

**food**

NOVEMBER/DECEMBER 2017

**australia**



*Is Fresh  
Best?*

THE CASE FOR CANNED  
AND FROZEN VEGETABLES

**INSIDE**

WHY WE SHOULD CELEBRATE  
FOOD PROCESSING

TOP 4 FOOD TRENDS FOR 2018

TOWARDS AN AFFORDABLE  
AND SUSTAINABLE FOOD SUPPLY

# Stand Out from the Crowd...

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5. Keep your finger on the pulse with the latest food industry news including regulatory changes and industry standards through *food australia* magazine and monthly BiteSize and Toolkit e-newsletters.
6. Access discounted rates for events, training and industry forums.
7. Opportunities to profile your individual or organisational technical expertise across the AIFST digital platforms.
8. Members-only activities including site and factory tours.
9. Members are eligible to apply for Professional recognition which includes AIFST post-nominals.
10. Expand your food connections across the science, technology and innovation sector.

# CONTENTS

NOVEMBER/DECEMBER 2017

## regulars

- 4 Food for Thought
- 5 By the Numbers
- 6 Your Institute
- 18 The Pulse
- 46 Fast Five



### YOUNG PROFESSIONALS

- 14 **2018 AIFST Summer School**  
2018 Student Product Development Competition: "Consumer-Led Innovation" + 2017 SPDC Winners + Solving the Problem of Waste + A Food Science Journey

### THE GRIST

- 19 **FSANZ Third Quarter Highlights**  
It's been a busy few months at FSANZ with the CEOs first annual report, a new newsletter and changes to the Food Standards Code.
- 20 **Technologists! Stand Up and be Counted!**  
We should be celebrating food processing, not demonising it, for when it comes to public health it's outcomes are positive. Just take milk as an example.

### INDUSTRY INNOVATORS

- 23 **Size Matters**  
The small innovation with big potential.

### FOOD FILES

- 30 **Top Four Trends for 2018**  
How we consume protein, changing and redefined demographics, and the war against waste will affect the way we produce and consume food in the future.
- 34 **Are Frozen or Canned Vegetables Really a Compromise on Nutrition?**  
Consumers might think fresh is best but the answer is as fascinating as it is complex.
- 38 **How to Get your Kids to Eat Their Carrots**  
How food packaging influences parents and getting Descriptive Analysis right.

### GLOBAL HUB

- 41 **12th Australian and New Zealand Sensory and Consumer Science Symposium**  
A platform to interact with international science leaders, learn about the newest developments in research methods, network and exchange ideas.

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# FOOD FOR THOUGHT

Welcome to the November/December issue of *food australia*!

As readers may be aware, this will be my last Food for Thought in *food australia* as CEO of AIFST. Having joined AIFST in April 2015 as the inaugural CEO, it has been a great pleasure to serve our members and the food industry community at large and I look forward to watching the Institute continue to grow and evolve.

As we often comment, the Australian food and agribusiness sector has a vibrant future ahead. Not only a key economic pillar for Australia, the industry also supports the livelihoods of millions of people globally. I have recently returned from Belgium where I was fortunate to spend a week with 100 delegates aged under-25 years from 49 countries discussing how we will feed 10 billion people by 2050. Hosted by Bayer Crop Science, the Youth Ag Summit inspires the food and agribusiness future of many and reconfirmed for me the great strength we have our people and the need to continue to support and underpin their ongoing skill and capability building, a core strategic priority of AIFST.

As I reflect on 2017, it has been a wonderful celebration of the 50th anniversary milestone of the Institute. I hope you have enjoyed hearing from Past Presidents throughout the year and we are pleased to round out 2017 with an interview with current AIFST Chair, Peter Schutz, who reflects on his own food industry journey as well as that of AIFST on page 6-7.

One of my greatest joys in the role as AIFST CEO is engaging and supporting the rising generation of food industry leaders. Our Institute Young Professionals are doing some amazing work in transforming the food industry for the future like Felicity Denham from Tasmania and Bijan Khariwala from Brisbane who outline some of their current work and food industry journeys in this issue on pages 14 and 16.

As we focus on 2018, the ongoing support we provide members is crucial. The launch of the AIFST webinar program in 2017 has been a great success and well received, see page 8 for more details. This program will expand in 2018 to further provide both career and technical support for members.

2018 membership renewals are currently underway so don't forget to renew before 31 December to take advantage of discounted rates. As we continue to launch new services and offerings for members, 2018 is already shaping up to be a busy year! We look forward to providing ongoing support for you as a member in 2018.

We wish you a great end to 2017 and hope you enjoy the last issue of *food australia* for 2017! 🍷

## GEORGIE ALEY

AIFST CEO





# RIPE IN TIME FOR SUMMER

**M**angoes, what fruit better represents the taste of summer in Australia? Whether it's from Coles, Woolworths or the local Sunday market, many of us love that distinct flavour that only a fresh mango can offer on a hot summer's day.

Native to the southern regions of Asia and India, mangoes were spread across the globe and reached Australia in the 1800s, and have since become a staple summer crop. Australia provides many varieties of mango, including Kensington Pride, Calypso, Honey Gold and Keitt. Kensington Pride is by far our favourite, accounting for nearly two thirds of total mango sales. Mango production in Australia is gradually increasing, and while the majority of mangoes are produced in Queensland and the Northern Territory, NSW is the largest consumer of mangoes out of all the states and territories.

Forget kale, because not only are mangoes delicious to many, but they are low in fat and packed with energy and essential vitamins. One serve a day will give you more than your required vitamin A and C intake! But enough talk, let's look at some of the numbers. 🍌

**65%**

Mango sales are Kensington Pride

**12%**

increase in Australian mango production from 2013 to 2015, from 39,010 to 42,515 tonnes.

**53 500**

tonnes average mango production per annum over the last 5 years

**4%**

growth in production per annum on average

**\$140 Million**

GVP at farm gate per annum

**66%**

of Australian adults purchased mangoes over the 2013/2014 summer

**95%**

of mangoes are grown in Queensland and Northern Territory

**2.2 kg**

Average consumption of Australian-grown fresh mangoes per person per annum

Retail value of the mango crop increased by

**40%**

in the past three years, more than double the overall fruit category

**122.3 mg**

Mango vitamin C content

**8%**

of total production is exported

References for this article can be found on the AIFST website: <https://www.aifst.asn.au/>.

# AIFST TALKS TO PETER SCHUTZ

AIFST CHAIR 2016 – PRESENT

**HAVING WORKED IN THE FOOD INDUSTRY ACROSS VARYING ROLES FOR OVER 40 YEARS', HOW WOULD YOU SUMMARISE THE EVOLUTION AND CHANGES WITHIN THE INDUSTRY LANDSCAPE DURING THIS TIME?**

There have been a lot of big changes within the industry, particularly with education and technology. When I went to university, only the University of New South Wales (UNSW) did any sort of food technology degree. All the other main universities courses like Sydney were microbiology and more “pure” sciences, nothing really applied to the food industry. As a result, you learnt on the job using what knowledge you had, and that's something that has changed now.

Technology has also been a game changer. Back at Tooth and Co, I was working with old timber fermenting vessels that had been there since the mid 1800's. I have seen over my 40 years in the sector a lot of factories re-tooling, rebuilding, and bringing in the latest overseas technologies.

Another change has been in food safety protocols. I'd never heard of things like

HACCP or ISO9001 40 years ago; they didn't exist back then.

**WHAT WOULD YOU SAY HAS BEEN THE BIGGEST DISRUPTOR IN THE FOOD INDUSTRY IN THE LAST 10 YEARS?**

A thing that I object to is instantaneous information, communication, and the expectation of people to have access to instant knowledge and responses. People aren't challenging views; there's a tendency to rely on the first bit of information you see online. When I attended university, we would go to the library and research. You would analyse, you would spend time reading through papers trying to find what you needed, and in the process of doing so you had a much deeper understanding of what was actually happening and what the processes were. Today, with instant knowledge, people tend to have the answers but not the understanding.

**HOW HAS AIFST HELPED YOUR TIME IN THE FOOD INDUSTRY?**

It is the community. In companies you tend to be a little bit isolated. You can feel that the problems or opportunities you have are unique, but there is a whole community



within AIFST with a wealth of knowledge. There is a cohort of people that you meet over the years that you can call upon.

**WHAT HAVE BEEN YOUR PRIORITIES AS AIFST CHAIR?**

It has been the restructure, shifting from a presidential structure to a Chair and CEO. I wasn't responsible for the change, rather the implementation. In any major change like that, there are always people who feel significant emotional involvement.

Having said that, overall it has been extremely positive. The biggest highlight for me since being Chair would have to be the 50th Anniversary Convention.

**OUTLINE THE AIFST BOARD'S SHORT AND LONGER-TERM PRIORITIES FOR AIFST?**

In the short term, we need to focus on



*WE NEED TO EXPAND OUR SCOPE TO BE RELEVANT TO THE NEW PEOPLE IN THE FOOD INDUSTRY.*

our member and industry services. For the members, we need to remain relevant to their needs. For the industry, we need to position ourselves as a supplier of skills and capability building, as well as mentorship and identifying new positions.

These priorities bring with it the challenge of having a profitable offering, for example our *food australia* magazine.

**WHAT DO YOU SEE AS AIFST'S ROLE IN SUPPORTING AUSTRALIA'S FOOD INDUSTRY PROFESSIONALS?**

To be relevant. There is not as much depth in food science and technology within companies as there used to be. Big industries no longer invest huge amounts in doing their own research anymore. This is presenting a challenge in that it's becoming harder to maintain the community, and our role is to keep the


community strong, as well as widen it.

We need to expand our scope to be relevant to the new people in the food industry. There are new areas of personalised nutrition, linking genetics right through to feeding and ageing population. These introduce a whole new range of people that potentially aren't covered by the traditional approach to food science and technology.

**WHAT RECOMMENDATIONS WOULD YOU GIVE TO ANY YOUNG ADULTS CONSIDERING A CAREER IN THE FOOD INDUSTRY?**

It is an extremely broad sector. You can get involved in manufacturing, in quality assurance, research and development, in new product development; just about anything you want could have a relevance to the food industry. I would also stress

that there aren't enough scientists in senior executive roles. We need scientists to develop skills in finance, accounting and management; that's something the industry really requires. We need CEOs with science backgrounds.

However, the one bit of advice that I would give to our Young Professionals is to never look at your horizons beyond two years. You just cannot predict what's going to happen and you have to keep an open mind. "Just have a go" – that's the mindset you need to have. 


# AIFST EVENTS

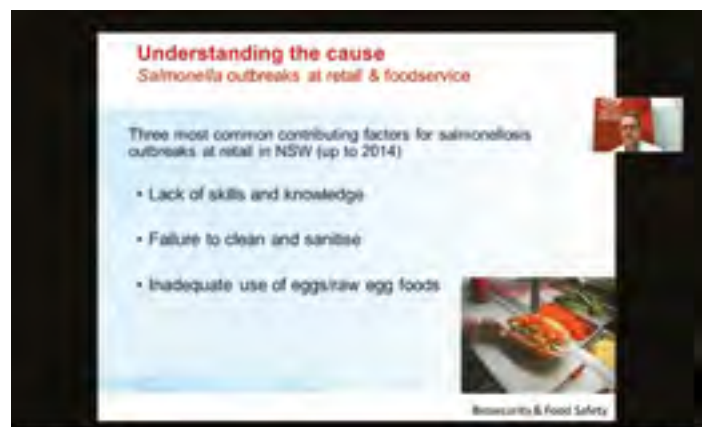
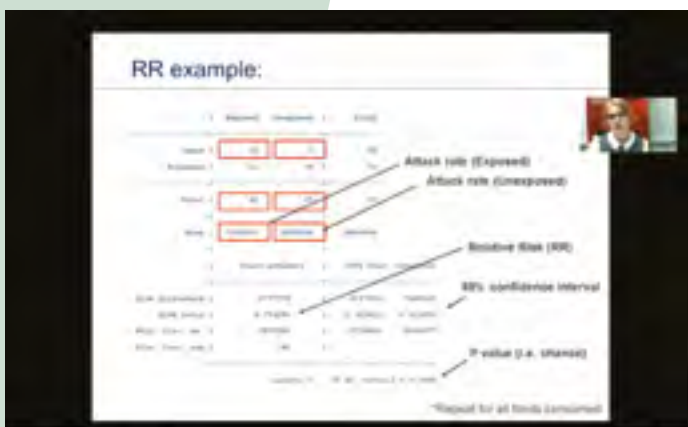
## WRITING FOR SCIENCE: DR ZOE DOUBLEDAY PRESENTATION

In September, Dr Zoe Doubleday from the University of Adelaide presented a webinar for AIFST members on “The other side of scientific writing: increasing reader engagement and readership”. Dr Doubleday, an ecologist, co-authored a paper that advocates for more accessible prose across scientific papers. Dr Doubleday put forward the argument that scientific writing can remain valid and accurate without an overly formal style.

