MARKET ANALYSIS
CONSUMER-READY PULSE PRODUCTS

Final Report

Prepared for:

Saskatchewan Agriculture and Food

March 2001

EXECUTIVE SUMMARY

Introduction

Saskatchewan Agriculture and Food (SAF) commissioned Canglobal Management Inc. (Canglobal) to undertake a study for the Market Analysis for Consumer-Ready Pulse Products. The project investigates the market for consumer-ready pulse products in North America, with the goal of identifying potential opportunities to further develop secondary processing in Saskatchewan. The project also provides a specific focus on the gluten-free market, the potential for developing gluten-free pasta products derived from pulses, and the opportunities for processing gluten-free products in Saskatchewan.

The principal research objectives of the project are to:

- Analyze the market for consumer-ready pulse products
- Analyze the market for gluten-free pasta derived from pulses
- Analyze the consumer-ready pulse product processing industry
- Analyze the gluten-free pasta processing industry
- Identify opportunities for value-added processing of consumer-ready pulse products in Saskatchewan
- Identify opportunities for value-added processing of gluten-free pasta derived from pulses in Saskatchewan

Project Justification

The underlying justification for this project is that acres seeded to pulses and pulse production has grown rapidly in Saskatchewan over the last decade and, according to all reports and research, is expected to continue growing. There have been several reasons for this trend, including the desire to diversify agricultural production from cereal crops, the sustained growth in the market of pulse products, and the agro-economic benefits of reduced input costs related to pulse crop production. No matter to what degree, one or all of the previous factors play a role in production mix decisions at any given time. It is evident that the growth in pulse production in Saskatchewan is not a passing trend. This fact combined with the desire to develop and exploit further areas of economic benefit from agriculture production and processing in the province, has led to the need to identify market opportunities to capture added value of pulse crop production in Saskatchewan.

Research Methodology

The data compiled and analyzed for the project was gathered under the following methodologies:

- Secondary Research of Internet data, previous reports and analysis of the pulse production, processing and consumer product industries.
- Primary Research, compiled from the following activities:
    - Telephone and personal interviews with producer associations, processors, and retailers
    - Retail store audits and interviews of both mainstream grocery and ethnic specialty stores. The product audits and store manager interviews took place in the following North American urban markets:
        - Saskatoon
        - Toronto
        - Vancouver
        - Chicago
        - Los Angeles
        - Miami
        - New York/New Jersey
    - Consumer survey conducted with individual members of Celiac Associations throughout North America
    - Industry consultations

Among the formal primary research categories, the following results were achieved:

- 40 telephone interviews
- 45 retail store audits/interviews
- 65 celiac consumer preference surveys

Current Pulse Production and Processing in Saskatchewan

Pulse crops in Saskatchewan include field peas, lentils, beans and chickpeas. In 1999, Saskatchewan had 97 percent of Canada's seeded acreage of lentil and 72 percent of Canada's seeded acreage of field pea. Saskatchewan is the world's largest exporter of field peas and lentils. Beans, however, are produced in small quantities, despite the fact that a large North American market for pinto and other beans exists. The area devoted to pulse crops has grown rapidly in Saskatchewan to over 1.1 million hectares in 1998 with production exceeding 2.5 MT. Significant annual growth in acres seeded of each crop is expected to continue rising. Organic pulse production represents only a very small percentage of current production in Saskatchewan with lentils being the largest organic crop, followed by field peas and chickpeas.

In terms of the processing in Saskatchewan, the focus of the industry to date has been on primary processing and exporting pulses in bulk, usually to global markets. Less attention has been paid to the domestic and broader North American market. This has mainly been due to the nature of raw product demand, as Saskatchewan has been a reactive market player. Other factors in the market for pulses have been the development of more accessible markets due to reduced trade tariffs or free trade agreements, such as the Canada Chile Free Trade Agreement (CCFTA). Since the signing of the CCFTA, Canadian exports of lentils to Chile have increased by over 30 percent.[1] In addition to reduced trade tariffs, another factor in the sustainability of pulse crops is Canada's, particularly Saskatchewan's, competitive advantage in the dry land agro-economic production of these crops, specifically peas, lentils and chickpeas.

Currently, there is relatively little value-added processing of pulses in Saskatchewan beyond cleaning, packaging and bulk loading. Most of the primary processed product is shipped in 25 kg bags or bulk to buyers around the world. Secondary processors are performing further processing on raw product such as seed splitting, feed processing or color sorting, but few are conducting processing activities targeted to the consumer-ready market. Aside from the lack of secondary and advanced processing, the current capacity of primary processing in Saskatchewan is not sufficient to handle the annual level of pulse crop production. All these factors indicate and support the need and justification for expansion of primary and secondary processing of pulse products in the province.

Analysis of the North American Market for Consumer-Ready Pulse Products

Market Analysis

For the purposes of this study, a "consumer-ready" pulse product refers to any processing that takes the product beyond a cleaned, dried, sorted and bulk state. Specifically, the term "consumer-ready" refers to a level of processing that makes the product easier to consume. This may range from splitting or partially cooking to reduce preparation time, to cooking and canning, or ingredient inclusion in canned, jarred or frozen prepared foods. The packaging and sorting of products into smaller individual consumer sized offerings will also be examined even though it does not necessarily make the product any easier to prepare or consume.

[1] Canada is expected to sign a free trade agreement with Central America in the next two years also.

There are a number of key trends and drivers in the North American retail food market that will affect and influence pulse products and processors. On the retail side, key trends are increased category management, increasing popularity of private labels, and increased just-in-time delivery. Not surprisingly, these trends are consistent with the general trends of the North American retail food market which include:

- Increased demand for convenience or easy-to-prepare food
- Taste, nutrition and convenience becoming the most important food product characteristics
- Increasing population of baby boomers
- Increasing immigration and ethnic diversity
- Increased interest in ethnic, health and organic foods
- Decreasing meat consumption
- Increasing vegetarianism
- Increasing use of the Internet to make retail purchases

Traditionally, pulse products such as beans, peas and lentils, have been a long time staple in Latin American, East Indian, and Middle Eastern countries and cultures. This has largely been due to the high cost and limited availability of meat protein in these regions. When compared to meat, pulses are certainly a low cost protein alternative, but have also developed a stereotypical image as "food for the poor" in North America.

In general, pulse production and consumption in North America is a relatively new trend. The general affluence of North Americans, combined with the lower cost and easy access to meat has meant that alternate protein sources were not necessary or highly demanded. As mentioned, the health benefits of pulse products as a protein alternative to meat, and a more diversified cultural mix in North America, due to immigration and travel, has broadened the demand and consumption patterns for pulses.

Therefore, the key market segments for pulse products examined for this study include the broad Canadian and U.S. retail markets as well as traditional pulse consumers in the Hispanic, Middle Eastern and East Indian, and organic and vegetarian specialty market segments. The above defined market segment is obviously very large and the research has indicated that there exists a multitude of retail pulse food products in a variety of forms. This study has attempted to draw conclusions and identify opportunities pertinent to the Saskatchewan producer and processor. As would be expected, there exists many opportunities for new and expanded product entry, the challenge is to target industry efforts to opportunities consistent with the competitive advantages and constraints inherent to Saskatchewan.

The other major market segment, the Celiac or gluten-free market for pulse products is analyzed in a separate section. This market segment proved far easier to research and specific opportunities were identified, as it is a generally overlooked market segment by the industry.

This was reflected in the high degree of cooperation from consumers and processors in the provision of research data.

