenField Sp. z o.o., Appol sp. z o.o., Whole Vine Products, and Yantai North Andre Juice Co. Ltd.

These insights are based on a report on Fruit Pomace Market by Future Market Insights.

## NEW PRODUCT LAUNCHES



### INDI & EM KOMBUCHA CHERRY COLA



Plant Based  
Waters



January  
2020



7.12 USD  
6.57 EUR



Australia

- Company:** Casalbor
- Description:** Cherry cola flavoured kombucha drink with green coffee bean extract in a glass bottle
- Claims:** Refreshing & Tasty
- Ingredients:** Raw kombucha (pure water, kombucha culture, organic black tea, organic green tea), natural sweetener (organic erythritol), organic hibiscus, cola extract (natural flavour), cherry extract (natural flavour), lemongrass extract (natural flavour), natural stevia sweetener (organic steviol glycosides), natural green coffee bean extract (contains caffeine).
- Analysis Insight:** This product combines the indulgence of cherry cola soft drink flavour with the health appeal of kombucha.



### SUNTORY LUSSOTTO LATTE COFFEE



Iced  
Coffee



December  
2019



1.68 USD  
1.55 EUR



Australia

- Company:** Suntory
- Description:** Latte coffee chilled and sweetened in a in a 280ml plastic bottle with a novelty Lid.
- Claims:** Strictly selected Ethiopian coffee. Recyclable packaging.
- Ingredients:** Water, sugar, milk <2.612 %, salt, emulsifiers.
- Analysis Insight:** Minimalistic packaging design with contrasting colors. Yellow cap resembles milk foam.



### PEPSI NO CALORIE CARBONATED COLA FLAVORED DRINK



Carbonates



January  
2020



5.28 USD  
4.87 EUR



Malaysia

- Company:** Pepsico
- Description:** Thirty aluminum cans of calorie free carbonated cola flavored drink, in a plastic wrapper.
- Claims:** Chinese new year special edition pack. With free 8 cans. Bold taste. No calorie. Contains 0 kcal (0 %) per 320ml. Certified halal. Recyclable.
- Ingredients:** Carbonated water, coloring, phosphoric acid, sweeteners (aspartame, acesulfame-K, sucralose), sodium citrate, flavoring (contains caffeine), preservative (potassium sorbate, sodium benzoate), citric acid.
- Extra Notes:** Contains phenylalanine. Product of Malaysia.
- Analysis Insight:** The festive packaging comes in a golden elegant can with stylish flowers to celebrate Chinese New Year.


## NEW PRODUCT LAUNCHES



### RAIMAIJON PASTEURIZED SUGARCANE JUICE

 Juices & Nectars

 January  
2020

 0.80 USD  
0.74 EUR

 Thailand


**Company:** Namaoyrainaijon Co  
**Description:** Pasteurized sugarcane juice in a plastic bottle.  
**Claims:** 100 % natural. No preservatives added. Pasteurized. Certified halal. GMP certified. Recyclable packaging.  
**Extra Notes:** HACCP certified. Shake well before. Serve chilled. Store at 7-10 degrees Celsius can keep or 5 days. Store at 2-6 degrees Celsius can keep for 10 days. Store at 0-2 Celsius degree can keep for 20 days. Store at -18 degrees Celsius can keep for 1 year. Product of Thailand.  
**Analysis Insight:** The plastic bottle mimics a sugar cane piece, conveying a natural image to the product and emphasizing its sugar cane flavor.



