

CASE STUDY

Tracking Dairy Waste Hotspots in Grocery Retail



NEW SEASONS
MARKET

Executive Summary

As the first step in an ongoing effort to identify the most effective strategies to reduce dairy waste in grocery retail locations, the Pacific Coast Food Waste Commitment (PCFWC) worked with New Seasons Market (NSM) and Cascadia Consulting Group (Cascadia) from July through November 2022 to study dairy product waste hotspots in grocery retail environments and potential waste reduction solutions for future pilot-testing. Cascadia studied NSM's data, observed current dairy department systems and practices, and recommended potential steps forward for retailers. Three key findings were determined:

1

Milk and eggs are the top wasted dairy department items - but for different reasons.

Milk is most often scanned out due to nearing the labeled expiration dates; it is sometimes delivered by suppliers without much time before expiration ("short-dated"), and staff scan it out three days before the date. Eggs are commonly damaged during transit, loading, and unloading because of their fragility, the type of packaging and way in which they are packed, and the quantity packed on each pallet.

2

Suppliers contribute to dairy waste by delivering inaccurate orders and short-dated items, packing refrigerated and dry goods on the same pallet, and packing eggs in containers that do not adequately protect them.

3

Tracking and reporting waste is a foundational first step to cost-effectively reduce food waste. NSM has a company-wide emphasis on scanning out items and even uses unique codes for expired and damaged items, which staff then use to generate store-level reports for analysis and action. Tracking and reporting waste enables data-driven decisions that help stores accurately forecast needs and reduce waste.

A set of recommendations are included in this case study following the analysis of dairy waste hotspots.



Introduction

Why Study Dairy Waste Hotspots?

PCFWC resource partner World Wildlife Fund (WWF) estimates that the dairy industry, from farm to consumer, accounts for 2% of total greenhouse gas emissions in the United States; [one gallon of milk alone requires 144 gallons of water to produce](#). As such, addressing dairy waste is important for helping mitigate climate change and the negative environmental impacts of our food system.

In 2021, dairy and egg products were the second most-wasted grocery category among PCFWC retail signatories by weight, behind only produce. West Coast signatories [produced an estimated 89,361 tons of dairy and egg waste in 2021](#). To take preventative action, they recognized that it was important to better understand the causes of in-store dairy waste. Participants in PCFWC's Dairy Working Group were particularly interested in exploring inconsistent date labeling as a possible cause of waste and identifying potential solutions.

New Seasons Markets

NSM is a Portland-based neighborhood grocery retailer with 19 stores in the Pacific Northwest. The company aims to integrate sustainability into all elements of its business, with objectives rooted in three impact areas: preventing food waste, reducing single-use packaging, and mitigating climate change.

NSM recognizes that reducing food waste is one area where the company can make a major difference for the climate. To take action, NSM signed on to the PCFWC, and as a signatory, they share their insights and successful practices to help accelerate food waste reduction across the grocery industry.



The Study Process

In June 2022, the PCFWC engaged with NSM and Cascadia to investigate the following questions:

- Which types of dairy products most often become waste?
- What are the reasons for dairy products becoming waste in grocery retail settings?
- How are dairy products managed when they are not sold in grocery retail settings?
- What practices are grocery retailers implementing to reduce dairy waste?

To answer these questions, the study team analyzed data, conducted walkthroughs at store locations, and vetted its findings and recommendations with NSM staff.

Data Analysis

PCFWC and Cascadia initiated the study by defining categories of dairy products to include in the analysis. The study team then collected reports for sales and shrink (unknown or unaccounted for loss of inventory) over a three-month period for dairy items by stock keeping unit (SKU). This information was used to analyze top-wasted products at individual stores and across the company.

Seven overarching categories were chosen: milk, other liquid dairy (such as cream and half & half), yogurt, other cultured dairy (such as kefir, sour cream, cottage cheese, and crème fraîche), eggs, cheese, and butter. Within those categories, the study team analyzed the following subcategories, which varied by product type, to understand if any were a significant source of waste:

- Conventional vs. organic
- Animal-based vs. plant-based vs. lactose-free
- Individual flavors, if any
- Package sizes

Walkthroughs

The study team and NSM chose stores that differed across a range of attributes, including setting (urban or suburban), size, presence of doors on dairy coolers, and sales and shrink volumes. One-hour walkthroughs were conducted with Grocery Managers at two stores on September 13, 2022. Topics discussed included why dairy items are wasted; how unsold dairy is tracked, managed, and disposed of; whether and how dairy items are donated; and how staff are trained on dairy waste prevention. The researchers also took pictures and documented the contents of store trash and compost dumpsters.



