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GROWING SOLUTIONS REPORT:

Global innovations fighting fruit and vegetable waste on farms

The Hort Innovation Churchill Fellowship to investigate approaches for reduction of on-farm food waste in horticulture.

MELISSA SMITH

FEB 2025

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To everyone who shared their time and knowledge with me - thank you! Special shout-out to Michael Jones, Toine Timmermans, Rosa Rolle and Lisa Johnson for helping with planning.

The farmers, processors, industry experts and food rescue organisations I met were incredibly open about their work. Their real-world insights have helped shape practical solutions we can implement here in Australia.

I'm immensely grateful to End Food Waste Australia, especially Francesca Goodman Smith, Sam Oakden and Steve Lapidge for backing me on this journey.

And to my friends and family - thanks for cheering me on, believing in me and in this project. Your support means everything.

Munching a rejected apple on a farm in Kent, UK

Winston Churchill statue, London

Lettuce gleaning, Barcelona, Spain

Project Overview

Food loss and waste on farms is a costly problem. It happens when a crop that was grown with the intention of feeding people never makes it past the farm-gate, and is particularly prevalent in horticulture. It is wasting precious resources like water and land; it is reducing farmer and industry profitability, and it is impeding access to fresh produce for food-insecure Australians. Throughout my 25 years in agriculture, both as a farmer and in other roles, I have seen firsthand the critical issues that lead to food waste, both in my own farming operations and across the entire horticulture sector.

In my current role as Horticulture Lead at End Food Waste Australia, I head the delivery of the Horticulture Sector Action Plan, an Australian-first initiative that has brought the entire supply chain together to understand and reduce food waste from fresh produce nationally. This position, combined with my practical farming experience, has reinforced the importance of addressing food waste at its source - **before it leaves the farm.**

Fellowship Objectives

Through this Churchill Fellowship, my primary objectives were to:

- Investigate successful approaches to reducing on-farm food waste in horticulture across different countries.
- Learn from global best practices and potential pitfalls.
- Identify strategies to accelerate Australia's progress toward halving food waste by 2030.
- Explore collaborative solutions that benefit farmers, the industry, and the environment.

Personal Reflection

My experience has shown that reducing food waste before it leaves the farm delivers a triple win for the planet, people, and the economy. I am passionate about bringing together industry, government, science, and food charities to achieve Australia's ambitious goal of halving food waste by 2030. This Fellowship has provided invaluable insights and connections to help advance this crucial mission.

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Definitions

On-farm: The on-farm stage, also known as the production stage, is the initial and crucial part of the agricultural supply chain. This stage involves the growth, cultivation, and development of agricultural products.

Food Waste: (UN Food and Agriculture Organisation and other global bodies) - Food that leaves the supply chain resulting from decisions and actions by retailers, food service providers, and consumers. This includes food discarded at retail stores, restaurants, and households.

Food Loss: (Food and Agriculture Organisation and other global bodies): Food that leaves the supply chain during harvest, post-harvest handling, storage, transportation, and processing.[1]

Food Waste: (Australian Definition): All food intended for human consumption generated across the entire supply and consumption chain that does not reach the consumer or reaches the consumer but is thrown away (see Figure 1).

Horticulture: For the purposes of this report, this is the commercial production of fruits, nuts and vegetables. Nursery and turf production are not included here as they are not food producing industries. Per the Australian Department of Agriculture, Forestry and Fishing: Horticulture is Australia's third largest agricultural industry. It includes fruit, vegetables, nuts, flowers, turf and nursery products.[2]

Fresh Produce: See Horticulture.

Product Specifications: Detailed guidelines that outline the quality, appearance, and allowable defects of fruits and vegetables, ensuring consistency and marketability in the supply chain.[3]

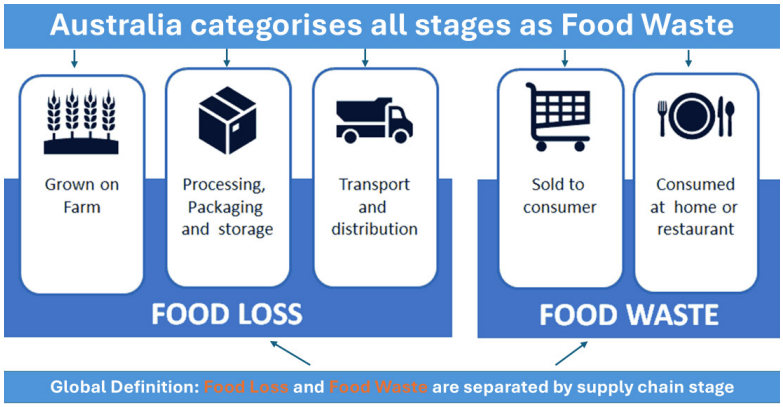


Figure 1 Global vs Australian definition of Food Loss and Food Waste,(image adapted from End Food Waste Australia)

Use of the term Food Waste

Australia's approach to defining food waste is comprehensive, and covers all stages of the food supply chain, including both edible and inedible food parts (See Figure 2). Other countries may have more nuanced or stage-specific definitions. In particular, using the term food loss for food that leaves the food supply chain in the production stage ie. on-farm or pre-farm gate, post-harvest or during processing (See Figure 1).

This report covers the on-farm stage of food waste. To prevent confusion, the term *Food Loss and Waste* or *FLW* will be used throughout.

Australia's Definition of Food Waste[4]

Australia's National Food Waste Strategy uses a broad and inclusive definition of food waste, which includes:

- Solid or liquid food intended for human consumption generated across the entire supply and consumption chain.
- Food that does not reach the consumer or reaches the consumer, but is thrown away. This encompasses edible food, as well as parts of food that can be consumed but are disposed of, and inedible food parts that are not consumed because they are undesirable or unable to be consumed (e.g., seeds, bones, coffee grounds, skins, or peels).

Scope

- The definition includes food that is imported into and disposed of in Australia. As well as food produced or manufactured for export but not exported.
- However, it excludes food produced or manufactured in Australia that becomes waste in another country.

Hierarchy

- The strategy also adheres to a waste hierarchy that prioritises waste management practices in the following order: avoid, reuse, recycle, reprocess, energy recovery, and dispose
- This hierarchy aims to guide the most resource-efficient and environmentally sound approaches to dealing with food waste. (see Figure 3)

Abbreviations

- ANFWS – Australia National Food Waste Strategy
- ASRS - Australia's Sustainability Reporting Standards
- CSRD - Corporate Sustainability Reporting Directive
- EU - European Union
- FLEX - FareShare Life Extensions
- FLW - Food Loss and Waste
- FOLOU - Food Losses in the European Union
- FRO - Food Rescue Organisation
- FAO – Food and Agriculture Organisation of the United Nations
- NGO - Non-governmental Organisation
- SEC - Securities and Exchange Commission
- WRAP - Waste and Resources Action Programme
- WWF - World Wildlife Fund

Key Words

- Food Loss and Waste (FLW)
- Horticulture
- Product Specifications
- Supply Chain
- Value-Added Processing
- Gleaning
- Measurement and Reporting
- Retail Collaboration
- Whole Crop Purchasing
- Food Security
- Food Rescue Organisations (FRO)
- On-farm Food Waste

Itinerary / Map

USA
- IFPA Conference
- Sustainability Council Meeting
- Farms, gleaning, processors, wholesalers
- NGO – WWF, WRAP, IFPA

UK
- Retailers
- Farms
- Processors, Packers
- Fareshare
- WRAP, WRI

SPAIN
- NGO – Espigoladors
- Processors, farms, gleaning.
- Central Wholesale Market
- Community Event


NETHERLANDS
• Retailers
• Rabobank
• Farms, Processors, Wholesalers,
• Wageninigen
• Start Up
ITALY
• FAO HQ
• Wholesale markets