Dr Doubleday spoke about “Ingredient X”, which melds clarity and creativity, uses narrative to scaffold ideas, and brings

tangible words out of abstract and remote ones. She took webinar participants through some examples of scientific papers she has re-written in a newer creative style, as a result of her research.

AIFST members can view the webinar online [www.aifst.asn.au/career-webinar-series](http://www.aifst.asn.au/career-webinar-series). 




## EPIDEMIOLOGY OF FOOD SAFETY OUTBREAKS WEBINAR

Keira Glasgow, Manager – Enteric and Zoonotic Diseases at the Communicable Diseases Branch of Health Protection NSW, and Dr Craig Shadbolt, Manager – Food Incident Response and Complaints at NSW Food Authority, took part in an AIFST webinar on food safety outbreaks, the investigation process and appropriate food control strategies in October 2017.

Keira gave an overview of how epidemiology (the study of the origin and causes of diseases in a community) is undertaken. Keira spoke of the analytics that form part of the evidence gathering framework, with the three main principles including person, time and place. She touched on some of the challenges, including an increase in international travel, not only of individuals but of produce. Keira also discussed how technology is being

utilised to strengthen control of food borne outbreaks, giving the example of genome sequencing of pathogens to determine how related particular cases might be.

Craig presented on how food outbreaks are managed by regulators and regulator interaction with the food industry. Craig gave an overview of the National Food Incident Response Protocol and how government and industry engage during a crisis. Craig examined the recent rockmelon salmonella outbreak, including the repercussions of the incident and the factors that resulted in the outbreak, such as poor food safety culture and inadequate audit processes.

If you would like to listen or watch the full webinar, please visit [www.aifst.asn.au/career-webinar-series](http://www.aifst.asn.au/career-webinar-series). 





# *AIFST HUMANITARIAN FOOD SCIENCE & TECHNOLOGY SYMPOSIUM*

AIFST hosted the first-ever Humanitarian Food Science and Technology Symposium in conjunction with the AIFST Convention in July 2017. This insightful and thought-provoking symposium brought together experts from Australia and around the world to discuss issues related to humanitarian and emergency feeding. The Symposium involved over 50 delegates who work in humanitarian and emergency activities in NGOs, governments, academia, research institutes and the private sector as well as a range of interested food science and technology professionals.

## *RESPONDING TO HUMANITARIAN CRISIS IS A COMPLEX SCENARIO AND REQUIRES MULTIPLE STAKEHOLDERS TO WORK TOGETHER.*

Getting food to consumers with the right quality at the right cost is the overarching goal with an eye to responding to crisis positively and capacity building to increase local food production, develop sustainable diets and nurture more resilient communities. Questions were raised about the fortification of food versus the consumption of a diversified local diet. What are the pros and cons of sourcing food locally versus importing food to feed those in need?

Responding to humanitarian crisis is a complex scenario and

requires multiple stakeholders to work together. Not only do we need to engage with the private sector but we need to look to sectors outside the food industry, such as defence, for lessons we can learn. We need to engage research providers and academia and define the role they can play.

And of course, we need to consider how food scientists and technologists get more engaged in humanitarian activities. Of the 14,000 employees at the World Food Programme (WFP), only 20 are food technologists. How can this industry become more involved and what role can they play in producing safe, nutritious and stable foods? And turning to the next generation, what are the opportunities for young food scientists and technologists in alleviating suffering and creating sustainable food systems for those affected by humanitarian crises?

As an outcome of the Symposium key actors including AIFST, CSIRO, University of NSW (UNSW), WFP, Global Alliance for Improved Nutrition (GAIN), Foodbank and humanitarian specialists have been working to advance the discussions at the event. These actors are also engaging with key groups including IFT, FAO and NGOs to implement key activities that further engage the food science and technology community. AIFST will keep members informed on future opportunities to participate in 2018.

AIFST would like to thank the Symposium Co-Convenors Jayantha Sellahewa and Dominique Bounie along with our Symposium Partners for their support: CSIRO, UNSW, DST Group, GAIN, University of Lille, World Vision and APEF.®



## WA FOOD FOR THOUGHT WORKSHOP - REGISTER NOW

AIFST members and guests are invited to a half day workshop that will explore the food industry from both a national and WA perspective. Registration also includes a sundowner networking hour.

### **Guest speakers:**

#### ***Current Policy & Regulatory Changes within the Australian Food Industry***

Mark Booth, Chief Executive Officer  
Food Standards Australia New Zealand

#### ***The Future of Food***

Professor Martin Cole, Deputy Director of Agriculture and Food  
CSIRO

#### ***The National Approach to Food Safety Certification Project***

Fiona Fleming, Adviser Policy and Regulation  
Australian Food and Grocery Council

#### ***Bacterial Biofilms and Food Safety***

Associate Professor Gary Dykes, Deputy Head of School,  
School of Public Health  
Curtin University

#### ***Packaging – It's Not Just the Wrapper.***

#### ***How Packaging is an Integral Part of a Product***

Alan Adams, Market Manager, ANZ – Retail, Case Ready  
and Poultry Food Care, Sealed Air

#### ***Health Benefits of Lupin Foods – Current Level of Evidence***

Associate Professor Stuart K Johnson, School of Public Health,  
Curtin Health Innovation Research Institute, Curtin University

**When:** Wednesday, 15 November 2017

**Time:** 1pm – 6pm

**Where:** Scotch College, 76 Shenton Road  
Swanbourne WA 6010

#### **Ticket prices**

AIFST members: \$65 (inc GST)

AIFST students/graduates: \$55 (inc GST)

Non-members: \$175 (inc GST)

Bookings can be made via the AIFST website –  
[www.aifst.asn.au/events](http://www.aifst.asn.au/events) or by contacting  
Shona.Gawel@aifst.com.au. 

Our thanks to our generous industry sponsors for the 2017 workshop: PM Fresh, Merieux NutriSciences, ProMicro and Zimbulis.



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# 2017 AIFST PILOT MENTORING PROGRAM UPDATE



2017 was an exciting year for the AIFST as it marked the introduction of the AIFST Pilot Mentoring Program. Designed to provide support and guidance to those in different stages of their food sector career, the NSW pilot has been a great success and provided the foundation for a national mentoring program to be launched in early 2018.

The mentoring program benefits both the mentor and the mentee. Mentees receive invaluable guidance and support to develop professionally, while mentors are able to give back to their industry and better develop their leadership and coaching skills. Similar programs are employed in many different industries by many different companies and are recognised as critical in helping guide future industry leaders.

The pilot program began in May this year, with a NSW Mentoring Consultation Breakfast, which was open to all NSW members and was hosted at the AIFST office in North Sydney. Over 25 members, ranging from new Student members to more experienced AIFST Professional and Fellow members, provided input on what they would like to get out of the program. During the breakfast, attendees formed small groups to discuss key points they believed defined mentorship. As many attendees had previously taken part in mentoring programs, their feedback and insight was an invaluable resource that helped AIFST develop the pilot program. Members in other states who had participated in mentoring programs were also generous in coming forward with information and feedback. This collaborative approach reinforced the strong sense of community within the Institute.

Taking key learnings from the mentoring breakfast, the NSW Community of Interest formed a working group to determine what

the mentoring program should ultimately look like. The working group, comprising NSW members Belel Rathborne, Soumi Paul Mukhopadhyay, Annesley Watson and Jayantha Sellahewa and AIFST staff Shona Gawel and Giles Aley, met frequently to finalise the program and the framework within which the program would run. The working group generously gave up their time to assist AIFST with the pilot program and the Institute would like to take this opportunity to thank those members. Without their input, ideas and commitment, AIFST would not have been able to launch this long-awaited program for members.

At the 2017 AIFST 50th Anniversary Convention in Sydney in July, AIFST Chair Peter Schutz officially launched the NSW Mentoring Pilot Program, with strong interest received from across the membership. Seven mentorship pairs were selected to take part in the Program.

Mentors and Mentees attended an initial induction and meet and greet on Friday, 1 September 2017. The afternoon brought together the pairs for the first time and gave everyone a chance to meet others in the program.

To support Mentors and Mentees through the program, a handbook with suggested activities was developed by AIFST to guide the mentoring relationship. These activities focus on key areas that many people who are starting out on their food journey may need help with. Key activities include: presentation skills; personal reflection on your goals and ambitions; dealing with new and unforeseen challenging professional situations; and what mentees would like to get out of the program and how to plan this with their mentor.




More recently, Mentor and Mentees met separately at the halfway “Check In” Session to discuss how they were finding the program, provide feedback and hear about the experiences of others. The feedback was very positive and it was encouraging to see how, in only a short period of time, the program was already delivering a tangible benefit for those involved. These crucial sessions have helped AIFST to hone the National Program to be launched in 2018.

As with everything, all good things must come to an end and in a few weeks the AIFST Pilot Mentoring Program will conclude with a wrap-up session. This will be a chance for everyone to come together to reflect upon their time in the program and share their stories from the 12 weeks.

Taking on board everything learnt from the pilot program, AIFST is already hard at work tailoring the program for 2018 and is pleased to rollout the program as a national offering to members. For those who are currently in regional or remote areas, AIFST will be offering an online platform to ensure members in these areas can take part.

The 2018 AIFST National Mentoring Program will open for applications early in 2018 and run through to September, when all participants will participate in an official program graduation. AIFST will provide a full update on the 2018 program in the January/February 2018 issue of food australia as well as in the BiteSize and Toolkit e-newsletters and on the AIFST website.

Thank you to all those involved in the pilot program. The national rollout would not have been possible without your input. 

*DESIGNED TO PROVIDE SUPPORT AND GUIDANCE TO THOSE IN DIFFERENT STAGES OF THEIR FOOD SECTOR CAREER, THE NSW PILOT HAS SO FAR BEEN A GREAT SUCCESS AND PROVIDED THE FOUNDATION FOR A NATIONAL MENTORING PROGRAM IN EARLY 2018.*

# AIFST YOUNG PROFESSIONALS

## 2018 AIFST SUMMER SCHOOL: SAVE THE DATE!

As part of AIFST's ongoing support for students and young professionals, the AIFST Summer School is returning for 2018. This annual event will be held at Curtin University in Western Australia from 22- 23 February 2018.

The AIFST Summer School provides first-hand opportunities for student and young professional members to further develop their learning and networking. Here are just a few ways in which attending Summer School can assist you:

- The Summer School is there to help undergraduate, post-graduate and recent graduate students to build their professional food industry network among their peers.
- Attendees will be exposed to food industry opportunities through industry guest speakers, who can provide insight and advice on prospective career paths in both research and industry.
- A highlight in previous years, attendees will be taken on a site tour that will expose them to a "real world" industrial or research facility.
- Attendees will be given the chance to build industry relevant skills, such as presentation and public speaking skills and, where relevant, a platform to present their current research in front of their peers.
- Attendees will build on their current skills through workshops designed to challenge their technical knowledge and requiring them to think critically.



Bithika Saha

Each year over 50 students take part in the two-day event. Bithika Saha, a PhD student at the University of New South Wales, attended the 2017 AIFST Summer School. Her research is on inclusion of shrinkage in the drying model and application of that model for the quality prediction of dried food, which she presented at the 2017 event.

