

# WASTE BYTES

## FOOD WASTE INNOVATION



### REDUCING THE VOLUME AND IMPACT OF FOOD WASTE.

Food Waste Innovation measures food waste, develops reduction strategies, applies innovative technology, and works to modify producer and consumer behaviour. We work collaboratively with stakeholders and supporters in the public and private sectors.

## NOTE FROM THE DIRECTOR

Fakamālo atu kia te koutou uma - greetings everyone as we celebrate Tokelau Language Week. Over many years, our team have been quantifying, understanding, and providing recommendations for action on food waste prevention and reduction in a wide range of sectors. Somewhat embarrassingly, though, until recently, we have ignored researching these issues in our backyard. So, I'm delighted with the recent publication "Food Waste Initiatives in the Tertiary Sector in Aotearoa New Zealand: The Challenge of Meeting SDG 12.3". The paper is published in Pūhau ana te Rā: Tailwinds, a journal focusing on student and emerging researchers who can accelerate our progress towards a thriving future. The lead author, Briar Mills, conducted a summer scholarship investigating food waste initiatives at 13 of NZ's tertiary institutes. She found that although a range of initiatives are in place, these approaches are mainly near the bottom of the waste hierarchy, so recommendations have been made for new initiatives to reduce the volume of excess food, focusing on prevention and avoidance as well as on recycling and recovery.



Briar is now doing an MSc, where she is doing a deep dive into one of the significant sources of food waste within the sector – residential colleges. This work is being supervised by Food Waste Innovation researchers based in academic departments as well as in the Toitū te Taiao (the University's Sustainability Office). Research like this that is conducted in real-world environments in collaboration with users and stakeholders is exactly what we need more. Our team is keen to explore how we can better use universities as living lab settings to drive food waste prevention at multiple levels – from educating the next generation of food waste and sustainability leaders to making impactful, positive changes on our campuses and local communities. As the teaching semester closes, we are really looking forward to hosting our next cohort of summer research students to engage in such work. I'm particularly excited about a project that will continue our investigations of food waste in universities – but will broaden our gaze across the 'Sea of Islands' to learn more about what is happening in universities across the Pacific region.

*Tofa koutou, Miranda*



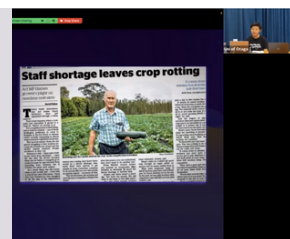
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## RESEARCHER SPOTLIGHT

**Professor Lisa McNeill**  
 Department of Marketing

### **Kia ora Lisa, tell us about your research interests.**

I am a Professor in the Department of Marketing at the Otago Business School. My research is underpinned by design-led thinking, identifying problems that consumption creates and providing useable solutions to consumers who wish to change or improve their consumption habits. I am particularly interested in the barriers to consumer behaviour change and how to overcome these whilst still maintaining life quality.

### **Could you explain how your research relates to Food Waste Innovation?**

My food-related research focuses on how consumers access and perceive information regarding food and how their behaviours are formed. With my colleague, Dr Rob Hamlin, I have examined how consumers interpret and respond to mandated food labelling information and respond to innovative or novel food solutions related to sustainability, including clean meat and alternative protein sources. My Master's student, Iwan Junaedi, and I are currently researching consumer responses to irradiation as an extended preservation method for fresh fruit and vegetables, contrasting this to consumer perceptions of genetic modification to increase food longevity.

### **What actions do you personally take to combat food waste?**

Over the last five years, we have made a significant effort toward 'waste-free' lunchboxes in our household, which has required a number of shifts in how we do things. I am a big fan of preserving and making pickles, relishes, etc., from fruit and vegetables that are bruised or toward the end of the 'fresh' scale, as well as making our own stocks that can be stored in desired portions in the freezer.