Netherlands
5–10 September 2024

Organisation/ Event	Industry Contact	Position	Description
Ahold Delhaize HQ (Zaandam)	Jesse Brinkman	Sustainability Lead	Discuss retail food waste reduction strategies
Wageningen University - Food & Biobased Research Centre (Wageningen)	Sanne Stroosnijder, Melanie Kok, Hilke Bos-Brouwers	Program Manager, Project Manager & Researcher, Senior Scientist	Research collaboration meetings on food waste reduction
Samen Tagen Voedselverspilling/ Food Waset Free United (Wageningen)	Toine Timmermans, Zoe Verdaasdonk, Manon Ensink	Director, Program Manager, Manager Public Relations	Food waste reduction initiatives
No Waste Army (Breda)	Thibaud Van der Steen	Founder	Study commercial food waste reduction solutions
Bakker Barendrecht	Jildou Smit	Sustainability Project Manager	A major fruit and vegetable supplier's approach
Van Rijsingen Green (Den Bosch)	Gerbrand van Veldhuizen	Director	Site visit to study processing and waste reduction
Rabobank Loss & waste Hub (Veghel)	Margit van den Berg	Senior Business Developer	Financial sector approach to food waste
De Verspillingsfabriek - The Food Waste factory (Veghel)			Site visit to study processing and waste reduction
Verspillingsvrije Week (Amsterdam)			Food Waste Free Week kick-off event
Rabobank Headquarters (Utrecht)	Bernd Feenstra	Horticulture Sector Manager	Financial sector approach to food waste

Van Rijsingen Green site tour with Director, Gerbrand van Veldhuizen, Den Bosch, Netherlands

United Kingdom
11–19 September 2024

Organisation/ Event	Industry Contact	Position	Description
Marks & Spencer (London)	Sophie Straford, Daniel Ruckin	Climate Manager, Sustainability Program Manager	Retail food waste reduction strategies
World Resources Institute (London)	Mark Little	Lead Food Loss & Waste	Global food waste reduction initiatives
Driscoll's (Maidstone)	Sara Gil Bishop, Tetyana Bennet, Wayne Raines	Sustainability Lead, Head of QA and Compliance, Head of Compliance EMEA	Tour packhouse operations and waste fruit management
Dole Farm Visit, Boxford Suffolk Farms, Plantsman PO & Peake Fruit (Suffolk)	Mike Cantwell, Robert England	Technical and Compliance Manger	Visit farms to discuss sustainable operations and on-farm losses, Packhouse visit to discuss fruit waste management
Worldwide Fruit & Mansfield & Son Packhouse (Kent), Middle Pett Farm	Simon Devanney, Adele Fash	Senior Technical Manager, WRAP Account Manager	Tour packhouse and farm operations and waste fruit management
FareShare Hub (Ashford)	Sonja and Debbie	Food supply chainmanager/s	Tour hub operations and fruit distribution process
WRAP Meeting (Banbury)	William McManus, Didem Mahunsular, Tom Quested, Will Nicholson,	Sector Specialist Fresh Produce, Global Delivery Lead, Senior Specialist, Program lead Food	Meeting to learn from a fellow FLW NGO in this space

Boxford Suffolk farm's waste/surplus fruit ready for anerobic digestion, Suffolk, UK

Italy

25–27 September 2024

Organisation/ Event	Industry Contact	Position	Description
FareShare, UK	Emma White	Commercial manager- Fresh Produce	In depth understanding of fresh produce donation procurement
Centro Agro-Alimentarie Roma/Central Wholesale Markets (Rome)	Andrea Russo	Marketing Officer Senior Enterprise Development Officer &	Study wholesale market operations and FLW initiatives
FAO HQ (Rome)	Rosa Rolle, Luciana Delgado, Francesca Gianfelici	Team Leader Food Loss and Waste. Food and Nutrition Division, FLW Co-ordinator	Presentation and International Day of Awareness of FLW attendance

Spain

1–11 October 2024

Organisation/ Event	Industry Contact	Position	Description
Espigoladors HQ (El Prat, Barcelona)	Raquel Díaz, Hector Barco Cobalea,	Director, FOLOU director & Researcher	HQ, central kitchen, processing facility and community store visits
Espigoladors Tomato and Gleaning days (El Prat de Llobregat)	Marc Farrés	Gleaning manager	Gleaning activities
Espigoladors Great Food Saving Lunch (Girona)	Berta Vidal Mones, Adrià Burniol Garcia	Researchers	Collaborative FLW event focused on raising awareness and celebration
Mercabarna wholesale market (Barcelona)	Marc Farrés		Study Feedback food waste reduction programs

United Nations' Food and Agriculture Organisation (FAO) headquarters visit, Rome, Italy

Great Food Saving Lunch with Espigoladors' Adria Burniol Garcia, Girona, Spain

United States of America

15-31 October 2024

Organisation/ Event	Industry Contact	Position	Description
IFPA Global Produce Show (Atlanta, GA)	Various		Industry conference
IFPA Sustainability Council meeting (Atlanta, GA)	Rachel Dupree (Zespri CSO) Helen Pappas	IFPA Board and Sustainability Council Chair, Chair of FLW group	Global fresh produce experts sharing insights and priorities
Sharing Excess	Evan Ehlers & Victoria Wilson	Founder/Operations Director	Learnings from a successful startup platform redistributing surplus food
Farmlink Project	Luis Yepiz	Chief Procurement Officer	Improving surplus to FRO processes discussion
Howell Farming, (Raleigh, NC)	Lisa K Johnson	Consultant	Sweet potato harvest and food loss measurement
Ripe Revival, (Raleigh NC)	Will Kornegay	Founder & CEO	Study whole crop purchase model
Society of St. Andrew and Foodbank (North Carolina), NC State Fair			Gleaning and food bank volunteering
World Wildlife Fund, (Washington DC)	Alex Nichols-Vinueza, Jessica Beck	Director Food Loss & Waste USA, Program officer.	Policy and program development discussions
Kai Roberston (Washington DC)		Senior Corporate Sustainability Advisor	FLW protocols, sustainable food system initiatives
WRAP USA	Erin McCluskey	Food Systems Program Lead	Discussion about global food waste prevention initiatives
International Fresh Produce Association	Tamara Mureotagoena	VP Sustainability at International Fresh Produce Association	Food loss and waste reduction strategies in the fresh produce industry globally and the USA

Sweet Potato Gleaning in North Carolina, USA with Lisa Johnson

Executive Summary

During my Churchill Fellowship, I set out to discover different ways to tackle food loss and waste (FLW) at the on-farm stage in horticulture. My primary aim was to investigate innovative strategies and best practices from leading business, non-profit, and government organisations across Europe and the United States. Seeking solutions to address the significant challenge of FLW in the Australian horticultural sector. This investigation was particularly timely given Australia's commitment to halving food waste by 2030, and the large role that horticulture plays in achieving this, as just over 50% of all FLW in Australia[5] is fruit and vegetables.

My original focus remained consistent throughout the Fellowship: to identify practical, scalable solutions that could be implemented in Australia's horticultural sector. By studying international best practices and potential implementation challenges, I sought to develop recommendations that would not only reduce FLW on farms but also realise the co-benefits of improved sustainability, economic outcomes, and greater food security in our horticultural industry. This approach aligns with my role at End Food Waste Australia and my commitment to driving positive change in the sector.

Through site visits, interviews, and collaborative discussions with industry leaders, I studied diverse approaches in different countries to identify adaptable solutions for the Australian context. This included exploring technological innovations, policy frameworks, measurement protocols, commercial processes and collaborative models that have demonstrated success in reducing on-farm FLW.

Intended Audience

This report is intended for a diverse audience within the Australian horticultural sector and related fields, including:

- Horticultural producers, processors, and distributors.
- Policymakers and government agencies involved in agriculture, agri-food supply chains and food waste reduction.
- Industry associations and organisations focused on sustainable agriculture.
- Researchers and academics in the fields of agriculture, food science, and sustainability.
- Retailers and food service businesses working with horticultural products.
- Non-governmental organisations and community groups interested in food waste reduction and food security.