Product Profile

The study identifies eight product categories in order to readily group consumer-ready pulse products. These product categories are based on value-added potential, as well as the types of processing technologies used. Opportunities to develop secondary processing in Saskatchewan are analyzed based on these categories. The identified product categories and corresponding product types are identified below:

- **Bagged pulses** – whole and split pulses
- **Ground pulses** – pulse flours
- **Products made with ground pulses** – pappadums and rotis, specialty dough mixes
- **Whole processed pulses** – canned pulses, micronized pulses, toasted pulses
- **Products made with processed pulses** – dried soup mixes, canned soups, canned refried beans, canned curries, canned chilies, retort pouch packaged entrees, frozen entrees, snack mixes
- **Fractionated pulses** – starches and proteins
- **Extruded pulses** – pastas, meat substitutes

A detailed listing of identified products, pulse content and processors is presented in the full report and appendices.

Consumer Profile

As would be expected, the largest consumers of pulse products in North America are ethnic consumers, based upon traditional cultural consumption patterns. Aside from ethnic consumers, non-ethnic pulse consumers include; Generation X, seniors, vegetarians, organic consumers and non-ethnic ethnic food consumers. There is also a great deal of crossover between these various segments, for example, non-ethnic vegetarian consumers.

Ethnic food products such as Hispanic, East Indian and Middle Eastern possess the highest percentage pulse content as compared to other ethnic or mainstream food categories. Over the past ten years there has been a noticeable increase in demand for ethnic foods, of all ethnic varieties, by traditional or mainstream consumers. Increased demand for, and retail sales of, ethnic foods in North America is due to two factors:

- Increased awareness and popularity of ethnic foods with non-ethnic consumers
- Increase in immigration and presence of ethnic groups in North America

The largest ethnic group in North America is represented by Hispanics, a group that has traditionally been a large consumer of pulse products. Although pulses of all types are consumed within Latin American countries, beans are the most commonly consumed pulse crop by North

American Hispanics. Tastes of second and third generation Hispanics, however, are coming in-line with mainstream preferences. Food products are slowly evolving to meet the mix. In general, the Hispanic consumer has followed the North American trend in demanding quality and convenient products that meet taste expectations. There has been a significant development over the past 20 years in processed foods for the Hispanic market, largely led by food processors of Hispanic origin in the U.S.

The Middle Eastern and Indian populations are also large consumers of pulses by tradition. In North America, these groups are heavily urbanized. The most common pulses used in both Middle Eastern and East Indian foods are chickpeas and lentils. The research has indicated that there are a greater variety of East Indian processed food products available in North America versus Middle Eastern products. The research was unable to determine if this reflects a lower degree of consumer acceptance by Middle Eastern consumers for processed food products or is a result of higher market demand for East Indian products. As well, many East Indian dishes require a much higher degree of base preparation and processing that may represent the demand and subsequent offering of more processed and consumer-ready products for this market segment.

In conclusion, the consumer group profile for consumer-ready pulse products in North America is large and varied. Regardless of which group a consumer belongs to, he/she is interested in quality, nutritious products that offer good taste and convenience at a reasonable price. The more specialized the product or degree of processing, the more consumers accept price premiums. In many ways, the general consumer profile for pulse products is no different than the profile of the typical retail food consumer. The significant difference is the cultural mix of the pulse consumer group versus the mainstream North American consumer mix.

Further details on all consumer segments identified are presented in the full report and appendices of the study.

Analysis of the Consumer-Ready Pulse Product Industry

There are numerous technologies associated with the processing of consumer-ready pulse products. Basic processing methods include: cleaning, color sorting, dehulling, polishing, splitting and milling. Once these processes have taken place, other technologies such as micronization, hydrothermal processing, wet processing, freezing and canning can occur to further add value to the pulses and make them more consumer-ready. The value-added component generally increases as pulses are transformed into higher level secondary products. As presented, at the current time, few processors in Saskatchewan do more than cleaning and bagging of pulses for bulk sales.

There are a host of companies that use pulses as ingredients in certain products, which are part of a much larger product line. However, there are very few companies that focus specifically on processing pulses into consumer-ready products of high pulse content. In virtually all cases, these processors provide specialty or niche market products. As a significant number of these North American further processors are undertaking their activities on raw product produced in

Saskatchewan, a considerable portion of the product value chain is not being exploited in Saskatchewan.

The majority of companies processing pulses into consumer-ready products are doing so within a diversified product line. Essentially, pulses are not the only product they are processing. The market for large volume products, such as canned pulses and soups, is primarily controlled by large-scale diversified food processors. There are many niche markets, however, where smaller companies dominate, including specialty variations of large volume markets, such as organic canned pulses. Higher value-added products, such as frozen entrees or retort pouch packaged products that use pulses, are primarily produced and dominated by smaller companies. Smaller companies are able to compete in many markets by contracting out their processing to facilities around North America, regardless of where the company is located. In many cases, location is of little importance to small companies as head offices are often located apart from processing facilities.

There are many processing companies in the Hispanic foods market, primarily located in the U.S. The majority are small to mid-size processors, but some large-scale Hispanic processors do exist and are predicted to increase as the market grows due to the influence of the large and growing U.S. Hispanic population. As well, many Hispanic foods have come to be considered mainstream, and products such as tacos, burritos, salsa and tortilla chips are now common fare among many non-Hispanics. The types of pulses used in the Hispanic market are predominantly pinto and black beans, though a variety of other pulses are also used. The product mix carried by most companies varies from canned beans and bean pastes to ready-to serve-entrees.

North American processors targeting the Indian and Middle Eastern market are generally small. Large multinational food processors have not yet moved to contest the market in a significant way and many of the products available to the North American market are imports. Domestic processors supply a wide variety of products using a wide variety of technologies. Available products range from bagged pulses and pulse flour to high value-added retort pouch packaged and frozen entrees. The array of products in this market also includes canned curries and dahls, curry pastes and snack foods that contain roasted or popped pulses such as chickpeas and lentils.

The organic market is undergoing both growth and change at the present time. Demand for organic products of all kinds, including pulses and pulse products, is growing rapidly. Increased demand is leading new entrants into the processing market. Most processors are still small, but large multi-national food processors are beginning to move in. Companies in the organic market process almost every type of pulse or pulse ingredient that non-organic processors do. This includes product specialty areas in the Hispanic and Indian markets such as refried beans and easy to prepare Indian entrees.

Although the vegetarian market may also be considered in tandem with the organic market, as they target many of the same consumers, the vegetarian market also offers a strong and consistent market for pulse products and an excellent alternative to soybean products as a source of non-meat protein. In general, the vegetarian market as an isolated segment remains small.

In conclusion, the research of the consumer-ready pulse market in North America indicates the following:

- **Pulse consumption is increasing**
- **Populations of traditional ethnic consumers of pulse products are increasing**
- **Non-traditional consumer markets are increasing their pulse consumption due to nutritional benefits, menu variation and influence of ethnic food presence**
- **North American consumers increasingly look for convenience products that offer traditional taste and quality**
- **Consumption and uses of pulse products are being modified and "North Americanized" beyond traditional or cultural uses**
- **Specialized products are produced on a relatively small scale and include a high percentage of imports, and are considered niche opportunities**

All of the above factors support the further development of secondary and value-added processing of pulses in Saskatchewan. The challenge for Saskatchewan lies in identifying the feasible opportunities based upon the logistical, population and economic constraints for the province.

