FRUIT PROCESSING

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Labelling Solutions

Market Price Report

Markets

Product Launches

Quality Control

Supplying Markets

MAY 5/2018

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

Citrus Belt Forecast for 2018/19 in Brazil

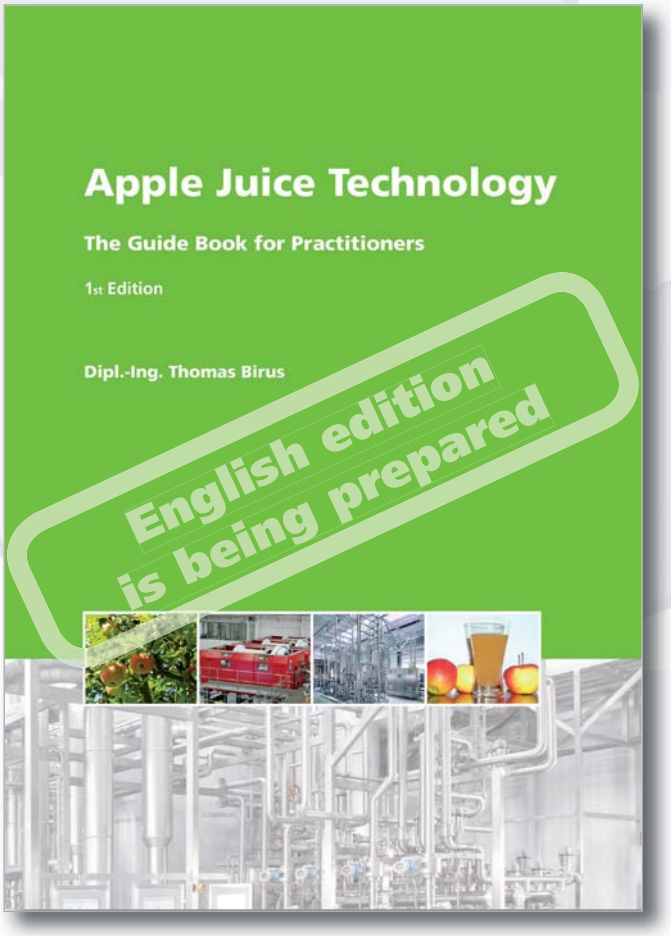
Modern Apple Juice Technology

The Guide Book for Practicioners

Present your technologies and services to an international readership and reach the specialists and decisionmakers in the juice business!

The first edition of „Modern Apple Juice Technology“ was published in German in 2011. Since then hundreds of juice professionals have relied on this informative guide book so that the first edition was out of print. With the continuing demand we decided to work on a second German edition which was published in 2017.

Also experiencing a regular demand for the book in other languages, we are preparing an English edition with the aim that juice professionals all over the world can profit from the practical information provided.



This book is a permanent advertising medium and offers an excellent opportunity to present your technologies and services to an international readership.

Content: raw material, dejuicing technology, juice treatment, production of apple juice concentrate, calculation of costs, handling of pomace and clouding.

Target group: juice experts and practitioners, students, technicians and engineers. Prospective specialists and managers can learn technical basics. The book is also suitable for educational purposes at technical colleges.

Format: DIN A4 (210 mm wide x 297 mm high) printed in 4c, print run: 2,000 copies

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1/1 page 4c
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EDITORIAL

Dear readers,

with high level of awareness and access to information sources, consumers are seeking beverage products that score high on nutritional value. Drink manufacturers are focusing on procuring natural ingredients. With a quick search on their smartphones, consumers can make informed and speedy choices about the products they consume. Which drinks promote healthier skin? Where is this raw material grown? What are the core values and history of the company manufacturing the product? As consumers increasingly demand additive-free beverages that still taste like freshly squeezed, a number of international drink manufacturers have turned to high-pressure processing (HPP), which eliminates bacteria while maintaining product longevity and flavour consistency. PMMI, the US-based Association for Packaging and Processing Technologies founded the Cold Pressure Council to help consumers understand the HPP technology.

Supply chain visibility is gaining momentum, thanks to several new concepts like sustainability, clean labelling and fair trade practice. Basically supply chain transparency offers information and access to consumers about the products provenance and manufacturing process. What therefore hits the shelves? Read more on page 167.

Another decisive factor is the sufficient availability of raw material and semi-finished products where Mother Nature may also play an important role. Please refer to the first citrus belt forecast with regard to the Brazilian supplying market on page 159 and find detailed information and statistical data on the Southern Africa citrus season on page 156.

In this sense I hope you enjoy reading this current edition of FRUIT PROCESSING,

Yours,

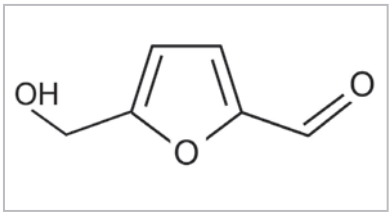
S. Brenniq

(Publisher)

FRUIT PROCESSING
No 5/2018 – May – Volume 28

CONTENT

QUALITY CONTROL



Thermal treatment is the most common way to preserve food and make it edible. Under adequate conditions, foods retain their expected nutritional and organoleptic properties. However overprocessing may be a damage reason of constituents and decrease in the nutritional value. Useful tool for the control of processes and assessing quality of heat-treated foods are chemical indicators, what gives the possibility of ...

LABELLING SOLUTIONS

It has never been more important to stand out from the crowd than in today's competitive beverage market. Labels are key components of any brand marketing mix, allowing manufacturers to differentiate their products and give end consumers the information they need and increasingly expect. Precise application of high-quality labels typically contributes to an excellent brand experience...

SUPPLYING MARKETS

At the beginning of each year growers serving on the variety focus groups estimate the forthcoming years export crop. Being an export crop estimate means that it is not only climatic and production variables that need to be considered, but also market conditions, phytosanitary risks and other demand side variables. Historically, the variety focus groups have been extremely accurate ...

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FRUIT PROCESSING
No 5/2018 – May – Volume 28

SUPPLYING MARKETS

The 2018/2019 orange crop forecast published on May 09, 2018 by Fundecitrus, in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp is of 288.29 million boxes of 40.8 kg each. This total includes: 55.81 million boxes of the Hamlin, Westin and Rubi varieties; 16.55 million boxes of the Valencia Americana, Seleta and Pineapple varieties; 81.16 million boxes of the Pera Rio variety; 99.80 million boxes of the Valencia and Valencia Folha Murcha varieties and 34.97 million boxes of the Natal variety ...

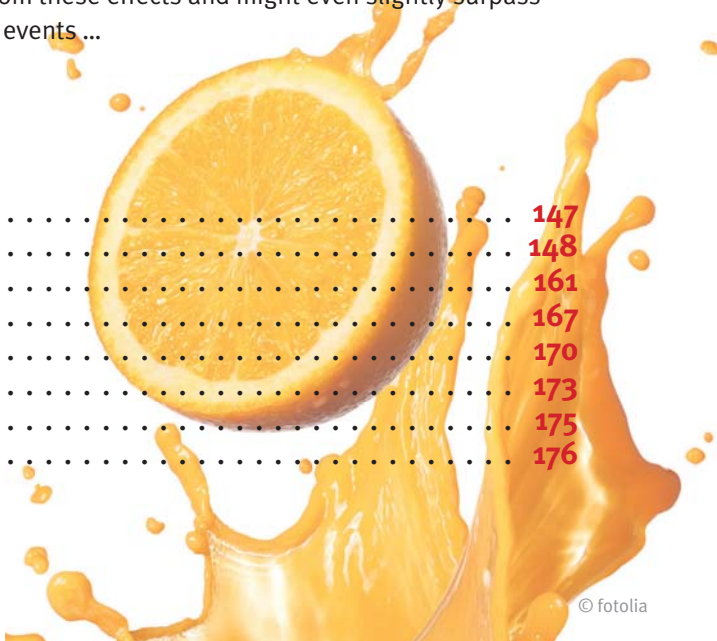
MARKETS

The U.S. liquid refreshment beverage market grew again in 2017, with retail sales increasing about 3 % and volume by around 2 %, according to newly released preliminary data from Beverage Marketing Corporation. Beverage-specific factors, such as the continued vitality of the large bottled water segment, as well as more general ones, such as the continuing economic recovery, contributed to the overall increase in liquid refreshment beverage volume, which approached 34 billion gallons in 2017. Measured in retail sales, the market exceeded $180 billion, propelled both by exceptionally fast growth by small, niche segments as well as growth by bigger, established categories, such as carbonated soft drinks. All but two segments of the liquid refreshment beverage market grew retail sales in 2017, with ready-to-drink coffee and tea, bottled water, energy drinks and carbonated soft drinks showing growth, and fruit beverages and sports drinks showing declines ...

EVENTS

ACHEMA 2018 is entering the home stretch: On 11 June 2018, the doors of the exhibition and presentation halls will open. Around 3,800 exhibitors and 167,000 participants from more than 100 countries will turn Frankfurt once again into the global center of the process industries. ACHEMA receives a positive momentum from the optimistic near-term outlook of its core industries despite all imponderabilia. The organizers expect that ACHEMA will benefit from these effects and might even slightly surpass the numbers of former events ...

REGULAR SECTIONS

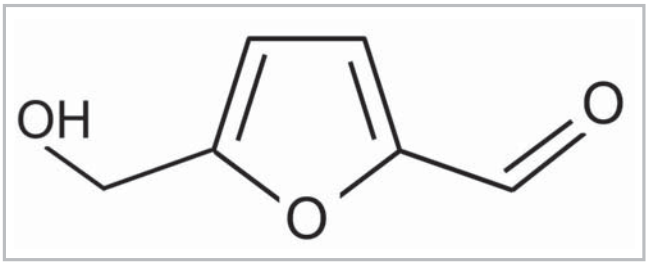


Hydroxymethylfurfural – basic characteristics and literature review

| 5-hydroxymethylfurfural | HMF | fruit technology | heat treatment | juice processing |

Thermal treatment is the most common way to preserve food and make it edible. Under adequate conditions, foods retain their expected nutritional and organoleptic properties. However overprocessing may be a damage reason of constituents and decrease in the nutritional value. Useful tool for the control of processes and assessing quality of heat-treated foods are chemical indicators, what gives the possibility of optimizing manufacture conditions. Heat processing is generally used to prolong shelf life of fruit products. However, heating processes can affect the quality of product which leads to consumer dissatisfaction. Non-enzymatic browning reactions and color degradation have been found to be major causes of such problems. Studies about kinetic of these reactions are required and used to predict quality degradation resulting from process conditions.[1]

Thermal treatment can affect the quality of juice through non-enzymatic browning. Non-enzymatic browning results from several reactions, including Maillard reaction, caramellisation and ascorbic acid browning processes, and degradation of pigments. Reaction taking place between a-amino groups and reducing sugars called Maillard reaction, is the most important reason for browning in heated apple juice. Non-enzymatic browning is the reason of some quality loss by giving the final product an unfavorable appearance or result in reduced food safety due to formed compounds. The measurement of 5-hydroxymethylfurfural (HMF), an well known intermediate chemical, is widely used as an indicator of Maillard reactions, i.e. browning development. (b) Kinetic models have been developed to evaluate color degradation and non-enzymatic browning reactions during processing of fruit products such as apple juice, pear puree and peach puree. For pineapple products, Fontana, Howard, Criddle, Hansen, and Wilhelmsen (1993) studied the effects of additional components, i.e. sugars, organic acids, on the quality deterioration kinetics of pineapple concentrate.[2]



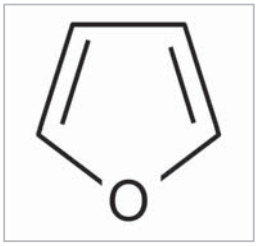
5-Hydroxymethylfurfural – HMF *© all Leszek*

Since non-enzymatic browning has a significant influence on the product quality, monitoring the extent of such quality loss can be useful for technologic design of the processing plant and the on-line detection of product properties. Currently, a number of methods have been evaluated to measure the extent of non-enzymatic browning in juice, like analysis of intermediates and final products of non-enzymatic browning. HMF is widely used as an indicator of Maillard reactions.

