



**FRUIT**  
PROCESSING *digital*

**Welcome to the first digital edition of  
FRUIT PROCESSING.**

**Enjoy reading!**



# FRUIT PROCESSING *digital*

[www.fruit-processing.com](http://www.fruit-processing.com)

Flavours &  
Ingredients

Clean Labelling

Bio & Wellness Drinks

Market Price Report

New Product Launches

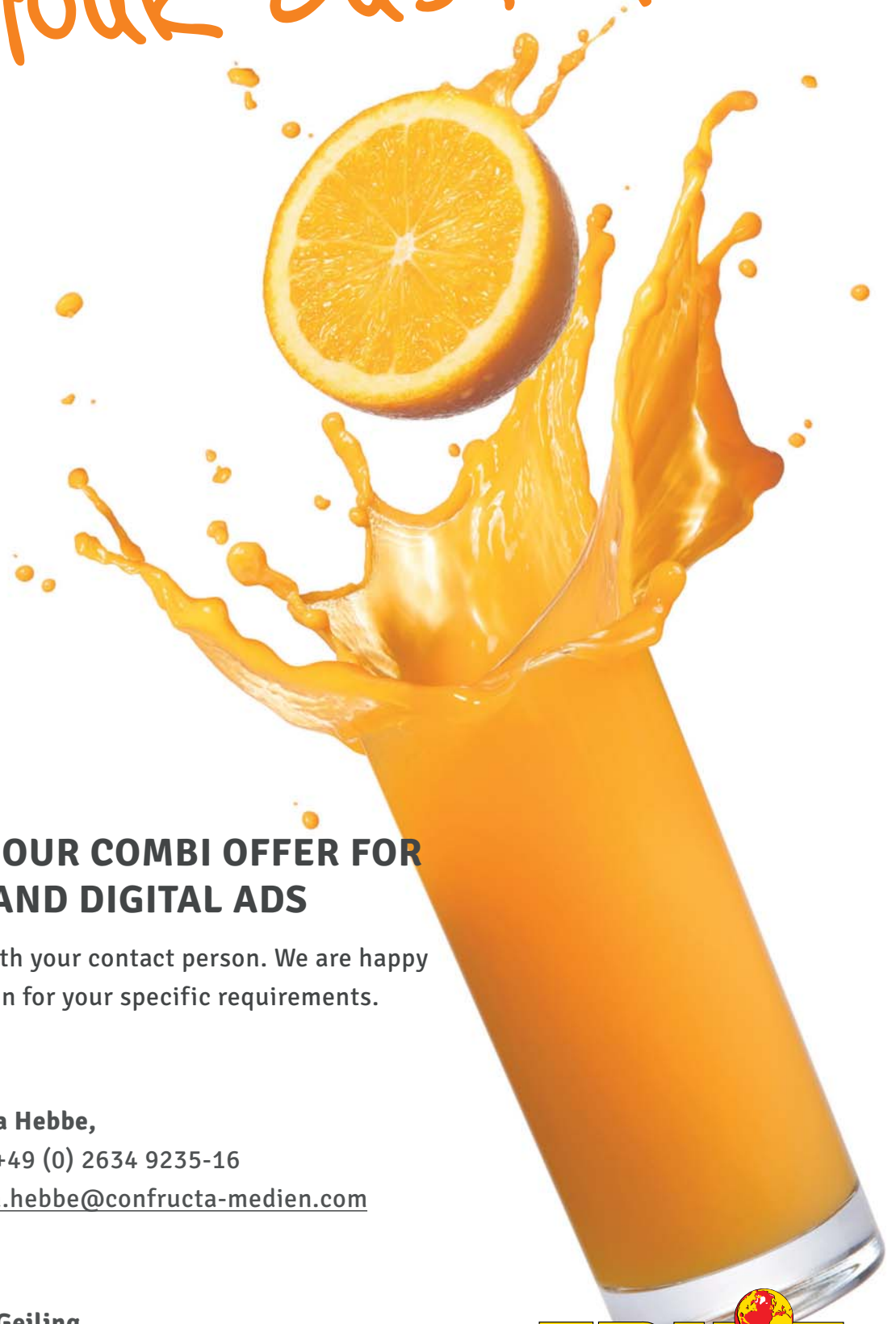
FEBRUARY  
2/2017

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



**Welcome to the first digital edition of  
FRUIT PROCESSING**

# AN EYE-CATCHER FOR YOUR CUSTOMERS



## MAKE USE OF OUR COMBI OFFER FOR YOUR PRINT- AND DIGITAL ADS

Please get in touch with your contact person. We are happy to send you a quotation for your specific requirements.



**Cornelia Hebbe,**  
phone: +49 (0) 2634 9235-16  
[cornelia.hebbe@confructa-medien.com](mailto:cornelia.hebbe@confructa-medien.com)



**Regina Geiling,**  
phone: +49 (0) 2634 9235-11  
[regina.geiling@confructa-medien.com](mailto:regina.geiling@confructa-medien.com)

**FRUIT**  
PROCESSING

# EDITORIAL

*Dear Readers,*

thanks to the solid experience gained the last couple of years, we have decided to match the editorial line, which distinguishes FRUIT PROCESSING since 1990, with content about the fruit processing and juice business, technology and production, product development and quality assurance, science and research so as to offer five additional digital editions with more content for readers and new opportunities for advertisers, to support placement and visibility on the international juice and soft drinks market.

As we enter a more digital centric age, FRUIT PROCESSING is going to pioneer digital content delivery beyond the printed editions of the magazine you can already enjoy. Check out the first digital edition FRUIT PROCESSING on [www.fruit-processing.com](http://www.fruit-processing.com) and please share your thoughts with us and leave your comments to serve you even better.

Consequently, we are relaunching the FRUIT PROCESSING website in the next weeks! There will be more comprehensive sections, more regular news and promotional feed, as well as a new 'shop' section.

We encourage all our readers in companies from more than 115 countries to send their news releases and manuscripts for publication in the regular departments of FRUIT PROCESSING: business news, product showcase and special feature articles to demonstrate your expertise in the fruit processing industry.

Follow us on social media and link up with us and our professional network to keep up-to-date with the latest company news, research highlights and benefit from a range of useful resources.

Looking forward to reading you!

Yours,



*M. Benich*

### CLEAN LABELLING

#### “Clean Supreme” leads top trends for 2017 . . . . .46



Growing calls for transparency throughout the supply chain are taking clean & clear label to a new and supreme level. This comes as the inherent benefits of plant-based products are being actively marketed to a more health conscious consumer. “Clean Supreme” and “Disruptive Green” lead Innova Market Insights’ Top Ten Trends list for 2017...

#### Free-from and organic . . . . .48

Free-from and organic becomes the fastest growing health and wellness categories in 2016. According to Global market research company Euromonitor International, foods and beverages offering health benefits, such as free-from, and organic properties, drove value sales in 2016 with organic increasing by 6.8 percent to...

### EVENTS

#### Organic continues to grow in Europe . . . . .49

Each year, European consumers are spending more for organic food – on average 36.4 euros in Europe and 53.7 in the European Union. The Swiss spent the most on organic food: Switzerland is the country with the highest per capita spending on organic food worldwide (262 euros), followed by Denmark (191 euros) and Sweden (177 euros). European countries also have the highest organic market shares: Denmark has the lead with 8.4 %; in Switzerland, the organic market share is 7.7 % and in Luxembourg 7.5 %...

### IMPRINT

#### Publisher

Evi BRENNICH

#### Editorial Office

Editor-in-Chief: Evi BRENNICH

[editorial@fruit-processing.com](mailto:editorial@fruit-processing.com)

Editor: Marco BRENNICH

[marco.brennich@fruit-processing.com](mailto:marco.brennich@fruit-processing.com)

#### Advertising

Cornelia HEBBE

[cornelia.hebbe@fruit-processing.com](mailto:cornelia.hebbe@fruit-processing.com)

#### Advertisement Rates:

Current price list 2017 on request and at

[www.fruit-processing.com](http://www.fruit-processing.com)

#### Readers' Service

Christian FRIEDEL

[christian.friedel@fruit-processing.com](mailto:christian.friedel@fruit-processing.com)

#### Subscription Rate (print)

Europe: EUR 115 incl. mailing cost

Overseas: EUR 124 incl. mailing cost

**Cancellation:** Written notice one month prior to the end of the subscription period.

#### Layout

confructa medien GmbH  
D-56587 Oberhonnefeld, Germany

#### Address for all Communications:

confructa medien GmbH  
FRUIT PROCESSING  
Westerwaldstrasse 2a  
D-56587 Oberhonnefeld, Germany  
phone: +49 (0)2634 9235-0  
fax: +49 (0)2634 9235-35  
[editorial@fruit-processing.com](mailto:editorial@fruit-processing.com)  
[www.fruit-processing.com](http://www.fruit-processing.com)

Inhaberhältnisse gem. Pressegesetz Rheinland-Pfalz  
Evi Brennich 51 %, Guido Hoffmann 26 %, Lothar Hoffmann 14 %, Hubert Brennich 9 %;  
Geschäftsführende Gesellschafterin: Evi Brennich  
HRB 14556 Montabaur

#### Printed by:

mohr medien GmbH, Metastraße 3,  
D-56579 Rengsdorf, Germany

#### Note:

The views and opinions expressed by the authors do not necessarily reflect those of the publisher or the editorial staff.

Original science and research papers will be presented for scrutiny to a member of the Peer Review Board. All manuscripts must be written in English. If English is not the author's primary language, the author should obtain assistance.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

**FRUIT** is read in over 115 countries by more than 30,000 readers per issue.

Publication frequency (print): Bimonthly, published in January, March, May, July, September and November.

© Copyright 2017 confructa medien GmbH, Westerwaldstrasse 2a, D-56587 Oberhonnefeld, Germany

ISSN 0939-4435,  
Printed in Germany

## NUTRITION & HEALTH

*Fred Brouns*

**Key Paper: New WHO Sugar Guidelines: Why is milk good and fruit juice bad?\*** . . . . . **54**

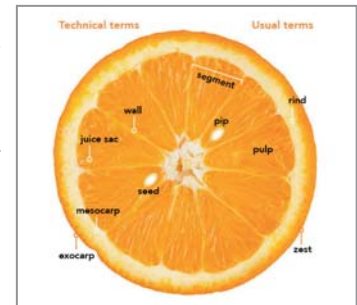
The newly released WHO guideline for the consumption of sugars has sparked immediate criticism. Basically, the WHO guideline strives for a reduction in the use of “added sugars” as listed in food and drink composition tables. Added sugars means “mono- and disaccharides” added by the manufacturer, cook or consumer, to food or drink during the process of preparation for consumption”...

## PLANT TECHNOLOGY

*Göran Stjernberg*

**Key Paper: Meeting the challenges of particles, fibres and pulp in beverages\*** . . . . . **58**

Taste, aroma, texture and mouth feel. The world of beverages is exciting just because that’s what beverages do. They excite our mouths, throats and imagination. They take us to a different place. So the search for new and better ways of titillating taste is a driving force in new beverage development. Carbonation is a well-established way of adding sensations. Another trend we see now is to add food particles – for example, from fruits, nuts or other plants – to change the way a beverage is experienced...



## REGULAR SECTIONS

<b>Editorial</b> . . . . .	<b>43</b>
<b>Imprint</b> . . . . .	<b>44</b>
<b>New Product Launches</b> . . . . .	<b>64</b>
<b>Business News</b> . . . . .	<b>66</b>
<b>Business Contacts</b> . . . . .	<b>71</b>
<b>Market Price Report</b> . . . . .	<b>72</b>
<b>Peer Review Board</b> . . . . .	<b>74</b>
<b>World of Fruit Processing</b> . . . . .	<b>75</b>



# “Clean Supreme” leads top trends for 2017

A clean supply chain and plant power will trend strongly

| Clean Supreme | innova market insights | Plant Power | Supply Chain |

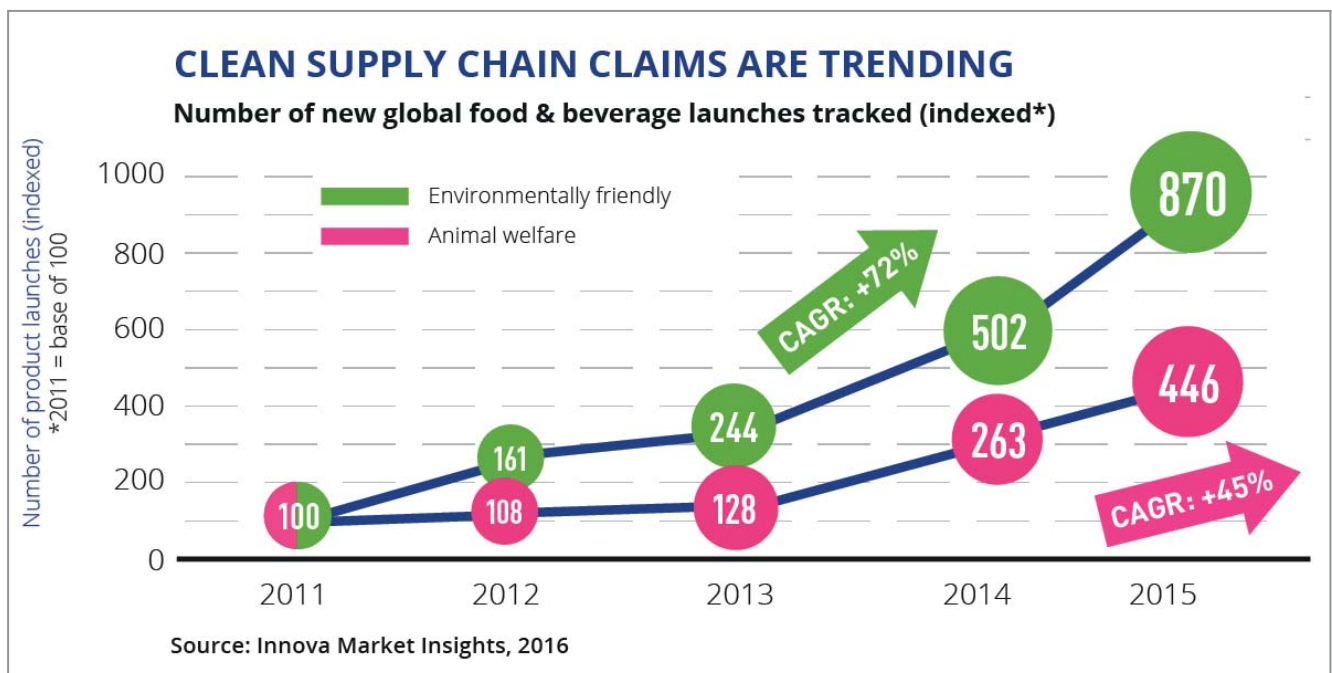
Growing calls for transparency throughout the supply chain are taking clean & clear label to a new and supreme level. This comes as the inherent benefits of plant-based products are being actively marketed to a more health conscious consumer. “Clean Supreme” and “Disruptive Green” lead Innova Market Insights’ Top Ten Trends list for 2017.

