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australia

JANUARY/FEBRUARY 2017

Top 5 *food trends for* 2017



INSIDE
HOW TO DEAL WITH FOOD FRAUD AND THREATS
HOW TO DISRUPT YOUR OWN BUSINESS
REVOLUTIONISING THE BANANA INDUSTRY
TRANSFORMING THE FOOD SUPPLY CHAIN



Haven't renewed your membership for 2017? Get online now!

Membership renewals were due 31 December 2016! If you haven't yet renewed, there is still time!

To renew, visit our new website and follow the steps below. For any issues please contact us on 02 9394 8650.

Please note old website member codes and passwords need to be re-set on the new website.

STEP 1: Visit <https://www.aifst.asn.au>. Click on the "Login" button at the top right hand corner.

STEP 2: Select the tab marked "Request New Password". Everyone needs to re-set their password the first time they access the new website.

STEP 3: Enter your current email address on file with AIFST in the box below, and then click on the button that says "Email New Password".

STEP 4: Go to your email inbox where you will receive a "Replacement Login" email from AIFST. Within the email, click

on the website link or copy the URL into your browser. Please note this link is valid for one time use and remains current for 24 hours only. You can request a new password at any time through the website.

STEP 5: Enter a new password of your choice into the screen options, and then click on "Login". Please note that your passwords must match as confirmed on the screen.

STEP 6: Once the passwords have matched you will be logged into the AIFST website and redirected to your "My Portal" home page where you can start taking advantage of your member benefits!

STEP 7: In "My Portal" click on "Renew my membership" and follow the prompts. Payment can be made by Visa or Mastercard credit or debit card and American Express.

Please make sure you also update your membership details and interest areas as this will assist us to better communicate with you on areas of interest and relevance. 📞

CONTENTS

JANUARY/FEBRUARY 2017

regulars

- 4 Food for Thought
- 5 By the Numbers
- 6 Your Institute
- 12 The Pulse
- 46 Palate



16



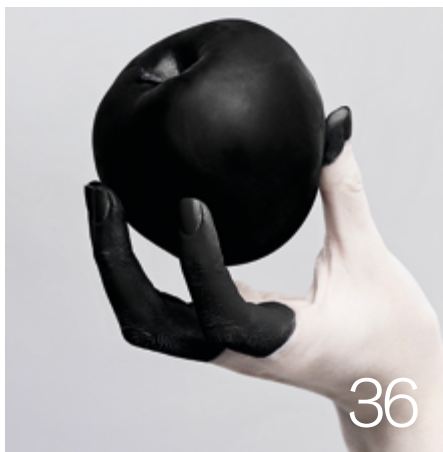
21



34



28



36



42

THE GRIST

- 16 **Why Our Kids Won't be Getting Vitamin D In Their Favourite Breakfast Cereals**
An abject failure of regulatory process – again.
- 18 **FSANZ Update**
Food Labels Survey + Keeping Food Safe + FSANZ Annual Report.

INDUSTRY INNOVATORS

- 20 **How To Disrupt Your Own Business**
Gourmet Garden Herbs & Spices Case Study.
- 21 **Going Global Together**
FIAL's Managing Director, Mirjana Prica, discusses the establishment of the Food and Agribusiness Industry Growth Centre.
- 22 **Banana Republic**
In Far North Queensland, a farmer made a startling discovery that is set to transform the banana industry.

YOUNG & HUNGRY

- 26 **AIFST Student Membership + AIFST Summer School + 2016 SPDC Winner Naomi Cutler + 2017 AIFST Student Awards**

FOOD FILES

- 28 **Top 5 Food Trends In 2017**
Plant-based diets + alternatives to sugar + sustainability + clean labels + snackification.
- 32 **If You Don't Like Hurting Animals, Why Do You Eat Them?**
Ugly food and waste + the meat paradox + the future of hops + link between liking and eating sweet food.
- 34 **From The Sea**
Salmon + Seaweed + Sustainability.

GLOBAL HUB

- 35 **Australians Prefer Sustainable Seafood**
New consumer data shows more Australians are opening their eyes, mouths and wallets to sustainable seafood.
- 36 **How To Deal With Food Fraud And Threats**
With increasing criminal attacks on the food industry, you need a plan to protect your customers and your reputation.

FARM TO FORK

- 40 **An Apple A Day**
With ample supply and low prices, now is the perfect time to explore alternative ways to use apples and pears.

FUTURE FOOD

- 42 **The Food Loss Bank**
A concept that could transform the food supply chain.

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FOOD FOR THOUGHT

What a wonderful year 2017 will be for AIFST as we celebrate our 50th Anniversary! This is a significant milestone for the Institute as we celebrate our key achievements over the past 50 years, and look to the next 50 years. If you can help us celebrate and share the story of AIFST via words or photographs, please drop us a line at aifst@aifst.com.au or phone us on 02 9394 8650 today!

As we recognise our 50th Anniversary, we will also focus on building for the next 50 years. Our priorities in 2016, in line with the 2016-2018 Strategic Plan, were on ensuring AIFST had strong foundations so we could better service members' needs and add new value moving forward.

In 2017 we will concentrate on growth and diversification to leverage the investments we made in 2016 to implement strategies to grow our membership, increase industry awareness of the Institute and deliver new services. As part of this growth and diversification focus, we will reposition some of our current Membership Services programs. For example, the current Continuing Professional Development (CPD) Program will be repositioned under a broader Education and Training offering tailored to provide more ways for members to maintain currency and skills. Communities of Interests networking events will also commence in early 2017.

A key focus for 2017 will be the 50th Anniversary Convention from 17–18 July at the International Convention Centre in Sydney. Co-located with foodpro, the Convention will bring together the largest grouping of Australia's food industry professionals to debate *The Future of Food* and conclude with the AIFST 50th Anniversary Gala Dinner. Registrations open in February 2017 on the AIFST website, with early bird registrations available until 1 May 2017 – so stay tuned!

We hope you enjoy the first issue of *food australia* for 2017 and I look forward to seeing you at our many activities throughout the year. 🍷

Georgie Aley
AIFST CEO





Feathers are Flying in the Chicken Wars

Forget milk. Forget bread. It's the war over roast chicken that really matters according to the latest findings from Roy Morgan Research. With nearly 85 per cent of Australians consuming chicken at least once a week, it's no wonder the battle of the roast chook is sending feathers flying!

But has the ready availability of cheap roasted chicken at our two major supermarkets had any impact on chicken fast food outlets? Are fewer people getting their roast chook from KFC, Red Rooster and the like, now that they can grab one when they're buying their groceries?



Roy Morgan data shows consistent, albeit moderate, year-on-year declines in visitation to fast food chicken outlets among the general population as well as Coles and Woolworths shoppers. The decline is evident for the main fast food chicken players – KFC and Red Rooster – as well as for the smaller chain Nando's.

The data also confirms the Australian Chicken Meat Federation's claim that our taste for chicken is insatiable. To survive in such a competitive market, marketers and retailers of roast chicken will increasingly need to keep up-to-date with consumers' dietary preferences and how these relate to their fast food and supermarket visitation, as well as their attitudes to food and health more generally.

Let's look at some of the numbers. ©



1

AIFST 50th Anniversary Awards

Applications are open for the 2017 AIFST Awards! Visit <https://www.aifst.asn.au> for all award guidelines and nomination forms.

Nominations close 13 April 2017.

Awards will be presented at the AIFST 50th Anniversary Convention.

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 JACK KEFFORD BEST PAPER AWARD

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

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 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 Bruce Chandler.

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.

For the list of awards for young members (students and young professionals), see page 27.

For further information phone 02 9394 8650 or email aifst@aifst.com.au or visit the new AIFST website at <https://www.aifst.asn.au>. @

SAVE THE DATE! AIFST 50TH ANNIVERSARY CONVENTION

2

17-18 JULY 2017

INTERNATIONAL CONVENTION CENTRE, SYDNEY

THEME: THE FUTURE OF FOOD

CONVENTION EARLY BIRD REGISTRATION OPENS IN FEBRUARY 2017!

Co-located with the premier **foodpro** exhibition, this not-to-miss event will bring together the largest grouping of Australia's food industry professionals in one location – the brand new International Convention Centre in Sydney. Early bird registration will open via the AIFST website in February 2017.

With the theme *The Future of Food*, there promises to be an exciting and prestigious line-up of speakers, with Bega Cheese Executive Director Barry Irvin and CSIRO Chief Executive Larry Marshall already confirmed to address delegates. Sessions will cover future consumer needs, who is the consumer of the future, export opportunities, insights into current scientific innovations, and research that will underpin the next 50 years of the Australian food industry. There will also be key sessions on food safety, regulations, sensory, cook chill, export and more!

Based on the success of the inaugural **Young Professionals Breakfast** in 2016, we will host a Breakfast for AIFST members aged 30 years and under to showcase the career opportunities available to emerging and recent graduates.

This year we will also host a **Fellows Networking Breakfast** for all Fellows attending the AIFST Convention, which will provide a great opportunity for our Institute leaders to catch up and network with each other along with recently appointed Fellows.

SPEAKING OPPORTUNITIES AVAILABLE!

Do you have the insights and answers to *The Future of Food*? If so, we would like to hear from you!

We are seeking case studies and cutting edge presentations capturing *The Future of Food* through emerging and new technologies, science and research. If your organisation has a cutting-edge product innovation, then let us know!

If you are interested in speaking at the Convention on *The Future of Food* and food innovation, phone 02 9394 8650 or email AIFST Marketing and Communications Manager Narelle Schuh: narelle.schuh@aifst.com.au.

PARTNER WITH US FOR THE 50TH CONVENTION!

Partnership opportunities are now available for companies wanting to support the historic AIFST 50th Anniversary Convention and extend their reach within the Australian food industry.

For more information regarding packages and to discuss ways your organisation would like to work with AIFST as part of the 50th Anniversary celebration, visit the new AIFST website at <https://www.aifst.asn.au> or contact AIFST General Manager –

Industry Services Sarah Hyland on 02 9394 8650 or email: sarah.hyland@aifst.com.au.

CO-LOCATED WITH FOODPRO

The 2017 **foodpro** exhibition will feature over 400 exhibitors representing hundreds of manufacturers from around the world and attract more than 10,000 qualified visitors. **foodpro** is Asia Pacific's iconic food manufacturing event that drives the Australian food processing industry forward. Held once every three years, **foodpro** is an opportunity to meet face-to-face with specialist suppliers from all over the world and compare an extensive range of ingredients, additives, testing equipment, packaging solutions, food processing machinery and technology all in one location. 📍



50TH ANNIVERSARY CONVENTION PARTNERS

Silver Partner:



Bronze Partner:



Partners:



3 A TRIBUTE TO GRAHAM FLEET

The AIFST Microbiology Community of Interest recently hosted a tribute to the late UNSW Emeritus Professor Graham Fleet, who was a well-respected colleague, educator, mentor and friend of many of the 45 attendees, which included family members. AIFST member Julian Cox gave the tribute for Professor Fleet, who held various positions at UNSW from the mid-1970s onwards. He made a huge contribution to yeast research, especially in the food and beverage sector. His seminal work on microbial ecology in fermentation systems in the 1980s and 90s provided a foundation on which many researchers have built their scientific careers. The tribute was followed by an evening of fermentation demonstrations and guided tasting sessions on the microbiology and biotechnology of three fermented commodities – cheese (Mohan Bhargava, Dairy Industry Solutions), wine (Peter Costello, Australian Wine Research Institute), and chocolate (Hugh Dircks, MARS Global Chocolate). 📍



Australian Export Grains Innovation Centre
Sydney Analytical and Technical Services



Industry training

North Ryde, Sydney

Fundamentals of Flour Milling 21-22 March, 2017

Fundamentals of Baking 28-29 March, 2017

Bookings: www.aegic.org.au

AEGIC Sydney was formerly known as the Bread Research Institute

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- Grain Analysis

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4

Recognising AIFST's 50th Anniversary in 2017

WORDS BY AIFST'S NARELLE SCHUH

FROM HUMBLE BEGINNINGS: 1949–1967

During WWII the food industry in Australia was called upon to co-operate closely with the United States' Armed Services. It came to appreciate the importance of "food technology" as an accumulated body of knowledge of food science and engineering for the solution not only of wartime problems, but for the general production and preservation of food. A greater appreciation of the value and necessity of continual research and improvement was also engendered.

