

ISSN 1032 5298 • PRINT POST APPROVED PP241613/00096 VOL 71 ISSUE 2

# food

APRIL - MAY 2019

# australia

OFFICIAL PUBLICATION OF AIFST



## EAT-Lancet report

How do we secure the health of our planet?

## SUSTAINABILITY IN KEY INDUSTRIES

Regulars  
*Food Files*  
*Your Institute*  
*The Pulse*  
*Fast Five*



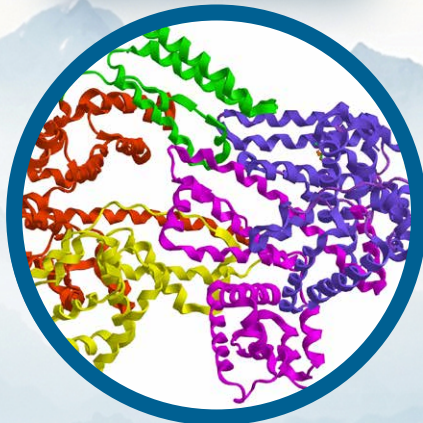
LOW  
ENERGY  
CONSUMPTION

# MAKING SPRAY DRYING COOL AGAIN

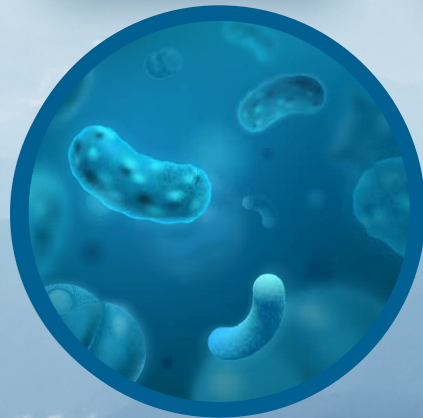
SPRAY DRYING



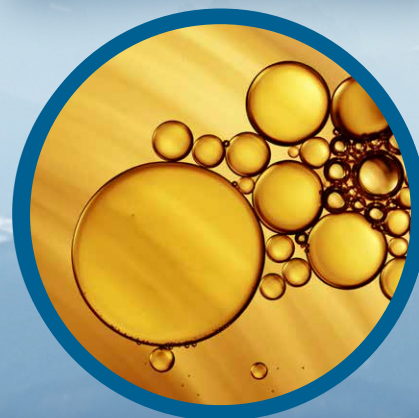
BIOACTIVES



MICROBES



ENCAPSULATION



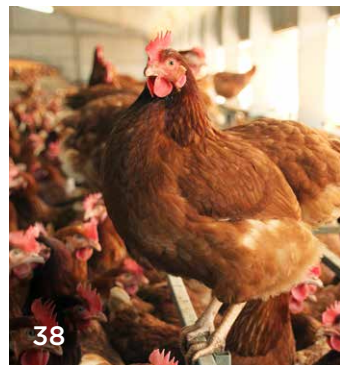
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April - May 2019



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# food australia

OFFICIAL PUBLICATION OF AIFST

Published by The Australian Institute of Food Science and Technology Limited.

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## Production

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## Subscription Rates

2019 Subscription Rates for 5 editions  
Australia \$145; Overseas (airmail) \$230;  
single copies \$29.00; Overseas \$46.00

*food australia* is the official magazine of The Australian Institute of Food Science and Technology Limited (AIFST). Statements and opinions presented in the publication do not necessarily reflect the policies of AIFST nor does AIFST accept responsibility for the accuracy of such statement and opinion.

Editorial contributions are invited. Guidelines are available at [www.aifst.asn.au](http://www.aifst.asn.au)

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## Food for Thought

Welcome to the second edition of *food australia* for 2019.

The Australian government estimates that food loss and food waste combined costs the Australian economy \$20 billion per annum. Along with a massive food loss and food waste problem, Australia also has a massive food security problem. Too many Australians lack secure access to sufficient amounts of safe and nutritious food.

These are major challenges facing the food industry and AIFST plays an important role in building the knowledge and capacity of members to ensure we are well-positioned to address them.

To that end, our focus for this issue of *food australia* is sustainability. We look at sustainable fishing (page 34), animal welfare (page 38) and sustainable packaging (page 30). We also explore the challenge of a future of healthy foods from environmentally sustainable systems with a summary and commentary on the recent *EAT-Lancet* report.

The Australian food industry needs to work together to come up with sustainable solutions to these major challenges. AIFST is proud to be a partner of the Fight Food Waste CRC and to support the important work of Foodbank – two organisations making a significant difference in the area of sustainable food systems.

Closer to home, the team at AIFST has been busy over the last few months with some major events for members. In February we held two successful summer schools in the lead up to “O” week at the University of Queensland and the University of Adelaide. More than 130 of our future industry leaders participated in two days of skills development and networking. Head to page 16 to read more.

The AIFST Convention (AIFST19) – our flagship event will be held in Sydney on 1-2 July. The theme for the convention this year is “*Feeding the Future: Challenges & Opportunities*”. Registrations are now open – head to our website to take advantage of the early bird registration discount. This will be another great learning experience for everyone with an interest in and passion for our food industry – please lock this date into your calendars and keep an eye on our new look website for updates.

In the meantime, happy reading.

## Fiona Fleming

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# Food Security & Nutrition In The World

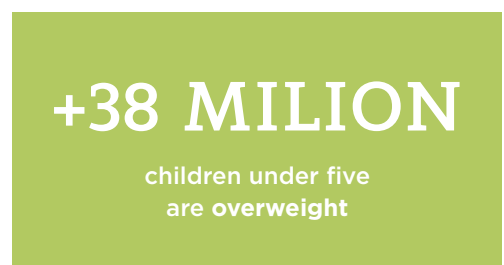
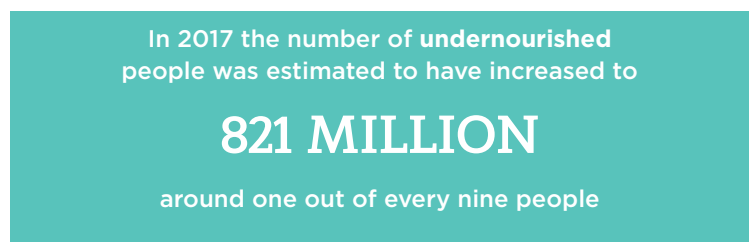
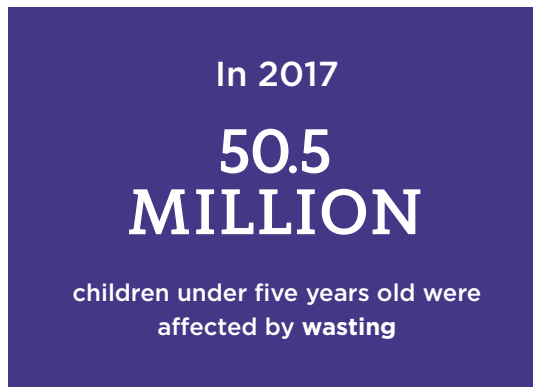
*The State of Food Security and Nutrition in the World* looks at progress towards achieving a world without hunger and malnutrition, within the framework of the United Nation's Sustainable Development Goals. It is prepared by the United Nations Food and Agriculture Organisation (FAO) in collaboration with a team of technical experts from International Fund for Agricultural Development, UNICEF, World Food Programme and World Health Organisation.

The report monitors progress towards the targets of ending hunger and all forms of malnutrition, and it analyses the underlying causes and drivers of key challenges including undernourishment, food insecurity and non-communicable diseases.

*The State of Food Security and Nutrition in the World* highlights that hunger is significantly worse in countries with agricultural systems that are highly sensitive to rainfall and temperature variability, and where a large proportion of the population depends on agriculture.

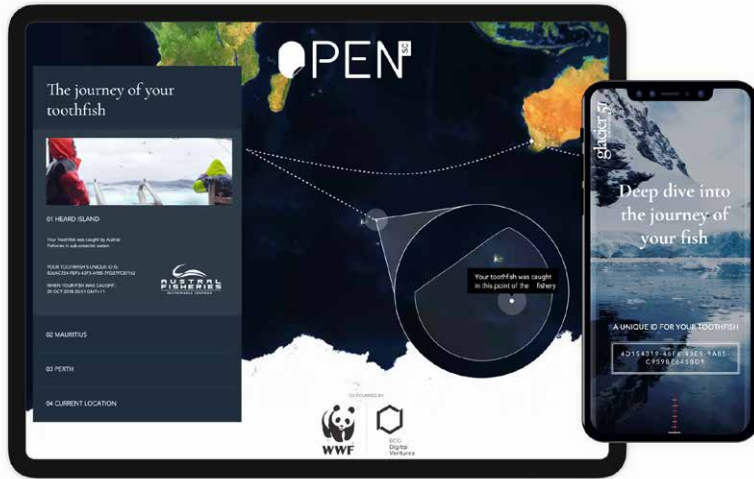
The 2018 report makes a call to strengthen the resilience and adaptive capacity of food systems. It points towards existing policy platforms as guidance but emphasises that better integration of these platforms into sectors such as food and agriculture is necessary for progress to occur.

Let's take a closer look at some of the numbers.



Source: *The State of Food Security and Nutrition in the World*, <http://www.fao.org/3/I9553EN/i9553en.pdf>, September 2018.

# Blockchain Technology To Help Achieve Open Supply Chains



WWF-Australia and BCG Digital Ventures have launched a world first, global digital platform that uses blockchain and other technologies to track food and products.

The platform, called OpenSC, works by attaching a digital tag such as an RFID tag to products at their original point of production and then linking

these to a blockchain platform. The blockchain, which cannot be tampered with, can then record when, where and how a product was produced, and when and how it moved through the supply chain from origin to consumer. It can also store additional information about a product's social or environmental credentials. Consumers

access the information via their smartphones by scanning a product's QR code.

According to BCG Digital Ventures managing director Paul Hunyor OpenSC will give businesses and consumers a whole new level of transparency about the food they eat.

"OpenSC is fantastic for businesses that are committed to sustainable and ethical operations. In addition to providing transparency about the origin of an item's production, OpenSC helps optimise business supply chain operations, reduces costs, and enables producers to manage issues such as product recalls," said Mr Hunyor, who is also co-chair of the World Economic Forum Council on the Future of Consumption.

The technology is available to all businesses. It has been designed to be compatible with existing supply chain operations and certification systems and to work in alignment with other blockchain enabled providence systems.

# Fromagerie Makes Vodka And Gin From Sheep Whey

Grandveve Cheeses' Hartshorn Distillery, a Tasmanian-based micro distillery, is the first in the world to make vodka and gin from sheep whey, and they're not only doing it, but doing it well.

Grandveve Cheeses Sheep Whey Vodka has won the Australia's Best Vodka award three years running, in 2017, 2018 and 2019 and took out the World's Best Vodka award at the World Vodka Awards in London last year.

Their Sheep Whey Gin has been released more recently, but already boasts a 9.5 out of 10-star rating on the "Ginventory" app. It won Gold at the World Gin Awards 2018.

During the cheese making process

whey is often discarded. Ryan Hartshorn of Grandveve Cheeses spent two years discovering how to turn the complex sugars held within the whey protein into basic sugars, in order to then ferment them into alcohol to eventually distil.

According to the cheesemaker the resulting distillate has a delicately sweet bouquet and extremely smooth finish, thanks to the dairy influence and traditional aging methods.

The distillery also collects all of its botanical waste from its gin and puts it on the outside of its cheese, so there's 360 degree waste reduction – waste from the cheese creates the spirit, then the distillery waste goes back to the cheesery to be used.







## Berry Body To Be Established

A report by Food Standards Australia New Zealand (FSANZ) on the response to the discovery of strawberries deliberately spiked with needles has called for improvements to be made by police, government and industry and for a national peak body for the berry industry to be established, to represent blueberries, raspberries, blackberries, and strawberries.

The report was produced by FSANZ in response to a request by the Minister for Health the Hon Greg Hunt MP. FSANZ consulted with government and industry stakeholders. The report also provides general background information on Australia's national incident response framework, strawberry production and

related industry bodies in Australia.

The report found that governments' response to the incident was timely in protecting public health, but discussions between FSANZ, government agencies and industry stakeholders highlighted several key areas for improvement, which are outlined in the report.

FSANZ made seven recommendations including that all jurisdictions should review their food incident response protocols and that a central agency be engaged to ensure national coordination of messaging and information. It also called for crisis preparedness and response in the horticulture sector to be centralised and made further recommendations in relation to traceability measures.

## The Urban Fermentary

Over in London Curtin graduate Nicola Stransky has been making the news, winning The Guild of Fine Food - Great Taste 3-star winners award for her raw, vegan and gluten free Original Kimchi (Sesame). The Urban Fermentary Original Kimchi was applauded for its "superb texture, stunning aroma and well-balanced heat". The Urban Fermentary is a London based, artisan, fermentation house producing Kimchis and hot sauces.