*"Participation in the AIFST Summer School this year was a fantastic experience for me. I really enjoyed the presentations of other students and industry professionals and gained valuable knowledge regarding different aspects of new product development, quality and safety. The most exciting part of the programme was the Campbell Arnott's site tour, where all the participants got an opportunity to see the commercial production and packaging process. AIFST Summer School is a great opportunity for all food science students to get real industry exposure and achieve practical knowledge regarding the food industry and it is also an excellent opportunity for networking."* Bithika Saha

*AIFST is currently calling for abstract submissions for presentations at the 2018 Summer School with submissions closing at 5pm on 1 December 2017. Make sure you submit via email to [aifst@aifst.com.au](mailto:aifst@aifst.com.au). Further information on the 2018 AIFST Summer School can be found at the AIFST website [www.aifst.asn.au](http://www.aifst.asn.au). *

*Team Nutcracker from Deakin University won the 2017 Student Product Development Competition*



## **2017 STUDENT PRODUCT DEVELOPMENT COMPETITION WINNERS**

In 2017, Student Product Development Competition teams were asked to think ahead and plan for the future with the brief, Future Proofing Our Food. With sustainability at the centre of the product development, students were asked to develop a food product that uses development techniques, raw materials, ingredients, processing methods, packaging, or distribution methods that contribute to one or more of the following:

- Protecting and conserving the environment
- Improving public health
- Giving rise to better human communities
- Protecting animal welfare

In July, the 2017 SPDC culminated in a full day of presentations and product tasting at the AIFST 50th Anniversary Convention in Sydney. On day one of the convention, teams pitched their products to the judges, fielded questions and even produced their products to be sampled by the judges. After many stages of hard work from all the teams that applied this year, the winners were Gina Absalom, Brittany Andreola and Tara McCormick from Deakin University with their product The Nutcracker.

The Nutcracker addressed the key elements of the brief by using a by-product of almond milk production, almond pulp, and turning it into a cracker that contained both fibre and protein. The team's approach of value adding to the production of almond milk is a creative way to solve the problem of an otherwise useless by-product.

Other teams in the 2017 competition addressed the brief in different ways such as the inclusion of insect flour in ramen noodles, incorporating bone marrow in production to increase nutrient density for the elderly, and decreasing the animal product content and allergens while maintaining nutritional value in pikelets. AIFST congratulates all of this year's competition entries for their creativity and ingenuity displayed.

*Want to take part in AIFST's student programs in 2018? Renew your membership or sign up as a new student member for 2018 and gain free registration to the 2018 Summer School and the opportunity to enter into the Student Product Development Competition. To renew or take out membership for 2018, head to the AIFST website [www.aifst.asn.au](http://www.aifst.asn.au). <sup>fa</sup>*

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## **2018 STUDENT PRODUCT DEVELOPMENT COMPETITION: "CONSUMER-LED INNOVATION"**

The AIFST Student Product Development Competition (SPDC) is on again in 2018. The annual competition is aimed at undergraduate and post-graduate students who want to take part in a real life product development, from brief to shelf.

The SPDC was established over 15 years ago and since then has attracted team entries from leading educational institutions across Australia, with many previous entrants and winning team members going on to find fulfilling careers in both the Australian and global food industry.

In 2018, the focus is on consumer-led innovation, which challenges students to ensure they put consumers at the

centre of development. As consumers have become more vocal, more demanding and more engaged with brands than ever before, consumers expect innovation in products that align with their needs.

After the initial submissions, finalist teams will further develop their product for presentation at the 2018 AIFST Convention in Melbourne next year!

Further information on the 2018 SPDC including submission dates, eligibility criteria and full competition brief can be found at the AIFST website, [www.aifst.asn.au](http://www.aifst.asn.au). Winners will be announced at the 2018 Convention. <sup>fa</sup>

# SOLVING THE PROBLEM OF PRODUCE WASTE

WORDS BY BLAKE CUNIO  
AIFST INTERN

Dr Felicity Denham, Post-Doctoral Research Fellow at the University of Tasmania's ARC Training Centre for Innovative Horticultural Products, has initiated a research project into the cost and environmental impact of waste in the fresh produce industry.

The project will measure the environmental impact and cost of waste in the fruit and vegetable industry, and investigate the potential benefits of strategies to minimise waste. Strategies include using more effective packaging, transport and storage conditions; creating new products from currently wasted goods; and evaluating new technologies to reduce the rate of quality loss.

"This new project aims to identify where resources can be used more effectively to minimise the amount of produce thrown out because of spoilage," says Felicity.

Felicity is confident that her research project is a step towards the future of food production and processing and that it will help create opportunities to reduce food waste and improve efficiencies for food businesses both in Tasmania and nationally.

"The Tasmanian food industry is unique and exciting," Felicity said. "There are many businesses that are expanding from production agriculture into value-added food products and this research will contribute helpful knowledge to improve resource efficiency for businesses of all sizes."

Felicity, an experienced food science researcher, was awarded her PhD in 2016. Her doctoral research explored ways to reduce the carbon footprint of processed fish fillets in Western Australia.

Felicity started her career in Food Science at Curtin University, graduating with a Bachelor of Food Science and Technology. She worked as a research assistant in seafood shelf life and as a tutor at Curtin University. She then has



worked in quality control and assurance for the seafood industry.

Two years ago Felicity relocated to the University of Tasmania so that she could continue to work closely with food industry partners through the ARC Training Centre for Innovative Horticultural Products.

"I love working directly with industry, combining scientific research to solve real-world problems," says Felicity. <sup>1a</sup>

*Dr Felicity Denham is a member of AIFST and the Tasmanian Community of Interest (COI) committee, and a Post-Doctoral Research Fellow at the University of Tasmania's ARC Training Centre for Innovative Horticultural Products.*

*The ARC Training Centre for Innovative Horticultural Products is supported through funding from the Australian Research Council's Industrial Transformations Training Centres Program and Woolworths, and involves researchers and collaborators from the University of Tasmania's Tasmanian Institute of Agriculture, Macquarie University, Houston's Farm, Hansen Orchards, Perfection Fresh, Costa, Zerella Fresh, Pact Group, Australian Mango Industry Association, Northern Territory Government's Department of Primary Industry and Resources, and CSIRO's Animal, Health and Food Sciences Division.*





## A FOOD SCIENCE JOURNEY

*Perseverance and an open mind led this young graduate to his first job in the food science industry.*

WORDS BY BIJAN KHARIWALA  
AIFST YOUNG PROFESSIONAL

While undertaking my Year 12 studies, I wrote down three goals that I wanted to accomplish within five years. The first one was to backpack to a different continent every year. The second was to become some sort of entrepreneur and the third was to study something that I enjoyed, which would eventuate into a successful career.

Undertaking a Bachelor of Science degree at The University of Melbourne was an exciting prospect because it allowed me to travel every year! It also allowed me to delve into various areas of science and reflect on what career to pursue at the end of my three-year degree.

Experimenting is what I did. I studied chemistry, biology, physics, pharmacology,

psychology and even geography! However, the subject that appealed to me the most was food science. There was something about food science that thrilled me. Initially, it was the subject food chemistry, learning about the chemical structure of proteins, carbohydrates and fats, and the underlying biochemistry. The primary knowledge left me with the appetite to learn more. I wanted to better understand how our body consumed these macronutrients and the relationships of the structural, physical and chemical properties of food components. This passion resulted in a Bachelor of Science with a Major in Food Science.

It was then time for me to take my learning into an industry environment. Finding a job was tremendously difficult. I applied for over 100 jobs over four-months and only

received two interviews. I attended job seminars at university, worked with a career counsellor, expanded my network, directly emailed companies and even cold called companies I aspired to work for. The main issue I had was inexperience. The majority of food science and technology jobs required at least two years of experience and finding a graduate entry job was extremely rare.

A good pathway for a food science students is to get experience in a Quality Control role. After working with a recruitment agency that had a food science and technology focus, I was fortunate to secure a job opportunity! It was a graduate program at Trisco Foods. The program offered a rotation through different departments of the business including product development, quality, operations and supply chain.

However, there was a challenge. The role was based in Brisbane, which meant I would need to move interstate, to a town where I didn't know anyone! I would be leaving behind family, friends and my support network. This was a daunting prospect but at the same time exciting. The rigorous job hunt with the resulting self-doubt and confusion made me really focus on the opportunity offered by Trisco and the desire to give 110 per cent to the role.

I have now been in the position for three months and can confidently say I love it! I started in the syrup room where all the products are created before they go to the packing line. Coming into the workplace where everything around you is relatively unknown and having to operate equipment can be daunting. Every day though, I continue to gain valuable knowledge from co-workers and am part of a team striving to meet the goals set.

If I were to give advice to fellow graduates looking for a job, I would say think of it as an adventure. One job could lead to a completely different opportunity. You never know who you might meet or what you could end up doing. Enter the job market with an open mind and do not be scared to take opportunities that will take you out of your comfort zone. 🍷

# Industry Bites

## **BIRCH & WAITE LAUNCHES NEW AUSTRALIAN FACTORY WITH BREAKTHROUGH TECHNOLOGY**

Birch & Waite launched its new, \$13.5 million factory in Revesby, including an Australian-first Shaking Retort in August. It is the first commercial sized machine of its type in the Southern Hemisphere. The family-owned company is an Australian food manufacturer employing over 100 staff, with the new site creating up to 45 full time jobs. Containing high speed packaging machines and state-of-the-art equipment, the site is set to drive over \$20 million in growth for the business. "The new technology allows for a higher vitamin retention and lower salt use, while retaining a superior taste with a longer shelf life and no preservatives," explains David Charles, General Manager, Birch & Waite. "High pH sauces that contain fresh ingredients will keep their full flavour, nutritional value and freshness thanks to the quick thermal cooking process it allows."

The new site has also given Birch & Waite the ability to develop and bring to market a new range of Thickened Liquid health products for those suffering from dysphagia. The launch is the latest in a long line of recent successes for Birch & Waite. Growth has averaged over 15 per cent cumulative per annum for the last 16 years. In 2014, it was the only Australian owned and run food business to be listed among BRW's 50 Most Innovative Companies. In 2016, it was voted Most Innovative Brand by Yum! 🍌

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## **FIAL IS LAUNCHING THE 3RD EDITION OF ITS INNOVATIONS BOOK!**


Expressions of Interest are now open for companies of all sizes across the value chain to be showcased in the book and share their innovation journey. *Celebrating Australian Food and Agribusiness Innovations* is the first Australian book to celebrate innovation in the food and agribusiness industry. The first and second editions were launched June 2016 and April 2017 respectively, with resounding praise and recognition from across the sector. The book showcases 50 of the country's leading innovations in agribusiness, food, drink, packaging and more, giving Australian businesses the real edge to market themselves and receive national recognition for their efforts. FIAL is now publishing a 3rd edition and is calling for all businesses to share their innovation challenge and solution by submitting an expression of interest. Applications close on 30 November 2017 and more information can be found at [www.fial.com.au](http://www.fial.com.au). 🍌

## REPORT FINDS AUSTRALIAN FOOD AND BEVERAGE INDUSTRY NOT READY FOR CRISIS

Australian food and beverage companies are under-prepared to respond to a crisis says a new study conducted by the Australian Food and Grocery Council and insurance advisor, Victual. According to the study, one third of businesses have no spokesperson or have not trained their spokesperson in what to do if a recall is required or a company crisis hits. All survey respondents said they have a recall plan but only 59 per cent said they frequently review the plan. Victual and the AFGC said recalls have increased steadily in recent years, largely due to undeclared allergens and microbial contamination. Insurance cover across the industry was described as alarmingly inadequate.

Director of Victual Recall and co-author of the report, Peter McGee, said the survey highlights the need for industry to better prepare themselves for crisis. "We have seen time and time again that a poorly managed recall has the potential to turn quickly into a crisis, affecting a company's reputation and bottom line. This is especially relevant with the advent of social media, where issues are rapidly amplified."

The report states that the average cost of a recall is US \$10 million. Approximately 60 per cent of survey respondents have insurance that covers less than that amount.

A number of recommendations were made in the report including: Businesses need a robust system for monitoring customer sentiment, including through social media; take small, relatively cheap measures, such as reducing batch quantities and storing batch samples; systems that track components or raw materials through the supply chain can help to pinpoint the source of defects; good communication between suppliers and retailers regarding product and packaging changes can reduce the risk of unexpected product issues; and a robust and practised recall and crisis management plan will limit the impact of a recall event. 



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## SANITARIUM LAUNCHES WEET-BIX CHOLESTEROL LOWERING


Sanitarium has launched a new version of Weet-Bix called Weet-Bix Cholesterol Lowering. The new breakfast cereal is claimed to help lower cholesterol with Sanitarium saying it is "clinically proven to reduce cholesterol levels by up to nine per cent in four weeks". Sanitarium also says it is the first cereal product in Australia to "harness plant sterols to effectively reduce cholesterol levels over four weeks with just two biscuits consumed daily". The version of Weet-Bix contains plant sterols which reduce LDL, or "bad" cholesterol. Sanitarium conducted a clinical trial involving Australian adults with high cholesterol in 2016 with University of South Australia researchers to confirm the cholesterol lowering effects of the cereal. The Heart Foundation

has thrown its support behind the product with its logo displayed front of pack. For the next 12-months, Sanitarium will hold exclusive permission in the Food Standards Code to include an increased level of plant sterols in cereals.