The decades from 1950 to 1970 were exciting times in Australia with the population expanding rapidly, and food technology at the fore.

In 1949, nine men met in Sydney to discuss the possibility of forming a Section of the Institute of Food Technologists (IFT) as wartime experience and cutting across commercial competition had demonstrated the value of technical cooperation. One year later, small groups in Sydney and Melbourne joined to become the first overseas Section of the IFT. It was a meagre group of 23 who gathered in Wagga in 1952 for the first "independent Section" meeting. By March 1954, Australian membership of IFT had grown to 135.

At the 1966 Convention more than 70 per cent of the IFT members voted in favour of the formation of AIFST, meeting the need for food technologists to be recognised by the Commonwealth Government as an Australian entity and gaining financial support for international conferences. The Australian Institute of Food Science and Technology (AIFST) was formally established in April 1967 at the Institute's first annual Convention at the Victoria Hotel in Shepparton, Victoria, where a meeting of members unanimously adopted its Constitution. At its inauguration, AIFST had 435 members – 220 in what was known as the "Northern Branch" and 215 in the "Southern Branch".

In the pre-technological era, organisations such as the AIFST were crucial to the exchange of information long before the rise of computers and online information sharing platforms. There was a genuine desire to support and underpin members' contributions to their industry through networking, peer-to-peer learning, education, training and information sharing.

The Institute was formed with the following objectives still aligned with the objectives of AIFST today:

- ◆ To promote the standing, usefulness and welfare of the profession of food science and technology.
- ◆ To encourage education, investigation and research in all aspects of food science and technology.
- ◆ To secure members of the Institute the advantages of cooperation and unity of action.
- ◆ To hold meetings and conventions, to publish and issue publications, to provide facilities for the reading of papers and the delivery of lectures, and generally to encourage the acquisition and dissemination of useful information relating to food science and technology.
- ◆ To serve the public need for knowledge in food science and technology especially in relation to public health and nutrition and promote a better public understanding of the role and importance of the profession of food science and technology.

The first AIFST Council meeting was held on 19 April 1967, covering the formation of Membership and Executive Committees, the disposition of funds held by the former IFT Sections and the design of an Institute insignia.

We look forward to sharing 50 years of memories in *food australia* magazine throughout 2017 in the lead up to the 50th Anniversary Convention from 17–18 July 2017 and the 50th Anniversary Gala Dinner on 18 July 2017.

Stay tuned to *food australia* in 2017 as we celebrate the 50-year history of AIFST. @

HELP US CELEBRATE IN STYLE!

Do you have AIFST-related memories or photographs from the past 50 years? We'd love to hear from you!

If you would like to contribute your memory or photograph, please email aifst@aifst.com.au or phone 02 9394 8650.

Interview with AIFST Founding Member Peter Ernest Seale

Our longest-standing member, now aged 90, worked as Golden Circle's Chief Chemist from 1948–1988. He saw their productions expand from tinning 10,000 tonnes of pineapple per year to 130,000 tonnes alongside nearly 100 other products. Since his retirement, importation threats and cheaper canning facilities impacted Golden Circle, which was sold to Heinz in 2008.

HOW LONG HAVE YOU BEEN A MEMBER OF AIFST?

As a founding member of AIFST, I initially took interest back in 1949 when the Royal Show and Chemical Institute arranged lectures on food scientists organised by Dr Reuter. This was when it was discussed to initiate the Institute as a branch of the IFT. The limitations that would come with this collaboration meant that it would be far more beneficial to be independent and so AIFST was born in 1967. I have always been a member of AIFST and am a Retired Fellow member now.

DID YOU ATTEND THE FIRST CONVENTION HELD IN 1967 AND OTHER CONVENTIONS?

Yes, and I received the Award of Merit in 1967. I have attended many annual Conventions over the years.

WHAT MEMORIES WOULD YOU LIKE TO SHARE WITH OTHER MEMBERS?

I organised the AIFST QLD Branch and hosted the first annual meeting for QLD in Surfers Paradise in 1970. This was a bold venture, as they didn't think many would travel so far, but it turned out to be a great success! It really is remarkable to see the growth and professionalism of the institute – it was all originally voluntary. You couldn't visualise this growth.

HOW HAS AIFST HELPED YOU IN YOUR CAREER AND PERSONAL DEVELOPMENT?

It has definitely helped. It gives you an opportunity to mingle with those with a shared understanding. An early decision was also made to set aside proceeds to bring an overseas speaker to the annual Convention. In a globalising world, this was to gain different perspectives and have the opportunity to reach out and advantage NZ and Asian countries.

WHAT DO YOU BELIEVE THE NEXT 50 YEARS WILL LOOK LIKE FOR THE CHANGING AUSTRALIAN FOOD INDUSTRY?

I don't really think I have the merit to comment, but we do owe a great deal of gratitude to so many people who have effectively run the AIFST and the Conventions over the years. ^{1a}

5

AIFST AGM 2017

As a company limited by guarantee, AIFST is required to hold its Annual General Meeting (AGM) by the end of May each year under the regulations and requirements of the Australian Securities and Investment Commission (ASIC). ASIC requires all registered companies in Australia to hold their AGM within five months from the end of their reporting period. AIFST's reporting period ends on 31 December.

In response to members' feedback on the timing and location of the 2016 AGM, and in recognition of 2017 as the 50th Anniversary of AIFST, the AIFST Board has responded by sending a formal application to ASIC requesting our reporting period be extended until 18 July 2017. Should ASIC approve the extension request, this will allow the 2017 AIFST AGM to be held in conjunction with the 50th Anniversary Convention being held from 17–18 July 2017 at the International Convention Centre, Sydney. The inclusion of the 2017 AGM within the 50th Anniversary Convention should provide the opportunity for more members to participate in the meeting along with the chance for members to meet and network with the AIFST Board. Once confirmation from ASIC has been provided, AIFST will confirm the 2017 AGM date and time with members.

Nominations for the AIFST Board will open on 19 January 2017 and close on 1 March 2017.

For further information regarding the Call for Director Nominations including the skills being sought, please visit <https://www.aifst.asn.au> or contact AIFST CEO and Company Secretary, Georgie Aley, on 02 9394 8650 or via georgie.aley@aifst.com.au. ^{1b}

6

AIFST 50TH ANNIVERSARY GALA DINNER

18 JULY 2017 DOLTONE HOUSE, JONES BAY WHARF, SYDNEY

AIFST looks forward to welcoming members old and new to celebrate the 50-year history of AIFST and toast to the next 50 years. This formal gala dinner will be a fantastic opportunity to catch-up with new and old industry colleagues and will be held at Doltone House, a unique heritage venue located on the restored finger wharf at Jones Bay, Pyrmont. It is a spectacular waterfront venue on the foreshore of Sydney Harbour, with views of the Harbour Bridge, city skyline and Darling Harbour precinct. More details and bookings will be available from February 2017 on the AIFST website: <https://www.aifst.asn.au>. ^{1c}

7

Disrupt your Business – “The Uber Effect”

THE STATE OF INNOVATION IN THE AUSTRALIAN FOOD INDUSTRY HAS NEVER BEEN AS TOPICAL AS NOW. HOW DO YOU GET AHEAD AND TRULY DISRUPT THE MARKET RESULTING IN YOUR OWN “UBER” EFFECT?

The key to innovation is understanding how to deal with a changing industry landscape so you can thrive in a changing consumer and industry marketplace. To assist individuals and businesses to better adopt innovation, AIFST launched the Innovation Masterclass in 2011. Now in its fifth year, this popular hands-on workshop provides attendees with access to world-class speakers and practical knowledge that can be applied in your business today.

KEY THEMES THAT WILL BE EXAMINED AT THE 2017 INNOVATION MASTERCLASS ARE:

Overcoming innovation challenges in the food industry.

The changing face of how we do business – how do we market ourselves in 2017?

Digital disruption – what can disrupt your business, insight or foresight?

Understanding consumer purchase behaviour.

SPEAKER HIGHLIGHTS

TOPIC: MARKETING IN THE YEAR THAT WE LIVE IN.

SPEAKER: STEVE CHAPMAN CEO & CO FOUNDER, SHINE+

Steve started his career at PwC but realised he was far more entrepreneur than accountant and left PwC to launch his first start-up, a social-commerce platform. It was one of Apple's Top Lifestyle Apps and Stephen was featured in The Australian and BRW and recognised as one of Australia's Top 25 Entrepreneurs Under 25 by StartupSmart in 2013. Steve subsequently started

an entrepreneurial apprenticeship with BRW Young Rich Lister and ACT Young Australian of the Year, Dr Sam Prince. Steve launched Shine+ in 2016, Australia's first focus drink. Steve will share his experiences and provide insights in how to market your products to consumers in the current environment.

TOPIC: SETTING UP A BUSINESS MODEL FOR CROWDSOURCING
SPEAKER: NIC MOULIS, GASBUDDY

Nic has over 20 years of experience as an operator and senior executive in the Australasian Petroleum Industry. Over the last decade he has become one of the leading commentators to media and an adviser to governments at all levels on the Australian fuel industry. In 2016 Nic brought GasBuddy, the world's most popular fuel pricing app, to Australia. With over 60 million downloads and in excess of 2.2 million prices collected daily, GasBuddy is a massive influencer of fuel buying habits that saves its users almost \$4 billion dollars annually. Nic will discuss crowdsourcing and how to build a business model around this financing structure.

TOPIC: DESIGN-LED INNOVATION
SPEAKER: GEORGE PEPOU, DESIGN INNOVATION PRACTITIONER, UNIVERSITY OF TECHNOLOGY, SYDNEY

George comes from a background of technical invention, working with innovation firm Intellectual Ventures inventing new food packaging and production technology for clients globally. More recently George has been working for the University of Technology Sydney (UTS) facilitating research engagement with Australian agricultural industries. He now works at the UTS Design Innovation research centre focusing on long-term innovation and strategy in the Australian food industry. This includes the development of a competitiveness plan for the agrifood sector and working with a number of rural research

and development corporations on innovation projects and capability development. George will discuss the concept of design-led innovation with Masterclass attendees.

FOR MORE INFORMATION PLEASE CONTACT AIFST ON 02 9394 8650 OR EMAIL AIFST@AIFST.COM.AU.

AIFST would like to acknowledge our 2017 Innovation Masterclass Partners – Thomson Reuters and Xinova.



AIFST acknowledges the support of the Australian Food and Grocery Council for their support of our education and training program.



DON'T MISS THE 2017 AIFST INNOVATION MASTERCLASS, REGISTER NOW!

Date: 9.00am–6.00pm, Wednesday, 22 March 2017
Venue: Christie Conference Centre, 4th Floor,
100 Walker Street, North Sydney, NSW
RSVP: 17 March 2017

Cost: AIFST/AFGC /Aus. Beverages Council members: \$440 (Inc. GST);
Non-Members: \$770 (Inc. GST)

Register on the AIFST website: <https://www.aifst.asn.au>. ©



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TECHNOLOGY

industry bites

EXECUTIVES ON THE MOVE



Pulse Australia elected **Ron Storey** as its new Chairman.



Bega Cheese has appointed **Paul van Heerwaarden** as its new CEO.



Emerson appointed **Boris Gabin** as its new General Manager/Managing Director.



Robyn Kruk AM has been appointed Chair of the Board of **Food Standards Australia New Zealand (FSANZ)**.



Restaurant and Catering Australia (R&CA) appointed **Mark Scanlan** as National President.



Dr Charles Day has been appointed CEO of **Innovation and Science Australia (ISA)**.

