

FOOD WASTE CASE STUDY: EMPOWER CITIES TO PREVENT, RESCUE, AND RECYCLE

SECOND HARVEST

FROM FORK TO FARM AND BACK



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LOCATION:
Nashville, TN

DATE STARTED:
June 2015

ORGANIZATION TYPE:
Nonprofit food bank

LEAD ORGANIZATION NAME:
Second Harvest Food Bank of Middle Tennessee

PARTNERS:
FreshPoint (a produce distributor wholly owned by Sysco) and Sysco

STRATEGY IN A NUTSHELL:
Rescue and process surplus tomatoes by a food bank

FOOD RESCUED:
6,000 pounds of tomatoes per week processed into high-quality spaghetti sauce

GHG EMISSIONS AVOIDED:
203 metric tons CO₂ equivalent/year¹

OTHER KEY SUCCESS METRICS:
Healthful tomato sauce made available to 490 nonprofit agencies that serve 400,000 food-insecure people

THE CHALLENGE AND OPPORTUNITY

Second Harvest Food Bank of Middle Tennessee is one of the largest food banks in the United States. The organization’s mission is to distribute food to people in need through its network of 550 nonprofit agencies. This network includes food pantries, shelters, and churches serving food-insecure people—those who lack reliable access to a steady supply of food—in Middle Tennessee, where one out of seven people, including one out of five children, are at risk of hunger.²

Second Harvest has long sought ways to reduce the cost of acquiring food while also increasing the amount of fresh produce it distributes. An opportunity arose in 2015 when FreshPoint, a national produce distributor, offered to donate 10,000 pounds of fresh tomatoes every week. However, Second Harvest did not yet have the capacity to sort, store, and distribute such a large and steady volume of highly perishable food. For more than 20 years, the food bank had paid for outsourced capacity to produce canned, shelf-stable food.

FreshPoint's donation offer presented an opportunity to process high quality produce in a shelf-stable form that is convenient for the food bank's clients and makes fresh, healthy food more affordable for the Second Harvest network, all while repurposing a vast quantity of produce that would otherwise be discarded.

Excited to take on this challenge, Dr. NK Kim, senior director of manufacturing for Second Harvest, and Kim Molnar, chief operating officer of Second Harvest, came up with an innovative plan. First, Dr. Kim developed a recipe for a nutritious spaghetti sauce using the fresh tomatoes and a handful of other simple ingredients. As a result of the tomatoes being processed for sauce, the product is healthy and its shelf life is extended. Next, the team developed a manufacturing process that is affordable, high capacity, and food safe: an in-house production line that processes the tomatoes into sauce in a shelf-stable pouch. This allows Second Harvest to extend the shelf life of the tomatoes so they are available year-round.

In addition to serving the hungry, this Second Harvest project diverts food that may have otherwise decomposed in landfills, a process that can emit methane, a greenhouse gas with an impact 25 times more potent than carbon dioxide.³ This is a key ecological consideration because landfills are the third-largest source of human-related methane emissions in the United States, accounting for 18 percent of U.S. methane emissions in 2015.⁴

RECIPE FOR SUCCESS

Second Harvest is one of the first food banks in the country to find a way to capture and redistribute millions of pounds of fresh produce through a large-scale preservation system, and the first to launch a pouch production system. This initiative provides important lessons for food bank-based efforts to capture agricultural surpluses in large volumes, including the following:

PRODUCE AND PROCESS DEVELOPMENT

A successful sauce was not created overnight. Recipe development included several rounds of taste tests and subsequent adaptation based on feedback from nonprofit agencies. Once the recipe was perfected, Dr. Kim's team focused on developing a shelf-stable product, working with an out-of-state co-packer to develop the best plan for sanitizing, grinding, cooking, mixing, and packaging the tomatoes. The original plan was to first grind, cook, and mix the sauce at Second Harvest in Nashville, then finish packaging by sending the work-in-process product to the out-of-state co-packer. However, it became clear that this approach was not cost effective and would compromise quality.

As a result, Second Harvest developed a system to process the large volume of tomatoes in-house, add ingredients, cook the sauce, transfer it to vinyl pouches, seal them, and box the product. Executing this at scale required purchasing packaging equipment, designing a thermal process to make the food safe, and complying with U.S. Food and Drug Administration (FDA) regulations.

PACKAGING AND IN-HOUSE MANUFACTURING

The pouch-filling machine was a costly part of the production system, so Second Harvest purchased a used but reliable machine with funding from an anonymous donor and Sysco. Second Harvest implemented a precise thermal processing protocol to ensure the safety of its finished product, which achieved a score of 98 percent on its FDA inspection.

In December 2016, Second Harvest started receiving tomatoes from FreshPoint and began its weekly production of 6,000 pounds of low-sodium, extra chunky spaghetti sauce. Today, Second Harvest provides 13-ounce sauce pouches to 490 partner agencies around the region for \$0.26 per pouch. The full supply is snapped up by partner agencies every week. Second Harvest has the capacity to double production to 12,000 pounds of tomato sauce per week within its existing facility, which would allow the organization to expand its reach. Second Harvest has set its sights on potentially expanding even further by increasing production to one million pounds per year. This expansion would require additional processing equipment and physical space, but would also bring additional farmers into the supply chain and reach even more people in need.