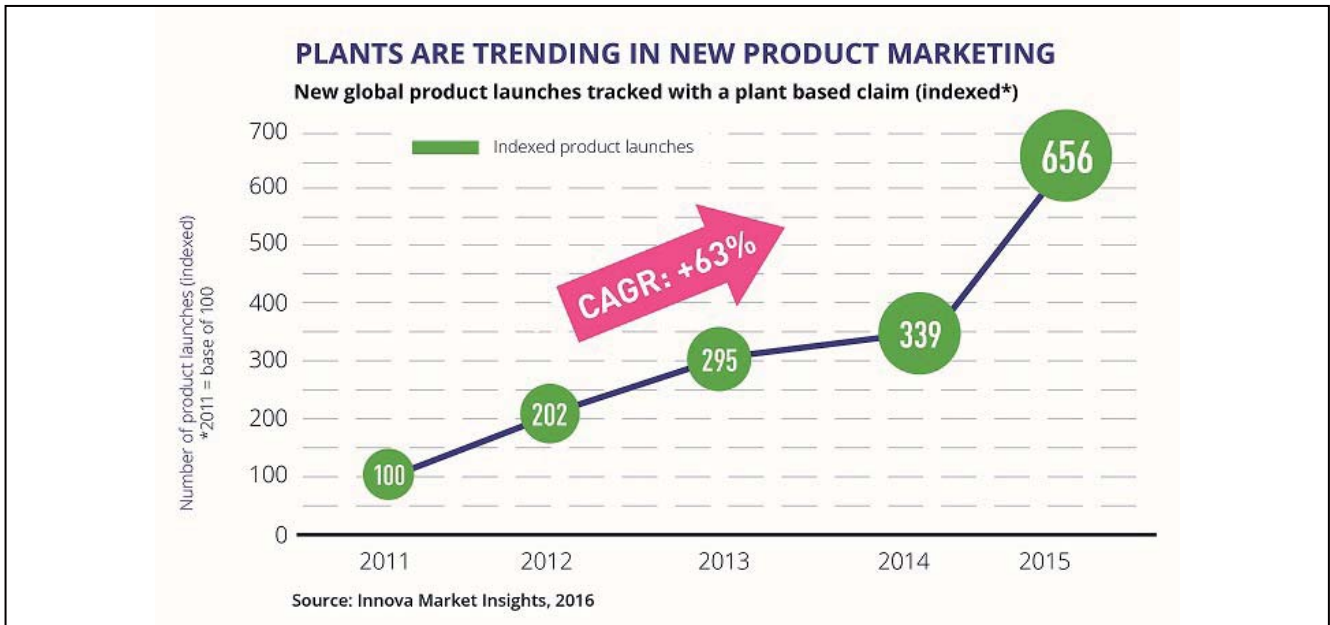
“Interest in naturalness and clean label continues to feature strongly,” according to Lu Ann Williams, Director of Innovation at Innova Market Insights. “It has become somewhat of a running theme through our trends forecasts in recent years. In 2008, ‘Go Natural’ led our trends list, and since then the theme has featured each year in different forms, such as ‘Processed is Out’ in 2011, ‘From Clean to Clear Label’ in 2015 and ‘Organic Growth for Clear Label’ in 2016. This year, clean & clear is a theme weaving throughout the entire list, but is specifically the case for trend #1 (‘Clean Supreme’).”

Innova Market Insights has revealed its top trends likely to impact the food industry in 2017 from its ongoing analysis of key global developments in food and drinks launch activity worldwide.

**The top five trends for 2017 are:**

- 1. Clean Supreme:** The rules have been rewritten and clean and clear label is the new global standard. The demand for total transparency now incorporates the entire supply chain, as a clean label positioning becomes more holistic. Trending clean supply chain claims include “environmentally friendly,” which has shown a CAGR growth of +72% from 2011-2015 and “animal welfare,” which has grown at +45% per year during this period.
- 2. Disruptive Green:** As plant-based milks, meat alternatives and vegan offerings have rapidly moved into the mainstream, consumers are looking for innovative





options to take the inherent benefits of plants into their daily lives. Even dairy companies are now leveraging the functional and technical benefits of plants in new product development, driving more variety and excitement into their category. Innova Market Insights has reported CAGR of +63% for new product launches with a plant-based claim from 2011-2015.

- 3. Sweeter Balance:** Sugar is under pressure, although it remains the key ingredient delivering the sweetness and great taste that consumers are looking for. The quest to combine taste and health is driving NPD, as the industry faces the challenge of balancing public demand to reduce added sugars and create indulgent experiences, while at the same time presenting clean label products.
- 4. Kitchen Symphony:** Italian Lasagna is no longer enough – we want Melanzane Aubergine Al Forno! The connected

world has led consumers of all ages to become more knowledgeable of other cultures. As a result, there is growing demand for greater choice and higher levels of authenticity in ethnic cuisines. At the same time, pride in local and regional foods is also seeing an upsurge in some countries, with a resulting rise in availability and authenticity of local cuisine.

- 5. Body in Tune:** Consumers are increasingly personalizing their own nutrition intake, making food choices based around what they think will make them feel better. They are also experimenting with free from products and specific diets like paleo and low FODMAP. At the same time, consumers continue to increase their intake of foods and beverages with ingredients that they consider to be healthy, like protein and probiotics.

For more information about Innova Market Insights, please visit: [www.innovadatabase.com](http://www.innovadatabase.com)

**To all exhibitors:**  
**Join the interpack 2017 PREVIEW**  
**in FRUIT PROCESSING 3/2017 !**

- Process Measuring & Control Technology
- Packaging
- Extraction Systems

Send your related press release and advertisement to [cornelia.hebbe@confructa-medien.com](mailto:cornelia.hebbe@confructa-medien.com) latest until **March 13, 2017.**

**USED // FACTORY REBUILT**

**CENTRIMAX - WINKELHORST**  
**TRENNTECHNIK GMBH**  
 KELVINSTR. 8 // 50996  
 COLOGNE // GERMANY  
 TEL.: +49 2236 393530  
 FAX: +49 2236 393559  
 INFO@CENTRIMAX.COM  
 WWW.CENTRIMAX.COM

**Centrifuges, separators and decanters from GEA Westfalia Separator, Alfa Laval/Tetra Pak and Flottweg**

**For clarification / separation of fruit- and vegetable juices**

- Hundreds of separators and decanters on stock
- More than 50 years experiences
- Machines equipped with new PLC-control units (Siemens S7)
- Delivery with warranty
- SALE and Purchase!



# Free-from and organic

Fastest growing health and wellness category in 2016

| Clean Labelling | Euromonitor | Free-from | Organic |

*The beverage landscape is shifting rapidly. Consumers are thirsting for drinks with less sugar, more nutrients, pure and simple ingredients, an energy boost and novel flavours.*

Free-from and organic becomes the fastest growing health and wellness categories in 2016. According to Global market research company Euromonitor International, foods and beverages offering health benefits, such as free-from, and organic properties, drove value sales in 2016 with organic increasing by 6.8 percent to reach US Dollar 36 billion and free-from increasing by 7 percent to reach US Dollar 32 billion. Free-from is food products that do not contain ingredients known to cause a reaction for people with food allergies or intolerances.

Ewa Hudson, head of health and wellness at Euromonitor International says, “Growth in organic and free-from food sales has boomed in 2016 as consumers are reading labels more carefully than ever, seeking natural ingredients and looking for foods that represent a ‘guilt-free’ purchase.”

The increasing demand for lactose-free and hypoallergenic options within foods and beverages has contributed to the growth of free-from, which is set to generate an additional US Dollar 9.5 billion sales by 2021 and will become the fastest growing category in Asia Pacific, Latin America, Europe and North America with an average of 5.4 percent growth.

“A clear statement that combines health, convenience, fashionable packaging and affordable price is the winning strategy behind health and wellness developments,” explains Hudson. “Before the free-form boom, gluten and lactose-free options were the opposite of convenience, meaning consumers were forced to either avoid or prepare almost every meal from scratch. Now, convenience has found its way into free-from and with that, growth opportunities abound. Organic is also in sync with the natural

and clean label trend, and so unlikely to fall out of favour with consumers in the foreseeable future.”

Free-from and organic foods and beverages will continue to contribute to the global health and wellness industry which is on the way to hit a record high of US Dollar 833 billion by 2021.

For more information, visit: [www.euromonitor.com/health-and-wellness](http://www.euromonitor.com/health-and-wellness)



# Organic continues to grow in Europe

## BIOFACH and VIVANESS achieve the 50,000 visitor mark

| Biofach 2017 | Growth Rate | Juice | New Products | Organic Market |

*Each year, European consumers are spending more for organic food – on average 36.4 euros in Europe and 53.7 in the European Union. The Swiss spent the most on organic food: Switzerland is the country with the highest per capita spending on organic food worldwide (262 euros), followed by Denmark (191 euros) and Sweden (177 euros). European countries also have the highest organic market shares: Denmark has the lead with 8.4 %; in Switzerland, the organic market share is 7.7 % and in Luxembourg 7.5 %. Diana Schaack of AMI (Agricultural Market Information Company) adds: “Many products and product groups reach far higher shares. In Switzerland, for example, every fourth egg sold is organic, and for dairy products, the organic market share can be 10 percent and more.”*

The organic market in Europe continues to grow. In 2015, it increased by 13 % and nearly reached 30 billion euros (European Union: 27.1 billion Euros). Almost all the major markets enjoyed double-digit growth rates.

Helga Willer of FiBL (Research Institute of Organic Agriculture) states: “The dynamics of the European market is showcased by the strong increase. For the first time since the financial crisis, the market showed double-digit growth (+13 %). In France and Italy, the markets grew by 15 % and in Germany by 11 % in 2015.”

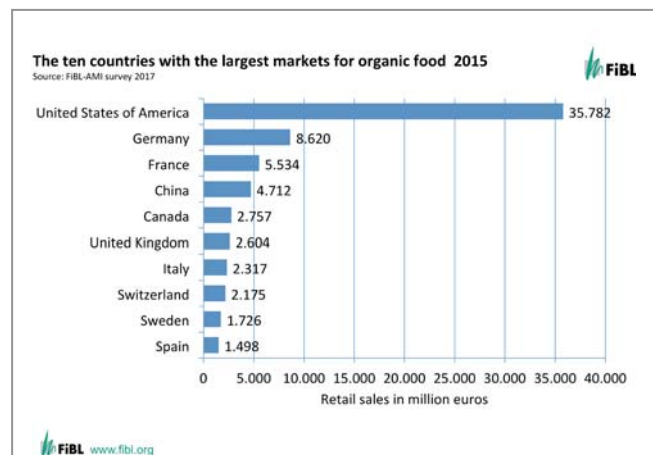
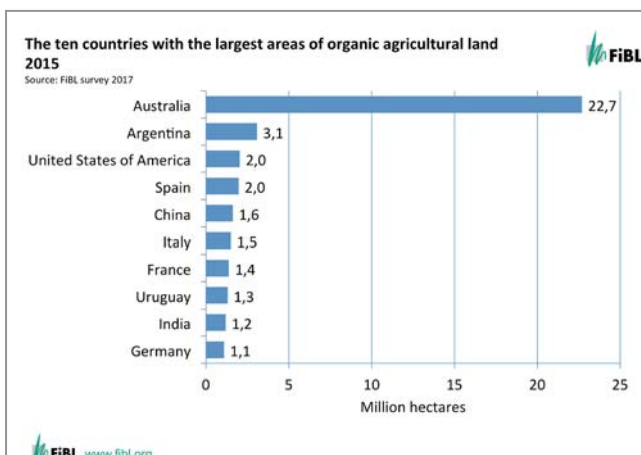
### Organic market grows faster than organic farmland

The trend of the market growing faster than organic farmland continued in 2015. However, it is encouraging that the area of organic farmland grew at a faster rate than it had in past years: it increased by almost one million hectares or by 8.2 %. At the end of 2015, 12.7 million hectares were under organic management in Europe (in the European Union, 11.2 million hectares). This constitutes 2.5 %, 6.2 % respectively of the total agricultural land. The countries with the largest organic farmland areas are Spain (1.97 million hectares), Italy (1.49 million hectares) and France (1.37 million hectares).

In each of these three countries, the area of organic farmland increased by at least 100'000 hectares. Nine European countries report that at least 10 % of their farmland is organic and the highest organic shares worldwide are in Liechtenstein (30.2 %), Austria (21.3 %) and Sweden (16.9 %).

### Organic processors and importers – double-digit growth

In Europe, there were almost 350'000 organic producers (European Union: 270'000), 60'000 organic processors and almost 3'700 organic importers. While growth in the number of organic producers was at 3 % (European Union:



## EVENTS

5 %) and therefore comparably modest, the number of organic processors and importers increased by 12 % and 19 %, respectively.

Matthias Stolze of FiBL concludes: “The fact that the number of processors and importers grows faster than the number of producers is another indicator that organic production does not keep pace with demand. Countries should pursue a clear organic sector strategy, support shorter organic supply chains that provide environmental and social benefits, and set up improved statistical processes to increase the accuracy of organic market data collection.”

The exhibition duo BIOFACH, the World’s leading Trade Fair for Organic Food, and VIVANESS, the International Trade Fair for Natural Personal Care, have been able to set a new record in 2017 by achieving the 50,000 visitor mark. This time, expert visitors travelled from 134 countries to the Nuremberg meeting place. They were enthusiastic about the offers from the 2,785 exhibitors (259 of these at the VIVANESS) from 88 countries, and were inspired by the country of the year, Germany.

### Ariza

[www.ariza.nl](http://www.ariza.nl)

Since 1991 Ariza is producing organic ingredients. They have grown into a worldwide player with more than 140.000 tons of organic fruit and vegetable handled every year. Respect and sustainability form the very solid basis of our company. While producing not from concentrate juice (NFC), Ariza aims to retain as much of the character of the initial fruit as possible. Ariza has her own production, blending and storage facility, which gives us the flexibility to keep a wide range of organic fruit juices in stock.

### The Pure Juice Co.

[www.pomepure.com](http://www.pomepure.com)



*Organic pures juices and natural fusions made of pomegranate, cherries, apple, pear, orange, grapefruit, mandarine, peach, carrot, purple carrot, red and golden beetroot, kale, cucumber, broccoli, spinach, lettuce, zucchini, parsley, celery, strawberry, bilberry, blackberry and pumpkin.*

Aromaproduct – the pure juice company, has been operating since 1985. One of the leading 100 % export oriented fruit and vegetable processing company located in Georgia and specializing in the production of high quality organic natural juices, IQF fruit and berries, jams etc.

### BIO-BULGARIA

[www.harmonica.bg](http://www.harmonica.bg)

Harmonica is the company leading the organic food movement in Bulgaria, with a well balanced portfolio of 80+ amazing products that combine tradition, innovation and care.



*Artisanal fruits and herbal syrups*

Their story starts back in 2006, when Maggie Maleeva, the former N 4 tennis star, visited the only two dairy organic farms in the country. Together with her husband, Lubo, and a close friend, Metodi, the trio embarked on a journey, becoming the pioneers of organic food in Bulgaria and expanding the organic food movement not only to dairy products but to a wider range of products. A decade later, Harmonica became a house-hold name with a strong team, a wide network of partners and can be found in almost all supermarkets across the country as well as in 10 foreign markets.