## STUDENT SPOTLIGHT

**Kim Shanks, Hayley McMillan &  
 Nethania Handoko**  
 Department of Food Science

### **Kia ora team, would you like to start by telling us a bit about yourselves and the WALL-E Walnuts?**

My name is Kim (team leader), and this is Hayley and Nethania, we are third-year Food Science students. WALL-E Walnuts is the name of our Food Product Development (FOSC311) project.

### **Where did the name WALL-E Walnuts come from?**

Nethania - we took inspiration from the movie WALL-E, which is about cleaning up the earth and trying to be more sustainable by reusing what we already have.

### **I love that, so tell me about your project.**

Kim - Our project brief was to develop an upcycled product using 30% of walnut "tank solids", a by-product produced that is often wasted. We did our market research and found there are currently no upcycled nut butters on the market and no walnut nut butters. So we have developed three nut butter variants using the walnut by-product.

### **What was the most challenging part of developing this product?**

Hayley - the hardest thing was standardising the inconsistency of the raw materials that we would get from the company. It was also hard to achieve the thicker consistency that we wanted and balancing the bitter flavour of the walnuts.

### **How do you envision your final product to look?**

Kim - we will package our product in amber glass to prevent oxidation and make it stand out from the other available nut butters and the fact that it is upcycled! It will be a source of omega-3 and fibre!

## NEW ZEALAND INTERNATIONAL SCIENCE FESTIVAL WRAP UP

As part of the festival, Food Waste Innovation had a stall at the University of Otago Science Expo and hosted an Upcycled Food Workshop. Our Science Expo stall focused on food sustainability and reducing food waste, showcasing the lifecycle of oat milk. We also developed a zero-waste oat milk ice cream, using homemade oat milk with the oat pulp (a by-product of the oat milk process) used to make oat pulp cones.



**Participant feedback: "Informative, hands-on, applicable to daily life, fun, learnt a lot."**

Our smoothie bike blending brown bananas and oat milk was a hit among the children and adults!

Thank you to Otis for supplying all the oat milk for the event.



**Participant feedback: "9/10 - Loved it! The workshop was both fun and educational, making it a great experience for families"**

Our Upcycled Food Workshop attracted 28 members of the public. The workshop focused on the dynamic food categories, plant-based milks and upcycled foods. The participants had the opportunity to make their own plant-based milk and use the pulp (usually considered waste) to create an upcycled product. To foster a sense of community, each group shared a portion of their milk, allowing every group to create their own upcycled product. The workshop resulted in a variety of products, such as almond meal, vegan, gluten-free crackers and vegan coconut pulp pancakes.

## TACKLING FOOD WASTE TOGETHER PANEL DISCUSSION

As part of the NZ International Science Festival and The NZ Institute of Food Science and Technology (NZIFST), we hosted the "Tackling Food Waste Together: Actions and Innovations" panel discussion. The panellists consisted of individuals from government, industry, academia, and the non-profit sector. The conversation focused on how the panellists are working to address food waste and provided tangible actions for the audience to contribute. The theme for the discussion was collaboration, hence 'tackling food waste together'. You can find the recording for this panel in our Resource Hub - link [here](#)



Panellists (left to right): Miranda Miroso, Craig Bunt (Uni Otago), Juliet Gerrard (PM's Chief Science Advisor's Office), Chris Hendersen (Dunedin City Council), Nicki Solomon (NZ Food Innovation Network), Hamish Conway (Goodman Fielder), Kaitlin Dawson (NZ Champions 12.3), Deborah Manning (KiwiHarvest)