Previously, Food Standards Australia New Zealand (FSANZ) only permitted a maximum of approximately 1 gram of plant sterols in a single serve of food. Researcher from the University of South Australia, Dr Peter Clifton, said the cereal was the most innovative cholesterol lowering product he has seen in 15 years. "While increasing intake of plant sterols is one of the most effective dietary measures to lower cholesterol, getting sufficient amounts in plant foods alone can be difficult," Dr Clifton said. Weet-Bix Cholesterol Lowering became available for purchase through major retailers from September 2017. 

## ROHA PURSUES AGGRESSIVE EXTERNAL GROWTH WITH THE ACQUISITION OF NEW FOODS INDUSTRY S.P.A., IN NORTHERN ITALY

Roha, one of the world's leading colour manufacturers has announced the acquisition of New Foods Industry S.p.A. near Verona in Italy, expert in dry ingredients for the food and beverage industries. This is the 3rd acquisition for Roha in 2017, consolidating its position in the colour business with synergistic innovating ingredients.


Founded in 1974, New Foods Industry is known across the globe for its wide range of high quality natural dehydrated ingredients answering challenges in most food and beverage applications, including natural enhancers, "garden fresh" aromatic herbs and vegetables among others. Similarly, the sweet and dehydrated ingredients include fruit pieces, fruit and vegetable juice powders and natural sweeteners. 

## NEW TECHNOLOGY COULD REDUCE SUGAR CONTENT BY UP TO 40 PER CENT

An Israeli company has received US \$8.1 million to commercialise a sugar reduction solution that claims to reduce the amount of sugar in a product by 40 per cent. Targeted technologies development company, DouxMatok, said its sugar reduction technology maximises the efficiency of sugar delivery to taste buds and enhances the sweetness. This then allows for less sugar to be used and for calories to be reduced. The sugar is said to leave no aftertaste in the product and is compliant with FDA and EU regulations. Chief Executive Officer and Founder of DouxMatok, Eran Baniel, said the financial investment will speed up the process of commercialising the technology. "We hope that DouxMatok will become a trusted leading brand in the efforts to reduce sugar consumption to healthier levels, so we can continue to enjoy the foods we love," Baniel said. The funding was led by Israel's largest venture capital fund, Pitango, along with existing shareholders. 

## URBAN AUSTRALIANS WANT TO BUY LOCALLY PRODUCED FOOD, MINTEL

Over 70 per cent of Australians living in metropolitan areas make an effort to buy food and drink with the Australian Made or Grown logo on it, new research from Mintel has found. Three in 10 purchasers say they do so because the logo instills trust in the product. Nearly 30 per cent of metro-living Australians report that the logo assures them that the food or drink they are purchasing is safe. Six in ten urban Australians say the new country of origin percentage bar logo clearly informs them how much of the ingredients in a product are from Australia or overseas.

Mintel Trend and Innovation Consultant, Shelley McMillan, said the number of safety scares reported on is enough to spur consumers into paying attention to what they are purchasing. "Our research indicates that local products or services that come with the Australian Made/Grown logo are likely to resonate well with Australian consumers, especially those featuring the newly revamped logo which now provides an overall heightened understanding of the provenance of a product," McMillan said. "What's more, older generations are more likely to purchase locally made or grown products or services than their younger counterparts – consumers who are generally more attuned to the digital world, more aware and open-minded, and perhaps have higher levels of distrust for official bodies." 



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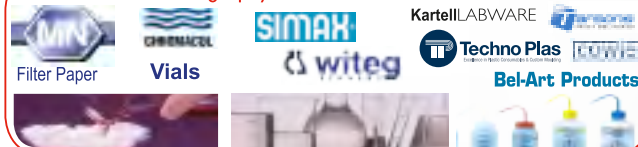
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# Save the Date

## NATIONAL EVENTS

*14 November 2017*

**AIFST Product Information Workshop**

Perth

*15 November 2017*

**AIFST WA Food For Thought Workshop**

Perth

*19 November 2017*

**AIFST Qld Christmas Catch Up**

Brisbane

*20 – 22 November 2017*

**TropAg2017 – International Tropical  
Agriculture Conference**

Brisbane

*29 November 2017*

**AIFST University Roundtable**

Sydney

*6 December 2017*

**AIFST NSW Christmas Catch Up**

Sydney

*7 December 2017*

**AIFST SA Christmas Catch Up**

Adelaide

*5 – 7 February 2018*

**12th Australian and New Zealand Sensory  
and Consumer Science Symposium**

Brisbane

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## INTERNATIONAL EVENTS

*13 – 15 November 2017*

**Food Vision USA**

Chicago, USA

*14 – 17 November 2017*

**ASEAN Food Conference**

Ho Chi Minh City, Vietnam





# FSANZ THIRD QUARTER HIGHLIGHTS

*It's been a busy few months at FSANZ with our CEOs first annual report, a new newsletter and changes to the Food Standards Code.*

## WORDS BY FOOD STANDARDS AUSTRALIA NEW ZEALAND

In October we tabled our Annual Report for the year ended 30 June 2017. This report was the first for Mark Booth in his role as FSANZ Chief Executive Officer, covering some of our agency's significant changes and new priorities established by ministers responsible for food regulation.

You can find the FSANZ Annual Report 2016–17 now on our website at [www.foodstandards.gov.au/publications/Pages/annual-reports](http://www.foodstandards.gov.au/publications/Pages/annual-reports).

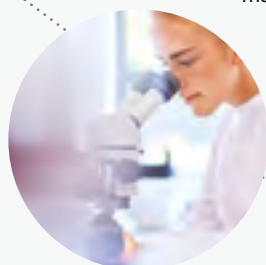
## FIRST EDITION OF FOOD SAFETY CULTURE NEWSLETTER RELEASED

In early September, FSANZ released its first national newsletter on food safety culture.

The edition includes an introductory message from FSANZ CEO Mark Booth; a brief bio of guest expert Dr Lone Jespersen, founder and principal of Cultivate; and an article from Dr Andrew Wilson from Safe Food Production Queensland on international recognition of Australia's efforts in food safety culture.

It also includes some interesting perspectives from Northern Territory environmental health officers and a caterer's case study on food safety challenges due to rapid staff turnover.

You can read our first Food Safety Culture newsletter now on our website at [www.foodstandards.gov.au/foodsafety/Pages/Food-Safety-Culture-Connections](http://www.foodstandards.gov.au/foodsafety/Pages/Food-Safety-Culture-Connections).



## FOOD ALLERGEN PORTAL: HELPING FOOD BUSINESSES COMPLY

Later in September, we urged food businesses to use our food allergen portal to assist them in the key role of ensuring the safety of people with food allergies by complying with laws including mandatory labelling requirements.

The portal was created to provide different sectors in the community – including the food industry, health professionals, and schools – with links to best practice food allergen resources and key messages to promote in the different sectors.

You can check out our food allergen portal now on our website at [www.foodstandards.gov.au/consumer/foodallergies/foodallergenportal](http://www.foodstandards.gov.au/consumer/foodallergies/foodallergenportal).

## NEW APPLICATIONS AND PROPOSALS

In September and October, FSANZ completed administrative assessments and accepted two applications to change the Food Standards Code.

The first application sought to allow the use of protein glutaminase as a processing aid.

The enzyme is used to enhance protein solubility in various applications such as baking, pasta/noodle making, milk, dairy, meat, fish, grain processing, yeast products and egg-based products.

The applicant said the enzyme improves emulsification, foam stabilisation and gelling and decreases flavour fade or "off flavour" problems associated with flavour-protein interactions.


Through a risk assessment, FSANZ determined there are no public health or safety issues associated with using this enzyme.

You can find out more about Application A1136 – Protein Glutaminase as a Processing Aid (Enzyme) on our website.

The second application sought to permit food from a genetically modified (GM) canola line that produces an omega-3 fatty acid.

The applicant said the canola line, which was modified to produce the long chain fatty acid docosahexaenoic acid (DHA) in the seed, could provide an alternate source of DHA for food manufacturers in a range of products.

Through a risk assessment, FSANZ determined there are no public health and safety concerns relating to this canola line.

You can find out more about Application A1143 – Food derived from DHA Canola Line NS-B50027-4 on our website. 

# TECHNOL



# OGI STS!

*STAND UP AND BE COUNTED!*

*We should be celebrating food processing, not demonising it, for when it comes to public health it's outcomes are positive. Just take milk as an example.*

**WORDS BY GEOFFREY ANNISON PHD  
AUSTRALIAN FOOD & GROCERY COUNCIL**

I have the good fortune of being asked on occasions to lecture university students on the food industry. I say good fortune because it reminds me of what a remarkable industry it is that we work for. Twenty-five million consumers in Australia rely on the industry daily to meet their food and nutrition needs. And the industry does it so well that most consumers not only take it for granted, but attribute next to no value to it. In fact, a worrying trend is that many consumers have poor views of the mainstream food industry, reflecting the drip-feed of negative news stories about the industry in the popular press. On top of that, there is a general lack of knowledge regarding the true nature of the food system which, for most Australians (but not all), more than adequately provides for their food security as defined by the Food and Agriculture Organization (FAO).

My lectures start with some clear up-front statements – the food processing industry transports food through space, through time and through form. In other words, it moves foods from production areas to markets, it stores food for out of season availability, and it changes the composition of foods making them more edible, more palatable, safer and in more convenient forms. I emphasise – we don't eat wheat, we eat bread; we don't eat live animals, we eat meat cuts; and we don't drink raw milk, we pasteurise milk for drinking or further processing to dairy products. Of course, the main point is that most food products we eat have been

processed in some way with very few untouched by technology. Even fresh fruits and vegetables have often been through some form of sanitation or treatment to slow perishing and/or to reduce microbial pathogen loads. So how is it that many of our food products are described as junk foods and the level of food processing is now equated with unhealthiness? All too often the health experts and their guidelines recommend eating fresh foods and limiting processed foods.

In the last few years not content with simply talking about processed foods, the term “ultra-processed” foods has come into the public health lexicon with studies seeking to link the level of processing of foods in the diet with public health outcomes. From my understanding the term was first advocated in this context by a Brazilian research group and was picked up rapidly by public health policy academics around the world. Following on from this a new food classification system called NOVA, based on the level of processing, was developed. The concept has now been formally adopted in high level public health documents originating from the FAO and the Pan American Health Organization. Space precludes reproducing the 160-word definition entirely but the basic gist is that ultra-processed foods are those with several ingredients derived from or synthesised through industrial processes, not naturally present. And yes, they are high in energy, saturated fat, sodium and sugars, but also ▶▶

additives, preservatives, colourings, etc. And apparently, they are also “hyper-palatable” showing that no superlative is too extreme to illustrate the public health alarm about these foods. I’m unaware of any consumer science studies confirming the claim.

Of course, classifying foods on their level of processing is not of itself a bad thing. Indeed it might have some usefulness in describing the nature of food supply for a number of reasons (eg health policy, industry policy, economic policy, etc.). However, ultra-processed foods have been described even in some respectable health journals in extremely pejorative terms. For example in *The Lancet* Moodie and co-workers write “...supply and demand drivers are similar in the tobacco, alcohol, and ultra-processed food and beverage industries and it is therefore not surprising that these unhealthy commodities stimulate complementary epidemics...”. They then go on to state “The term industrial epidemic has been used to describe health harms associated with various goods including tobacco, alcohol, vinyl chloride, asbestos, cars, and the food and drink industries”. Not only are ultra-processed food products themselves considered harmful to health, but the very industries which produce them are considered to be “vectors” of non-communicable diseases. Taken in its entirety, the study comes across as a polemic conflating the issues non-communicable disease levels with globalisation, trade policies, trans-national corporations, and as well as the nature of the products themselves.

Of course, the corollary to the ultra-processed food/disease dogma, if it becomes widely accepted, is that there will be calls for greater regulation of the food industry. Restrictions on advertising and promotion, warning statements on food packaging, limits on product formulations and fiscal measures (taxation) to reduce demand have already been mooted both in Australia and overseas.

In the Australian context, the NOVA food classification system has been applied to food and beverage items contained within the Australian Food and Nutrient (AUSNUT) 2007 and AUSNUT 2011-13 food composition databases. The authors of the study propose that “...rather than defining and categorising food quality in terms of nutrient profiles, primary production and processing could be the foundation for nutrition education campaigns or alternative dietary guidelines.” If this proposal is adopted it effectively discards the learnings of a century of classical nutritional science upon which the concept of balanced diets was developed and substitutes an approach to healthy eating based on the misguided, and almost spiritual, belief that the more unchanged, or natural, a food is the more healthy it necessarily is.