Nicola Stransky

FSANZ said it will convene a joint debrief with industry, jurisdictions and police involved in the strawberry tampering incident in the first half of 2019 to further reflect on the incident and confirm what systemic changes may be required. [www.foodstandards.gov.au/publications](http://www.foodstandards.gov.au/publications)

## Avocados Not Just For Smashing on Toast

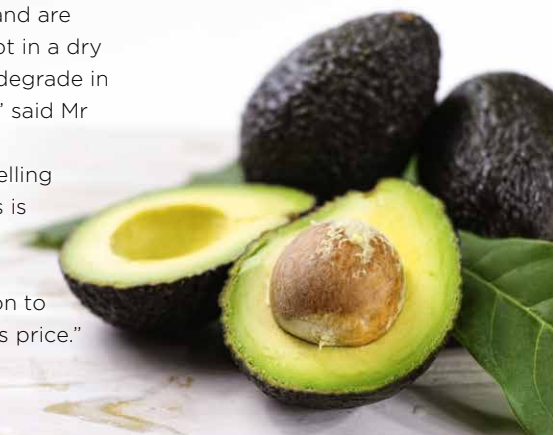
Mexican company Biofase has created cutlery and straws out of avocado seeds.

Chemical engineering student Scott Mungía stumbled into the idea while looking for a reliable source of biodegradable plastic and what followed was two-year development process during which he searched for the most effective method of extracting the required molecular compound from the avocado pit.

"The avocado pit cutlery contains 60% avocado pit polymers and

40% synthetic compounds. The products are single-use and are usable for one-year if kept in a dry place, and otherwise biodegrade in approximately 240 days," said Mr Mungía.

"Unfortunately, while selling companies on bioplastics is easy because everyone wants to look green, the main hurdle in comparison to traditional plastic remains price."



## New Definition Of Lamb From 1 July



Sheep Producers Australia has announced that Australia's new definition of lamb is likely to take effect from 1 July 2019, pending amendments to federal and state legislation. The new definition is "young sheep

under 12 months of age or which do not have any permanent incisor teeth in wear". It is consistent with New Zealand and removes the unfair advantage New Zealand producers had over Australian producers. "The current definition of a female,

castrate or entire male that has zero permanent incisor teeth means producers have no warning light about when a lamb stops being a lamb. The moment a permanent incisor erupts, that lamb is downgraded to hogget delivering a lower return per head for farmers," Sheep Producers Australia's Stephen Crisp said. The Australian Government, including Federal Agriculture Minister David Littleproud, announced its support for the new definition in November 2018. The change has also been endorsed by the Australian Meat Industry Language and Standards Committee whose members include the Department of Agriculture and Water Resources, Australian Meat Industry Council, Sheep Producers Australia, Cattle Council of Australia, Australian Lot Feeders' Association, Australian Pork Limited and Australian supermarkets/independent retailers.

## Chr. Hansen Ranked World's Most Sustainable Company

Global bioscience company Chr. Hansen has been ranked the most sustainable company in the world by Corporate Knights, a specialised Toronto-based media and investment research firm. The announcement was made during the World Economic Forum in Davos, Switzerland.

More than 7,500 companies were analysed against global industry peers on a number of quantitative key performance indicators. Chr. Hansen scored 100% on 'clean revenue', indicating that the company's products have clear environmental and certain social benefits, according to Corporate Knights' evaluation.

Chr. Hansen develops natural solutions for the food, nutritional, pharmaceutical and agricultural industries. It produces cultures, enzymes, probiotics and natural colours for food, confectionery, beverages, dietary supplements and animal feed.

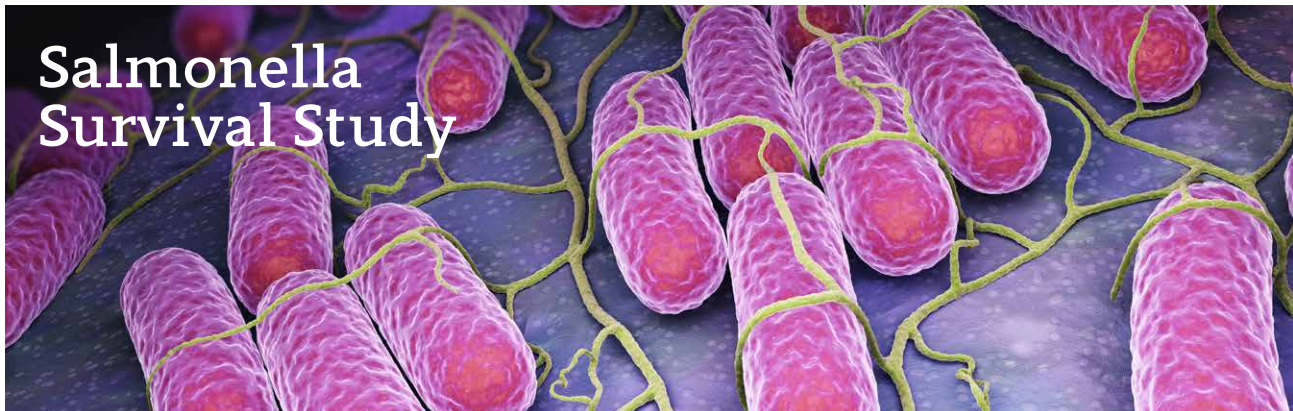


"The world is beginning to understand the power of good bacteria and the impact it can have on some of the major challenges the world is facing, such as food waste, antibiotic overuse and the need for a more sustainable agricultural sector to feed a growing world population while preserving our planet for future

generations," said Chr. Hansen's CEO Mauricio Graber.

Chr. Hansen says sustainability is an integral part of its business. The company uses the UN Global Goals as a framework to link the impact of its corporate strategy to sustainable development.





## Salmonella Survival Study

Hort Innovation has funded the first research study investigating the survival of *Salmonella enterica* in soil contaminated with chicken manure, conducted under Australian conditions.

The study assessed the effects of soil type, temperature, moisture and the presence or absence of chicken manure on the *Salmonella*'s survival. It found that soil temperature and

type both play a key role in the pathogen's survival.

While *Salmonella* counts declined over time after a contamination event, the rate of decline was significantly slower in clay loam soils. That rate of decline was also found to be reduced by the presence of chicken manure, soil temperatures less than 37 degrees Celsius and by the presence of moisture.

Conversely, in sandy soils, soils without chicken manure and temperatures higher than 37 degrees Celsius, *Salmonella* populations quickly declined within four weeks.

Solarisation, using black plastic covering on the soil, may cause faster die-off of *Salmonella* if soil temperatures under the plastic have several hours at 37 degrees Celsius or above.



## Aussie Entrepreneurs Create New Low Carb Super Brand

The Protein Bread Company has joined forces with low carb living experts Anna's Low Carb Kitchen to create a new super brand, PBCo.

The Protein Bread Company was founded in 2012 by siblings Anna and Luke Hopkins. The company produces a range of higher protein, lower carbohydrate products. Anna

Hopkins then went on to create Anna's Low Carb Kitchen in 2015, which catered to a growing market of consumers who wanted lower sugar, lower carbohydrate versions of traditionally less healthy foods with a range of baking mixes for cupcakes, pancakes and cookies.

The merger of the two popular

low carb brands is set to create Australia's largest manufacturer of low carb foods.

"We have made the decision to combine our two brands and become a one-stop shop, a low carb powerhouse that could achieve our big goal of inspiring five million Aussies to be fitter, healthier and happier," said Anna Hopkins, founder of Anna's Low Carb Kitchen.

PBCo co-founder Luke Hopkins said "The addition of an extended range of low carb cakes and treats will enhance the product offering we can provide to our audience."

On the back of its success with Muffin Break and the launch of multiple low carb, no added sugar mixes, PBCo. is working with a range of commercial partners in 2019 to launch more high protein, low carb and no added sugar foods into the market.

"We will be investing heavily in new technology to create better delivery and food experiences for our customers," said Luke Hopkins.

## Ocean Plastics Vacuum Gets To Work In Western Australian Waters



The first ocean vacuum cleaner, which helps to prevent rubbish, microplastics, oil and even micro fibres from entering the food chain, is being used in Western Australia. Dubbed the Seabin, it has been adopted by The City of Cockburn in Perth following a successful crowd-funding campaign that allowed the device to be produced commercially.

The Seabin is the brainchild of surfers Andrew Turton and Pete Ceglinski. It is a floating rubbish bin that moves up and down with the tide collecting floating rubbish. Water is sucked in from the surface and passes through a catch bag inside the bin, with a submersible water pump capable of displacing 25,000 litres per hour. The water is then pumped back into the ocean leaving litter and debris trapped in the catch bag to be disposed of properly.

Despite its mechanical movements, the device is said to be safe for marine life because of its bobbing up and down movement and the small amount of sound it emits. The Seabin is about the same size as a standard rubbish bin and is able to trap 20 kilograms of rubbish at a time.

CEO and Co-founder Pete Ceglinski says “The journey of 100 miles starts with the first step and the Seabin is our first step in addressing the global epidemic of ocean plastics and marine litter. However it needs to be stated that the Seabin technology is not a solution. Education and changing our consumer culture is the real solution to turning off the tap to plastics in our waterways.”

Seabins have been in commercial production for a year. Following its recent launch in Australia, Seabin Project will launch in New Zealand next month and in the USA in June by which time Seabins will be active in more than 28 countries. From there the Seabin Project aims to scale up operations in each country.



## ADM Partners With Savannah Bio Systems



*Scott Trethowen, Commercial and Operations Manager Savannah (left), Nigel Doyle, National Sales Director Australia, ADM Nutrition WFSI / H&W (right)*

Archer Daniels Midland Company (ADM) has announced it will begin a new distribution partnership with Savannah Bio Systems in Australia.

Savannah will support and service selected food and beverage companies with ADM's extensive portfolio of specialty ingredients, including proteins, sweetening solutions, fibres, plant sterols, vitamin E, edible beans, hydrocolloids, and flavours, colours and extracts. The company has an extensive understanding of the Australian market, with more than 30 years of servicing local food and beverage manufacturers.

"We are very excited about the new partnership, as it will allow us to service a wider group of customers, delivering taste, texture, nutrition and function within one broad portfolio", said Nigel Doyle, National Sales Director Australia, ADM.

### Food Science In Business - Innovative Ice Cream

Gelavo has found itself in the news over the past few months. It was set up by food technologists Andrew Tilley and Anthea Rodoreda, who developed the avocado ice cream as part of their food science studies at Curtin University. Second grade avocados for aesthetic reasons such as blemishes on the skin, or size or shape, are used as a base for the innovative ice-cream. Flavours include the flagship avocado and vanilla, chocolate and coffee.



*Anthea Rodoreda, Andrew Tilley and Helena Tilley.  
Source: Westpix.com.au*

# Vale Ramon Hall

Words by Dr. Martin Palmer



The AIFST community has lost a dedicated and much valued member, Dr. Ramon Hall.

Ramon had more than 20 years' experience working across the food industry, academia and government. After graduating in Physiology and Genetics from Monash University in 1993, Ramon went on to study Human Nutrition at Deakin University, then completed his PhD there on the nutritional properties of Australian sweet lupin kernels, under the supervision of Dr Stuart Johnson.

Ramon's careful and thorough research on the nutritional and satiety effects of lupin flour, protein and fibre resulted in excellent scientific papers and conference presentations that are still cited today. This pioneering work also helped to stimulate a revival of interest in the wider potential of lupin flour and ingredients in Australia and internationally.

Ramon's career developed through a range of research, management, teaching and consultancy roles in food science and nutrition. These included regulatory positions in the Victorian Departments of Health and Primary Industries, Lectureships in Food Science and Nutrition at Deakin University and

as a Senior Research Scientist at Fonterra in New Zealand.

During Ramon's time at Dairy Innovation Australia, in Werribee, he brought the same energy, enthusiasm, professionalism and good-fellowship that he showed throughout his career and for which he'll be fondly remembered by so many colleagues.

Ramon was a keen cyclist, sailor and fisherman, regularly subjecting himself to gruelling rides around the Bay and early-morning fishing expeditions from Phillip Island at the weekend. Around the lunch table on Mondays at Dairy Innovation Australia, staff looked forward to hearing Ramon talk about "the one that got away", sharks, octopus and other tales of derring-do.

From 2015 to 2019, Ramon went back to Deakin University School of Exercise and Nutrition Sciences as a Lecturer/Senior Lecturer in Food and Nutrition Sciences.

Ramon Hall was a founding Director of CANHERA (Children and Adolescent Nutrition and Health Education and Research Association), a charity established in 2018 to encourage healthier eating practices early in life. Ramon had great empathy with children as he showed in the development of his much-loved primary school education program. His role as "Dr Ramon – Nutrition Magician" highlighted his humour, keenness and enthusiastic nature in interacting

with young schoolchildren to encourage healthier eating in a way that was so typical of his natural talents. It also made him a Youtube star.

Ramon also had an entrepreneurial streak. He was the creative mind behind Hallsome SportsPasta, an innovative, world-first pasta product designed specifically to help athletes recover from training and competition. The brand donates five percent of its profits to CANHERA.

An extremely vibrant and active member of both the Nutrition Society of Australia and the AIFST, Ramon was past Chair of the Institute's Victorian Nutrition and Microbiology Groups. He was a regular contributor to *food australia*, with the Nutrition Watch pages. In recognition of his passion and dedication to the Institute and to the wider food industry, Ramon was made a Fellow of AIFST in 2018.