### PIP ORGANIC

[www.piporganic.com](http://www.piporganic.com)

Pip Organic produces a beautifully tasting Valencia Orange/Cloudy Apple Juice, made from 100 % organically grown fruit, providing 1 of your 5-a-day, with absolutely NO added sugar, sweeteners, preservatives, concentrates or any other nasties. Bottled in very convenient, 200 ml grab-and-go bottles which have proved very popular in grab-and-go, leisure & travel environments. These products are also ambient and have a 9 month shelf-life so



## EVENTS

can be easily transported, stored & sold across export environments.

### FRITZ KULTURGÜTER GMBH

[www.anjola.de](http://www.anjola.de)

The Germany-based company fritz-kulturgüter gmbh has held the trademark rights to Anjola since 2013. Towards the end of 2015, it relaunched the former classic fizzy drink with its original word mark, but this time in five delicious varieties.



Anjola Organic Fizzy  
Ginger and Lemon  
Drink

All vegan, with Fairtrade-certified ingredients and 100% fresh, organic fruit (not from concentrate). Instead of the 0.25-litre bottle with crown cap, the drinks are now packaged in fully recyclable 0.33-litre returnable glass bottles with a screw top. The bottle still has its pineapple shape, but it is now slightly more streamlined.

Also still there are the natural deposits of fruit pieces and spices. Shake gently and serve cold.

### MATAHI COMPANY

[www.matahidrink.com](http://www.matahidrink.com)

Coming from Africa, the Adansonia Digitata baobab is the best known species of baobab tree. This legendary tree dominates the Savannah. It's also called "the upside down tree" as its breadth can exceed its height and the tree has branches which resemble roots.

It is also known as the "tree of life" or "pharmacy tree" due to its incredible properties. Its wood is soft and absorbs water which makes it unusable, nevertheless all of the other parts can be processed: bark, fruit, leaves, juice and fibre.



*Matahi, is an innovative baobab energy juice: all organic and ecofriendly. The baobab fruit is amazing: full of vitamins; ions and minerals. It is the king of superfruits!*

### JAMES WHITE DRINKS LTD.

[www.jameswhite.co.uk](http://www.jameswhite.co.uk)

The UK's leading manufacturer of organic juices brought a new range of ZINGERS – little drinks (7 cl) with a big kick – Organic Ginger, Xtra Ginger, Turmeric and Lime & Chilli – caffeine free alternatives to an espresso for a wake up shot. Also Beet It the Organic and Sport range of beetroot juice.



*Organic beetroot juices, blended with 10 % apple juice. Not from concentrate and free from additives and preservatives.*

### LEMONAID & CHARITEA

[www.lemonaid.de](http://www.lemonaid.de)

We make soft drinks, iced tea & tea how they should be. With the best Fairtrade ingredients. All organically grown and straight from certified small farming cooperatives. The green and black teas are from the Sri Lankan mountains; our rooibos grows under the hot South African sun.

Wellness – now available in bottle form. A lot of the good stuff, but few calories – that's our green tea's mantra. Our organic hero from Sri Lanka has already taken the yoga studios by storm. Freshly brewed with a dose of honey and a subtle note of Indian ginger – it's a liquid sun salutation.



*ChariTea green – black – red – mate*

### BOBICA D.O.O.

[www.bobica.hr](http://www.bobica.hr)

Bobica LLC is a Croatian company dedicated to farming organic aronia berries and creating products made from aronia. The company was founded in 2010 and is based in Novska, a fertile Slavonia region of Eastern Croatia.

Bobica's first products entered the Croatian market in 2011. By 2014, Bobica achieved EU ECO certification and the market expanded to Bosnia and Herzegovina,

## EVENTS



*Cold-Pressed Aroniaberry Juice*

Slovenia, and a few products were presented in Germany. Aronia juices and teas and aronia powder and capsules are created in cooperation with local Croatian organic growers and producers

### INNO'VO

[www.inno-vo.fr](http://www.inno-vo.fr)

Subsidiary of the most important French wine cooperative, Inno'vo with the 3 L stand-up pouch proposes innovative solutions. Inno'vo acts on the field of organic juices.

Inno'vo can offer products in 3 L stand-up pouches (called Bag'Innov) 1 L & 20 cl. A new organic juice range called "Les Fées Bio" has just been launched with red grape & apple coming 100 % from Languedoc Roussillon.

The delicious taste of freshly pressed apple juice! Packaged in a stand-up pouch (Bag'Innov), the juice smells of fresh apples and tastes like freshly pressed juice. The combination of sterile packaging and organic juice ensures that the pleasure and taste last right through to the glass.

### EHD – EXPLOTACIONES HERMANOS DELGADO SL

[www.bodegaehd.com](http://www.bodegaehd.com)

EHC is a company devoted to the production of organic products as: wine, pure grape juice, sparkling wines, sparkling grape juices, sparkling sangría, concentrated grape juice, sangria, vinegar, organic grape seed flour, organic grape skin flour, red vine leaves and grape seed oil coming from their own vineyards, founded in 1998 by the Delgado Brothers, and located in Socuéllamos in the heart of La Mancha.



*Organic red grape juice from Spain*

### RÕNGU MAHLAS

[www.kyllus.com](http://www.kyllus.com)

KÜLLUS – special forest berries, from the ecologically pure northern wilderness in Estonia. Nurtured in forests, swamps and bogs, the berries are packed with flavour and charged with the primordial power of nature. The genuine taste of nature, KÜLLUS – from the purity of nature.



### ORIGIN

[www.origin.bio](http://www.origin.bio)

Based in Grenoble, in France, the Natura France Company has developed the first brand of organic beverages based mainly on plants "ORIGIN".

These beverages are both healthy with new exceptional flavours such as hibiscus juice, rhubarb juice, green mint tea and ginger-lemon juice.



*Origin hibiscus is a very refreshing drink with a slightly tangy taste and subtle flavour of red fruits*

The company has acquired unique know-how and found top-quality recipe for their beverages. The plants were infused one by one, by the method of water extraction which allowed getting the essence. Thanks to this technique, Origin beverages conserved rich aromas of plants in order to bring naturalness and authenticity. They contain no chemical substance.

### RENUKA AGRI FOODS PLC

[www.cocomibio.com](http://www.cocomibio.com)

Renuka is proud to be Sri Lanka's leading integrated grower, manufacturer and global marketer of value added coconut based food and beverage products, exporting to over 50 countries.

For generations the owner family Rajiyah has lovingly tended their coconut farms, producing some of the finest coconuts there is. Though times have changed, they have not, their love for coconuts still remains the same and they bring to you the finest organic certified coconut products that are truly fresh and pure, hand harvested, packed at source and from their very own farms prepared especially for you with all the love. Cocomi Bio Organic Coconut Water is an all-natural juice made from the water of freshly plucked coconuts. Our coconuts are hand harvested and processed within a few hours, using UHT technology. Our

## EVENTS

goal is to provide you a straight-from-the-coconut taste while retaining the natural goodness inherent in Coconut water, as Mother Nature intended.



*Cocomi Bio Organic Coconut Water is an all-natural juice made from the water of freshly plucked from Sri Lanka*

### FRUCTIVIA – LA PANACÉE DES PLANTES

[www.espritsante.com](http://www.espritsante.com)



La Panacée des Plantes is a French company specialised in the manufacture, distribution, retail commerce and trade of natural fruit and plant health foods. At Biofach their organic super fruit juices and organic super fruit confectionaries were presented.

### CIDRERIE TRADITIONNELLE DU PERCHE

[www.cidrerie-traditionnelle-du-perche.fr](http://www.cidrerie-traditionnelle-du-perche.fr)

We make organic pure juice ciders that ferment naturally and are bottled without any pasteurization or carbonation – a prime example of the ancestral cider-making process, guaranteeing optimum development of the aromas and truly exceptional flavours.

Our dry cider, with its complex and delicate notes of leather and mown hay, is an ideal accompaniment to savoury food. Our medium-sweet cider is light and fruity with apple and floral aromas – a perfect drink to pair with



desserts, cakes and pastries. And last but not least, the “Cuvée Sélectionnée du Perche” is a medium-sweet cider made with traditional apple varieties from the Perche region. The cider combines a subtle hint of vanilla with a taste that lingers pleasing on the palate.

### DAILY SIRUPI BY NCB SPRL

[www.dailysirupi.com](http://www.dailysirupi.com)

Dayly Surupi is the producer, creator, preparer of organic products of the highest quality. Fruits syrup, line of Birch sap drinks. All our products are “BIOGARANTIE” certified by TÜV Nord Integra.

The fruits used to prepare Daily Sirupi organic syrup are cultivated on rich, fertile land in northern Europe without the use of chemicals. When mature, they are harvested using small, light-weight machines the size of a lawnmower, and any remaining fruit is picked by hand. There are no large agricultural machines or other sources of pollution within a radius of 30 kilometres, and no heavy or polluting industry.



The composition of Daily Sirupi is 49 % fruit, 44 % high-quality cane sugar and 7 % pure water, monitored and approved for consumption from the age of six months.

### LACONIC GARDENS SA

[www.laonicgardens.gr](http://www.laonicgardens.gr)

The Greek company presented “Freshly Orange Juice NFC “11-13 °brix, which is refrigerated to low temperature and has a short shelf life.

Laonic Gardens S.A. was established and operated in 2010, in purpose to cover supplying needs of BIOFRESH S.A. factory and provide farmers modern farming solutions. The Laonic Gardens S.A. is accredited by former Q Ways, currently absorbed by TÜV Austria Hellas, for trading operations with regard to Organic Fresh Fruit, Organic NFC Orange Juice and Organic OJC. The Laonic Gardens S.A. is part of the Laconian Agricultural Tradition.



### SAVE THE DATE: BIOFACH 2018

14-17 FEBRUARY IN NUREMBERG, GERMANY

# New WHO Sugar Guidelines: Why is milk good and fruit juice bad?\*

| Diabetes | Obesity | Overweight | Sugar | WHO Sugar Guideline |

## Introduction

The newly\* released WHO guideline for the consumption of sugars has sparked immediate criticism. Basically, the WHO guideline strives for a reduction in the use of “added sugars” as listed in food and drink composition tables. Added sugars means “mono- and disaccharides” added by the manufacturer, cook or consumer, to food or drink during the process of preparation for consumption”.

In the present directive, however, the WHO expert panel followed a different principle. Suddenly it is no longer about sugars added to food and drink to but about so-called “free sugars”. The WHO panel defined free sugars as follows: “Free sugars include mono-saccharides and di-saccharides added to foods and beverages by the manufacturer, cook or consumer, AND sugars as naturally present in honey, syrups, fruit juices and fruit juice concentrates”...

The latter raises a big question mark.

Why, for example, do naturally occurring sugars in fruits, according to this approach, not belong to “free sugars”, but when being in present fruit juice they suddenly do?

In this respect, milk is treated equally strange by the panel. Milk contains 40-50 gram intrinsic sugars per liter, as milk sugars (lactose) and “drink away” as easy as intrinsic sugars in fruit juice. However, in this case the panel considers milk sugars not be “free sugars” at all. This points to the use of an approach that is inconsistent and seems to be based on arbitrary criteria.

## Does it make a difference?

Our intestinal cells do not make a difference in the absorption and metabolism of sugars when they are coming from an added source, as (extrinsic) refined sugars or when being present as (intrinsic) natural sugars, as can be found for example in a ripe banana, sweet fruit or honey. The absorption by the intestinal cells and subsequent meta-

bolism of the mono-saccharides is always the same, regardless of the source from which they come. Our intestinal cells never “see the source” and “process” only the sugar molecule that is presented to them according to known steps and mechanisms. Based on the principle of “free sugars”, the WHO (food category, Appendix 4a) recommends that advertising of 100 % (pure) fruit juice should NOT be allowed because of its content of free sugars. HOWEVER, advertising oranges (category 15: fresh fruits), containing exactly the same sugars, gets a full OK. The latter is strange, the more so, because it has been demonstrated that our blood sugar responses after eating whole oranges or drinking fresh 100 % juice does not differ (table 1).

THUS, sugars in fruit are NOT counted, BUT the same sugars present in juice pressed from that fruit ARE counted.

This was also recently realized in UK where responsible authorities did not agree to the approach and advised in the beginning of March to the allowance of marketing of 100 % fruit juice as part of “modern healthy eating pattern”.

Table 1: Glycemic index of fruits and their juices. Source: Atkinson FS, Foster-Powell K, Brand-Miller JC. International Tables of Glycemic Index and Glycemic Load Values: 2008. Diab. Care 2008; 31(12).

	As eaten, GI	Drink GI
Apple	38	40
Pineapple	51-66	46
Orange	31-51, mean 42	52 (46-71)
Grapefruit	46-49	48
Soda's	-	60 (53-68)

## Randomness

Another potential problem with the current sugars directive is related to the feasibility of the quantitative recommendations given. It is stated that not more than 10 % of daily energy should be consumed as “free sugars”. If pos-

sible, 5 % should even be preferred. In today's modern diet is 10 % very low but 5 % seems unrealistically low.

Everyone will understand that the creation of unrealistic (in terms of unreachable) guidelines will have little to no effect at all. In that case people and businesses will not take the 5 % much for serious.

### Why 5 %

The 5 % level is based on the idea that there is little to no tooth decay at this level. Nevertheless, in the report of the study on which this recommendation is based, it is literally written that there is little evidence to support such a strict limit.

### Sugars worse than starch?

The WHO guideline also does not implement the fact that we digest and absorb certain starchy foods (white rice, potatoes, ripe banana) and also starch derivatives, which are often added to foods (maltodextrins/glucose polymers), as fast or even faster than the "free sugars" which are mentioned in the guideline. The effect of starches on blood sugar responses is at least as large, and often even larger than after the consumption of the defined 'free' sugars.

In addition, the effect of starches on bodyweight changes is indifferent from that of "free sugars". That leads to conclude that the new directive has signs of a rather arbitrary approach in its choice of a "free sugars" concept approach and pointing to selective free sugar types, as related to aspects of health and disease.

### But, why sugar in the sausage or the ketch-up?

For products to be tasty and boost sales, the food industry widely adds sugars to all sorts of food that, in the mind of consumers, are not expected to contain any sugar.

Why, for example, do we find sugar in ham, surimi sticks, sausages, and red cabbage? And, why is there so much in the BBQ sauce?

Our food is full of "smuggled sugars" that we do not know about but that are responsible for a significant portion of our total added sugar consumption. We get them unnoticed throughout the day. THIS is a food production aspect that should be addressed!

Ideally the WHO panel should have addressed what to do about "these stealth sugars", how to get them out of food if there is NO good reason to add them.

Hence, I would make a strong plea that, apart from communicating that added sugars, as present in soft drinks,

are a significant source of sugar intake in "heavy consumers", we should get more grip on "sneaky sugar to boost sales practices".