The views that unprocessed fresh foods have an innate healthiness which is diminished, dispersed or destroyed through processing are not new. Indeed, when pasteurisation was introduced into Britain in the first half of the last century there was significant delay, particularly in rural areas, as a result of opposition from those claiming it “took the good out of the milk”. One consequence was that child evacuees from cities to the country during the Second World War suffered a high incidence

of tuberculosis contracted through the drinking of raw milk. In fact, it was one of the best kept secrets of the war as you can imagine the alarm which would have resulted if the parents of the children became aware of the epidemic. Until pasteurisation became widespread, milk was a common vector of tuberculosis and many other diseases with “typhoid follows the milk maid” a common saying in 19th century London.

The pasteurisation of drinking milk and milk used in derived products in Australia is mandatory (with some exceptions). Pasteurisation has turned a high risk “natural” food product into an extremely safe core food group. Indeed, food processing is about making foods safer, improving their nutritional value by increasing the digestibility of their nutrients, and of course making them more palatable. The industrial processes used result in a food supply for consumers that is accessible and affordable providing extensive choice from which healthy diets can be constructed.

As scientists, and particularly as food technologists (and I am one), it I time we stood up to be counted, and set the record straight. The message is simple – when it comes to public health, food processing is by far a net contributor to positive outcomes. Any suggestion to contrary is ill-informed and misguided at best and deliberately misleading at worst. We should be celebrating food processing and the industry which supports its as major contributors to the health of the nation, and indeed the wealth of the nation through the economic activity generated and exports dollars earned.

Fortunately, the scientific literature is producing some studies seeking to redress the balance. A recent study concluded that the NOVA food classification system provides little advantage to the current epidemiological and nutrient intake assessment when developing public health nutrition strategies. Notwithstanding that, it is likely to be a long, drawn out debate with the food manufacturing industry coming under more and more pressure to explain and justify the processes and technologies it uses. I’m encouraged, however, by the name NOVA itself. While nova stars do shine brightly, their time in the firmament is brief as they are doomed ultimately to fade into the darkness. <sup>6</sup>

*References for this article can be found on the AIFST website:  
<https://www.aifst.asn.au/>.*



# Size Matters

THE SMALL INNOVATION WITH BIG POTENTIAL

**WORDS BY BLAKE CUNIO  
AIFST INTERN**

Imagine low-fat cream that's easier to whip, cold butter that's more spreadable, and dairy cream powders that can be tailored for a range of products from milk to cheese to yoghurts. The solution is all in the fat globule sizes, according to a research team led by AIFST Honorary Fellow Professor Bhesh Bhandari from the University of Queensland School of Agriculture and Food Sciences.

Dairy food products have long been known to be an emulsion of fat and water particles, with the ratio of fat to water determining their properties. However, the team led by Professor Bhandari have found that changing the size of the fat globules in the emulsion can change the properties of a dairy product.

"Fat globules in milk came in various sizes, with each size class able to be used to improve specific dairy products," Professor Bhandari said. "Our latest findings reveal that small fat globules impart an amazing stability to cream and give cold butter softer texture and improved spreadability."

It utilises nanoemulsions technology; an emulsion with droplets within billionths of a metre in size. The highlight of this innovation is that it uses existing manufacturing machinery, making it

affordable and readily available to the dairy industry. The team at the university developed procedures using a modified commercial cream separator separating the fat globules into different sizes without hindering the integrity of the emulsion.

"The benefit of using the existing dairy equipment is that it can be readily applied to the dairy industry with some modification," said PhD student Pramesh Dhungana. "We expect this innovative approach can be used to increase the whippability of low fat cream and to manufacture functional cream powder for use in recombined liquid milk, cheese, yoghurt and butter making."

"This is a great outcome for the dairy industry, as these innovations could boost the sale of dairy fat products, potentially increasing the return on investment to dairy manufacturers," said ARC Dairy Innovation Hub director Associate Professor Sally Gras.

This research is undertaken as a part of the ARC Innovation Hub, which is a collaborative project between the University of Melbourne and University of Queensland along with Australian dairy industry partners.®

# HELPING MANUFACTURERS REDUCE SUGAR WITH GREAT TASTE

*One of the major challenges facing Australia and New Zealand's food manufacturers, and their counterparts worldwide, is creating lower sugar products that still taste great. Zona Negri discusses how Givaudan can provide solutions to support manufacturers overcome these challenges.*

## **SUGAR, THE NEW VILLAIN?**

Sugar has stolen the limelight of late, but does the latest data confirm that sugar is indeed the new villain? A recent survey reported that one in four Australian children and approximately 30 per cent of Australian adults are overweight or obese. More than 50 per cent of Australians consume more than the maximum recommended daily intake of sugar.

These staggering figures have prompted the Australian Heart Foundation to call on the Australian government to examine the benefits of levying a sugar tax. An illustration of just how high up the medical and political agenda the consumption of sugar has risen.

As consumer attitudes towards sugar and sweeteners continue to evolve, one thing is clear – consumer needs are many and varied. Tailored solutions are required to ensure these needs are met. Successful navigation of the sugar reduction challenge is all about understanding the needs of your target consumer and maintaining the great taste they demand.

At Givaudan we are constantly challenging ourselves to be the partner of choice for food and drink manufacturers. We support our customers in navigating the often complex and challenging arena of reduced sugar products, providing flavour solutions across various product segments. Givaudan is proactive and passionate about finding the right solutions. We are always looking to discover the next ingredient, formulation approach or consumer insight that will give our customers an edge in the market – and this of course also applies to sugar reduction.

## **UNLOCKING CONSUMER TASTES OF TOMORROW**

Anticipating changes in consumer behaviour and expectations guides us in unlocking consumer expectations. Our long-running FlavourVision program, based on social, technical, economic, environmental and political analysis, is one way we keep track of consumer trends, globally and locally. Leveraging this knowledge helps us design solutions that connect to consumers' needs.

Through this program we have identified five trends that are shaping the future of sugar reduction:

1. Politics of food and health – Around the world political leaders are under pressure to support health care initiatives and limit rising health care costs. This has created the perfect environment for sugar taxes and regulations to influence consumers' behaviour.

2. Consumer empowerment – Consumers are linking their buying habits to their social values and younger consumers believe that consumerism can drive change. Manufacturers are responding by aligning their brands and products with values such as sustainability, transparency and fairness.

3. Naturally perfect – The demand for natural products is surging. This is not only linked to the health and wellness trend, but also social values and the need for a slower lifestyle. Natural can be translated as less materialistic and as a symbol of premium or luxury products.

4. Designed perfection – Consumers love the control that technology can deliver. They will indulge in trade-offs to obtain an enhanced experience or outcome that would otherwise be impossible. In the right situation, artificial is tolerated, and even embraced – zero calorie products is one example.

5. Breaking through – New behaviours and attitudes elevate the importance of forging new paths in product development. Millennials in particular are less brand loyal. They crave novelty and rotating flavours. Eating and drinking are opportunities to build "experience currency". As all age groups fight obesity, mimicking sugar is simply not enough.

Reducing sugar is about more than calorie reduction. It is linked to general health and wellbeing goals, a desire for short ingredient lists made up of natural, locally sourced and recognisable food stuffs, as well as a desire for healthy indulgence. Givaudan anticipated these consumer requirements and has various solutions to address them in sugar-reduced products.

## **REDUCE SUGAR NOT TASTE!**

To summarise, consumers today are seeking less sugar without compromise on taste!

It sounds simple, right? Not quite. Manufacturers are faced with many challenges, as reducing sugar not only diminishes sweetness perception, but also flavour intensity and mouthfeel.

Our focus on what drives sugar reduction today, and what to watch for tomorrow, is backed up by more than a decade of taste research through Givaudan's industry-leading TasteSolutions® Sweet program. To deliver market-leading solutions in sugar-reduced products, Givaudan's taste research delves deep into the science behind sugar. Analysing its unique taste, mouthfeel and aroma at molecular level, and finding great alternatives.

Givaudan's TasteSolutions® Sweet portfolio in Oceania has been created based on local market and consumer needs and meets relevant regulatory and commercial requirements. The portfolio is built on proprietary Givaudan technology, which offers clean label, natural flavour solutions. These solutions not only provide sweetness intensity, but also a better quality of sweetness to allow food and drink manufacturers to create a more authentic sugar profile and drive consumer preference.

### **A DOOR TO NEW OPPORTUNITIES**

While certainly challenging, we believe the demand for sugar reduction also offers opportunities to explore new directions for innovation and to surprise consumers with something new.

We predict that in the longer term, only true innovation will meet evolving market needs for sugar reduction, natural and artificial sweeteners will continue to have a role in meeting various sugar reduction scenarios.

We are helping Australia and New Zealand's food and drink manufacturers anticipate changes in consumer attitudes, behaviours and expectations and understand that different sugar reduction scenarios require different solutions. Our solutions are the most comprehensive in the industry and we are continually evolving them to address new consumer needs.

Our sensory insights and global ingredient discovery programs drive our innovation and allow us to support our customers in developing consumer-preferred products.®

*Zona Negri is Head of Consumer Sensory Insights and Marketing, Givaudan Flavours Oceania.*

*To find out more about TasteSolutions® Sweet and how Givaudan can help your sugar reduction plans, please contact us on 02 8818-2700 or [oceania\\_flavours@givaudan.com](mailto:oceania_flavours@givaudan.com).*

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engage your senses



# TOP FOUR TRENDS FOR 2018

*How we consume protein, changing and redefined demographics, and the war against waste will affect the way we produce and consume food in the future.*

WORDS BY SARAH HYLAND  
AIFST



# IT IS AN INNOVATOR'S JOB TO UNDERSTAND

where our society is going and to do the work that will solve the problems of the future; not just produce more of the same. Ultimately, this is what successful businesses do.

Identifying, evaluating and utilising large scale trends is essential for success in consumer markets. Without a doubt, driving sustainable growth for business means remaining relevant to customers and consumers as competition increases and new ideas disrupt entire industries.

Food trends are shaped by myriad influences, from social and political events, economic and geographical dynamics, through to generational changes and the resulting shifts in attitudes and behaviours towards nourishing ourselves and the next generation.

These are the top four trends in food, beverage and packaging NPD that are expected to gain further momentum in 2018 and beyond.

## RETHINKING PROTEIN

Along with other nutrients like fibre and healthy fats, consumers look to protein and its associated nutrient density to help them feel full – with a sense of sustained energy – throughout the day. A Health and Wellness study from Hartman in 2017 reports that there is strong demand for consumer protein – 60 per cent of consumers surveyed across a broad age and demographic stated that they are actively trying to increase their protein intake.

However, perceptions of protein are changing – it's not just "the more protein the better". Our traditional protein source, animal-derived protein from meat, is being more heavily scrutinised in terms of cost, health and consumer conscience. New protein sources are becoming increasingly important as more consumers make a conscious decision to eat less meat. Public views on protein consumption are shifting to include a focus on plant-based proteins, food quality and smaller portions.

## FLEXITARIANISM AND ALTERNATE PROTEIN SOURCES

A flexitarian is defined as "one whose normally meatless diet occasionally includes meat or fish". Flexitarians focus on having vegetarian meals, rather than just not eating meat. Taking steps to reduce meat intake on three or more days a week is the conventional specification for being called a flexitarian.

A mainstream version of flexitarianism is the Meat Free Monday movement launched by Paul, Mary and Stella McCartney in 2009. The not-for-profit campaign aims to raise awareness of the environmental impact of eating meat, and to encourage people to help slow climate change, preserve precious natural resources and improve their health by having at least one meat-free day each week. This means eating more vegetables, fruits, beans, peas, lentils, whole grains, nuts, and seeds as well as plant-based milks, cheeses, snacks and meat alternative products.

## CLEAN MEAT

It is generally recognised that livestock production is one of the largest producers of greenhouse gases and users of land, often subjected to tree-clearing for cattle to graze, on the planet. However, livestock also provides delicious foods many people don't want to live without.

The field of biotechnology has been instrumental in pursuing technologies that provide the same (or better) foods without using animals. There are various types of animal-free technologies evolving, but the cutting-edge solution is clean meat. This involves producing lab-grown or cultured meat, a process in which a small amount of animal cells are grown in a laboratory setting to create real meat without slaughtering animals.