Opportunity Identification for Consumer-ready Pulse Products

Based upon the current situation of production and processing in Saskatchewan, availability of facilities and equipment, pulse consumer profile, and market analysis, certain opportunities have been identified as suitable for Saskatchewan, and are presented as follows:

- **Additional cleaning and bagging plants – with the capacity to color sort and/or split**
    - Currently in Saskatchewan there is post-harvest pressure on processors indicating a deficiency in capacity
    - Saskatchewan pulse production is expected to continue growing with the addition of new pulse varieties
    - There is increased demand by international buyers for color sorted pulses
    - Distributors and retailers of Indian food products, particularly lentils, are interested in establishing processing facilities in Saskatchewan
    - Trash, splits and damaged seed can be easily marketed for animal feed within Saskatchewan
    - There are also opportunities to process products such as, retail size bags of "house brand" products (e.g., President's Choice bagged lentils)

- **Additional cleaning and bagging plants for organic pulses**
    - Organic products are now available in 75 percent of mainstream grocery stores
    - Canadian retail sales are estimated at $70-100 million, growth at 15-25 percent
    - U.S. organic food sales is over $609 million
    - If Saskatchewan can implement a system of preserving the identity of organic pulses, they can compete in this higher margin market e.g. retail bagging organic split lentils
- **Scope exists to supply ingredients in greater value-added form to large-scale processors**
- **Production of pulse flour in-province**
    - Milling equipment can be relatively inexpensive and small flour milling operations are simple additions to existing cleaning and bagging operations
    - Large multinational food processor have not moved into this market yet
    - Current North American processors are generally small and limited in number
    - There is increasing immigration of Indian and Middle Eastern people to North America
    - Indian food sales are forecast to grow in the next decade
    - Mainstream and ethnic consumers are demanding more ethnic foods

- **Ingredient supply of pulse flour milled in Saskatchewan**
    - As supply as an ingredient to Indian food processors
    - As supply as an ingredient to gluten-free processors
    - As supply as an ingredient to vegetarian processors
    - In organic from to be supplied to organic food processors assuming identity preservation measures are implemented and maintained
- **The creation of new snack foods, i.e. theatre, airplane from puffed or toasted pulses**
    - Prospective of such products requires more extensive and detailed market studies before a complete list of products can be developed
- **Scope exists to produce many value-added products that contain pulses as ingredients**
    - Opportunities exist in producing frozen stews and curries
    - New and novel ready-to-serve dry products lines (freeze-dried soups, snack mixes, pulse derived pasta, thickeners and baking mixes)

- The scope to develop new products for niche markets is quite large, i.e. the Indian, organic, celiac or vegetarian market, i.e. pappadums, roti, gluten-free baking mixes, gluten-free pasta

- **There are opportunities to process ingredients for snack foods, pastas, breakfast cereals, meat substitutes and fillers, pet foods, and trail mixes from pulses**
  - Products made from extrusion technology are becoming increasingly popular and are found in a growing number of products. These products could also be sold as ingredients to large processors for use in complex food products

- **At present, many opportunities exist in the market for fractionated pulses**
  - Specific opportunities have not been developed yet because the underlying research and development has not been done. However, there are opportunities in the creation of specialized starches for use in paper and textiles industries, mining, oil and gas industries; specialized proteins for use in nutraceuticals and functional foods and/or special fatty acids in adhesives and paints

For a detailed chart outlining specific product opportunities, potential target markets, advantages to processing in Saskatchewan and major requirements needed before undertaking processing, refer to the Market Opportunity Matrix in Appendix G in the main report.

Market Analysis for Gluten-Free Products

It is estimated, that the gluten free market in North America consists of just over 2 million people, which represents less than 1 percent of the total North American population. The wholesale and retail structures of the industry are well developed. A variety of vendors such as health food stores, specialty stores, mail order, phone order, and web-based ordering companies exist to meet consumer demand. The scope of new products currently being developed for the gluten-free market is unknown but large multinationals are not active, or expected to participate in, this product segment in the near future.

A major challenge that consumers of gluten-free foods encounter is product availability, even in urban areas. Many gluten-free consumers must shop in a number of stores because the products carried by each store vary significantly, and products are often temporarily unavailable. This is either because the store is unresponsive to the market needs or there are supply problems from the distributor or manufacturer end. Due to the fact that the market for gluten-free foods is not big and is spread out over a large geographical area, Internet retailing is a common way of displaying and selling products. There are many Internet retailers that have established “virtual stores” to sell a variety of gluten-free foods.

Product Profile

The consumer survey conducted indicates that the majority of celiacs, 80 percent, have never tried gluten-free pulse pasta products. Although many respondents were not aware of pulse pasta before the survey, many are anxious to try it now.

Rice is by far the most commonly used gluten-free substitute for making pasta. It represents a relatively inexpensive input and the cost saving is passed along to the consumer in the form of lower prices compared to other major ingredients. Additionally, the taste and texture of rice pasta is similar to traditional wheat pasta, making it a close substitute for traditional pasta and a favorite among consumers of gluten-free products.

A challenge faced by consumers of gluten-free products is the unavailability of many pre-made and ready-prepared foods. In terms of bread, rolls, cakes and pastries, there is little on the market. In terms of frozen entrees, side dish mixes and soups and stews, there is also little selection. For the most part gluten-free consumers must do their own baking and scratch cooking, which is often time-consuming and frustrating. There are many foods or food products that respondents stated are missing from the market or that they would like to see more of. They present potential opportunities for new entrants into the gluten-free market and are included in the body of the report.

Consumer Profile

The majority of consumers of gluten-free products are those who suffer from Celiac disease, however a small percentage of consumers are those who have chosen to purchase gluten-free products for their "perceived" health benefits.

According to the consumer preference survey, a product with superior taste is most important to consumers of gluten-free pasta. Of the pulse pastas people have tried, many stated that they were texturally good but had a strange taste. Popular brands of gluten-free pasta on the market have subtle flavoring, if any at all. In this aspect, they are similar to wheat pastas. Texture was the second most important characteristic of gluten-free pasta. Consumers of gluten-free pasta demand a product that is a close substitute to the texture of traditional wheat pastas and that can be used similarly. Price, availability and ease of use respectfully round out the top five important characteristics. What concerned consumers least was packaging and purity. It is assumed that products marketed as gluten-free meet the required standard to make that claim.

Nearly 60 percent of consumers surveyed, purchase their products through health/natural food stores with the remainder purchasing from mainstream grocery stores (20 percent) and the Internet (less than 10 percent).

Analysis of Gluten Free Pasta Processors

There are currently nineteen processors of gluten-free pasta in North America, three of which manufacture pulse pastas. The largest processor of pulse pasta is Adrienne's Gourmet Foods, the largest, Special Foods and Natural Noodles. There are also three very popular imported pastas being sold to the North American market.

