CASE STUDY

FALL 2025

U.S. Food Waste Pact

Whole Chain: Yogurt

Identifying Food Waste Hotspots in the Yogurt Supply Chain

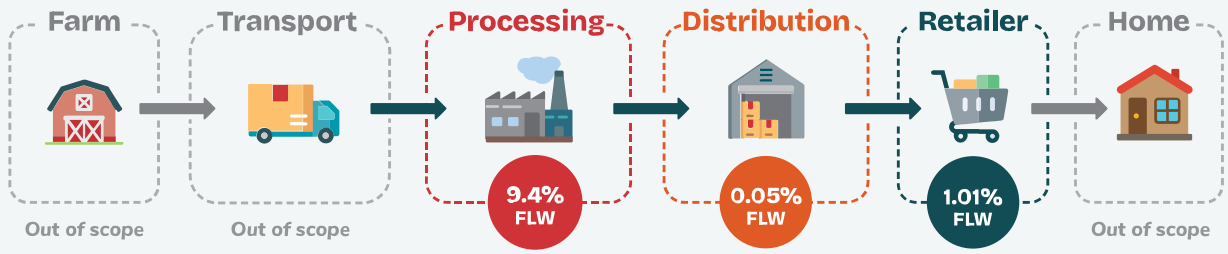
An initiative of ReFED

WWF

Executive Summary

The U.S. Food Waste Pact commissioned a study on food waste in the yogurt supply chain to identify waste hotspots. Several companies participated in the research across the supply chain, including processing, distribution, and retail. The farm and consumer stages were outside of the scope of the study. This initial study explored where and why loss is occurring, with the ultimate goal being to catalyze collaboration among supply chain partners to explore solutions that address the root causes of yogurt loss.

Loss and Impact Applied to all U.S. Yogurt Market



Causes of Food Loss and Potential Solutions

	Food Loss Cause	Potential Solution
Processing Facility	**19%** of processor losses were due to **product leftover in pipes and flushed out with water in between product changeovers.**	Repurpose the yogurt-water mixture in a drinking yogurt product, or use a projectile instead of water to push out and recover the product.
	13% of processor losses were due to **errors in filling and packaging.**	Implement continuous improvement and loss tracking activities, and fine-tuning of automated filling and packaging steps.
Distribution Center (DC) and Retail	**40%** of DC/retail yogurt losses were due to **expired products.**	Improve inventory management and consumer and employee education on date labels and storage.
	34% of DC/retail yogurt losses were due to **damages in the cardboard shipment packaging.**	Redesign secondary shipment packaging to be more robust, reusable, or handled differently.

Project Overview

Why Yogurt?

Signatories of the U.S. Food Waste Pact work together to reduce food waste in their operations and across the supply chain. Using a whole-chain approach provides comprehensive insight into the flow of product, relative waste hotspots at each node, and opportunities for waste prevention or redirection. Yogurt was identified as a high interest commodity for a whole chain study among U.S. Food Waste Pact retailers due to its perishability, high cost, and environmental impact.

The loss rates found in this study were applied to the entire U.S. yogurt market using publicly available USDA total national volumes of yogurt production and average prices. The resulting numbers showed the magnitude of the losses if experienced similarly across all companies, and the great potential for reducing food loss and waste nation-wide if the causes of these losses are addressed.

Table 1: Annual estimated losses found extrapolated to entire U.S. yogurt market

USD*
$507 million
Equivalent to over 1.5x the cost of NASA's four lunar rovers used in the Apollo missions, adjusted for inflation to 2025
Pounds
511 million
Equivalent to over 4x the weight of the Titanic
Meals
232 million
Equivalent to the amount of meals it would take to feed about 2,700 Americans for their entire lifetime
Acres of Agriculture
144,000
Equivalent to around 10x the size of Manhattan

*Includes retail inventory losses that are donated. Donations are excluded from the other categories of impact metrics. Request methodology appendix for details.