WORLD'S FIRST ALLERGY VACCINE

The world's first food allergy vaccine could be a reality within four years, with scientists in north Queensland studying proteins in fish, shellfish and eggs that cause adverse reactions. James Cook University's Molecular Immunology Research Group is developing food allergy treatments with Professor Andreas Lopata analysing the molecular structure of proteins that cause allergic reactions to 40 different types of fish, many of which are consumed in Australia. 📍

SUNDROP FARMS PIONEERING SOLAR-POWERED GREENHOUSE

A groundbreaking greenhouse that relies on sunlight and seawater to grow tomatoes has opened north of Adelaide in Port Augusta. All the water used for irrigating the crops is piped from the Spencer Gulf and converted into fresh water using a thermal desalination unit. Sundrop Farms spent several years developing the idea at a pilot plant before building the 20-hectare futuristic-looking facility, which includes a field of more than 23,000 mirrors that capture the sunlight and direct it to a central receiver at the top of a 127-metre "power" tower. 📍

A NEW ERA IN FOOD DELIVERY

A new era in food delivery is rapidly emerging according to Rabobank. Last year the amount Australians spent at restaurants and other food service venues exceeded our grocery shopping bills for the first time – a major milestone. The *Food Delivery 2.0* report says the idea of browsing the supermarket is increasingly irrelevant when food can be delivered with only a few clicks on a smartphone. Rabobank analysts say this new style of delivery is still in its early days but the rise of the on-demand economy will have a lasting affect on the food industry. 📍

AUSTRALIA STREAMLINES FOOD SAFETY STANDARDS

Australian vegetable producers could benefit from a more streamlined, cost-effective approach to food safety certification, bringing domestic and international standards into line. The new initiative being delivered through Horticulture Australia will see the *Freshcare Food Safety and Quality Standard* – commonly used by Australian vegetable producers to meet domestic certification requirements – benchmarked against the internationally recognised GlobalG.A.P. standard, which is currently required to access many key export markets in Asia and the Middle East. This should lead to increased efficiencies and cost savings for Australian fresh produce exporters. 📍

RESEARCH HUB STUDIES LEGUMES SUITABLE FOR AUSTRALIAN CONDITIONS

Aiming to make agriculture more sustainable, improve soil and reduce fertiliser use, the \$14.5 million Legumes for Sustainable Agriculture Hub was launched at the Camden campus of the University of Sydney, with the funds coming from the Grains Research and Development Corporation, seven universities, the Australian Research Council and the Wheat Research Foundation (WRF). The Hub hopes to resolve issues that make legumes susceptible to Australia's variable climate and will focus on why lentils, peas, beans and pulses are difficult to grow in conditions of drought, salinity and flooding. ⑥

CAPILANO PREBIOTIC HONEY IT'S THE BUZZ!

The world's first clinically tested prebiotic honey that aids digestive health is now available in Australia. Beeotic is 100 per cent natural Australian honey and is listed with the Therapeutic Goods Administration as a therapeutic good. Beeotic was tested during a study conducted by UNSW to identify the prebiotic health benefits of Australian honey. The clinical study showed that particular honey types significantly raise the levels of good bacteria and suppressed harmful bacteria in the digestive tract. Levels of good bacteria decreased once the participants stopped taking the honey for a period of time. ⑥

FOOD AND GROCERY EXPORTS GREW 14.4 PER CENT IN 2016

The Australian Food and Grocery Council's (AFGC) *State of the Industry 2016* report showed food and beverage exports rose 11 per cent to \$26 billion, fresh produce shipments jumped 49 per cent to \$1.5 billion, and non-food grocery exports were up 32 per cent to \$4 billion. AFGC CEO Gary Dawson said the report highlights export growth and a lift in overall industry turnover, but falling capital investment and stalling job growth are clear warning signs for the future of Australia's largest manufacturing sector. The report said that while Australia's food and grocery sector recorded export revenue of \$31.5 billion, the nation was still a net importer of food and groceries, with imports rising 14.6 per cent during the year to \$35.2 billion. ⑥

DYSPHAGIA CUP AIDS INDEPENDENT FEEDING

Dysphagia is the medical term for difficulty in swallowing. One in three Australians over the age of 65 suffer from the condition, which can result in dehydration and malnutrition.

Thickening fluids is the internationally recognised method of helping individuals to live with dysphagia. Now there is an alternative, with Brisbane-based company Flavour Creations launching a Dysphagia Cup that enables individuals who experience difficulty holding their own cup to independently feed themselves.

The cup complements the company's range of ready-to-drink products in 29 flavours and three viscosities. Its angled shape allows the contents to be sipped without tilting the head, which is a necessary postural adjustment for people with dysphagia. It also has a suitable diameter, curvature, ribbed sides and indentations for ease of holding.

The large, easy-peel foil lid has external ribbing and embossed texture to assist with a manual grip and its design meets and/or exceeds all criteria outlined in *Arthritis Australia's Packaging Design Accessibility Guidelines*. The cup is suitable for hospitals, residential aged care and those living at home in the community. ⑥



industry brief

WHOLE GRAIN CODE OF PRACTICE HIGHLIGHTS OPPORTUNITIES FOR INDUSTRY

THE ADDITION OF OVER 100,000 TONNES OF WHOLE GRAIN TO THE AUSTRALIAN FOOD SUPPLY SINCE 2013 PAVES THE WAY FOR INNOVATION.

WORDS BY ALEXANDRA LOCKE
GRAINS & LEGUMES NUTRITION COUNCIL

As evidence continues to increase on the role that plant-based diets play in the prevention of chronic disease, particularly diets rich in whole grain, an increasing demand for "high in whole grain" foods is being firmly established. As a result of this trend for more authentic and nutritious whole grain products, the need for innovation in this area represents significant opportunities for the industry.

Combine this with the shocking statistic that only 30 per cent of Australian adults are meeting the recommended amount of whole grain for good health, and it becomes clear that the industry has a large part to play in helping to empower consumers to make better grain food choices.

But communicating levels of whole grain content continues to present a challenge due to a lack of regulation on whole grain content claims, both on pack and in product marketing. Currently, the *Australian New Zealand Food Standards Code* does not regulate the use of whole grain content claims, so products making these claims can contain vastly differing amounts. For example, breads can contain varying levels of whole grain from 8 grams up to 60 grams per serve.

To promote a consistent standard for whole grain content labelling, the Grains & Legumes Nutrition Council (GLNC) launched the *Code of Practice for Whole Grain Ingredient Content Claims* (the Code) in 2013. Since then, the Code has helped to combat the difficulty surrounding communication of whole grain content to consumers.

One of the primary objectives of the Code is to provide a tool to encourage the development and promotion of more nutritious whole grain foods, thus increasing demand for whole grain products and providing opportunities to the food industry.

As part of GLNC's promotion of the Code, representatives from the grains industry gathered in Sydney in November 2016 for the GLNC Industry Briefing Day, this year with a focus on whole grain. GLNC presented an insight into the latest research and trends in the whole grain category, as well as an update on the considerable impact the Code has had in the last three years.

Rebecca Williams, Accredited Practising Dietitian and Nutrition and Code Manager at GLNC explains the Code's impact, "Since its launch in 2013, the Code has encouraged manufacturers to add over 100,000 tonnes of whole grain into the food supply. That's the equivalent of over 400 Olympic swimming pools from 20 registered manufacturers and over 370 eligible products."

Positive uptake of the Code and good levels of compliance continue to instil confidence in the Australian public's ability to identify foods that contain significant amounts of whole grain. For the grains industry, forming a part of this movement towards clearer identification represents just one of the many advantages of registering compliance with the Code. Registration demonstrates commitment to ensuring consumers can make an informed decision when looking for foods higher in whole grain. In many cases this has led to reformulation of whole product lines in order to comply.

Sarah Hyland, General Manager of Industry Services at AIFST, who spoke at the GLNC Industry Briefing Day, noted that the opportunities for industry are substantial. "The trend for more authentic products, coupled with increasing consumer awareness on health issues is driving demand for innovation in this sector. And with significant growth in the snack market and an emphasis on consumer convenience, there are considerable opportunities for change."

With demonstrated consumer awareness and adherence to trends driving movement in this category, this noteworthy addition of a large volume of whole grain since the Code's launch shows continuing growth in the grain food market. Importantly, this identifies a growing need for innovation along the entire supply chain, presenting valuable opportunities for growers and manufacturers alike. 🌾

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

Industry save the **dates**

NATIONAL

7-8 MARCH

Food Drying Technology Short Course
CSIRO's Food Innovation Centre, Melbourne

7-10 MARCH 2017

Auspack Packaging + Processing 2017
Sydney Showground, Sydney

23-25 MAY 2017

AFGC Annual Conference
Sofitel, Brisbane

28-30 MAY 2017

Foodservice Australia 2017
Royal Exhibition Building, Melbourne

16-19 JULY 2017

foodpro 2017
International Convention Centre, Sydney

INTERNATIONAL

20-22 FEBRUARY 2017

11th Australia & NZ Sensory & Consumer Science Symposium
Queenstown, New Zealand

21-22 FEBRUARY 2017

Printed and Flexible Electronics Congress 2017
London, UK

1-2 MARCH 2017

3rd Microbiome R&D and Business Collaboration Congress
Hong Kong

1-2 MARCH 2017

The 2nd Probiotics Congress
Hong Kong

2-3 MARCH 2017

8th World Congress on Agriculture and Horticulture
Amsterdam, Netherlands

2-4 MARCH 2017

16th Euro Global Summit on Food and Beverages
Amsterdam, Netherlands

6-7 MARCH 2017

The 3rd Biologics Congress
Berlin, Germany

8-9 MARCH 2017

XV International Conference of Food Security and Nutrition
Pattaya, Thailand

9-10 MARCH 2017

19th International Conference on Global Food Security
Miami, USA

16-17 MARCH 2017

The 5th Plant Genomics and Gene Editing Congress
Amsterdam, Netherlands

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Why our kids won't be getting Vitamin D in their favourite breakfast cereals

AN ABJECT FAILURE OF REGULATORY PROCESS – AGAIN.

WORDS BY CHRIS PRESTON
AUSTRALIAN FOOD AND GROCERY COUNCIL



Early 2015 witnessed the remarkable, and as far as I can recall only, perfect alignment of views between the food industry and public health organisations supporting the fortification of certain breakfast cereals with Vitamin D. Also remarkable, however, was the unanimous opposition by the states and territories.

This perfect alignment was to an application to Foods Standards Australia New Zealand (FSANZ) seeking an amendment to the *Australia New Zealand Food Standards Code*.

The occasion was the public consultation on *A1090 Voluntary Addition of Vitamin D to Breakfast Cereal*. The unified support was based on FSANZ's evidence that the Vitamin D status of some population groups are sub-optimal and would be improved through Vitamin D fortification of breakfast cereals, with no negative health implications.

In mid-2015 FSANZ gave its recommendation to the Ministers of the Forum for Food Regulation (FoFR): the FSC should be amended to allow Vitamin D fortification of breakfast cereal.

“The primacy of scientific evidence as the guiding light of good public health policy has been overthrown.”

And this is where it gets interesting. FoFR rejected the recommendation and requested FSANZ to review the application in the light of a “clarification” of the *Policy Guideline on Fortification of Food with Vitamins and Minerals*, which the Ministerial Council would develop. Normally a change to a policy guideline would be subject to some public consultation, but in this case it was not. The FoFR determined that, since it was a “clarification”, no public consultation was required.

This clarification to the policy guideline appeared in late 2015: FSANZ “Should use recognised nutrition profiling tools and initiatives that are capable of identifying foods that are high in salt, sugar or fat, or little or no nutritional value, to determine which foods are appropriate for fortification”. Essentially, this reflects the collective view of the jurisdictions that the Nutrient Profiling Scoring Criterion (NPSC) in *Standard 1.2.7 Nutrition, Health and Related Claims* should be used to assess whether food products can be fortified to ensure that Vitamin D content claims are not made on foods high in risk-associated nutrients.

Now remember, during the development of *Standard 1.2.7*, FoFR specifically ruled out application of the NPSC to nutrient content claims, essentially establishing a policy at least by inference.

Fast forward to October 2016, when FSANZ notified its stakeholders that, “As a pragmatic approach, FSANZ applied the NPSC to the permission to fortify breakfast cereal on a voluntary basis.” FSANZ noted that this is consistent with the policy “clarification” but also that the imposition of an NPSC requirement for Vitamin D fortification is “Inconsistent with other fortification permissions for breakfast cereal both domestically and internationally; will impact on cost, competitiveness and efficiency in food manufacture; and may reduce the overall potential public health benefit of Vitamin D fortification.” FSANZ specifically points out that the greatest impact of Vitamin D intake will be on children, as they are the highest consumers of breakfast cereals that do not meet the NPSC.

Now let’s be absolutely clear. This is a case of best practice regulatory principles being discarded by health bureaucrats across all jurisdictions acting in concert to promote their own misguided faith that a simplistic tool like the NPSC is the panacea to the challenge of diet-related non-communicable diseases. To achieve their goals, the concept of transparent government and public consultation has been pushed aside and justified through semantics (the clarification), the primacy of scientific evidence as the guiding light of good public health policy has been overthrown, and the concept of optimising public health benefit has been sacrificed.