If the WHO, in debate with the food industry, would ALSO help realize the development of international rules that make it impossible to add sugars to almost anything and for no good reason, that would reduce our total daily sugar consumption and favor health to a significant degree.

### Are sugars or other carbohydrates worse than fat?

When it comes to tooth decay, YES.

Sugars are easily fermented in the oral cavity, giving rise to acids that impact on tooth enamel. Fats do not!

However, when it comes to obesity, there is no generally accepted opinion that sugar is worse than fat. If, for example, one consumes foods that contain less sugar/ less starch but therefore contain more fat, there will not be much of an effect on caloric/energy intake and weight management. Often it is thought that fat is much more satiating than carbohydrate and sugar. However, the opposite is true! In terms of satiety induction the order of magnitude is as follows: protein >> carbohydrate > fat.

To help reduce obesity the public should realize that it is not a single nutrient type that causes "gaining fat". Rather, it should get known that the only way promising way is to consume less of all, less of fat, less sugars/starches, less alcohol and to decide to exercise more.

### Sweet facts – lessons about sugar:

Much confusion in the world of food production as well as food consumption seems to come from not understanding the basics of sugars and their metabolism.

For example, taking sucrose out of a product by replacing it with agave syrup (and declaring "now with less sugar") is an unacceptable industrial marketing approach.

To think that table sugar has a very high glycemic index and starches due to their complex carbohydrate structure do not is also incorrect.

To give the interested reader an easy understandable insight in evidence based SWEET FACTS, some straightforward "Lessons in Sugar" are presented below:

Living organisms are mainly composed of water, protein, fat and carbohydrate.

According to current definitions, sugars are a sub-class of carbohydrates and are composed of one single or of two



carbohydrate components (saccharides) tied together. Carbohydrates exist in many forms, varying in chain length and in the way that the mono-saccharides are connected to each other. Glucose (= dextrose) or fructose (= fruit sugar) are mono-saccharides. Mono- and di-saccharides for example are present in honey and sweet fruits. In addition to honey, also syrups (high concentration of sugars in water, resulting in a viscous solution) are rich sources of sugars, which can be added to food or used as an accompaniment. For example glucose syrup or maple syrup for pancakes.

Di-saccharides can be composed of one type or different types of mono-saccharides. Table sugar (beet sugar, cane sugar, sucrose), consists of glucose + fructose (50 % / 50 % ratio). Maltose, a disaccharide formed during the digestion of starch, consists of glucose + glucose. Table Sugar has been isolated from its original natural source (sugar beet, sugar cane) in a way that ultimately PURE sugar (sucrose) remains. In this respect, we refer to it as refined sugar. There is no difference in the composition of sugar, as it occurs in a fruit or plant (for example in a citrus fruit or sugar beet) and the sugars present in the pressed juice from a fruit, or isolated from a sugar beet. There is no difference in the composition of cane sugar and beet sugar. In both cases it is exactly the same di-saccharide composed of glucose + fructose.

Table sugar or concentrated solutions of sugar (syrups) are very sweet and very cheap. That makes their use in food and beverage attractive. Consumers like SWEET. Food and drink producers who know that like to add sugar to their products to meet consumer desires and boost the attractiveness as well as the sales of the product.

In the mouth, refined sugars are favored as food by bacteria and converted into acid. This acid accumulates in dental plaque and causes the tooth enamel to become weak, especially in the case of poor oral hygiene, leading to caries. This effect is enhanced if the sugars are added in a beverage, which also contains acid, either as added food acid or is naturally present. This is the case with soft drinks and fruit juices (apple juice, grapefruit juice, orange juice).

After digestion of the carbohydrates into their individual building blocks, their absorption in the intestine (mainly as mono-saccharides) is always the same, regardless of the carbohydrate source where these come from. Our intestinal cells in fact never see the source and “see” only the mono-saccharides that are presented to them.

The rate of digestion and the subsequent availability for absorption may vary depending on the structure (matrix)

in which the sugars are presented to the stomach and the intestine. For example, whole wheat bread containing whole kernels will be digested more slowly than bread made from finely milled or white flour.

When chewing a sugar cane stalk, sugar will be SLOWLY available as it is released from the fibrous stalk structure. This will induce a slow blood sugar increase, if any. Ingestion of refined cane sugar in a drink will result in rapid availability in the intestine, thus also a rapid absorption and a more pronounced increase in blood glucose. Starch Sources and maltodextrins (from starch-derived glucose chains called glucose polymers), lead to a much stronger increase in blood glucose than equivalent amounts of table sugar (sucrose). The reason is that table sugar contains 50 % fructose, which hardly affects the blood glucose level. Starch and maltodextrins, in contrast, consist of 100 % glucose and deliver twice the amount of glucose to the bloodstream.

Fructose has been called “a toxic sugar” and “a cause of obesity” in the social media. There are 3 important facts here:

- 1) statements are based on studies using excessively high pure fructose intakes, especially in mice.
- 2) Food/drink does not contain pure fructose, instead always fructose + glucose, as also in table sugar, honey, HFCS and fruits.
- 3) When consumed together many of the effects on metabolism and bodyweight, as seen after pure fructose supply, disappear.

Because of its rapid uptake, sugar dissolved in water is not for 100 % perceived by our hunger and satiety regulation and can therefore easily lead to excess energy intake. Individuals who consume a lot of sugar regularly have more often tooth decay and obesity. Accordingly, there are good grounds to reduce the consumption of sugars. However, that seems to be a real challenge for many individuals

### Concluding remarks

Less sugars? Less energy intake? How do you do that?

The quantitative intake of refined sugars added to food, appears to be greater than that of sugars with soda. Yet, sugars in drinks may lead to a more prominent effect on weight gain seen the fact that about 15-20 % of the energy is not sensed by the satiety regulating systems. These effects appear to similar for soft drinks, juices and milk.

So, attention needs to be paid to what is in the products that you buy. Consumers can choose food or drinks with

little or no added sugar. This information can be found on the package-product labels, in the list of ingredients and in the nutrition declaration panel.

The food industry can and MUST add less sugar (as refined sugars, and syrups) to their products. Reducing the supply of high sugar products will in itself induce a reduction in the consumption of sugar. By making appropriate use of (preferential natural) non-caloric sweeteners, sugar consumption can also easily be reduced. Yet, sugars are only one of many contributors of energy imbalance. Fat is another one. Although it is clear that in favor of public health a reduction of overall energy intake has to be achieved, it should be acknowledged that obesity is NEVER caused by one particular nutrient or ONE particular food type/group. As such, pointing to “free sugars” as being a major cause of overweight may also mislead the public in terms of causality. The public should be educated that both milk and 100 % juice contain valuable nutrients, yet should be consumed in moderation. The latter is valid all energy supplying drinks. Whole fruits that can be eaten including the peel, have an advantage above juices in their supply of dietary fibers with associated micronutrients. Are sugars or other carbohydrates worse than fat? When it comes to tooth decay, YES. When it comes to obesity, NO! Consuming less sugar/ starch but therefore more fat, will not have much of an effect on weight management. If you eat less of both fat and sugars/starches (which can simply be met by “eating less overall”) while focusing more of fiber rich foods and deciding to exercise more, consumers are on the right path.

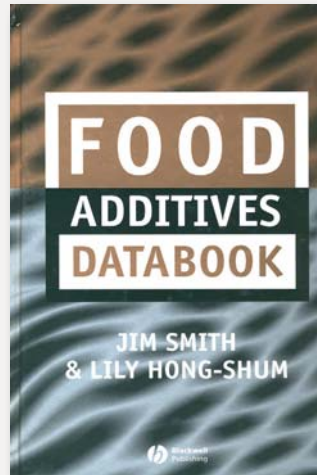
This article has been written WITHOUT any involvement of the Food and Beverage Industry. The sole intention of the author is to help create transparency to the academia, public, industry and policymakers on truthful interpretation of science. The opinions expressed are based on current scientific evidence as also presented in recent reviews by the author. The author has no conflicts of interest!

\* This article was first published in FRUIT PROCESSING 5/2015



**Author:**  
**Fred Brouns**  
 Faculty of Health, Medicine and Life Sciences  
 Dept of Human Biology  
[www.maastrichtuniversity.nl/fhml/](http://www.maastrichtuniversity.nl/fhml/)

EXPERT LITERATURE



**Food Additives Databook**

First Edition 2003  
 Jim Smith / Lily Hong-Shum

This major new comprehensive reference work covers all the „must have“ technical data on food additives. Compiled by industry experts with proven track record of producing high quality reference work, this volume is the definitive resource for technologists in small, medium and large companies, and for workers in research, government and academic institutions.

Coverage is of preservatives, enzymes, gases, nutritive additives, emulsifiers, flour additives, acidulants, sequestrants, antioxidants, flavor enhancers, color, sweeteners, polysaccharides and solvents.

Entries include information on function and applications, safety issues, international legal issues, alternatives, synonyms, molecular formula and mass, alternative forms, appearance, boiling, melting, and flash points, density, purity, water content, solubility, and more with full and easy-to-follow-up references.

Reduced Special Price:  
~~EUR 325~~  
 EUR 99 + P&P + 7% VAT, if applicable

Book available at confructa medien GmbH.

Please contact Christian Friedel:  
[books@fruit-processing.com](mailto:books@fruit-processing.com)  
 phone +49 (0) 2634 9235-15  
 fax +49 (0) 2634 9235-35  
[www.fruit-processing.com](http://www.fruit-processing.com)

# Meeting the challenges of particles, fibres and pulp in beverages\*

| Drinking Fruit | Fibres | Particles | Processing | Pulp |

Taste, aroma, texture and mouth feel. The world of beverages is exciting just because that's what beverages do. They excite our mouths, throats and imagination. They take us to a different place.

So the search for new and better ways of titillating taste is a driving force in new beverage development. Carbonation is a well-established way of adding sensations. Another trend we see now is to add food particles – for example, from fruits, nuts or other plants – to change the way a beverage is experienced.

Once you go down that path, however, you will end up being challenged, simply because beverages with particles don't "behave" in the same way as ordinary beverages. And particles need protection during process-

ing in order to do their job. So in the rest of this article I'll describe some of the practical engineering experiences we have had at Tetra Pak in creating beverages successfully with particles.

## A global trend – drinking fruit

A global trend we are seeing currently is the addition of more and bigger particles in both beverage and prepared food applications. The expanding market for beverages with particles, as well as fibres and pulp, is putting new demands on processors and the technologies they use to deliver high quality products. This is both because these constituents are often fragile and easily damaged during processing, and because there is an endless array of combinations. Consequently, the lines between processing categories are even being blurred. When we put coconut in juice, or add Aloe Vera to tea, are we making foods or beverages?

Beverage processors have traditionally worked with pulp and fibres, but particles have become more important ingredients in the last 5-10 years. Consumers are increasingly looking for enhanced, value-added, high-quality

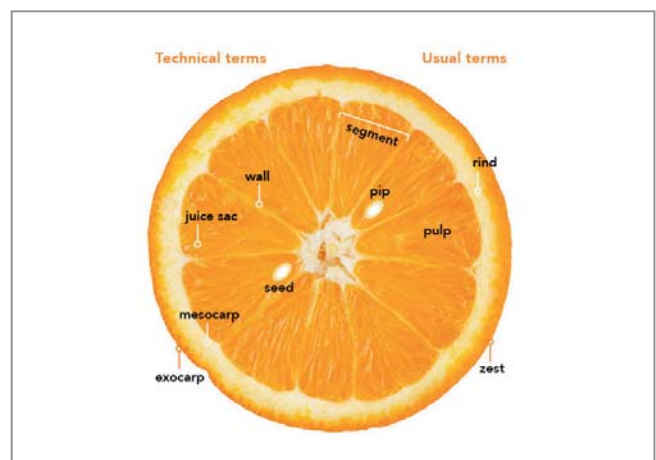
### Starting with some definitions

**Particles** within beverage applications are typically 5-6 mm cubes, although there is a trend towards even larger sizes. Particles have a wide range of properties; for example, a Nata de coco particle – which is fermented coconut water cut into cubes – is quite rigid and strong while an Aloe Vera particle – from the core of the plant – is very fragile.

**Fibres** are the destroyed sacs (i.e. pulp emptied of its juice) or other parts inside the fruit. The mouth-feel of a product is dependent on the length of its fibres.

**Pulp** is the sacs, fruit cells or other parts inside a fruit that contains the fruit's juice (e.g. the pulp of a citrus fruit is the stringy content of the endocarp). When the juice-filled sacs burst in the mouth, they deliver the mouth-feel of freshly squeezed juice.

We sometimes refer to all three types as **"inclusions"**.



*In addition, there can be several terms to describe parts of fruit that end up as particles. The orange below shows some technical terms (left side) as well as some ordinary household terms (right side).*

© all photos Tetra Pak

products with the trend accelerating towards keeping natural fruit fibres in the beverages – or mixing particles or pulp into them – to create products where consumers experience the feeling of drinking fruit in liquid form. In other words, consumers are looking for more than ‘just’ a beverage. This trend is emerging from the fruit and food industry where particles have been common for a very long time.

### Beverage processing challenges and solutions

A number of considerations have to be taken into account when processing products with particles, fibres and pulp: How much damage to these inclusions is acceptable? How do we measure this? Where in the process is the damage most likely to occur and can something be done about it? How do variations, such as ripeness or sugar content in the raw material, affect the process and the product? How do the equipment factors – e.g. the pumps, valves, heat exchangers – influence the final product?

Products containing particles, fibres and pulp need both specialized and customized processing and packaging solutions. Each unique combination using these inclusions poses processing challenges, and considerable risks in terms of product quality, food safety and profitability.

### Protecting particle integrity

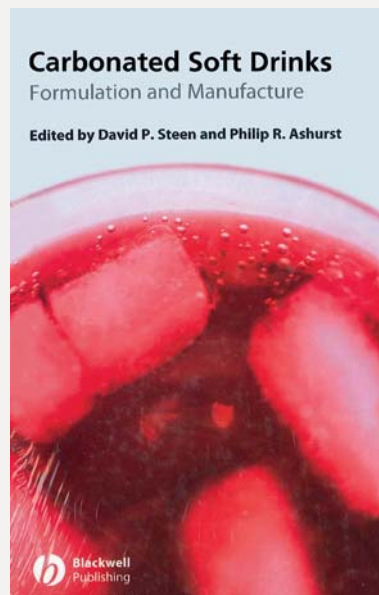
Processing beverages and other products that are naturally fibrous, or which have fibres and particles added, inevitably damages them. Damage limitation is thus essential when designing new systems or optimizing existing plants. Reviewing the entire process to ensure that particle integrity and fibre content are maintained can bring tangible rewards.

To achieve good product quality, particle integrity needs to be protected. This can be challenging because all handling of raw material affects the product and because particles, fibres and pulp are sensitive to mechanical shearing or tearing. Important issues for pulp

and particles are whether they come fresh, frozen or aseptic; their properties (e.g. size and quality); and how they are prepared or mixed. A normal acceptance level for reduction of particle content through processing within a certain specification is 10-20% (note that this does not mean that all particles or fibres are lost or destroyed; they are reduced to the next specification).