Highlights

Throughout my Fellowship, I encountered numerous innovative approaches and valuable insights including:

- **Collaborative Approaches (Spain):** Espigoladors' network of "champions" across public, private, and social sectors demonstrated the power of multi-stakeholder collaboration in addressing FLW
- **Measurement and Policy (UK, USA, Spain, Italy):** Organisations like WRAP UK, WWF USA, FOLOU, and the FAO have developed standardised measurement protocols for FLW. Their work with growers has demonstrated how consistent measurement frameworks can lead to better understanding and targeted reduction strategies, whilst policies such as the UK's Farm Gate Food Waste Fund are driving reductions through financial incentives.
- **Product Specifications (UK):** This issue was consistent across all countries and all parts of the supply chain. Driscoll's in Maidstone found that when retailers allowed temporary widening of specifications from 28-30mm down to 25mm minimum size for strawberries, it increased grower sales by 10-15%. While cosmetic flexibility was important, quality aspects like rot, softness, and mould remained non-negotiable.
- **Value-Added Processing (Netherlands, UK, Spain):** Van Rijsingen Green's approach to creating ingredients from side streams, such as using carrot pulp for fibre, demonstrated innovative ways to utilise the whole crop, whilst initiatives like Fareshare UK's FLEX project and Espigoladores' Esimperfect range highlighted the role of NGOs in the crucial product creation and commercialisation stages.
- **Gleaning and Social Impact (Spain, UK and USA):** Gleaning projects not only reduced on-farm losses, but also provided valuable data on FLW and raised public awareness.
- **Whole Crop Purchase (USA):** Ripe Revival's whole crop purchasing approach realised multiple benefits, including increasing returns to growers via sales of out-of-spec products like spaghetti squash (below) and sweet potatoes, increasing farmers' revenue at times by US$700 per acre
- **Technology Integration (UK):** Advanced technologies like drones and data analytics at Boxford Suffolk Farms showed how precision agriculture can optimise production and reduce waste.

Visiting Espigoladors partner, Foodback at the Mercabana wholesale market in Barcelona, where these rejected limes will be sorted and donated to food charities.

Racquel Diaz, Director of Espigoladors displays carrot soup made from surplus carrots at their processing site Esimperfect, Barcelona, Spain

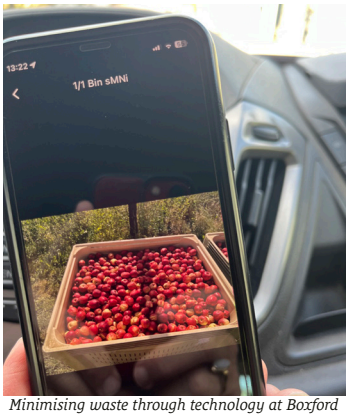
Tetyana Bennet and Sara Gill Bishop from Driscoll's, Maidstone display blackberries fresh off the packing line in carboard packaging – they are acting to reduce both food and packaging waste.

Blackberries from Driscolls, Maidstone, UK

Carrots held by Van Rijsingen Green Director that will be processed into new products, Netherlands

Marked Spaghetti Squash Finds a Home Thanks to Ripe Revival, USA

School children, teachers and volunteers glean sweet potatoes in Raleigh, USA



Minimising waste through technology at Boxford Suffolk Farms, Suffolk, UK

Conclusions & Recommendations

Based on the observations and learnings from my Fellowship, my conclusions and recommendations for the Australian context are:

1. Develop a National FLW Reduction Program: Collaborate with industry and government to create a coordinated approach to support reduction of on-farm FLW.

Benefit: Enhanced coordination and impact.

2. Standardised Measurement Protocols: Pilot on-farm research of measurement and reporting techniques to create an industry endorsed, user-friendly, standardised method of recording FLW on-farm.

Benefit: More accurate data leading to targeted interventions.

3. Prioritise Market-Driven Value-Added Processing with possible leadership from Food Rescue Organisations: Invest in market-led research and development of innovative processing techniques. This will create valuable products from horticultural side streams and out-of-spec produce, ensuring commercial viability is established before investing in processing infrastructure. Examine the role of food rescue organisations in piloting this work.

Benefit: Increased revenue for growers and processors via new market opportunities.

4. Review the Role of Product Specifications: Work with retailers and other customers to quantify the role of product specifications and develop mutually beneficial cosmetic standards for fresh produce, allowing for the increased sale of imperfect but edible items.

Benefit: Increased marketable yield.

5. Consider Gleaning Programs: Explore gleaning initiatives for reducing on-farm losses and collecting FLW data.

Benefit: Community engagement and food security.

6. Strengthen Policy Framework: Develop policies that incentivise FLW reduction and address regulatory barriers.

Benefit: Systematic change across the sector.

7. Enhance Education and Awareness: Implement public education campaigns about FLW issues.

Benefit: Behavioural change and market acceptance.

8. Encourage Technology Adoption: Support growers to implement precision agriculture technologies.

Benefit: Optimised production and reduced waste.

By implementing these recommendations, Australia can not only can significantly reduce FLW in its horticulture sector but also meet the national commitment to UN Sustainable Development Goal 12.3 to halve food waste, contributing to improved sustainability, economic outcomes, and food security.

Note left at the Rabobank Food Loss and Waste Hub, Veghel, The Netherlands

Introduction

This Churchill Fellowship report explores business, non-profit organisations, and government approaches that have reduced food loss and waste (FLW) at the on-farm stage in the horticulture sector. The Fellowship journey spanned multiple countries, including the Netherlands, England, Italy, Spain, and the USA, with the aim of identifying best practices and innovative solutions that could be applied in the Australian context.

Methodology

I used several different techniques to gather information about reducing FLW. By combining different types of research methods, I was able to get a clearer picture of what strategies work best.

The mixed-method approach included:

- Site visits to farms, processing facilities, and markets for first-hand observations.
- In-depth interviews with industry leaders, policymakers, non-government organisations, (NGO) and innovators to gain expert insights.
- Participation in local food recovery and redistribution initiatives for experiential learning.
- Analysis of quantitative data on FLW measurements and impacts.
- Case study examinations of successful FLW reduction programs.
- Literature reviews of relevant policies, articles and academic research.

This multi-faceted approach allowed for triangulation of data from various sources, enhancing the validity and reliability of the findings presented in this report.

Background

Food loss and waste (FLW) is a significant global issue, with far-reaching implications for food security, economic efficiency, and environmental sustainability[6]. In Australia, the horticulture sector faces unique challenges in reducing FLW. According to the Technical Report[7] for the Horticulture Sector Action Plan, the Australian horticulture industry loses an estimated 25% along the supply chain.

The causes of FLW in the Australian horticulture sector are multifaceted, including:

- Climate variability and extreme weather events, which can lead to crop damage and quality issues[8]
- Geographic isolation, resulting in long transportation distances and potential spoilage.
- Market dynamics, such as fluctuating demand and strict cosmetic standards.
- On-farm factors, including overproduction, pest and disease damage, and labour shortages.

The economic impact of this waste is substantial, with the value of FLW in the Australian fruit and vegetable industry estimated at a minimum of AU$1.8 billion[9] annually. Moreover, the environmental consequences are significant, with FLW contributing to greenhouse gas emissions and inefficient use of inputs and resources such as water, fuel, fertiliser and land.

This Fellowship sought to investigate international approaches to addressing these challenges, and identify opportunities for improvement in the Australian horticulture sector. By examining best practices from around the world, my aim is to develop strategies that can help reduce FLW, improve economic outcomes for growers, and contribute to a more sustainable food system in Australia.

Carrots ready to be processed at Van Rijsingen Green, Netherlands

Out-of-spec tomatoes gleaned in Barcelona, Spain

Apple harvest underway in Kent, UK, with juice grade in rear crates

Digging Deep: Insights from the Field

Gaining global perspectives at the FAO headquarters for International Day of Awareness of FLW, Rome

During my Churchill Fellowship journey through the Netherlands, England, Spain, and the USA, I identified eight significant strategies that individuals and organisations are implementing to combat the on-farm waste of fruits and vegetables. From high-tech solutions to creative partnerships, I learned from everyone involved - farmers, retailers, food rescue groups, and others who are rolling up their sleeves to reduce food waste where it starts.