Key Findings

A Solid Foundation

NSM previously implemented several strategies to reduce and divert dairy department waste. The strategies observed include:

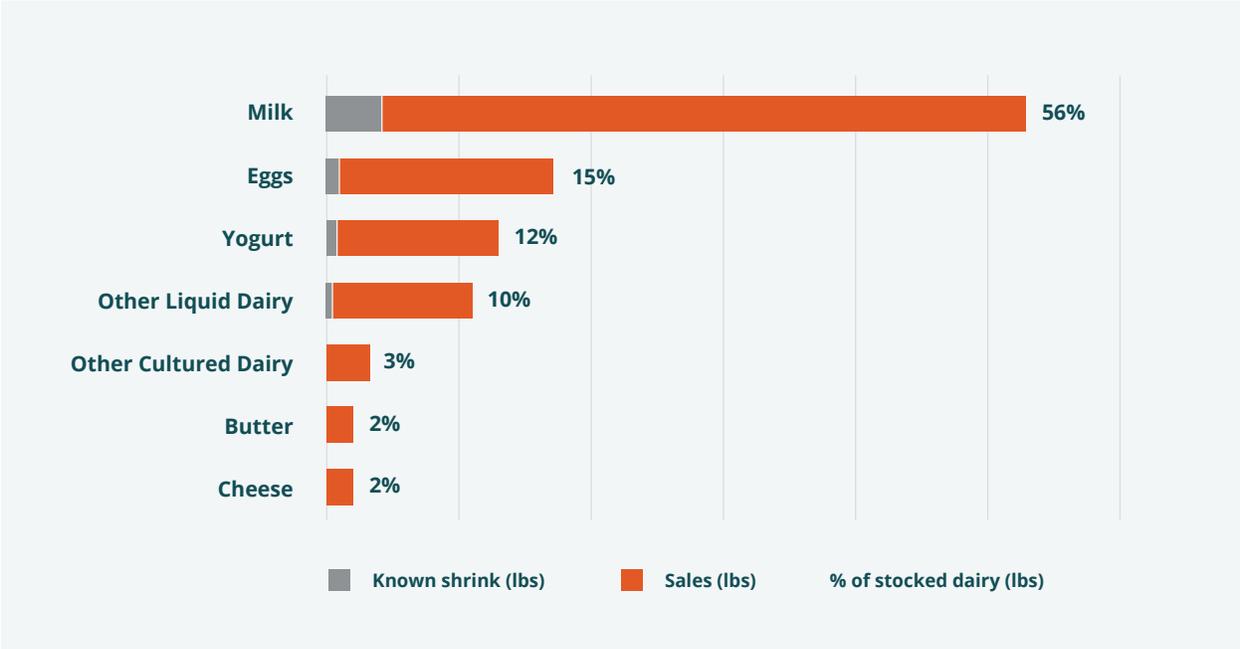
- *Goals for scanning out unsold items.* In 2022, NSM set a goal for all stores to scan out at least 90% of their unsold products. This effort started in their prepared food departments, then expanded to all departments, and scanning rates were incorporated into quarterly incentives for staff. This allowed NSM to develop baselines and understand their waste hotspot items better.
- *Detailed shrink codes.* When staff scan out items, the items become “shrink,” and staff enter a code indicating the reason they became shrink. NSM shrink codes differentiate between expired and damaged items. This level of detail helps Grocery Managers forecast store needs and can guide waste reduction.
- *Waste tracking and reporting software.* NSM uses a platform called Cantina. Waste information is available for each store, and staff can view trends by department and by item.
- *Experienced Grocery Managers place orders.* At NSM, interviewees informed the study team that Grocery Managers make the majority of purchasing decisions. This is often preferable to corporate staff making purchasing decisions, as Grocery Managers tend to better understand the waste and demand at their stores.
- *Several channels to dispose of unsold items.* Employees are trained on where to put unsold items: for donation or employees (not yet expired items only), composting (depackaged solid dairy items), or recycling (empty liquid dairy containers). Garbage is seen as a last resort.

Dairy Waste Observations at New Seasons Market

Shrink and sales (by weight and dollar amount) and total weight stocked (defining stocked as the total shrink + sales of an item) for each item were reviewed. **Overall, 5.2% of all stocked dairy by weight is not being sold.**

Milk makes up more than half (56%) of the weight of total dairy stocked, followed by eggs (15%), yogurt (12%), and other liquid dairy (10%) (Figure 1).