At the time of his passing, Ramon was Research and Development Manager at Australian Dairy Park and Principal of his own food industry consultancy company, NutraRegs.

Ramon will be dearly missed.





## New Ceo At Koko Black

Nicolas Georges has recently taken up the position as chief executive officer at Australia's luxury chocolate company Koko Black Chocolate. Nicolas comes from Monash University where he was director of food and agriculture innovation. Prior to Monash, Nicolas was at Mondelez International where he was responsible for research and development across Asia Pacific for premium chocolate and dairy.

Nicolas will oversee Koko Black as it looks to quadruple its turnover in the next four years.



Nicolas Georges

## MLA Lands Strong

Meat and Livestock Australia has appointed respected senior executive and industry leader Jason Strong as its new managing director.

MLA Chair Dr Michele Allan said the board unanimously supported the appointment.

"We are extremely confident that Jason will make an outstanding contribution to MLA and will continue to foster the prosperity of our industry on behalf of the red meat producers we serve," said Dr Allan. "Jason offers significant on-farm experience, which means he has a unique understanding of what is expected from MLA on behalf of levy payers. He is focused with a passionate commitment for our industry."

Jason most recently held the position of Chief Executive Officer of Smithfield Cattle Company, a leading family owned feedlot and cattle supply business. Prior roles include managing director with AA Co and representing industry as MLA's regional manager in Europe and Russia responsible for the expansion of the a DNA technology business into new key international markets. He has also owned a number of meat retail outlets.

He is also experienced at agri-politics and industry advocacy through his involvement with the Cattlemen's Union of Australia as a councillor, New South Wales State Chairman and National Vice President.



Jason Strong



Christine Giuliano

## Christine Giuliano

Christine Giuliano has moved from her role as managing director of botanicals company NATUREX Australia to take up the position of Chief Operating Officer at Nature's Care. Nature's Care is most well-known for its supplements, including the Healthy Care brand, and for its skin and beauty products.

Christine continues to play an important role in the Australian food industry as a board member of the Fight Food Waste CRC.

## Three New Appointments To Australian Organic

Organic standards body, Australian Organic has announced three new appointments. Leo Watling and Bernadette Favis have both been appointed to the Board of Directors and Niki Ford is Australian Organic's new general manager.

Leo Watling and his wife founded Apples and Sage Organic Wholefoods in 2013 and have been eating certified organic produce for more than 20 years. He was appointed to the board

by Australian Organic members at its annual general meeting last November.

Bernadette Favis is a former corporate lawyer and founder of Cocolife, a health food company which specialises in organic kitchen oils. She is the first board-appointed director and was selected as a result of recent changes to Australian Organic's constitution, which aim to increase the size of the board and

enable appointments to fill any skills gaps.

The appointment of Bernadette and Leo take Australian Organic's board to six directors.

Niki Ford was appointed by the board in December as new general manager after a six-month period of consulting on key strategic marketing projects. Niki is the founder of consultancy Naturalis Advisory.



Leo Watling



Bernadette Favis



Niki Ford

## Dairy Moves

**Adrian Freckleton** has been appointed to the role of chief operating officer at La Casa Del Formaggio. Adrian has over 20 years' experience in FMGC within the dairy, beverage and mining industries. He was previously at Bega Cheese, where he worked for more than 10 years. Adrian was responsible for operations at Bega, with P&L responsibility for a facility manufacturing dairy and whey products. He also held the roles of Head of Technical Services and R&D, and Head of Quality. La Casa Del Formaggio is a South Australian family business, which boasts 30

years of success in cheesemaking. The company recently announced it will build a new state-of-the-art cheese manufacturing plant in 2020.

**Anthony Bourke** has been appointed general manager of ingredients division at Bega Cheese. He was previously transformation director at George Weston Foods. With 25 years' experience within the FMGC food and service sectors, Anthony is well-placed to head up operations at Bega.

Nutritional dairy products company Wattle Health Australia has announced the appointment of **Dr Tony McKenna** as its new chief executive officer. Tony has over 30

years' dairy industry experience, most recently holding the role of senior vice president at Saputo Australia.



Dr Tony McKenna




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# 2019 AIFST Summer School

The 2019 AIFST Summer Schools were held in late February at the University of Queensland (UQ), and University of Adelaide. Both Summer Schools were a great success, with over 130 students attending. This takes the total number of students to more than 680 since the first summer school was held in 2011.

The aim of AIFST Summer School is to provide students with the opportunity to:

1. Build professional food industry networks among peers, industry and academia.
2. Gain exposure to food industry opportunities through industry guest speakers, who can provide insight and advice on prospective career paths.
3. Experience local site tours to gain firsthand experience of food manufacture.
4. Hear from recent graduates on their experience post-study and what life

is like out in the “real world”.

5. Build industry relevant skills including presentation and public speaking skills with a platform for participants to present their current research in front of their peers.

The two-day events provided students and graduates of food science and technology and students and graduates of nutrition an opportunity to learn from and connect with academics and leaders from the Australian food industry, gain insight and advice on prospective career paths and network with their peers.

The program for each of the summer schools was created to facilitate local connections for each of the attending students.

In Brisbane speakers included Emeritus Professor Hilton Deeth, Dr Narelle Fegan (CSIRO), Dr Polly Burey (USQ), Dr Michael Sweedman (Australian Vinegar) and Dr Heather

Smyth (QAAFI). They covered topics including new challenges in food safety, reducing food waste, innovations in food packaging, nutrition guided food design and human variation in sensory science. A panel of recent graduates from UQ shared their experiences with the audience on life beyond university. Participants the attended an onsite tour at either Steggall Nutrition or Snap Fresh.

In Adelaide, speakers included Dr Jane Bowen (CSIRO); Professor Ian Fisk (University of Nottingham UK), Catherine Sayer (CEO, Food South Australia) Fiona Fleming (AIFST Managing Director) and Prakash Chand (Dnata Cateringtopics). They covered topics including sodium reduction through changes salt crystal structure; quality assurance for in-flight catering; food waste and health and wellbeing; sustainable food sources and packaging; latest food and beverage trends; and the data base available to guide new product development. Participants visited either Lot 100 followed by Woodside Cheese Wrights or West End Brewery, followed by Goodman Fielder.

The AIFST would like to recognise the hard work of Associate Professor Mark Turner (UQ) and Helen Morris (UoA) in organising the 2019 AIFST Summer Schools. We would also like to thank our supporters, including Steggall Nutrition, Earlee Products, Trisco Foods, The University of Queensland, QAAFI, Snap Fresh, Institute of Food Technologists, University of Adelaide, Lot.100, Woodside Cheese Wrights, Laucke, West End Brewery, Coles and Goodman Fielder.





# Peter Schutz Awarded The Medal Of The Order Of Australia

AIFST Chair Peter Schutz has been awarded the Medal of the Order of Australia in recognition of his outstanding achievements and services to the Australian food and agribusiness industry.

Peter, a statesman of the industry, has been a long-time member of the AIFST and became the current chair of the board in 2016.

Peter is truly one of a kind – a humble gentleman who is passionately committed to equity in opportunity. Peter develops and nurtures people, particularly women, to achieve their maximum potential for both for themselves and for the greater good of the industry.

His working knowledge and views on industry's challenges and opportunities are highly regarded. Many have used this knowledge to inform industry policy throughout his more than 40 years of working life. Peter continues to be the voice of industry, driving outcomes that are setting the foundations for growth of the industry into the future. He was recently enticed out of retirement to chair the Australian Food and Agribusiness Growth Centre.

On behalf of the AIFST Board and team, we would like to congratulate Peter on obtaining this prestigious award.



## Food Recall Workshop

Having policies and procedures in place for a food or beverage product recall is one thing, executing them is another.

In February, AIFST, along with industry specialists Victual and Bite Communications, presented a comprehensive food recall workshop in Melbourne hosted by GSI Australia. More than 40 participants took part in a recall simulation activity, including their own mock recall exercise using the GSI Australia Recall portal.

Leading the workshop, AIFST Managing Director Fiona Fleming gave participants advice to help with developing and testing your food recall policies and procedures including:

- a business food recall plan should also cover key areas such as staff training, product traceability and a regular review of the plan as well as the steps to follow when carrying out a recall
- make sure you practice so you are ready for a recall – mock recall and traceability exercises are a great way to test out your plans in “peace time”.

Bite Communications shared insights on crisis communications in an age of social media, when issues break in real time and are public, often well before the related company is aware.

Guiding participants through the mock activity, GSI Australia's recall expert Andrew Brown pointed to the key functions of the GSI Australia Recall portal, such as bulk

product uploads, mobile alerts for your trading partners and reports for regulators and stakeholders.

With this session, Brown demonstrated the value of food companies having a centralised system where you can plan, act and report recalls with enhanced speed and efficiency. Importantly, participants gained a better understanding of the ramifications of a product recall with real-life scenarios.

Concluding the workshop, Peter McGee from Victual encouraged participants to get help with managing food recalls. “If you don't have in-house expertise, seek out experienced people to help you. This includes communications specialists, experts in recall management, regulatory affairs professionals and experts in specific areas such as allergens and allergen management.”





# SAVE THE DATE- 2019 AIFST CONVENTION 1-2 JULY 2019

**SYDNEY INTERNATIONAL CONVENTION CENTRE**

## **FEEDING THE FUTURE: CHALLENGES & OPPORTUNITIES**

The AIFST Convention is to be held from 1 - 2 July 2019 at the International Convention Centre (ICC).

The Convention theme is Feeding the Future: challenges & opportunities. The program will include tangible and practical information that is relevant to today's operating environment, as well as insights and information that is future focussed.

## **WHAT CAN YOU EXPECT IN 2019?**

AIFST19 will feature four concurrent streams with keynote speakers featured in the plenary sessions on each of the two days.

The 2019 AIFST Convention will feature networking opportunities including the Young Professionals & Mentoring Networking Breakfast, Wine & Cheese Tasting Sensation and an industry trade exhibition.

## **PARTNERSHIP OPPORTUNITIES**

Partnership opportunities are available for companies wanting to link their brand with the Convention and extend their reach in the Australian food industry. To discuss ways your organisation would like to participate in the 2019 AIFST Convention, contact AIFST today via [aifst@aifst.com.au](mailto:aifst@aifst.com.au).

## **CALL FOR POSTER PRESENTATIONS**

AIFST is calling for Poster Presentation submissions. For more information visit the AIFST website. To be eligible for a poster presentation, at least one of the authors must be registered to attend the Convention. To submit a poster, please use the provided poster template on the AIFST website and submit to AIFST via [aifst@aifst.com.au](mailto:aifst@aifst.com.au) by close of business on **Monday, 18 April 2019**.

## **WINE AND CHEESE TASTING SENSATION - 1 July 2019**

The ever-popular Wine and Cheese Tasting Sensation remains a key part of the social program.

The Wine and Cheese Tasting Sensation is included in all Full Convention Packages and any one-day Convention Registrations purchased for Monday 1 July 2019.



**FEEDING  
THE  
FUTURE.**  
CHALLENGES & OPPORTUNITIES

## **CONVENTION REGISTRATION**

Registrations to attend the 2019 AIFST convention are now open via the AIFST website. All Full Convention Registrations include a ticket to the Wine and Cheese Tasting Sensation. Early Bird Registration is available until Sunday 12th May 2019. After this date full pricing will apply. AIFST offers individual and group booking options including corporate registrations and discounted packages. Contact us to find out more information.



# AIFST AWARDS PROGRAM OPEN FOR 2019

Applications are open for the 2019 AIFST Awards. Nominations close on Sunday 28th April 2019. Winners will be presented with their award at the 2019 AIFST Convention.

Visit the AIFST website for all award guidelines and nomination forms.

## **AIFST President's Award**

The AIFST President's Award recognises and acknowledges an individual or an organisation that has made an outstanding contribution to advancing the Institute.

## **AIFST Keith Farrer Award Of Merit**

Acknowledges members' achievements within the food industry in the areas of science, technology, research, industry and education, and their contributions to advancing the Institute in honour of Keith Farrer.

## **AIFST Peter Seale Food Industry Innovation Award**

The AIFST Food Innovation Award acknowledges a significant new development in a process, product, ingredient, equipment or packaging that has had successful commercial application in any section of the Australian food industry. The award is given in honour of AIFST Past President, Peter Seale.

## **AIFST Anthony (Tony) Williams Sensory Award**

The AIFST Sensory Award is for young members who demonstrate academic achievement, interest, enthusiasm and integrity in sensory research. The AIFST Sensory Award is sponsored annually by Sensory Solutions in honour of Anthony (Tony) Williams.

## **AIFST Jack Kefford Award For Best Paper**

Recognises the contribution to food science and technology by members who publish research and technical papers in honour of AIFST Past President, Jack Kefford.

## **AIFST Malcolm Bird Young Members Commemorative Award**

This award is for young AIFST members who demonstrate academic achievement, leadership and integrity in their profession in honour of AIFST Past President, Malcolm Bird.

## **AIFST John Christian Young Food Microbiologist Award**

The John Christian Young Food Microbiologist award was created as a means of encouraging and supporting the development of young food microbiologists.

## **AIFST Student Product Development Competition**

The SPDC was created over 15 years ago to provide students with a chance to create a new product and demonstrate their skills, knowledge and creativity. Each year students are asked to create a product based on a brief and submit the development of their product at various stages to the judges. The competition culminates at the annual convention, where teams must present their final product to the judges and submit it for tasting.