Opportunity Identification for Gluten Free Products

Based upon the current situation of production and processing in Saskatchewan, the market analysis, consumer and product profiles, certain opportunities have been identified as suitable for the processing of gluten-free products in Saskatchewan, and are presented as follows:

- **Opportunities exist in producing gluten-free flours in pure form or blended with other ingredients such as spices**
    - Local entrepreneurs could experiment in making these products, which would be relatively low cost, could be undertaken within the province at a small scale and pose little financial risk
    - The immediate celiac segments in surrounding provinces could be initial test markets
- **Organic gluten-free pulse flours present a great opportunity**
    - If Saskatchewan can implement a system of preserving the identity of organic pulses, they can compete
    - Quality controls and marketing dollars must be in place in order to penetrate the market successfully
- **Pulses can be used to produce gluten-free flours as supply to the ingredient market**
    - Specific targets would be Canadian and U.S. companies currently producing baked goods, baking mixes and/or pasta (approximately 20-25 processors)
    - Supplying to the ingredient market would garner higher prices than simply selling whole or split cleaned seed and would eliminate dealing with retail packaging considerations and marketing costs
- **Opportunity exists for heat-extruded gluten-free pasta made from peas**
    - This product can be made through a contracted processor
    - Consumers are willing to try new pasta products
    - The technology and product have already been tested at the Food Centre
- **Opportunity exists to process frozen ready-to-bake bread dough made from pulse flour**
    - Freezing equipment and refrigerated transportation will be necessary, but the frozen product has a longer shelf life, presents a highly value-added opportunity and can be made in advance and warehoused until ordering
- **Potential opportunities also include dry cereals, pretzels, cookies and baking mixes**
    - With the aid of recipe specialists at the Food Centre, products can be developed using pulse flours to appeal to consumers in this market. These products have relatively long shelf lives and can be successful if packaged and marketed properly

- **Opportunity exists for gluten-free, freeze-dried/dehydrated products containing pulses**
    - This would include instant meals and side dish options. New and novel ready-to-serve products can be marketed on a trial basis through large retail outlets without large listing/shelving fees and the cost of transporting these types of products is relatively low due to low weight

Conclusions

The research and analysis conducted indicates that opportunities exist to develop small and medium scale processing of consumer-ready pulse products in Saskatchewan. In many of the market segments examined, small and medium scale processors account for most of the market, which is consistent with the capital and logistical constraints in Saskatchewan. In addition, based upon the varieties of pulses produced in Saskatchewan, certain market segments are more attractive due to the type of pulse traditionally consumed by that group.

In terms of establishing further processing aimed at splitting, sorting and packaging for direct retail distribution, opportunities exist for the North American market as similar activities are currently being conducted under similar cost conditions and market demand is increasing. The research found examples of packed retail pulse products offered for sale in Canada, packaged in the U.S., but originally produced in Canada. This would involve the establishment of more direct and sophisticated distribution channels, but would increase the economic value attributed to the province.

Based upon the findings of the research, the study is able to draw the following conclusions:

- **Location is of little importance for small-scale food processors**. Many contract out production components to other facilities in North America allowing them to be competitive with larger processors, minimize risks, direct management skill set requirements and manage capital constraints
- **There are opportunities in lower-value-added, but high volume market segments such as whole or split bagged pulses**
- **Opportunities exist in prepared or easy-to-prepare foods (non-ethnic).** Demand for this product segment is growing, though new products are constantly entering the market. Product development opportunities are extremely varied and constrained only by the imagination
- **Opportunities exist in the Indian and Middle Eastern markets**. Saskatchewan produces a high volume of lentils and is increasing chickpea production - two major components for these cultural diets. Most processors in this segment are small, and many products are imported. Demand from both consumers and retailers is growing for high value-added canned, frozen and retort pouch-packaged products. Additionally, opportunities exist to supply ingredients to processors in this segment. Informal industry consultation has also indicated that there are a number of East Indian consortiums considering investing in and developing pulse processing facilities in Saskatchewan

- **Opportunities exist in the organic market**. Demand is strong both for low value-added products such as bagged or canned pulses, as well as greater value-added products that utilize pulses in easy-to-prepare, frozen or retort pouch packaged products. Opportunities also exist to supply ingredients to this market
- **Opportunities exist in the market for fractionated pulse products**. However, more research and product development must be done
- **Many opportunities for niche and small scale processing exist for the gluten-free market**. Thus is due to the gap in product offerings and availability. Further product and consumer testing research is required to determine exact opportunities
- **Potential exists in the market for extruded pulse products.** Opportunities exist in this product segment primarily as ingredients for further use by other food processors. Contracting may be the most ideal arrangement for processors entering this market due to high capital requirements. Product development and alliances with other processors will also reduce the initial risk associated with further development
- **Few opportunities exist in the market for high volume pulse products.** For example, canned pulses, canned pork and beans, and canned soups have limited opportunity. Processing in Saskatchewan is at a disadvantage due to the weight add that occurs in the canning process. As a result, there is little interest in relocation of existing facilities to Saskatchewan. Some opportunities, however, exist for small-scale processors in areas such as dried soups where greater opportunity for product differentiation exists and weight added is substantially lower
- **Few opportunities exist in the Hispanic market.** Most Hispanic foods use pinto and black beans, which are not grown in large quantities in Saskatchewan. Informal research also indicated that Hispanic processors of products containing chickpeas prefer the chickpeas produced in Mexico

In summary, the growth of the pulse production industry in Saskatchewan coupled with sustained growth in consumer demand in North America strongly indicates that Saskatchewan has the opportunity and ability to develop further value-added processing for the consumer-ready pulse market. However, the constraints of access and distance to major consumer markets, limited access to capital, and high competition indicate that initial efforts must be extremely focused and targeted at basic secondary processing and smaller scale specialty or niche opportunities.

For a detailed chart outlining specific product opportunities, potential target markets, advantages to processing in Saskatchewan and major requirements needed before undertaking processing, refer to the Market Opportunity Matrix in Appendix G.

Successful ventures will have to align themselves to specific market needs and established distribution channels, but many opportunities exist to achieve this. Therefore, it is the recommendation that the pulse industry focus development efforts on expanding value-added activities in Saskatchewan beginning with expanding primary and secondary processing.

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1.0 INTRODUCTION

Saskatchewan Agriculture and Food (SAF) commissioned Canglobal Management Inc. (Canglobal) to undertake a study for the Market Analysis for Consumer-Ready Pulse Products. The project investigates the market for consumer-ready pulse products in North America, with the goal of identifying potential opportunities to further develop secondary processing in Saskatchewan. The project also provides a specific focus on the market for gluten-free pasta, the potential for developing gluten-free pasta products derived from pulses, and the opportunities for processing gluten-free products in Saskatchewan.

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1.1. Project Justification

The underlying justification for this project is that acres seeded to pulses and pulse production has grown rapidly in Saskatchewan over the last decade and, according to all reports and research, is expected to continue growing. There have been several reasons for this trend, including the desire to diversify agricultural production from cereal crops, the sustained growth in the market of pulse products, and the agro-economic benefits of reduced input costs related to pulse crop production. No matter to what degree, one or all of the previous factors play a role in production mix decisions at any given time, and it is evident that the growth in pulse production in Saskatchewan is not a passing trend. This fact combined with the desire to develop and exploit further areas of economic benefit from agriculture production and processing in the province, has led to the need to identify market opportunities to capture added value of pulse crop production in Saskatchewan.

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More detailed information and copies of the survey instruments for both the general and celiac segments are included in Appendix A. Survey results from the in-store retail audits and survey are included in Appendix D, while Appendix A contains results for the celiac consumer preference survey.

2.0 CURRENT SITUATION

2.1. Industry Overview

Over the past decade the pulse industry has experienced accelerated growth, particularly in Western Canada. The industry forecast is continued growth. Expansion has been fuelled by several factors including: rapid market expansion, increased world demand, lifestyle changes regarding diet due to an increase in disposable income, and heightened health awareness.

Although pulse production has increased in North America, there has been little development of novel processed food where pulse is a major ingredient. Pulses have been incorporated into conventional products such as soups and stews; however, very few high value-added, high pulse content products are found on the market. The inability to modify the undesirable image North American consumers have of pulses has been a contributing factor to low product development**.** Pulses have traditionally been viewed as a "poor man's food" that require long preparation times and have the undesired side effect of producing intestinal gas.