Figure 1. Dairy categories’ shrink, sales, and % stocked at New Seasons Market from October 2021 - October 2022



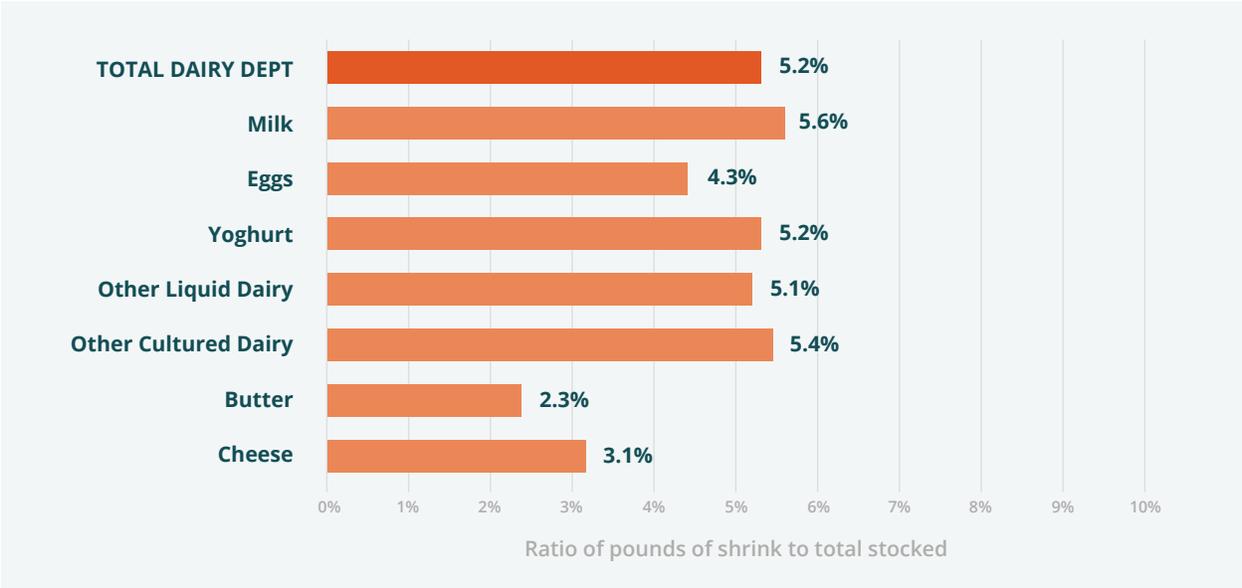
Milk makes up a disproportionate amount of known dairy shrink. While milk makes up 56% of total stocked dairy items, in pounds, it represents 61% of total dairy shrink. Together milk, eggs, and yogurt account for 85% of total known dairy shrink by weight (Figure 2).

Figure 2. Dairy category total known shrink by weight at New Seasons Market from October 2021-October 2022



Milk and other cultured dairy are the categories with the highest shrink rates; 5.6% of milk and 5.4% of other cultured dairy items are not sold. The other cultured dairy category includes cultured items besides yogurt, such as kefir, sour cream, cottage cheese, and crème fraîche.