## **AIFST Bruce Chandler Book Prize**

Awarded to AIFST members who have published a book that has made a great contribution to the literature on food in honour of AIFST Past President, Bruce Chandler.

## **AIFST Research Poster Competition**

The competition provides a space for scientists to present a summary of their recent work in poster form. As space on the poster is limited, the challenge for entrants is to effectively condense their research without losing the quality of their research.

## **AIFST Allergen Bureau Julie Newlands Award**

This award recognises excellence in food allergen management in Australia.

## **AIFST Foodbank Hunger Hero Award**

The Australian Institute of Food Science and Technology (AIFST) Foodbank Hunger Hero Award recognises a person or team who have gone above and beyond to tackle food insecurity. Whether it's championing a new initiative within their company or volunteering their time and expertise in the community, AIFST and Foodbank want to recognise an individual's or team's contribution and hold it up as an inspiration to others.

For further information phone 0447 066 324, email [aifst@aifst.com.au](mailto:aifst@aifst.com.au) or visit the AIFST website at [www.aifst.asn.au](http://www.aifst.asn.au)







# Pushing For Planetary Health Diets

*A summary of the EAT-Lancet commission report*

Whether it be an unhealthy diet epidemic or food scarcity, every country faces the question of how to strike the balance in feeding its people well. Overlaid on this is the question of how to protect the planet in order to safeguard it into the future. The recently released report *Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems* considers these challenges.

The commission brings together more than 30 world-leading scientists from across the globe and from various fields, including human health, agriculture, political science and environmental sustainability, with the aim of reaching a scientific consensus

on what defines a healthy and sustainable diet. The independent and peer-reviewed report was co-chaired by Professor Walter Willett and Professor Johan Rockström.

The report calls for radical and urgent transformation of the global food system. “Without action, the world risks failing to meet the UN Sustainable Development Goals (SDGs) and the Paris Agreement, and today’s children will inherit a planet that has been severely degraded and where much of the population will increasingly suffer from malnutrition and preventable disease”.

## One Goal

The Commission’s goal is to achieve planetary health diets for nearly 10

billion people by 2050. Planetary health refers to the “the health of human civilisation and the state of the natural systems on which it depends”. The EAT-Lancet Commission builds on this to define a planetary health diet as diets that are considered both healthy and sustainable. Planetary diets “highlight the critical role that diets play in linking human health and environmental sustainability, and the need to integrate these often-separate agendas into a common global agenda for food system transformation to achieve the SDGs and Paris Agreement.”

To do this, it has developed global scientific targets for healthy diets and sustainable food production,



and integrated these into a common framework – the safe operating space for food systems – so that planetary health diets could be identified. The scientific targets that define a safe operating space for food systems allow the evaluation of which diets and food production practices together will enable achievement of the SDGs and the Paris Agreement.

The scientific targets look at specific food groups to create The Planetary Health Diet (refer Table 1). The Commission references a large body of work that has emerged over time, on the environmental impacts of various health diets. It stated that “a diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.”

The Commission also analysed the potential impacts of dietary change on diet related disease mortality using three different approaches. All three approaches concluded that dietary changes from current diets toward healthy diets are likely to result in major health benefits. Each approach would prevent approximately 11 million deaths per year, representing between 19 and 24% of total adult deaths.

It then compared The Planetary Health Diet to current eating patterns

## Two Targets

1. The Commission holds that transformation to planetary health diets by 2050 will require substantial dietary shifts. It will entail more than doubling the consumption of fruits, vegetables, legumes and nuts, along with a more than 50% reduction in global consumption of red meat and foods with added sugars. The Commission suggests that the main way this will be achieved is by changing food consumption patterns in wealthier countries, but acknowledges that some populations rely on agropastoral livelihoods and animal protein from livestock and so caveats for the role of animal source foods in people’s diets needs to be considered in each geographic context.

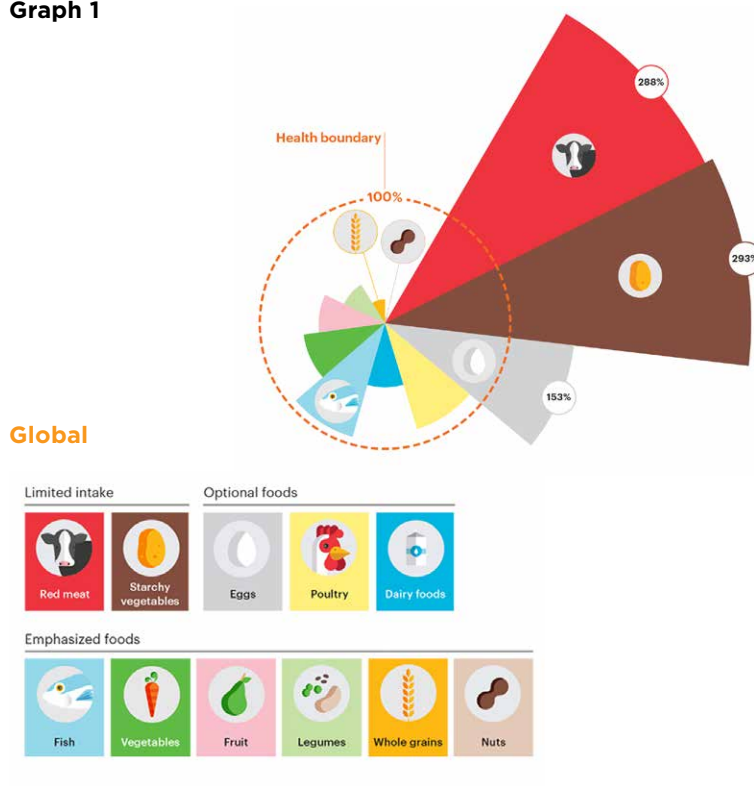
## The Planetary Health Diet

Table 1

	Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
Whole grains <b>Rice, wheat, corn and other</b>	<b>232</b>	<b>811</b>
Tubers or starchy vegetables <b>Potatoes and cassava</b>	<b>50</b> (0-100)	<b>39</b>
Vegetables <b>All vegetables</b>	<b>300</b> (200-600)	<b>78</b>
Fruits <b>All fruits</b>	<b>200</b> (100-300)	<b>126</b>
Dairy foods <b>Whole milk or equivalents</b>	<b>250</b> (0-500)	<b>153</b>
Protein sources		
<b>Beef, lamb and pork</b>	<b>14</b> (0-28)	<b>30</b>
<b>Chicken and other poultry</b>	<b>29</b> (0-58)	<b>62</b>
<b>Eggs</b>	<b>13</b> (0-25)	<b>19</b>
<b>Fish</b>	<b>28</b> (0-100)	<b>40</b>
<b>Legumes</b>	<b>75</b> (0-100)	<b>284</b>
<b>Nuts</b>	<b>50</b> (0-75)	<b>291</b>
Added fats		
<b>Unsaturated oils</b>	<b>40</b> (20-80)	<b>354</b>
<b>Saturated oils</b>	<b>11.8</b> (0-11.8)	<b>96</b>
Added sugars <b>All sugars</b>	<b>31</b> (0-31)	<b>120</b>

## Current Diets vs Planetary Health Diet

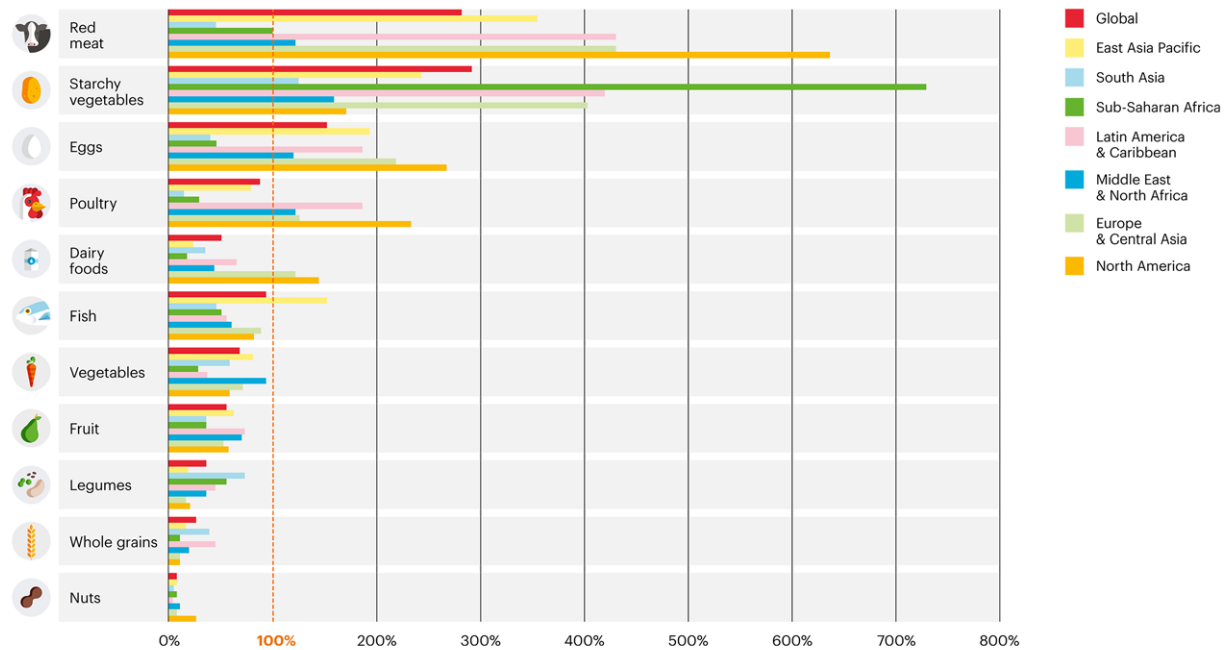
Graph 1



Credit: EAT Foundation

## Current Diets vs Planetary Health Diet

Graphic 2



Credit: EAT Foundation

2. The Commission’s second target focused on six interacting, biogeophysical systems. For each of these the Commission proposed boundaries for global food production in order to decrease the risk of “irreversible and potentially catastrophic shifts in the earth system.” The six systems the Commission looked at were: climate change, land-system change, freshwater use, nitrogen cycling, phosphorus cycling and biodiversity loss. Taking one of these as an example, for the climate change boundary for food production, the Commission adopted the assumption that the world will follow the Paris Agreement – keeping global warming to below two degrees Celsius, and decarbonise the global energy system by 2050.

### Five Strategies

The Commission outlined five strategies to achieve the planetary

health diets it says are necessary to avoid serious, even disastrous consequences:

#### 1. Seek international and national commitment to shift toward healthy diets

“Commitment can be achieved by making healthy foods more available, accessible and affordable, in place of unhealthier alternatives, improving information and food marketing, investing in public health information and sustainability education, implementing food-based dietary guidelines, and using health care services to deliver dietary advice and interventions.”

#### 2. Reorient agricultural priorities from producing high quantities of food to producing healthy food

“Agriculture and fisheries must not only produce enough calories to feed a growing global population but must also produce a diversity

of foods that nurture human health and support environmental sustainability. Alongside dietary shifts, agricultural and marine policies must be reoriented toward a variety of nutritious foods that enhance biodiversity rather than aiming for increased volume of a few crops, much of which is now used for animal feed.”

#### 3. Sustainably intensify food production to increase high-quality output

“The current global food system requires a new agricultural revolution that is based on sustainable intensification and driven by sustainability and system innovation. This would entail at least a 75% reduction of yield gaps on current cropland, radical improvements in fertiliser and water use efficiency, recycling of phosphorus, redistribution of global use of nitrogen and phosphorus, implementing





# Demystifying **Traceability**

*Developed by IFT's Global Food Traceability Center to help companies build an effective food traceability plan.*

This new, customizable food traceability learning experience will help small to mid-size companies and their supply chains to either evaluate the effectiveness of their existing traceability plans and/or create new ones.

#### **It includes the following:**

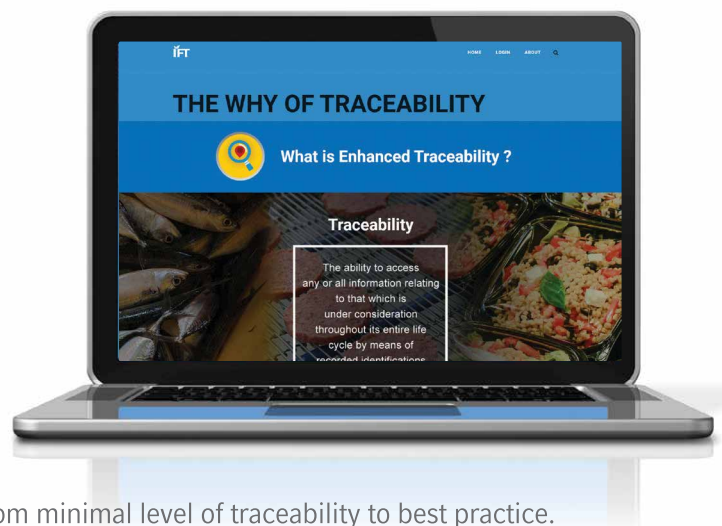
- **risk analyses** (product and process risks)
- **vulnerability assessments** (for traceability)
- **consequence management** (for impact)

The online course provides a range of options from minimal level of traceability to best practice. It also helps individual companies and their supply chains to implement traceability mitigation strategies to fill the gaps identified by the course.