Out of fear that breakfast cereal companies might make nutrient content claims about Vitamin D on some breakfast cereals considered “discretionary”, the health bureaucrats argued and succeeded in preventing this by proxy – in other words by prohibiting their fortification. Never mind the regulatory nonsense

that has been created – the same cereals that are not permitted to be fortified with Vitamin D can be fortified with other vitamins and minerals, while other products that fail

the NPSC can be fortified with Vitamin D.

Against this backdrop, FSANZ has maintained a degree of integrity. Its documentation clearly indicates there is no justification for limiting fortification to a subset of breakfast cereals, quite the contrary in fact. However, they do ultimately fall into step behind the current health bureaucracy dogma that foods are either good or bad (core or discretionary) by justifying their findings on the basis of aligning with the policy clarification.

The question that must be posed is: “When will FSANZ demonstrate its independence as a statutory authority?” The legislation requires FSANZ to have regard to policy guidelines, but it’s not required to slavishly follow them. This is particularly important if policy guidelines are developed in the absence of proper stakeholder consultation, and if they become more prescriptive in processes for standard assessments (such as requiring application of the NPSC).

At the time of writing it remains uncertain whether FoFR will accept the recommendation. Clearly there are doubts about regulatory process. Apart from the lack of consultation regarding the clarification of the policy guideline, the FSANZ Board is depleted in number, resulting in substantial loss of nutrition expertise and experience. Putting the most generous interpretation on it, one assumes the FSANZ Board misunderstood the advice from their technical and legal experts. A less generous interpretation is that they disregarded that advice preferring to echo the mantra of the health bureaucracy, which seeks to subjugate all nutrition-related decision-making to the output of a single, crude algorithm – namely the NPSC.

Interestingly, public health organisations that previously supported the original FSANZ position joined the anti-science bandwagon and supported the application of the NPSC during the review. Other public health organisations, which had not deigned to have a view initially, also jumped aboard.

Just to be clear – I don’t want to join the cheer squad of FSANZ detractors. There’s enough of them out there among the public health community, state and territory bureaucracies and consumer representatives. All the Australian Food and Grocery Council (AFGC) ask is that the FSANZ Board adhere to the principles of good regulatory practice, stick to process and exert their authority. Australian and New Zealand consumers, and many more overseas, will be the ultimate winners. 🍌

Chris Preston is Director, Legal & Regulatory at the Australian Food and Grocery Council.

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

Do Consumers Trust Food Labels?

AND WHY YOU SHOULDN'T EAT BURNT TOAST.

WORDS BY FOOD STANDARDS AUSTRALIA NEW ZEALAND (FSANZ)

An update on recent activities within the food regulations landscape from Food Standards Australia New Zealand (FSANZ).

FOOD LABELS SURVEY RESULTS IN

FSANZ has released the findings from its *Consumer Label Survey 2015*, which gathered information about how consumers use food labels and their understanding of the different labelling elements. The online study surveyed 1396 Australians and 1015 New Zealanders aged 15 years and over.

Major findings from the study include:

- Consumers generally trust information on food labels and are interested in standardised nutrition information.
- More than 80 per cent of Australians and 70 per cent of New Zealanders check the country of origin information when purchasing a product for the first time.
- The Nutrition Information Panel (NIP) and the statement of ingredients are the two most popular tools consumers use when making a food purchase for the first time, with date marking also important.
- The NIP is also the most used label element when consumers are choosing the healthier option of two similar food products.
- The amount of sugar is the ingredient that most consumers look at on the NIP.
- Consumers have greater trust and understanding of short advisory statements on familiar products than long and more complex statements on unfamiliar products.
- Consumers generally tend to pay less attention to nutrition related claims.
- In regard to safety related information, consumers are most interested in the use-by and best-before dates.


KEEPING FOOD SAFE

Acrylamide is a chemical that can form when starchy foods are cooked or processed and has been linked to cancer in laboratory animals. While there is no direct evidence that acrylamide can cause cancer in humans, FSANZ believes that it is wise to reduce our exposure to acrylamide in food. A simple infographic that provides advice on how consumers can reduce their exposure to acrylamide is now available.

The third edition of *Safe Food Australia* is now available. The guide relates to three food safety standards in Chapter 3 of the *Food Standards Code – Interpretation and Application, Food Safety Practices and General Requirements, and Food Premises and Equipment*.

FSANZ also recently released the *Compendium of Microbiological Criteria for Food* – a compilation of process hygiene criteria for some food commodities and microbiological guideline criteria for ready-to-eat foods. Microbiological criteria support decision-making about a food or process based on microbiological testing. Criteria that are applied to determine the safety of food are included in the *Food Standards Code*. The compendium replaces the guidelines for the microbiological examination of ready-to-eat foods and *User Guide to Standard 1.6.1 – Microbiological Limits for Food*.

FSANZ ANNUAL REPORT

FSANZ's 2015-16 Annual Report was tabled in Parliament in October 2016. The Report details the number of milestones met and major projects delivered by FSANZ, including the introduction of the revised *Food Standards Code*, updates to the nutrition content, health, and related claims standard, and a detailed analysis of the 98 food recalls that were coordinated across Australia. 

For more information on these topics and to download the documents discussed please visit the FSANZ website: www.foodstandards.gov.au.

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How to Disrupt your own Business

CASE STUDY: GOURMET GARDEN HERBS & SPICES

The most innovative companies in the world share one thing in common – they use design as an integrative resource to innovate more efficiently and successfully.

Design-led companies worldwide, such as Apple, Nike and Whirlpool, have significantly outperformed competitors. On the food front, Australia's Gourmet Garden Herbs & Spices has learnt that when "design-led thinking" principles are applied to strategy and innovation, the success rate for innovation dramatically improves.

Gourmet Garden aims to make fresh herbs and spices and everyday cooking easier, more inspiring and ultimately more enjoyable for busy cooks who don't want to sacrifice flavour. In 2014, Gourmet Garden launched its revolutionary Lightly Dried Herbs range, which subsequently created a new herb category, more than doubling its like-for-like sales. The innovation was awarded several Australian accolades including Packaging Council of Australia's Design Awards, 2014 Good Design Award and 2015 Product of the Year, as well a World Star Award from the World Packaging Organisation.

Gourmet Garden Head of Innovation, Jacqui Wilson-Smith, says the primary reason for the success of this range was the cultural adoption of design-led thinking by the team. "The cultural shift came about as we embarked on a design thinking journey when Gourmet Garden was lucky to be a recipient of a government support program in 2010. Within the program, Dr Sam Bucolo, currently Professor of Design Innovation at UTS, mentored the management team on becoming more design-led.

"We learnt that it's okay to be self-critical and it's healthy to challenge the status quo. This got us thinking that perhaps we could be brave enough to disrupt our own successful business of 'herbs in a tube' and transform ourselves into a herb, spice and seasoning business for busy cooks. Since then our design thinking processes have become fully embedded.

"Today, new innovation projects at Gourmet Garden include activities such as observing and empathising with our consumers and customers, collaborating with internal stakeholders on solving consumer pain-points, visualising solutions, imagining a brighter future, storytelling, rapidly prototyping, co-designing and continuously testing and learning.

"We learnt that it's okay to be self-critical and it's healthy to challenge the status quo."


"It's become everyone's job to empathise with the consumer. We're constantly experimenting in a shared environment where it's okay to play and it's okay to fail too, as long as you fail fast and quickly learn the insight in order to mitigate the risks of failing big," says Wilson-Smith.

As Chairman and a Co-Founder of FAN (Food and Agribusiness Network), a collaborative not for profit organisation that represents the greater Sunshine Coast region, Wilson-Smith hopes to inspire more food and agribusinesses to adopt design-led thinking principles.

ABOUT GOURMET GARDEN

Gourmet Garden Herbs & Spices specialises in the growing, harvesting and packaging of prepared herbs, spices and seasonings for busy cooks who value freshness.

Gourmet Garden's farmers grow their herbs on broad acre, organically certified farms mostly in the Callide Valley, Central Queensland. Within 12 hours of harvesting, the herbs are washed, chopped and packed, capturing the essential oils for fresh flavour, colour and aroma without adding artificial flavours or preservatives.

The well-known range of squeezable herb and spice stir-in pastes first launched onto chilled supermarket shelves in 1999, and is now exported to over 15 countries and ranged in more than 25,000 supermarkets. The Lightly Dried Range launched in 2014 complements the stir-in paste range by adding a roughly chopped format for tossing, garnishing and sprinkling. 

Going Global Together

AIFST asks FIAL's Managing Director, Mirjana Prica, about the establishment of the Food and Agribusiness Industry Growth Centre.



Why was the Food and Agribusiness Industry Growth Centre formed?

Food Innovation Australia Limited (FIAL) is an industry-led organisation that is leading the Food and Agribusiness Industry Growth Centre as part of the Federal Government's Industry Growth Centres Initiative. The food and agribusiness sector has been identified as one of the six areas where Australia has a competitive strength and is a strategic priority. Essentially, we were formed to be the catalyst for growth by working collaboratively with all industry-wide stakeholders to encourage investment in innovation, value-add and be a smart, export focused sector.

What are the short-term and long-term visions/objectives?

FIAL's long-term vision is to see the industry working together to grow the share of Australian food in the global marketplace by 2025. In the short term, FIAL is working to share knowledge, build capability and establish connections to encourage investment in innovation.

What are the challenges and how do you propose to overcome these?

The biggest challenge we have identified is the culture across the sector, which needs to change if we are to be competitive in a global marketplace. There are almost 180,000 businesses in the food and agribusiness sector, which can be divided into two categories: businesses of today and businesses of tomorrow.

In short, businesses of tomorrow are progressive, innovative and passionate. However, they are the minority. The industry is

dominated by businesses of today which are less interested in being connected to their end customers and are not as growth orientated, with a low-risk appetite. We will see real change when we mobilise businesses of today and ignite a passion and desire in them to grow, thus transitioning into businesses of tomorrow.

FIAL is in the process of publishing the second edition of the book, *Celebrating Australian Food and Agribusiness Innovations*. The strategy behind this book is to showcase Australian brands and products that fall into the businesses of tomorrow category. We hope that by showcasing inspiring success stories we will ignite the desire to become a business of tomorrow.

How can we grow the share of Australian food in the global marketplace?

The only way we can achieve this goal is by working together, sharing knowledge and collaborating on projects where everyone benefits. By doing so we maximise the impact of our limited resources, reduce the amount of duplication and better leverage the support services available to industry.

What research will be conducted?

The research will focus on gaining a better understanding of the evolving needs and wants of the different customers, both locally and overseas, and how Australian companies can best meet them cost effectively and sustainably with a differentiated offering.

For more information about FIAL visit www.fial.com.au. 



Rob and Krista Watkins with their daughters Kate (left) and Kira.

BANANA REPUBLIC

IN FAR NORTH QUEENSLAND, A FARMER MADE A STARTLING DISCOVERY THAT IS SET TO TRANSFORM THE BANANA INDUSTRY. AIFST'S NARELLE SCHUH ASKS KRISTA WATKINS ABOUT PIONEERING GREEN BANANA FLOUR.



Rob and Krista Watkins have developed a fully automated system, NutroLock, that turns nutrient-dense green Lady Finger bananas into the world's most resistant starch. Green banana flour, marketed under their Natural Evolution brand, is a game-changer. And like many revolutionary discoveries, it happened by accident.

Where did the idea for green banana flour come from?

The idea came from Rob Watkins – at the time Australia's largest Lady Finger plantation grower who was tired of dumping 5–10 tonnes of perfectly beautiful nutritious fruit every week simply because it was too small or large (according to supermarket specifications), or due to oversupply in the market.

Each week in North Queensland 450–500 tonnes of fruit is wasted and some weeks can see up to 1000 tonnes cut onto the ground. After observing the wildlife (wallabies, wild pigs, cattle) breaking fences and stepping over ripe bananas to feast only on

the green, Rob was fascinated to say the least. The animals were in prime condition with healthy, shining coats, disease free, very calm and happy!

One afternoon while loading a truck, Rob accidentally drove over a hand of bananas that had been sitting on the cement for a few days. In the setting rays of the sun it was like a puff of powder. He very excitedly came home with a hand of crumpled bananas and urged me to try it because it tasted like flour. Not long after, we started producing a very humble six kilograms of banana flour each week.