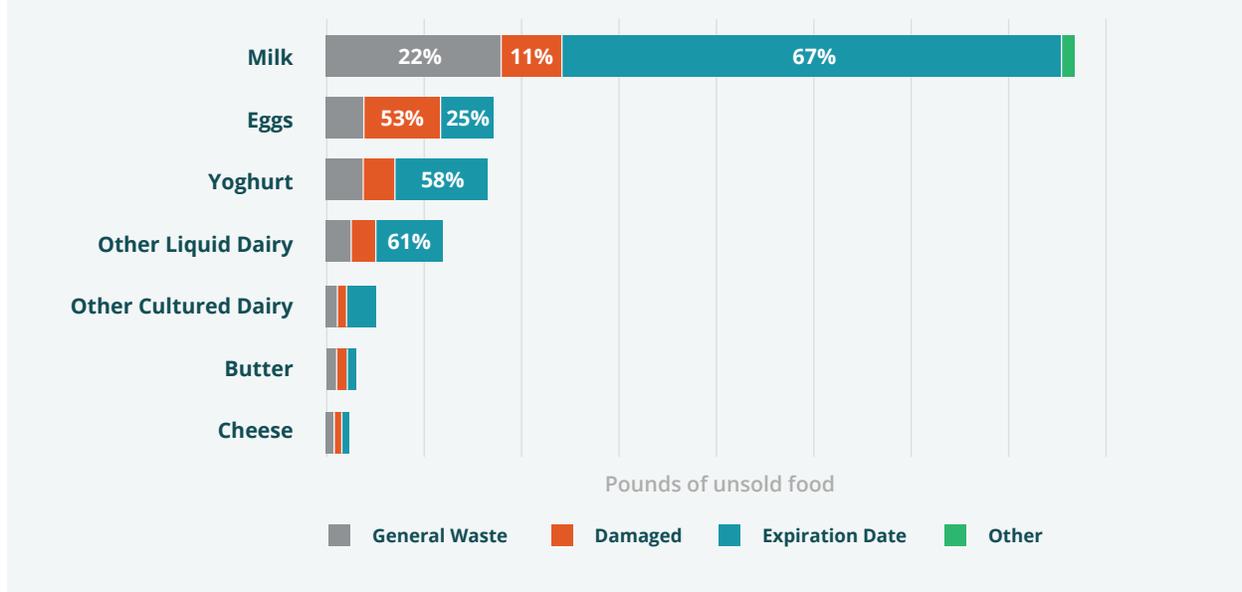
Figure 3. Ratio of known pounds of shrink to pounds stocked of dairy overall and dairy categories at New Seasons Market from October 2021-October 2022



A review of the reason codes entered as items were scanned out found that:

- Approaching expiration date was the leading cause of dairy shrink, accounting for 59% of known shrink. Items with longer shelf lives, such as cheese and butter, appear to have lower shrink ratios.
- Product damage causes 18% of dairy shrink. Eggs make up more than a third (36%) of damaged products.
- Other reasons for dairy inventory loss (including theft, resets, samples, and repurposing) made up 1% of total dairy shrink.

Figure 4. Percentage of shrink (in pounds), by dairy category and reported cause



Contributors to Dairy Waste

During walkthroughs, the following insights were heard from Grocery Managers:

- Suppliers contribute to dairy food waste by not delivering some items, delivering items close to their expiration dates (“short-dated” items), packing refrigerated and dry goods on the same pallet, and packing eggs in containers that do not adequately protect them.
- Fragile items and products with a shorter shelf life most often become waste. Eggs are the item most often wasted due to damage, and milk is often delivered “short-dated.”
- Other staff priorities may hinder their typical food waste reduction practices, such as ideal shelf stocking, scanning out, reviewing of dairy orders to align with inventory and waste data and to avoid over-ordering, and other processes.
- Staff mentioned excitement about NSM’s waste reporting dashboard but would like to see more streamlined data.
- Each individual store’s unique customer base and their interest in different products can create challenges with determining the appropriate item mix and quantities for a particular neighborhood store, which can lead to waste.
- Staff were not aware of store-specific dairy waste reduction targets. Corporate staff at NSM mentioned a new process to create and communicate store-specific dairy waste reduction targets, but staff who were interviewed were not aware of the targets.
- Staff are trained to pull items three days before the date listed and to stock newer items at the back of shelves; staff use the same protocol for all items regardless of the type of date label (“sell by,” “best by,” “use by,” or “best before”). This does not allow for maximizing the time items are available on the shelf based on the date (e.g., products with a “best before” date, which refers to quality, could stay on the shelf longer than those with a “use by” date, which generally refers to safety).



Recommended Steps for Grocery Retailers and Suppliers/Manufacturers

Based on the study's findings, the following are steps that grocery retailers should consider to further reduce dairy waste.

Waste Reduction Steps in Stores

1

Make sure that high-quality waste data is available:

- *Prioritize scan-out practices for accurate waste data.* High scan-out rates are essential for data quality, which enables staff to make confident, store-specific decisions to help reduce dairy department waste.
- *Streamline waste reporting to ensure busy staff can use waste data.* Pull out important data, like high-shrink items and categories and waste trends, into user-friendly reports for each store that highlight top-wasted items. Make sure processes for building and reviewing reports are built into workflows.
- *Invest in technology to track the accuracy of incoming orders.* At NSM, there is no way to formally track if items are not delivered as ordered, and any items not delivered as ordered appear as “unknown shrink.” To ensure there is no extra “unknown shrink,” practices such as scanning in items as they are unloaded from pallets can help monitor order accuracy.