5-Hydroxymethylfurfural (HMF) is a heat-induced product of the well-known Maillard reaction that occurs in carbohydrate-rich foods such as fruit juices, biscuits, bread, marmalade, breakfast cereals and honey. Maillard reactions is a complex set of non-enzymatic browning reactions takes place during processing and cooking foods containing reducing sugars and amino acids. HMF is formed during its initial steps.[3]

In different foods HMF is being used as an indicator of non-microbial changes. There is a correlation between the development of strange flavors and aromas and the formation of HMF. HMF is an indicator of the thermal treatment received and storage time. In other cases, the determination of HMF indicates the origin of the product.[4]

Furthermore, HMF is one of the decomposition products of ascorbic acid and it is used to evaluate the level of heating during fruit-juice processing. HMF is not only produced in the Maillard reaction, but also from hexoses degradation and caramelisation, where presence of amino groups is not needed. HMF is almost absent in fresh and untreated foods, its concentration rise during heating, so level of HMF is a tool for heat damage evaluation in foodstuffs. It is also a recognized parameter of food freshness and



Furan

quality. Therefore, control of HMF has been used to evaluate the quality of the processing method and the organoleptic characteristics of the final product.[3]

Interest towards HMF and also furan has greatly increased since beginning 1990s, while data about the toxicity of these molecules were published. Various animal experiments showed that these molecules may exert adverse effects. HMF has been used for years as a quality indicator of thermally processed foods, recently some toxicological concerns are raised. HMF has a number of possible dangerous to health structures like: furan ring, α,β-unsaturated carbonyl group, and allylic hydroxyl group, that pose possible genotoxic and carcinogenic risks. Some studies revealed that HMF may induce genotoxic and mutagenic effects in bacterial and human cells and promote colon and liver cancer in rats and mice. Nevertheless, no relevance for humans concerning carcinogenic and genotoxic data of HMF are available. Basing on the present state of knowledge it is not possible to elucidate the risk associated with the HMF and furan exposure. Due to their widespread presence in foods their levels should be kept as low as is possible. However, very scarce information is available about the possible routes to mitigate HMF and furan levels in foods, and thus consumer intake.[5]

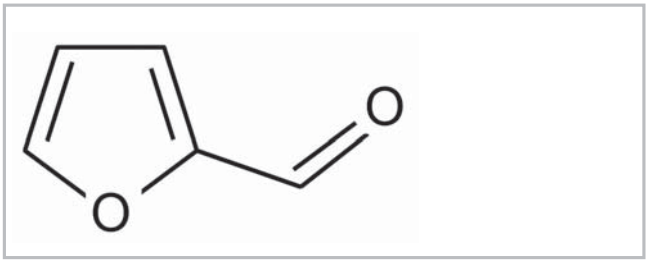
Toxicological relevance of HMF exposure has not yet been clarified and the mechanisms by which HMF exerts its genotoxicity remain unclear. HMF is almost absent in fresh and untreated food, its concentration tends to rise as a result of heating processes, and its concentration is a useful tool to evaluate browning reaction extension. Furthermore, it is a parameter related to the freshness and quality of foods, and therefore control of HMF has been used to evaluate both the quality of the processing method and the organoleptic characteristics of the product. For instance, HMF presence has been used in different foodstuffs, such as jam and infant foods, as a good indicator of inadequate storage time or temperature. Most of the methodologies for the analysis of HMF in food are based on classical spectrophotometric techniques and liquid chromatography with UV detection (LC–UV).[3]

Relatively high levels of HMF have been detected in a large variety of food commodities for adults and infants, either industrially processed or prepared at domestic level. These are canned or jarred foods, cereal derivatives, fruit juices, dried foods, honey, milk, coffee. HMF concentrations in foods can vary largely too. Levels above 1 g/kg were found in dried fruits, roasted coffee, chicory, barley, malt, balsamic vinegar and caramel products.[5]

Results for fruit juice marketed in Malaysia show that 5-HMF occurred in high incidence (100%), and 19% out of these samples exceeded the IFFJP limits.[6]

Reason of HMF widespread occurrence in many types of food is due to the fact that they are products of different reactions following multiple routes and involving different precursors and intermediates. Carbohydrates, amino acids, carbohydrate-amino acid mixtures, vitamins, polyunsaturated fatty acids and carotenoids are precursors for HMF and furan formation. HMF can be formed as an intermediate in the Maillard reaction, which occurs when carbohydrates are heated in the presence of amino acids, proteins or alternatively, by thermal dehydration of a sugar under acidic conditions. At low pH, glucose or fructose may undergo 1,2 enolization and dehydration to form 3-deoxyosone which is the key intermediate in HMF formation. Fructose is more reactive than glucose in the formation of HMF. Modification in process parameters like heating regime, and formulation can be treated as strategies that can be used to prevent HMF and furan formation. HMF and furan formation increases with the increase of temperature and heating time. Changing processing temperature and time could be an effective way of HMF and furan mitigation during thermal treatment. Scientists found no or very low furan levels in samples heated at temperatures lower than 90 °C, meanwhile significant furan concentrations were found in acid foods (apple cider, pH 3.5) only at temperatures equal to or higher than 100 °C and prolonged heating time. This data are correspond with the relatively low furan levels found in pasteurized products, like fruit juices, and the high furan levels found in sterilized foods for example canned meat and vegetables. It must be taken into account when using lower temperatures the heating process should be efficient to achieve the hygienic and safe properties. No data are available on the influence of equivalent thermal effects achieved by using high temperature–short time or low temperature–long time processes on HMF levels. To achieve a 5-log reduction of the microbial population different lethality values have to be applied depending on the food pH.[5]

Processing apple juice using ultrahigh-pressure homogenization could be an alternative to conventional pasteurization. Ultra-high-pressure homogenization, causes a significant decrease in microbial counts, and allows to reduce HMF formation. HMF concentration in pasteurized juice in experiments was indeed 100-fold higher than in ultra-high-pressure homogenized and raw samples. High hydrostatic pressure used for food stabilization could be potentially used for HMF and furan mitigation. In Vervoort et al. (2012) researches, after comparison the impact of high pressure and thermal processing on the basis of an equivalent microbial effect on some quality attributes of



Furfural

carrots, was found that only the thermally sterilized vegetable contained a detectable amount of HMF.[5]

Partial or total replacement of reducing sugars with non-reducing sugars or polyalcohols resulted in significant reduction in HMF formation in experimental models and bakery products despite the intensity of the thermal treatment was. When reducing sugars were removed from an orange juice, no HMF formed. Lower levels of reducing sugars may affect the development of the brown color via Maillard reaction. While this is a desired feature for many heated products, substitution of reducing sugars may be a practicable way of mitigating HMF for non- or light-colored products.[5]

Regarding wine industry a validated method was used for the evaluation of HMF and furfural contents in Madeira wines submitted to prolonged heating. The amount of HMF tended to increase with heating and ageing, where amounts higher than 1 g/L were formed in sweet wines submitted to thermal conditions 55 °C after a 4-month period. This research clearly showed that the amounts of HMF and furfural formed in sweet wines, fermented to reduce the amount of residual sugars and treated with temperatures lower than 45 °C, are under control even for longer ageing periods. Whereas, dry wines can be fermented to maintain a low level of residual sugars, in order to induce the formation of some typical aromas resulting from sugar degradation, and above 45 °C without a significant increase of furans. Thermal process known as estufagem, used in the production of Madeira wines since 1795, is related to the bouquet of these wines and may play an important role in their exceptional longevity. Thermal treatment parameters can be set up in order to maintain important characteristics without compromising the final amount of HMF and contributing to improve general quality. The observed tendency to enhance modern wines, as resulting from organoleptic analysis and HMF evolution data, suggests the importance of the changes being introduced in the fermentation process (sweetness) and baking (temperature). The results shows that dry and sweet wines should not be heated at the same conditions, with dry wines having lower evolution and supporting higher temperatures. This conclusion suggest changes in the differentiation of heating conditions applied to different wines.[7]

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New Labelling Solutions Maximise Flexibility and Performance

| EvoDECO | Flexibility | Hygenic Design | Labelling |

It has never been more important to stand out from the crowd than in today's competitive beverage market. Labels are key components of any brand marketing mix, allowing manufacturers to differentiate their products and give end consumers the information they need and increasingly expect. Precise application of high-quality labels typically contributes to an excellent brand experience.

At the same time, a growing variety of beverage types and bottle formats has made labelling increasingly challenging. More than ever, flexibility has become a valuable benefit to beverage producers. For them, top priorities today are faster product and format changeovers, simple operations and optimised processes that use the same equipment for different label types, still ensuring consistent uptime.

In order to meet these demands, Sidel has introduced the new EvoDECO labelling solutions. Based on a common core and optimised design, they enable producers to deliver different stock keeping units (SKUs). They might either include several labelling applications in one multi-technology machine or a single labelling application through dedicated equipment, for optimised uptime, reduced footprint and low total cost of ownership (TCO).

The EvoDECO platform is built using the latest technologies regardless of model or configuration. This gives beverage producers the ability to choose solutions based on their specific labelling needs and output levels, without compromising on flexibility, efficiency or sustainability.

The Sidel EvoDECO solutions, available either as a modular, multi-technology or as dedicated-technology equipment, are designed for total flexibility and optimised for unmatched performance, to meet today's demands within labelling. *© all Sidel*

The unique ergonomic design of the Evo-DECO Roll-Fed labeller ensures easy operations during production and maintenance.

The EvoDECO Adhesive labeller, achieves the industry-leading speed of up to 66,000 bph.

The EvoDECO Multi labeller, where performance and flexibility come together

Sidel's most flexible labelling solution to date, the EvoDECO Multi, brings modularity into labelling. It offers a standardised carousel that can be equipped with up to four different labelling technologies: roll-fed, self-adhesive, cold glue and hot melt. This allows manufacturers to set up the machine for their unique labelling needs, as they can easily apply several types of labels to different types of containers and packaging materials (PET, HDPE, glass), of varying formats and dimensions (from 0.1L to 5L), on a single machine at speeds from 6,000 up to 81,000 containers per hour. Switching between various labelling modules is quick and easy, thanks to Plug & Play connections, offering producers the freedom of labelling choice and total flexibility.

As part of the Sidel Matrix™ platform, the EvoDECO Multi has been designed for modularity, flexibility and performance. It allows for up to 36 layout configurations and a 30% faster changeover time. It also offers 98 % efficiency with non-stop labelling as well as lower TCO through reduced electrical consumption, maintenance time and optimised glue management. Attention has also been paid to ergonomics and operator safety: Easy operations, cleaning and maintenance are facilitated by its open, frameless structure. This, together with the redesign of all the single modules, results in a significantly enhanced machine uptime.

New brushless motors integrated into the carousel and the labelling stations remove the need for lubrication and achieve great energy savings. The new EvoDECO Multi labeller was developed to handle all labels, even ultra-thin, with utmost precision, ensuring top label quality application and performance at a very high level.

1 When integrated in the Sidel Super Combi, the EvoDECO Roll-Fed labeller can generate outputs of up to 81,000 bph.

The EvoDECO labelling technologies can also be installed as dedicated applications, answering manufacturers' needs for maximum performance.

The EvoDECO Roll-Fed labeller for top productivity and a sustainable footprint

Boasting four carousel sizes, up to three labelling stations and 24 configurations, the Roll-Fed can generate outputs of up to 72,000 containers per hour[1] at an efficiency rate of 98%. It is particularly suitable for water, carbonated soft drinks (CSD), juices and dairy producers. Using hot glue to apply wrap-around plastic labels, it can handle lightweight containers and ultra-thin labels, yet allowing for better glue control and distribution, together with reduced consumption.

The ergonomics of the solution have been significantly optimised for performance and efficiency as reflected by the linear design of the roll-fed station, with all main components fully visible and accessible during production or maintenance, without disengaging the station. Cleaning can be carried out completely automatically during production by a system installed on the vacuum drum, which removes any glue residual for higher performance. It can also be equipped with an automatic label extraction system (protected by Sidel patent), ensuring no downtime occurs due to labels being not properly applied on the bottle or no bottles being present, for a smooth and consistent flow of production. The label application is carried out with a pad-to-pad transfer, leading to a very stable and accurate process, even at high speeds. Furthermore, the reels auto-splicing system can be activated at very high speeds of up to 30,000 containers per hour resulting in improved productivity.

While developing the EvoDECO Roll-Fed labeller, ease of operations has been high on the Sidel engineers' agenda, as this is instrumental in securing maximum flexibility and performance. The solution can be controlled and adjusted

With its stainless-steel structure and components, the EvoDECO Cold Glue labeller is hygienically designed and fully washa-ble. © Sidel

via a human-machine interface (HMI) which is integrated within the labelling station. Additionally, the vacuum drum is built in light-weight sectors for easy and quick replacement, without disengaging the station, and also features newly patented adjustable pads for longer production time and less time needed for maintenance.

With an integrated glue tank, patented vertical melter and heating control, glue is melted on demand and circulated always at a precise temperature and in smaller quantities, increasing the label quality application. This allows for reduced consumption of glue and avoids glue degrada-tion, glue filament, and glue splashing, for better overall quality and improved sustainability.

The EvoDECO Adhesive labeller for top quality labels and flexible configuration

The Adhesive labeller is designed to apply labels at high speed with increased efficiency. It can be equipped with six different carousel sizes, up to five labelling stations and 36 configuration possibilities. Able to apply plastic or paper Pressure Sensitive Labels (PSL), it has been optimised to suit the needs of beer, water, food, home and personal care producers.

The advanced unwinding, feeding and peeling control, through highly efficient servomotors, enables greater stability and precision in the labelling process. This allows the machine to handle also ultra-thin labels, down to 25µ, with top quality application at speeds of up to 66,000 containers per hour. It also delivers the flexibility that manufacturers need in applying labels to a variety of containers of different shapes and sizes. The EvoDECO Adhesive labeller is equipped with brushless motorisation of the bottle platforms to smoothly handle round and shaped bottles. A vision system can be added for accurate bottle orientation and label positioning. An air-dancer and a push-pull system ensure that the labels are not under any stress at any point, to avoid labels web liner breakage, and to ensure the correct alignment with the containers being labelled for a flawless “no-label” look.

Users can configure the labelling module with either two reels – both engaged, applying two different labels – or a master-slave non-stop labelling, applying the same label without production downtime during reel changeover. The machine can apply up to ten different labels to the same bottle while a highly efficient auto-splicer changes reels without any reduction in production speed.

The automatic opening and closing of the protection window, a Sidel patented solution, makes it possible to engage or disengage modules for changeover or maintenance, for complete opera-tors’ safety.