## **Available Now!**

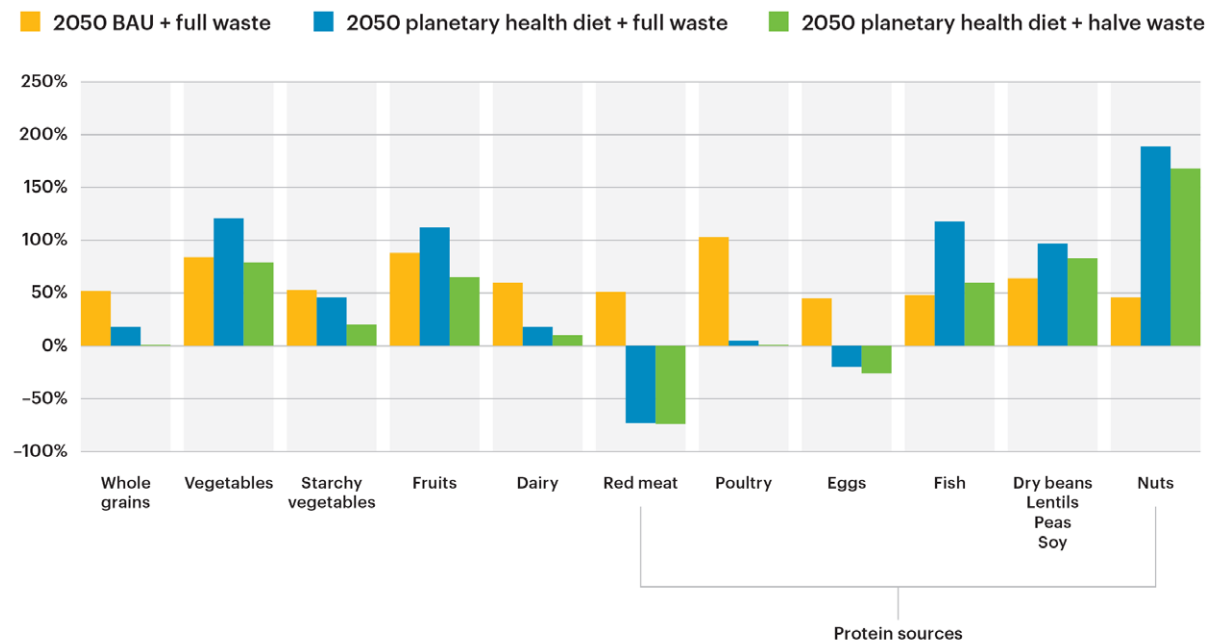
**To learn more...** visit [ift.org/gftc](http://ift.org/gftc).

*This course and other activities are funded in part by the Gordon and Betty Moore Foundation and is the result of a collaboration between the Institute of Food Technologists Global Food Traceability Center, World Wildlife Fund, FishWise and Future of Fish.*



## Predicted Change in Food Production

Graphic 3



Credit: EAT Foundation

climate mitigation options including changes in crop and feed management, and enhancing biodiversity within agricultural systems. In addition, to achieve negative emissions globally as per the Paris Agreement, the global food system must become a net carbon sink from 2040 and onward.”

#### 4. Strong and coordinated governance of land and oceans

“This implies feeding humanity on existing agricultural land i.e. by implementing a zero-expansion policy of new agricultural land into natural ecosystems and species-rich forests, aiming management policies at restoring and reforesting degraded land, establishing international land use governance mechanisms, and adopting a “Half Earth” strategy for biodiversity conservation (i.e. conserve at least 80% of

preindustrial species richness by protecting the remaining 50% of Earth as intact ecosystems). Moreover, there is a need to improve the management of the world’s oceans to ensure that fisheries do not negatively impact ecosystems, fish stocks are utilized responsibly, and global aquaculture production is expanded sustainably.”

#### 5. At least halve food losses and waste, in line with UN Sustainable Development Goals

“Substantially reducing food losses at the production side and food waste at the consumption side is essential for the global food system to stay within a safe operating space. Both technological solutions applied along the food supply chain and implementation of public policies are required in order to achieve an overall 50% reduction

in global food loss and waste as per the targets of the SDGs. Actions include improving post-harvest infrastructure, food transport, processing and packing, increasing collaboration along the supply chain, training and equipping producers, and educating consumers.”

The global adoption of healthy diets from sustainable food systems would safeguard our planet and improve the health of billions of people, but according to the Commission, for this we need immediate action and a great food transformation. It is still an unknown, whether this first attempt at setting universal targets for the food system that apply to all people and the planet will bring a substantial shift in our ways with food. The summary report can be found at <https://eatforum.org/eat-lancet-commission/>





# OPINION ON THE EAT-LANCET REPORT

## Irresistible force; Immovable object

Words by Geoffrey Annison, PhD,  
Australian Food and Grocery Council



January, just as we in Australia were devising strategies to enjoy, or at least get through, another month of record-breaking high temperatures, North America was almost brought to a standstill due to record breaking Arctic weather conditions. Against this backdrop of extreme weather events keeping the media busy, an irresistible force (climate change science) met an immovable object (nutritional science) in the form of the release of the EAT-Lancet Commission's report on healthy diets from sustainable food systems.<sup>1</sup> And interestingly, the report proposed a framework for *food system transformation* which ostensibly accommodates both.

The report comprehensively details the role of agricultural and food production as a driver of climate change and proposes drastic changes to minimise greenhouse gas emissions. The specific changes to moderate environmental impacts are aligned with

dietary advice and nutritional science, or so it is claimed. The ultimate, highly laudable goal is to set a direction for change which will enable the basic nutritional needs of the entire global population of 10 billion people by 2050 to be met, but with the minimum impact on environment. But alas, the report did not meet the approval of all interested parties.

Before focussing on the criticisms of the EAT-Lancet report, it's appropriate to provide a little more detail on its content. With regard to environmental challenges the report describes planetary boundaries for the adverse effects of food production on the climate system, land systems, freshwater resources, biodiversity and nutrient cycles of nitrogen and phosphorus. Thus the report discusses in detail approaches to reducing methane and nitrous oxide emissions in agriculture, better water saving and water use in agriculture integrated with maintaining adequate

environmental flows. Biodiversity is to be protected through land system changes and production practices such as agroforestry, watercourse buffers, wide field margins, and conservation tillage. And adopting closed systems in food production to recycle nitrogen and phosphorus within food systems, for example capturing and recycling nutrient run off and sewage outflows, will be used to reduce adverse environmental effects.

There is no doubt these are major environmental challenges of our resource-constrained world – truly an irresistible force. And just as the report is broad and sweeping in its scope in describing these issues, so too are its suggestions as to how current agriculture and food production systems must be transformed to address them. In short it is argued that food production from animals, and particularly ruminants, should be greatly curtailed, and production of plant foods (grain, legumes,

nuts, tubers, fruits and vegetables) expanded to form the bulk of our diet. The justification for these radical proposals comes not just from the urgency of addressing environmental issues, but also two further areas of science reviewed in the report. Firstly the overall environmental impact of different types of food production (i.e. meat, dairy, eggs, fish, nuts and legumes etc.) are assessed in terms of greenhouse gas emissions, land use, energy, acidification and eutrophication potential. Secondly, a detailed review and assessment of human nutrient requirements is presented. It's in this area in particular that the report has attracted some criticism.

There is certainly no argument that if individuals eat a balanced diet – balanced in the classic, nutritional definition that all nutrient requirements are met precisely with no excessive or inadequate nutrients intakes – their environmental impact will be lower than if they overconsume. And nutrient requirements can be met through almost limitless combinations of food types and amounts in the diet, with some combinations having a lower environmental impact than others. But the real issue is, how low can you go? Not so much in terms of what is the absolute minimum dietary intake of nutrients to avoid deficiency syndromes, but what is the minimum recommendation for dietary intakes so that almost all of the population's individuals are covered and will have adequate nutritional status. This is the immovable object, and there is limited agreement as to where exactly it sits.

I should, at this point, declare that I am not a climate change denier. Nor does my expertise extend to assessing climate change science. I have, however, personally conducted benchtop experiments which demonstrated that carbon-oxygen double bonds absorb in the infrared part of the spectrum. So, I'm convinced the climate warming effect is real. Likewise, I've limited expertise in nutrition, but I've got enough background to know that when it comes to nutrient requirements and how they should be met through

dietary advice and foods, it is not an exact science.

The *EAT-Lancet* report assessment of dietary requirements is extreme, particularly for nutrients derived from animals – that is animal derived protein. While the report concedes some animal protein can be included in the diet it suggests ranges of intake from zero, up to levels which are low relative to many dietary guidelines. Beef, lamb and pork is to be restricted to only 14g per day.

Not surprisingly this has attracted some criticism with some analyses<sup>2</sup> indicating that the report is essentially advocating a vegan diet which if followed to the letter would lead to significant dietary deficiencies of many micronutrients (vitamin B12, vitamin D, vitamin K, sodium, potassium, calcium and iron). Iron from red meat is particularly bioavailable being present as *haem*-iron. Those following vegan diets need to take great care in ensuring iron intakes are adequate. Likewise, the *EAT-Lancet* diet recommends very low levels of dairy foods (just 250ml per day of milk), so again, poor calcium status needs to be guarded against, should this extreme dietary pattern be followed.

Much of the criticism of the report has come from animal production sectors, which is understandable. They have a right to be concerned regarding the downplaying by the report of the importance of animal derived food products in diets, contrary to most dietary guidelines. Also, the report also pays scant recognition to the great variability in animal production systems failing to acknowledge, for example, the productive use by grazing of marginal land unsuitable for cropping. There is also no acknowledgement of the commitment being made by the animal production industries to improve their processes to have lower environmental impacts.

Some commentary<sup>3</sup> has also queried the potential bias of some contributing authors of the report on the basis of their long-term advocacy for vegetarian diets. Certainly, the report is very hard hitting. It fails to provide a clear grading of strength of

evidence supporting the very definitive statements made regarding the need for transforming the food system. To be fair, they acknowledge a degree of uncertainty in their predictions, but then claim sensitivity analyses have reduced their uncertainty to comfortable levels.

The real risk is that this report ultimately becomes a polemic. Careful reading reveals the influence of parties (such as the Auckland school of thought) infamous for their tactics in making extreme claims about the current food system and its detrimental effects on consumer health and the environment. And indeed some of the suggestions for specific actions are taken straight from their playbook such as "...restricting advertising of unhealthy, unsustainable foods...". A nice catch-all phrase which is unhelpful on dissection.

The launch of the *EAT-Lancet* report is not a one-off, but rather it is one of series of events planned to take place around the globe during 2019. The intent is to keep the debate alive, and push forward the views for the EAT Forum.<sup>4</sup> Certainly, the goals of the Forum are supportable but even the most sympathetic observer would agree that calls for coordinated global action in the critical area of sustainability must be devoid of partisan views.

Evidence is paramount and whilst the links between environmental sustainability, food production systems and human nutritional requirements are clearly strong, care must be taken not to distort the scientific evidence in one area to achieve desired outcomes in the others. Readers of the report will judge for themselves whether this fundamental principle has been met.

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3. <https://www.nutritioncoalition.us/news/eatlancet-report-one-sided>
4. <https://eatforum.org/about/who-we-are/>

*Dr Geoffrey Annison is Deputy Chief Executive at the Australian Food & Grocery Council and Professional Member of AIFST.*





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# IS FOOD SAFETY A MYTH?

Words by Deon Mahoney

Consumers often take the microbiological safety of our food supply for granted based on the tacit expectation that all food should be safe. Therefore, when an incident of foodborne illness occurs, Australian consumers are unforgiving, particularly if young children are involved.

Aside from the burden of illness, food safety incidents usually result in costly recalls, which negatively affect brand reputation, impact consumer trust, and damage the reputation of our food products in export markets.

In recent years there has been a worrying increase in the incidence of selected foodborne illnesses in

Australia.<sup>1</sup> *Campylobacter* is the most commonly notified cause of gastroenteritis in Australia, with a 13 per cent increase in foodborne *campylobacteriosis* infections over the ten-year period to 2010. The incidence of foodborne salmonellosis in Australia is one of the highest in the industrialised world, with 39,600 annual foodborne infections in 2010.

Overseas data also demonstrates that the rates of foodborne illness are not declining, despite the development of a host of risk-based interventions. We now have more stringent food laws and regulations, enhanced food control systems, increased surveillance and regulatory

oversight, and improvements in processing and testing technologies.

In Australia, recent incidents of illness associated with lettuce, eggs, and rockmelons have highlighted problems along the entire food supply chain. This includes our inability to effectively control pathogens in the primary production environment for horticultural products, and challenges with controlling pathogens during food processing and preparation. There is also evidence that the food service sector and consumers are not taking sufficient care with perishable, high-risk foods. The practices of the food service sector have been identified as key factors in recent



*Salmonella* outbreaks linked to eggs.

