

# Local Food Manufacturing

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### Dominica Manufacturers Association

## Abstract

This past summer, the team travelled to the island country of Dominica to work with DMA, or the Dominica Manufacturer's Association. The team rotated mainly between manufacturers – Graceson John of Big G's Pepper Sauce in Delicés, Dominica and Linvor Ambo of Choco Dominique in Dublanc, Dominica. Delicés is a farming village located in the mountains on the southeast corner of the island and Dublanc is a fishing village located on the northwest coast of the island. While in Delicés, the team worked with Graceson to increase efficiency in production by making equipment recommendations that he could invest in to complete his newly constructed factory and also created a guide to help his business become HACCP certified so that the market could expand internationally as production increases. In addition, the team created a report that captured Big G's sales and expenses from 2015-2017 using Google Sheets. While in Dublanc, the team worked with Linvor to also increase efficiency in production by creating a factory design complete with recommended processing equipment and also designed and constructed a solar dryer for cocoa beans to reduce the cost of production.

## Introduction

- Dominica Manufacturer's Association promotes locally made products in the DMA store, and gives the manufacturers an opportunity to acquire necessary, new machinery through government grants.
- Big G's lacked key machinery to make parts of the production process more efficient and the level of document organization led to inaccurate estimates about company growth, accuracy of recorded expenses, and limited ability to become HACCP certified.
- Choco Dominique lacked machinery that could improve the speed of filling and packaging cocoa powder, current machinery was becoming inefficient to supply the increasing product demand, current factory was at risk for cross contamination, and a better method for drying cocoa beans was needed.

## Results & Discussion

### Big G's Pepper Sauce

#### Results

- Created a guide to understand the process of writing a HACCP business plan, based on FDA guidelines
- Wrote recommendations for improving CGMP in Big G's new factory, which targeted sanitation, workplace attire, and labeling
- Collected information and quotes for time saving equipment (i.e. hand choppers, food processors, bottle fillers, labelers, and sealers)
- Translated handwritten records of Big G's sales and expenses from 2014-2017 into a Google Sheets document
- Analyzed the Google Sheets file to create a Sales and Expenses Report and a series of Sales Graphs for 2015-2017

#### Discussion

- The Team concluded that Big G's made an increasing profit from 2015-2017
- The Team determined that Big G's 3 highest selling pepper sauce flavors in 2016 were Roasted Red Peppers, Turmeric, and Fireball, respectively
- Undocumented flavors caused the sales graphs to be unreliable

### Choco Dominique

#### Results

- Collected information and quotes for time saving equipment (i.e. filler machines, mixers, roasters, hydraulic presses, winnowers)
- Made factory layouts to increase efficiency and reduce cross contamination using current machinery and future invested machinery using AutoCAD
- Designed a Solar Dryer using SolidWorks and constructed a solar dryer based on the model

#### Discussion

- The factory drawings put Choco Dominique in a good position to receive government funding to purchase more of the equipment and machinery recommended by the team
- The solar dryer did not undergo any testing since the plexiglass cover still needed to be purchased, but it is intended to be shared with neighbors to dry out plants and other fruits

## Project Description

### Big G's Pepper Sauce

- Researching and recommending equipment to speed up production
- Gathering information about HACCP and CGMP (Current Good Manufacturing Processes) for international trade to expand business
- Creating a sales and expenses report to document Big G's yearly profit and to assist in the HACCP certification process

### Choco Dominique

- Researching and recommending equipment to keep up with rising demand in production
- Creating factory layouts in AutoCAD with both current equipment and recommended equipment
- Designing and constructing a portable solar cocoa bean dryer to decrease cost of production

### Sales & Expenses Report

#### 2015

Quantity Sold	1,193
Quantity Undocumented	679
<b>Total Sales</b>	<b>\$16,770.12</b>
Catering	\$350
<b>Total Expenses</b>	<b>\$13,333.38</b>
<b>Profit</b>	<b>\$3,436.74</b>

#### 2016

Quantity Sold	3,185
Quantity Undocumented	699
<b>Total Sales</b>	<b>\$34,520.86</b>
Catering	\$2,200
<b>Total Expenses</b>	<b>\$29,551.28</b>
Personal	\$2,666.65
Construction	\$15,000
<b>Profit</b>	<b>\$4,969.58</b>

#### 2017 (Jan-Jun)

Quantity Sold	1,775
Quantity Undocumented	138
<b>Total Sales</b>	<b>\$16,143.00</b>
Projected Sales (Based on 2016)	\$24,048.36
<b>Total Expenses</b>	<b>\$10,503.81</b>
Factory	\$4,000
Personal	\$455
<b>Profit</b>	<b>\$5,639.19</b>

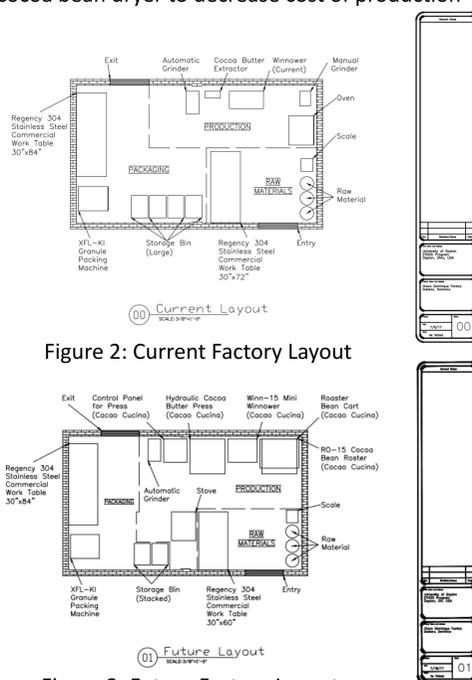


Figure 2: Current Factory Layout

Figure 3: Future Factory Layout



Figure 4: Completed Solar Dryer

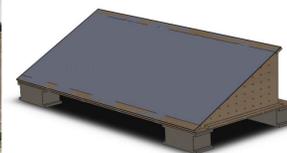


Figure 5: 3D model of Solar Dryer



Figure 6: Unassembled Solar Dryer

## Recommendations

- If Big G's adopts Google Sheets for keeping record of sales and expenses, it would be helpful for students to train Big G's on how to analyze the data annually
- The Team would recommend that students help Big G's new factory meet CGMP standards
- Big G's could also use a business major for creating a business expansion plan and a graphic design major to make adjustments to bottle labels or advertising
- The Team would recommend that future ETHOS groups placed at Choco Dominique test the solar dryer for overall effectiveness post completion
- If the model is successful, ETHOS groups could continue to build solar dryers with different manufacturers on the island since it is a very practical way of reducing energy costs
- Future ETHOS students could help design an affordable cocoa bean roaster to aid Choco Dominique's manufacturing process

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