To ensure integrity, all three types of inclusion need to be pumped with minimal mechanical treatment and without rapid pressure gradients. Special design and dimensions are the basis for minimum maceration. Sudden pressure drops in control valves need to be avoided, both from a

## EXPERT LITERATURE



### Carbonated Soft Drinks Formulation and Manufacture

2006, Hardcover  
Steen, David / Ashurst, Philip R.

This book provides an overview of carbonated soft drinks production in the early part of the twenty first century, presenting the latest information on carbonation and filling methods. There are also chapters on bottle design, can making, general packaging considerations, production and distribution. A final chapter deals with quality assurance, and environmental and legislative issues. Detailed references provide opportunity for further reading in more specialised areas. The book is aimed at graduates in food science, chemistry, microbiology and engineering who are considering a career in the soft drinks industry, as well as technical staff already employed within the industry and associated suppliers.

EUR 158,90 + P&P + 7% VAT, if applicable

Book available at **confructa medien GmbH**.

Please contact Christian Friedel:  
[books@fruit-processing.com](mailto:books@fruit-processing.com)  
phone +49 (0) 2634 9235-15, fax +49 (0) 2634 9235-35

maceration point of view but also from physical dimensions, avoiding flow blockage.

Positive pumps of sufficient size with low slippage and limited speed are a good bet for retaining product quality. Heat exchangers designed with fewer but larger tubes of sufficient diameter and smooth inlets are also beneficial since larger particles need larger tube diameters.

Avoiding much maceration during processing also requires having control of raw material quality and the ripening or softening of particles. This can be done in a structured way and checked with instruments that measure particle characteristics such as texture and strength. Particle damage can also be measured at various processing stages to indicate the effects of the processing and filling procedures. This can be done via sieving and weighing, counting and measuring, and sophisticated digital image analysis that can measure the distribution of fibre lengths and that can characterize particle shapes to provide valuable information on particle distribution and size.

### Product consistency

However, the main challenge with all three types of inclusions, from a product quality standpoint, is the tendency of the inclusions in the buffer tanks to float or precipitate into sedimentation? If the formulation and recipe are not optimized for the density difference between particles and carrier liquid, the particles will separate from the carrier

liquid, resulting in an uneven distribution in the consumer package. This affects the consistency of the final product.

### System design

To ensure product consistency, there needs to be proper internal design of the heat exchangers – such as the inlets of tube packages, tube sizes – as well as tank and agitators. Proper agitator optimization is of utmost importance to get an even end product; the design of the tank dimensions and the agitator must match. Gentle, low-shear agitation with slow, revolving paddle agitators gives a very good agitation that is able to keep the particles in an even distribution in the tank without destroying the particles; good agitation does not necessarily mean high shear mixing.

### Liquid over-processing

The liquid phase of a product should not be over-processed if high product quality is to be achieved. Particles, fibres and pulp require longer heating time than the liquid, which is sensitive to heat. This means that quality will be negatively impacted when holding times are too long because of the presence of particles, fibres and pulp.

To ensure that the liquid phase is not over-processed, solutions like dual stream processing lines can be applied. Single stream processing lines can be used for most liquid products, but can only handle smaller particle sizes, require a longer holding time for the liquid phase, and make deaeration impossible. Dual stream processing lines, on the other hand, employ separate product flows. They allow the liquid to be processed in one line the conventional way – for example, in a plate heat exchanger or steam injection featuring standard pumps and processes – while the inclusions are processed according to their specific characteristics in another line. The line also includes an aseptic blending of the two streams, juice and inclusions.

In addition to the prevention of liquid over-processing, the advantages of using these are minimized mechanical treatment and higher particle integrity, more efficient heating, and minimized thermal load on the end product. Splitting the streams also allows for the liquid to be homogenized and deaerated to reduce its free and dissolved air content, increase vitamin C retention, and minimize colour change, aroma loss, and foaming in filler, so as to improve its quality. Particles themselves cannot be deaerated or homogenized.

An additional method is in-line dosing. This method adds the particles after the homogenizer or deaerator, but before the final heat treatment in a single-stream line. This

### How integrity is challenged

#### Particles

- Strength of a raw material may vary according to species, how it was ripened, where and when it was harvested
- Can be damaged via transport
- Behave differently than liquids

#### Fibres

- Tend to be cut to pieces by centrifugal pumps

#### Pulp

- Very sensitive to warming and mechanical stress
- Difficult to deliver in a homogenous state so usually removed from fruit juice by filtering it out

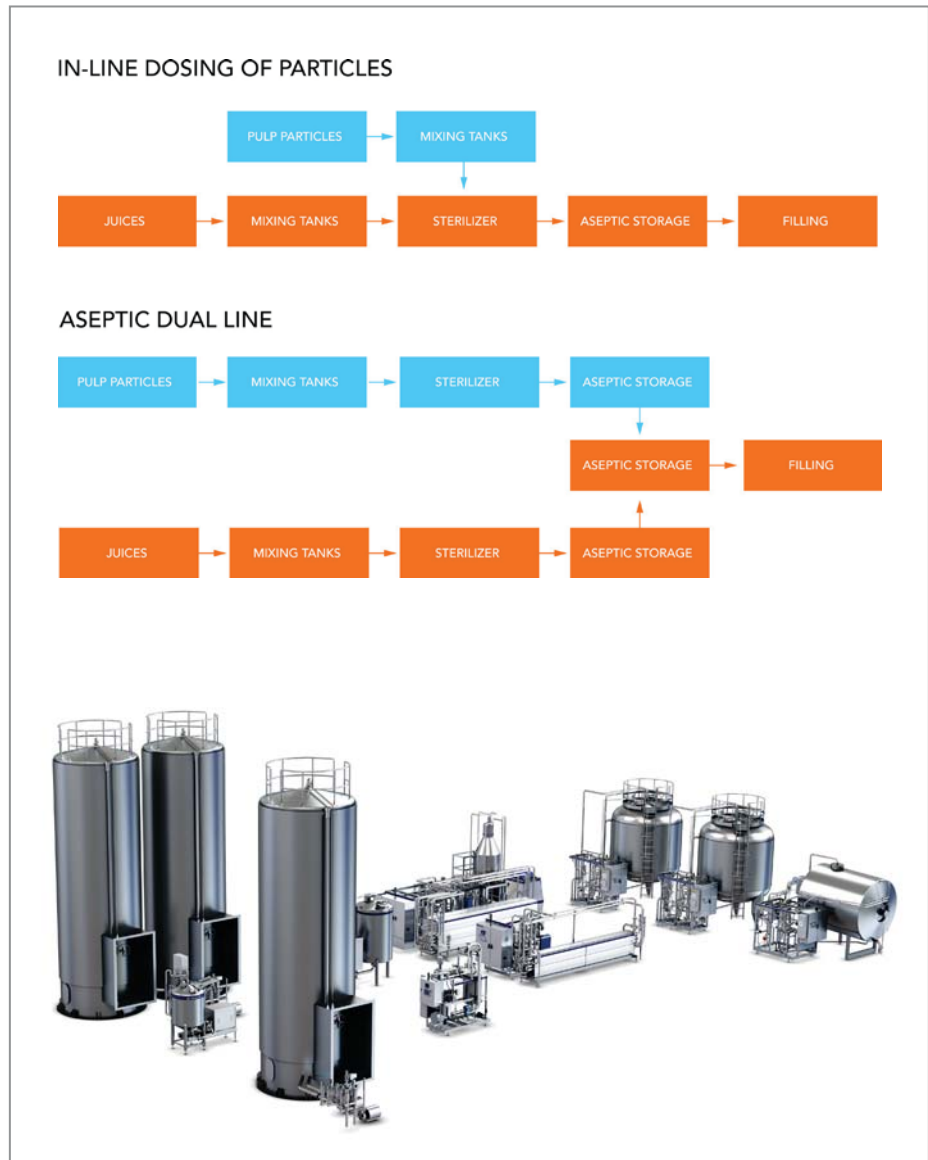
way, the costly fruit content can be pasteurized gently and cost-efficiently. Using in-line dosing of particles in a single aseptic processing line, before final heating and aseptic filling, will yield better particle integrity. In addition, the liquid can be homogenized and deaerated, and the optimal holding time for the liquid can be used. This means a much smaller capital investment. However, particle size limitation narrows the possible product range.

## Food safety

The key heat treatment challenge when producing particulate beverages is to achieve a safe product by ensuring that particles reach the required temperature in the coldest spot, while simultaneously avoiding overcooking the liquid and surface of the particle to preserve taste, colour, texture and nutrients. The other main challenge from a food safety perspective is controlling for the formation of lumps.

As shown in the graph, it takes time for the heat to penetrate into the centre of the particle – there is a temperature lag – and the process needs to allow time for this. The heating time depends on the size of the particles. Optimizing heat treatment requires selecting the right heat exchanger with an optimized heat exchanger design, whether it is a coil formed mono-tube for larger particles or a multi-tube for smaller particles; this requires an advanced multidimensional calculation that determines heat transfer from the liquid into the inclusions. Selecting the right heat exchanger gives you control of retention time to ensure optimal heat treatment with an optimized temperature curve. In a dual-stream process solution, heating is tailored even further to ensure the optimal quality of liquid and optimal food safety of particles.

It is also important to have an even distribution of particles throughout the system so that they are heated evenly in the holding section. To achieve this, proper mixing and agitation, and the density and viscosity of the liquid phase is important. Running a pulp slurry with high particle concentration can be helpful to obtain even distribution.

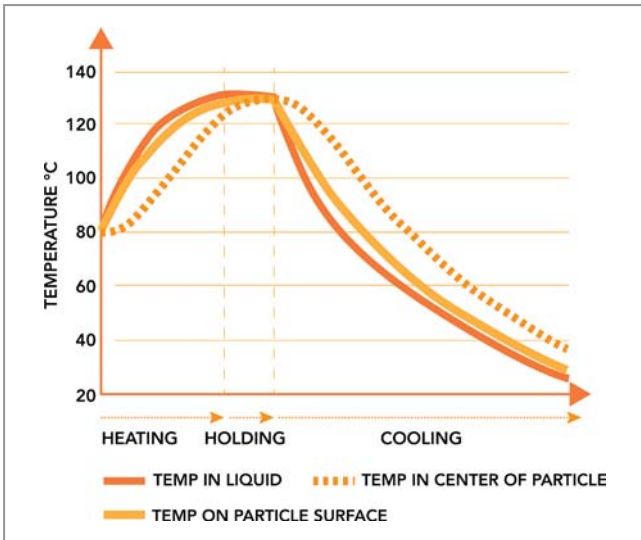


## Profitability

Beverages are particularly price-sensitive. To save on operational costs, it is particularly important that the heat exchanger is properly dimensioned in order to minimize energy use.

Another dimension of cost savings is the cost of raw materials. Because the chunks and pieces are usually costly ingredients, minimizing damage to them and ensuring preservation of their shape, consistency and flavour throughout transportation and processing is very important.

But the overall cost driver for the line is product quality. Thus the process solutions have to be balanced and optimized for product quality demands in a given context of raw material cost. If raw materials can be obtained at lower cost, for example, then additional maceration or damage might be tolerated.



Heating of the centre of the particle is clearly delayed and the centre does not reach sterilization temperature until it reaches the end of the holding tube.

### Summing up

Responding to the growing trend of including particles, fibres and pulp in consumer products poses unique challenges for beverages and prepared food manufacturers. Particles, fibres or pulp behave differently according to their intrinsic properties and therefore require unique processing solutions.

To ensure integrity, all three types of inclusion require special design and dimensions of control valves and pumps – with low slippage and limited speed.

Heat exchangers designed with fewer but larger tubes of sufficient diameter and smooth inlets are beneficial since larger particles need larger tube diameters.

Proper agitator optimization is of utmost importance to get an even end product; the design of the tank dimensions and the agitator must match.

Measuring particle characteristics such as texture and strength can occur at various processing stages so as to control the effects of the processing and filling procedures, and checking that particle distribution meets recipe requirements.

The liquid phase of a product should not be over-processed, which may occur when particles, fibres and pulp require longer heating time than the liquid. Liquids with larger inclusions may require dual stream processing lines, which allow the liquid to be processed in one line the conventional way, while the inclusions are processed according to their specific characteristics in another line.

An additional method is in-line dosing, which adds particles after the homogenizer, but before the final heat treatment in a single-stream line, allowing costly fruit content to be pasteurized gently and cost-efficiently.

Careful calculations can lead to optimal processing, taking into account line design, safety requirements, raw material costs, recipes and quality specifications.

\*This article was first published in FRUIT PROCESSING 2/2016.



**Author:**

**Göran Stjernberg**

Line Solution Manager, Tetra Pak  
[www.tetrapak.com](http://www.tetrapak.com)



**You are invited to join the next digital issue:**

**FRUIT PROCESSING 4/2017**

- Hygienic Design
- Packaging – Caps and Closures
- Fiber, Probiotics, Nutrients

Profit from the worldwide digital availability, hyperlinks to your own website and low budget advertising rates.

Send your press release and advertisement to [cornelia.hebbe@confructa-medien.com](mailto:cornelia.hebbe@confructa-medien.com) by the latest April 13, 2017.

[www.fruit-processing.com](http://www.fruit-processing.com)





# TECHNICAL WORKSHOP

28.03.2017

Valencia, Spain

In conjunction with SGF and AIJN

For the Juice Industry. From the Industry Experts

## Ayre Hotel - Astoria Palace

To reserve a double room at €110 inc. breakfast

Contact Lina Fernandez

[LFERNANDEZ@EUROPATRAVEL.ES](mailto:LFERNANDEZ@EUROPATRAVEL.ES)

Tel. +34 96 352 93 53

A block booking of rooms have been reserved until the 29th January



Packages	Juice Package <i>Inc. networking dinner</i>	Nectar Package <i>day programme only</i>
IFU Member <i>early bird</i>	€139	€99
IFU Member <i>regular</i>	€189	€149
Non Member <i>early bird</i>	€159	€119
Non Member <i>regular</i>	€209	€169
Technical Tour	€49	

## Programme

Opening	Workshop Welcome
	"When the going gets tough" by David Berryman
GMO	The GMO debate: Scientific saviour or Environmental threat
Processing	Traditional vs Ohmic heating: quality and colour improvements on a variety of temperature sensitive
	Added value from citrus peel disposal
	PCT. A new processing technique using pressure change technology
	How to get added value from fruit waste
	Processes for upgrading of citrus juices and by products
Genetics	Genetics and metabolomics
	CRISPR/Cas
Quality Assurance	QA in the supply chain controlling authenticity and safety
	Influence of processing aids on heavy metals in fruit juices
	Codex changes to pesticide MRL's
	Coconut water analytical characteristics
Microbiology	Spoilage mechanisms and control of <i>Alicyclobacillus</i>
	Microbiology of high pH juices including coconut water
	Technologies in bulk transportation



## Technical Tour

Citrus processing plant: [Zuvamesa](#) &  
Research Institutions: [IVIA](#) and [AINIA](#)

08.30	Depart Hotel
09.00	Arrive IVIA and visit
11.00	Depart IVIA
11.30	Arrive Zuvamesa and visit
13.30	Lunch
14.30	Depart Zuvamesa
15.00	Arrive AINIA and visit
17.00	Leave AINIA
17.00	Arrive at Hotel

## Networking Dinner



27<sup>th</sup> March—8pm  
@ Terrace—Astoria Palace  
Sponsored by GfL



Click Here  
To Register Now

You can also register via the website

[www.ifu-fruitjuice.com](http://www.ifu-fruitjuice.com)



## NEW PRODUCT LAUNCHES



### LITHUANIA

Company: Mega Baltic  
Country: Lithuania  
Category: Other Soft Drinks  
Event Date: February 2017  
Price: USD 0.97 EUR 0.89

**Description:** Aloe vera drink with chia seeds, in a 500 ml pet bottle.

**Claims:** Aloe vera pulp inside. Preservatives free. No added colors. Recyclable packaging.

**Ingredients:** Water, aloe vera 30 % (aloe vera pulp, aloe vera gel powder), fructose, chia seeds 0.5 %, acidity regulators (citric acid, sodium citrate, calcium lactate), antioxidant: ascorbic acid, emulsifier: gellan gum, grape flavoring, honey.