## INTERNATIONAL STANDARDS ORGANISATION (ISO) ANNUAL MEETING

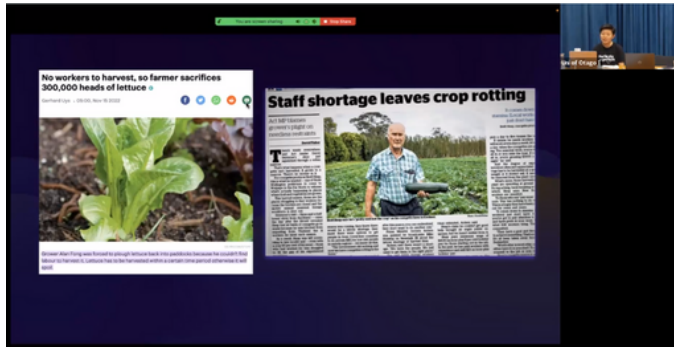
Our Director, Miranda, recently participated in the #ISOAnnualMeeting, which took place in Brisbane. The panel session was titled "Overcoming barriers to food loss and waste". The session was chaired by Raj Rajasekar, the Vice-Chair of the Codex Alimentarius Commission. ISO is developing a new standard, ISO/WD 20001, for food loss and waste management systems. This standard is being designed to help organisations throughout the food chain reduce food loss and waste. Committees are already working globally on developing this standard, which will provide a common framework for measurement and reporting and allow organisations to track their progress over time and identify areas where they can make improvements.



You can watch a recording of the session [here](#)

## SEMINAR HOSTED BY WENDY ZHOU

Wendy Zhou, founder of Perfectly Imperfect, recently visited Food Waste Innovation in Dunedin and presented a seminar about how we can redesign the food system.



Wendy launched Perfectly Imperfect during the global Covid-19 lockdown in 2020. Her inspiration came when a friend, a tomato grower, faced supply chain disruptions, leaving surplus yet perfectly good produce going to waste. Wendy was astonished to learn that 45% of New Zealand's fresh produce never leaves the farm due to imperfections. Perfectly Imperfect is a social enterprise in Auckland with a mission to reduce food waste and alleviate food insecurity. This is achieved through a network of volunteers who glean surplus fruits and vegetables post-harvest and provide them to the community in weekly mystery boxes. Additionally, Perfectly Imperfect operates a storefront offering rescued produce at reduced prices, increasing access to sustainable and affordable food. Wendy's business model ensures that the revenue from selling rescued produce returns to the hardworking farmers. You can find Wendy's seminar in our Resource Hub - link [here](#)

## MIRANDA AND FRANCESCA IN AUSTRALIA

Our director Miranda had the pleasure of connecting with our group's International Rep, Francesca Goodman-Smith (TRANSFORM Program Leader at the Australian Fight Food Waste Cooperative Research Centre) in Brisbane earlier this month. As well as meeting Francesca's team, highlights included site visits to FlyFarm (a highly automated Black Soldier Fly larvae farm that upcycles organic waste into quality protein for animal feeds and other sustainably produced by-products) and FareShare (that mobilises volunteers to cook delicious, free meals from rescued, donated and homegrown ingredients). Miranda said, "my visit reinforced the idea that we need to do a better job of staying connected with our Aussie friends. There is so much good work happening in Australia and it's silly not to share learnings and find synergies".



## FOOD WASTE INNOVATION IN THE NEWS



- Machine first of its kind in the world - link [here](#)
- \$4.6m awarded to help reduce food waste - link [here](#)

# NEW RESOURCES

You can find all the new and older resources in our Resource Hub - link [here](#)

Mills, B., O'Brien, R., Miroso, M., & Skeaff, S. (2023). Food waste initiatives in the tertiary sector in Aotearoa New Zealand: The challenge of meeting SDG 12.3. *Pūhau Ana Te rā: Tailwinds*, 1(2). <https://doi.org/10.11157/patr.v1i1.23> [Research article].

Miroso, M (2023, September 19). *Overcoming barriers to reducing food loss and waste*. International Standards Organisation (ISO) Annual Meeting [Video].

Zhou, W. (2023, September 15). *How can we redesign our food system so that the earth thrives and can feed us with positive, good food* [Video].

Gerrard, J., Hendersen, C., Miroso, M., Bunt, C., Solomon, N., Conway, H., Manning, D., & Dawson, K. (2023, July 4). *Tackling Food Waste Together: Actions and Innovations*. NZIFST Annual Conference [Video].