Banana flour is traditionally consumed as porridge in many developing countries, but it was not commercially available. We were the first company to commercially produce banana flour in the world, and are still the only internationally food safe certified producers.

Observing nature and a little universe intervention is definitely what led us to this point today. We had been severely affected by two cyclones and were constantly battling the giant wholesalers.

Now we have taken some risk out of cropping bananas. If a cyclone comes through, the facility has been designed to run like a sugar mill – just a healthier version of processing all of the fruit that can't be sold!

What is so special about Lady Finger bananas?

Lady Fingers are harder to grow than regular Cavendish bananas. They require twice the amount of work to grow and also are grown more sparsely due to their risk of disease. Fortunately our foundation at Natural Evolution begins with care for the soil – to grow healthy food it really does start with healthy plants and soil that supports that goal.

We have had them clinically tested and the variety of Lady Finger bananas grown in North Queensland produce the highest tested resistant starch in the world. This is huge for gut health and not found in many foods. We have had them tested as high as 44 per cent. Through our world leading research we have also

“It is a very humble experience that in the little town of Walkamin in rural Far North Queensland, one of the most exciting food preservation technology systems was designed, built, scientifically tested, and is now being prepared for worldwide roll out!”

found that they contain 5HTP in the available form – even more rare than resistant starch occurrence. We have also found that in the powder form, Lady Finger bananas kill bacteria and have powerful anti-inflammatory and rejuvenation properties.

How long did it take you from concept to actual market reality?

To begin with it all happened very quickly. From accidentally making flour to selling six kilograms a week happened within about two months. Very soon we were behind on orders, so in 2012 we built the first pilot plant that had a maximum output of 50kg per day. We worked this way – popularising the idea of banana flour for a couple of years – and designing the NutroLock facility.

In 2014 we broke ground on building the facility and finished commissioning the facility early in 2015. The new facility will see output increase to around eight tonnes of banana flour each week. While it has been a long time getting where we are, on our timeline of the journey still to come we are just at the beginning!

Branding has played a huge role in our product. We worked firstly with our own family branding, however we were limited in our expansion. Natural Evolution was founded by myself and Rob in August 2015 and is the best move we have made for the company as we saw sales double within the first week and continue to grow. It is certainly that connection to earth and our story that our consumers love.

So, we've gone from complete desperation in business, to observing animals, to finding a sustainable solution. It is a very humble experience that in the little town of Walkamin in rural Far North Queensland one of the most exciting food preservation technology systems was designed, built, scientifically tested, and is now being prepared for worldwide roll out!

What difficulties did you face along the way?

Peeling a green banana is near impossible! Trying to separate the skin from the flesh is extremely difficult and very hard on



your hands. To make the business viable we needed to design machinery that would separate the skin and flesh.

Other producers boil the green bananas to make the skin separation easier...inevitably this changes the product as they are “cooking” a starch, which starts the sugar conversion leaving you with a product that contains sugar rather than a product that contains no sugar, is raw and contains the highest natural resistant starch.

What are the most unique aspects of your manufacturing process?

NutroLock technology is a fully inline food processing system which has the capability to take any fruit or vegetable with a few days to weeks' shelf life and preserve it naturally in a powder form in less than 25 minutes! While bananas are our main business, we have processed potatoes, berries, nightshades, apples, cassava...all with tremendous results. ➤



NutroLock has been scientifically tested to lock in nutrients, with the product coming out of our system 20–50 per cent more nutrient-rich than any other competitors. The process is entirely raw, cold, natural and low-speed milling.

What are your plans for the future?

We are currently in the process of engineering the factory – NutroLock – ready for roll out in 2018. There is strong interest for more facilities in Australia, however the majority of interest is overseas. Australia is only a small banana growing region, but according to market predictions the world is ready to consume as much banana flour and resistant starch that can be produced. The factory takes what 100 people would achieve in 12–14 hours down to two people in eight hours. Currently we can produce one tonne of powder in a two-person, eight-hour shift. However, we are currently upgrading that to two tonnes – machinery and technology design will remove any margin for human error.

Have you had international interest in the product?

We have had huge international interest in the product! Some countries have already licensed with Natural Evolution. 2017 will see us launch in Canada and America. From Australia we already handle many online international sales, so it will be great to make the product more readily available at the store level for international consumers. ☺

NutroLock won the 2016 Premier's Sustainability Award for Innovation in Sustainable Technologies and Best Proven Product at the 2016 Tropical North Queensland Innovation Awards.

Banana Facts

There are more than 2000 different varieties of bananas but most of them are inedible.

The most popular bananas in Australia are Cavendish followed by Lady Fingers.

Lady Fingers are smaller, sweeter and richer in minerals.

Green banana flour contains the world's highest quality resistant starch, which is great for gut health, regulating blood sugar and improving metabolism.

Plain



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- › Nominate to be a volunteer at the 50th Anniversary AIFST Convention in July 2017. This is a unique opportunity to listen to and network with leading industry speakers.

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RSVP online at <https://www.aifst.asn.au> by 24 January 2017

More than 500 students over the past six years have attended the AIFST Food Science Summer School, coming together in a format that provides an avenue to learn, network and promote individual research projects. Why not encourage your friends to become AIFST student members to enjoy free registration. ⑩

NAOMI IN ACTION AT RETAIL FOOD GROUP!

One of our 2016 SPDC winners, Naomi Cutler, recently completed her internship with the Retail Food Group (RFG), where she worked on her EAT ME coconut and chickpea cookies!

"There are so many things happening here and I have loved seeing even more product development as well as production trials, quality assurance and how the food technologists work with marketing in industry," says Naomi.

"Darrell Kesur has been my main point of contact at RFG and is a wonderful mentor. He has taught me a lot about the industry and used his vast experience to help me further refine and develop Charlize and my chickpea cookies. The RFG team as a whole has been very friendly, supportive and encouraging!

It has been awesome seeing the cookie taken on by Brumby's, and I hope that my work here will be continued and see the commercialised cookie in Brumby's stores in the future!" ⑩



2016 AIFST Young Members
Malcolm Bird Commemorative Award winner
Jessica Tan



2016 AIFST Sensory Award winner
Julia Low

2017 AIFST STUDENT AWARDS!

AIFST Student Product Development Competition

The Student Product Development Competition (SPDC) is a unique opportunity to experience a “real life” new product development project and gain exposure to industry experts, peers and future employees in the food industry.

Supported by industry and government, AIFST's SPDC is the only competition of its type offered in the Australian food industry. For more than 14 years the SPDC has attracted entries from leading educational institutions across Australia, with previous entrants and winning team members going on to find fulfilling careers in the Australian and global food industries.

The 2017 SPDC theme *Future Proofing our Food* is based around sustainability as a key and growing area of interest amongst consumers. The competition is open to two entrant categories: Undergraduate and Postgraduate. From each category three finalist teams will be selected to present their projects at the 50th Anniversary Convention in Sydney from 17–18 July 2017.

To be eligible to compete in the 2017 SPDC, teams are required to submit an Expression of Interest by 24 February 2017.

Visit <https://www.aifst.asn.au> for more information on the 2017 SPDC.

AIFST Malcolm Bird Commemorative Award

This award is for young AIFST members who demonstrate academic achievement, leadership and integrity in their profession. It is named in honour of Malcolm Bird, the fifth AIFST president who always showed an active concern for the welfare of young members.

The subject of the award entry abstract and subsequent paper and oral presentation can be on any topic relating to food science and/or technology.

This award is open to all current financial members of AIFST who are under 30 years of age at 30 June 2017. Nominees must have been a financial member of AIFST for a minimum of 12 months prior to the closing date for nominations.

AIFST Jack Kefford Best Paper Award

This award recognises the contribution to food science and technology of members of the Institute who publish research and technical papers.

The Award is named in honour of Jack Kefford who made an enormous contribution to the science and technology of food as Officer-in-Charge of the CSIRO Food Research Laboratory, Assistant Chief of the CSIRO Division of Food Research, as a scientist of international repute, and as AIFST President (1971–73) and Technical Editor of *food australia*.


AIFST Sensory Award

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

Dr Tony Williams was one of the pioneers of the sensory research industry in the United Kingdom and a world authority on sensory and consumer science. Tony's enthusiasm and passion helped establish sensory research in Australia and launch Sensory Solutions in 1996.

The AIFST Sensory Award provides the opportunity for young members to demonstrate their interest and passion for sensory research with the submission of a short paper on a sensory related topic of their choosing and interest. The submission should be unique and not include a republished piece of work or a previously published paper, but may include a revised or rewritten component of a sensory thesis specifically prepared for this award.

Visit <https://www.aifst.asn.au> for all award guidelines and nomination forms.

Nominations close on 13 April 2017. 

Top 5 Food Trends in 2017

WORDS BY SARAH HYLAND
AIFST

If you are in the food business, you are in the fashion business. Food trends are inspired by a myriad of influences – from social and political events, economic and geographical dynamics through to generational changes – that shape the resulting shifts in attitudes and behaviours towards nourishing ourselves and the next generation.

Here are the top five foods trends expected to gain further momentum in 2017 and beyond!

1 More Plants, Less Meat

Eating more plants and less meat is becoming more popular than ever and is set to grow in 2017. While vegetarian and vegan diets are defined by what they exclude, a plant-based diet is defined by what it includes. This means eating more vegetables, fruits, beans, peas, lentils, whole grains, nuts and seeds, as well as plant-based milks, cheeses, snacks and meat alternative products. What factors are driving this trend?

Broadening horizons – Consumers generally see the benefits of increasing their protein intake beyond meat or dairy. Plant-based foods give them the option to do so in a palatable and accessible way.

Health – Plant-based foods offer whole food with naturally functional benefits that resonate with the consumer. Eating value-added plant-based foods makes reaching the recommended daily target for whole grains and fruit and vegetables easier.

Cost – The rising cost of red meat in particular has been the impetus for consumers to reduce their intake and look for other protein sources. Beans, peas and lentils are some of the cheapest foods you can buy.



Environment – Consumer concerns around water usage and greenhouse gas production has prompted a rethink of plant-based food. Grain feeds animals, so by eating grain ourselves we consume fewer resources.

Conscience – Conditions under which animals are bred, raised and slaughtered are a common reason for selecting plant-based alternatives.

This trend is less about avoiding meat altogether and more about broadening the diet to incorporate nutritional alternatives as well as bringing the excitement of flavour, textural and experiential variety.

2 The Better Sweet

While sugar has rarely been the hero, it has certainly been the villain in more recent times. Some consumer groups decry even natural sugar (especially fructose) from fruit as another source of sugar to avoid at all costs. Many consumers have a love/hate relationship with sweetness, wanting full flavour experiences but with less added sugar.

There will be a greater demand in 2017 for products with reduced or no sugar that still appeal to sensory profiles. Typically sweet categories are diverging into savoury, salty or bitter SKUs – think carrot, tomato and beetroot flavoured yoghurts, and soft

drinks that embrace fermentation practices such as kombucha. It is predicted more categories will move into other basic taste/flavour profiles while delivering on low sugar demands.

But consumers' love affair with sweet foods is not likely to end anytime soon. A good example is the work recently announced by Nestlé, who have found a way to significantly cut the sugar content in its chocolates without altering the taste. Nestlé food scientists say they have discovered how to structure sugar differently so that even when less is used, the sweetness is almost identical to what it would be if the usual amount of sugar was used.

Noncaloric sweeteners such as sucralose are losing appeal with even Stevia, which is perceived to be natural, presenting flavour and cost problems. 2017 will see food that is more naturally sweetened, such as with dates or date concentrate. Other perceived wholesome alternatives include coconut sugar, monk fruit and Truvia Nectar.

3 Primum Non Nocere

The origin of the phrase, which means “first, do no harm” is uncertain, but the Hippocratic Oath includes the promise “to abstain from doing harm” and is the central tenet of healthcare professionals. This is becoming a theme throughout food production due to its complex and necessary supply chain. ►



Concerns about all aspects of sustainability affect purchase decisions and consumption.

There is no official definition or accreditation for “sustainable” like there is for “organic”, but Sustain: The Alliance for Better Food and Farming in the UK has a working definition: good food should be produced, processed, distributed and disposed of in ways that:

- › Contribute to thriving local economies and sustainable livelihoods – both in the UK and, in the case of imported products, in producer countries.
- › Protect the diversity of both plants and animals and the welfare of farmed and wild species.
- › Avoid damaging or wasting natural resources or contributing to climate change.
- › Provide social benefits, such as good quality food, safe and healthy products, and educational opportunities.