2

Ensure staff is equipped and motivated to use data to make decisions around waste reduction:

- *Ensure that staff with access to data and deep knowledge of the store make ordering decisions.* Compared to ordering decisions made by each store's staff – who have insight into trends and consumer preferences at the store level – allocations for stores made by corporate staff can lead to more waste. Trained and experienced staff are better able to use their knowledge to make ordering decisions, train newer staff, and stay versed in the available tools, technology, and best practices to reduce dairy department waste.
- *Explore enhanced demand planning.* [Enhanced demand planning](#) systems can help retailers forecast demand based on the season, day of the week, store promotions, and other factors. If implemented by all U.S. retailers, the total annual impact potential is a 265k-ton reduction in overall food waste with an estimated \$3,140 in savings per ton of food diverted.
- *Create and communicate specific, manageable goals at the store level.* Set goals around waste reduction for one or more top-wasted products and around staff behaviors, such as generating weekly waste reports, scanning out a percentage of products, or participating in a number of hours of training.

- *Communicate waste reduction goals and impact to staff in terms of dollars and pounds.* Staff told researchers that hearing waste data in terms of profit lost resonated with them the most; however, setting goals using weight more directly aligns with retailers' overarching waste reduction targets and can help incentivize waste reduction for items with low prices but high volumes, such as gallons of milk.
- *Use data to celebrate waste reduction wins in monthly and quarterly communications that highlight individual stores and departments that are making progress toward waste goals.* NSM saw success in scan-out practices in part by incentivizing and celebrating high scan-out rates to further motivate staff.



3

Investigate current practices to understand which food waste reduction solutions will be the most impactful:

- *Investigate pulling items closer to the date label when it references product quality rather than safety.* NSM pulls items three days before the date label and donates them to hunger relief organizations and employees. This edible food could be sold from shelves if it is labeled with a date referencing quality, such as "best before." However, it is important to recognize that even if these products are sold, they may end up being discarded by consumers in their homes if they are not educated on what the labels actually mean.
- *Implement standard quality and expiration labels for store-brand items.* Consider implementing standard date label language on private brand food labels as Walmart has done with their Great Value brand, choosing to only allow the label "Best if Used By." Be sure that employees and customers understand what the labels mean.
- *Unload pallets promptly to reduce the chances of food spoilage.* Some pallets are packed with both perishable and nonperishable items. If a pallet contains products for multiple grocery departments, it should be unloaded swiftly, so that each product can be stored at the proper temperature.
- *Stock shelves from the back, ensuring items with the nearest expiration or sell by date labels are moved to the front.* The products nearest their sell by and expiration dates should be easily available to customers. This is a standard operating procedure at NSM. Only sometimes do capacity constraints lead to stocking shelves from the front, pushing items approaching expiration dates further back on the shelf.



Waste Reduction Steps with Suppliers and Manufacturers

Work with suppliers and manufacturers to further investigate and address their contributions to store-level waste. Potential goals are to:

- *Minimize deliveries of short-dated items.* NSM reports that short-dated milk often becomes waste. Consider increasing the frequency of deliveries and reducing the quantity of cartons to increase the window of time that milk is on the shelf and available for purchase.
- *Avoid surrounding perishable items with non-perishable items and cap the amount of eggs on pallets.* If store employees do not realize that perishable goods are mixed with nonperishables on a pallet quickly enough, it can lead to waste. Additionally, if there are too many eggs packed on each pallet, they are more likely to break. Eggs are one of the most-wasted dairy department items due to damage.
- *Standardize date labels.* NSM staff use the same protocol for items with any kind of date label, which does not maximize the time each item is on the shelf. For industry-wide date label standardization, ReFED's Insights Engine predicts [an annual impact potential of 796k tons of food waste diversion among consumers, retailers, manufacturers, and foodservice sectors with an estimated savings of \\$4,460 per ton of food diverted.](#)

These potential waste reduction steps represent the results of this phase of study; the PCFWC will build on them by choosing and developing strategies to test in pilots with grocery retail signatories.

Acknowledgments

The PCFWC would like to thank New Seasons Market and Cascadia Consulting Group for their contributions to this case study.

About the Pacific Coast Food Waste Commitment

The Pacific Coast Food Waste Commitment (PCFWC) arose out of the [Pacific Coast Collaborative](#) in 2016 and is an innovative public-private partnership made up of West Coast jurisdictions, U.S. food industry leaders, and nonprofit resource partners that together seek to eliminate food waste in the region by 50% by 2030. Learn more about the initiative and its members at pacificcoastcollaborative.org/food-waste.

Business Signatories

(As of Summer 2023)

Retailers



Hospitality and Food Service



Manufacturers



Distributors



Growers



Resource Partners