Approach

This case study investigates opportunities to reduce food loss[1] across the supply chain from processing to distribution to retail. Though data was not collected at the consumer level, solutions were considered that have the potential to influence household waste.

Enviro-Stewards, a certified B-corporation that measures sustainability impacts and actively supports process improvements for businesses across the supply chain, served as the project's research team. They visited a selection of facilities across the yogurt supply chain (processing, distribution centers, and grocery stores) and collected and assessed 2024 annual waste data where available from each facility.

Observations, measurements, and interviews were conducted at each facility, and data was analyzed to determine loss rates, top waste causes, and potential solutions at each stage of the supply chain. The proposed solutions were evaluated based on their estimated potential to address key waste hotspots and on businesses' reported feasibility.

Sour whey, a major byproduct of yogurt production, was not counted as food loss in this study. It takes three liters of milk to make a liter of yogurt (and two liters of sour whey). Sour whey is typically sent for animal feed and/or applied to land as a soil amendment and fertilizer, but upcycling opportunities are being investigated in order to use this product directly in food.

Findings & Insights

Processor

Flush losses—which occur when residual yogurt is pushed through pipes with clean water to prepare equipment for the next batch—account for 19% of yogurt waste that was identified during processing (1.8% of yogurt production).

One solution could be to implement a sanitizable product pigging system (which pushes the yogurt out by sending a solid projectile through the pipes) to recover more product. An alternate solution could be to capture the yogurt and water mixture and repurpose it in the production of drinking yogurt. An estimated 80% of these flush losses could be saved by adding it to drinking yogurt products, which already use water as an ingredient. Design considerations would need to include the type of water used to push, storage temperature, and compatibility of products.

The solution would involve capital investment at the processing level but no change to products downstream in the supply chain. By implementing this solution, processors can reduce the volume of ingredient input, resulting in cost savings and reduced environmental impact.

The average loss found at the yogurt processing stage was

9.4%

Filling and packaging losses could be addressed through continuous improvement measures, such as measuring losses by line and at each step of the process, to pinpoint the specific places needing intervention.

Figure 1: Drinking yogurt, which could be manufactured from diluted white mass in the yogurt-making process that otherwise may have been lost.

Table 2

Processor Loss Causes and Potential Solutions

Cause	Quality Checks/Damages	Flush Losses	Filling and Packaging
% Total Waste*	20%	19%	13%
Loss Impacts Extrapolated to U.S. Total Yogurt Market**	$59 million	$56 million	$39 million
Solutions	■ Product life R&D	■ Redirect to drinking yogurt products	■ Packaging process continuous improvement

*Percent loss of the processor total loss (9.4%).
**Numbers based on USDA total nationwide yogurt production and associated value.

Distribution Center and Retail

Losses at distribution centers (DCs) and retail were due to the same two root causes: product expiration and product spoilage as a result of damages to packaging. While the root causes are the same at DC and retail, solutions to address them will need to be pursued differently depending on the supply chain stage.

Data from DCs came in the form of overall losses by product for the whole facility, with insufficient data available to determine the ratio of waste by root cause. However, interviews with DC managers consistently revealed these same two main causes for nearly all yogurt waste, with product expiration accounting for the majority of loss.

Expiration loss can be reduced with improved inventory management software with more automation, especially date tracking and lost pallet prevention. Transitioning inventory management software in a DC is an intensive process which requires an investment of years and significant cost, but can also represent significant savings opportunities. In the retail setting, proper stocking procedures (e.g., first expired, first out) are essential to reducing expiration losses, along with daily date checks and discounting those items that are close-dated.

0.05%
Average loss of yogurt at the distribution stage

1.01%
Average loss of yogurt at the retail stage with an additional

0.32%
of yogurt donated

Packaging damages and associated loss can be reduced by an improvement in secondary package design—the cardboard boxes which multiple yogurt packs are shipped in—to be sturdier and more robust. See the “Whole Chain Solutions” section for more.

