Norpac Pumpkin Seed Products

Team Members: Nicholas Juchau, Scott Stevens, Sam Morland, Codi Morton, Grant McGill, Garrett Burr, and Taylor Fraker

Advisors: Bob Harder, Nick Gilbert, and Stephen Leijon

Purpose

Norpac Foods produces 1.7 tons of winter squash (Pumpkin), and 175,000 lbs of pumpkin seeds from their winter squash production lines, during the harvest season. Those seeds are currently being sold for $1.10 per lb (unprocessed). Our goal was to increase profit.

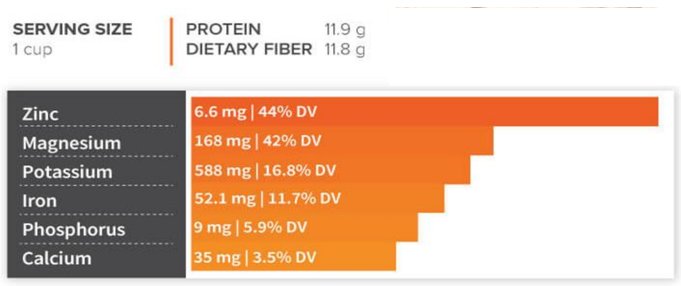

Figure 1. Nutritional information for the pumpkin seed.

Proposal

To evaluate several different pumpkin seed products based on analysis of market, ROI, and technical feasibility. From this, we recommended the best product line, its implementation, and propose further branding and marketing strategies.

OTHER CONSIDERATIONS

It was critical that the pumpkin seed throughput constraint be met and maintained throughout the process, at approximately 860 lbs/hr to ensure smooth transitions and processing. Several different pumpkin seed product alternatives were considered, including: roasted pumpkin seeds, seed oil, protein powder, pumpkin seed flour, pumpkin seed kernels, pumkin seed butter and milk.

NUTRIPAC

Figure 2. NUTRIPAC Label

Figure 3. Gluten free pumpkin bread made from pumpkin seed meal

Figure 4 : Pumpkin Seed Processing Line

Final Design

RECOMMENDED PRODUCT: We are recommending that Norpac implement a mixed production line. The product flow diagram in Fig 4. shows two different paths of kernels being processed, in addition to a third product, Pumpkin Seed Flour. We are recommending this approach because it allows for versatility of products, investment in a safe market, as well as potential for expansion.

OPERATION:

1. Pumpkin Seed Mix -> Washer
2. Washer -> Dryer
3. Dryer -> Dehuller
4. Dehuller -> Sorter
5. Sorter -> Bulk Kernels, Packaged Kernels, Grinder
6. Grinder -> Pumpkin Seed Flour

MARKETING: An early research study was taken to see the likelihood of college students purchasing pumpkin seed products and the results have indicated that pumpkin seed products are not advertised or marketed well. This is an excellent market opportunity for NORPAC's new product, pumpkin seed flour. A detailed marketing plan was developed during the second semester including prospective market conditions, SWOT analysis, customer demographics, environmental analysis, competitive analysis, price structuring, and a few promotional ideas to give the brand momentum.

BRAND DEVELOPMENT: Norpac currently has two brands that they sell product under, FLAV-R-PAC® and Santiam®. These brands have a product mix of frozen produce and canned products. We recommend the new pumpkin seed product(s) be sold and marketed under a new brand name, Nutripac (see Fig. 2).

Table 1. Annual Return on Investment (ROI) for three different types of pumpkin seed products (assuming 80% of the product is sold).

Most-likely- Max Sales 80%			
Product	Bulk Kernals	Package Kernals	Powder/Flour
Amount of Product (lbs)	61,200	61,200	61,200
Final Price/lb	$1.92	$8.00	$15.00
Revenue	$94,003.20	$391,680.00	$734,400.00
Machines (over 10 years)	$15,500.00	$31,500.00	$43,500.00
Labor	$55,000.00	$55,000.00	$75,000.00
Utilities (water,gas,electricity)	$9,000.00	$11,000.00	$15,000.00
COGS (cost of goods sold)	$1,000.00	$12,000.00	$15,000.00
Advertising	$0.00	$50,000.00	$75,000.00
Profit	$13,503.20	$232,180.00	$510,900.00

Machine Specifications

MACHINES

1. Buhler Fluidized Bed Dryer
   Dries product by forcing air upwards through a granular product causing it to become fluidized. The heated air will dry the product as it moves through the machine.
   - Meets the required flow rate with scalability
   - Low air drive requirements
   - Cost: approx $60,000

1. Buhler Dehuller
   Feeds from the top onto a spinning plate. Removes the outer shell of seeds by gently colliding them with an impact plate.
   - Meets required flow rate with scalability
   - Cost: $50,000 - $55,000

1. Buhler Sortex A
   Accepts or rejects seeds based on criteria including color, shape, size, and intactness.
   - Meets required flow rate with ability to increase capacity
   - Cost: $170,000

1. Buhler Sortex B
   The Sortex B is a color sorter much like the Sortex A, however it lacks the shape sorting capability. For flours this is fine, because the seeds get ground up anyway.
   - Color Sorting Capabilities
   - Meets required flow rate with scalability
   - Cost: $130,000

1. Buhler Multi-Impact Hammer Mill (Grinder)
   The Multi-Impact Hammer mill works by spinning blades and dropping seeds on them. The seeds bounce between the blades and the impact plate until the particles are small enough to pass through the sieve.
   - Meets required flow rate with ability to increase capacity
   - Cost: $80,000

TEAM MEMBERS

Garrett Burr not pictured

Senior Design
GEORGE FOX UNIVERSITY