The EvoDECO Cold Glue labeller, hygienically designed for consistent uptime

The Cold Glue labeller is available in six carousel sizes and can feature up to five labelling stations, making it easy to configure according to bottle size, output need and product type. Capable to generate outputs of up to 81,000 containers per hour, the solution handles partial pre-cut paper labels, as such it is particularly suitable for the beer, food, home and personal care markets. It comes with a fully washable stainless-steel structure and components: this, together with an automatic cleaning system, dedicated to all the parts that come into direct contact with the glue, ensures top levels of hygiene. The easy-to-operate labelling station features quick-release tool-less label pallets for quick changeover time, while consistent uptime is ensured by the au-tomatic label magazine loading system.

The Sidel EvoDECO labelling solutions offer beverage producers both total flexibility and unmatched performance to deploy any kind of labelling technologies for all containers. The modular design is coupled with the latest technological innovations in order to deliver high efficiency, low total cost of ownership with high output and, above all, great brand experience.

Sidel Group
www.sidel.com

The 2017 Southern African Citrus Season

| Citrus | Crop | Export | Production | South Africa |

Estimated export crop

At the beginning of each year growers serving on the variety focus groups estimate the forthcoming years export crop. Being an export crop estimate means that it is not only climatic and production variables that need to be considered, but also market conditions, phytosanitary risks and other demand side variables. Historically, the variety focus groups have been extremely accurate – over the past ten years the estimate has always been within 10 % of actual, and in eight of the ten years within 5 % of actual.

In March 2017, the variety focus groups estimated a crop of 122.7 million cartons (1.84 million tons) – the final volume shipped was 123 million cartons. The bulk of the fruit was estimated to be valencia oranges at 50.1 million cartons, with navel oranges estimated at 26.3 million cartons. The lemon estimate was 17.5 million cartons, grapefruit 15.6 million cartons and soft citrus 13.2 million cartons.

Predicted export crop

Once harvesting, packing and shipping has begun, the variety focus groups meet regularly to update their predicted shipped volumes.

As harvesting began the Grapefruit Focus Group were concerned that they had overestimated, dropping their estimate by a million cartons. However, as the season went on this prediction was increased, with a final shipped volumes spot on the March estimate.

The Valencia Focus Group followed the same route and initially dropped their prediction by two million cartons. However, good market conditions and late demand for oranges resulted in almost four million additional cartons being exported when compared to the March estimate.

For both lemons and soft citrus, final crop figures were higher than estimated; marginally so in the case of soft citrus (200 000 cartons); but a significant 1.5 million cartons for lemons.

The navel estimate was the most inaccurate. Hot and dry conditions during fruit set resulted in an estimated five million cartons of navels wasted as a result of fruit drop.

Final 2017 crop

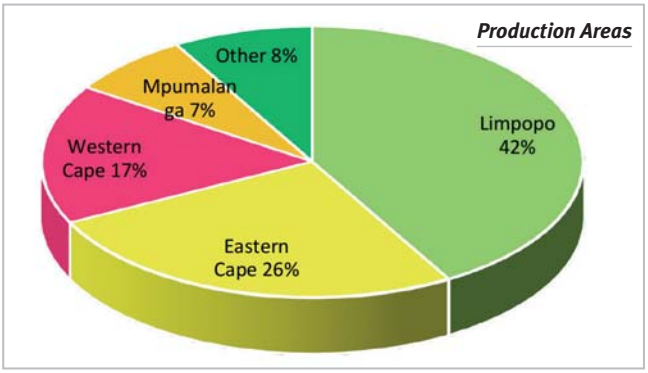
The final crop realised and the original estimate are presented in the table below (Tab. 1).

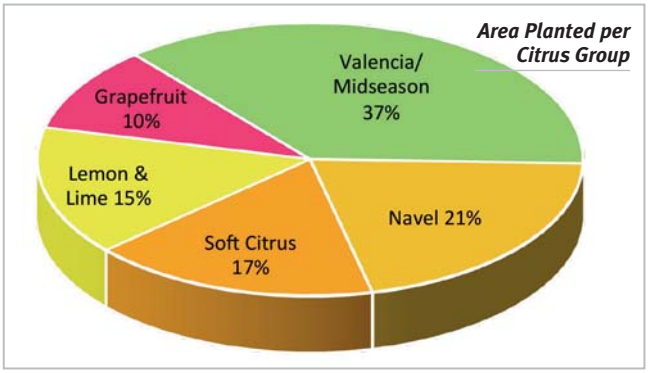
Production

Citrus is grown throughout South Africa, the majority produced along the eastern seaboard. The Limpopo province in the far north has 42 % of the production area – producing mostly valencia oranges and grapefruit, although recent plantings of both soft citrus and lemons have been

Tab. 1: The final crop realised and the original estimate

	March 2017 Estimate	Final 2017 Crop	Difference
Valencia Oranges	50.1 million cartons	53.8 million cartons	5.3%
Navel Oranges	26.3 million cartons	21.1 million cartons	19.8%
Lemons	17.5 million cartons	19 million cartons	8.6%
Grapefruit	15.6 million cartons	15.7 million cartons	0.01%
Soft Citrus	13.2 million cartons	13.4 million cartons	0.02%
TOTAL	**122.7 million cartons**	**123 million cartons**	**0.002%**



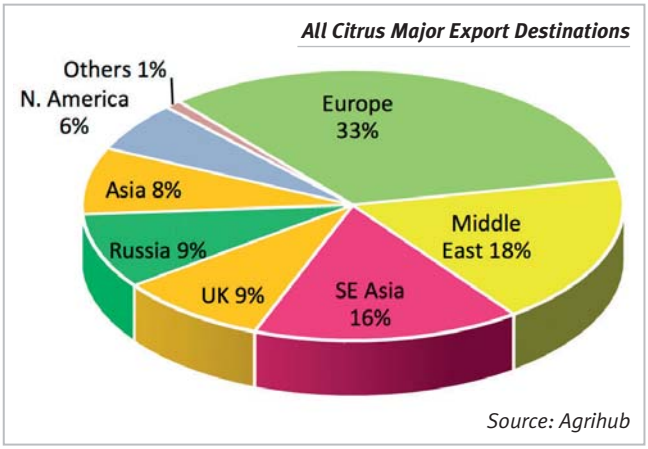


significant. The Eastern Cape follows with 26 % – and is the biggest area of lemons in South Africa, also producing significant volumes of navels and soft citrus. Next is the Western Cape at 17 % - this winter rainfall area produces mostly soft citrus and navels. Mpumalanga province in the north has 7 % of the planted area – producing mostly grapefruit and Valencia oranges.

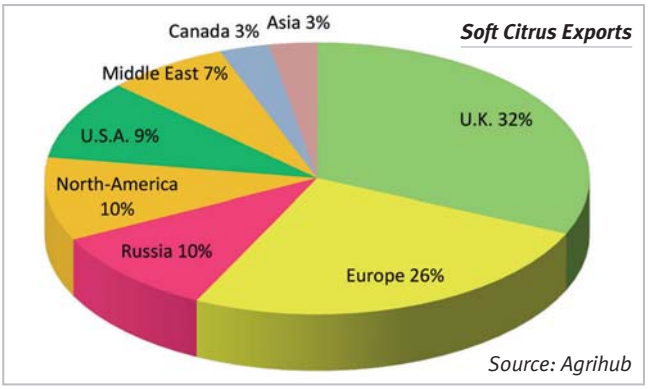
Most of South Africa's citrus basket is made up of oranges – 37 % valencia (juicing) oranges and 21 % navel (table) oranges. The soft citrus share has increased considerably over the years, and the 17 % level will surely grow in the future. Lemons are also showing growth – and the 15 % will increase. The grapefruit percentage (at 10 %) has decreased over the years.

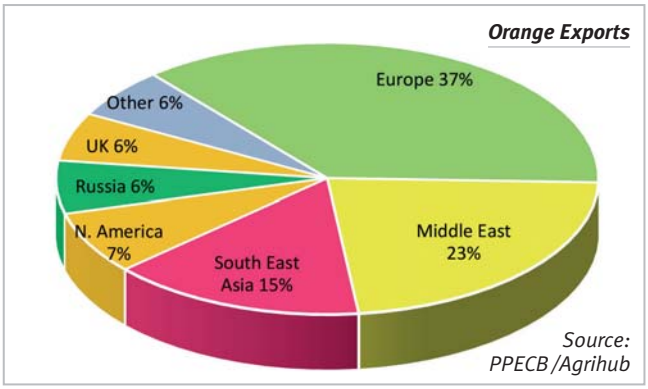
Export distribution

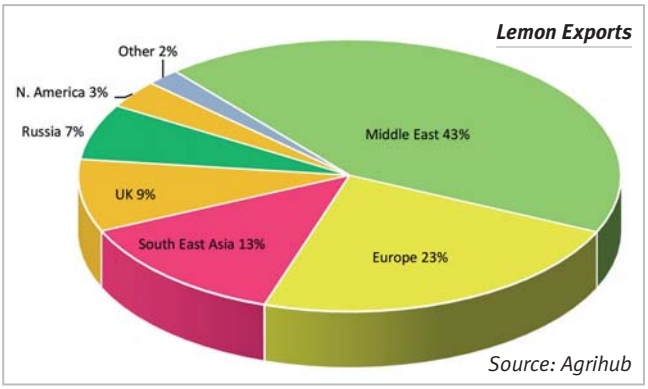
Mainland Europe (33 %) and the UK (9 %) make the European Union the biggest market for South African citrus. The Asian region follows (South East Asia 16 % and Asia 8 %), with significant growth in recent years. Middle East receives 18 %, Russia 9 % and the Americas 6 %.

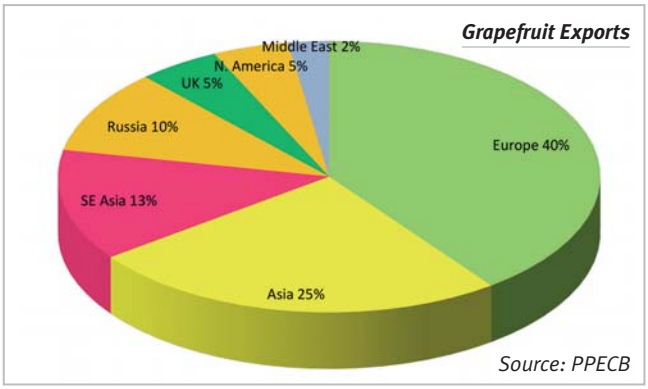


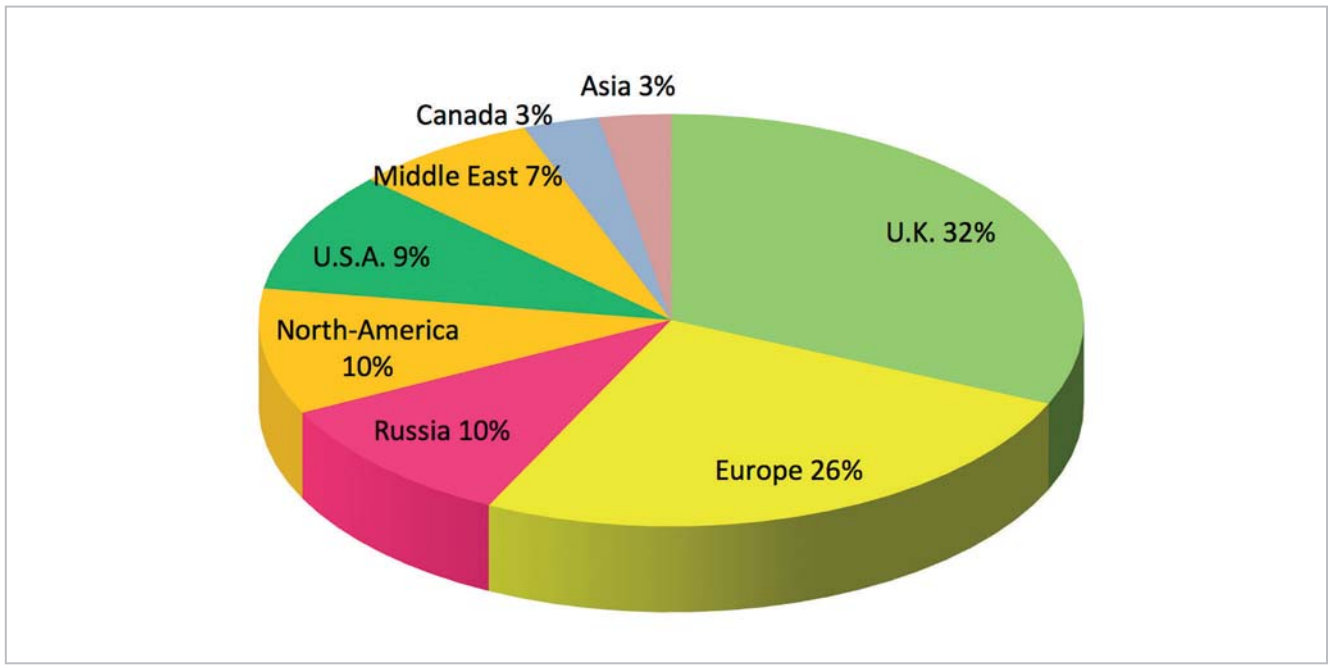
Distribution of the different citrus sector is given below. More than half of soft citrus exports go to the EU. Although EU is also the biggest importer of South African oranges,











Major Export Destinations 2017 *Source: Agrihub*

Middle East and Asia are also important destinations. For lemons, Middle East remains the most significant destination. South African grapefruit is mostly shipped to Europe and the Middle East.