### SINGAPORE

Company: Sky Birdnest  
Country: Singapore  
Category: Other Soft Drinks  
Event Date: February 2017  
Price: USD 5.68 EUR 5.20

**Description:** Bird's nest drink with rock sugar, in a glass bottle.

**Claims:** Rich in collagen-compact.

**Ingredients:** unstated



### SPAIN

Company: Nestle  
Country: Spain  
Category: Bottled Water – Unflavoured  
Event Date: February 2017  
Price: USD 0.51 EUR 0.47

**Description:** Natural mineral water in a 330 ml pet bottle featuring justice league super-woman.

**Claims:** Very low mineral content. Green dot certified. Recyclable packaging.

**Ingredients:** Natural mineral water



### SPAIN

Company: Eroski  
Country: Spain  
Category: Juice & Juice Drinks  
Event Date: January 2017  
Price: USD 1.52 EUR 1.39

**Description:** 100 % squeezed apple juice from Germany. Apples are selected for their sweetness and freshness. Eroski does not add anything else, just authentic juice of the best fresh fruit. Comes in a 1 l tetra prisma aseptic.

**Claims:** 100 % squeeze juice. Green dot certified. Recyclable packaging. Fsc certified. Pasteurized. Tested by expert professionals of basque culinary center, a pioneering academic institution worldwide that aims at the superior training, research, innovation and promotion of food and gastronomy. 1 out of 5 daily servings of fruits and vegetables. Does not add anything else. Authentic juice squeezed without giving up a natural flavor.

**Ingredients:** 100 % apple juice.



### UNITED KINGDOM

Company: Marks And Spencer  
Country: United Kingdom  
Category: Carbonates  
Event Date: February 2017  
Price: USD 3.00 EUR 2.76

**Description:** No added sugar carbonated spring water with elderflower infusion, with sweetener. Comes in a 750 ml glass bottle.

**Claims:** Suitable for vegetarians and vegans. No added sugar. Green dot certified. A fragrant blend of handpicked british elderflowers, grown in gloucestershire, and spring water.

**Ingredients:** Carbonated spring water, elderflower infusion (6 %) (water, elderflowers, preservative: e223 (sulfites)), lemon juice from concentrate, sweetener (sucralose).



### UNITED STATES

Company: Amc Grupo  
Country: United States  
Category: Bottled Water – Flavoured  
Event Date: January 2017  
Price: USD 1.99 EUR 1.83

**Description:** Purified water infused with blueberry and rosemary, in a 454 g pet bottle.

**Claims:** Recyclable packaging.

**Ingredients:** Purified water, blueberries, rosemary.



## NEW PRODUCT LAUNCHES



### UNITED STATES

Company: Pepsico  
Country: United States  
Category: Bottled Water – Unflavoured  
Event Date: February 2017  
Price: USD 1.79      EUR 1.65

**Description:** Purified water with ph balanced and electrolytes, in a 700 ml pet bottle.

**Claims:** Ph balanced-electrolytes for taste. Life, water and inspiration. Recyclable packaging.

**Ingredients:** Purified water (purified by reverse osmosis), magnesium sulfate, potassium bicarbonate.



### UNITED STATES

Company: Welchs  
Country: United States  
Category: Juice & Juice Drinks  
Event Date: January 2017  
Price: USD 3.19      EUR 2.93

**Description:** Non-alcoholic sparkling white grape juice cocktail in a 750 ml winter edition glass bottle.

**Claims:** Non-alcoholic juice cocktail. Contains 40 % juice. Pasteurized. Winter edition.

**Ingredients:** Sparkling filtered water, niagara grape juice, high fructose corn syrup, citric acid (for tartness), sodium benzoate (preservative), potassium metabisulfite (preservative), natural flavor.



### UNITED STATES

Company: Suja Life  
Country: United States  
Category: Other Soft Drinks  
Event Date: February 2017  
Price: USD 2.99      EUR 2.75

**Description:** Organic drinking vinegar with water, grapefruit, coconut vinegar, beet, ginger, stevia, vegan probiotics and jalapeno, in a 399 ml pet 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 3 g sugar. Usda organic. Non gmo project verified. Cold pressured protected.4b probiotics. Contains 8 % juice. Certified gluten free. Certified kosher. Certified organic by ccof. Recyclable packaging.

**Ingredients:** Purified water, grapefruit juice\*, coconut vinegar\*, beet juice\*, ginger juice\*, stevia leaf extract powder\*, bacillus coagulans gbi-30 6086, jalapeno juice\*; \*organic.



### VIETNAM

Company: Highlands Coffee  
Country: Vietnam  
Category: Iced Coffee  
Event Date: January 2017  
Price: USD 2.99      EUR 2.79

**Description:** 6 x 235 ml aluminum cans of vietnamese iced coffee with milk, in a carton box featuring lunar new year 2017.

**Claims:** Featuring lunar new year 2017 (golden chicken).

**Ingredients:** Water, sugar, skimmed milk 4 %, vegetable cream powder 4 %, coffee 3 %, coffee flavoring, acidifier: e500ii, food additive: e339ii, flavor enhancer: e473, caramel color (e150c).



**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](http://www.innovadatabase.com)

### JBT Corporation acquires Avure Technologies, Inc.

#### Avure Acquisition Adds to JBT Clean Label Solutions

JBT Corporation announced it has acquired Avure Technologies, Inc. (“Avure”) for \$57 million, before post close adjustments. Avure is a leader in food processing technology and has gone on to create a range of HPP systems for worldwide tolling centers and major food manufacturers all over the globe. JBT Corporation, also a global leader in food and beverage processing solutions, has curated customer solutions up and down the line – from cooking, frying and chilling to portioning, sorting, weighing and grading in the protein market to extraction, mixing, blending, filling, closing and sterilization in the liquid foods market. And now, with the addition of Avure Technologies to the family, JBT is expanding its clean label solutions for fresh, flavorful foods and beverages with a longer shelf life.

Avure’s High Pressure Processing (HPP) uses ultra-high pressure purified water to keep packaged food pathogen-free to stay fresh longer. At very high pressures bacteria such as *Listeria*, *E. coli*, and *Salmonella* are inactivated. Foods using HPP include ready-to-eat and ready-to-cook meats, ready-meals, fruits and vegetables, juices and smoothies, soups and sauces, wet salads and dips, dairy products, seafood and shellfish. HPP helps producers increase food safety and extend shelf-life while providing consumers with nutritious, natural, flavorful food.

Now together, JBT and Avure will be able to offer customers a single, global source for their protein and liquid foods processing needs by coupling Avure’s design, fabrication, and food science resources for high-pressure processing systems in the food and beverage markets with JBT’s existing portfolio of protein and liquid foods technologies.

### DSM collaborates with Singapore Institute of Technology to support next generation of food technologists

#### Agreement sealed to provide SIT students with industry experience as part of a holistic learning approach

Royal DSM, a global science-based company active in health, nutrition and materials, signed an agreement with local autonomous university Singapore Institute of Technology (SIT) to develop commercial and scientific opportunities for undergraduate students in the food technology sector.

The signing of a Collaboration Agreement, held at DSM’s Singapore Nutrition Innovation Center brought together representatives from SIT and DSM Singapore Industrial Pte Ltd.

Professor Loh Han Tong, Deputy President (Academic) & Provost, SIT, said, “With the growing focus on health and well-being through food consumption, the demands for qualified, well-trained food technologists are increasing. We are thankful for the strong support from DSM, which will provide opportunities for our students to learn through real-world challenges and gain hands-on experience.”

This three-year collaboration will grant SIT’s Food Technology students and staff access to DSM’s Nutrition Innovation Centre (NIC) in Singapore and its state-of-the-art industry facilities and expertise during their course of study. Through the establishment of an Industry Lab, students will have the chance to use the latest technology in real-life applications for the food and nutrition sector, including dietary supplements, dairy, food and beverage

segments. They will be exposed to the prototyping and product development process. This includes time with a UHT pilot plant for food fortification, a sensory lab to create desired flavor profiles, and climate-controlled chambers to establish stability under different environments.

Pieter Nuboer, Vice President, Human Nutrition and Health, Asia Pacific, DSM, said: “This agreement is reflective of our commitment to Bright Science, Brighter Living. In partnership with customers and the academic community, with whom we share ideas, insights and inspiration, we create innovative and sustainable solutions that address the key challenges facing society today, hence creating Brighter Living. Early exposure to this collaborative approach in action will provide SIT students with a competitive advantage to get their career in the food technology industry off to the best possible start.”

By developing the next generation of food technologists, DSM is also supporting the government’s drive to develop Singapore into the leading food and nutrition hub in Asia<sup>1</sup>. This agreement is also a continuation of on-going collaborative efforts that DSM has with local academic institutions.

<sup>1</sup> “Food Manufacturing Industry Transformation Map to Develop Singapore into Asia’s Leading Food and Nutrition Hub”, SPRING Singapore, 18 Nov 2016. Available at: <https://www.spring.gov.sg/NewsEvents/PR/Pages/Food-Manufacturing-Industry-Transformation-Map-to-Develop-Singapore-into-Asia%E2%80%99s-Leading-Food-and-Nutrition-Hub-20161118.aspx>

### Studies show further digestive health benefits for BENE0's chicory fibre

*Two recently published scientific studies are building on findings from earlier research, with results showing that BENE0's prebiotic chicory root fibres support digestive health by improving bowel regularity and softening stools, while being very well tolerated. With up to 30% of the Western population (including children) affected by a low number of weekly bowel movements and hard stools, the potential for using chicory root fibres in this area of digestive health cannot be underestimated.*

The first study by Antje Micka *et al.*, shows that chicory root inulin improves bowel function in adults and contributes to improved digestive health. The second study by Ricardo Closa-Monasterolo *et al.*, focuses on children between the ages of two to five years old and demonstrates that prebiotic chicory root fibres, inulin and oligofructose, support digestive health by improving stool consistency, while being very well tolerated.

The clinical trial conducted by Micka *et al.* was a randomised, double-blind, placebo-controlled, cross-over design trial of 44 healthy, slightly constipated subjects (self-reported constipation defined as 2-3 stools per week). Participants were supplemented with 3x4g/day of BENE0's chicory root fibre, Orafiti® Inulin, or placebo (maltodextrin). The supplements were delivered in a drink form that was consumed together with breakfast, lunch and dinner over a 4-week period and after a 2-week run-in phase. The results showed that BENE0's prebiotic chicory inulin significantly improved stool frequency per week without resulting in gastrointestinal discomfort. It also contributed to improved overall wellbeing and satisfaction, evaluated by a validated quality of life questionnaire for constipated people.

The research design followed the EFSA guidance documents for studies addressing digestive function (EFSA Gold Standard). It was also included in BENE0's dossier for a 13.5 claim that resulted in a positive opinion, as well as an exclusive claim for its prebiotic chicory inulin and digestive health.

The study by Closa-Monasterolo *et al.* is the first to show that prebiotic chicory inulin and oligofructose also support normal bowel habits in children between the ages of two to five years old. It was a randomised, double-blind, placebo-controlled parallel group design. The children received a 2x2g/day combination of BENE0's Orafiti® Inulin and Oligofructose, or placebo (maltodextrin), incorporated into yoghurt or fresh cheese, for a 6-week period. Results showed that the chicory root fibres softened the



*Studies show further digestive health benefits for BENE0's chicory fibre.*  
(© BENE0)

stools of the constipated children and were as well tolerated as the fully digestible placebo.

While there are a number of scientific studies that demonstrate the positive effects of prebiotic fibres, inulin and oligofructose, in infants and small children (0-2 years old), there was previously limited data on their effect in children between the ages of 2 to 5 years old.

This really highlights the high level of importance of the recent study results. Also, this is especially significant because this age group is particularly at risk of constipation due to their change in diet (overall low dietary fibre intake), toilet and potty training, as well as more exposure outside of the home (kindergarten), all of which may influence their digestive well-being.

The physiological mechanisms underlying this digestive support by chicory root fibres are related to their prebiotic effect. They selectively stimulate the growth of bacteria promoting saccharolytic fermentation, in particular Bifidobacteria and Lactobacilli. EFSA (European Food Safety Authority) described the underlying fermentation-driven mechanism in their positive opinion on Orafiti® Inulin and the improvement of regularity.

BENE0's Orafiti® Inulin and Oligofructose are natural, non-GMO, clean label prebiotic fibres that are derived from chicory root via a gentle hot water extraction method. These characteristics underline the uniqueness of these dietary fibres and differentiates them from others.

## CIFI launched new product branding, sweet potato ingredients



(© CIFI)

Carolina Innovative Food Ingredients (CIFI) launched four new ingredient brands and two other new products, defining and adding to its existing line of 100 percent Carolina-made sweet potato ingredients, which can replace artificial sweeteners and other unpopular ingredients in clean-label applications.

### The new brands are:

- Carolina Original cloudy sweet potato juice: a nutrient-dense, domestically sourced juice that adds flavor, color, and a nutritional boost to baked goods, sauces, and more
- Carolina Clear clarified sweet potato juice: the ideal alternative to high fructose corn syrup and sugar for your health-focused consumer, adding vegetable servings and a health halo

- Carolina Craft dehydrated sweet potato ingredients: sweet potato flour and granules that support gluten-free and non-GMO applications by adding flavor, texture, and nutrients including fiber
- Carolina Sweet clean label sweetener: a vegetable-based, nutritional replacement for high fructose corn syrup and other undesirable sweeteners

These new brands will allow CIFI to better communicate the value of its portfolio of diverse, multifunctional ingredients. In addition, CIFI will introduce two other purple sweet potato products:

- Purple sweet potato juice concentrate: rich in anthocyanin, this product adds not only an abundance of nutrients but also an all-natural and durable purple hue
- Purple sweet potato granules: adds healthy fiber, nutrients, and anthocyanin to baked goods, snacks, and more

“Our product development team has successfully created applications with compelling nutritional profiles, as well as sensory appeal,” said John Kimber, CIFI Chief Operating Officer. “These new ingredients do a great job solving clean label issues and will allow food brands to add the health and trend appeal of sweet potatoes to a wider range of applications. With consumers seeking cleaner labels, sweet potatoes are a great alternative in an industry that demands transparency.”