The significance of the problem resulted in the Australia and New Zealand Ministerial Forum on Food Regulation endorsing Australia's Foodborne Illness Reduction Strategy 2018-2021+<sup>2</sup> with the goal of reducing the number of food-related human cases of *campylobacteriosis* and *salmonellosis*.

But there are numerous other pathogens, such as pathogenic *E. coli* and *Listeria monocytogenes* that may be transmitted by food, and it would be unwise to ignore the risk they present.

Some of the solutions necessary to reduce the burden of foodborne illness are simple. These include:

- more effective control of inputs on farm, and better environmental control including reducing exposure to pests and vermin to achieve safer primary production outputs
- improvements in food safety

management during food processing and preparation to enhance product safety

- improving food hygiene in the home to reduce the exposure of consumers to unsafe food.

A key feature for the food processing sector is shifting the mindset from managing food safety for compliance reasons, to managing food safety to protect consumers. The bonus is improved food quality and greater efficiencies.

Much has been written about food safety culture, but how do you assess it and does it overcomplicate matters? The food processors that get it right genuinely demonstrate management's commitment to producing safe food and then back it up with the physical resources and competent, properly trained personnel responsible for making it happen. It's not that complicated, but the prerequisite is a desire to protect food safety.


A focus on enhancing the

knowledge and skills of personnel within the food industry is key to improving food safety. This requires development of relevant, succinct guidance and educational materials tailored for different target audiences: primary producers, processors, the food service sector, and consumers.

Importantly, a better understanding of foodborne hazards by both food businesses and consumers would lead to real improvements in food handling behaviours and a reduction in the burden of foodborne illness.

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*Deon Mahoney is food safety advisor at DeonMahoneyConsulting.* 



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# A TARGETED SHIFT TOWARDS SUSTAINABLE PACKAGING

Words by Nerida Kelton



In September 2018 Australia's 2025 National Packaging Targets were announced at a milestone industry event convened by the Australian Packaging Covenant Organisation (APCO). These targets build on commitments made on 27 April 2018 by Commonwealth, state and territory environment ministers and the President of the Australian Local Government Association to set a sustainable path for Australia's recyclable waste.

The 2025 National Packaging Targets are:

- 100% of all Australia's packaging will be reusable, recyclable or compostable by 2025 or earlier.
- 70% of Australia's plastic packaging will be recycled or composted by 2025.
- 30% average recycled content will be included across all packaging by 2025.
- Problematic and unnecessary

single-use plastic packaging will be phased out through design, innovation or introduction of alternatives.

With 2025 only six years away now is the time for businesses to stop and re-evaluate current packaging designs and formats and develop a structured plan to ensure that all packaging adheres to the sustainable targets.

As the peak professional body for packaging education and training in Australasia the Australian Institute of Packaging (AIP) is often asked to provide a list of the exact substrates and materials that should be selected for every product on the market to meet the sustainable packaging targets. The answer unfortunately is never that simple. When re-designing packaging, businesses need to make sure that teams are fully-informed and able to truly measure the reasons behind decisions made. It's recommended that businesses gather

as much data as possible to be able to manage all expectations across a business and supply chain.

AIP often reminds packaging technologists and designers that the true role of packaging is its functionality. First and foremost, packaging is designed to ensure that a product is protected all the way across the supply chain until it is purchased by the consumer. This includes the vital role that packaging plays in ensuring the health and safety of products and consumers, that product waste is kept to a minimum and the efficiency of the packaging in withstanding the rigors of transport.

The functionality of packaging cannot be ignored when re-designing packaging to meet the Sustainability targets. 'Sustainable Packaging', in the simplest of terms, is packaging that performs the primary role of functionality but is also designed with



the lowest possible environmental impact when compared to an existing or conventional pack. Finding the balance between functionality, commercial reality, consumer demands, and environmental criteria is the real challenge.

### Existing Packaging

For existing packaging businesses need to question what is the purpose of the packaging currently being used. They then need to re-evaluate whether the packaging can be improved and altered to either be reduced, reused or recycled. Businesses should challenge their design process and start incorporating the 2025 targets in all packaging decisions, for example re-designing on-pack communication to demonstrate the changes and enable customers to better understand what is being done to adhere to the 2025 targets. When reviewing conventional packaging businesses should look at whether the materials currently being using are right for Sustainable Packaging and consider alternatives.

### New Product Development

For all New Product Development (NPD), incorporating Sustainable Packaging Design from the beginning will be a much easier process and this should ultimately become a fundamental part of packaging design. NPD is the perfect time to focus on the number one waste management hierarchy item of REDUCE. Businesses should look at what they can do to reduce packaging before it is even designed and manufactured, whether they're doing everything in their power to reduce as much packaging as possible from primary, secondary and tertiary products.

### Lifecycle Assessment Tools and Lifecycle Thinking

Incorporating Lifecycle Assessment (LCA) Tools into NPD process should be a consideration as LCA quantifies the environmental burdens associated with a product over its entire lifecycle, from production of the raw

material to disposal at End-of-Life (as defined by INCPEN). Using LCA tools provides insight and better understanding of how to include Lifecycle Thinking into packaging design processes and will help achieve the 2025 targets. Lifecycle Thinking also enables businesses to determine whether changes will have a greater or lesser environmental impact on other parts of their supply chain for example within transport, storage or disposal.

### Understanding Recycling Facility Capabilities

AIP also recommends that businesses look at the End of Life (EoL) of their product, or the expected disposal options for packaging when the consumer has removed the product. APCO has developed the Packaging Recyclability Evaluation Portal (PREP), which provides information to ensure that businesses are selecting the most appropriate packaging substrates that will actually be able to be reused, recycled or repurposed. The PREP tool is the starting point for the application of the new Australasian Recycle Label (ARL), which provides helpful and consistent on-pack information to the consumer on correctly disposing of the packaging items.

All manufacturers and their packaging teams have a responsibility to better understand the current recycling facilities and capabilities in this country, and those into which businesses may export products, and ensure that packaging is able to be sorted and processed through these systems.

A useful exercise is to take designers, marketers and agencies to local Material Recycling Facilities (MRF) to see what happens to the packaging collected at kerbside. Manufacturers can also arrange with suppliers to visit paper, glass or plastics recycling facilities or review the RED Cycle program for soft plastics to really get a true view of what happens to packaging at the End-of-Life.



### Auditing Supply Chain Partners

It's possible a business might manufacture a new product with primary packaging that has been re-designed to meet the sustainable packaging targets only to find out Supply Chain partners are incorporating non-recyclable materials in secondary and tertiary packaging. AIP urges businesses to review and audit their entire packaging supply chains and investigate whether partners are working towards the same 2025 targets and if not, ask why?

There are so many more decision points that need to be discussed when re-designing packaging to meet the 2025 Sustainable targets than those covered here. A recommended starting point is to contact the Australian Packaging Covenant Organisation (APCO) who are tasked by the Federal Government to ensure that the targets are achieved. APCO have developed information tools, checklists and guidelines on the sustainable packaging process and can help businesses optimise packaging to make more efficient use of resources and reduce environmental impact without compromising product quality and safety. Ultimately the goal is to achieve optimal outcomes for packaging functionality and to collectively meet the new 2025 National Packaging Targets.

*Nerida Kelton MAIP is executive director of the Australian Institute of Packaging (AIP) and ANZ Board Member of the World Packaging Organisation (WPO).*



# Dairy Manufacturers Working Together To Deliver Sustainable Production

Words by Ian Olmstead

For nearly a quarter of a century, the nation's major manufacturers have worked together as members of the Dairy Manufacturers Sustainability Council (DMSC) to advance state-of-the-art practices to maximise the environmental performance of the industry.

The biggest names in Aussie dairy have signed up to the DMSC, including Saputo Dairy Australia, Fonterra Australia, Bega Cheese Limited, Bulla Dairy Foods, Burra Foods, Lion Dairy and Drinks, Chobani Australia, Union Dairy Company,

Parmalat, Norco Cooperative and Brownes Dairy.<sup>1</sup>

These dairy manufacturers process up to 90 per cent of Australia's milk, and by working together they have demonstrated tangible progress towards reducing the resource and emissions intensity of their operations.

## Setting targets, measuring performance and communicating progress

The DMSC focuses on key issues such as greenhouse gas (GHG) emissions, water usage and waste-to-landfill intensity. From an industry-

wide sustainability framework developed by the Australian Dairy Industry Council in 2010, the DMSC took the lead in setting forward-looking industry-wide targets for the environmental sustainability of the dairy manufacturing sector. These 2020 targets include:

- Reduce waste to landfill intensity by 40 per cent;
- Reduce greenhouse gas emissions intensity by 30 per cent; and
- Reduce the consumptive water intensity by 20 per cent.

The DMSC's collaborative approach



allowed manufacturers to benchmark their own operations against industry best practice. This has led to an ability to communicate tangible outcomes for the manufacturing sector, and highlighted areas for further improvement.

The soon-to-be-released DMSC results for 2017/18 will show that in just seven years, the industry has almost halved its waste-to-landfill intensity. The manufacturing sector has also reduced its GHG emissions by more than 15 per cent, and increased its water intensity by more than six per cent.

### Sharing knowledge and addressing challenges

In a major effort to drive practise change throughout the sector, dairy manufacturers within the DMSC meet regularly to share knowledge on best practice and connect with new technologies and project funding opportunities to accelerate technology transfer.

Members also work together to identify evolving industry challenges, drawing on a collective voice and the support of Dairy Australia to respond to the challenges facing the industry.

By promoting best practice initiatives, the group delivers valuable commercial outcomes and works to influence the transfer of key skills and knowledge into the industry, while also guiding research activity.

### Driving change on sustainable packaging

Dairy manufacturers are also taking concrete steps to provide leadership on packaging. The DMSC has led an industry working group on sustainable packaging, demonstrating the group's ability to mobilise around a critical issue.

The initiative will enable the dairy industry to respond to changing consumer expectations, set the agenda, and move quickly on funding and government support. In addition to aligning itself with federal

packaging targets and developing an annual reporting structure, the working group is exploring the development of dairy-specific sustainable packaging guidelines.

The guidelines will provide insight into how packaging can be better designed to ensure it is correctly sorted at Australia's waste management facilities. The working group is also investigating harmonised labelling to better communicate how consumers sort their packaging waste, such as the Australasian Recycling Label system.

The DMSC's seventh scorecard, which will report on performance across 2017/2018 is set to be released by end of April 2019.

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1. Associate Members include EPA Victoria, Isle Utilities, Carbonetix, ABB Australia and GHD.

*Ian Olmstead is the Manufacturing and Sustainability Program Manager at Dairy Australia. He manages the DMSC on behalf of its members.*

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# Promoting Sustainable Australian Fish And Seafood

Words by Nicole Senior and Carolyn Stewardson

Seafood is a nutritionally important food and an inherent part of Australian eating culture. However, consumers are often unsure which seafood to eat. This is for a range of reasons, including not knowing enough about the defining features of differing species or how to prepare and cook them, as well as concerns about sustainability.

Fortunately, fisheries in Australia are focussed on ensuring ongoing

sustainability of our seafood supplies. The Fisheries Research and Development Corporation (FRDC) invests in research and development (R&D) related to fishing and aquaculture providing a knowledge resource covering a range of fishing and aquaculture issues for the public, industry and government. It is now investing in consumer education via Australian health and food science professionals to support clients and communities to eat the

recommended amounts of seafood and encourage them to choose Australian sustainable seafood.

## Seafood supply in Australia

Australia produces an amazingly diverse range of seafood. Underpinning this production is a fisheries management system that is rated among the top four worldwide. The Australian Bureau of Agricultural and Resource Economics (ABARES) has reported that Australians





consume around 16 kg per person per year. Domestic supply is 236,803 tonnes – made up of 166,022 from wild catch fisheries and 93,965 from aquaculture.

Despite Australia's good management and diverse range of species, the reality is our production is actually very small. This means the majority (70-75%) of seafood we eat is imported, made up of mostly frozen fish fillets and prawns and canned seafood. There is significant room to increase our consumption of local catch, both from growing aquaculture production and better utilising our wild fisheries.

### **Seafood and health**

Seafood, including fish is a nutritious core food providing quality protein,

omega-3 long chain fatty acids, selenium, zinc and vitamins A and D. It is a major source of iodine in the Australian diet (especially saltwater species), an excellent source of fluoride, and fish with edible bones contribute significant amounts of calcium.

From a health perspective, there are many reasons to recommend regular seafood consumption. The most common is a reduced risk of cardiovascular disease but including seafood regularly is also associated with healthier ageing and longevity, better pregnancy and birth outcomes and reduced risk of depression, type 2 diabetes and some cancers. International guidelines consistently recommend consumption of at least two fish meals each week.

### **Seafood consumption**

It is a public health challenge to increase seafood consumption across the population, and especially in socially disadvantaged groups.

The Dietary Guidelines for Australians recommend including around two serves of fish or seafood a week, which is around 230g raw/200g cooked. The most recent survey of consumption by the Australian Bureau of Statistics (ABS) shows most Australians don't eat near that amount. In fact, as a nation the National Health and Medical Research Council (NHMRC) says we need to increase our seafood consumption by 40% to meet recommendations.