Returns

After years of sustained growth in export returns, 2017 returns were not as attractive. Although returns for oranges increased slightly, the other sectors all experienced a decline in returns.

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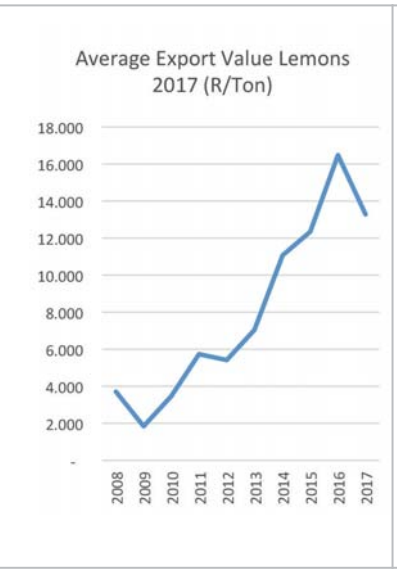

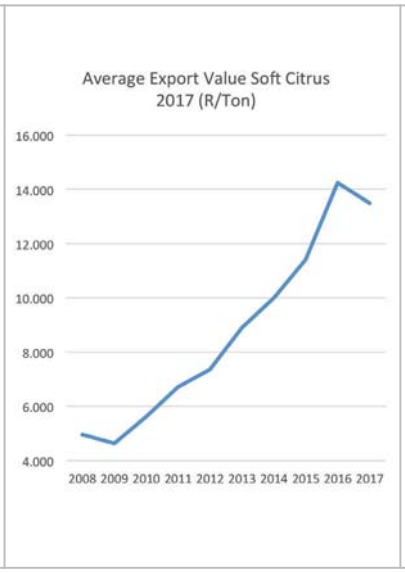

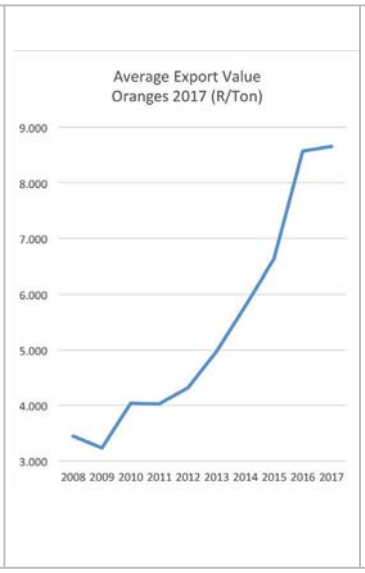

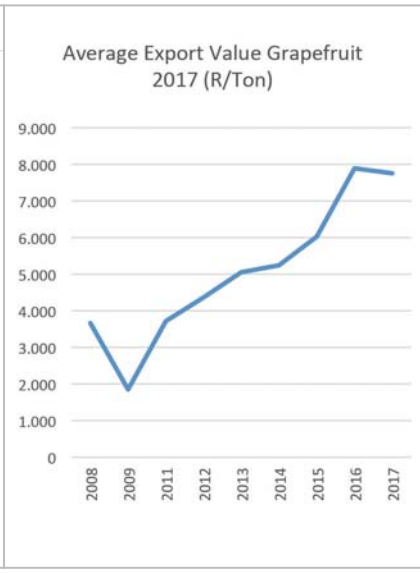

Despite the lower returns, the increased volumes resulted in an increase in gross export revenue.

The Citrus Belt Forecast for 2018/19 in Brazil and Market Implications

| FCOJ | Juice Consumption | Orange | Outlook 2018 | Supply Chain |

The 2018/2019 orange crop forecast published on May 09, 2018 by Fundecitrus, in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp[1] is of 288.29 million boxes of 40.8 kg each. This total includes: 55.81 million boxes of the Hamlin, Westin and Rubi varieties; 16.55 million boxes of the Valencia Americana, Seleta and Pineapple varieties; 81.16 million boxes of the Pera Rio variety; 99.80 million boxes of the Valencia and Valencia Folha Murcha varieties and 34.97 million boxes of the Natal variety.

Bearing trees of the varieties that make up this estimate total 175.27 million. The georeferenced mapping, carried out for the first time at the 2015 Inventory, has been through a complete update for this 2018 Inventory. New high definition orthorectified images were obtained by the satellites SPOT 6&7 from European Airbus Defence and Space between May and August, 2017.

The average number of fruit per tree in April/2018, without considering the drop to occur throughout the season, is of 564 fruit per tree. The high number of fruit in the 2017/1018 crop in addition to unfavourable conditions caused mainly by high temperatures in October led to a reduced fruit setting for the main bloom in regions with later flowering. Approximately 2,200 trees were stripped of fruit. They were distributed proportionally to the total of orange trees in the citrus belt and were stratified according to region, variety and age.

The estimated average drop rate is of 17.0 %. This figure is projected from the perspective of a drier year with temperatures above standard as of October, according to information presented by the meteorological company Climatempo in April, 2018. The increased severity of HLB observed in the last two years is likely to continue in this season, which accentuates the early fruit drop, even in a year of less fruit per tree.

The average size is estimated at 256 fruits per box of 40.8 kg. This figure is projected from the perspective described in the previous item.

1 Department of math and science, Jaboticabal.

Brazilian orange orchards as part of the FCOJ supply chain *© all fundecitrus*

In order to perform this forecast, the objective method used in previous seasons was maintained, which is based on quantitative data – field measurements, counting and weighing of fruit – applied to the direct expansion model whose formula is shown below. The result from this equation needs to be corrected according to variable not considered in the forecast model, such as different planting densities of plots, which are not included in the stratification of groves, or the loss of trees along the season due to eradications, abandonments or deaths. The correction factor (CF) of 0.10 is the same used in the 2017/1018 season.

$$\text{Production forecast} = \frac{\text{Bearing trees} \times \text{Fruit per tree} \times (1 - \text{Drop rate}) \times (1 - \text{CF})}{\text{Fruit per box}}$$

The orange crop forecast and its components by variety group are shown in Table 1.

Results compiled from the inventory and the stripping of trees, obtained throughout the survey, were restricted until the date of this publication, to the following professionals: Antonio Juliano Ayres (general manager of Fundecitrus), Fernando Alvarinho Delgado, Renato Tadeu Rovarotto and Roseli Reina (PES supervisors), Vinícius Gustavo Trombin (executive coordinator for Markestrat), Marcos Fava Neves (political-institutional coordinator linked to FEA-RP/USP and Markestrat) and José Carlos Barbosa (coordinator of methodologies linked to the Department of Math and Science of the FCAV/Unesp).

All of them are subject to confidentiality obligations with regard to PES information before its announcement is made public, according to agreements signed between each of them and Fundecitrus. As for antitrust practices, all of them were complied with through the adoption of measures necessary to prevent any communication or sharing of individual information with a competitive content among the orange juice companies that collaborate with Fundecitrus in this project or between these and citrus growers.

This team, together with Fundecitrus Chairman, Lourival Carmo Monaco, concluded the crop forecast on May 9, 2018 at 9:30 a.m., in a closed meeting, devoid of any communication channel beyond participants. Next, the Fundecitrus Chairman made the final information public starting at 10 a.m. at the auditorium at Fundecitrus, in Araraquara-SP, broadcast live online. A presentation of the detailed data was given by the general manager of Fundecitrus, Antonio Juliano Ayres.

This executive summary was approved on May 9, 2018. The full report on the tree inventory and the 2018/2019 crop forecast will be available on May 21, 2018 at www.fundecitrus.com.br.

The following tables present the 2018/2019 orange crop forecast by sector, age, bloom and variety. The margin of error in the production forecast for the strata is greater

Table 1: 2018/2019 Orange crop forecast and its components by variety group

			Components of May 2018 forecast				2018/2019 Orange crop forecast		
Variety group	**Mature groves area**	**Average density[1]**	**Bearing trees**	**Fruit per tree at stripping[2]**	**Fruit estimated per box**	**Estimated drop rate**	**Per tree**	**Per hectare**	**Total**
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(fruit/ box)	(%)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:									
Hamlin, Westin and Rubi ...	60,870	452	26,649	766	292	11.0	2.09	917	55.81
Other early season:									
Valencia Americana, Seleta, Pineapple ...	18,103	452	7,959	664	255	11.0	2.08	914	16.55
Mid Season:									
Pera Rio ...	124,920	503	61,575	454	255	17.5	1.32	650	81.16
Late:									
Valencia e V.Folha Murcha[3]	130,637	465	59,583	560	240	20.0	1.67	764	99.80
Natal ...	43,893	455	19,503	603	240	20.5	1.79	797	34.97
Average ...	(X)	474	(X)	564	256	17.0	1.64	762	(X)
Total ...	378,423	(X)	175,269	(X)	(X)	(X)	(X)	(X)	288.29

(X) Not applicable.
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2015 or 2016 resets).
2 Weighted average per total stratum fruit.
3 V.Folha Murcha – Valencia Folha Murcha.

Table 2 –2018/2019 Orange crop forecast by tree age group (continues)

			Bearing trees by age group				Fruit per tree at stripping by age group of trees[2]			
Age of plots	**Mature groves area**	**Average density of mature groves**	**3 – 5 years**	**6 – 10 years**	**Over 10 years**	**Total**	**3 – 5 years**	**6 – 10 years**	**Over 10 years**	**Total**
	(hectares)	(trees/ hectare)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(fruit/ tree)	(fruit/ tree)	(fruit/ tree)	(fruit/ tree)
3 – 5 years ...	37,472	636	22,996	–	–	22,996	234	–	–	234
6 – 10 years ...	123,238	540	2,202	62,780	–	64,982	107	493	–	480
Over 10 years	217,713	408	2,940	4,955	79,396	87,291	131	265	763	713
Total ...	**378,423**	**474**	**28,138**	**67,735**	**79,396**	**175,269**	**213**	**476**	**763**	**564**

– Represents zero.
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2015 or 2016 resets).
2 Weighted average per total stratum fruit.

than the production forecast for the citrus belt as a whole. Variations that may occur in fruit size and drop rate can change the forecast and will be determined throughout the season by constant field monitoring for crop forecast updates.

Market implications of this forecast:

Brazil needed at least 2 large crops to bring the world juice inventories to a more confortable level. The second crop did not happen, as we could see in this article, at least in the first forecast. We are entering another year that the slightly declining juice demand will be even higher than the supply, bringing the level of inventories down and possible impact on juice prices.

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U.S. Liquid Refreshment Beverage Market

Carbonated soft drinks retail dollars grew while volume declined — driven by continued package downsizing and introduction of more no-sugar options

| U.S. Market | Retail | Volume | no-sugar options |

The U.S. liquid refreshment beverage market grew again in 2017, with retail sales increasing about 3% and volume by around 2%, according to newly released preliminary data from Beverage Marketing Corporation. Beverage-specific factors, such as the continued vitality of the large bottled water segment, as well as more general ones, such as the continuing economic recovery, contributed to the overall increase in liquid refreshment beverage volume, which approached 34 billion gallons in 2017. Measured in retail sales, the market exceeded $180 billion, propelled both by exceptionally fast growth by small, niche segments as well as growth by bigger, established categories, such as carbonated soft drinks. All but two segments of the liquid refreshment beverage market grew retail sales in 2017, with ready-to-drink coffee and tea, bottled water, energy drinks and carbonated soft drinks showing growth, and fruit beverages and sports drinks showing declines.

Bottled water, which surpassed carbonated soft drinks to become the number-one beverage by volume in 2016, further solidified its leadership with notably vigorous growth in 2017. The category's defining qualities – healthful, natural, calorie-free and convenient – increasingly appeal to U.S. consumers. Pricing remained aggressive, which also contributed to bottled water's performance. Volume enlarged by 7% and retail sales swelled by nearly 11%.

Extending an ongoing trend, small segments outperformed most traditional mass-market ones. In terms of both volume and dollars, ready-to-drink (RTD) coffee and value-added water in particular advanced forcefully in 2017. Indeed, RTD coffee outperformed all other segments with a 12.3% increase in volume and a 14.4% increase in retail dollars. Value-added water also saw double-digit growth rates in both volume and dollars. Bottled water also outperformed the overall beverage market. In contrast, fruit beverages saw contraction in both volume and dollars, while carbonated soft drinks grew in dollars and declined in volume as beverage companies continued to downsize packages to respond to consumers' desire for less sugar.

Despite their growth, no energy drink, RTD coffee or value-added water brand ranked among the leading trademarks by volume. (No fruit beverage brand did either.)