These insights are:

1. Measurement and Reporting
2. Collaborative Approaches
3. Technology and Innovation
4. Policy and Regulation
5. Value-Added Processing – Food Rescue Organisation Leadership
6. Commercial Solutions/Whole Crop Purchasing
7. Retail Collaboration Opportunities
8. Including Farmer Perspectives

Insight 1: Measuring & Reporting

A key finding across all visited countries was the importance of accurate measurement and reporting of FLW. Through site visits and interviews with organisations such as WRAP (Waste and Resources Action Programme) in the UK, it became clear that precise measurement protocols have proven essential for understanding waste levels and developing targeted interventions. When organisations like Berry Gardens (now Driscoll's) implemented detailed categorisation and measurement techniques, it provided valuable insights into actual levels of waste occurring on farms.[10] This evidence-based methodology has proven essential for developing targeted interventions and measuring their effectiveness in reducing on-farm food waste. They were assisted by WRAP, who have been instrumental in developing standardised measurement protocols and encouraging businesses to report their FLW data.[11]

The work of Lisa K Johnson (Ph.D.) from the USA, also provides an excellent example of the importance of measurement in reducing FLW. Lisa has been active in FLW research for many years, is a leader in on-farm food loss research, serving as an independent consultant and National Program Manager for USDA-SARE[12] (United Stated Department of Agriculture - Sustainable Agriculture Research and Education). Her current projects focus on providing technical assistance and protocols for in-field measurement, and estimation and analysis of food loss, in fruit and vegetable crops and she has multiple publications on this topic.[13]

Measuring Sweet Potato FLW with Lisa Johnson

One of Lisa's notable contributions is her method for measuring FLW,[14] which has been influential in developing the World Wildlife Fund (WWF) Global Loss Tool.[15] This tool is now being used internationally, demonstrating the far-reaching impact of robust measurement techniques in FLW reduction efforts.[16]

My time with Lisa on a sweet potato farm in North Carolina reinforced the simplicity and accuracy of her method. Her methods also revealed the benefit of targeting harvest procedures that can increase waste such as piece-rates and grower training.

Lisa sharing some advice with school students during a gleaning excursion. She reinforced the role we all play in reducing FLW

Lisa's approach to measurement also extends to understanding the broader impacts of FLW reduction initiatives. For instance, her work considers factors such as boosting nutrition for food-insecure people and creating awareness among future consumers.

By including these additional outcomes, Johnson's work provides a more comprehensive understanding of the benefits of FLW reduction efforts beyond just the amount of food saved.

Lisa Johnson's work exemplifies how precise measurement techniques are fundamental to understanding the scale of FLW, identifying its causes, and quantifying the impact of reduction strategies. This data-driven approach is crucial for developing effective policies and practices to combat FLW.

The exciting global strategy of Champions 12.3 – a UK based NGO also recognises the importance of on-farm data. They are championing the 10x20kx30 plan.[17] (See Case Study 1). In London I met with Mark Little from the World Resources Institute (WRI) who is leading this initiative. Another global project focussing on standardised measurement is the work being done by FOLOU (Food Losses in the European Union) (See case Study 2).

Case Study 1
Seeds of Change – 10 x 20K x 30
Food Loss Reduction Initiative

10x20Kx30 is a World Resources Institute (WRI) initiative where 10 major agriculture companies each engage 20,000 farmers to halve on-farm food losses by 2030 using the "Target-Measure-Act" approach. This ambitious program aims to transform agricultural practices and reduce food waste across global supply chains.

Key Challenges Identified:

- One-third of food is lost between farm and fork
- Contributes to farmer income loss and reduced profitability
- Wastes 25% of agricultural water resources
- Generates 8% of global greenhouse gases
- Impacts food security in vulnerable regions

Implementation Strategy:

Companies provide:

- Comprehensive farmer training and capacity building programs
- Access to modern technology, storage facilities, and market opportunities
- Standardised measurement tools and ongoing technical assistance
- Financial support and innovative funding solutions for technology adoption
- Regular monitoring and evaluation of progress

Expected Outcomes:

For participating companies:

- Improved supply chain efficiency and reliability
- Strengthened farmer relationships
- Reduced environmental impact and carbon footprint
- Better public profile and stakeholder trust
- Enhanced compliance with emerging sustainability regulations

Progress Tracking:

The initiative is coordinated by WRI in partnership with FAO and the World Bank, creating a collaborative environment for sharing best practices and accelerating innovation in food loss reduction. Regular progress reports and knowledge-sharing sessions will ensure continuous improvement and adaptation of strategies across participating organisations.

10X20kX30

Case Study 2
Counting What Counts:
FOLOU's Framework for Food Loss Measurement

Funded by the European Union through the Horizon Europe program, FOLOU (Food Losses in the European Union)[18] plays a significant role in reducing on-farm food waste through several key initiatives, including a measurement framework. The project contributes to the systemic transition of EU food systems by establishing mechanisms to measure and estimate food losses at the primary production stage, monitor and report losses at both Member State and European levels, and assess the magnitude and impact of food losses.

FOLOU develops practical tools that help:

- Quantify food losses across five key food categories
- Support farmers in estimating production losses using IT-based technologies
- Assess sustainability impacts at territorial level
- Report food losses through a unified National Food Loss Registry
- Harmonise data reporting across the EU

The project also facilitates knowledge transfer through their Twinning Regions Program, which helps European regions tackle food loss detection, quantification, and reporting challenges.

Insight 2: Collaborative Approaches

Successful FLW reduction initiatives often involved collaboration between multiple stakeholders, including growers, retailers, government agencies, and non-profit organisations.

In Spain, the non-profit organisation Espigoladors weave their multi-stakeholder magic to coordinate a network of "champions" across public, private, and social entities.

They collaborate with growers, small, medium and large businesses and retailers to implement gleaning projects, process surplus crops into new products, supply food rescue organisations, employ and train vulnerable people, conduct research and development and develop digital solutions. They exemplify how collaboration between multiple stakeholders is crucial for effective FLW reduction and the power of bringing together diverse entities to embed solutions.

The Espigoladors Approach

Public Sector Involvement includes:

- Leading the FOLOU (Food Losses in the European Union) project.
- Collaboration with local governments to implement food waste policies including their Twinning Regions Program.[19]
- Partnerships with public institutions to raise awareness about FLW.

Private Sector Engagement includes:

- Work with small/medium, large businesses, and retailers on gleaning projects.
- Engagement with food producers to identify and address sources of waste.

Processing Surplus

Esimperfect (https://esimperfect.com/en/) is a successful social enterprise that combines food waste reduction with employment opportunities for vulnerable people.

- It produces preserves, pâtés, jams, and sauces from rejected produce and gleaning:
- Uses fruits and vegetables rejected for appearance or market reasons.
- Creates employment for people at risk of social exclusion.
- It has grown to 50 employees.

Social Sector Integration

- Partnerships with non-profit organisations for food redistribution.
- Collaboration with community groups to organise local gleaning events.
- 'Esimperfect' processing site creates jobs and training opportunities for people who might otherwise struggle to find work.

Gleaning Projects (see What is Gleaning, below)

Espigoladors' gleaning projects are a prime example of their collaborative approach:

- Coordination between farmers, volunteers, and food banks.
- Engagement with businesses to provide logistical support.
- Collaboration with local authorities to facilitate access to fields.

Digital Solutions for Food Waste Action Plans

The development of digital solutions showcases Espigoladors' ability to bring together technological expertise with on-the-ground knowledge:

- Collaboration with tech companies to develop user-friendly platforms.
- Input from various stakeholders to ensure the solutions address real-world needs.
- Partnerships with academic institutions for data analysis and impact assessment.

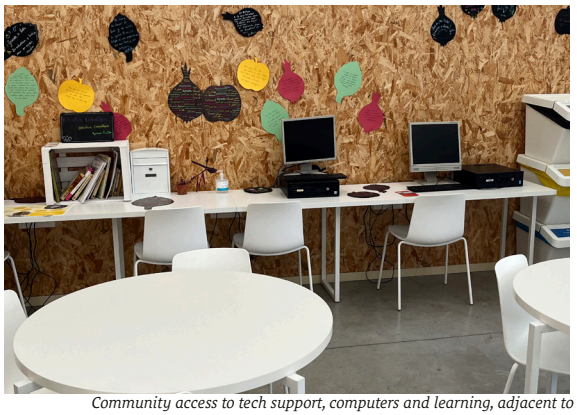
Challenges and Lessons Learned

- Coordinating diverse stakeholders with different priorities and timelines.
- Ensuring equitable participation and benefit-sharing among partners.
- Maintaining long-term commitment from various entities.

These challenges underscore the importance of strong leadership, clear communication, and shared goals in multi-stakeholder collaborations.

Baby Food made from Rescued Vegetables.

Cream of Zucchini Soupmade from Rescued Vegetables.



Community access to tech support, computers and learning, adjacent to La Botiga community grocery store, supplied with gleaned and donated produce and Esimperfect products.

Marc Farres and colleague leading a gleaning team, Barcelon, Spain

What is Gleaning?

Gleaning is a systematic approach to recovering surplus and out-of-specification fresh produce through volunteer labour, coordinated by NGOs.

During my Fellowship, I observed successful gleaning operations with Fareshare (UK), Espigoladors (Spain), and the Society of St Andrew (USA). While this practice is not widely adopted in Australia, international examples demonstrate its potential.