### GOODBELLY PROBIOTIC WATER BEVERAGE

 Bottled Water-  
Flavored

 January  
2020

 1.98 USD  
1.83 EUR

 United States

**Company:** Nextfoods  
**Description:** Orange, pineapple, and basil infused probiotic water beverage from concentrate, in a 375ml PET bottle. Goodbelly is a food product and not a treatment or cure for any medical disorder or disease.  
**Claims:** Digestive wellness made simple. LP299V may help promote healthy digestion when consumed daily. Created to help promote digestive health the refreshing way. USDA organic. No added sugar. Contains 20 billion live and active probiotic cultures. Non-GMO. Dairy-free. Suitable for vegan. Contains 10 % juice. Certified organic by QAI. NSF certified. Certified kosher. Recyclable packaging.  
**Ingredients:** Filtered water, cultured organic pear juice (filtered water, organic pear juice concentrate, calcium citrate, Lactobacillus Plantarum 299V), organic orange juice from concentrate, organic pineapple juice from concentrate, contains 2 % or less of citric acid, natural flavors.  
**Analysis Insight:** Water beverage with a flavor twist due to the inclusion of basil herb in the fruit selection. The probiotic claim appeals to health conscious consumers.



In cooperation with Innova Market Insights we are happy to publish new product launches on a global scale. Innova Market Insights is a world leading provider of knowledge solutions for the food and beverage industries. They serve their clients around the world with a full spectrum of solutions built around the professional needs of their individual roles.

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For more details and more products please contact:

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**(Price Information without Liability)**

**Source:** Survey by confrica Medien GmbH, from a minimum group of 5 marketers and 5 juice purchasers for each product. Since its first publication in 1991, more than 40 industry partners – manufacturers, traders, processors, bottlers, packers, bankers – have been contributing data.

Your price quotation data, too, is much appreciated.

Please forward your contributing input directly to the editorial team  
c/o christian.friedel@confrica-medien.com

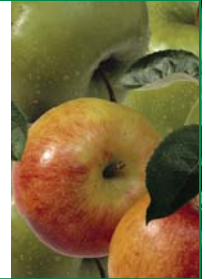
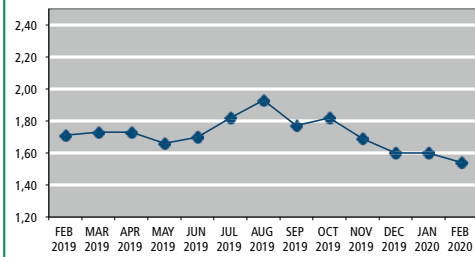
**Prices:** The price range is calculated for juice or puree of different proveniences, traded in drum or bulk; \$/kg = cif Rotterdam; EUR/kg = DDP

**Custom Duties:** The range encompasses preferential duties up to 30 %

◆◆ This line represents the development of the mean values (excepted graph 'orange juice concentrate – future markets')