U.S. Liquid Refreshment Beverage Market
Retail Dollars, Volume and Growth 2007–2017

Year	Millions of Dollars	Millions of Gallons	Dollar % Change	Volume % Change
2007	149,717.3	30,708.4	–	–
2008	150,263.4	30,067.9	0.4%	-2.1%
2009	145,472.2	29,264.2	-3.2%	-2.7%
2010	147,763.1	29,663.4	1.6%	1.4%
2011	152,166.2	29,888.1	3.0%	0.8%
2012	155,770.3	30,273.6	2.4%	1.3%
2013	156,141.9	30,265.2	0.2%	0.0%
2014	160,848.5	30,949.5	3.0%	2.3%
2015	167,899.3	31,847.5	4.4%	2.9%
2016	174,656.5	32,983.9	4.0%	3.6%
2017	180,051.8	33,692.7	3.1%	2.1%

Source: all Beverage Marketing Corporation

Leading Liquid Refreshment Beverage Trademarks*
Volume, Change and Market Share 2016–2017

		2017	Millions of Gallons		% Change	Share of Volume	
Trademark	**Company**	**Rank**	**2016**	**2017**	**2016/17**	**2016**	**2017**
Coke	Coca-Cola	1	3,933.0	3,867.5	-1.7%	11.9%	11.5%
Pepsi	PepsiCo	2	1,858.9	1,770.7	-4.7%	5.6%	5.3%
Mountain Dew	PepsiCo	3	1,333.0	1,281.8	-3.8%	4.0%	3.8%
Dr Pepper	DPSG	4	1,160.3	1,168.0	0.7%	3.5%	3.5%
Nestle Pure Life	NWNA	5	1,089.6	1,112.6	2.1%	3.3%	3.5%
Gatorade**	PepsiCo	6	1,081.7	1,050.3	-2.9%	3.3%	3.1%
Sprite	Coca-Cola	7	897.2	931.5	3.8%	2.7%	2.8%
Poland Spring	NWNA	8	835.4	857.8	2.7%	2.5%	2.7%
Dasani	Coca-Cola	9	705.8	705.9	0.0%	2.1%	2.1%
Aquafina	PepsiCo	10	588.1	603.9	2.7%	1.8%	1.8%
Subtotal			**13,483.0**	**13,349.9**	**-1.0%**	**40.9%**	**40.0%**
All Others			19,500.9	20,342.7	4.3%	59.1%	60.0%
TOTAL			**32,983.9**	**33,692.7**	**2.1%**	**100.0%**	**100.0%**

* Includes all trademark volume (e.g., all types of Coca-Cola, including Diet Coke, et al.; all types of Pepsi, including Diet Pepsi, etc. ; and so on).
** Includes G2.

Sports beverages, on the other hand, had Gatorade (including all brand variations) as the sixth largest liquid refreshment beverage trademark during the year with volume greater than 1 billion gallons.

Carbonated soft drinks continued to account for four of the five top beverage brands by volume, with the category growing retail sales by 1.2%. Total category volume dipped by 1.3% from 12.5 billion gallons in 2016 to 12.3 billion gallons in 2017, which lowered their market share to less than 37%. Coca-Cola and PepsiCo retained their usual first and second positions among the 10 leading beverage trademarks in 2017, with Mountain Dew and Dr Pepper claiming third and fourth place. Dr Pepper and Sprite (ranked seventh) both recorded volume growth during the year.

Bottled water had four entries among the leading trademarks in 2017. All of them grew volume (though one barely did), and two of them moved in advance of the overall liquid refreshment beverage category.

Four companies accounted for all of the leading refreshment beverage trademarks. PepsiCo had four brands. Coca-Cola had three while Nestlé Waters North America (NWNA) had two and Dr Pepper Snapple Group (DPSG) had one.

U.S. Liquid Refreshment Beverage Market
Changes in Volume and Retail Dollars by Segment 2016–2017

	% Change	
Segments	**Volume**	**Retail Dollars**
Ready-to-Drink Coffee	12.3%	14.4%
Value-Added Water	11.7%	10.0%
Bottled Water	7.0%	10.8%
Energy Drinks	3.7%	2.8%
Ready-to-Drink Tea	1.1%	3.9%
Sports Drinks	-2.1%	-1.2%
Carbonated Soft Drinks	-1.3%	1.2%
Fruit Beverages	-3.9%	-2.2%
TOTAL LRBs	**2.1%**	**3.1%**

"The beverage industry's ongoing growth in both volume and retail sales indicates fundamental strength," said Michael C. Bellas, chairman and CEO, Beverage Marketing Corporation. "Its response to changes in consumer preferences illustrates its ability to adapt."

New York City-based Beverage Marketing Corporation is the leading consulting, research and advisory services firm dedicated to the global beverage industry.

Source: Beverage Marketing Corporation

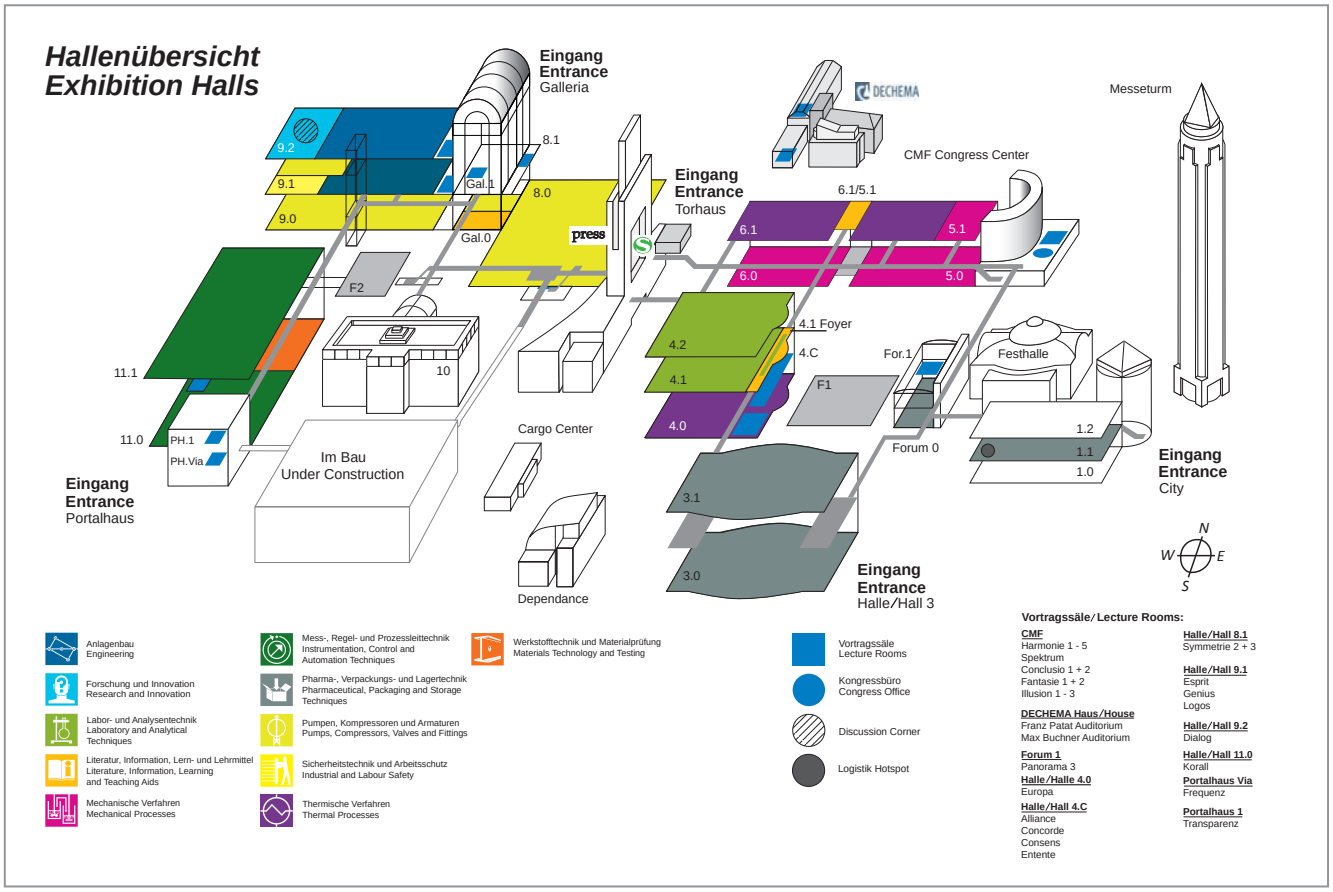
Tailwind for ACHEMA 2018 from upbeat industry mood

| Achema 2018 | Digitalization | Engineering | Industry Mood | Process Technology |

ACHEMA 2018 is entering the home stretch: On 11 June 2018, the doors of the exhibition and presentation halls will open. Around 3,800 exhibitors and 167,000 participants from more than 100 countries will turn Frankfurt once again into the global center of the process industries. ACHEMA receives a positive momentum from the optimistic near-term outlook of its core industries despite all imponderabilia. The organizers expect that ACHEMA will benefit from these effects and might even slightly surpass the numbers of former events.

"VDMA Process plant and equipment association expects respectable increase for 2017" – "Suppliers of process automation optimistic for 2018" – "Further strong growth of the chemical industry in 2018" – The last weeks have been characterized by positive news from the ACHEMA industries. Thus the organizers are going into the last preparations with optimism. "We are usually reluctant about forecasts", said Dr. Thomas Scheuring, CEO of DECHEMA Ausstellungs-GmbH. "However, we see significant growth in some exhibition fields such as automation, pharmaceutical, packaging and storage technologies, but also in the mechanical processes group, and this certainly gives reason to positive expectations."

At the ACHEMA Press Preview mid-March it became apparent that all industries and exhibition groups are preoccupied with the "megatrend" digitalization, whether it's laboratory equipment, plant engineering or packaging and logistics. Exhibitors have many innovations up their sleeve that are



based on digital methods: Thanks to digital interfaces, pumps can be integrated via "plug and play" into a plant and monitor themselves. Control and operation centers are designed to redefine the collaboration between humans and machines. Especially the focal topics "Flexible production" and "Chemicals and pharma logistics" benefit from this trend as modular plants or integrated supply chains are inconceivable without data integration.

In addition, "conventional" topics such as components for increased process efficiency or new materials are also on the agenda of companies offering products and technologies for the chemical, pharma and food industry. And the focal topic "Biotech for Chemistry" does not only concern biopharmaceutical producers, but also "classical" players in the chemical industry: Increasingly they combine chemical and biotechnological steps especially in the production of fine chemicals.

Fristam
Hall 8.0, Booth A54 **www.fristam.de**

Fristam FPH range permits system pressures of up to 80 bar

Pump standard for hygienic filtration systems

Representing a specific evolution of Fristam FP centrifugal pumps, the FPH range combines all the construction benefits of the standard range, including open impellers and flow-optimised pumping channel, with the suitability for use under high system pressure and with high volumetric flows. What is more, FPH pumps transport media with a viscosity of up to 800 mPa s. Fristam engineers have succeeded in adapting the outstanding pumping properties, ease of maintenance, durability and efficiency of the standard pumps to meet the high requirements demanded in filtration technology.

Membrane filtration systems are used in the hygienic process industry, among other things to concentrate liquids in powder manufacturing as well as to gently make foodstuffs non-perishable without heat treatment or avoid physiological and/or taste changes in the product being pumped. Other key applications of this separation process include the concentration of valuable materials in the pharmaceutical industry and in biotechnology. High-pressure pumps are designed for the efficient operation of filtration systems, with multi-stage centrifugal pumps used as booster or feed pumps, and high-performance single-stage centrifugal pumps also used as circulation pumps under inlet pressure between and within the individual circuits. Fristam offers both types of pump across a wide output range.

Fristam FPH for high system pressures up to 80 bar *© Fristam*

Multi-tested technology for challenging conditions

In terms of its construction, the FPH range is based on the FP centrifugal pump, which has proved itself thousands of times over and has a high-quality solid stainless steel construction. Using the finite element method, Fristam engineers succeeded in precisely analysing the components of the pump subject to specific exposure, so that the housing, lantern or clamping disc, bolts and screws, could be specifically reinforced and the seals adapted to meet the specific challenges of high system pressures. Depending on the fluid used, the pumps feature a single or double-acting – also flushed – mechanical seal with the material combination adapted to the respective application. The sealing materials are all FDA-compliant. All pumps lend themselves perfectly to being cleaned in CIP systems and feature modern energy-efficient IE3 motors as standard. The different sizes are suitable for system pressures of between 30 and 80 bar and thus cover the entire range of hygienic high-pressure filtration applications.

Eaton
Hall 5.0, Booth D62 **Eaton.com**

Eaton to present the latest liquid filtration solutions at ACHEMA 2018

This year the Filtration Division of the energy management company Eaton will again be participating in the leading international trade show for the process industry taking place from June 11 through 15. At booth D62 in hall 5.0 Eaton will present its one-stop-shop solution for a range of applications for the segments "Industrial Processes", "Life Sciences" and "Hydraulic Filtration". Among the product portfolio highlights this year, available worldwide, are the new range of MAX-LOAD™ coreless filter bags, the BECO® depth filters as well as filters and filter elements for use in hydraulic systems.

The new MAX-LOAD coreless filter bags supplement Eaton's wide range of high-performance filters. They are made of melt-blown material and are suitable for applications involving high retention ratings, such as water treatment, filtration of bulk and fine chemicals or metal cleaning. The rigid, graduated material structure has a depth of over 18 mm and therefore offers a protective shield against hard, metallic, as well as deformable, gel-like contaminants. For widely varying operating conditions, reliability can be increased through an outer mesh cover of polyamide 6.6 with a thickness of 10 µm.

Along with MAX-LOAD filter bags, Eaton will also be presenting other product highlights from the Industrial Process segment such as the TOPLINE™ single bag filter housings made of highly corrosion- und temperature-resistant nickel alloy using cast components for the first time, the new range of filter cartridges for all types of industrial processes, as well as the MCF automatic filter series for innovative drive technology requiring no dynamic seals.