Impact and Outcomes

- Reduces on-farm food losses through systematic harvest recovery.
- Generates valuable data for measuring and understanding food waste.
- Increases public awareness through direct participation.
- Strengthens community engagement and educational opportunities.
- Enhances food security through direct distribution to food banks.
- Benefits farmers through field clearing and reduced labour costs.
- Creates opportunities for corporate and school involvement.
- Facilitates connections between agricultural and social sectors.

Challenges and Considerations

Several barriers exist to implementing gleaning programs, including work health and safety concerns, liability issues, and biosecurity requirements. However, these challenges can be overcome through careful planning and prioritising farmer relationships. As one coordinator emphasised, "take care of farmer first, second and third." As Marc Farres, Gleaning Manager at Espigoladors, notes: "The power of gleaning is to bring light on to problem as well as connecting people to the issue." While the direct food recovery impact may be modest, the broader benefits of community engagement and awareness-raising make gleaning a valuable tool in the fight against food waste.

Further reading[20]

Gleaned and donated produce at the Fareshare UK packhouse

Lisa Johnson and Society of St Andrew gleaning manager display produce gleaned by school children and volunteers in background , Raleigh, USA

Case Study 3
Collaboration is a Sweet Success: How Aldi Turned Fallen Grapes into Frozen Gold

An innovative partnership between Aldi and table grape growers in Mexico demonstrates how collaboration can turn food waste into a profitable product while achieving sustainability goals. Meeting with Charlie from Molina Fresh at The Global Fresh Produce and Floral Show, revealed how creative thinking and shared commitment transformed waste into a popular consumer item that is sold out until 2027.

Process Development[21]

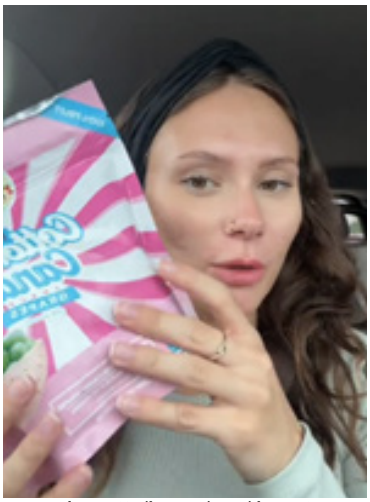
- The collaboration began when Bill Duesenberg (Aldi's Director of Corporate Buying for Produce) discovered unused fallen cotton candy grapes during a vineyard visit, identifying a significant waste problem of 15-20% detaching from bunches.
- The team worked together to explore solutions, first considering to-go containers before innovating further based on their experience with strawberries.
- Through collaborative effort, they developed a specialized freezing process at -40°F to ensure premium quality.

Impacts and Outcomes

The results of this collaboration have been remarkable:

- Prevention of 50,000 pounds of food waste annually.
- Achievement of 100% crop utilisation.
- Creation of a unique product not available elsewhere in the market.
- The initiative also aligns with broader sustainability goals, incorporating fair-trade certification and recyclable packaging.

Sampling the treats for myself in Atlanta



@alyssarp12 TikToK review with over 1.4 million views

Insight 3: Technology & Innovation

The use of technology to optimise production and reduce waste was evident in several countries visited.

Boxford Suffolk Farms in the UK uses an online platform to synthesise data on pests, diseases, pollination, and weather for optimal treatment and irrigation.

They also employ drone technology for blossom flights, fruit counting, and harvest yield prediction, which helps in planning and reducing waste.

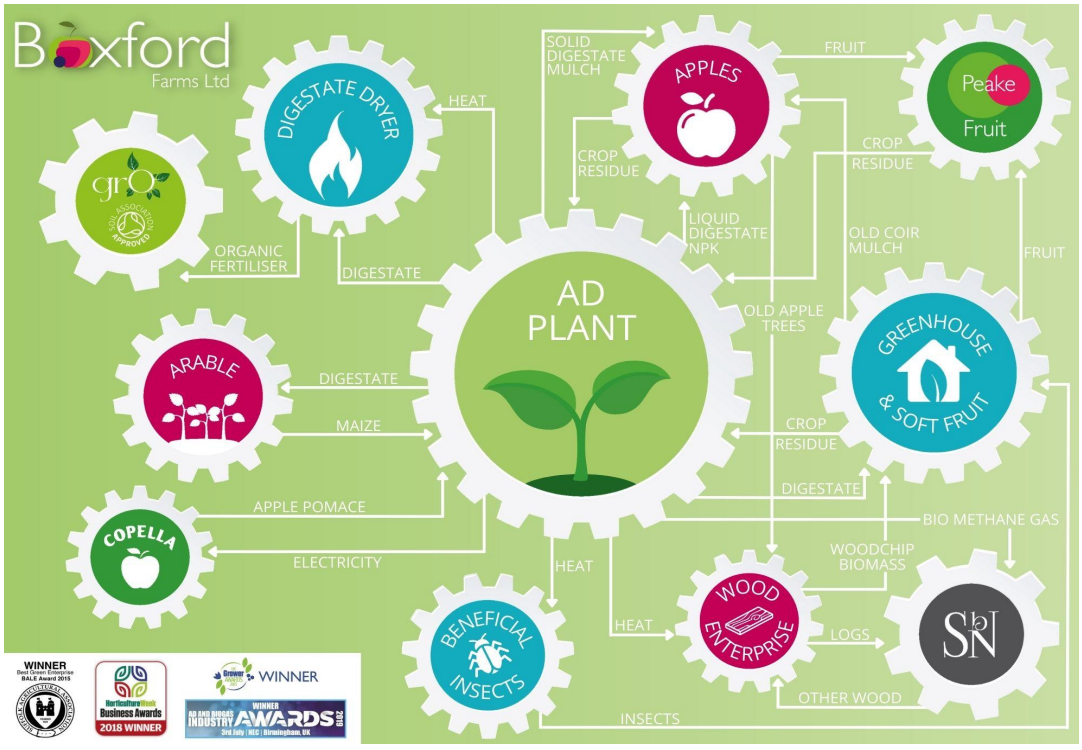
The anaerobic digestion (AD) plant has also become a central part of their sustainability efforts.

- Built in 2015, the facility has been commercially successful and won the 2019 global AD and Biogas Industry Awards.
- The plant was driven by energy prices and helps utilise apple pomace (peel, pulp, seeds, stems, and core of the apple leftover from juicing operation) that was previously rotting.

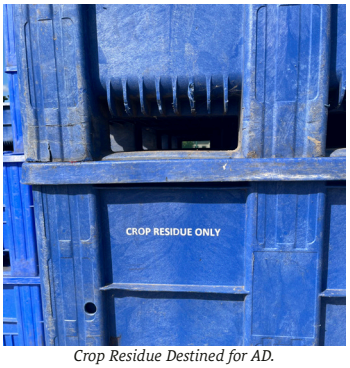
Key benefits include:

- Zero waste to landfill.
- Provides a focal point for sustainability initiatives across the operation.
- Generates both heat and electricity that can be used locally.
- Offers the co-benefit of removing botrytis (fungi) source from berries.
- Produces fertiliser as a by-product. (In Australia, the use of AD byproducts as fertiliser is subject to strict regulations[22]).

While the initial investment was significant, the facility receives a 20-year feed-in tariff that incentivises efficient operation.



Boxford Suffolk Farms Circularity Map – Image supplied by Boxford Suffolk Farms



Crop Residue Destined for AD.

Onion waste from a local farm supplements the AD supply.

Insight 4: Policy & Regulation

Government policies and regulations play a crucial role in driving FLW reduction efforts across the supply chain. In February 2025, the EU adopted significant new legislation with legally binding targets to reduce food waste by 30% at retail and consumer levels and by 10% in processing and manufacturing by 2030. This marks a substantial step forward in addressing food waste comprehensively, though measurement at the primary production level remains voluntary. These binding targets demonstrate how regulatory approaches can accelerate progress toward food waste reduction goals.

In the UK, there is tension between incentives for sending food to anaerobic digestion and efforts to redistribute surplus food to people.

This highlights the need for carefully designed policies that prioritise the food waste hierarchy to keep food in the human supply chain (Figure 3).