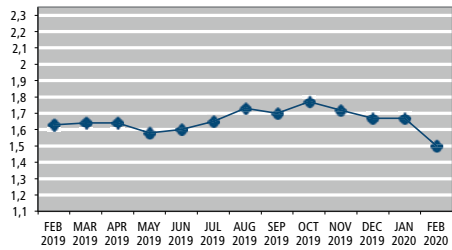
## Apple

Concentrate, 70 °Brix, high acidity, EUR/kg



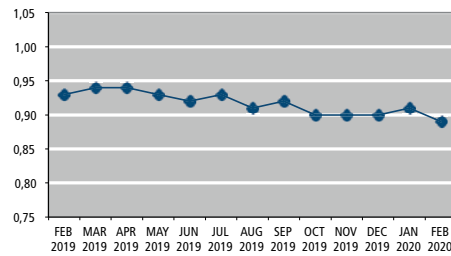
## Apple

Concentrate, 70 °Brix, low acidity, EUR/kg



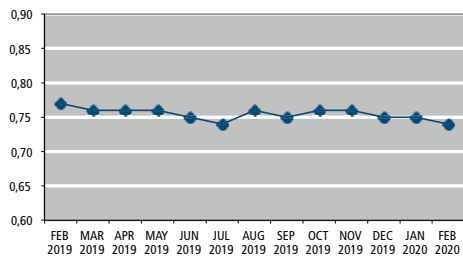
## Apricot

Puree Concentrate, 30-32 °Brix, EUR/kg



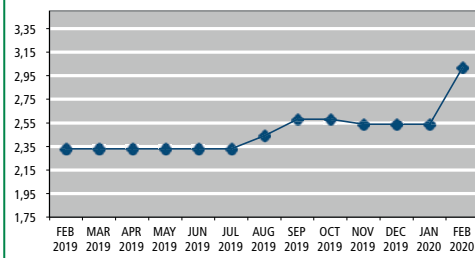
## Banana

Puree Concentrate, 22-24 °Brix, \$/kg



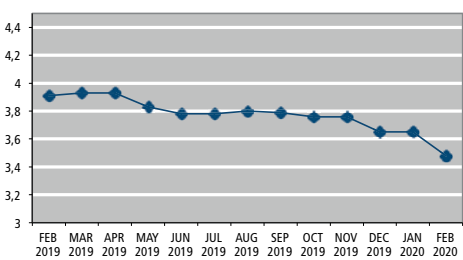
## Black Currant

Concentrate, black, 65 °Brix, EUR/kg



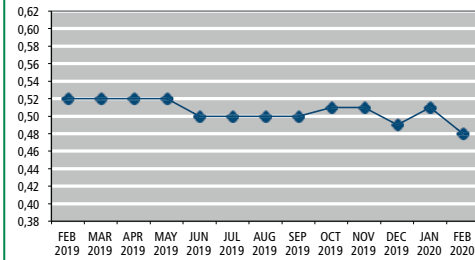
## Carrot

Concentrate, 65 °Brix, EUR/kg



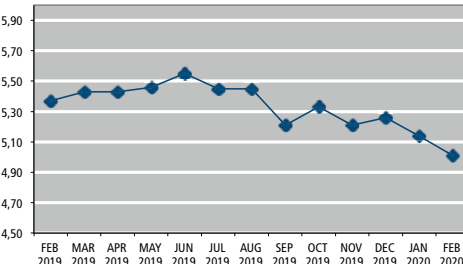
## Carrot

NFC, EUR/l



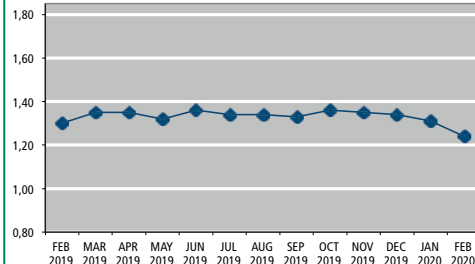
## Coconut

Concentrate, 60 °Brix, \$/kg



## Coconut

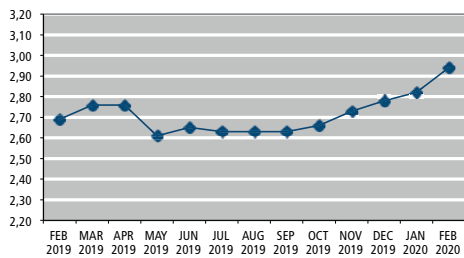