It is becoming a natural part of consumer narrative to ask questions about the origins of our food. Expecting producers to deliver honestly and transparently on this information will become a hygiene factor in 2017.

4 Eat Clean 2017

Clean label is a trend with plenty of room to run over the next few years. At the Institute of Food Technologists (IFT) Expo in Chicago in July 2016, clean label was the number one talking point around consumers, ingredients, packaging, processing and product development challenges.

What is clean label? Again, there is no regulated definition but in general terms clean label products have fewer ingredients, no artificial sweeteners, no artificial flavours or preservatives, low added sugar, high fibre, whole grains, and low sodium and saturated fat.

2017 will see further developments in the technologies, ingredients and new product development processes required to reformulate, relaunch or redesign existing products.

2017 will see further developments in the technologies, ingredients and new product development processes required to reformulate, relaunch or redesign existing products.

5 Snackification

Snacking now makes up nearly half of all eating occasions and is one of the most profound changes in consumers' behaviour. Time-poor consumers, rising health consciousness, higher discretionary incomes and demand from grocery are drivers of snacking.

Consumers eat around their schedules rather than around mealtimes. While dinner remains an important social meal for many, breakfast and lunch are routinely “snackified”. Millennials and baby boomers are significant snackers but with different needs. Millennials are multisnacking largely due to their busy lifestyles, which are often structured around part-time and casual work leaving them too time-poor to cook meals. Baby boomers snack to avoid consuming larger meals – often alone or just for two.

Wrapped in all of this is the need for high quality, targeted nutrition, high levels of palatability and convenience. These factors are only set to grow in importance over the next year. ¹³

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



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If you don't like hurting animals,

— *why do you eat them?* —

New research explains the meat paradox, examines the link between ugly food and waste, looks at the future of hops, and finds a weak link between liking and actually eating lollies – even if you're only 10.

WORDS BY DRs RUSSELL KEAST, GIE LIEM, MEGAN THORNTON AND SARA CICERALE
ADVANCED SENSORY SCIENCE, DEAKIN UNIVERSITY

CHOOSING THE APPLE WITH THE SPOT

Food waste is a major issue for the food industry with policy makers and non-governmental organisations applying pressure to reduce the amount of waste. According to some figures, approximately 33 to 50 per cent of all produced food is wasted, which is a drain on water, land and other natural resources.

It would seem that appearance is important – not just our own, but also the appearance of food we eat, or rather don't eat. One significant source of food waste at retailers and in households seems to be the unwillingness to sell, purchase, or consume foods that deviate from normal or optimal appearance, labelling (proximate use-by date) or packaging (dented or torn). We do not know the key factors that explain consumers' distaste for unappealing food. A recent study sheds some light.

An online choice experiment among 4214 European consumers examined preferences for suboptimal food products in terms of appearance, best-before date and packaging damage in supermarkets and at homes. The selected food items included an apple and a cucumber of inferior appearance, milk and yoghurt close to their use-by dates, and fruit juice and biscuits with minor damage to their packaging. For each type of food item, two images were created: an optimal version with standard

appearance or a distant best-before date, and a suboptimal version showing visual defects.

For every product, the suboptimal one was chosen less often when the respondents were in a supermarket compared to when they were at home. In supermarkets, only 25 per cent of consumers would buy a bent cucumber, and hardly any consumers would purchase an apple with a spot (2.6 per cent) or broken biscuits (3.3 per cent). At home, more than 40 per cent of consumers were fine with consuming milk (42.4 per cent) or yoghurt (46.9 per cent) past the best-before date, and 21 per cent would consume the apple with a spot.

The majority of consumers, however, were willing to purchase a suboptimal product if a discount was offered. The broken biscuits and the milk or yoghurt one day before the best-before date required a higher discount than the bent cucumber or the indented carton of juice. The apple with a spot required the highest discount.

There is marketing potential for suboptimal foods, especially to people interested in cooking. Campaigns that aim to reduce food waste of suboptimal foods in households may be more successful if they focus on consumers' commitment to environmental sustainability, or on shopping and cooking habits.

THE MEAT PARADOX

Why do so many people enjoy eating meat if they dislike causing pain to animals? A dissociation of meat with its animal origins, also known as the “meat paradox”, may be a contributing factor to this phenomenon.

A recent study investigated consumer dissociation with meat. In five experiments, participants (101–292 people per experiment) were asked a series of questions relating to empathy, dissociation and consumption willingness after being shown different pictures or descriptions of meat. In *Experiment 1*, participants were exposed to one of three pictures: a raw whole chicken, raw chicken cut into commonly consumed parts, or raw chicken mince. *Experiment 2* involved two pictures: a whole roasted pig or a beheaded roasted pig. In *Experiment 3*, participants were exposed to one of two advertisements: cooked lamb cutlets and a sheep, or cooked lamb cutlets alone. In *Experiment 4* participants were exposed to one of three conditions with different written words (“harvested”, “slaughtered” or “killed”) used to describe

of epoxyxanthohumol for the first time in hops. A sensomics heatmap of the quantitative results was created, and multivariate analysis used to categorise the hop varieties into five clusters. In particular, isoxanthohumol M was identified as a marker for German hops.

To examine the effect of both cold storage and oxygen on bitter compound concentrations, two additional analyses were performed. Analysis of nine cold-stored samples from 2003–2011 and fresh and kilned hops from 2011, found that some humulones and lupulones, as well as flavonoid glycosides, were not affected until after two and three years of storage respectively. “Forced aging” (using an oven at 50°C) tested the effect of oxygen during storage. Interestingly, some xanthohumols and flavonoid glycosides increased in concentration after one week of ageing, but then decreased (to give degradation products) as ageing continued.

Further research is still required to identify mechanisms of degradation.

A beheaded roasted pig evoked less empathy and disgust compared to a pig with its head intact.

meat. In *Experiment 5*, participants were randomly assigned to exposure to the written words “pork/beef” or “pig/cow”.

The study found that the more processed the chicken, the less empathetic participants were towards the slaughtered animal. A beheaded roasted pig evoked less empathy and disgust compared to a pig with its head intact. Coupling a living animal with cooked meat in an advertisement increased empathy and reduced willingness to eat that meat. Use of the word “harvested” resulted in a reduced empathy compared to the words “killed” or “slaughtered”. Lastly, using the words “beef/pork” reduced empathy and disgust compared with the words “cow/pig”.

There appears to be a number of elements involved in consumer dissociation with meat. The way meat is presented in terms of its production, preparation and the way it is discussed appears to have significant influence on consumer perceptions of meat.

PRODUCING BETTER BITTER BEER

When it comes to beer, Germany does it well. It is no surprise that when looking at the future of hops for craft brewing, German flavour scientists were involved. A recent study aimed to inform the future selection of appropriate breeding hops for better beer flavour and storage.

In examining flavour degradation over storage time, the researchers analysed 75 hop varieties from 12 different locations around the world. They quantified 117 bitter compounds (including flavonoid glycosides, xanthohumols and degradation products) in all 75 varieties using Liquid Chromatography-Mass Spectrometry (LC-MS). This included the identification

SWEET LITTLE TEETH

It is no secret that children like sweet foods. As free sugars in our foods have increased, you might think children would develop an even sweeter tooth, which would ultimately lead to increased consumption of sugar. However this relationship is far from clear, with most studies finding no evidence that an increase in sugar consumption is related to a heightened preference for sweet taste.

Methodological issues, however, could have resulted in these findings. Perhaps the focus should be on sweetness not just sugar content. Perhaps we should also measure more than just one type of food (eg. solids, liquids, snacks, fruits, cereals). To this end, sensory tests were conducted on 101 children (7–12 years old) to assess how much they liked a range of sweet foods. Each food had a different level of sweetness or sweetness intensity. The children’s “general” liking of sweetness and how much they liked particular sweet foods was correlated with their consumption of those foods.

The results show only a weak correlation between liking sweet taste and the consumption of sweet snacks and lollies. Could this be explained by the fact that parents tend to control what children consume? If so, a clear association should appear when children reach adulthood, but a number of studies have found no significant link. 🍬

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



from the sea

SALMON: A FISH FOR FOODIES

While a quarter of Australians consume salmon at least once a week, the majority are from the “trendsetter” and “entertainers” segments according to Roy Morgan culinary profiling.

More NSW residents eat salmon than any other state, with the greatest recent increase in consumption found in Melbourne followed by Queensland. The over 50s are the biggest consumers of the fish, which is rated highly by those who take their food seriously.

“Trendsetters” are adventurous with food and always looking for new flavours and ingredients, as opposed to the “takeaways” who are well below the average in salmon consumption. Interestingly, more than half the “trendsetters” are aged between 25 and 49, opening up a lucrative consumer market for salmon providers.

2000+ SEAWEED VARIETIES IN AUSTRALIA

Seaweed is becoming increasingly attractive in western countries for its health benefit as a natural alternative to salt.

There has been a rise in the number of launches of products containing seaweed in the last five years and a 10 per cent increase in global supplement launches containing seaweed from 2014 to 2015, according to research company Innova Market Insights.

Be it as a superfood, a fertiliser or in industrial gels, there are an ever-increasing number of uses for seaweed and more than 25 million metric tonnes are being produced by seaweed farms annually. Interest outside of Asia is growing due to its wide range of applications and because it can be produced in a sustainable fashion with very little environmental impact.

Despite the fact it is a \$6 billion global industry and Australia has

a natural advantage, we are still in the early stages of exploring the potential of our native seaweeds. There are more than 2000 varieties of seaweed in Australia and around 1000 species in Tasmanian waters alone. Processing of sea vegetables in Tasmania only began a few years ago as a partnership between Craig Sanderson, a seaweed biologist, and James Ashmore of Ashmore Foods Tasmania. Now called Kai Ho Sea Vegetables and based in Tasmania, this relatively new business venture harvests, processes and markets seaweeds for the edible market.

All Kai Ho seaweeds are locally foraged and harvested sustainably. The company aims to be a conduit for the sale of a wide range of edible globally-sourced seaweed products. Their main product, Wakame (*Undaria pinnatifida*), is an introduced, invasive seaweed first identified 1998 and thought to have been originally introduced in Tasmania via the ballast water of Asian trading ships.

Kai Ho’s new product, Red Lettuce (*Grateloupia turuturu*), is also introduced and only available in limited quantities. Being red it is very striking, has a subtle flavour and can be used chopped and shredded as a garnish or in salads and soups.

JOHN WEST AUSTRALIA WINS GLOBAL SUSTAINABILITY AWARD

A first for any Australian organisation, John West Australia was awarded the Best Engagement Campaign at the Ethical Corporation’s Responsible Business Awards in London recently.

The award recognises the partnership between John West, WWF-Australia, the Marine Stewardship Council and Pacificall to help end unsustainable fishing methods in the canned tuna industry in Australia. The alliance is the result of many years working together to find a way to overhaul John West’s supply standards and move towards a more sustainable future for the world’s oceans. ¹³

Australians Prefer Sustainable Seafood

New consumer data shows more Australians are opening their eyes, mouths and wallets to sustainable seafood.

Australian consumers are voting with their cash to future-proof oceans by choosing sustainably certified seafood, according to the largest-ever global analysis of attitudes to seafood consumption carried out by independent research company GlobeScan, on behalf of the Marine Stewardship Council.

Rather than a passing trend, it is an evolution driven by consumer demand. As 85 per cent of Australian households regularly buy seafood, there's an opportunity for consumers to make a difference. They want to know the fish they buy can be traced back to a known and trusted source.

The survey was conducted between January and February 2016 using large and reliable national consumer research online panels to recruit respondents, with a minimum of 600 seafood consumers surveyed per country in Australia, Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Poland, Singapore, South Africa, Spain, Sweden, Switzerland, UK and the USA.

The statistics

85% of Australians buy seafood regularly.

65% want to know where their seafood comes from.

75% believe sustainably sourced seafood is a top priority for future-proofing our oceans.

51% are prepared to pay more for certified seafood and are willing to spend 11% more.

54% are likely to trust the source of the products if they are eco-labelled.

36% are purchasing more eco-labelled seafood than a year ago.

71% believe brands' claims about sustainability need to be labelled by an independent organisation.