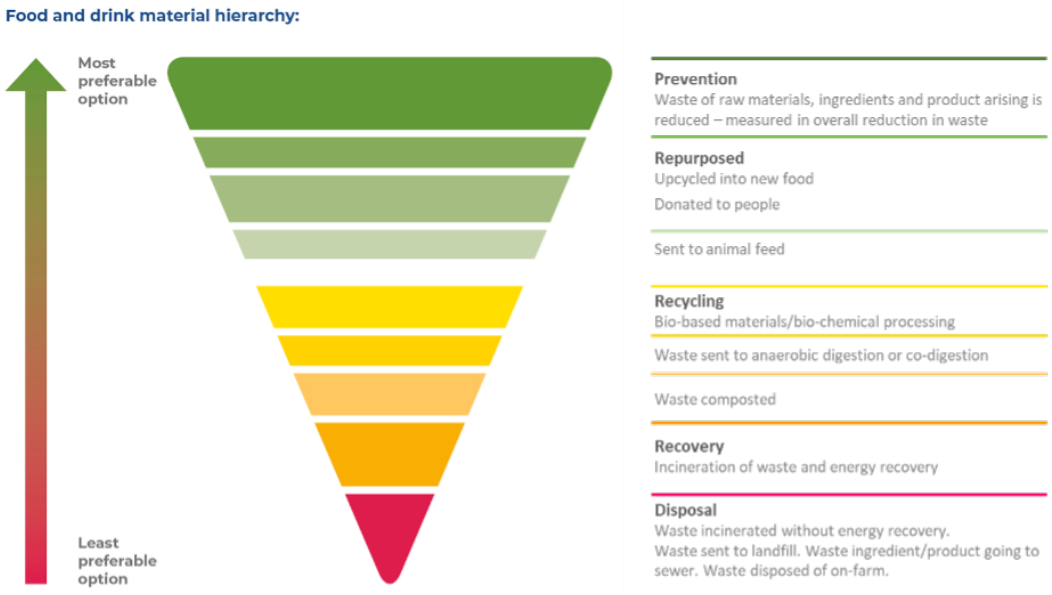


Figure 3- Australia's Food Waste Hierarchy, source End Food Waste Australia

A policy that is 'walking the talk' of reducing food waste and supporting farmers is the Farm Gate Food Waste Fund. (See Case Study 4). At Worldwide Fruit's supply partner's orchard in Kent, UK a field of apples was deemed below quality for a leading UK retailer, due to russeting (a condition that only affects the fruit cosmetically). However, thanks to the fund, which paid the harvest costs, all the crop was harvested and sent to people in need. Whilst this is a win for hungry people, it is not a financially successful outcome for farmers, (as the fund only covers harvest costs) who need to make a profit from edible, high quality yet cosmetically imperfect crops such as this.

'Russeted' apples, rejected for retail sales but harvested for a food rescue charity, thanks to government funding, Kent UK

Case Study 4
From Field to Food Bank:
Uk's Visionary Investment in Surplus Crop Recovery

The Farm Gate Food Waste Fund (formerly Surplus with Purpose)

- The UK Government has implemented several major funding initiatives to support the harvesting and redistribution of surplus crops:[23]
- A £25 million Farm Gate Food Waste Fund (formerly called Surplus with Purpose) was established to offset critical costs including labour, packaging, and freight.
- The Fund enables growers to break even when donating surplus produce, removing financial barriers to food redistribution.
- A proposed additional £15 million in funding was approved by the previous government, though this is currently awaiting confirmation in the new government's budget.

Impact and Outcomes – The programs have demonstrated significant success in several areas:

- Fresh produce now accounts for 50% of FareShare's food supply, compared to primarily retail/manufacturing donations in the past.
- Even with reduced budgets, the program continues to handle increasing volumes of fresh produce.
- The funding has been described as of "major importance" by FareShare locations, who indicate they "would not have produce" without it.

Challenges and Considerations – Several key challenges have emerged in implementing these initiatives:

- Balancing fair prices to growers while effectively spreading limited funds.
- Managing tensions between incentives for anaerobic digestion versus food redistribution.
- Coordinating logistics and transportation, which comprise a large portion of the budget.

The program is supported by a comprehensive infrastructure network:

- 32 FareShare warehouses strategically located in the most disadvantaged areas.
- Regional centres with representatives who coordinate local freight and build relationships with growers.
- Grading sites that can accept up to 20% damaged produce.

Eight new "Coronation Food Hubs" with kitchens and grading facilities.

Further evidence of government policies and regulations driving FLW reduction efforts across the supply chain can be found in frameworks like the European Union's Corporate Sustainability Reporting Directive (CSRD), the United States Securities and Exchange Commission's (SEC) climate disclosure rules, and Australia's Sustainability Reporting Standards (ASRS), each representing different regulatory approaches to addressing sustainability challenges. An analysis of these three frameworks and the role they can play in FLW reduction can be found in Appendix 1.

Another policy and regulation topic that may support FLW reductions on farms is carbon credits. The Verra standard VM0046 Methodology for Reducing Food Loss and Waste24 has been active since July 2023 and rewards participants in the food supply chain for keeping food out of landfill. However, it does not appear that this standard is useful for reductions at the on-farm stage. However, during my meeting with Kai Roberston - a global leader in building Food Loss and Waste Standards, such as the Food Loss and Waste Protocol for The World Resources Institute25 in Washington DC, I learned about a new draft methodology from Verra that may fill this gap and provide an excellent reward as well as incentivise reductions (See Case Study 5).

Case Study 5
Green Rewards:
Verra's Draft Methodology for Food Waste Carbon Credits

Verra, a leading carbon credit standards organisation is drafting a new methodology for measuring and reducing greenhouse gas emissions in food systems through carbon markets.[26] Recent research from the Netherlands demonstrates the significant climate impact of food waste, with every ton of food waste contributing 3.4 tons of CO2 emissions.[27]

Impact and Outcomes

- Comprehensive measurement of emissions across the entire food supply chain, from production to disposal.
- Quantifiable emission reductions through:
    - Transition to plant-rich diets.
    - Reduction of FLW.

Organisations will be able to earn carbon credits for reducing food waste, creating financial incentives while supporting climate action.

Challenges and Considerations

Traditional carbon accounting methods have struggled to capture the complex emissions profile of food systems. To address this, Verra is collaborating with Circle Economy, Green Data Consulting, and WRAP, with Eaternity supporting performance benchmark development. The methodology is currently at Step 3 of the VCS Methodology Development and Review Process. Stakeholders interested in collaboration can contact methodologies@verra.org (referencing ID #M0169).

Insight 5: Value-Added Processing – Food Rescue Organisation Leadership

Initiatives from food rescue organisations that process surplus fresh produce into value-added products were common across the countries visited. Particularly successful was the Esimperfect project from Espigoladors in Spain and the work of Fareshare in the UK.

Food rescue organisations are uniquely positioned to test and develop value-added solutions for surplus produce for several key reasons:

- They have dedicated facilities and infrastructure - For example, FareShare has established "Coronation Food Hubs" with specialised processing centres that include kitchen facilities, grading capabilities, and repacking facilities (See Case Study 6)
- They can experiment with product development through initiatives like FareShare's FLEX (FareShare Life Extensions) project, where they test creative processing solutions like converting edamame beans into soup and transforming frozen fries into potato/bean soup (see Case Study 6).

They have flexibility to perfect products before commercialisation, as seen with Espigoladors' Esimperfect range in Spain and FareShare's FLEX project in the UK, FROs have the space to refine products and offerings before commercial launch.

They maintain strong industry partnerships - FROs work alongside food manufacturers and processors to develop new products, as demonstrated by FareShare's partnerships with companies like We Can Foods for soup production.

Rescued Potatoes at Fareshare Hub, Ashford, UK

They can accept produce with higher defect rates. For example, FareShare's grading sites can handle produce with up to 20% damage/defects, allowing them to test solutions for produce that commercial operations might reject.

Case Study 6
From Waste to Taste: Fareshare's Food Transformation Journey FLEX (FareShare Life Extensions) Project[28]

FareShare has developed innovative solutions through their FLEX Project and Coronation Food Hubs to transform surplus food into valuable products. Their comprehensive approach includes specialised processing facilities and strategic industry partnerships.

Impact and Outcomes

FLEX Project achievements:

- Successfully converted edamame beans into soup.
- Transformed frozen fries into potato/bean soup.
- Pioneered new uses for broccoli stems.