## SENIORS AIN'T SENIORS

As life expectancy increases, older population groups will be the fastest growing demographic globally. From 2018-2030, the number of people aged 65+ are expected to increase by 58 per cent, far outpacing the global population growth of 15 per cent. However, the middle-aged population (soon to be seniors) have never been fitter and healthier and, on balance, have the longest projected life expectancy.

Companies interested in targeting this group segment the market in different ways, but the most common is chronological age. But it may be that there is no such thing as a single "older consumer". Some argue that chronological age is a poor tool for segmenting the population, and some research finds that age has little impact on consumer demand if income is taken into account.

Understanding this significant market is a key determinant of effective mid-term and broader horizon NPD strategy and the investment required for the development of food, beverage and packaging for the ageing population.

## GENERATIONAL BLURRING

There is a new breed of women over 40 and they don't feel or act "middle aged". A new survey conducted by UK marketing agency, SuperHuman, found that 96 per cent of women over 40 don't feel middle-aged at all. The study of over 500 women found that 80 per cent felt society's ▶▶



While they might not feel middle-aged, the truth we don't need as many calories to function as we age but older adults often suffer from a lack of nine nutrients such as B12, fibre and folate that are critical to keeping bones strong, minds sharp and hearts healthy. Thrive produces premium, fortified ice cream with superior organoleptic properties that is appropriately designed and messaged for its older market.

**MILLENNIAL MOMENTUM**

Millennials are shaping attitudes to food that will cement as their purchasing power increases and they pass on their preferences and ideals to their children.

Millennials may like the convenience of going out to dine but they are among the healthiest eaters of any generation. According to the Organic Trade Association in the US, more than half of organic shoppers are millennials with kids, with 52 per cent buying organic compared to 35 per cent of Generation X parents and 14 per cent of baby boomer parents. According to a report by global information company NPD group, millennials have increased their consumption of fresh vegetables by 52 per cent over the past decade while boomers have decreased their consumption of vegetables by 40 per cent.

While many millennials are second generation in terms of a more health-conscious attitude to food, they also grew up during a time when obesity rates in Western countries soared. Millennials place value on what they put into their bodies, educating themselves on the benefits of natural and organic foods. They also place great value on eating ethically. This is supported by shifts in diet – a staggering 40 per cent of millennials are reportedly adopting a plant-based diet.

Millennials also shop for food differently than baby boomers. They buy online and shop at multiple venues rather than

purchasing everything at traditional “one-stop-shop” supermarkets. They also seek out specialty foods, including ethnic, organic and natural products, and are willing to pay more for the foods they value. They are also more aligned with key food movements, such as small-batch artisanal cuisine.

Ultimately, millennials food preferences could be nutritionally advantageous to the rest of the population as highly processed foods with artificial additives and long shelf lives lose favour.

**WASTE NOT, WANT NOT**

Globally, around 1.3 billion tonnes of food intended for human consumption is wasted each year due to inefficiency in supply chains and production harvesting, restaurant waste and because produce doesn't meet the necessary cosmetic standards to warrant inclusion on the supermarket shelf.

Australian households bin \$8 billion of worth of food a year, equal to one in five bags of groceries. This has not gone unnoticed by organisations such as OzHarvest and Foodbank, which have been very successful in growing public awareness of the issue. The ABC's popular War on Waste program has also highlighted the impact of our failure to consider and manage waste across a number of sectors in the consumable landscape.

France became the first country in the world to ban supermarkets from binning unsold food in 2016 (the food now goes to charities and food banks instead), but there is growing movement of farmers and food manufacturers addressing waste at the beginning of the food chain.

Leftover fruit pulp, which is normally thrown out or composted, is being used

assumptions about middle-aged women are not representative of their lives. Most considered themselves in the prime of life, felt as vibrant and young as they ever have, and don't define themselves by age.

This “generational blurring” is in part driven by a strong focus on health and fitness and the crumbling of old stereotypes. SuperHuman co-founder Rebecca Rhodes notes that 84 per cent of the women in the survey used products and services aimed at younger women.

One company taking on board generational blurring is ice cream company, Thrive.





in innovative ways to cut down waste in the food supply chain by Danish innovators Vesterhavsmost and Wish.

Family-owner apple producer and juice manufacturer Vesterhavsmost is transforming around 20,000 tonnes of dried pulp a year into apple granules that can be used by consumers in baking and as toppings on cereals and yoghurt and by other food manufacturers as a high-fibre ingredient.


While still in the development stage, Wish is transforming the pulp of pressed apples and oats into flakes that could possibly be used in cereals, chocolates and healthy baked snacks.

Closer to home, Huskee Cup manufacturers reusable ceramic coffee

cups made from coffee husk, which is normally discarded during the milling process and left to go mouldy. The idea originally came from Chinese farmers inundated with hundreds of tonnes of husk waste.

Killing two birds with one stone, this could help solve the problem of the 1.35 million tonnes of coffee husk waste generated globally every year and reduce the massive number of takeaway coffee cups that end up in landfill. As those who have watched War on Waste will know, Australians throw away 50,000 takeaway coffee cups every 30 minutes. That adds up to a sobering 2.7 million a day, or 1 billion every year.

While the food industry hasn't been disrupted in spectacular Uber or Airbnb

fashion, these trends will shape and inform how food is produced and consumed in years to come. 

*Sarah Hyland is AIFST's General Manager of Industry Services. If you are interested in learning more about trends in food and nutrition, please contact Sarah on 02 9394 8650 or email: Sarah.Hyland@aifst.com.au.*

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# *Are frozen or canned vegetables really a compromise on nutrition?*

**WORDS BY JENNIFER ARGUELLES  
ACCREDITED PRACTISING DIETITIAN  
SIMPLOT AUSTRALIA**

## *Consumers might think fresh is best but the answer is as fascinating as it is complex.*

**A**sk any health-conscious person if vegetables are better fresh or frozen or canned, and most likely they will answer “fresh is best”. Preparing your vegetables fresh from the market can give you a deeper connection with your food like no packet food can. With fresh vegetables, they’ve been on a journey to your plate the minute you hand selected them for their perky green leaves and smooth skin, thinking of how delicious they would be in your casserole. You spent considerable time peeling and dicing them with care to reveal their brilliant flesh and juiciness.

No doubt, it is a very different story to selecting your can of vegetables from the supermarket; the fresh vegetables just seem so much more nutritious... or are they? Should you feel guilty because you steamed a carrot, bean and corn mix in the microwave and that the whole process from bag to plate took less than three minutes? What about the beets that you added to your salad straight from the can?

Hana Robinson, student nutritionist, reviewed the literature earlier this year to investigate research into the nutrition value of frozen and canned vegetables compared to their fresh counterparts. Her findings were interesting and complex.

### **WHAT HAPPENS TO FROZEN AND CANNED VEGETABLES ONCE THEY ARE HARVESTED?**

Vegetables, including those destined for freezing or canning, are usually harvested when they are at their peak quality or just prior to ripening. Immediately following harvest, fresh vegetables begin to deteriorate. They undergo high rates of respiration, rapidly lose moisture and there can be microbial spoilage – so overall quality declines. By the time fresh vegetables are purchased by the consumer they have spent three to seven days in the retail distribution chain and storage plus transport time, particularly if harvested overseas or interstate.

Frozen vegetables are blanched and frozen shortly after harvest. Blanching inactivates enzymes that cause deterioration to maintain freshness, colour and texture and it also destroys microorganisms. Blanching causes an initial loss of water-soluble nutrients due to water leaching, but once frozen, vegetables retain most of their nutrients.

Canned vegetables are processed shortly after harvest too. After arriving at a cannery, the vegetables are washed, peeled, sliced or diced. The vegetables are dropped into a can with water or brine, vacuum sealed and then heat treated. These processes

eliminate microbial spoilage while allowing the vegetables to be stored at ambient temperatures.

So how do frozen and canned vegetables fare nutritionally against their fresh counterparts?

Well, the answer isn’t straightforward and will depend on the vegetable, the season, vegetable maturity stage, cultivar, production location and processing conditions.

### **SO HOW DOES THIS AFFECT NUTRITION?**

Research on the nutritional differences between fresh and frozen and canned vegetables is sometimes conflicting. There is inconsistency in methodologies and reporting of results, there are a limited number of studies, and many variables; such as season, cultivar, time of harvest, time in storage before or after processing, the processing method and the cooking method. These factors all have a part to play in paddock to plate nutrient retention.

Though freezing might negatively affect the structure and texture of vegetables, the good news is that freezing vegetables retains  $\beta$ -carotene (precursor to vitamin A), vitamin E and fibre similar to levels in fresh vegetables. There is some initial loss of vitamins C, B vitamins and phytonutrients during blanching, but when storage and cooking is accounted for, the levels are similar across fresh and frozen vegetables for most nutrients. This is supported by a recent study by Li et al (2017) that found there to be no significant difference between vitamin C,  $\beta$ -carotene and folate found in fresh, fresh-stored and frozen vegetables. Furthermore, the study consistently found that five days of refrigerated storage had a negative impact on nutrient concentration, highlighting that nutrient retention of vegetables has many additional variables beyond whether they were bought fresh, frozen or canned.

Data on canned vegetables is not as clear and consistent. While minerals are mostly retained during processing, some vitamins show increases, while others show higher levels of degradation. Generally, canned vegetables show stable or even increased levels of  $\beta$ -carotene and vitamin E as a result of heat treatment improving the extractability of these vitamins. On the other hand, canning results in water-soluble vitamin and phytonutrient losses from leaching and heat. Folate levels may depend on the canning medium and fibre depends on physical separation of vegetables.

Mineral content may increase in canned vegetables: sodium is often added for flavour enhancement whereas calcium is added, for example, to tomatoes, to minimise softening. Hard water ►►

**DID YOU KNOW?****VITAMIN C**

- Frozen vegetables retain more vitamin C than fresh vegetables.
- The levels of vitamin C in frozen carrots is higher than fresh carrots.
- Green beans retain high levels of vitamin C when frozen.

**B VITAMINS**

- Canning green beans in water retains their folate content.
- Riboflavin and niacin are more resistant to the canning process than other B vitamins.

**VITAMIN A**

- Low surface area exposed to oxygen and pH levels are integral to maintaining carotenoid levels during storage.
- After cooking, fresh, frozen and canned vegetables end up with similar levels of  $\beta$ -carotene (pro-vitamin A).

**VITAMIN E**

- Heat during processing increases levels of vitamin E.
- Canned tomatoes contain more vitamin E than fresh tomatoes.
- Frozen vegetables contain similar levels or more vitamin E than fresh vegetables.

**MINERALS**

- Hard water used in processing vegetables can result in uptake of minerals such as sodium, potassium and calcium.
- Rinsing canned vegetables before cooking them can reduce sodium content by up to 45%.

**FIBRE**

- Frozen vegetables retain most of their fibre.

**PHYTONUTRIENTS**

- Thermal treatment, as occurs in the blanching and canning of vegetables increases the extractability of phenolic compounds, chemicals which have antioxidant properties.
- Frozen vegetables contain similar antioxidant activity to their fresh counterparts, which is much higher than canned vegetables.




utilised during processing can also result in increased uptake of sodium, potassium and calcium, which may exceed the losses due to leaching or during blanching.

**THE VERDICT**

To put things in perspective, nutrient losses do not equate to canned or frozen vegetables being completely devoid of nutrients; in fact, in the case of frozen vegetables they have been found to be just as nutritious, or in some cases, even more nutritious than fresh. Frozen or canned, they still deserve nutritional merit and are recognised by the Australian Dietary Guidelines as a suitable source of vegetables. The guidelines recommend eating five serves of vegetables a day for health, to maintain a healthy weight and to protect against chronic disease.

**SOME PRACTICAL ADVICE**

An easy way to boost your vegetable intake is to place them on the plate first, filling half the plate with them at meal times. For good measure, choose a variety of different coloured vegetables to make sure you are getting a good mix of nutrients. Considering that Australians are eating just 2.7 serves of the recommended five vegetable serves per day, there are clearly barriers to vegetable consumption. Canned and frozen vegetables can certainly help improve vegetable consumption as they are easy to keep on hand in the pantry or freezer, they allow access to high quality produce all year round and they are often economical, making them a practical, convenient and nutritious alternative to fresh vegetables. 

References for this article can be found on the AIFST website:  
<https://www.aifst.asn.au/>.