Definition of Pulses

Pulse crops are annual grain legumes that produce relatively large edible seeds. The term "pulses" refers to crops harvested solely for dry grain, excluding crops that are harvested "green" for food, which are more commonly classified as vegetable crops. The term also excludes those crops harvested for oil extraction and sowing purposes. Aside from their food value, pulses play an important role in the cropping system because the plants produce soil-enriching nitrogen. Pulses contain carbohydrates, proteins, including essential amino acids, and fat. Research shows that pulse consumption can promote heart health and aid in diabetes management due to nutritional composition.

Food Uses for Pulses

As food sources, pulses are found in many forms. Peas, lentils and beans can be used whole in soups and stews, pureed or ground into a powder or flour for use in noodles or sauces. Because of their rapid re-hydration rate, precooked powders are being used as natural thickeners in soups, gravies, stews and casseroles. Chickpeas are used to make Hummus and dahl and are widely used in Middle Eastern, Asian and Indian cooking.

Recently, there has been a trend towards incorporation of processed pulses in pre-made food items; particularly, traditional ethnic dishes. Traditional North American diets have not featured large-scale pulse consumption due to relative ease and low cost access to other protein sources, namely meat. Whereas, in Mexico, and the Americas, meat has traditionally been too expensive for the average person to consume regularly. However, pulses are experiencing far greater consumption in North America due to growing ethnic diversity, and nutritional awareness.

Cooking time varies with different pulses, ranging anywhere from 30 minutes to two hours, depending on bean size and age. Precooked bean powder, canned pulses and dehydrated whole beans or lentils have been developed to reduce preparation and cooking time down to three minutes for soups, stews or rice. As the North American consumer is continually searching for products that offer nutritional value, good taste, and ease of preparation, the length of time to

prepare pulse products represents an important factor to expanded market penetration. Therefore, it is expected that the popularity of pulses will increase further; once more "consumer-ready," or easy-to-prepare products that retain their texture and flavor are created.

In regard to nutritional value, fresh pulses contain relatively high levels of vitamin C and are a good source of non-heme protein. However, vitamin C content declines after harvesting and is virtually all lost in the drying process. Alternately, canned pulses retain about half of their vitamin C. Canning does not affect protein content, eliminates the need for soaking and considerably reduces the cooking time compared with dried pulses. This is why canned pulses have become popular among consumers, compared to dry bagged pulses - although both lack strong market appeal.

2.2. Crop Overview

The following section is a production overview of pulses in raw commodity form.

Pulse crops in Saskatchewan include: field peas, lentils, beans and chickpeas. The area devoted to pulse crops has grown rapidly in Saskatchewan to over 1.1 million ha in 1998 with production exceeding 2.5 million MT. Significant annual growth in acres seeded of each crop is expected to continue. In 1999, Saskatchewan had 97 percent of Canada's seeded acreage of lentil and 72 percent of Canada's seeded acreage of field pea. The following table displays the increase in pulse production from 1998 to 2000.

Table 1: Pulse Production in Saskatchewan 1998-2000 (MT)

Crop	Production 1998	Production 1999	Production 2000
Lentil	465,900	702,600	888,100
Chickpea	47,400	187,200	370,700
Green Pea	585,100	524,000	596,300
Yellow Pea	952,600	1,058,600	1,366,900
Colored Bean	N/A	9,500	6,800

Source: Saskatchewan Agriculture and Food 2000 Specialty Crop Report

The trend of increased production of pulse crops in Saskatchewan is the result of increased market demand resulting in sustained returns as well as the reduced input cost for pulse crops. The latter has been a significant factor in recent years due to the difficult economic situation for agricultural producers related to the slump in agricultural commodity prices. The reduced need for nitrogen fertilizer inputs for pulse crops has been a considerable influence in the crop mix and rotation patterns for Saskatchewan producers.

Peas

The two major types of peas are the round seeded, used primarily for food and feed, and those with wrinkled seeds, which are usually harvested when immature and used for freezing and canning. The round-seeded pea is the main type grown in Saskatchewan. Approximately 14 million metric tonnes (MT) of dry peas are grown worldwide annually, and Saskatchewan is the world's largest exporter. In 1999, Saskatchewan produced an estimated 72 percent of Canada's

dry peas.[2] Approximately 80 percent of Canada's pea crop is exported to Europe, South America and Asia as illustrated in Table 2.

Table 2: Canadian Dry Pea Exports (MT)

Importing Country/Region	1998-99	1999-00
Belgium	89,447	25,143
Netherlands	26,643	18,740
Spain	431,050	395,654
Total Western Europe	588,794	502,312
Total Eastern Europe	661	2,757
Total Middle East	20,925	15,728
Total Africa	24,809	22,256
India	381,637	92,679
Japan	13,187	7,196
Total Asia	700,088	262,434
Total Oceania	41,674	29,338
Colombia	32,164	39,874
Venezuela	14,114	13,929
Total South America	90,072	94,425
Total Central America/Mexico	214,889	50,155
Total North America (US)	23,121	23,531
Total	1,705,034	1,002,935

Source: Sask. Ag & Food 2000 Specialty Crop Report

Lentils

Approximately 2.7 million MT of lentils are produced worldwide each year. India is the world's leading lentil producer and India and its neighbors are the leading per capita consumers. Canada began producing lentils in 1969, and is now the principal world exporter. Saskatchewan produces the bulk of the Canadian lentil crop. The Middle East, Western Europe and South America are main markets for Canadian lentils. The following table highlights Canada's main export markets for lentils.

[2] Sask. Ag. And Food 1999 Specialty Crop Report

Table 3: Canadian Lentil Exports (MT)

Importing Country/Region	1998-99	1999-00
Belgium	12,886	15,881
France	13,206	14,588
Germany	13,033	13,363
Italy	15,484	15,234
Spain	20,908	18,859
Total Western Europe	97,151	97,535
Total Eastern Europe	2,732	3,053
Total Africa	73,214	84,323
Total Middle East	44,225	127,058
Total Asia	23,867	17,491
Total Oceania	64	298
Colombia	40,090	49,890
Ecuador	11,851	10,386
Peru	7,820	11,502
Venezuela	12,734	15,082
Total South America	94,283	114,209
Mexico	11,848	17,240
Total Central America/Mexico	27,682	25,972
Total North America (U.S.)	8,471	3,199
Total	371,688	473,138

Source: Sask. Ag & Food 2000 Specialty Crop Report

Laird lentils are the dominant variety grown in Saskatchewan and account for approximately 50 percent of total production. Eston lentils account for 15 percent of production and the final 35 percent of production is made up of CDC Richlea, Red lentils and French green varieties. Efforts are currently being made to perfect a CDC Gold non-tannin variety that is predicted to be more widely accepted by North American consumers. The following Table highlights Saskatchewan's lentil production by variety for the years 1998-2000.

Table 4: Lentil Production in Saskatchewan by Variety ('000 tonnes)

Lentil Variety	1998	1999	2000
Laird	286.7	348.7	435.6
Eston	62.6	108.3	171.7
Others	116.6	245.6	280.9

Source: Sask. Ag. & Food, 1999 and 2000 Specialty Crop Report

Beans

There are several classes of dry beans including: pinto, great northern, navy, pea or white, small white, small red, pink, kidney, blackberry, white marrow, flat small white and yellow eye. The most common in North America is the pinto, which accounts for 40 percent of annual production. Approximately 70 percent of the pinto beans produced in North America are consumed domestically.