Globally, 66% of respondents are willing to pay more for sustainable goods – up from 55% in 2014 and 50% in 2013 (Nielsen's The Sustainability Imperative, October 2015).

The Marine Stewardship Council is an independent non-profit organisation that sets a standard for sustainable fishing.

Ocean sustainability is a topic with global relevance and ranks high in seafood purchase decisions.

Export growth keeps fishing and seafood processing afloat

Overseas markets are becoming increasingly important to Australia's fishing and seafood processing industries, according to IBISWorld Research. Among Australian seafood processors, IBISWorld estimates that exports account for a sizeable 76.6 per cent of total industry revenue, or almost \$1.2 billion. Some of the seafood processing industry's key exports include rock lobster, tuna and prawns.

The aquaculture, fishing and seafood processing industries that farm, catch and process fish generate more than \$4 billion annually and offer around 13,000 jobs across Australia. Due to a rise in incomes, health concerns and increases in beef processing, people have begun eating more seafood and alternative proteins. IBISWorld says seafood consumption has grown by 1.1 per cent to reach 18.3 kilograms per capita with tuna, salmon and trout some of the most commonly consumed fish in Australia.

Over the past five years, exports have become increasingly important to fishing and seafood processing as overseas markets demand higher profit margins. Australia tends to import low margin, cheaper seafood products such as bass fillets and export high value products such as premium Tasmanian salmon. An expanding Chinese middle class has boosted demand for high-value Australian-caught fish and seafood including lobster, crab and abalone.

Traditionally, Australians have preferred to consume Australian-grown produce and seafood due to its perceived quality and the economic and social benefits of supporting local industry. Some seafood products, such as salmon or snapper, will often only be accepted by Australian consumers if they are Australian. ©

HOW TO DEAL WITH FOOD FRAUD AND THREATS

A close-up photograph of a hand holding a black apple. The hand is wearing a black glove on the index finger and thumb, while the rest of the hand is bare. The apple is a deep, matte black color. The background is a plain, light grey.

With increasing criminal attacks on the food industry, you need a plan to protect your customers and your reputation.

WORDS BY JOHN VARCOE
QUALITY ASSOCIATES

In 2008 six infants died in China after drinking melamine-laced infant formula and more than 300,000 people were affected by contaminated dairy products. In 2013 undeclared horse meat was found in beef products across Europe. Even here in Australia we have recently seen food fraud activity associated with imported honey (adulterated with sugar syrup) and free range eggs (not free range).

Behaviourally or ideologically motivated threats and food fraud is a growing concern for the global food industry. With the increase in globalisation and complexity of supply chains, criminal activity in the food industry is on the rise and companies are losing money and facing reputational damage. Food fraud alone is reputed to cost the global food industry US\$10–15 billion every year. The industry needs to protect consumers by strengthening its capability to proactively identify and combat these risks.

The food industry today is reliant on the principles of HACCP (Hazard Analysis and Critical Control Points) for safe food production. Currently, many food safety management systems are designed around traditional HACCP applications. Unfortunately, HACCP is not designed to deal with deliberate tampering with foods or ingredients – either due to fraudulent, economically motivated adulteration or malicious contamination associated with extortion and terrorism.

New food safety guidelines have been introduced by various scheme owners and attempts have been made in various geographical regions to deal with these risks through regulations or international standards. There are many examples of this in the US in relation to food defence, dealing with the real threat of terrorism, and in Europe and Asia in response to food fraud scandals

But as this area of risk management in the food industry is developing, there is still a lot of confusion about different approaches and terminology. For instance, TACCP (Threat Assessment Critical Control Points) is seen to deal with food

Behaviourally or ideologically motivated threats and food fraud is a growing concern for the global food industry.

defence associated with behavioural and ideological threats, while VACCP (Vulnerability Assessment Critical Control Points) specifically deals with food fraud and vulnerabilities associated with economically motivated adulteration (EMA), primarily in relation to raw materials and ingredients. Both methods can be used independently of each other.

The US Food and Drug Administration's (FDA) *Food Safety Modernization Act (FSMA) Final Rule on Mitigation Strategies to Protect Food Against Intentional Adulteration* requires companies to have a food defence plan including a vulnerability assessment. Guidelines produced by the Global Food Safety Initiative (GFSI) and Woolworths consider VACCP as dealing with economic motivation and TACCP as dealing with behavioural and ideological motivation. The UK *PAS 96:2014 Food Defence* standard regards TACCP as the evaluation of threats from any source, including EMA, and recommends assessing vulnerabilities to all these threats at each step throughout the food supply chain using a paddock to plate approach.

What all these systems have in common is that they are based on risk management – identification of who the attacker might be, their motives, the type of food tampering, where tampering may occur and how to reduce the risk through specific interventions.

Instead, perhaps it is best to take a holistic approach and think about managing this set of complex issues as a complete Threat and Vulnerability Management Program, rather than only focusing in isolation on TACCP or VACCP, otherwise you risk the chance of having a disjointed program and will fail to capitalise on the synergies between the two. ►

Let us show you through the TACCP & VACCP Maze...


TACCP (Threat Assessment Critical Control Point) & VACCP (Vulnerability Assessment Critical Control Point) Systems are becoming essential components of business risk management. There is a genuine threat to food manufacturers from deliberate malicious attacks, food fraud or substitution and adulteration. However, many companies are confused as to what TACCP & VACCP is, let alone develop and implement systems.

Quality Associates are experts in TACCP & VACCP Systems and offer consulting and a comprehensive training course that will enable you to identify different types of threats, determine vulnerability points in the supply chain and conduct a TACCP & VACCP evaluation using risk management framework.

Find out more by visiting www.qualityassociates.com.au or speak to us today, call 1300 737 193



PB10327



Food fraud alone is reputed to cost the global food industry US\$1 to \$15 billion every year.

Implementing a Threat and Vulnerability Management Program can best be summarised in eight steps.

STEP 1. Form a cross-functional implementation team.

STEP 2. Identify and assess potential threats (economic, ideological, behavioural) against the organisation, operational site and product.

STEP 3. Develop flow charts for the food supply chain.

STEP 4. Identify where the vulnerable points are in the supply chain for specific threats.

STEP 5. Evaluate risk and prioritise these threats and vulnerabilities using an impact and likelihood matrix to categorise the overall risk.

STEP 6. Assess the need for an additional control that detects or prevents such threats.

STEP 7. Keep records of assessments and findings.

STEP 8. Keep a watch on developing trends and issues from a global perspective and review the plan periodically, at least annually or when a change or incident occurs.

As there are many different types of motivations and possible avenues of attack, intimate knowledge and information, as well as an historic perspective of the company's operational activity is important. The implementation team should comprise individuals with a wide range of tenure and job roles including security, human resources, quality, production, purchasing, distribution, marketing, information technology and so forth. In contrast to HACCP, developing a Threat and Vulnerability Management Program should not rely solely on the quality professional, but rather it should be shared as part of a wider business continuity process. For business-wide acceptance it may best if the program is driven from outside the quality function.

It is important to have trusted team members participate, as information discussed is highly confidential and, in many respects, very sensitive. The plan will become the vulnerability blueprint for the business, which can be dangerous in the wrong hands.

When assessing attackers, it is important to think about their motivation, capability and determination. This can sometimes be achieved by putting yourself into the attacker's mindset to "think like an attacker".

Controls will need to be identified for high risk points in the supply chain and recorded confidentially. Where the residual risk after implementing changes is still excessive, or where new information changes the risk profile, further controls will need to be considered and implemented.

Controls will be specific to the risk identified and, while by no means an exhaustive list, they could range from one or any combination of these factors: controlled access to site; site security; risk rating and auditing suppliers of ingredients and raw materials; testing and inspection of raw materials and product; human resource screening; using cameras in at-risk points; and using tamper evident seals and packaging.

Finally, as with any risk management system, the response to a possible incident should be pre-planned and practiced with periodic mock exercises. Emphasis should be placed on ensuring public safety always comes first, followed by commercial interests and the effectiveness to react and recover in the best possible way.

We find that many businesses in Australia have little experience with these new food safety guidelines and, with the confusion between TACCP and VACCP, they simply do not know the best place to start. I believe that over time threat and vulnerability programs will become an integral part of food safety management systems across Australia. ®

TYPICAL THREATS

Economically Motivated Adulteration (EMA) eg, substitution, dilution, grey market, diversion, theft, mislabelling, concealment

Malicious contamination

Extortion

Counterfeiting

Cyber crime

Espionage

ATTACKER PROFILES

Attacker Type	Drivers
Extortionist	Financial gain, remaining hidden, targetting high profile business
Opportunist	Has access, technical knowledge, rationalises substitution
Extremist	Focus on impact, possibly wants to cause harm, failure is a deterrent
Irrational Individual	No specific motive, detection or preventing access is a deterrent
Disgruntled Individual	Believes has been treated unfairly, wants to cause embarrassment or financial loss
Cyber Criminal	Drive a cause or disrupt business through IT platform
Professional Criminal	Make money if little risk of getting caught or penalised

John Varcoe is a Partner and Managing Director of Quality Associates, a provider of client-focussed quality services and training (RTO 41341) to the food industry. For further information, please visit www.qualityassociates.com.au.

SAVE THE DATE!

Want to know more about TACCP & VACCP? Quality Associates will be presenting on the topic at the 2017 AIFST 50th Anniversary Convention from 17–18 July 2017.



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An apple a day

WITH AMPLE SUPPLY AND LOW PRICES, NOW IS THE PERFECT TIME TO EXPLORE ALTERNATIVE WAYS TO USE APPLES AND PEARS.

WORDS BY RICHELLE ZEALLEY
APPLE AND PEAR AUSTRALIA LTD

While consumers will always want to bite into a crisp apple or a juicy pear, developing high value fruit-based products is a great way for growers to increase profitability. Many growers are already value-adding to their fruit by juicing and producing cider, but there are many more innovative ways to make the most of your produce.

Developing apple or pear fruit bars, vinegars, ciders, chips and purées are great ways to improve margins on lower grade fruit. But there are also huge opportunities to develop fruit-based products for people who are hungry for health conscious alternatives to traditional products, who suffer various food intolerances, or who are failing to meet their daily nutritional requirements. The by-products of apple and pear juicing are packed with fibre – turn those into a flour or purée and they can help Australians reach their daily fibre intake while maintaining a nutritious gluten-free diet.

Australia has an opportunity to build on its international reputation for clean, green, quality produce and use its large pool of skilled development technologists to deliver the next wave of new ideas. Extend this to a range of value-added commodities and the opportunities could be endless.

REVOLUTIONISING THE INDUSTRY

Delegates at the 2016 National Horticulture Convention had the opportunity to hear Jonathan Middis, Chief Technical Officer of Food Revolution Group, present on *Value added opportunities for apples and pears*. His company takes a range of fruits and extracts nutrients, fibres and more to make them into a range of saleable juices, smoothies, fibres, infused fruit pieces, beverages, and functional ingredients using a portfolio of patented technologies. Only launched in 2014, Food Revolution Group won the 2015 Victorian Manufacturing Hall of Fame Award for food and fibre processing.

Companies like the Food Revolution Group are formed in response to consumers' dissatisfaction with the lack of product innovation, their increasing awareness and distaste for additives and preservatives, and the lack of "real" and "natural" food in convenient, packaged products. "Increasing costs of production, continuous price pressure from retailers and a relentless appetite from consumers for healthier diets means growers and processors need to adapt in order to grow," Middis said at the Convention.

A good example is Food Revolution's innovative use of fruit fibre. Fibre is found in a range of foods such as fruits, vegetables, whole grain products, legumes, nuts and seeds. The Dietitians Association of Australia recommends people eat at least 25-30 grams of fibre each day, but according to Middis very few Australians actually consume this amount. To put this into context, a medium-sized unpeeled apple contains just over four grams of fibre while a pear contains just over five grams.

Food Revolution offers unmilled pear fibre, which looks like an oat cluster, as an alternative for breadcrumbs, oats and as an ingredient in smoothies. "This product is a great offering for someone with a gluten or grain intolerance as the fibre offers texture, nutrition and substance," Middis explained. "This product is also available in a milled form where it is quite similar in appearance to flour – and of course can be used as a flour substitute."