FRESH	FREEZING	CANNING
Nutrient loss is influenced by length of time from paddock to plate and storage conditions	Freezing is done shortly after harvest, locking in high levels of nutrients	Vegetables destined for canning are processed as soon as possible after harvest to minimise quality and nutrition loss
	Blanching reduces vitamin C and some B vitamins	Hard water used for canning increases potassium and calcium
		Sodium is sometimes added for flavour
		Blanching reduces vitamin C and some B vitamins
		Fibre levels can reduce if vegetable components are discarded
		Heat treatment extracts pro-vitamin A and vitamin E from cells

*Nutrition impact of freezing and canning vegetables compared to fresh vegetables.*



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*HOW FOOD  
PACKAGING  
INFLUENCES  
PARENTS,  
AND GETTING  
DESCRIPTIVE  
ANALYSIS  
RIGHT.*

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# HOW TO GET YOUR KIDS TO EAT THEIR CARROTS

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WORDS BY  
DRS RUSSELL KEAST, GIE  
LIEM, MEGAN THORNTON  
AND GEORGIE RUSSELL  
THE CENTRE FOR  
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UNIVERSITY



be influential on parents' food choices although other visual aspects of the package such as the product image could be more influential.

### USE THE RIGHT TYPE OF SCALE IN DESCRIPTIVE ANALYSIS

Descriptive analysis has been described as the most sophisticated method in the toolbox of the sensory scientist. But the sophistication comes with a downside, the training involved in establishing a panel. For many small and medium sized companies the costs involved in screening over 100 individuals, selecting the top 20 candidates, followed by 20+ hours per panellist training is excessive.

At the end of training you have a group of specialists who can provide both qualitative and quantitative flavour profiles of products. But how much influence does training have in terms of results? It is important to note that most panels are unique as the training used by one panel may differ from the training used for another panel, even though they are trained to provide a flavour profile of the same product.

Over the years different methods have been applied to training, with the Sensory Spectrum method attempting to be a universal method – that is all panellists are trained the same way irrespective of the product. In this way, results obtained in Australia could be compared with results obtained in the USA. The other common method is Quantitative Descriptive Analysis (QDA), where panellists are trained to the flavour of the specific product.

A recent study by Arroyo and Seo from the University of Arkansas completed Descriptive Analysis of cooked rice using a universal scale (Sensory Spectrum type approach) and a specific rice aromatic scale (QDA type approach). The panel evaluated seven aromatic rice flavour attributes for eight different rice varieties using the different approaches. The results showed that both methods were able to distinguish between aromatic rice varieties for five of the seven attributes. However, the universal scale approach was unable to distinguish between rice varieties for the remaining two attributes, whereas the rice aromatic scale was able to differentiate between all rice varieties for all attributes. The implication here is that when using Descriptive Analysis it is important to train specifically for the product/s under evaluation, as universal (not trained specifically for the product) ▶▶

### FRONT OF FOOD PACKAGES INFLUENCE PARENTS' FOOD CHOICE

Although parents may be motivated to select healthy foods for their children, at times they struggle to do so. One of the reasons may be that when purchasing packaged foods for their children, parents are faced with a range of, sometimes conflicting, information on the front of food packages and this can make it difficult to make informed decisions.

Typically, foods manufactured for children carry a range of packaging attributes such as product imagery, cartoons, celebrities, childish fonts, colours, health claims, taste claims and nutrition information such as a Health Star Rating. The relative importance of these attributes in affecting parents' food choices was the focus of a study by Russell et al. Using a discrete choice experiment approach, the study investigated the trade-offs parents made when selecting breakfast foods for their primary school aged child. Participants (n=520, 53% fathers) were asked to select their most preferred and least preferred breakfast cereal from four hypothetical options presented to them on a screen. The products varied in a number of attributes including their Health Star Rating (stars), the Health Star Rating (panel), imagery of the product, extra visuals (wheat, fruit, cartoons) and written claims.

Results indicated that parents' choices were most affected by the product visual (imagery of the cereal in a bowl), followed by the Health Star Rating (stars). Parents were more likely to avoid products with a low (2 stars) Health Star Rating, but, interestingly, were equally likely to avoid products without a Health Star Rating present. The authors also noted that parents with fussier children were less likely to rely upon the Health Star Rating system when making choices.

Overall, the findings indicate that front-of-pack nutrition information in the form of the Health Star Rating system can




training may miss some of the subtle product specific differences. And in products like rice, such subtle differences in flavour are very important.

### **A SIMPLE TRICK TO INCREASE CHILDREN'S VEGETABLE INTAKE**

It is well known that children do not eat enough vegetables. Encouraging children to eat their vegetables can often lead to a daily struggle. Wouldn't it be nice if there was a simple trick to increase children's vegetable intake? Although we do not claim to have the magic bullet, recent research published in the journal *Foods* does show some interesting results.

In an experimental randomised study they gave primary school aged children diced carrots on one day and whole carrots on another day as a mid-morning snack. The amount of the diced and whole carrots given to the children were exactly the same amount, yet children ate about 10 per cent more of the whole carrots compared to the diced carrots. Such unit size bias has previously been shown with unhealthy snack foods such as chocolate, but never with healthy snack foods such as carrots. The unit size bias can be explained by the consumers' tendency to think that whatever size they are served (within reason) represents an acceptable serving size. In other words when consumers are served a block of 100 grams of chocolate, consumers think that it is acceptable to eat 100 grams. Whereas when the same amount of chocolate has been broken up in 5 pieces of 20 grams, 20 grams becomes the acceptable quantity to eat. Anything above 20 grams is seen as indulgent, greedy and therefore less acceptable.

Now CASS researchers have shown that a similar unit size bias can increase children's consumption of carrots. However, it remains to be investigated if the unit size bias seen with vegetables can be explained by exactly the same mechanisms as seen with unhealthy snack foods. It seems unlikely that children judge the consumption of multiple pieces of diced carrots as a sign of indulgence and greed. Future research will be focussed on understanding the exact mechanism.

Whatever the underlying mechanism is, the results of this study point to a simple way to increase children's carrot consumption. 

References for this article can be found on the AIFST website: <https://www.aifst.asn.au/>.

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*RESULTS INDICATED THAT PARENTS' CHOICES WERE MOST AFFECTED BY THE PRODUCT VISUAL (IMAGERY OF THE CEREAL IN A BOWL), FOLLOWED BY THE HEALTH STAR RATING (STARS).*

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# 12TH AUSTRALIAN AND NEW ZEALAND SENSORY AND CONSUMER SCIENCE SYMPOSIUM

*Monday, 5 February –  
Wednesday, 7 February 2018*

**KINGS COLLEGE, UNIVERSITY OF QUEENSLAND**



*Professor Joanne Hort*

**R**egistrations are now open for the 12th Australian and New Zealand Sensory and Consumer Science Symposium. The Symposium has been designed to provide new inspiration and knowledge for sensory and consumer professionals. The Symposium is an excellent platform for New Zealand and Australian sensory and consumer researchers and professionals to interact with international science leaders in this field, learn about the newest developments in research methods, network and exchange ideas.

The 2018 international guest speaker is Professor Joanne Hort BEd (Hons), PhD, CSci, FIFST RSensSci from Massey University.

## **ABOUT PROFESSOR JOANNE HORT**

Professor Joanne Hort, previously the SABMiller Chair of Sensory Science at the University of Nottingham, took up the position of Fonterra Chair of Consumer and Sensory Science at Massey University in New Zealand in July 2017.

At Nottingham Professor Hort established the University of Nottingham Sensory

Science Centre, which is internationally renowned for both its sensory training and research into flavour perception. She has applied her consumer and sensory expertise to understand the complexity of beer flavour alongside other foods and beverages. Her multidisciplinary approach combining analytical, brain imaging and sensory techniques has provided rich insight into multisensory interactions, individual variation and temporal changes in flavour perception and emotional response to sensory properties leading to over 100 scientific publications with research funding obtained from RCUK, multi-national industries and charitable foundations. As co-founder of the Wellcome Trust-funded University of Nottingham research café, Café Connect, she has engaged with consumers throughout the research lifecycle, in real life contexts, to understand food choice decisions.

Professor Hort is co-author of the key text in sensory science, *Sensory Evaluation: A Practical Handbook*, and editor of the recently published *Time-Dependent Measures of Perception in Sensory Evaluation*. Joanne sits on the editorial

board of Food Quality and Preference. She is a Fellow of the UK Institute of Food Science and Technology and a founder member and past Chair of the European Sensory Science Society and the Institute of Food Science & Technology's Sensory Science Group.

Professor Hort will be addressing the following topics:

- Individual variation in sensory perception, context and implicit response.
- Cross cultural and within cultural differences.
- Consumer testing using physiological measures of emotion and the impact of context.

## **CALL FOR ABSTRACTS**

If you are interested in presenting your work relating to sensory and consumer research at this symposium, please provide an abstract via [aifst@aifst.com.au](mailto:aifst@aifst.com.au) by 1 December 2017.

There is an "Outstanding Abstract Award" for a student (first author) that includes a free registration to the Symposium. If you wish to be considered for this award, please indicate on your abstract that it is a student submission.

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Registrations are now open via the AIFST website [www.aifst.asn.au](http://www.aifst.asn.au). For further information please contact [aifst@aifst.com.au](mailto:aifst@aifst.com.au) or telephone (02) 9394 8650. Delegate registration includes accommodation on-site at Kings College. AIFST/NZIFST members: \$540 (inc GST) Non-members: \$580 (inc GST) AIFST/NZIFST student/graduates: \$480 (inc GST)

## **POST SYMPOSIUM**

Anne Hasted (QI Statistics Ltd) will be running a sensory stats course directly following the symposium and at the same location. We hope you will choose to stay on and spend a couple of days brushing up on your statistics and enjoying an extra two evenings with colleagues in Brisbane. If you are not attending the Symposium you are of course welcome to join the class! @

# BREAKING DOWN BARRIERS TO EXPORT

*Collaboration and understanding new markets were key factors for Krio Krush to break into the global marketplace.*

**WORDS BY KRIO KRUSH AND FOOD INNOVATION AUSTRALIA LIMITED**



For many Australian businesses being the dominate player in their home markets is more appealing than tackling the size and complexity of the global marketplace. Not so for one Sydney-based business whose strong family traditions and driving ambition meant staying small was never an option.

Combining hard work, passion and a penchant for innovation, this food provider of savoury seasonings, herb blends and herbs and spices, Krio Krush Basic Foods, have grown their local business into an Australian powerhouse exporting to over 10 countries and counting.

## **THE IMPORTANCE OF FLEXIBILITY AND BEING NIMBLE**

Established in 1987 by Anthony Alsten and his son Lee, their cumulative 30-plus years of experience make them the brains and the leaders who drive the company. Situated in Kingsgrove NSW, their headquarters occupies an impressive 3000 square metres that includes a full-scale commercial kitchen where clients and chefs are regularly invited to try their flavour combinations.

While these flavour combinations are unique, what ultimately sets Krio Krush apart from its competitors is their client interaction.

They describe this interaction as nimble, highly visible, and hands-on. This approach is achieved by working with each client to create unique proprietary flavours that are inventive, versatile and easy to use. They can also vary packaging sizes and styles to suit individual needs.

The ease of use component is especially important for busy chefs whose commercial scale production requires product consistency.

“Chefs may need to blend 10 or even 20 ingredients to get one seasoning,” says Stephen Li, Krio Krush Business Development Manager.

“Instead, we do it for them, with all the right ratios, every time, so they can have real confidence in the quality and outcome.”

## **PATHWAYS TO EXPORT**


With a unique business model and a strong desire to lead the industry in bespoke, inventive products, the natural next step for Krio Krush was to expand their global reach through export, which has been a key focus for Stephen since joining the business in 2015.

Krio Krush has built a wealth of knowledge about exotic flavours by drawing on Australia’s multicultural identity and by sending a team of experienced chefs to different countries so they could try different flavours. Despite this, however, they began to experience limitations with only marginal success exporting to New Caledonia and Indonesia.

These limitations to growing their footprint in the global market were attributed to their reliance on word-of-mouth marketing, no clear plan for export and a lack of knowledge and connections.

Armed with this insight, Stephen gathered as much information as possible around market possibilities and various routes to export – it was then their relationship with Food Innovation Australia Limited (FIAL) was born.

FIAL is an industry-led, not-for-profit organisation focused on growing the share of Australian goods globally.



"FIAL's ethos is unique, they want to be a cohesive and clear voice for businesses operating in the food industry, and aim to influence and shape government policy while increasing collaboration between industry participants who desire transformational change," says Stephen describing how FIAL fits in with Krio Krush.