A contributing factor to these two sources of loss is the high number of products in the yogurt market. This diversity of options is inherent to what consumers demand in the market—different

Table 3
Distribution Center & Retail Loss Causes and Potential Solutions

Cause	Expiration	Packaging Damages
% Total Waste*	40% of losses	34% of losses
	67% of donations	25% of donations
Impacts of Loss Extrapolated to U.S. Total Yogurt Market	$94 million	$65 million
Solutions	■ Improved inventory management software ■ Consumer education	■ Improved secondary package design

*Retail-only data due to insufficient data at the distribution stage.

flavors, different milk bases including non-dairy and low-fat, and a wide assortment of package shapes and sizes—but it means more difficult inventory management and ordering, leading to products expiring prior to sale.

The variety of package shapes and sizes increases damage, as more touches are needed to stock a layer, and the layers are more prone to toppling off-balance. Co-mingling backstock in retail storage coolers can lead to both product damage through inconsistent sizes and shapes being stacked together, and spoilage due to fragile or mismatched items with different rates of expiration getting shuffled and lost among each other.

Whole Chain Solutions for Reducing Yogurt Loss Due to Packaging Failures

The most promising opportunity identified in this study, which would require collaboration across the entire supply chain, is the redesign of secondary packaging used to ship yogurt.

The data for packaging damages includes losses occurring from both primary (individual yogurt containers) and secondary (box shipping many containers) packaging, as the data did not differentiate between the two. But interviews with retail staff and observations at DCs and stores suggest that much of the primary packaging damage is caused by a failure of secondary packaging.

Packaging damages account for an average of

34% of losses at the retail stage

Extrapolated to the entire U.S. yogurt market, this represents a loss of over $53 million USD, 17 million pounds of yogurt, 7.6 million meals, and 4,700 acres of agricultural land annually.

Figure 2: An entire refrigerated aisle in a grocery store dedicated to yogurt, depicting a wide variety of products due to different brands, formulations, flavors, package shapes, and sizes.

Problem

Fragile secondary (i.e., outer) cardboard and paperboard packaging failures lead to crushed yogurt containers, contamination, and food loss. Too much glue used to adhere the flaps of the box can cause boxes to stick to each other or tear. On the other hand, too little glue can cause boxes to fall open and spill during transit and receiving at the store. Additionally, packages of yogurt are sometimes put lower down on a pallet stack with heavy items on top, contributing to the issue.

Solution

Redesigning secondary packaging could involve using stronger cardboard boxes or switching to durable, stackable reusable trays. Improving pallet-stacking protocols and ensuring consistent adherence to procedures at processors and distribution centers can also help further reduce damage-related losses.

One DC in the study has already been in communication with processors about better box design.

More research is needed to account for labor, cost implications, and potential waste reduction benefits of reusable stackable trays, and to consider the impact of packaging changes on cardboard recycling downstream in the chain.

In addition to reducing yogurt losses, the benefits of packaging improvements could include:

- Improved retailer-distributor partnership satisfaction, and reputation for the distributor.
- A transition to reusable materials and reduced environmental impact.
- Reduction in retailer staff time for handling yogurt waste.

A potential challenge around the implementation of improved box design is that the cost of using a thicker box is borne by the processor, but the processor does not reap the economic rewards for cardboard recycling, which occurs at the retail stage.

Further research is needed to scope the economic, staff handling, and environmental implications of switching from the current cardboard design to sturdier models. And while switching to stronger cardboard may reduce food waste, analysis should be done to determine whether the environmental and cost benefit will offset the increase in consumption of paper material.

Figure 3: Damaged secondary packaging in a DC, causing crushed primary packaging.

Figure 4: Secondary packaging failure due to box design and/or insufficient glue on the flap.

Whole Chain Solutions for Reducing Expired Yogurt Waste

According to WRAP, 70% of wasted yogurt at the consumer stage is due to date label expiration.[2] In this study, expiration losses were found to be the largest losses at the retail level as well.