The company also produces Hi-Fi, a 100 per cent natural dietary fibre made from apples and oranges that contains 3.7 grams of fibre per tablespoon. Hi-Fi can also be used as a flour substitute, but is a little denser than flour so quantities need to be adjusted when cooking. Competitor Metamucil contains three grams of fibre plus sucrose, psyllium husk, citric acid, and natural and artificial flavours.

Artificial ingredients are also often present in dried fruit products. According to Food Standards Australia and New Zealand, they commonly contain preservatives such as sulphites (220-228),

which can trigger allergic reactions in asthmatics. The dried fruit products developed by Food Revolution only have fruit ingredients. To add more flavour they are infused with other juices and spices including cinnamon, strawberry, raspberry, apple and blackcurrant.

GETTING RID OF WASTE

The beauty of all these products is that there's limited waste. Think about juicing – after you've extracted the juice from the fruit, you're left with pomace. Pomace is commonly used for stock feed or dumped as waste but it could be turned into flour.


Recently, University of Auckland PhD student Ninna Granucci made international headlines with her development of a nutrient-rich, high-protein, low-calorie apple flour. According to the *NZ Herald*, Ninna has received queries from around the world, including from supermarkets looking to stock the product, vegan and gluten-intolerant consumers, cafés looking for innovative products, and apple processing companies currently sending their waste to landfill.

In 2015, FoodBev Media, a global company that reports on international food and drink innovations and trends, said the total functional flours markets could grow in value to more than US\$800 billion by 2019. There is already demand in Australia for these type of products – walk through the baking aisle of your local supermarket or health food store and you'll already find flour made from coconuts, chickpeas, rice, soy, arrowroot, almond, pumpkin seeds... and the list goes on. Why not add apples and pears to this list?

BUILDING RELATIONSHIPS WITH GROWERS

The Food Revolution Group is currently working with growers in the Goulburn Valley but is always on the lookout for new partners and opportunities. "We are always looking to develop relationships with growers and the timing of supply is managed through forecast and strategic planning," says Procurement Manager Randall Dow.

"We are also open to working with growers to develop new ideas – they have the fruit, know what to do with it, and we have the technology. We see the importance and opportunity to work with growers to develop new products and channels away from juice. If the grower just sells us apples or pears and we fund everything else, they just get the price of the fruit that we buy. If we do things together we share the profits. We are also happy to look at joint ventures," Randall adds.

To help identify and commercialise new ideas, The Food Revolution Group has launched a separate business, Defugo, which is actively looking for growing partners to co-develop new product ideas. 

Bringing the revolution to you!

New business: Justin Nikolovski at jnikolovski@thefoodrevolutiongroup.com.au

Fruit supply: Randall Dow at rdow@thefoodrevolutiongroup.com.au

Richelle Zealley is the Communications and Events Officer at Apple and Pear Australia Ltd (APAL).



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The food loss bank

A concept that could transform the food supply chain.

WORDS BY CSIRO





here are momentous challenges ahead for successfully feeding the growing world population. About 795 million people are undernourished, while more than two billion people are overweight or obese. Forecasts predict that by 2050, nine billion people will need to be fed in an environmentally and nutritionally sustainable way.

Meeting food and nutritional needs in a world of diminishing natural resources requires a combination of strategies such as reducing food demand, increasing food production and maintaining sustainability. Food processing also plays a major role in food and nutritional security, with strategies needed to reduce production losses during processing and increase nutritional content, shelf life and environmental sustainability.

In the meantime, approximately 1.6 billion tonnes of food production annually is not even consumed by humans – it is used for other processes such as composting or ends up as landfill. As it travels from farm to retail, food is lost during production, harvest, post-harvest handling, storage, distribution and food processing. Once food reaches the consumer, massive amounts are wasted. But much of this lost or wasted food is potentially edible biomass – it could be diverted back into the global human food supply.

The UN has addressed these and other global problems and in 2015 released the *UN Sustainable Development Goals*. Among those goals are Zero Hunger (Goal 2) and Responsible Production and Consumption (Goal 12). By facilitating the redirection of food that is usually lost from the food supply back into the food chain, the Food Loss Bank will help achieve those goals.

THE FOOD LOSS BANK CONCEPT

The Food Loss Bank Streaming Platform is a networked supply chain that will facilitate classification, provenance, storage and diversion of the edible food loss biomass suitable for human consumption back into the food supply chain.

We propose a physical and virtual stage-gated food loss streaming platform whereby intelligent decision-making is applied at each stage-gate. That decision-making will be based on combined heterogeneous data – relating to aspects such as biomass type and safety, stability and supply chain logistics – to determine optimal diversion of biomass at each point.

One of the biggest hurdles is ensuring underutilised biomass is safe (or can be made safe through processes such as heat treatment and fermentation) for human consumption, while preserving its nutritional value. Ensuring product safety requires gathering a range of data relating to physical, chemical and microbial quality attributes of the biomass.

The physical biomass will be assessed at each stage of the food supply chain by lab-on-a-drone or other mobile, highly integrated laboratories for microbial, chemical and physical properties and safety evaluation (ie high-throughput tests for food-borne pathogens, toxic chemicals and volatiles, and temperature, humidity electrical, magnetic and optical testing). The data collected will be sent to the virtual food loss streaming platform for fit-for-purpose or use matching. Specification sheets for the raw and added-value underutilised edible biomass will be developed certifying the material for use.

THE FOOD LOSS BANK

The Food Loss Bank is a transitory store for edible food loss biomass (Figure 1). It is a central node in the new dynamic and networked value chain with a central supply chain node, which consists of both physical and virtual components. The physical component is the store for edible food loss biomass flow (FLBF) available for diversion back into the food supply chain. The virtual component is a repository of knowledge designed to support decisions made by all participants in the food supply chain. The Virtual Food Loss Bank (Figure 2) uses algorithms, simulations and the trade-off analysis between quality and higher operation costs to incorporate perishability and traceability information and to consolidate various data streams collected for an optimised new dynamic food chain. ►

Figure 1. The Food Loss Bank

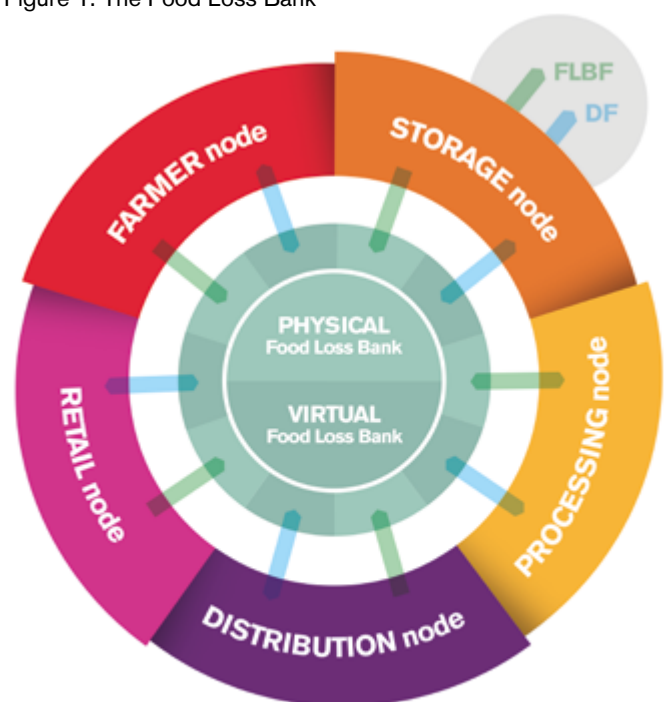


Figure 2. The Virtual Food Loss Bank



HOW WILL THE FOOD LOSS BANK WORK?

The Food Loss Bank connects each point in the food chain to catalogue underutilised edible biomass supplies, facilitates yes/no decisions on the availability and safety of edible biomass at each point in the supply chain, determines optimal diversions and provides a data portal each supply chain stakeholder can access.

A dynamic network map indicates where supplies are held and where they could be diverted to and for what further processing. This gives each stakeholder an overview of the supply chain and facilitates understanding and management of available biomass.

Take, for example, the horticultural supply chain. Produce that does not meet cosmetic specifications is rejected for sale as fresh produce and never even makes it into the fresh food market. With the Food Loss Bank, it will be possible to monitor undersized or misshapen horticultural harvests, collate this data within a growing district and direct the produce to other uses.

The particular characteristics and extent of non-conformance to specifications will dictate how such produce may re-enter the food chain.

Canada and France have solved this problem by creating a new category sold in supermarkets – “ugly fruit and vegetables”. This produce may not look great, but because it meets food safety requirements it can be sold for human consumption in a different category. Some countries are redirecting produce to processing operations such as juicing. Juicing, however, also produces a side product, pomace, which is currently being used for animal feed or sent to landfill. To avoid this food loss, CSIRO have embarked on a project that collects apple pomace for further processing into higher value food ingredients (eg apple pomace powder, which could be used as a supplement, a functional nutritional ingredient, or in formulated extruded products).

WHY HAVE THE FOOD LOSS BANK STREAMING PLATFORM?

This Food Loss Bank Streaming Platform will create a more integrated and efficient supply chain with reduced food loss, traceability and certainty, providing a mechanism for achieving the aspirational goal of maximising the conversion of underutilised edible food biomass into safe and acceptable food ingredients and manufactured food products. Producers along the supply chain will be able to “bank” a stabilised edible food loss that can later re-enter the food chain via the streaming platform.

Looking at the big picture, the Food Loss Bank will help increase the efficiency of food production systems, decrease the associated environmental footprint, facilitate increased economic efficiency, and help tackle the immense problems of global hunger and feeding the world’s population.

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Karolina Petkovic is a Team Leader of Microfluidics & Fluid Dynamic Team at CSIRO Manufacturing.

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



A New Food World?

WHAT TRENDS WILL DRIVE CONSUMERS TOWARDS 2025?

Chr. Hansen has recently conducted a project on future innovations in food. Key insights and changes that can be anticipated in the world of food and health during the next 10 years include:

- › Consumers' move to a new food world – where real food is demanded by more people.
- › The predicted future of dairy as a stable food category.
- › The presence of five value drivers (tasty, healthy, convenient, authentic and safe) consumers will use to make food purchases and choices over the next decade.
- › The ongoing consumer concern over food's affordability.

Chr. Hansen's Director of Corporate Strategy, Dr Kelli Hayes, led the study and she emphasised that consumers' pursuit of real food is a constant negotiation among the five value drivers and the dilemmas and trade-offs they involve.

"Negotiating among the five value drivers results in people facing difficult dilemmas and contradictions. For example, consumers

often find it difficult to find healthy foods that are also safe to eat since the healthiest foods are those that are high in nutrients and contain no chemicals, but such unprocessed, fresh foods tend to be unstable and present a safety risk. Consumers also think it is difficult to find food that is both healthy and convenient since eating healthily requires extra time and energy that people are hard-pressed to find.

"Providing affordable solutions that meet multiple value drivers will be the key to the industry's success and present significant innovation opportunities," Dr Hayes said.

This research into understanding changes in consumer food behaviour required significant insight and observations, and a series of "consumer immersions" were conducted in partnership with anthropologists and sociologists. These studies involved spending six to eight hours with each consumer, giving the opportunity to dig through pantries, grocery shop with them, and observe the gap between their aspirations and actions. 🍌

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Vegetables Fresh Facts

25% of the recommended dietary intake of vitamin C can be found in one serve (75 grams) of red radish
(source: veggycation.com)

\$5.87 kg

Zucchini's national average price in August 2016, significantly higher than April 2016 when it was just \$3.65kg
(source: Project Harvest Wave 39)

3.9 grams

Of fibre in half a cup of brussels sprouts
(source: gofor2and5.com.au)

1-3 days

How long The Heart Foundation recommends storing cucumber in the refrigerator crisper, ie eat it quickly!

68%

Of consumers cannot name a variety of carrot
(source Project Harvest Wave 37)

\$23 million

Additional profit Australian vegetable producers are predicted to receive if consumption was 10% higher
(source: *Deloitte Access Economics 2016 Report, The impact of increasing vegetable consumption on health expenditure*)

68%

Of 30,000 respondents from 61 countries who preferred local brands to global ones for vegetables
(source: Nielsen Global Brand Origin Survey)

10.74 Metres

The tallest sweet corn plant in the world. Grown by Jason Karl of the United States and measured on 22 December 2011 by Guinness World Records

Statistics courtesy of Vegetables Australia magazine, November/December 2016, p8. Vegetables Australia is the official publication of AUSVEG. ©

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