NFC, \$/kg



# MARKET PRICE REPORT

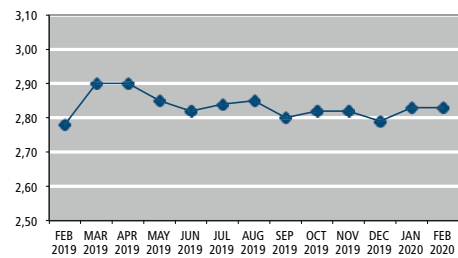
## Grape

Concentrate, red, 65 °Brix, EUR/kg



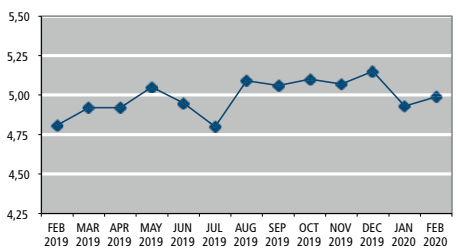
## Grape

Concentrate, white, 65 °Brix, EUR/kg



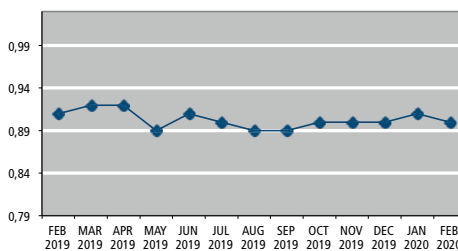
## Grapefruit

Concentrate, 58 °Brix, \$/kg



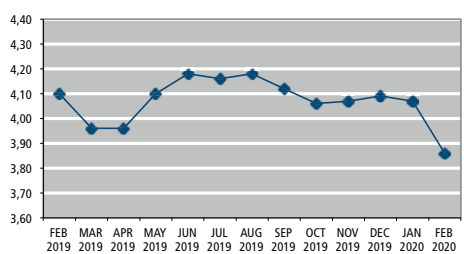
## Guava

Pure Concentrate, pink, 8-10 °Brix, \$/kg



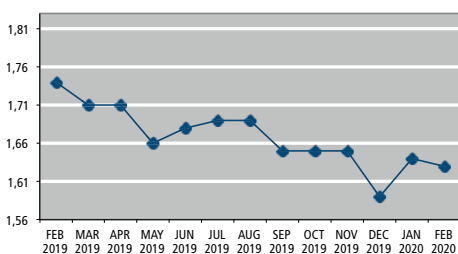
## Lemon

Concentrate, cloudy, 400 g/l acid, \$/kg



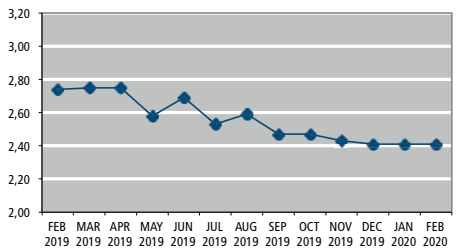
## Mango

Puree Concentrate, 15 °Brix, \$/kg



## Orange

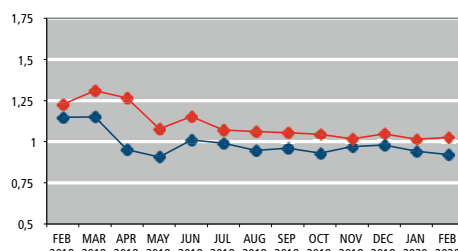
Concentrate, 66 °Brix, \$/kg



## Orange

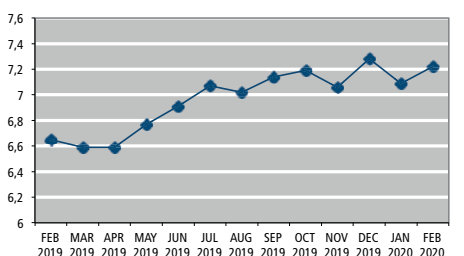
Concentrate, Future Markets \$/lb.