## Coca-Cola delivers greater variety to Brazilian consumers with slimmer format beverage packaging

CROWN Embalagens Metálicas da Amazônia S.A. (CROWN Brazil), a joint venture of Crown Holdings, Inc. (Crown) and Évora S.A. of Porto Alegre, Brazil, has partnered with Coca-Cola to introduce a 220 ml sleek style beverage can to local consumers. Produced at Crown’s plant in Cabreúva, the sleek style format addresses consumer demand for smaller portion sizes and greater product variety.

The functional and sophisticated format will be used for Coca-Cola lines: Coke Zero, Coke Life, Coca-Cola, Fanta, Grape Fanta, Sprite and Guaraná Kwat. It joins Coca-Cola’s line of standard 355 ml and 250 ml size beverage cans for soft drinks.



Slimmer format beverage packaging  
(© CROWN)

Like all aluminum cans, the 220 ml can is infinitely recyclable, provides an effective barrier against light and oxygen, and has significant shelf life properties. The can size also meets consumer preferences in terms of it being lighter, easier to hold, transportable and faster to chill than larger sizes.

The 220 ml sleek style beverage can brings CROWN Brazil’s portfolio to ten different sizes – the largest portfolio in the country. Other sizes available on the market are the 250 ml slim style, 269 ml, 310 ml, 355 ml and 425 ml sleek style cans and 250 ml, 355 ml, 473 ml and 550 ml standard cans.

### Vegesentials' HPP cold-pressed juices now available on Amazon.com

Vegesentials, the multiple international award-winning high-pressure pasteurized cold-pressed fruit and vegetable drink brand is now available on Amazon.com. The London-based Vegesentials Ltd. partnered with Vegesentials USA, LLC, with offices in Bloomfield Hills and Three Rivers, Michigan to manufacture and distribute the Vegesentials line of juices throughout North America.

Vegesentials is the United Kingdom's first cold pressed vegetable and fruit drink brand. Following its launch in June 2012, Vegesentials can now be found in all but one WholeFoods in the U.K., 60 % of the Waitrose supermarkets, and 50 % of the Holland and Barrett outlets.

Vegesentials has received numerous awards and recognition since its initial launch, including 2 Gold Stars awards for Superior Taste from the International Taste & Quality Institute, Winner of 'the Health & Fitness Food and Drink 'Smoothie Category 2014 Award' by Women's Fitness and Health & Fitness Magazines, Gold in the low calorie food and drink category by Women's Fitness and Health & Fitness 2016, Voted as No.1 'Highly Recommended' Drink at Be:Fit London Show 2014 by 'Science of Fit', Winner of 'Best Exhibitor Award 2014' at The Food & Drink Expo

Trade Show NEC Birmingham, UK's largest 'Food & Drink' trade show in 2014, and Finalist for Grocer Gold Award for "Entrepreneur of 2014."

Vegesentials USA will offer Amazon.com customers the Vegesentials 8.8oz Cheeky Carrot (carrot, apple, orange, lime, and chicory root), Cool Cucumber (cucumber, apple, spinach and chicory root), and Groovy Beet (beetroot, apple, cucumber, strawberry and chicory root). The child and senior version of these juices, sold in a 4.4oz bottle, will be available on Amazon.com at a later date.



*Vegesentials is the United Kingdom's first cold pressed vegetable and fruit drink brand.  
(© Vegesentials Ltd.)*

Discover more daily business news under  
[www.fruit-processing.com](http://www.fruit-processing.com)

### A protein smoothie that actually tastes good? No why



innocent introduced two delicious super smoothie recipes, each containing a whole portion of fruit, a source of vitamin C and 8 g of plant-based soya protein. And if that wasn't enough, both berry and tropical protein recipes are lactose free.

*Berry protein super smoothie & Tropical protein super smoothie  
(© innocent)*

Berry protein super smoothie is a mix of strawberries, raspberries and velvety coconut milk, expertly blended with soya protein. So it not only tastes great, it helps keep your bones strong and your muscles healthy too.

Tropical protein super smoothie is a blend of tropical fruits, coconut milk and soya protein. This magic combination means you're able to keep your body healthy during the winter months and beyond.

The brand new innocent protein super smoothies can be found in all good supermarkets in UK with the RRP £2.19 for a 360 ml bottle.

## New IFU Methods

### IFU method #83 Colour measurement in blood orange juices



*As the trade of blood orange juice and concentrates depends on their colour intensity, a unique and internationally accepted method for measuring their total concentration has been developed.*

(© istock)

The colour of pigmented “blood” oranges is caused by the presence of anthocyanins. Cyanidin-3-glucoside is the main anthocyanin pigment seen in oranges with lower concentrations of other mono- and di-glycosides anthocyanins. The total concentration of the anthocyanin pigments varies depending on the variety concerned and seasonal climatic influences (a).

As the trade of blood orange juice and concentrates depends on their colour intensity, a unique and internationally accepted method for measuring their total concentration has been developed and is described in this method. It provides an analytical technique that can be used by both processors of blood orange juices and purchasers (such as bottlers) as a standard way of establishing specifications that does not rely on arbitrary visual appearance. It is a useful tool to avoid conflict between buyers and sellers.

The method works on the principle that anthocyanins pigments are completely extracted from the juice with a specified volume of acidified methanol. After centrifugation the pigment content is determined by measuring the extract’s absorbance at 530 nm against a solvent blank.

The method requires the use of a spectrophotometer capable of measuring at a wavelength of 530 nm, a

centrifuge with sufficient speed to give a “g” force of 3000 g and other equipment and solutions typically found in a juice operational laboratory.

The method has taken 3 years to develop and was validated in 2016 with 18 participating international laboratories using blood orange samples.

### IFU method #84 Stability tests for clarified juices

Fruit juices in their natural state are generally cloudy or turbid. However, most juices that are to be sold as concentrate are clarified during processing to allow their easy concentration to >65 °Brix. If the enzymic treatments and/or clarification processes are not carried out correctly it can result in a hazy (slightly turbid) end product or one that develops a haze on standing. This will be unsightly to the consumer and may lead to complaints or claims.

This haze is often caused by insufficient or incorrect enzymatic treatments, improper clarification, fining or filtration due to a contamination with microorganisms. The haze often contains more than one substance and its most common causes are microbial infections, phenolics, proteins, pectin, starch and metal ions.

The tests described in this method are either carried out during juice processing to assess the efficacy (efficiency) of the enzymatic and/or clarification steps or on the finished product to ensure that the appropriate treatments have been carried out correctly. They may also be carried out on blended materials to ensure that the mixture does not produce an unstable blend.

#### The main stability tests are:

- Detection of pectin in fruit juices (“Ethanol test”)
- Detection of starch in fruit juices (“Iodine test”)
- “Hot/cold stability test” (test for phenolic/protein compounds)
- “Acetone test”
- “Bento-test” for assessing the dosages of bentonite and gelatin required to give a “good” fining
- Determination of gelatin bentonite demand for proper fining (Proteins)

The method requires a turbidity photometer (turbidimeter), refractometer and other apparatus and reagents typically found in a well equipped juice operational laboratory.

## BUSINESS CONTACTS

**BUCHER**  
unipektin

**Bucher Unipektin AG**  
Murzlenstrasse 80  
CH-8166 Niederweningen  
Phone +41 44 857 23 00  
Fax +41 44 857 23 41  
[info@bucherunipektin.com](mailto:info@bucherunipektin.com)  
[www.bucherunipektin.com](http://www.bucherunipektin.com)

**Hydraulic Filter Press, Micro- & Ultrafiltration,  
Adsorbers, Evaporators**

Bucher Unipektin AG is leading supplier of plants and components for the production of fruit juice and purees. In addition we are recognized supplier of sludge-dewatering plants and vacuum drying units. Recently we started the supply of evaporators for the dairy-industries and equipment for citrus-production.

**centrimax**<sup>®</sup>

**Winkelhorst Trenntechnik GmbH**  
Kelvinstr. 8  
50996 Cologne  
Phone: +49-2236-393530  
Fax: +49-2236-393559  
[info@centrimax.com](mailto:info@centrimax.com)  
[www.centrimax.com](http://www.centrimax.com)

**Disc Stack Centrifuges and Decanters  
Used – Fully Reconditioned – Warranty**



Disc stack centrifuges and decanters from  
GEA Westfalia Separator, Flottweg, Alfa Laval  
– used – fully reconditioned –  
– with a Warranty – new PLC Control units –



**Flottweg**  
Separation Technology

**Flottweg SE**  
Industriestrasse 6-8  
84137 Vilsbiburg, Germany  
Phone +49 (0) 8741-301-0  
Fax +49 (0) 8741-301-300  
[mail@flottweg.com](mailto:mail@flottweg.com)  
[www.flottweg.com](http://www.flottweg.com)

**Belt Presses, Decanters, and Disc Stack Centrifuges  
Solutions for the Production of Fruit and Vegetable Juices**

Flottweg offers customized solutions for higher yields and best quality. Our systems are well-known for high reliability and low operating costs. Due to more than 50 years of experience we have gained considerable know-how in the production of fruit and vegetable juices.



**GfL – Gesellschaft für Lebens-  
mittel-Forschung mbH**  
Landgrafenstrasse 16  
D-10787 Berlin, Germany  
Phone: +49 (0)30 263920-0  
Fax: +49 (0)30 263920-25  
[www.gfl-berlin.com](http://www.gfl-berlin.com)  
[info@gfl-berlin.com](mailto:info@gfl-berlin.com)

**Residue Analyses for Fruit Juice and Food,  
Contract Research**

GfL is one of the world wide leading laboratories in the field of fruit and vegetable juice. We analyse about 15.000 samples per year on adulterations and authenticity. Since 1990 we are additionally active in the analysis of pesticide residues.

AN EYE-CATCHER FOR  
YOUR CUSTOMERS



THE BUSINESS CARD OF YOUR COMPANY

Please contact **Cornelia Hebbe**

Phone +49 (0) 2634 9235-16  
[cornelia.hebbe@fruit-processing.com](mailto:cornelia.hebbe@fruit-processing.com)

**FRUIT**  
PROCESSING

**As of 2017 FRUIT PROCESSING  
is published 11 times!**

**Profit from the higher frequency and  
enhanced market penetration.**

**A Gateway to the Global Market**

Present your company or products in every  
FRUIT PROCESSING issue (printed and online) for a whole year.

## BUSINESS CONTACTS – the Buyer's Guide for our readers!

**1**

**Your insertion in BUSINESS CONTACTS in  
11 consecutive issues (6 print/digital, 5 e-papers)**

Standard advertisement (85 mm wide x 55 mm high), full colour, including logo, address, up to 4 highlighted keywords and space for additional text.

**Print & online offer (one year/11 issues)**

**= 720.– EUR** + VAT, if applicable

**2**

**Linked skyscraper banner on  
[www.fruit-processing.com](http://www.fruit-processing.com)**

Banner size: 120 x 60 pixel, linked to your website, for the reduced rate of EUR 90.– per month (regular rate is 150.–)  
For 12 months: 12 x 90.– EUR = 1,080.– EUR

**Cross media offer (one year/11 issues)**

**1**

**+**

**2**

**= 1,800.– EUR** + VAT, if applicable

Please contact **Mrs Cornelia Hebbe**: phone +49 (0) 2634 9235-16 or [cornelia.hebbe@fruit-processing.com](mailto:cornelia.hebbe@fruit-processing.com)



# MARKET PRICE REPORT

## (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

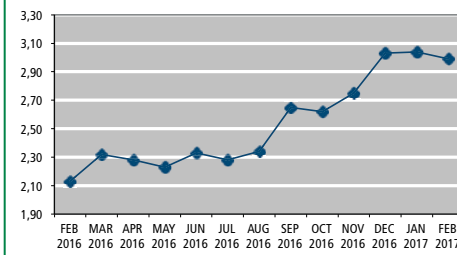
**Prices:** The price range is calculated for juice or puree of different proveniences, traded in drum or bulk; \$/kg = cif Rotterdam; EUR/kg = DDP

**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')

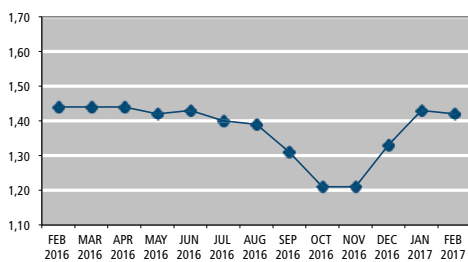
## Orange Juice Concentrate

65 °Brix, \$/kg



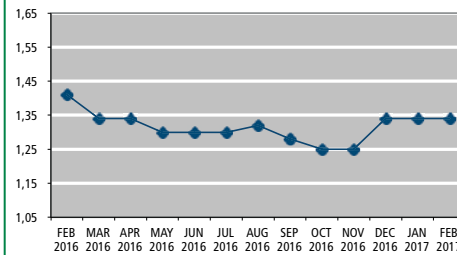
## Apple Juice Concentrate

70 °Brix, high acidity, EUR/kg



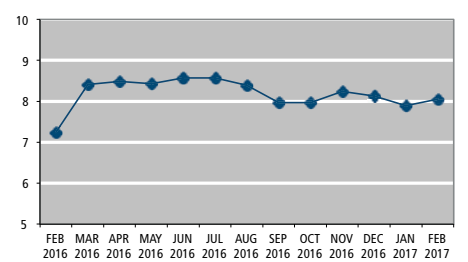
## Apple Juice Concentrate

70 °Brix, low acidity, EUR/kg



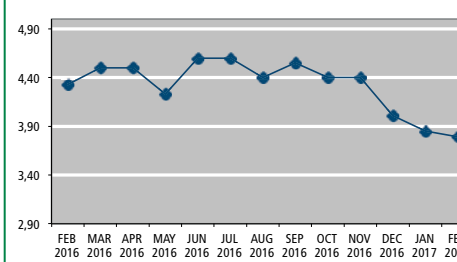
## Passion Fruit Juice Concentrate

50 °Brix, \$/kg



## Pineapple Juice Concentrate

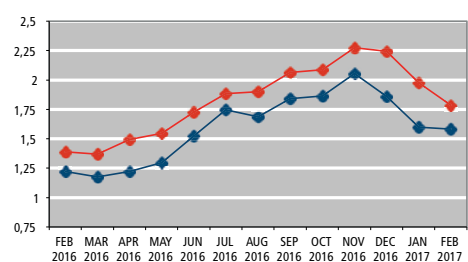
65 °Brix, \$/kg



## Orange Juice Concentrate

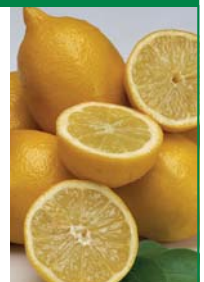
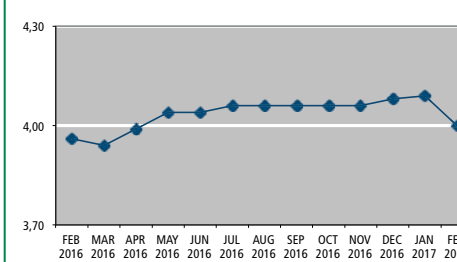
Future Markets \$/lb.