In the field of Life Sciences, the focus at this year's trade show will be on the BECODISC® range of products consisting of standard and specialized stacked disc cartridges. Part of the exhibit will also be devoted to the BECO INTEGRA DISC™ housing with raised edges and quick closure device. Easy to use when switching out stacked disc cartridges, it's perfect for complex applications in processes involving fine chemical or pharmaceutical products. The enclosed BECO INTEGRA PLATE™ EP plate and frame filter comes in five sizes, ranging from 200 mm to 1000 mm, thereby providing for perfect scalability.

The range of products on exhibit at booth D62 in hall 5.0 is rounded out with items from the Hydraulic Filtration segment. These include a variety of hydraulic filters, filter elements, EasyFit™ exchange filter elements, compatible with most competing systems, and the CCS4 contamination control system. The condition monitoring system measures the condition of oil in hydraulic systems in order to prevent damage and to ensure compliance with standards.

MAX-LOAD coreless filter bags *© Eaton*

LABEE COCONUT CAN SUCK JELLY DRINK

Other Soft Drinks | October 2018 | 0.75 USD 0.65 EUR | China

Company: Crayon Fujian
Description: Coconut jelly drink in a 150g plastic doy pouch.
Ingredients: Water, fructose syrup, nata de coco, concentrated apple juice, coconut powder, coconut juice, konjac powder, food additives (carrageenan, and xanthan gum, pectin, sodium carboxymethyl cellulose, lactic acid, potassium chloride, potassium citrate, sodium citrate, single, double stearate, sodium hexameta-phosphate, calcium lactate, potassium sorbate), edible flavor, fruit juice (15%).
Extra Notes: Shelf life: 6 months

WAHAHA HELLO-C DAIRY AND BLENDED FRUIT JUICE DRINK

Juice & Juice Drinks | March 2018 | 0.68 USD 0.59 EUR | China

Company: Hangzhou Wahaha Group
Description: Fruit juice drink with pineapple and coconut flavor, in a 450g plastic bottle.
Ingredients: Water, sugar, reconstituted milk, concentrated apple juice, blended fruit juice (pineapple, mango, grapefruit, lychee) additives (carboxymethylcellulose, citric acid, sodium triphosphate, sodium citrate, guar, aspartame, acesulfame-k, natural vitamin E, sucrose ester of fatty acid, beta-carotene.
Extra Notes: Shelf life: 9 months.

RIPE 100 % CALAMANSI JUICE

Juice & Juice Drinks | November 2017 | 2.66 USD 2.20 EUR | Singapore

Company: Australian Fruit Juice
Description: 100% calamansi juice in a 1L PET bottle.
Claims: Made from 100% juice. Made from concentrate. Certified halal. Recyclable packaging.
Ingredients: Water, freshly squeezed calamansi juice, refined cane sugar, permitted preservative (E211)
Extra Notes: Keep refrigerated at 0-4 degrees Celsius. Shake well before serving. HACCP certified. Product of Singapore.

MORE SPARKLING WATER WITH CHERRY FLOWER FLAVOR

Flavored Water | March 2018 | 0.96 USD 0.81 EUR | Taiwan

Company: Vedant
Description: Sparkling water with cherry flower flavor, in a 560ml plastic bottle.
Claims: Contains magnesium (9-24mg/L). Recyclable packaging.
Ingredients: Carbonated water, ocean deep water concentrate, spices.

MIXED VEGETABLE AND FRUIT JUICE WITH PURPLE CARROT JUICE

Juice & Juice Drinks | March 2018 | 2.10 USD 1.75 EUR | Thailand

Company: Uni President
Description: Mixed vegetable and fruit juice with purple carrot juice, in a 100ml Tetra Prisma Aseptic.
Claims: Contains 100% fruit juice. No sweetener added. No artificial color added. No preservatives. Certified halal. FSC certified. Recyclable packaging.
Ingredients: White grape juice 29%, apple juice 25%, orange carrot juice 14%, red grape juice 11%, purple carrot juice 7%, pineapple juice 6.7%, mixed fruit juice 0.248% (lemon juice, prune juice, strawberry juice, raspberry juice, blackcurrant juice, cherry juice) from mixed vegetable and fruit juice concentrate, bilberry extract 0.004%, nature identical flavor added.

VERMONT VILLAGE SIPPING RAW AND ORGANIC APPLE CIDER VINEGAR

Other Soft Drinks | March 2018 | 2.98 USD 2.47 EUR | United States

Company: Vermont Village
Description: Raw and organic apple cider vinegar with blueberries and honey, in a 236ml glass bottle.
Claims: This drinking vinegar were born from Suja's obsessions with cold pressed juice and gut health. Only at target. Contains 15 cal and 3g sugar. USDA organic. Non GMO Project Verified. Cold pressured protected.4B probiotics. Contains 8% juice. Certified gluten free. Certified kosher. Certified Organic by CCOF.
Ingredients: Raw, organic and unfiltered apple cider vinegar (with the ‚mother'), organic honey, organic blueberries.

MARTINELLIS SPARKLING CIDER

Juice & Juice Drinks | October 2017 | 1.00 USD 0.83 EUR | United States

Company: Martinellis

Description: Sparkling cider made from Northwest blend from U.S grown fresh apples, in a 250ml glass bottle.

Claims: Gold medal.100 % juice. Not from concentrate. Celebrate with Martinelli's in perfect taste. Certified kosher. Pasteurized

Ingredients: 100 % pure carbonated apple juice from U. S. Grown fresh apples, vitamin C

Extra Notes: Since 1868. Natural sediment may occur.

RAW JUICERY MELON ROSE

Juice & Juice Drinks | March 2018 | 6.99 USD 5.80 EUR | United States

Company: The Raw Juicery

Description: Cold pressed watermelon and rose juice drink, in a 355ml PET bottle.

Claims: Cold pressed. Electrolyte-rich. For skin health. Floral, mellow and refreshing. USDA Organic.1 billion living probiotics. Contains 55% juice. Low glycemic. Cold pressure technology. Certified organic by QAI. BPA free.100% vegan. Organic. Gluten free. Small batch. No additives. No preservatives. Never heated. Certified R.A.W. Not from concentrate. Consciously sourced. The super food plus probiotics collection brims with ingredients high in antioxidants, essential vitamins, living enzymes and the good bacteria to keep you and the flora in your gut balanced. Recyclable packaging.

Ingredients: Watermelon*, rose water* (filtered water, rose petals*), lemon*, mint*, baobab*, probiotic cultures (bacillus coagulans gbi-30 6086); *organic.

INNOVA MARKET INSIGHTS

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.

The Innova Database is an online, cutting-edge food and beverage product database – created by a dedicated team of industry- leading food and beverage experts that collect the latest data from more than 70 countries. This allows you to instantly track trends and innovations across all food and beverage categories with just the click of a mouse. At Innova, their goal is simple – help you stay ahead of the curve.

For more details and more products please contact:

Dominik Herwald, Innova Market Insights BV; dominik@innovami.com and visit www.innovadatabase.com

IFF to combine with Frutarom to create a global leader in taste, scent and nutrition

International Flavors & Fragrances Inc. and Frutarom announced that they have entered into a definitive agreement under which IFF will acquire Frutarom in a cash and stock transaction valued at approximately $7.1 billion, including the assumption of Frutarom's net debt. Under the terms of the agreement, which has been unanimously approved by the Boards of Directors of both companies, Frutarom's shareholders will receive for each Frutarom share $71.19 in cash and 0.249 of a share of IFF common stock, which, based on the 10-day volume weighted average price (VWAP) for IFF's common stock for the period ending May 4, 2018, represents a total value of $106.25 per share.

By combining with Frutarom, IFF is accelerating its Vision 2020 strategy to create a global leader in taste, scent and nutrition. The combination unites two industry-leading, innovative companies with complementary customers, capabilities and geographic reach, resulting in more exposure to fast growing end markets and an enhanced platform to deliver sustainable, profitable growth. The combined company's customers will have access to comprehensive and differentiated integrated solutions with increased focus on naturals and health and wellness.

Frutarom is a flavors, savory solutions and natural ingredients company, with production and development centers on six continents. It markets and sells over 70,000 products to more than 30,000 customers in over 150 countries. Frutarom is primarily focused on natural products, which drive more than 75 % of its sales. Frutarom's product portfolio consists of innovative and integrated solutions combining taste and health, natural and clean label products. In addition, Frutarom mainly serves local and mid-size customers, and has a compelling presence in fast-growing adjacent and complementary categories such as natural colors, health and beauty ingredients, natural food protection and enzymes. Frutarom has a strong track record of growth, with expected sales of above $1.6 billion in 2018, and their previously announced target of $2.25 billion in sales by 2020.

Source: International Flavors & Fragrances Inc.

BUSINESS NEWS +++ BUSINESS NEWS +++ BUSINESS NEWS +++ BUSINESS NEWS +++ BUSINESS NEWS

A Big-Time Boost for Citrus Nutrition Programs

Today's successful citrus growers employ a variety of strategies to manage HLB. Coordinated insecticide sprays and bactericides are two of the main methods growers are using to battle citrus greening in their groves. But just as important as these methods is intensive nutrient management.

Growers around the world are super-charging their plant nutrition programs with Wildfire micronutrient coating powders from Scott G. Williams, LLC. By blending Wildfire with nitrogen, phosphorus and potassium, growers can easily and economically add the specific micronutrients they need to their fertilizer formulas. Wildfire is available in both single-element formulations as well as custom blends.

Wildfire's patented Ultra Chelation™ technology allows for application versatility. The technology is available in a powder form (for fertigation, drip and foliar applications) or as a pellet (for granular fertilizer soil applications).

Taking no risks in the food industry: GKD process belts and seam FDA-certified

In the world of global trade, food safety deserves particular attention. The toughest quality standards in place to ensure this safety are the regulations enacted by the US-American Food and Drug Administration (FDA). As such, FDA-compliant production is crucial for food producers to survive in international trade. Synthetic process belts from GKD – Gebr. Kufferath AG (GKD) now also provide vital added value with their end-to-end FDA-certification. Whether for dewatering, drying, or cooling: every one of the application-specific belts is FDA- certified, including the seam. That makes the GKD belts the globally approved first choice for the transport and processing of unpackaged foodstuffs.

Fruit Juice Industry *© GKD*

In the food industry, only companies that work to FDA standards – which also means using appropriately certified components and materials in production – stand a chance of surviving in global competition in the long run. It follows then that process belts in direct contact with foodstuffs must also meet extremely strict requirements in order to prove that they ensure the necessary safety. They need to be able to stand up to the relevant processing conditions, the material used may not transmit any harmful substances to the foods or alter their constitution, it must be tasteless and odorless and easy to clean, as well as highlydurable.

As the leading international producer of process belts for the food industry, GKD ensured that its products conformed to food safety standards very early on and has gradually acquired the relevant certifications. The overall FDA certification for the polyester belts with PAD seam that has most recently been received clearly highlights the manufacturer's leading role. The plastics used for the mesh as well as the glue and staples of the seam fulfill the tough FDA specifications. This compliance is regularly monitored and certified by an external testing institute. As such, the belts also meet the European standards of EU 10/2011 and EC 1935/2004. Plus, GKD actively follows the code of Good Manufacturing Practice (GMP) and a strict HACCP concept (Hazard Analysis and Critical Control Points), which ensures that the products are free from metal contamination or other foreign bodies. Observance of the relevant process routines is monitored by quality assurance in line with ISO9001:2015.

FDA approval for maximum requirements

The added safety bonus with the FDA certification is provided by the inspection parameters created by GKD, each of which fulfills maximum requirements. As such, the belts not only meet the FDA standards under moderate working conditions, but are tested according to the actual loads. In order to ensure this, GKD developed maximum risk assessments together with the customers and seamlessly adapted the processes and the materials used to them. Extensive documentation verifies the underlying concept, risk definitions, and the measures taken to avert them. For example, the synthetic belts meet the FDA requirements when washing lettuce just as well as when drying herbs or producing fruit juice and milk. The belts tested and FDA-certified for single and multiple contact up to a contact duration of 120 minutes at 90°C therefore offer food contact safety of the highest level. The entire delivery chain was arranged accordingly to achieve such levels through audits and quality agreements – including the obligation to audit the respective upstream suppliers aswell.

In the best hands

GKD ensures that it maintains its state of the art through regular exchange with colleagues from the subsidiary in the USA and at conferences of specialist institutes and the German Federal Institute for Risk Assessment (BfR). An extensive declaration of conformity that was drawn up in line with the relevant FDA paragraphs provides proof of the high standard of certification. If desired, GKD also supports manufacturers from the food industry in preparing customer audits through consulting on site or at its own factory. Thanks to decades of research in the sector and integrated competence – from consulting through engineering and development of process-specific product modifications or even new developments, to manufacturing and assembly – GKD offers customers the certainty that they are in the best hands in terms of food-safety-compliant process belts.

Innovation blooms this spring via Blossom Water Version 2.0

Blossom Water LLC introduces Blossom Water Version 2.0, a transformational evolution of the category-creating essence water that is distinguished by appreciation and use of blossom botanicals. More than ever, Blossom Water checks all the boxes in addressing those core values that mainstream, discriminating buyers seek: a drink that is healthful, convenient to consume and, above all, truly enjoyable.