◆ = highest values  
◆ = lowest values



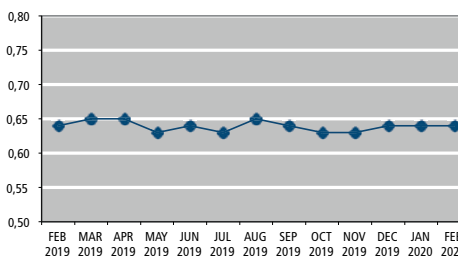
## Passion Fruit

Concentrate, 50 °Brix, \$/kg



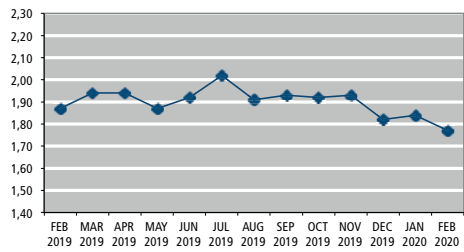
## Peach

Puree Concentrate, EUR/kg



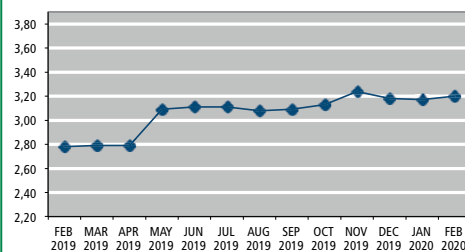
## Pear

Concentrate, 65 °Brix, EUR/kg



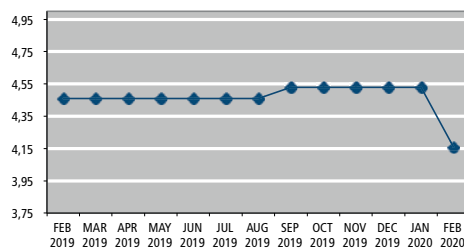
## Pineapple

Concentrate, 65 °Brix, \$/kg



## Sour Cherry

Concentrate, 65 °Brix, EUR/kg

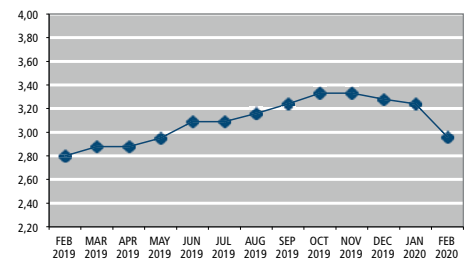


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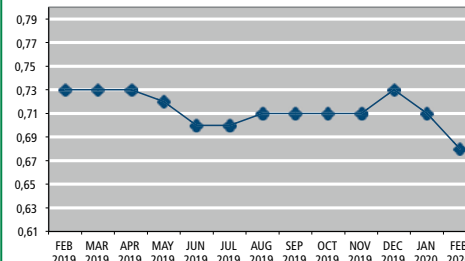
## Apple