KEY SUCCESS FACTORS

LEARN FROM PAST EXPERIENCE. Second Harvest was able to draw from some previous experience in processing large volumes of fresh produce. During the 2015 harvest season, Second Harvest partnered with a local farm to process more than 300,000 pounds of surplus green beans. The donated green beans were not uniform. To preserve their freshness, the beans were blanched and frozen, then distributed to shelters and other nonprofit agencies with instructions to trim the ends before cooking. This allowed Second Harvest to preserve the green beans for use throughout the year, rather than only serving fresh green beans when they were in season. However, the shelters were unable to easily integrate the frozen green beans into their meal preparation because food preparation staff were accustomed to canned green beans during times when fresh beans were not available. The canned beans did not need to be trimmed on-site as the frozen green beans did. As a result, Second Harvest ultimately decided to go back to distributing fresh, rather than frozen, green beans.

From this experience, Second Harvest learned about the importance of testing its products with network agencies and carefully assessing the feasibility and cost of processing fresh food. So when FreshPoint offered to donate 10,000 pounds of fresh tomatoes a week, Second Harvest invested in research and testing to ensure that it came up with a product that was affordable, healthful, well-received by clients, and easy for agency staff to use. As a result, it now has a successful product that allows it to achieve its goals of reducing its long-term costs and providing quality food.

BUILD ON SIMPLE, HEALTHFUL INGREDIENTS. In developing a process for preparing and preserving fresh tomatoes, Second Harvest focused on maintaining the healthful attributes of its raw ingredient while also creating a delicious product that

people would enjoy. By focusing on blending quality, taste, and nutrition, Second Harvest is increasing the volume of produce in the food it provides.

CONTRIBUTE FINANCIAL RESOURCES TO PRODUCE QUALITY, IN-HOUSE PRODUCT. To recover and process tomatoes at such a large scale, Second Harvest needed to contribute the initial financial resources for the project. In the long run, this investment will enable the organization to save money (compared with the cost of outsourcing a canning service) and produce a top-quality tomato sauce. FreshPoint's commitment to providing a reliable supply of tomatoes combined with Second Harvest's investment in infrastructure enhancements helped Second Harvest unlock an ongoing supply of surplus produce. In addition, financial support from Sysco and an anonymous donor made possible the purchase of a pouch processing machine, which contributed to the development of a consistent production process.

RIGHTSIZE INFRASTRUCTURE TO ALLOW FOR GROWTH. It is important to partner with manufacturing facilities or acquire equipment that can convert fresh food into shelf-stable products for distribution, well beyond the brief harvest period when products are at peak freshness. For example, Second Harvest is currently producing 6,000 pounds of tomato sauce per week, but it can actually handle up to 12,000 pounds per week using its existing production capacity. In the future, it can manage increased donations by increasing its own production capacity through the addition of a second processing line or the addition of a second shift. Rightsizing infrastructure to allow for growth is an important consideration when investing in new processing capacity.

SUPPORTING ROLES

EXPAND FOOD RECOVERY INFRASTRUCTURE AND CAPACITY. In this example, building infrastructure and investing in a processing facility were supported by a capacity grant from a philanthropic donor. However, philanthropic funds may not always be available. City governments can help address this challenge by partnering with philanthropies and economic development agencies to support infrastructure investments that enable these programs to increase their scale and flourish.

PROVIDE IN-KIND CONTRIBUTIONS. In addition to philanthropic donations and economic support, nonmonetary contributions of space and services can be a boon to nonprofit organizations. State and local entities can help facilitate access to shared processing facilities by working with area food hubs and commercial kitchens, identifying city buildings that could be used for food processing, or subsidizing space for processing activity.

FACILITATE PARTNERSHIPS AND CONNECTIONS. City agencies are often well positioned to help connect key stakeholders and potential partners, such as food processors, retailers, or producers, with food banks and food recovery organizations. These relationships are critical to establishing a successful food recovery program.

EQUITY IMPACT

FILLING NUTRITION GAP: Second Harvest's mission is to provide food to those in need and work toward solving hunger issues in Middle Tennessee, where 15 percent of residents are food insecure, including one in four children. By investing in in-house capacity to process surplus tomatoes, Second Harvest is able to provide a long-term supply of a product that is low in sodium, sugar, and fat, and high in vitamin C, giving families access to a high-quality, nutritious food year-round.

New from Project Preserve

Marinara Style Spaghetti Sauce Pouch



Crafted and Produced in the Project Preserve Cook Chill Facility with fresh, donated tomatoes and spices to create a chunky and flavorful Marinara Style Spaghetti Sauce

20/13oz pouches
84 cs/pallet 23 pallets/truck
Easy open pouch Microwaveable
Case weight 21 lbs

ENDNOTES

- 1 Based on calculation using the EPA Waste Reduction Model (WARM) Version 14, <https://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM Tool V14>.
- 2 Second Harvest Food Bank of Middle Tennessee, <https://secondharvestmidtn.org/>.
- 3 Twenty-five times more impact, pound for pound, over a 100-year period. U.S. Environmental Protection Agency, *Overview of Greenhouse Gases*, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>.
- 4 Ibid.

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