New Health Benefits

With Version 2.0, Blossom Water ups the ante as a better-for-you beverage. While a touch of sweetener remains indispensable for carrying the lively yet nuanced flavours that are Blossom Water's hallmark, this new version has been reformulated to more than halve the original's already low calorie and sugar content. Through a proprietary, next-generation sweetener blend, each serving is now only 10 calories and 2 grams of sugar – with 0 (zero) compromise on taste. Moreover, in the spirit of offering an even cleaner label, erythritol and agave have been eliminated. Version 2.0 also provides a new and valuable functional benefit for supporting immune health. With this game-changing enhancement, Blossom Water is the only shelf-stable RTD beverage providing clinically proven immune support efficacy on a par with that of probiotics.

Immunity has become an area of paramount interest for food and beverage consumers, in keeping with the trend toward a more preventive approach for protecting health. Surveys show immune support to be consumers' second most desired functional benefit, behind only general health and wellness. That's not surprising since a strong immune system is the best defense for maintaining wellness and vitality. Natural immunity can be operating at less than full strength due to a host of factors: dietary or sleep deficiency, age (children, for example, don't have fully developed immune systems) or just plain stress brought on by today's fast-paced way of life. To help address the need, Blossom Water Version 2.0 includes Staimune®, an FDA GRAS functional ingredient that was developed by Ganeden, now part of Kerry Group.

New Packaging

To signify these fundamental improvements, as well as aid convenience and versatility, Blossom Water Version 2.0 sports completely refreshed packaging. The label is now dramatic matte white, suggestive of the heightened wellness value, while strikingly superimposed flower and fruit watercolors convey the same dedicated commitment to flavor. Instead of glass, the bottle is now 100 % recyclable,

© Blossom Water LLC

BPA-free PET for better portability (lighter weight with no breakage worry) that fits with busy lifestyles and a wide range of occasions for consumption. Finally, the logo's blossom image is thrown into sharper relief, clearly tying to the brand's original inspiration and ongoing vision for development.

New Flavor

That vision is on display with the expansion of Blossom Water's product line to include mango hibiscus, a new flavor that fuses succulent, mellow mango with the gentle, berry-like zest of hibiscus. Touted as „the king of fruits" in Asia and South America for its luscious juiciness, mango is gaining favor in the U.S. with growing influence of more ethnically diverse Millennials. At the same time, hibiscus in food and drink has begun to catch fire in the country. Whole Foods Market ranks floral flavors as #1 on its list of top 10 trends for 2018, and further singles out hibiscus as a „hot part of the trend." Blossom Water's hibiscus comes from Hibiscus sabdariffa that's sustainably grown by local farmers in Sudan and Nigeria, who handpick and sun-dry the ruby red bases (calyces) of the flowers after bloom. Hibiscus has been consumed as a beverage for hundreds of years across Africa, Asia and Latin America. In Northern Africa, for instance, weddings and other special events are toasted with a glass of karkade, water infused with hibiscus calyces and sweetened with honey. In Southeast Asia, the calyces are frequently made into a syrup and poured over ice. And throughout Mexico, Central America and the Caribbean – where hibiscus is often called Jamaica – agua de flor de Jamaica is popular as a refreshingly crisp drink to help beat the heat. Harmonized to bring out the best and most complementary attributes of each, Blossom Water's mango hibiscus delivers a delightfully balanced sweet-tart taste and fresh fruit nose.

Curiously crafted sodas

A mouth-watering blend of sparkling spring water, apple cider vinegar with mother, honey, fruit juices and carefully selected botanical extracts that will delight your taste buds, satisfy your thirst and fuel your body with natural goodness.

Sugar Tax exempt, with only naturally occurring sugars from the fruit juices and honey, and certified organic by the Soil Association, Switchle is curiously crafted in small batches from only the finest natural ingredients. Each 250 ml serving has just 55 calories - is vegetarian, gluten-free and in 100 % recyclable cans.

The inspiration behind Switchle is centuries old. In fact, in its most basic form it dates back to the 400 B.C. when Hippocrates, the father of medicine, prescribed apple cider vinegar mixed with honey for a number of ailments. Fast forward to 17th Century United States and 'Switchel', as it became known, was popularised by colonial farmers who added water and ginger and drank it to quench their thirst in the hot fields whilst harvesting the summer hay.

In 2017, we set out to evolve the formula by adding the finest organic ingredients to create a modern British version with a twist and subtly altered the name to Switchle. Using real spring water, Switchle is then blended with organic honey and organic apple cider vinegar 'with mother'; which today is known to help alkalise the body, lower blood sugar levels and cholesterol and is also said to increase satiety, helping you lose weight. We then added a unique combination of popular health-giving organic fruit juices, spices and botanical extracts to produce 3 unique flavour combinations (Matcha, Lime and Mint, Rooibos, Raspeberry and Pomegranate & Tumeric, Ginger and Peach).

© Switchle

https://www.healthysales.co.uk/switchle

OFFERS & REQUESTS

Closing dates:
FRUIT PROCESSING 6/2018 digital **– June 15, 2018**
FRUIT PROCESSING 7/2018 print + digital **– July 10, 2018**

For further details please ask Mrs Cornelia Hebbe: advertising@fruit-processing.com or phone +49 (0) 2634 9235-16

New process prolongs Chia Oil's shelf-life

Successful co-operation between Taiyo and Benexia

Taiyo, an expert manufacturer of functional ingredients, offers Xia Oil, a premium chia oil, that remains stable for up to two years. Using a novel process, XIA PURE Ox Blocker technology, the taste and smell of the oil stay fresh and its nutraceutical properties remain intact. With a content of more than 60% alpha-Linolenic acid, Xia Oil from Chilean chia seeds is the richest natural source of vegetarian omega-3 fatty acids on the market, making it an ideal dietary supplement for vegetarians and vegans. A regular intake has a positive effect on heart health, blood circulation and cortisol levels.

Healthy oils are usually very sensitive to oxidation and perish quickly. To counteract this problem, Taiyo has collaborated with Benexia, one of the leading cultivators and processors of chia seed ingredients for the nutritional, food and beverage industries. Working closely together, the two companies have successfully developed XIA PURE Ox Blocker technology. The patented technique provides improved oxidative stability and a longer shelf-life for the high quality, 100 % natural seed oil. Benexia is responsible for the entire supply chain of the oil in Chile, thus ensuring its quality from cultivation to harvesting and processing.

By cold pressing of the chia seeds without using chemical solvents or thickening agents, the oil retains its natural tocopherols. It can be kept for up to two years at normal ambient temperatures, during which time the antioxidant ORAC-level remains constant. Xia Oil is almost colorless and tasteless, with a slightly nutty note. As such, it can be used in powder form, added to juices, smoothies and mueslis, or utilised as a rapeseed or olive oil substitute in dressings.

„Chia Oil is the richest vegetarian source of omega-3 fatty acids in nature. It consists of 60 % alpha-linolenic acid (ALA), a polyunsaturated omega-3 fatty acid that has,

© joannawnuk – 123rf

among other benefits, a positive effect on the immune system, metabolism and blood pressure. Also containing polysaccharides, which inhibit carbohydrate breakdown in the gut, it can also contribute to gastrointestinal well-being and a healthy diet as well. In addition, Xia Oil has an anti-inflammatory effect and is rich in valuable nutrients and trace elements," says Stefan Siebrecht, Managing Director of Taiyo GmbH and micronutrient expert.

To ensure the safety of its nutraceutical products, Taiyo's chia ingredients are sterilized using an approved Log-5 reduction technology. Apart from Xia Oil, the company offers food grade white or black chia seeds, as well as micronized chia protein and fiber with standardized particle sizes.

Taiyo also works on powdered Xia Oil that is sprayed on Sunfiber, a water soluble dietary bean fiber, for this as ALA-powder in powder shakes and food products. These ingredients allow the high quality nutrition of chia to be added to a broader range of formulations, such as capsules, beverages, various powder blends and healthy fats blends. All products are certified gluten free, halal, kosher and vegan.

(Price Information without Liability)

Source: Survey by confructa 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@confructa-medien.com

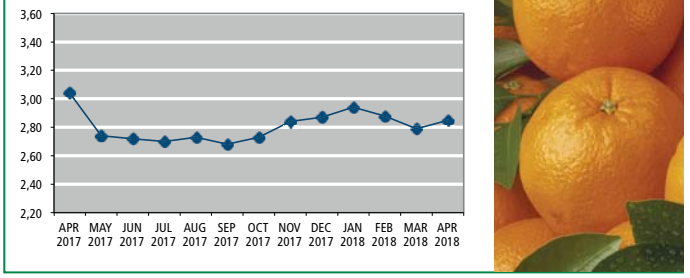
Prices: The price range is calculated for juice or puree of different proveniences, traded in drum or bulk; $/kg = cif Rotterdam; EUR/kg = DDP

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')

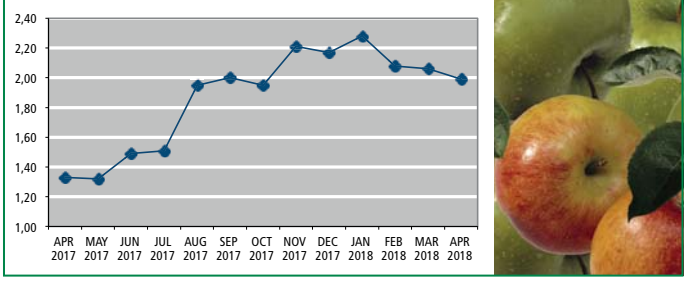
Orange Juice Concentrate

65 °Brix, $/kg



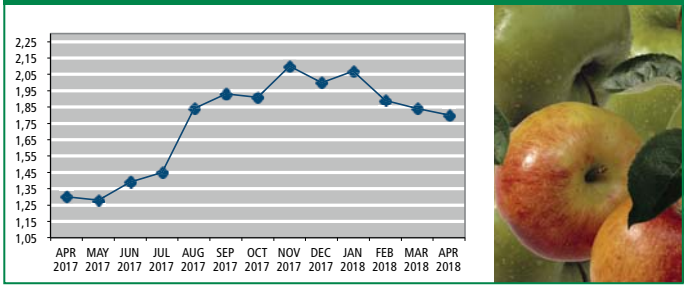
Apple Juice Concentrate

70 °Brix, high acidity, EUR/kg



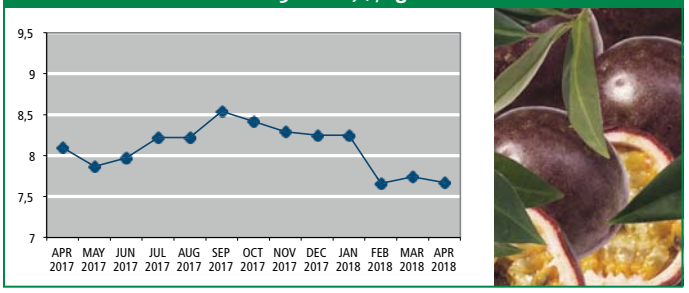
Apple Juice Concentrate

70 °Brix, low acidity, EUR/kg



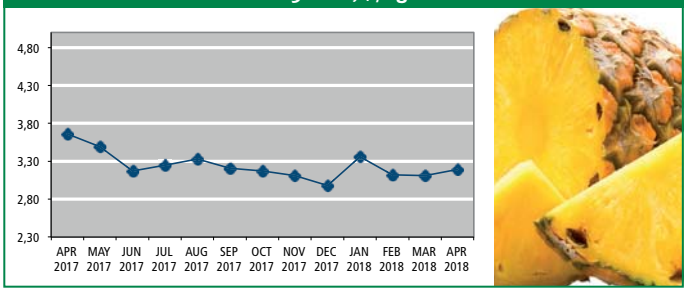
Passion Fruit Juice Concentrate

50 °Brix, $/kg



Pineapple Juice Concentrate

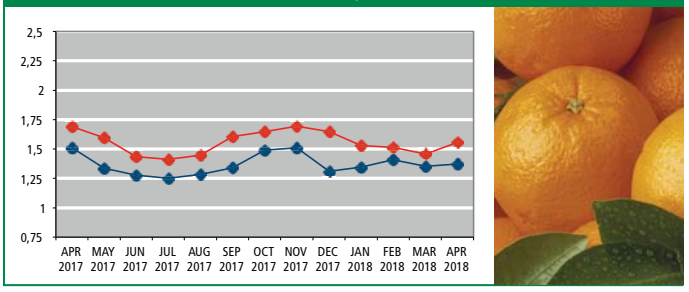
65 °Brix, $/kg



Orange Juice Concentrate

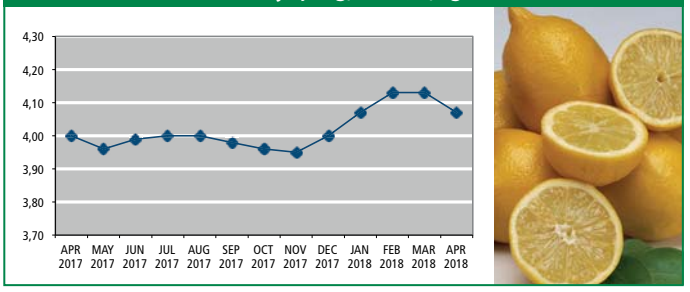
Future Markets $/lb.