FIAL also works to upskill Australian businesses, providing them with the confidence and capacity to build on their prior knowledge and resources to develop differentiated offerings that meet the wants and needs of Australian and international markets and consumers alike.

As an Australian Government Industry Growth Centre, FIAL operates and works closely with agencies to help businesses export and assist Australian suppliers to understand new market opportunities and the steps required to start an export journey.

### **BRINGING IN THE BIG GUNS**

"From the start, FIAL represented an ideal gateway and opportunity to promote our reputation overseas," says Stephen. "They gave us information and opportunities we could never gain on our own."

The partnership success is attributed to collaboration and a willingness to learn, with the Krio Krush team attending FIAL events, webinars and market updates that provided much needed insight into product development as well as strategies to support export initiatives.

Knowledge gained from attendance at key FIAL-supported international trade shows was a great benefit to the company, providing them with the networks and connections to the key places and players in the industry.

Stephen credits the market insights tour which was part of the Gulfood trade show as a prime example of the opportunities FIAL provides, noting the Middle Eastern market is very difficult to break into.

Realising that connections would only get them so far, the next step for Krio Krush was to understand the needs of overseas markets so they could identify gaps and develop products to address them.

Using the FIAL China Insider information, Krio Krush learnt that bakery was seen as a relatively new Western-influenced category for the Chinese consumer who is more inclined to try these new products without any preconceptions. Armed with this knowledge, and his previous trade experience as a baker, Stephen and the Krio Krush team created a product that would appeal to this untapped market.

"For the Chinese market, the idea of adding flavour or seasoning with butter and other spreads or toppings is not one they have adopted," he says.

"We worked together with FIAL to expand our culture, flavour and palate insight to incorporate flavourings and seasonings into the bread itself. This was adopted quite well from the outset and we have been exporting our bakery seasoning ever since."

### **LEARNING FROM MISTAKES**

Success wasn't achieved without encountering some obstacles along the way, a lesson Krio Krush learnt when selling flavourings in Malaysia.

Of the four put to market, three performed well, but the smoky bacon flavour struggled to generate traction due to Malaysia's large Muslim population.

However, a deep understanding of the key markets they wished to expand into, coupled with persistence paid off for Krio Krush in the Philippines, where they explored ways to provide a fresh offering in an already saturated market.

"Chicken meat is so popular that it is commoditised, so it is difficult for food providers to control pricing," Stephen says.

After a thorough observation of the market, Krio Krush came up with the idea of using their seasonings as a value-add, which in turn would enable retailers to charge higher prices on their products.

Krio Krush credits their partnership with FIAL for contributing to the growth of their export market into China, Hong Kong and the Middle East, which they conservatively project to exceed 10 per cent with hopes for even stronger growth.

### **WHAT'S NEXT?**

For these seasoned professionals, their next focus brings them back to Australia where they hope their expanding knowledge of lesser known Asian herbs and spices will tap into a fruitful new market ripe for the picking.

Capitalising on their strengths in Western seasonings, they hope to create a fusion between the two and are conducting research and development with their Asian clients to build brand confidence in the market. While this process takes time, Stephen says it is made infinitely easier now the company is armed with the knowledge provided by FIAL.

"The size and breadth of the opportunities provided, makes the time and effort you put in very, very effective. We may not be a multinational, but when you partner with FIAL you get multinational-style exposure." <sup>1a</sup>

# TOWARDS AN AFFORDABLE AND SUSTAINABLE FOOD SUPPLY

*Recent advances and future prospects.*

**WORDS BY CHRIS BALDOCK  
UNIVERSITY OF SYDNEY**

Looking to the future, the agri-supply chain faces two grand challenges: feeding a growing population, and ensuring that food is nutritious and healthy. They are grand because of their complex, multifaceted nature, involving demand and supply side drivers.

On 31 August 2017, ILSI SEAR Australasia in conjunction with the American Association of Cereal Chemists International (AACCI) hosted a seminar, Towards an Affordable and Sustainable Food Supply — Recent Advances and Future Prospects, in Sydney, Australia to discuss what these challenges mean and some of their innovative solutions.

## **NEW AGRICULTURAL TECHNOLOGIES AND SUSTAINABILITY**

On the supply side, the rate of increase of crop improvement for production of food will not meet forecasted demand. Constraints on land, water and other inputs, as well as evolving threats including biosecurity, climate change and social license are all production hazards. Additionally, the right type of production and processing needs to occur. While many people in the world are undernourished, there are just as many who overeat. This is where supply melds into demand. Even if a sustainable, healthy and tasty product is available, consumers need to want it. Thus, solutions to these problems will need careful planning, collaboration and integration across the supply chain with health officials, government bodies, researchers, industry and consumers.

An obvious question in meeting these challenges is what do consumers want? It turns out authenticity is the latest in a growing list of consumer needs. To be authentic, a product must be what it says it is. It must be safe, of high quality and have integrity. The latter two aspects can refer to a broad range of things, including the technologies used to make a product, its origin, or its sustainability. Importantly, there must be a way to prove these qualities, for example, traceability through the supply chain or certification.

As new technologies emerge at the farm gate, how they are regulated and represented to the consumer will be critical to their profitability and success. Technologies that give yield gains may be at odds with desirable traits of authenticity. Take for instance, genetically modified (GM) crops. When these crops entered the Australian supply chain two decades ago, regulators and consumers approached this new technology with caution. Responding to this concern, legislation was passed requiring pre-market assessment and approval, as well as mandatory food labelling.

Now, even though 30 years of research has proven their safety, regulations and disapproving consumer sentiment still persist. This has generated costs up and down the supply chain; from companies developing these crops who need approvals, to the certification systems put in place by logistics companies to sell and store GM and non-GM grain.

This is why all eyes are on the regulators for the new generation of breeding techniques. Lines are being blurred between the definitions of traditional and the newer gene technology based breeding techniques. Crispr Cas-9, for example can make single base pair changes in DNA, with no foreign DNA inserted. There is no way to distinguish this manipulation from natural variation. Responding to this, Food Standards Australia New Zealand (FSANZ) and the Office of the Gene Technology Regulator (OGTR) are reviewing the regulations in regard to what techniques need pre-market approval and the definitions of gene technology as well as food produced by such technology.

It is impossible to predict how consumers will respond to new technologies. Researchers, industry and government must learn from the mistakes of the past and ensure information is communicated effectively to the public.

Regardless of how consumers and regulators respond to new gene technologies, parallel opportunities exist. Traditional plant breeding techniques are producing impressive crops. The CSIRO has recently made a gluten-free, hull-less barley variety



*(From left to right) Dr Anne Bridges, AACCI; Prof David Guest, University of Sydney; Prof Les Copeland, University of Sydney; Mr Kay Khoo, Bayer Crop Science; Dr Mary Anne Augustin, CSIRO Agriculture & Food; Dr Lisa Kelly, FSANZ; Dr Steve Jobling, CSIRO; Dr Paul Brent, University of Laval Quebec Canada and ILSI.*

and a high amylose wheat. Advances including high throughput screening in breeding can reduce product development time drastically for new varieties. Additionally, novel “omics” approaches and big data are helping to link genotype and phenotype to better understand plant genetics at a fundamental level.

Breeding technologies share a common goal to increase yield. However, pests, diseases and weeds reduce actual yields by 40 per cent (this goes up to 60 per cent when no crop protection product is used). Accordingly, achieving yields close to the potential should be a top priority. The key to this is increased research and development output and ensuring growers use best practice. One new practice to emerge from digital agriculture is crop surveillance, whereby a grower can monitor for disease symptoms so they can be controlled quickly. The success of such technologies will depend on access to information and grower support for their implementation. New practices may also provide value adding opportunity, if they can be marketed in ways that appeal to consumers (eg “greener” practices).

### **FOOD PROCESSES AND IMPROVEMENTS IN FOOD SECURITY**

The post-harvest supply chain suffers considerable losses too. Food processing is an exciting area for new techniques to help minimise loss, while improving nutrition, maximising resource use and enhancing flavour. New technologies involving high pressure and microwave radiation are being used to make ready-made meals that don't need refrigeration. Other pressure-based techniques are being used to make nutritious unpasteurised juices and potentially safe to drink raw milk. Fortification of milk with vitamin D and encapsulation of omega 3 fatty acids are two of many examples of food processing to improve nutrition.

Processing can also optimise extraction and minimise waste, for example, using ultrasound technology to increase extraction of oil while minimising water use.

The developments extend beyond the processing level. New technologies are giving consumers more information at their fingertips than ever before. The new smart label database allows consumers to search product information for things such as country of origin, allergen information, product claims or traceability. Portable near infrared technologies allow consumers to obtain real time nutritional information about fresh produce, meat and dairy. These changes are allowing consumers to assess products for their authenticity and in turn may change consumer preferences.

### **THE FUTURE**

Feeding everyone with the right foods are the two grand challenges whose solution will rest on how we handle and harness the unprecedented rate of technological change in the agri-food sector. New management strategies, breeding and processing technologies coordinated across the supply chain, enhanced by digital agriculture, will minimise input use and waste, while maximising efficiency. Demonstrating authenticity to consumers, who have ever-increasing information about products, remains a challenge, and an opportunity for adding value. However, the degree of regulation on new technologies, especially for gene-related ones, may affect their profitability.

Demand side drivers appear to be the biggest risk. Consumer attitudes can make or break a new technology. Thus, proper consultation and research with consumers is paramount, and reinforces the need for integration across the supply chain. <sup>1a</sup>

5 Questions with  
AIFST Member

# TOM ROSS

*Associate Professor  
of Food Microbiology,  
University of  
Tasmania*



## **What do you think will be the most significant change in our sector over the next five years?**

As a microbiologist, I see the incredible rate of progress in 'omics technologies and bio-informatics platforms as providing previously unimaginable power to make food safer (better epidemiology and traceability tools to curtail outbreaks) and to improve human diets and nutrition by matching diets to the physiology of individual consumers to benefit, and manipulate, their gastric microbiomes to achieve better health outcomes.

## **What has been the most important or interesting food innovation you've witnessed in your lifetime? Was it a success in your eyes?**

I think it would be the progress towards "risk-based" food safety management strategies and regulations internationally and domestically. This includes the widespread adoption of HACCP-based food safety management strategies, and the WTO SPS and TBT-rulings intended to increase the equitability of international trade in foods to support the growth of developing nations. It also provides the scientific platform for innovation in food technology, including the substantiation of health benefits claims.

## **What's the most unusual or interesting job you have ever had?**

As a teenager, I worked in a Chinese market garden in the outer suburbs of Hobart, but my most interesting job by far has been as a researcher and teacher at Uni of Tasmania, responding and contributing to food safety challenges and sharing that with students, and postgraduate researchers and government and industry. Working in industry-focused research introduces you to passionate and gifted people from around the country and the world, as well as enabling you to mentor equally brilliant young people to take their place in the quest for better food safety, nutrition and quality.

## **What might other AIFST members be surprised to learn about you?**

I'm really not very surprising, but if I hadn't ended up in food science research I probably would have become a graphic artist or architect. I remain fascinated by the interplay between art, science and technology. In that sense, it was a particular joy for me recently to be able to visit the Escher Museum in the Netherlands. Maurits Cornelius Escher was a Dutch graphic artist whose career from the 1930s to 1970s combined art and mathematics to perfection.

## **What do you see as the most valuable benefit of being involved with AIFST?**

Networking. And more networking. Being able to talk with and learn from other people in the food industry who have the same overall aims for the industry, and consumers, but who have different skills, and knowledge, and perspectives. People in the Institute are generous with their knowledge and insights, and provide invaluable perspectives on how to design foods and food processes that meet consumer needs and desires. 🍷



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# Fresh. Delicious. Juicy. All the things good news should be.



Roha acquires New Foods Industry S.p.A of Italy.

Roha has now stepped into the production of dehydrated ingredients by adding New Foods Industry S.p.A of Italy to its basket. New Foods produces a wide variety of ingredients in the savoury and sweet categories for the food, confectionary, beverage, ice-cream and dessert industries, using a large variety of innovative drying technologies.

These technologies and the production facilities at New Foods are modern, efficient and highly flexible, designed to meet the industry's needs in full compliance with UNI EN ISO 9001 and UNI EN ISO 14001 standards. This ensures that our product range delivers the desired level of preserved freshness of dried vegetables and fruits while adding color, flavor & nutritional value for our customers so they don't have to compromise on the best. With this acquisition, Roha can now supply its customers with the choicest of natural ingredients for their products.



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