Infrastructure development:

- Eight new Coronation Food Hubs with specialized processing capabilities.[29]
- Comprehensive kitchen and food preparation facilities.
- Advanced grading and repacking operations.

Challenges and Considerations

Processing complexity:

- Managing produce with up to 20% damage/ defects.
- Coordinating with multiple food processors.
- Scaling production while maintaining quality.

Future opportunities:

- Expansion into smoothie production.
- Strengthening industry partnerships.
- Optimising production runs and manufacturing coordination.

Insight 6: Commercial Solutions/ Whole Crop Purchasing

Solutions from commercial businesses often work well in reducing FLW for several reasons:

- **Financial motivation:** Commercial businesses have a strong incentive to reduce in-house waste as it directly impacts their bottom line.
- **Innovation and agility:** They can quickly develop new products or processes to utilise surplus produce.
- **Scale and resources:** Larger businesses often have the capacity to implement wide-reaching solutions.
- **Market knowledge:** They understand consumer demands and can create products that sell.

Here are some examples of effective commercial solutions that I encountered:

No Waste Army (Netherlands): This 'new kid on the block' is having strong commercial and marketing cut through. Their unique model quickly processes surplus and out-of-spec produce into new products and sells them through subscription boxes. Their agility in product development and strong marketing (40,000 Instagram followers) has helped them save 300,000 kg of food waste.

De Verspillingsfabriek / The Waste Factory, (Netherlands): Located in Veghel, The Waste Factory produces soups and sauces from surplus vegetables and fruits sourced from wholesalers, farmers, and food companies. The success of this processing facility is supported by it's parent company, Hutten, the fourth largest catering company in The Netherlands. This relationship creates a market pull for the upcycled products (See Case Study 7).

Ripe Revival (USA): This business supports growers to sell 100% of their production by training them in harvest techniques, finding markets for whole crops, and integrating commercial operations with social impact through mobile markets. They've increased profitability for growers and reduced on-farm losses. (See Case Study 8).

Worldwide Fruit (UK): This large fresh produce wholesaler works across multiple retailers and have developed various outlets for second-class produce, including partnerships with companies like Odd Box. They aim to utilise 100% of crops by working closely with farmers, processors, food rescue organisations and NGOs.

These examples demonstrate how commercial businesses can effectively combine profit motives with FLW reduction, often achieving significant impact through innovative approaches and efficient use of resources.

Items ready for packing into subscription boxes at the No Waste Army headquarters, Breda, Netherlands. Including cream of broccoli soup, which is made at the Waste Factory.

A Brambly apple sorted into a juicing bin at Worldwide Fruit supply partner Mansfield and Son Packhouse, Kent, UK

Case Study 7
No Waste at The Waste Facory

De Verspillingsfabriek (The Waste Factory)[30] demonstrates commercial innovation in food waste reduction through sustainable food processing and social impact. The factory transforms surplus produce into high-quality soups and sauces while providing employment opportunities for vulnerable populations.

Impact and Outcomes

Production scale and savings:

- Daily output of 8,000 litres.
- 750,000 kg of food waste saved since 2020.

Business success:

- Partnership with major customers such as airlines.
- Collaboration with Hutten, a leading Dutch catering company creates a ready end-use for products, however products are sold to external companies also, such as No Waste Army

Social impact:

- Employment program for vulnerable and disabled workers.
- Established THREE-SIXTY knowledge center for Circular Economy.

Challenges and Considerations

Development timeline:

- Required 3-4 years to achieve commercial viability.
- Demanded sustained commitment to the mission.

Supply chain management:

- Coordinates with multiple suppliers including wholesalers, farmers, and food producers.
- Balances varying quality and quantity of surplus produce.

Juices and sauces made from surplus fresh produce at The Waste Factory, Veghel, Netherlands

Case Study 8
From Field to Fork: Ripe Revival's 360° Approach

Ripe Revival[31] implements a comprehensive approach to reduce on-farm food waste through integrated strategies, from harvest optimisation to community distribution.

Impact and Outcomes

- **Increased revenue:** Sweet potato farmers have seen a US$700 per acre increase through whole crop harvesting.
- **Comprehensive training:** 30-page playbook provided to growers covering harvesting, staff training, and packing methods.
- **Market diversification:** Established partnerships with organisations accepting wider cosmetic tolerances.
- **Value-added processing:** "Ripe Revival Provisions" transforms surplus into products across multiple sectors.
- **Community access:** Mobile markets operating on "pay what you can" model improve food accessibility.

Challenges and Considerations

- Coordinating multiple sales channels and processing operations.
- Managing logistics between farms, processing facilities, and mobile markets.
- Balancing commercial viability with social impact goals.
- Training and supporting growers through transition to whole crop harvesting.

These integrated practices aim to achieve 100% crop utilisation while creating both economic and social value.

Ripe Revival founder, Will Kornegay and Lisa Johson hold spaghetti squash destined for market despite some cosmetic imperfection

A mobile market bus Raleigh USA

Insight 7: Retail Collaboration Opportunities

Australia is currently scrutinising the retailer-grower relationship, with multiple inquiries[32] underway or completed examining various aspects of this relationship. A frequently cited concern is Australia's retail "duopoly," where Coles and Woolworths Supermarkets dominate with a combined 65% share of the retail market.[33] A fascinating contrast emerged from first-hand discussions with growers and industry representatives in other countries. In the UK, where approximately 10 large retailers dominate the market,[34] their competitive environment drives constant differentiation efforts.

For fresh produce, this competition leads to several issues that significantly increase FLW, including:

- frequent changes in packaging sizes,
- shifting cosmetic standards, particularly regarding fruit size, and
- order cancellations and reductions.

However, multiple positive opportunities were also shared, highlighting that working with retailers presents several key opportunities to reduce on-farm FLW and these include:

Flexible Specifications

- Driscoll's found that when retailers allowed temporary widening of specifications from 28-30mm down to 25mm minimum size for strawberries, it increased grower sales by 10-15%.
- Tesco's Bumper Harvest program implemented flexible specifications and rapid response systems for managing surplus crops (see Case Study 9).

Innovative Processing Solutions

- Aldi and Molina collaborated to create frozen cotton candy grapes from fallen fruit, preventing 50,000 pounds of waste annually (See Case Study 2).
- Albert Heijn is supporting the utilisation surplus bananas for both branded and own brand products like banana bread and cookies (See pictures below).

Whole Crop Purchasing

- Ripe Revival's model increased farmer revenue by US$700 per acre through improved harvest techniques and market access for lower spec products (See Case Study 8).
- Worldwide Fruit works with multiple retailers and companies like Odd Box to find outlets for second-class produce.

Supply Chain Communication

- Developing trigger points and communication plans helps manage gluts and surplus effectively.

Surplus bananas used in Sunt Banana Bread and Albert Heijn cookies, Netherlands

Case Study 9
Tesco's 1kg Box Initiative: A Solution for Bumper Berry Harvests

Tesco, as one of the UK's largest retailers, implemented an innovative solution to handle surplus berries during peak production periods through their 1kg box initiative.[35] This program was specifically designed to help move excess product quickly during flush periods and bumper harvests, supporting both growers and consumers.

Implementation

- Strategic store positioning of larger format boxes to maximise visibility.
- Flexible pricing strategy to encourage quick sales while maintaining grower returns.
- Rapid activation during peak production periods and bumper harvests.
- Consumer education through advertising of "flash packs" for flush periods.

In the 2021 heatwave and resulting glut, the initiative moved an additional 400 tonnes of strawberries.[36] The increased supply led to price drops of up to 50%, with this brief price drop making the fruit more accessible to a broader section of consumers, creating repeat buyers while preventing food waste.

Berries from Driscolls, Maidstone, UK

Impact and Outcomes

The program demonstrated significant benefits:

- Provided effective outlet for surplus produce during flush periods.
- Maintained strong grower relationships through supportive actions during oversupply.
- Successfully moved product quickly when positioned well in store.
- Helped prevent significant on-farm food waste during bumper harvests.

The initiative demonstrated that while ambient temperature display positions can create challenges for product longevity, the increased visibility and quick sales velocity can offset these concerns when managed properly. Success relied heavily on:

- Rapid response systems and clear grower-retailer communication.
- Flexible procurement strategies during peak harvest periods.
- Balance between accessibility and proper product handling.
- Consumer education about seasonal abundance.

