

Project Overview

P3 Intern: Madilyn Jaska
Major: Food Science
School: University of Nebraska-Lincoln



Company Background

The McCain brothers, Wallace, Harrison, Robert, and Andrew founded McCain Foods in 1957 with a specialty in appetizers. Today, McCain Foods spans worldwide with sales in more than 160 countries. The McCain Grand Island location has 417 employees and produces over 400,000 pounds of different appetizers each day, including mozzarella sticks, fried jalapeños, cream-corn nuggets, French toast sticks, and a large emphasis on onion rings. This plant's main focus is onion rings ranging from beer battered to raw breaded.

Project Description

In the summer of 2022, McCain Foods hired Madilyn Jaska from the University of Nebraska-Lincoln's Partner in Pollution Prevention Program to aid them in creating a more profitable and waste reducing approach to quality assurance. The main focus was to analyze the waste from the final step of production to minimize the total number of defects, defects that are thrown away and help the tracking process of this waste.

Pollution Prevention Benefits

Minimizing Zone 3 waste was the goal for the summer. Some recommendations do not require any capital costs just organized training for the employees. The outcomes were tested on some methods and proved to reduce waste when implemented. The ability to analyze the amount of Zone 3 reduced was also improved.

Results

Table 1: Total Benefits of Recommendations

P2 Category	Annual Savings Cost	Implementation Cost	Payback Period	P2 Benefits (per year reduction)
Zone 3 Training	\$2,293,750/year	\$0	none	746 MTCO ₂
Zone 3 Inspectors to QA Techs	\$1,883,900/year	\$500,000	<1 year	N/A
Zone 3 Weighing	\$642,000/year	\$930	<1 year	785 MTCO ₂
Freezer Replacement	\$554,700/ year	\$2,407,125	4.3 years	Electricity savings
Total	\$2,964,525*	\$2,908,055	0-4.3 years	1,531 MTCO ₂ and Electricity savings

*since the reduction of Zone 3 is a common outcome for the recommendations, using more of the recommendations will help minimize Zone 3 but the cost savings will not sum together equally as that would be over a 100% reduction in Zone 3. To calculate annual cost savings more accurately, 50% of each cost saving will be summed from the Zone 3 recommendations.

Additional Indirect or intangible benefits include:

- Reduce truckloads to animal feed drop off
- Reduce greenhouse gas emissions
- Reduce hazards in the ammonia feed to freezers