### **How do we lift seafood consumption?**

Australian research has found the leading drivers of seafood consumption are health, taste and convenience. The main barriers are price, availability, concerns about quality and a lack of confidence in selecting and preparing seafood (Christenson JK *et al* 2016). Socio-economic status (SES) also plays a role; people of higher SES are more likely to eat seafood and consume species with higher omega-3 fat levels (Farmery *et al* 2018).

### **Is there enough seafood to support recommendations?**

According to the *EAT-Lancet Commission on healthy diets from sustainable food systems* (Willett *et al* 2019), 196g seafood per person a week is globally sustainable – roughly equivalent to the two serves a week widely recommended (200g). Its healthy reference diet for an intake of 2500 kcal/10,500kJ per day includes 28g of seafood a day, with a range of 0-100g to account for regions without access to seafood and higher amounts for added health benefits.

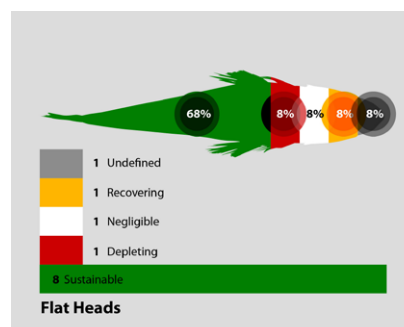
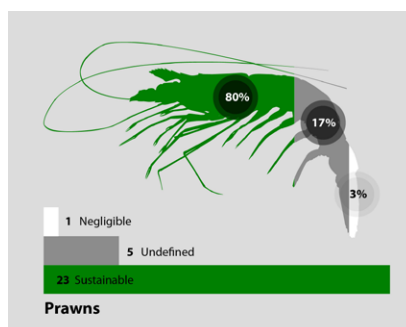
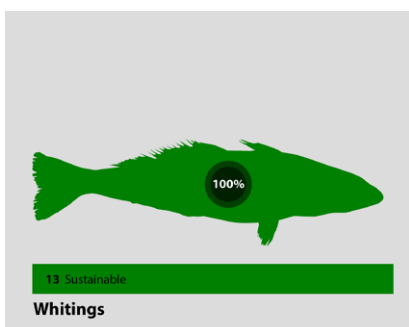
### **What is seafood sustainability?**

There is no singularly agreed definition of seafood sustainability. However, at its simplest, sustainability means to be able to continue



## Stock status classifications used in the FRDC Status of Australian Fish Stocks (SAFS) reports

DESCRIPTION		POTENTIAL IMPLICATIONS FOR MANAGEMENT OF THE STOCK
	SUSTAINABLE	Fish stock size (biomass) is above a minimum level (limit reference point) for the stock, and fishing pressure is adequately controlled (there is no overfishing)
	DEPLETING	Fish stock size is above a minimum level (limit reference point) for the stock, but fishing pressure is too high
	RECOVERING	Fish stock size is too low but fishing pressure is adequately controlled and stock is recovering
	DEPLETED	Fish stock size is too low and fishing pressure too high, or fishing pressure has been reduced but recovery not yet detected
	UNDEFINED	Not enough information available to make a reliable assessment
	NEGLIGIBLE	Catches are so low as to be considered negligible



production into the future at a rate that the environment can replenish the system, while having limited negative impacts on the environment.

The FRDC, with stakeholders that included fishers, government and environmental groups, agreed to a common set of definitions for ecologically sustainable wild seafood. Its framework looked at ensuring impacts across five key elements were at acceptable levels. These are: target and by-product species, bycatch species, threatened, endangered and protected species, aquatic habitat, and aquatic ecosystems. Of course, not all of these apply to aquaculture production. However, similar principles still apply around environmental

impact, further aquaculture operations look at animal health and welfare.

### Australian fisheries are being managed sustainably

Every two years the FRDC produces Status of Australian Fish Stocks (SAFS) reports, to assess sustainability of our fish supply. The reports look at whether there are enough fish to meet current and future needs and are based on a consistent national reporting framework developed by fisheries scientists across Australia. They bring together all the available information on Australia's key wild catch fish stocks and give a rating (and colour) to each species.

The 2018 SAFS report is the largest

and most comprehensive report on the sustainability of Australia's fish stocks ever undertaken. The report shows the majority of assessed stocks are sustainable – 85% were sustainable or recovering. Species assessed as sustainable include all five prawn species, all four lobster species, and all five whiting species. Southern Bluefin Tuna is now rated as recovering from depleted. Only seven per cent of stocks are overfished and management plans are in place to rebuild the stocks.

The sustainability status of a seafood species can vary state by state, therefore ensure you check the data is relevant to your location or the source of the catch. The latest



SAFS report is available at [fish.gov.au](http://fish.gov.au) and the FRDC has also created a phone app for easy reference. The SAFS Sustainable Fish Stocks app is available from the App Store and Google Play.

### What about Aquaculture

Over 40 species of seafood are commercially farmed in Australia, with Atlantic salmon making up the largest proportion at around 55% of total farmed volume. Other species include oysters, prawns, mussels, barramundi, silver perch and Murray cod.

Australian aquaculture is tightly regulated. The FRDC and key industry sectors have in place ongoing research programs to improve practices and sustainability. Like all forms of farming food production, they require constant monitoring to ensure best practice is maintained. One key area that is very important to aquaculture is water quality. Government monitors run off, algal blooms and discharge from farms –

all that can affect the environment and seafood production.

To reinforce their sustainability credential Australia's major aquaculture companies have sought to have their farms certified by independent third party certification – this includes Aquaculture Stewardship Council (ASC), Best Aquaculture Practice and Global G.A.P. (Good Agricultural Practices). The World Wildlife Fund (WWF) reports 61% of the Australian salmon market is now ASC certified.

### New resources for health professionals

In 2018 the FRDC commissioned resources to better equip health professionals to support their clients and communities to eat the recommended amounts of seafood and encourage them to choose Australian sustainable seafood. These are also useful for food industry professionals. The suite of resources includes an evidence review of seafood and health, an online

brochure and a collection of family-friendly recipes using Australian sustainable seafood species. The resources can be accessed at [www.fishfiles.com.au](http://www.fishfiles.com.au)

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*Nicole Senior is an Accredited Practising Dietitian (APD) and principal consultant at Professional Nutrition Services, Sydney NSW. Carolyn Stewardson is a research portfolio manager at Fisheries Research and Development Corporation (FRDC), Canberra ACT.*







# Animal Welfare For A Sustainable Future

Words by Hope Bertram

**T**he welfare of animals farmed for food is more important than ever to the Australian public. Research from Futureye, commissioned by the Department of Agriculture and Water Resources, Australia's Shifting Mindset on Farm Animal Welfare, reported that 95 per cent of Australians are concerned about farm animal welfare and 91 per cent want at least some reform to address it.

With millions of animals on farms every day across the country, and many of these animals farmed in conditions that the public has expressed concern about, it's clear that farming industries have to address these issues in order to maintain future public support to ensure they continue to have a 'social licence to operate'.

## Drivers towards a cage-free future

On average, Australians are eating over 16 million eggs a day and consumption is on the rise. However, more than 10.7 million egg-laying hens in Australia are housed for their entire life in barren battery cages, unable to carry out natural behaviours such as stretching and flapping their wings, perching, or laying their eggs in a nest.

With three in four Australians concerned about the housing of hens in battery cages, it's clear why cage eggs are appearing less and less on supermarket shelves and the biggest users of eggs in food service and manufacturing are switching to cage free.

While cage-free egg production is steadily increasing in response to

community demand, the number of hens in battery cages hasn't reduced significantly. Out of the 20 million hens on farms across the country, the majority are still farmed in cage systems.

Last year, a record-breaking 165,000 individuals made submissions to the Federal Government to support an end to battery cages. With the Australian public and businesses increasingly demanding eggs from cage-free farming systems, it's hard to understand how the egg industry can continue to support the use of battery cages.

Barn-laid eggs and free-range eggs are good alternatives to cage eggs that, together, can meet both the demand for eggs and provide good welfare for birds.



Food service and manufacturing uses around half of Australia's total egg production and with the price sensitivities faced by many in this sector, barn-laid eggs can be a viable option. Companies including McDonald's and Hungry Jacks demonstrate that you can have a successful and profitable business based on good animal welfare. Industry can support farmers into the future by supporting the growth of barn systems, where hens can move freely, lay their eggs in a nest and have suitable flooring for natural hen behaviours, such as dust bathing.

### **Paying a fair price for chicken**

Chicken is the most popular meat in Australia with Australians each eating an average of 47kg a year, estimated to rise to 49kg by 2020. With an increasing consumption comes increased demand on farmers.

Most chickens in Australia are raised in large, environmentally-controlled sheds. Birds can move around and because of the significant uptake of the RSPCA Approved Farming Scheme Standards within the meat chicken industry, most Australian chickens now live in more welfare-friendly conditions than chickens farmed overseas.

The RSPCA's standards means chickens have an environment where they are encouraged to be active during the day and are able to rest properly every night. The environment has adequate light and dark periods, perches, and good quality litter covering the floor, which helps birds build muscles in their legs which is very important as they grow and put on weight.

Meeting the RSPCA's standards comes at a significant cost to farmers though and in order to ensure Australian chickens continue to be raised in conditions that provide for their wellbeing, consumers need to be prepared to support higher welfare and pay a fair price for it. This means good consumer promotion is essential.

### **Increasing awareness about pork**

The Australian pig industry has improved pig welfare over the last few



years by voluntarily phasing out sow stalls. However, there are still around 20% of farmers keeping pregnant sows in these narrow metal crates, and the majority of the industry is still using farrowing crates for the period when sows are giving birth until their piglets are weaned.

Consumer understanding of pork production is growing, and with that will come demand for higher welfare pork. Labels like 'sow stall free' show a positive first step to improving welfare, but are increasingly being disputed by consumers as 'not enough'. The same consumers who have driven demand for higher welfare eggs and chicken, are likely to push for similar reforms of the pig industry.

Without sufficient space, and an environment that encourages pigs to express their natural behaviours, pigs can become bored and aggressive towards each other.

### **Keeping seafood ethical**

Aquaculture is seen as a necessary alternative to a global and domestic decline in wild-caught fish. As the demand for seafood increases and the industry ultimately expands, aquaculture must remain an ethical choice for the consumer in order to be sustainable. As part of being an ethical industry, consumer expectations around animal welfare must be recognised as a priority by producers, brands and retailers, especially as consumer awareness about fish welfare grows.

Consumer demand for humanely farmed seafood overseas led to key Australian industry stakeholders

expressing interest in having standards for farmed Atlantic salmon as part of the RSPCA Approved Farming Scheme. With a focus on the health, diet, environment and handling of fish, the release of these standards gives Australian Atlantic salmon producers the means to work towards offering consumers a product that has been raised with consideration of animal welfare.

### **Dining out**

Three in four Australians believe it's important that the meat, eggs and dairy being served at cafes and restaurants are sourced from animals that are farmed humanely. In addition, there's an increasing trend of customers asking whether the eggs are cage free, when ordering eggs at a café or restaurant. It's easy to see how, as awareness grows in the community, other higher welfare products will also become more sought after for customers when eating out.

### **Guiding consumer choice**

Committing to good animal welfare across the supply chain simply makes good business sense. The RSPCA Approved logo has also become a key influencer in determining product choice. As demand for higher welfare products grows, reliable and independent accreditation is a valuable point of difference and will determine whether brands are going to be sustainable into the future.

*Hope Bertram is Humane Food Manager at RSPCA Australia.*





# The Basics Of Allergen Management

Words by Rob Sherlock

Food allergy is a significant concern for the entire food chain, whether you are an ingredient supplier, producer, retailer or food service provider. But it is not a new issue. The requirement for mandatory declaration of food allergens has been in place in Australia and New Zealand since 2000 and a number of useful tools have been developed to assist in allergen management through the Allergen Bureau, FSANZ and AFGC.

Despite these tools, there are

still risks for both the food industry and consumers. The practical application of allergen management in manufacturing can be complex. In order to allocate resources appropriately and set up systems that will reduce risk, a clear view of the actual risks that are impacting on the food industry and reducing consumer confidence is required.

A review of recent allergen recalls provides insight regarding the issues experienced by the food industry, challenging some of our assumptions

regarding allergen management.

In 2018 Australia had the highest number of allergen related recalls since 2009. Allergen issues constitute 39 per cent of all recalls during the last ten years.<sup>1</sup> But like all statistics, a superficial look at the data may lead to some flawed conclusions. In the last 10 years undeclared milk has been the most common allergen-related recall, with peanut rating second. While this may superficially indicate control of these two allergens is the most difficult,



it is more likely that the number of recalls associated with these allergens is due to increased regulatory surveillance triggered by specific issues, including a spike in recalls for milk in coconut-based products in 2015.

In mid-2016 FSANZ began expanding their collation of recall information providing a clearer picture of the root causes of allergen recalls. While that process continues to be refined, there are some initial findings which are useful for us to consider.<sup>2</sup> Four categories of issues were identified in the review of the data:

1. Lack of skills and knowledge;
2. Supplier verification issues;
3. Packaging errors; and
4. Cross contact.

Packaging errors and supplier verification were identified as the most significant identified root causes. Both of these issues sit in the area of good manufacturing practice and are not specifically associated with allergen risks. The requirement for mandatory allergen labelling has shifted what may have previously been considered a quality issue into the arena of food safety.