◆◆ = highest values  
◆◆ = lowest values



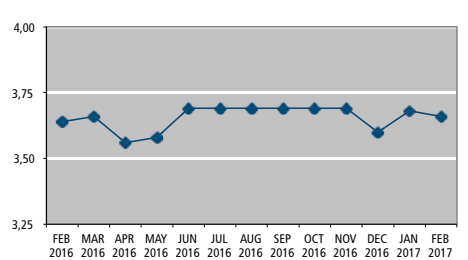
## Lemon Juice Concentrate

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



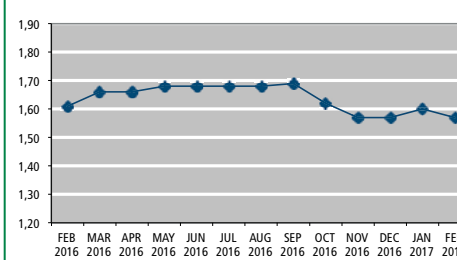
## Grapefruit Juice Concentrate

58 °Brix, \$/kg



## Pear Juice Concentrate

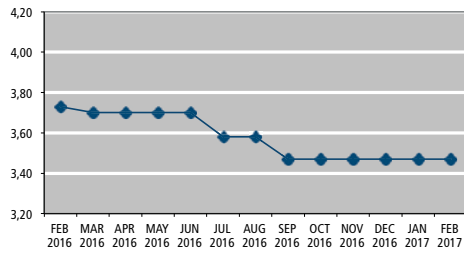
65 °Brix, EUR/kg



# MARKET PRICE REPORT

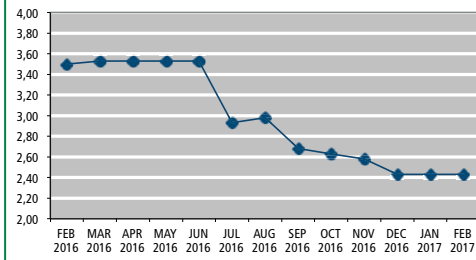
## Sour Cherry Juice Concentrate

65 °Brix, EUR/kg



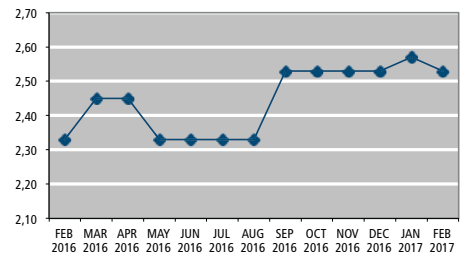
## Black Currant Juice Concentrate

black, 65 °Brix, EUR/kg



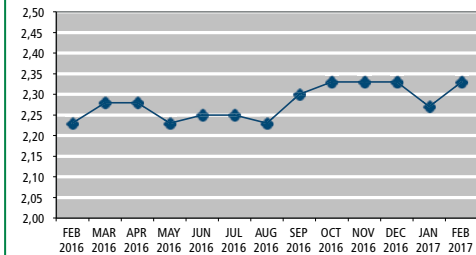
## Grape Juice Concentrate

white, 65 °Brix, EUR/kg



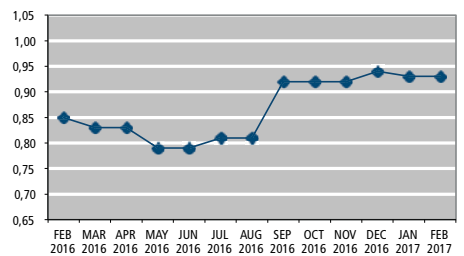
## Grape Juice Concentrate

red, 65 °Brix, EUR/kg



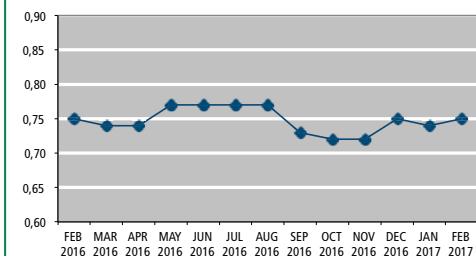
## Apricot Puree

EUR/kg



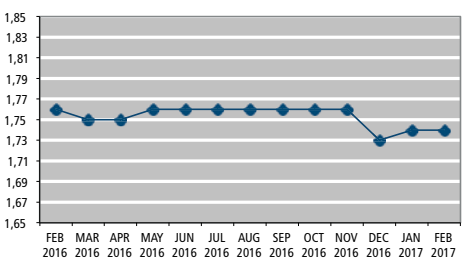
## Banana Puree

22-24 °Brix, \$/kg



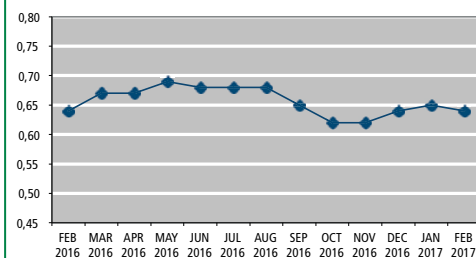
## Mango Puree

15 °Brix, \$/kg



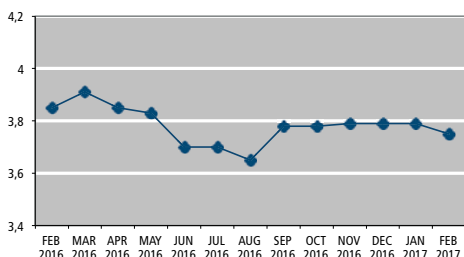
## Peach Puree

EUR/kg



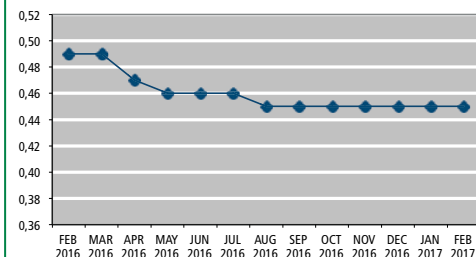
## Carrot Juice Concentrate

65 °Brix, EUR/kg



## Carrot Juice

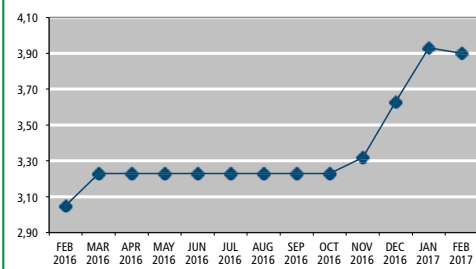
EUR/l



# MARKET PRICE REPORT

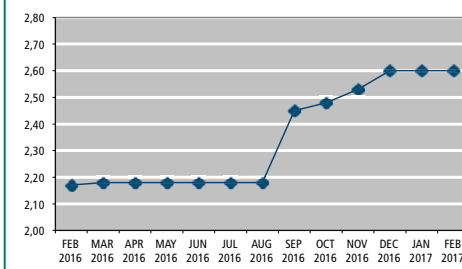
## Orange Juice Concentrate

organic, 65 °Brix, \$/kg



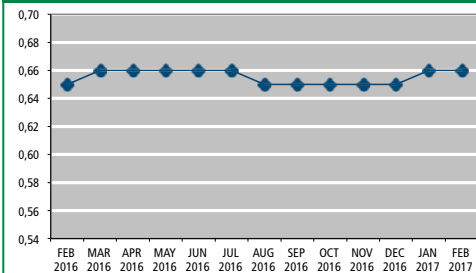
## Apple Juice Concentrate

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



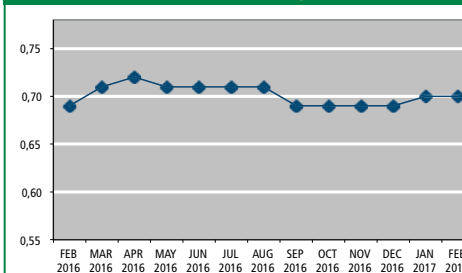
## Carrot Juice

organic, EUR/l



## Red Beet

organic, EUR/l



Print and online edition available! Have a look at [www.fruit-processing.com](http://www.fruit-processing.com)



# PEER REVIEW BOARD

New members welcome – please apply by sending an email to [editorial@fruit-processing.com](mailto:editorial@fruit-processing.com)

### Permanent Members:

- Dr Victor ARA, Chelab, Hemmingen, Germany
- Prof Dr Reinhold CARLE, Hohenheim University, Germany
- Prof Dr Helmut DIETRICH, Geisenheim University, Germany
- Mikko HOFSSOMMER, GfL, Berlin, Germany
- Prof Tilo HÜHN, Wädenswil University, Wädenswil, Switzerland
- Prof Dr Alessandro NOGUEIRA, Ponta Grossa State University, Brazil
- Dr Stefan PECORONI, GEA Westfalia Separator Group GmbH, Oelde, Germany
- Matthias SASS, Rudolf Wild GmbH & Co. KG, Eppelheim, Germany
- SGF International e. V., Nieder-Olm, Germany
- Dr Joachim TRETZEL, DöhlerGroup, Darmstadt, Germany
- Prof Dr Frank WILL, Geisenheim University, Germany
- Dr Edgar ZIMMER, Bucher Unipektin AG, Niederweningen, Switzerland

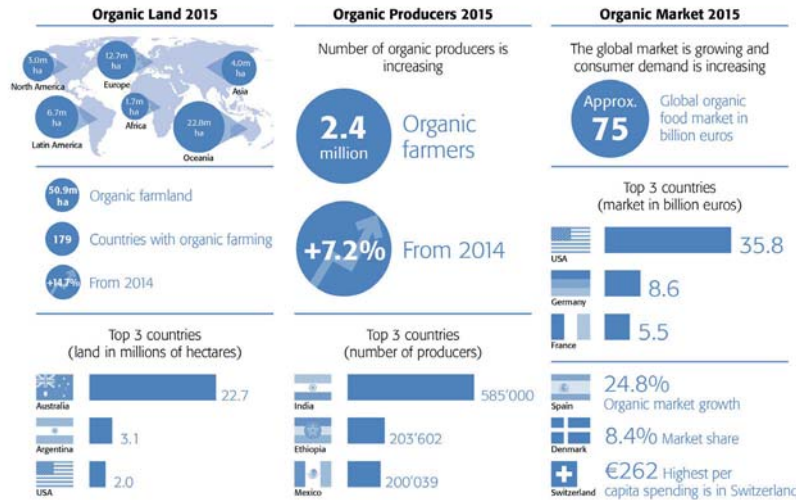


# WORLD OF FRUIT PROCESSING

Market Data – confructa medien GmbH

## Organic market continues to grow

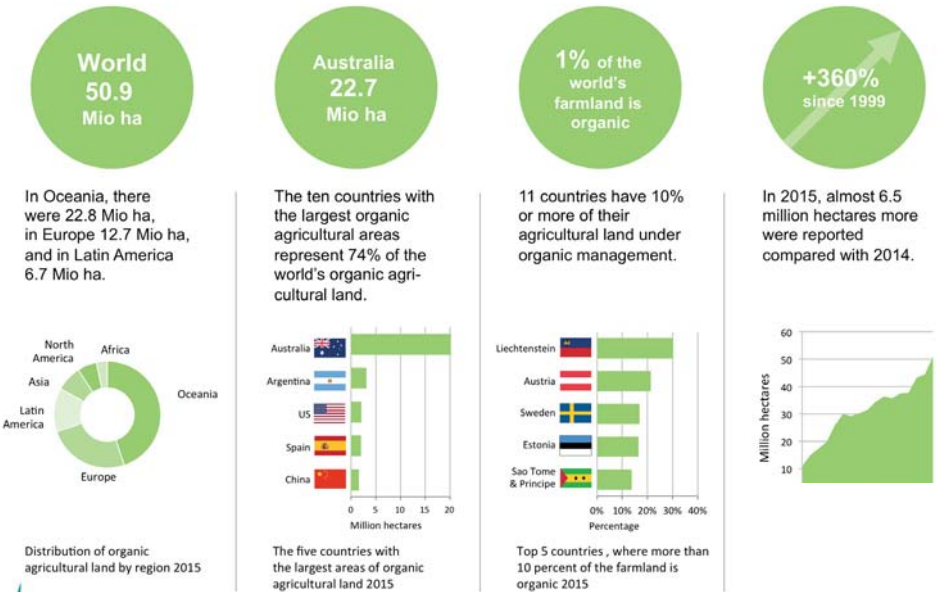
### The World of Organic Agriculture 2015



Source: FiBL survey based on national sources © FiBL 2017  
More information: [www.organic-world.net](http://www.organic-world.net)



### WORLD: ORGANIC FARMLAND 2015



### Organic market grows faster than organic farmland

The trend of the market growing faster than organic farmland continued in 2015. However, it is encouraging that the area of organic farmland grew at a faster rate than it had in past years: it increased by almost one million hectares or by 8.2%. At the end of 2015, 12.7 million hectares were under organic management in Europe (in the European Union, 11.2 million hectares). This constitutes 2.5% 6.2% respectively of the total agricultural land. The countries with the largest organic farmland areas are Spain (1.97 million hectares), Italy (1.49 million hectares) and France (1.37 million hectares). In each of these three countries, the area of organic farmland increased by at least 100'000 hectares. Nine European countries report that at least 10 % of their farmland is organic and the highest organic shares worldwide are in Liechtenstein (30.2 %), Austria (21.3 %) and Sweden (16.9 %).

(Source: Research Institute of Organic Agriculture (FiBL) – 2017)

**FRUIT PROCESSING** offers all you need to know about fruit processing innovation and trends around the world and interprets them to help you improve your business.

# 11 times a year! The new subscription options:

Choose yours today...

## PRINT FRUIT PROCESSING

### PRINT PACKAGE:

6 print issues of  
FRUIT PROCESSING a year,  
shipped worldwide

**new!** **★ PLUS**  
5 additional digital issues a year  
**PLUS**  
weekly **Juicy News** e-newsletter



\* price is valid for Europe incl. p+h, + VAT if applicable  
Overseas: € 124 incl. p+h

## DIGITAL FRUIT PROCESSING

### DIGITAL PACKAGE:

6 digital issues of the print version  
FRUIT PROCESSING a year

**new!** **★ PLUS**  
5 additional digital issues a year  
**PLUS**  
weekly **Juicy News** e-newsletter  
**PLUS**  
online archive  
for last 12 and next 12 months



\* price is valid for Europe incl. p+h, + VAT if applicable  
Overseas: € 184 incl. p+h

## PRO FRUIT PROCESSING

### PROfessional PACKAGE:

Print PLUS digital! Read FRUIT  
PROCESSING in the office **AND**  
on the go

6 digital **AND** print issues a year  
**new!** **★ PLUS**  
5 additional digital issues a year  
**PLUS**  
weekly **Juicy News** e-newsletter  
**PLUS**  
FULL ACCESS to online archive  
since 2002!