The lack of regulation around date labels creates confusion among consumers and retail employees as to whether a date label indicates a safety concern or simply an expected reduction in quality. Many retailers have joined the Zero Food Waste Coalition to show support for the Food Date Labeling Act, which would standardize labels to "BEST If Used By" for quality and "USE By" for safety, aiming to reduce confusion.

In addition to improving date labeling, education with respect to date labels—what they mean and how to handle the food before and after the date—can provide consumers and employees with clearer guidance on how to prevent the food from being wasted.

Figure 5: Yogurt container featuring the "Look-Smell-Taste" campaign from Too Good To Go.

For example, solution provider Too Good To Go launched the 'Look, Smell, Taste, Don't Waste' campaign in the United Kingdom with key yogurt brands such as Danone, Actimel, Activia, Oykos, Onken, and Light & Free, as well as other products like The Laughing Cow cheese.[3] The campaign promotes educational label messaging that encourages consumers to use their senses to assess whether food is still safe to eat beyond a "Best By" or equivalent-quality date label.

Potential challenges associated with this solution could include:

- Liability concerns among manufacturers and retailers.
- Limited packaging space on small containers for educational messaging.
- Retailer concerns around the customer experience.

Conclusion & Next Steps

This study identified key hotspots of waste in the yogurt supply chain, and feasible solutions that have potential for making meaningful reductions. The U.S. Food Waste Pact will continue to explore the solutions identified in the case study to pilot in a second phase, especially improving secondary packaging, consumer messaging, and utilizing flush losses at the processing stage.

Endnotes

1 Loss was defined as edible and inedible food not destined for human consumption, and calculated using a mass balance approach (the difference between inputs and outputs at each stage).

2 WRAP Label better less waste - Yogurt guidance, Published April 2018, Updated August 2023, pg 5 - “Reasons for not using yogurt purchases”.

3 https://www.toogoodtogo.com/press/look-smell-taste

Acknowledgments

The U.S. Food Waste Pact team would like to thank Enviro-Stewards for their leadership and authoring of this case study. The Pact would also like to thank the participating processors, distributors, and retailers for their collaboration on this effort. If you would like to know more about the methodology for this project, please request this case study's technical appendix by emailing Nia D'Emilio at nia.demilio@refed.org.

To learn more about the U.S. Food Waste Pact, please email Kristen Lee at kristen.lee@refed.org.

About Enviro-Stewards

Enviro-Stewards is an engineering consulting firm whose mission is to cultivate resilient businesses and improve lives in extraordinary ways. They are committed to assisting corporations to significantly reduce their environmental impact, with a focus on comprehensive decarbonization strategies. They are a Best for the World classified B Corporation and the only Canadian company to win a Global SDG award. They help manufacturing facilities to reduce food loss & waste as well as conserving water and energy.

About the U.S. Food Waste Pact

The U.S. Food Waste Pact is a national voluntary agreement to help food businesses accelerate progress toward their waste reduction targets. Led by national nonprofit partners ReFED and World Wildlife Fund, the U.S. Food Waste Pact is aligned around the global framework of "Target, Measure, Act" to help food businesses reduce waste within their operations.

Partner Leads

U.S. Food Waste Pact Commitment Business Signatories

(As of Fall 2025)

Retail

ahold delhaize USA

Albertsons Companies

ALDI

amazon fresh

Kroger

NEW SEASONS MARKET

Raley's

SPROUTS FARMERS MARKET

Walmart

WHOLE FOODS MARKET

Foodservice

aramark

COMPASS GROUP

GUCKENHEIMER

Health Care Without Harm

Stanford Food Institute
Residential & Dining Enterprises

sodexo

Quick-service Restaurants

Chick-fil-A

Wawa

Hospitality

Hilton
FOR THE STAY

Manufacturing

Bob's Red Mill

Del Monte Quality

LambWeston
SEEING POSSIBILITIES IN POTATOES

Distribution

ORGANICALLY GROWN co

MIDWEST FOODS

Trade Associations

FMI THE FOOD INDUSTRY ASSOCIATION

WESTERN GROWERS