Challenges and Considerations

- Cold chain management - boxes couldn't be kept in chilled displays due to positioning requirements.
- Weather impact - sales velocity affected by unexpected weather changes.
- Speed to market - required rapid coordination between growers and retailers.
- Balance between quick sales, profitability and proper storage conditions.
- Need for consumer education about seasonal abundance.

Insight 8: Including Farmers Perspectives

Including the voices of farmers in solutions for FLW is vital for several reasons:

- Farmers have firsthand experience with the challenges and realities of food production, making their insights invaluable for developing practical and effective solutions.
- Building trust and relationships with farmers is crucial for implementing successful FLW reduction strategies.
- Farmers can provide unique perspectives on the causes of FLW and potential solutions that may not be apparent to other stakeholders.

Across my travels, farmers expressed various views and concerns:

- They emphasise the importance of being treated as allies rather than being blamed for FLW issues.
- Farmers have provided feedback on measurement categories, such as including size-based loss due to pricing, which helps them understand lost profits.
- Some farmers fear potential issues with allowing gleaning, such as liability concerns, strangers in fields, and biosecurity risks.
- Farmers appreciate seeing more of their product being used, even if they don't always receive extra compensation for it.
- There's a recognition that farmers are already doing everything they can to reduce waste, and it's challenging to ask them to do more without proper market support.

Including farmers' voices has led to valuable insights and improvements in FLW reduction efforts, such as adapting measurement techniques and developing more collaborative approaches to addressing the issue.

Farmer Rich in his apple Orchard, Kent, UK

Robert England, farmer and Farm Director at Boxford Suffolk Farms, UK

Growing Forward: Conclusions & Recommendations

This Churchill Fellowship has been an incredible journey of learning and growth, connecting me with so many inspiring people working to tackle food waste. Through visits and discussions across multiple countries, I've had the chance to really dig deep into innovative ways to reduce food waste on farms.

Looking back at what I set out to do, I'm pleased to say I achieved my main goals:

- I got to see firsthand how different countries are tackling on-farm food waste.
- I learned about what works (and what doesn't), from Spain's collaborative approach to an American business' whole crop purchasing that's adding substantially to farmers' bottom lines.
- I found practical ways to help Australia move faster toward our 2030 food waste reduction target, including better measurement systems and smart ways to work together.
- Most importantly, I discovered solutions that work for everyone - farmers, industry, and the environment - that we can put into practice here in Australia.

The connections and insights I've gained from this Fellowship will be invaluable in helping Australia tackle our food waste challenge.

Key Conclusions

1. Measurement and transparency are fundamental to effective FLW reduction.
2. Collaboration and co-ordination across the supply chain is essential for implementing successful FLW initiatives.
3. Technology and innovation can play a significant role in optimising production and reducing waste.
4. Policy frameworks need to be carefully designed to support the food waste hierarchy and avoid unintended consequences.
5. Redistribution and value-added processing offer opportunities to reduce waste while providing social benefits.

Challenges & Barriers

Several challenges were common across the countries visited:

- Difficulty in obtaining accurate and consistent FLW data, especially at the farm level.
- Customer product specifications are driving waste in the supply chain.
- Tension between ensuring long-term donation for food charities and increasing saleable proportion of crop.
- Lack of integration between sustainability initiatives and core business strategies.
- Resource intensity of some FLW reduction initiatives, such as gleaning.
- Complexity of drivers behind FLW, requiring multi-faceted solutions.

Recommendations for the Australian Context

1. Establish a national collaborative program bringing together growers, retailers, government agencies, and non-profit organisations to address FLW holistically.

2. Develop a standardised measurement and reporting framework for FLW in the Australian horticulture sector, building on international best practices.

3. Invest in market-led research and development to pilot processing options for surplus crop and explore the role of food rescue organisations in this initiative. Also gleaning programs

4. Review and align policies and incentives to ensure they support the food waste hierarchy, prioritising prevention and redistribution over lower-value uses like anaerobic digestion.

5. Integrate FLW reduction targets into existing sustainability certifications, reporting and audits to reduce audit fatigue and improve adoption.

6. Develop education and awareness programs for both industry stakeholders and consumers to drive behaviour change and create a culture of food waste reduction.

7. Encourage technology adoption by supporting growers to implement precision agriculture technologies. To optimise production and reduce food waste.

Dissemination & Implementation

To realise these recommendations, a coordinated approach involving government, industry bodies, and individual businesses will be necessary.

Key actions include:

- Co-design of standardised on-farm FLW measurement and reporting.
- Engaging with End Food Waste Australia to align recommendations with the Horticulture Sector Action Plan.
- Collaborating with research institutions, such Co-operative Research Centres, State departments of Agriculture, CSIRO, Universities etc to adapt and develop technologies for the Australian context.
- Working with retailers and other customers to review specifications and develop mutually beneficial approaches to produce grading.
- Piloting collaborative projects in key horticultural regions to demonstrate the benefits of FLW reduction initiatives.

Disseminating this report to government and industry will occur via End Food Waste Australia media and communication channels, Hort Innovation channels, and personal social media, including LinkedIn. By implementing these recommendations, Australia can significantly reduce FLW in its horticulture sector, contributing to improved sustainability, economic outcomes, and food security.

Collecting surplus lettuce, Barcelon, Spain.

Appendix 1

Analysis of Food Waste Reporting Requirements and Climate Impact: EU CSRD, USA SEC and Australian ASRS

The intersection of food waste and climate reporting represents a critical challenge and opportunity in sustainability reporting frameworks globally. As organisations grapple with increasing pressure to address both food waste and climate change, it is useful to compare the differences between major reporting frameworks. The European Union's Corporate Sustainability Reporting Directive (CSRD), the United States Securities and Exchange Commission's (SEC) climate disclosure rules, and Australia's Sustainability Reporting Standards (ASRS) represent three distinct approaches to this challenge, with significant implications for how food waste is measured, reported, and managed.

A major development occurred on February 19, 2025, when the EU Council and European Parliament reached a provisional agreement to set legally binding food waste reduction targets for member states by 2030:

- 10% reduction in processing and manufacturing waste compared to the 2021-2023 average
- 30% reduction per capita in waste from retail, restaurants, food services, and households compared to the 2021-2023 average.[37]
-

In Australia, the scale of food waste in horticulture is significant, with approximately 20% of all fruits and vegetables grown never leaving the farm, resulting in a loss of one million tonnes of produce valued at AU$2.5 billion annually. Recent research from the Netherlands demonstrates the significant climate impact of food waste, with every ton of food waste contributing 3.4 tons of CO2 emissions.[38] This relationship between food waste and climate impact underscores the importance of integrating food waste reporting into climate-related disclosures.

Key Differences Between CSRD, SEC, and ASRS
The EU's CSRD, USA's SEC, and Australian ASRS represent different approaches to sustainability reporting:

CSRD Framework - Europe

- Comprehensive scope covering environmental impacts, including explicit food waste requirements
- Social considerations and labour practices
- Governance structures and risk management
- Detailed value chain reporting requirements
- **Implementation timeline:**
  - Large companies (more than 500 employees) began reporting in 2024
  - Companies with more than 250 employees and over €50M in revenue start reporting in 2025

SEC Framework - USA

- Mandatory climate-related risk disclosures
- Greenhouse gas emissions reporting
- Climate-related business impact assessment
- Financial risk disclosure related to climate events
- Implementation set to begin in 2025, with staggered introduction through 2029
- No specific requirements for food waste reporting
- Note: March 2024, proposed requirement for companies to report Scope 3 emissions removed and April, 2024, implementation has been paused due to ongoing litigation.[39]

ASRS Framework - Australia

- Climate-related financial risks and opportunities
- Alignment with ISSB standards for global consistency
- Material impact disclosure requirements
- Forward-looking climate transition planning

The SEC (USA) framework represents a middle ground between the comprehensive CSRD (EU) and the ASRS (Aust) approaches. While not as broad as the CSRD, which explicitly includes food waste reporting, the SEC's focus on climate-related disclosures aligns more closely with the ASRS's emphasis on climate-related financial risks. This supports the broader global trend toward increased sustainability reporting, as seen with the CSRD's comprehensive requirements and the ASRS's focus on climate-related financial risks.

For food businesses, these requirements would create additional pressure to:

- Measure and manage food waste more effectively
- Develop more robust sustainability strategies
- Improve transparency in reporting

Endnotes

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