= highest values
= lowest values



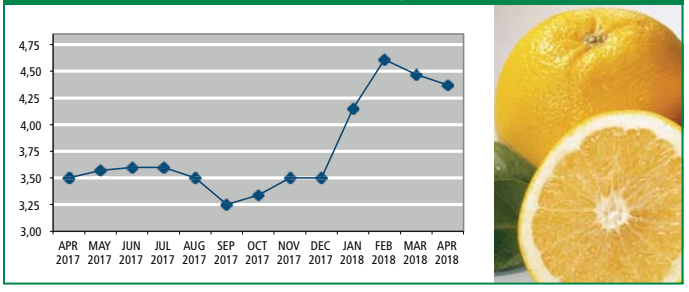
Lemon Juice Concentrate

cloudy, 400 g/l acid, $/kg



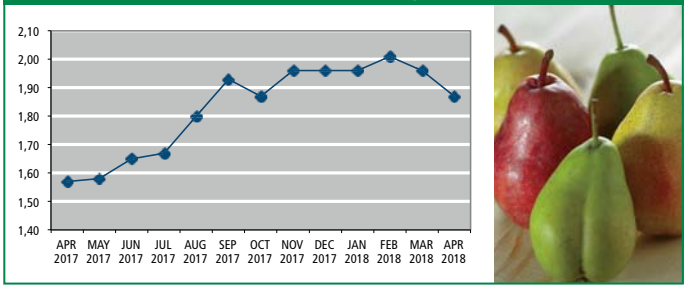
Grapefruit Juice Concentrate

58 °Brix, $/kg



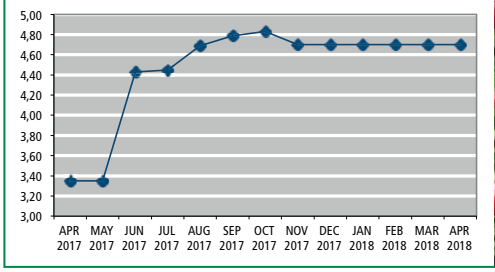
Pear Juice Concentrate

65 °Brix, EUR/kg



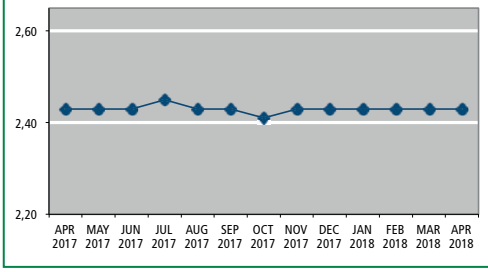
Sour Cherry Juice Concentrate

65 °Brix, EUR/kg



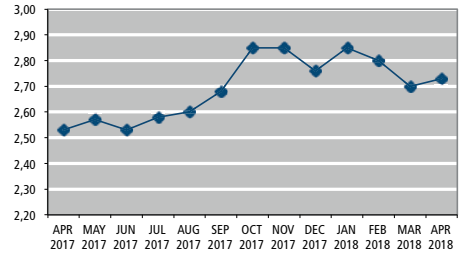
Black Currant Juice Concentrate

black, 65 °Brix, EUR/kg



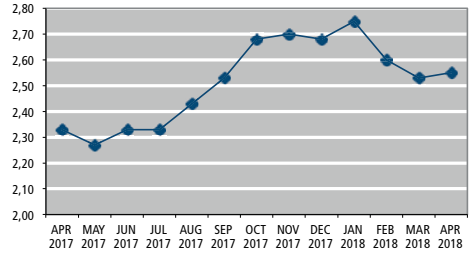
Grape Juice Concentrate

white, 65 °Brix, EUR/kg



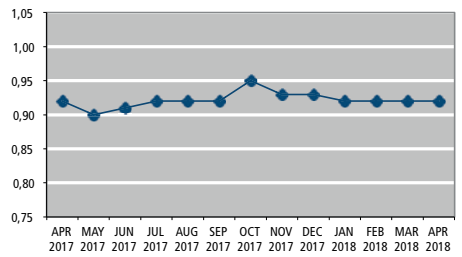
Grape Juice Concentrate

red, 65 °Brix, EUR/kg



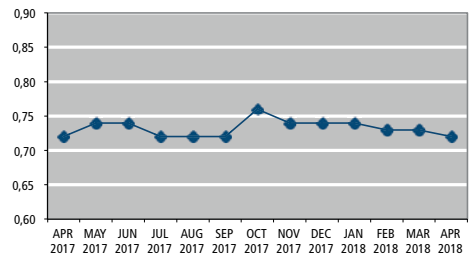
Apricot Puree

EUR/kg



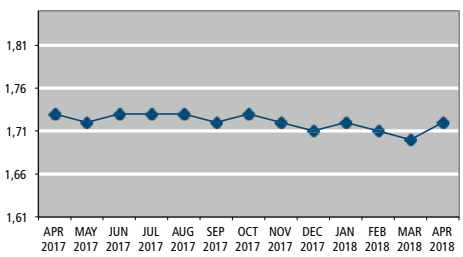
Banana Puree

22-24 °Brix, $/kg



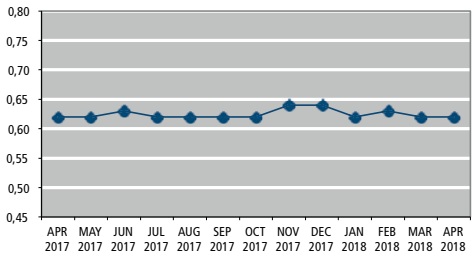
Mango Puree

15 °Brix, $/kg



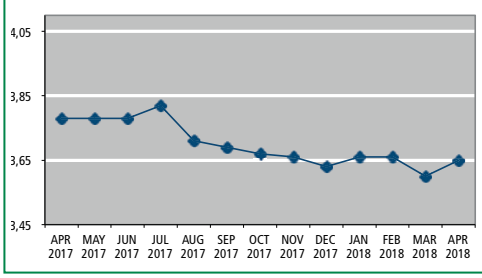
Peach Puree

EUR/kg



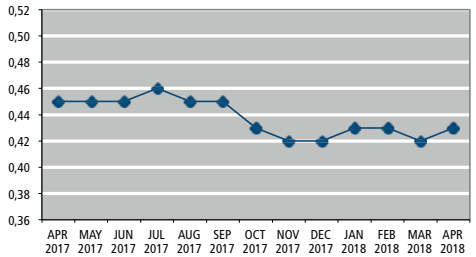
Carrot Juice Concentrate

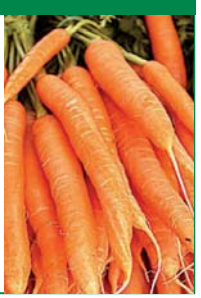
65 °Brix, EUR/kg



Carrot Juice

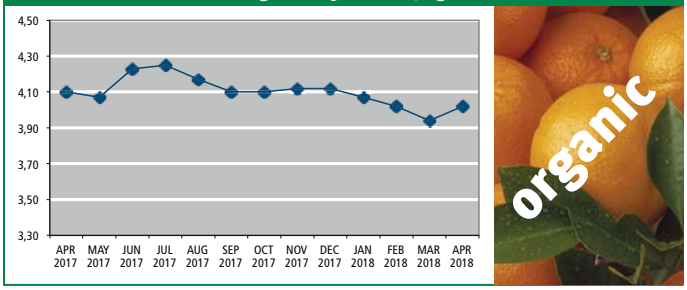
EUR/l





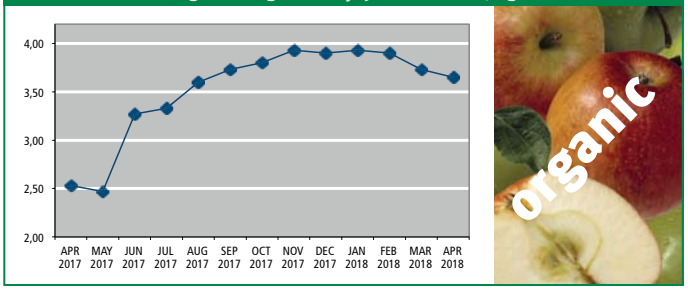
Orange Juice Concentrate

organic, 65 °Brix, $/kg



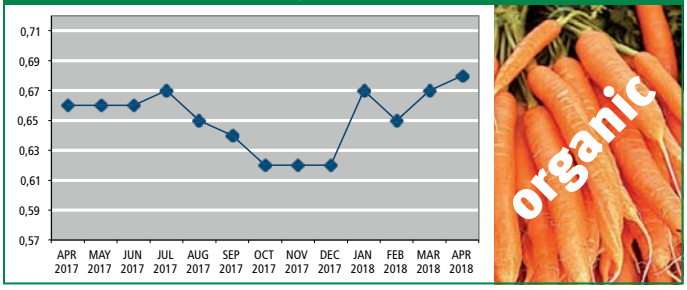
Apple Juice Concentrate

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



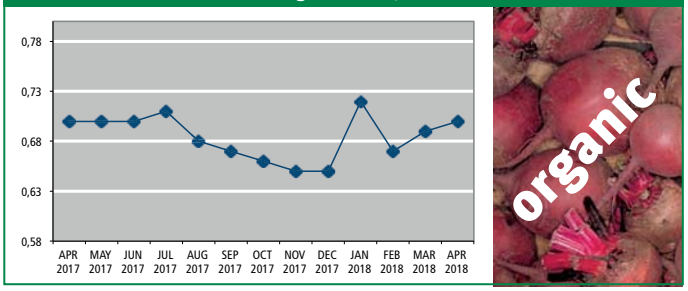
Carrot Juice

organic, EUR/l



Red Beet

organic, EUR/l



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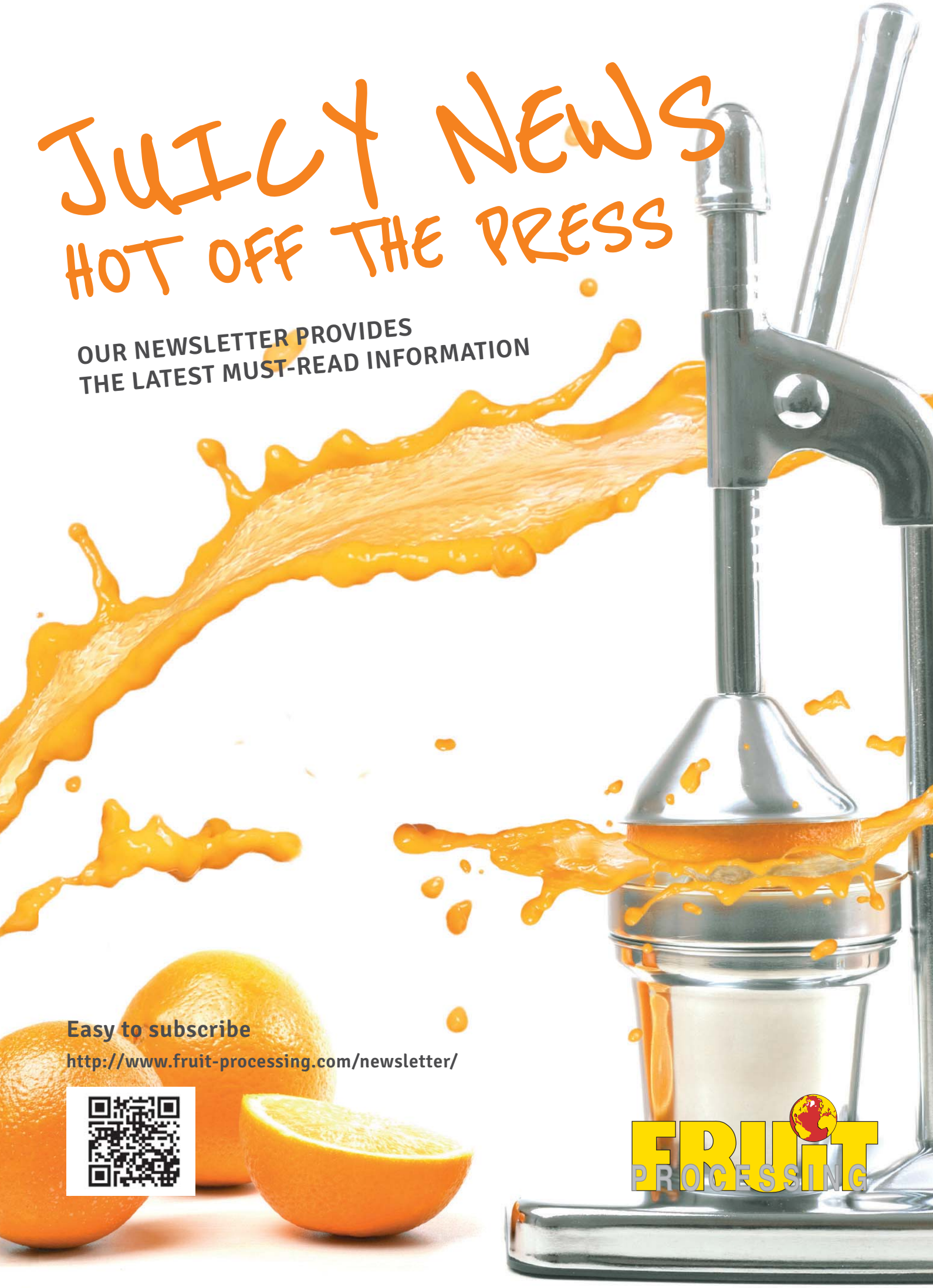

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