Worldwide, 16 million MT of dry beans are produced annually. Brazil is the leading producer, followed by Mexico. Saskatchewan produced dry beans in the 1920s and 1930s, however, since the 1970s, most beans grown on the prairies are grown in Alberta and southern Manitoba. Currently, just over 1600 hectares (ha) of dry beans are grown annually in Saskatchewan. The bean varieties produced include Pinto, Black Turtle (Black), Great Northern, Small Red and Faba. In 1999, approximately 9,500 MT of colored beans were produced while 1,100 MT of faba beans were harvested.

Chick Peas

Currently, chickpeas make up 15 percent of the world pulse production. Major producers include India, Pakistan, and Mexico with India consuming 90 percent of the world's chickpea crop.[3] Turkey, Mexico, Syria and Australia are major exporters, while Spain, Iran, Libya, Lebanon and the U.S. are major importers. Opportunities exist for Canada in the U.S., European and Mediterranean markets.

Canada has a small domestic market for chickpeas and chickpea products. This demand is currently met by imports from Mexico, California, Australia, Turkey and Malawi. Canada chickpea exports in 2000 were 54,399 MT, resultant of increased sales to virtually every export market as illustrated in Table 5. [4]

Table 5: Canadian Chickpea Exports (MT)

Importing Country/Region	1998-99	1999-00
Spain	1,260	4,712
Total Western Europe	2,356	9,061
Total Middle East	2,213	10,672
Total Africa	256	1,611
Total Asia	6,546	27,696
Total Oceania	21	80
Colombia	658	955
Total South America	786	2,247
Total Central America/Mexico	291	440
Total North America (U.S.)	1,187	2,528
Total	13,656	54,399

Source: Sask. Ag & Food 2000 Specialty Crop Report

Two varieties of chickpea are grown in Saskatchewan. These are the larger Kabuli (also known as the Garbanzo) and the smaller Desi variety. Approximately, 15 percent of world chickpea production is of the Kabuli variety, while the remainder is Desi. The majority of Saskatchewan chickpea production is of the Desi variety.

[3] Sask. Ag. and Food: *Chickpea in Saskatchewan*, June 1998.
[4] Sask. Ag. and Food 1999 Specialty Crop Report

Organic Pulse Production in Saskatchewan

Organic agriculture in Saskatchewan has grown slowly in the past twenty years. Many farmers have changed from conventional to organic production for economic reasons, although this has not always been the case. The primary economic goal is to reduce input costs and reap further gains through value-added processing. Economic gains from organic production are great because relatively small amounts of production can generate substantial income.

A considerable number of organic farmers have established value-adding enterprises on their farms to increase their profits. Some baking for instance is done on small scale. Most Saskatchewan operations are small and often not much more than cottage industries, although they contribute significantly to the income of the operator.

The Saskatchewan organic pulse market is small representing a very small percentage of current pulse production. Current data indicates that seeded acreage of organic pulses in 2000 accounted for approximately 6,989 ha. Lentils represent the largest organic crop, followed by field peas and chickpeas. The following table outlines total crop types and their total production by hectare in Saskatchewan:

Table 6: Organic Pulse Crops in Saskatchewan, 2000

Pulse Type	Hectares
Green field Pea	1,261
Yellow field Pea	950
Total Pea	2,212
French lentil	852
Green lentil	2,872
Black lentil	292
Red lentil	361
Total Lentils	4,378
Desi chickpea	187
Kabuli chickpea	207
Total Chickpeas	393
Total Organic Pulse Production	6,989

Source: Sask. Ag. & Food Production Statistics for Organic Agriculture in Saskatchewan for 2000

2.3. Current Pulse Processing in Saskatchewan

Current Processing in Saskatchewan

The pulse-processing sector is growing, creating jobs and contributing to the economic well being of Saskatchewan. It is estimated that there are approximately 128 special crop processors in the province and most (97 percent) are involved in primary processing. Primary processing includes cleaning, packaging and bulk loading the product. The remaining processors are performing further processing on raw product such as seed splitting, feed processing or color sorting.

Originally, primary processing of Saskatchewan pulse crops took place at seed plants as farm enterprise operations. As pulse production increased, processing plants dedicated strictly to pulses were constructed. The plants were located on rail lines for convenient loading of bagged and bulk shipments. Since initial construction, most plants have undergone expansion and upgrading on almost an annual basis. Currently there is post-harvest pressure on processors, which indicates deficiency in provincial processing capacity. However, there are plans to construct larger plants in the near future and on-going upgrades to existing facilities. These both will help take up the slack as production increases.

The general feeling in the industry is that the new and significantly upgraded plants will specialize in handling pulse crops for human consumption where high overhead is more justified. New and upgraded facilities are tending towards refining their services with the addition of color sorters and splitters and additional processing technology for higher value markets e.g. retail packaging. However the rationalization of the grain elevator system and reductions in branch rail lines translate into processing plants being located nearer to major market centres where there is an assurance of rail service provision and access to container loading facilities.

The focus of the Saskatchewan industry to date has been on the global commodity markets with less attention paid to the value-added domestic and North American markets. There are only a handful of companies currently producing higher value-added products. These companies include InfraReady Technologies, Parrheim Foods, Jim Scharf Holdings and Carolliny Sprouts Ltd.

Based upon primary and secondary research, the following is a list primary and secondary pulse processors in Saskatchewan:

Table 7: List of Major Pulse Processors in Saskatchewan

Company	Product
Primary	
Belle Pulses Ltd.	Cleaning, splitting, shipping whole
Best Cooking Pulses Inc.	Cleaning, splitting, bagging peas
Broderick Garden Centre	Cleans and packages peas, beans and lentils
Newfield Seeds Limited	Cleans and bulk bags peas
Secondary	
Carolliny Sprouts Ltd.	Sprouting organic lentils and peas
Gramma Bep's.	Lentil Soup Mix
InfraReady Foods Ltd.	Pulses treated with infrared light to aid in faster cooking times
Jim Scharf Holdings	Mrs. Nona's Lentejas
Parrheim Foods	Pea component isolates for use as ingredients, pea flour

Saskatchewan Processing

The crop most commonly processed in Saskatchewan is the pea, followed by the lentil and chickpea. Total volume of all processing activities being carried out by Saskatchewan processing companies is approximately 3.55 million tonnes. The average cleaning capacity of a plant is 6.7 tonnes per hour and the majority of processors have a capacity of between two and five tonnes per hour. Approximately half of the pulse processors in the province purchase external raw materials, while the other half process their own production for marketing.[5] The following table breaks down the Saskatchewan value-added processing industry.

Table 8: Value-Added Activities and Volumes

Value-Added Activity	Percent of Processors	Avg. Volume (Tonnes/Year)	Total Volume (Tonnes/year)	Percent of Total Volume
Cleaning	90.7	14,812	1,723,818	48.4
Bulk Loading	76.3	10,411	1,010,526	28.4
Bagging	72.9	7,782	725,102	20.4
Feed Processing	7.6	1,947	17,525	0.5
Colour Sorting	5.9	2,524	17,669	0.5
Splitting	4.2	9,765	48,823	1.5
Retail Packaging	1.7	231	463	-
Milling	1.7	163	325	-
Other	3.4	2,025	8,100	0.2
Total			3,550,000	100.0

Source: 1999 SAF Special Crops Processors Survey

According to informal interviews, the economic gains for undertaking further processing such as dehulling and splitting no longer exist. Cleaned and bulk bagged pulses generally garner the same price as dehulled and split product. Opportunities exist to make more money color sorting and retail packaging, but many small processors cannot afford color-sorting equipment, which costs approximately CAN$500,000.