Concentrate, organic, high acidity, 70 °Brix, EUR/kg



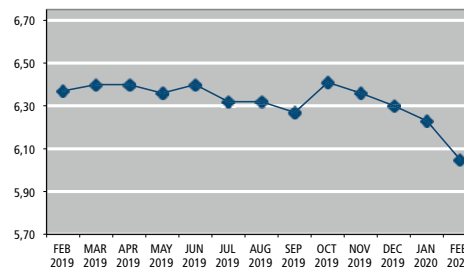
## Carrot

NFC, organic, EUR/l



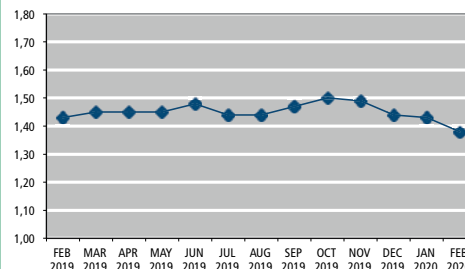
## Coconut

Concentrate, 60 °Brix, \$/kg



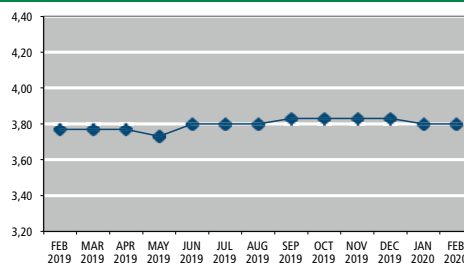
## Coconut

NFC, \$/kg



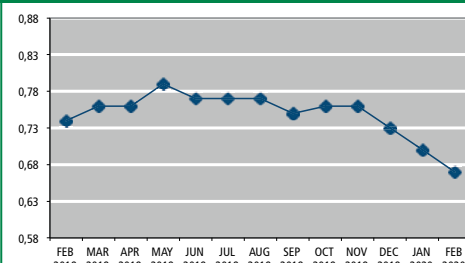
## Orange

Concentrate, organic, 65 °Brix, \$/kg



## Red Beet

NFC, organic, EUR/l



# The Publication for Practitioners!

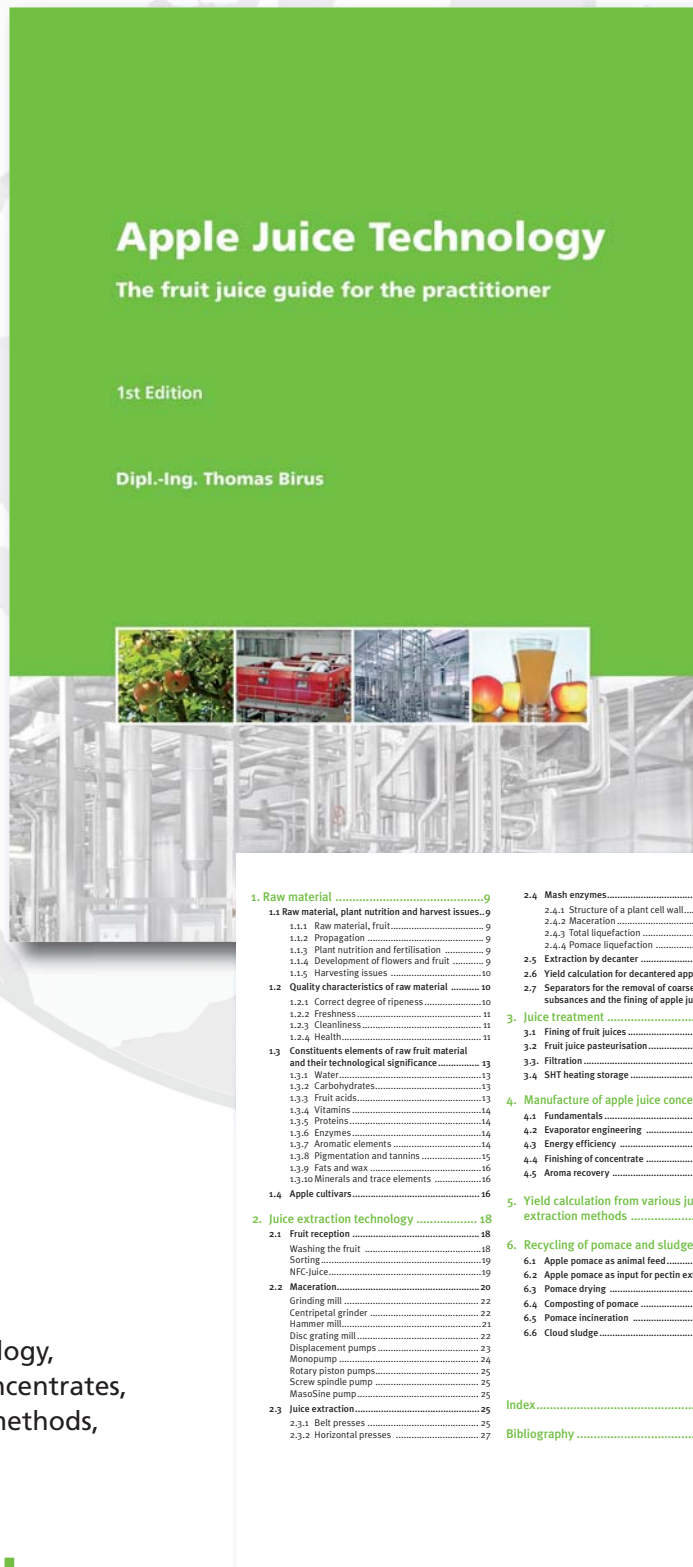
The production of apple juice is a carefully engineered sequence of technological measures aimed at extracting the valuable, flavoursome, enjoyable and desired contents from apples and presenting them to the consumer in the very best packaging.

**With this book, up-to-date information is now available to practitioners keen to learn what's new in the increasingly automated production. The book sheds light on the back-ground to modern apple juice technology without delving too deeply into scientific detail.**

This book is intended to be of service to school and college students, skilled and master craftsmen and engineers.

It will help to answer the many questions about "How does that work?", "Is there an alternative to this method?" and "Can I do something better in my operation?".

**Content:** raw material, juice extraction technology, juice treatment, manufacture of apple juice concentrates, yield calculation from various juice extraction methods, recycling of pomace and sludge.



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