The focus on allergen management and control has consistently been on cross contact measures, however there is good evidence that, while this continues to be a crucial issue, other factors are also at play.

Recently in New Zealand, there are a number of recalls for milk in a range of dark chocolate-based products which appear to be linked to a single ingredient.<sup>3,4</sup> This clearly illustrates both the impact of supplier verification and the domino effect a single trigger can have for the broader industry.

While allergen matrices and cleaning schedules are essential for effective allergen management, and cross contact must be considered a significant contributor to allergen risk, control mechanisms are best when they are matched to the real risk. This includes time spent ensuring ingredients are correct, that there is open, informed communication between manufacturers and suppliers, and that stringent processing and labelling protocols are in place.

A focus on the basics of (i) know your ingredients, (ii) know your process and (iii) label your product appropriately may seem over-simplified but there are indications to suggest that it may be a useful and cost effective approach.

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*Rob Sherlock is a consultant with Sherlock Food Allergen Risk Management Pty Ltd.*



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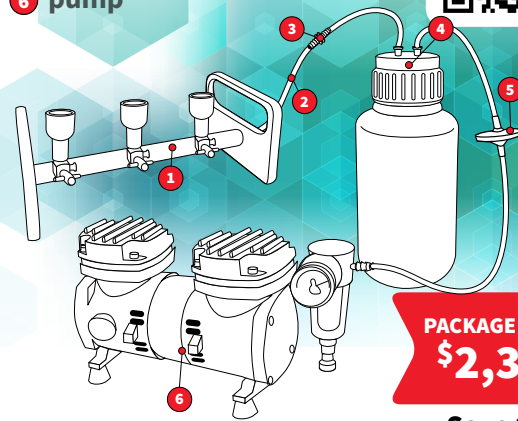


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REF:101

x/marketing/advertising/AIFST/101-AIFST.MAR 2019



# FOOD FILES

Words by Drs Russell Keast, Georgie Russell, Gie Liem and Robert Shellie

## A Consumer-driven Approach to Plant Breeding

In Australia, total fresh horticultural exports were valued at \$2 billion in 2016/17, with over 60% going to Asia. The value of production of all fresh Horticulture in Australia was \$12.9 billion, making this sector very important economically for Australia. For this sector to continue to grow and thrive into the future it needs to meet the changing desires of consumers. One technique that has been successfully used is preference mapping.

Preference mapping techniques are commonly applied to consumer

research, to assist in linking consumer preferences to the sensory profiles of products, thus ensuring an accurate depiction of the characteristics linked to consumer liking. This multivariate statistical approach, via internal and external preference mapping, accounts for differences between individual consumers, by either relating sensory profile information to consumer data, or relating consumer data to product sensory profiles and they have been shown to provide a well-rounded understanding of the attributes driving consumer liking.

A group from Canada (Bowen *et al*, 2019) applied external preference

mapping to an apple breeding program to establish new varieties of apples to meet the needs of consumers. The first step was to assemble a descriptive analysis panel, which over 16 hours of training developed a lexicon of 18 attributes for aroma, taste, and texture to describe an objective description of  $n=78$  apple varieties over two years. To determine consumer acceptance of apples, hedonic testing using  $n=219$  regular apple consumers was conducted on a subset of  $n=19$  apple varieties, including varieties that were commercially successful. Consumer acceptability is an important aspect of





product research and development, fundamental in gauging the likelihood of a product's acceptance or rejection by the public. After the two sets of data are collected, preference maps can be created, essentially a sensory and preference space that can be used to predict liking of new varieties of apples. The information generated is linked with conventional plant breeding programs to develop new varieties which consumers will like.

The authors state that although the research was multi-year and laborious, it yielded an invaluable, robust tool for the consumer-led apple breeding program.



*Bowen A et al. External Preference mapping: A guide for a consumer-driven approach to apple breeding. Journal of Sensory Studies 2019 34 e12472*

### Children and Vegetables

For some parents this combination sounds like sourness and coffee. But a recently published study in the journal *Food Quality and Preference*, by CASS researchers, suggests that children and vegetables can be a peaceful combination as long as you take the size of the pieces and some distraction in mind.

The key to children's vegetable consumption is firstly increasing accessibility and secondly making it a habit, rather than a big deal. Although many parents are aware of the health properties of vegetables, they are still mainly served during evening dinners. However, vegetables can be an ideal snack and children might consume them without even thinking about it.

In 2017, CASS researchers discovered that serving children carrots whole, rather than diced, could increase vegetable consumption by about 10% (Goh et al 2017). This study, although promising, was however carried out in a classroom where an adult was closely watching what the child ate.

In a new study, 60 primary school aged children were taken to a cinema to watch two movies with one week in between (Liem & Russell, 2019). They were randomly allocated a box of whole carrots on one day

and diced carrots on the other day. Children were free to eat as much, or as little, as they liked while they were enjoying the movie. Without any incentive or force, children happily ate around two servings of vegetables while they were watching the movie. This is almost 50 per cent of recommended daily vegetable intake for children. Interestingly, the day children were served whole carrots, they consumed 50 per cent more carrots than when they were served the same carrots diced. This not only replicated earlier findings, it also shows that a vegetable like a carrot may well be an alternative for your regular movie snack food. For sure it is very likely that if children were to be given a choice between salty popcorn and carrots, most of the children will choose popcorn. However, when children are not given a choice, they seem to be happy to munch on carrots and still enjoy the movie. This study again emphasises that with some clever (sensory marketing) tricks, children and vegetables can feel like coffee and cream.

*Liem DG, Russell GC. Supersize me. Serving carrots whole versus diced influences children's. Food Quality and Preference 74 (2019) 30-37*

### Sustainability in the flavour industry

Although the flavour industry pride itself on its sustainable laboratory practices, helium carrier gas (He) for GC-MS continues to be used in

flavour analysis laboratories, including ours at Deakin's Centre of Advanced Sensory Science. Recently, the European Chemical Society published the 90 natural elements that make up the periodic table, colour coded to show how vulnerable they are to dissipation.<sup>1</sup> H is noted as one of the three elements, along with silver (Ag) and strontium (Sr), most under threat. To reduce our impact on the planet, an alternative to helium needs to be found.

To this end, we recognise two possibilities. We already have a hydrogen generator and use H<sub>2</sub> for GC-FID analysis, both as a carrier gas and as a detector fuel. Like many people we are a little nervous about switching to H<sub>2</sub> for GC-MS. Our concern is two-fold, first from a safety aspect – even though modern instruments have countless inbuilt safety features, we are opting for an absolute safety-first approach and


wish to eliminate this risk altogether. The second aspect is linked to reactivity in the MS ion source.

Our choice is nitrogen. Until now we have ignored nitrogen as a carrier gas candidate because, as all the textbooks have taught us, analysis time is far too long using N<sub>2</sub> as a carrier gas. However, de Zeeuw and Cochran<sup>2</sup> showed there is a way to harness the economical and sustainability benefits of N<sub>2</sub> carrier gas without increasing analysis time compared to existing methods using He carrier gas. By using a shorter and narrower capillary column with a carefully selected stationary phase thickness, the same researchers showed it is possible to achieve identical separation in terms of retention times and resolution compared to existing laboratory methods. They illustrated this by analysing a fragrance mixture using a 30 m x 0.25 mm capillary column (1.4

mL/min He carrier gas) and a 20.2 m x 0.15 mm capillary column (0.36 mL/min N<sub>2</sub> carrier gas). Separation, void time, and analysis times were identical across chromatograms acquired using these two sets of conditions. Moreover, the temperature program conditions used were identical, so translation from non-renewable He to renewable N<sub>2</sub> was reported to be a breeze.

<https://www.euchems.eu/element-scarcity-displayed-in-new-euchems-periodic-table-of-elements/>

J. de Zeeuw & J. Cochran 2015, "Changing from Helium and Nitrogen While Maintaining Separation Efficiency and Analysis Time", LC-GC, vol. 11, no. 19

Drs Russell Keast, Georgie Russell, Gie Liem and Robert Shellie are from The Centre for Advanced Sensory Science, School of Exercise and Nutrition Sciences at Deakin University. 



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# FAST 5



## What inspired you to study Food and Nutrition Science?

*Ashna:* We've both worked as chefs and are passionate about food. Working in the food industry, I found that I was often told to not ask questions about how things were done, to "just do it". But I wanted to know the scientific answers behind my questions.

## Do working in the food industry and studying food and nutrition science complement each other?

*Leonardo:* Studying gives me tools for the workplace and means I'm able to work more efficiently and effectively.

*Ashna:* Working in the industry gives me first-hand experience of how the industry works. I love the fact that I can work in the food industry and study at the same time. There are many transferable skills.

## What's your view on sustainability's place within food and nutrition science?

*Ashna:* This year a compulsory sustainability unit was introduced as part of the food and nutrition science course. This is great because everyone is talking about sustainable food.

*Leonardo:* Given the planet's current circumstances, sustainability is very

## Leonardo Bohorquez

Leonardo Bohorquez is a food lover and experienced chef. He has over 10-years' experience in hospitality and has worked with chefs such as George Calombaris and Shane Delia.

**Ashna Gobin** has a passion for product development and alongside her studies works as a Specification Administrator at Australian food supplier Simplot.

Both Leonardo and Ashna are half way through the three-year Bachelor of Food and Nutrition Science degree at Deakin University, Melbourne. *food australia* spoke to the pair about what inspires them, sustainability's place in the industry and where they look to head post-study.

important. The changes occurring, for example soil erosion, affect the way people are producing food, so we need to be more aware of sustainability especially in light of a growing world population.

## What area within the food and nutrition science space would you like to specialise in?

*Ashna:* I want to focus on product development and technology in the intersensory space. If food doesn't taste good, no one will buy it!

*Leonardo:* I also wish to move into product development because I enjoy the challenge and process of developing a new product. Last year we competed in and won the Macadamia Innovation Challenge 2018. We're proud of what we achieved and

even the judges were surprised and commented on the product, packaging and rationale.

## How does your involvement with AIFST contribute to your study and knowledge in the workplace?

*Ashna:* In first year of university you're just focused on trying to get things right. But then you realise what's also important is networking, which we've done through AIFST. AIFST has linked us up with industry.

*Leonardo:* AIFST is a great career tool many students should be using. It's one of the best ways to find a network in the industry you'll be in when you finish your degree and gives you a window into what innovations and companies are out there.

# Join AIFST today!

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The Australian Institute of Food Science and Technology (AIFST) is the only national independent voice and network for the nation's food industry professionals.

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## Australia and New Zealand 2019

**May 13-16 2019 The 3rd Food Allergen Management Symposium - FAMS 2019** State Library Victoria, Melbourne  
[allergenbureau.net/events-2](https://allergenbureau.net/events-2)

**May 24-26 2019 ACNEM 9th Science of Nutrition in Medicine Conference 2019** Pullman Melbourne on the Park, Melbourne  
<https://conference.acnem.org>

**June 24-26 2019 Hort Connections 2019** Melbourne Convention Centre, Melbourne, [www.hortconnections.com.au](http://www.hortconnections.com.au)

**July 1-2 2019 The AIFST Annual Convention 2019**  
Sydney International Convention Centre, Sydney  
<http://www.aifst.asn.au/events/2019-aifst-convention>

**July 2-4 2019 NZIFST Annual Conference** Christchurch, NZ  
<https://nzifst.org.nz/events/annual-conf.asp>

**July 28-30 2019 Creating New Lines in Manufacturing**  
Brisbane Convention & Exhibition Centre  
<https://foodtechqld.com.au>

**August 27-29 2019 69th Australasian Grain Science Conference**  
Rydges on Swanston, Carlton, Melbourne, Victoria

## International 2019

**May 10-11 2019 4th Global Food Security, Food Safety and Sustainability Conference** Montreal, Canada, <https://foodsecurity.conferenceseries.com>

**May 23 2019 International Conference on Food Science and Technology** Barcelona, Spain, [www.clytoconferences.com/international-conference-food-science-and-technology](http://www.clytoconferences.com/international-conference-food-science-and-technology)

**June 2-5 2019 IFT19 Feed Your Future** New Orleans, LA, [www.iftevent.org](http://www.iftevent.org)

**July 26-27 2019 The 7th International Conference on Nutrition in Medicine 2019** Grand Hyatt, Washington, D.C., [www.pcrm.org/icnm](http://www.pcrm.org/icnm)

**August 7-10 2019 Vietfood and Propack 2019** Saigon Exhibition & Convention Centre, HCMC, [www.hcm.foodexvietnam.com/en](http://www.hcm.foodexvietnam.com/en)

**September 23-26 2019 International Dairy Federation** Istanbul, Turkey, [www.fil-idf.org/event/idf-world-dairy-summit-2019-istanbul-turkey/](http://www.fil-idf.org/event/idf-world-dairy-summit-2019-istanbul-turkey/)

**September 25-26 2019 Vitafoods Asia** Sands Expo & Convention Centre, Marina Bay Sands, Singapore, [www.vitafoodsasia.com/en](http://www.vitafoodsasia.com/en)

**October 30-31 2019 29th World conference on Food and Beverages** London, UK, <https://foodandbeverages.foodtechconferences.com>



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