Saskatchewan Competitive Advantages

Saskatchewan has many competitive advantages for further developing secondary processing of pulse products. These include:

- Saskatchewan has a competitive advantage in the dry land agro-economic production of pulse crops, specifically peas, lentils and chickpeas
- The raw materials are produced in Saskatchewan giving processors immediate access to the inputs and relatively low transportation costs from processor to processor
- Saskatchewan has experience in mechanized pulse processing
- New varieties of pulses are being developed and grown in Saskatchewan. Their increasing availability will enable new and existing facilities to increase their production volumes and processing capabilities

[5] Sask. Ag. and Food 1999 Special Crops Processors Survey

- Saskatchewan is a producer of high-quality products made from high quality inputs
- The infrastructure and resources are in place to foster secondary processing in Saskatchewan, i.e. well-established industry organizations, a strong existing research team at the Crop Development Centre, access to biotechnologists, food technologists and processing specialists, etc.
- Due to comprehensive research facilities at the University of Saskatchewan and the Crop Development Centre, disease management and crop development are evolving to ensure increased crop quality and harvest
- There is a very knowledgeable and innovative staff of researchers and recipe developers at the Food Centre at the University of Saskatchewan
- Processors have access to local companies utilizing advanced technology in micronization and fractionation
- Land in rural areas is relatively inexpensive and labour is moderately priced
- Dry cold weather, characteristic to Saskatchewan, makes the long-term storage of pulses easy

Trends in the Saskatchewan Pulse Industry

- Some Saskatchewan pulse processing companies are recognizing that there is a domestic and North American market for pulses. They are hiring in-house marketing staff and planning for future sales activities
- The industry has recognized the need for identity preserved pulse crop production and processing so that crop integrity can be maintained from the moment the seed is purchased for planting to the time it reaches the end-use consumer
- Organic production and the identity preservation needed to maintain the integrity of this segment is being considered

A review of the Saskatchewan pulse industry notes that one of the first pulse splitting facilities in Saskatchewan has plans to triple their current splitting capacity for pea, lentil and chickpea crops. This is in response to market demand for their products. Additionally another splitting facility with experience in pea splitting will process its first production run of Desi chickpeas to supply Chana dal to markets outside of India.

There is a potential for promising market opportunities for value-added pulse products in North America as demand for foods derived from these crops increases. However, some challenges must be overcome first. These challenges include:

- **Lack of market and development support for consumer-ready pulse products, particularly from key pulse associations**
- **Lack of vision and drive in developing value-added consumer-ready pulse products**

- **Producer hesitation in starting small-scale processing because potential immediate gains will not be large**
- **Lack of monetary resources of some Saskatchewan processors**
- **Poor perception of pulses by consumers in their current forms**
- **Intraprovincial and national transportation and logistics challenges**

3.0 ANALYSIS OF THE MARKET FOR CONSUMER-READY PULSE PRODUCTS

3.1. Market Profile

In this section, two major markets, the Canadian and U.S. retail markets, and three market segments, Hispanic, Middle Eastern/East Indian, and organic and are identified and examined. The other major market analyzed in this study is the Celiac, or gluten-free, market which is presented in Section 5.0.

Consumer Trends

The following is a general list of consumer trends that are driving the **North American** retail food market. These trends also establish parameters for consumer-ready pulse products:

- **Increased demand for convenience or easy-to-prepare food**
- **Taste is the most important factor in buying food. Nutrition ranks second, convenience third** [6]
- **Increased population of baby boomers**
- **Increased immigration and ethnic diversity**
- **Increased interest in ethnic foods**
- **Increased interest in health foods**
- **Increased interest in organic foods**
- **Decrease in meat consumption**
- **Increase in vegetarianism**
- **Increased use of the Internet to make retail purchases**

Implications of Trends and Drivers

The prevalence of dual-income and non-traditional families is now the norm. As a result, North Americans have less time to shop and prepare meals. Meal solutions, the value-added items that offer higher margins to manufacturers and easy home preparation for consumers are enjoying slow and steady growth. ACNielsen reports that frozen dinners and entrees, the fifth largest grocery category, enjoyed a 25 percent increase in sales between 1996 and 1997.[7]

To be in step with the demand for convenience foods, it is important to develop and market "instantized" pulse products in forms that are easy to use. However, the considerations of taste and nutrient value must be considered as important factors leading to high consumer acceptance. Population factors will strongly influence the retail food industry in the next ten years as the proportion of baby-boomers (born 1946-66) increases and ethnic populations rise. The baby-boomer segment holds tremendous purchasing potential and will drive future developments and

[6] Grocery Manufacturers of America: *Taste reigns: Research Reveals What Consumer Crave Food items*, 2000.
[7] Food In Canada: *Processors Cautiously Optimistic for 1999*, September 10, 1999.

trends in the retail food industry. For example, this group is expressing a growing interest in healthy foods and ethnic cuisine. Manufacturers and retailers will have to adapt their business strategies to capture this market and will do so by offering high quality products and increased services. Consumer demand will increase for the following:

- Single-serving sizes
- Easy-to-use packaging
- Easy to read labels
- Foods with greater nutritional content
- Foods with ethnic flair

In Canada and the U.S., the increase in ethnic populations will have a significant impact on product offering, promotions and retail store set up. There are also generational and cultural gaps within ethnic populations, which will translate into a further fragmentation of consumer demands. As these populations increase, the number of domestic companies manufacturing ethnic foods will also rise, as will retailers who choose to target this market. Increased product offering will lead to mainstream crossover, as many non-ethnic consumers begin consuming new ethnic items thereby increasing variety in their diets. Thus, both immigrants and those in the mainstream that choose to include these foods in their diets will demand more pulses and pulse products.

Demographic shifts, the media, travel and ingredient availability are exposing consumers to authentic ethnic foods. Baby boomers are eating more of foods that have an ethnic flare and Generations X (ages 26 to 35) and Y (ages 6 to 25 years) are more experimental and adventurous in what they eat. They are interested in hot and spicy foods and are exerting a significant influence on the buying patterns of their parents to purchase new or alternative food products.[8] Due to growing demands for "traditional" familiar foods, colleges and hospitals have recently increased the number of ethnic offerings on their menus.[9] Ethnic dishes of nutraceutical interest, that feature phytochemicals, contain ingredients that boost energy or perform healing functions are also emerging.

More than ever before, people are willing to pay a higher price for foods that are perceived as healthy, including organic products. This has led to increased demand for and the production of certified organic products, including organic pulses. Trends also indicate that consumers are gradually shifting to a wider acceptance of non-meat protein alternatives. Pulse products are a healthy alternative to animal protein, but must also meet consumer demand for taste, variety, overall nutritional value, convenience and ease of use.

The use of the Internet to make food purchases has been increasing in the past 3 years. More people have access to the Internet than ever before and many are making on-line purchases. The percentage of consumers buying online rose from 17 percent of all Internet users (roughly 6

[8] Susheela Uhl: *Flavor trends: Ethnic Fusion Cuisines*. Food Product Design, 2000
[9] Ibid. According to Food service Survey.

percent of all consumers) in 1998 to 25 percent in 1999.[10] This trend is projected to grow and is currently particularly strong in the gluten-free segment. Saskatchewan may be able to minimize its disadvantage in being located far from major urban markets in the rest of Canada and the U.S. as retailing via the Internet becomes more accepted and utilized. In this way, products can be sold via the Internet and shipped anywhere in North America.

Canadian Versus U.S. Consumer Trends

Although Canada and the U.S. share many of the same consumer trends that are affecting the retail foods market, there are some differences. These differences are mainly found in the areas of ethnic population makeup, disposable income, food purchase preferences and the purchase of food outside the home. The following table outlines these differences:

Table 9: Canadian Versus. U.S. Consumer Trends

Canadian Consumer Trends	U.S. Consumer Trends
High immigration of Asian, East Indian and Middle Eastern peoples[11]	High immigration of Hispanic people
Disposable income is lower in Canada than U.S.	Disposable income is higher in U.S. than Canada
The convenience foods market is growing slowly	The convenience foods market is very strong
The organic foods market is growing slowly	The organic foods market has skyrocketed

Because the majority of immigrants into the U.S. are from Hispanic countries, ethnic food influences and the degree of influence will be different than in Canada. It has been projected that by the year 2040, Hispanics will account for one in five Americans. This group is expected to achieve greater buying power and an ethnic upper middle class is emerging with growing affluence and buying power.[12] Hispanics already significantly influence the industry as they spend a higher percentage of their income on food: US$12,396, compared to US$10,196 for African Americans and US$8,396 for the general population.[13] As the food preferences of second and third generation Hispanics change to include aspects of the mainstream diet, food products will enter the market place to meet this new demand. For example, easy-prep dishes such as pilafs and rice and beans, are taking on new flavors to meet the demands of both the mainstream and ethnic markets.

The "ready-to-eat" category has not caught on in Canada as well as it has in the U.S., and comprises a relatively small market. This is because Canadian disposable income is less than that of the U.S. and ready-to-eat is not feasible on a regular basis.[14] The convenience foods market in the U.S. is projected to continue growing. Convenience foods currently represent

[10] FCPMC-FPACC: *State of the Industry Report*, 2000/2001.
[11] For the purpose of this report, Middle Eastern is defined as having originated from the following countries: Afghanistan, Algeria, Armenia, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.
[12] Susheela Uhl: *Designing for the Hispanic Market.* Food Product Design, March 1996.
[13] Ibid.
[14] FCPMC: *The Home CEO, Household Management in the 90's*, 1997.

US$1.2 billion of the retail food market and are likely to reach an estimated $1.8 billion by 2002.[15] Home meal solutions continue to be a focus of food companies, from frozen or shelf stable meal kits to pre-cooked meals. Many companies have also launched meal kits, sauces and seasoning with exotic ethnic flavors. The frozen dinner and entrée category continues to be the largest within the frozen food market with more than $5.3 billion in annual supermarket sales.[16]

A significant trend is the recent interest in organic foods in both Canada and the U.S. In the U.S., organic products have penetrated the mainstream market to the extent that 33 percent of organic products are sold in mass-market retail outlets[17] and in 2000, sales of organic grocery, dairy and frozen products was over $609 million.[18] Conversely, in Canada, organic food sales are from $70-100 million annually with growth estimated at 15-25 percent.[19] There may be a place for organic pulses and pulse products in the organic foods market, which can garner prices up to twice that of traditionally produced products. A significant trend in the organic food industry is the ongoing amalgamation of small companies. Small companies are either consolidating or are being slowly bought out by large corporations that want to increase their market share in a growing and lucrative industry. As a result of this trend, the industry will become more and more competitive in the next few years as large and strong market leaders develop and emerge.

The Canadian Retail Grocery Market

Total grocery sales in Canada were more than $68.4 billion in 1999. Food retailing occurs through supermarkets, convenience stores, specialty stores, and non-food stores (department stores, drug-stores and other non-food outlets). Grocery stores account for the greatest share of retail food sales in Canada as chain supermarkets and major banner convenience stores increased their share of total grocery industry sales from 57.2 percent in 1998 to 57.4 percent in 1999. [20]

The typical Canadian food shopper is between 19-54 years old with at least one child 1-18 years old. Women remain the primary meal preparers and spend more of their time grocery shopping than males.[21] In 1996, households spent 11.6 percent of their incomes on food. The relative share of grocery spending on major food groups in Canada is as follows:

[15] American Frozen Food Institute: *Frozen Food Trends*, 2001.
[16] Ibid.
[17] Nutrition Business Journal: *Organic Foods in Fighting Trim*, 2000.
[18] New Hope Communication. *Organic Market Overview*, June 2000.
[19] Agriculture and Food Canada: *Organic*, June 2000.
[20] Canadian Grocer: *National Market Survey*, February 2000.
[21] FCPMC-FPACC News Releases

Table 10: Share of Grocery Spending on Major Food Groups, 1996

Major Food Group	Percentage of Grocery Spending
Red Meat	16.3
Bakery Products	14.8
Dairy Products and Eggs	14.6
Fruits, Vegetables and Nuts	21.9
Prepared Foods	7.1
Beverages	6.3
Poultry and Fish	9.2
Confectionary/Snacks	4.6
Sauces and Condiments	2.4
Fats and Oils	2.3
Spices and Seasonings	0.6

Source: Food Bureau. 1996 Consumer Food Spending Overview[22]

The U.S. Retail Grocery Market

In 1999, the U.S. retail grocery market was valued at approximately US$472.2 billion. Competition for shelf space in the U.S. is fierce, as it is in Canada. The retail grocery industry today is strongly influenced by factors such as company mergers and the growing number of "super-centers" being built. These super-centers are becoming popular to consumers as they offer both grocery and general merchandise, have extended store hours and offer one-stop shopping. Super-centers generally draw consumers in by under-pricing their grocery items while making up for the difference in their general merchandise sections.

Strong competitive pressures are forcing large supermarket chains to merge and independent retailers to form cooperative buying groups (e.g. United Grocers or Associated Grocers). Large chains have a lot of buying power, allowing them keep prices very competitive while at the same time financing large scale promotions campaigns.

The following developments are becoming increasingly evident in the U.S. retail food industry:

- ***Increased Category Management*** – The industry is placing increased importance on category management. Retailers realize that the relationships they have with manufacturers will play a key role in their success. As well they are taking advantage of services manufacturers offer to help manage and grow product categories.
- ***Increased Popularity of Private Labels*** – The competitiveness of private labels in the past decade have convinced consumers that private label products are at least equal in quality to name brand product. Thus private level products are on the rise and are predicted to grow.
- ***Cross docking and Just-in-Time (JIT) Inventory*** – Manufacturers, distributors and retailers are all working together to facilitate the JIT inventory system. Also cross-

[22] According to Agriculture and Agri-Food Canada, 1996 is the most recent public data that indicates grocery spending patterns. This data are not collected and published annually, however, the department is in the process of analyzing 2000 data and hopes to have it released by the end of June 2001.

docking, in which products are moved from incoming trucks to outgoing trucks, without being stored, is becoming common.

Implications of these developments are that the U.S. retail food market will become more and more competitive. Additionally, companies who wish to supply to the U.S. market must be able to work within the framework of the evolving industry. Retailers and wholesalers no longer want to hold large amounts of product in their warehouses. Retailers want processors to expand and integrate their services to include retail promotion and category management. To succeed in the U.S. market, Canadian processors must be able to supply the minimum required quantities, provide product and financial support and successfully compete in an aggressive market. Niche marketing is a viable alternative for small Canadian processors if they specialize in a particular product/product line and are able to provide extraordinary service and support at the retail and consumer levels.

The Ethnic Retail Food Market in North America

A major focus of the market analysis for the project has been the ethnic food segment, specifically Hispanic and Middle Eastern/East Indian markets. This approach was taken for two reasons. First, initial secondary research findings indicated that these populations are growing and traditionally consume a higher percentage of pulses and pulse products than the general North American population. Second, research also indicated that ethnic foods are growing in popularity within the mainstream populations of Canada and the U.S.

While it is likely that ethnic food consumption will continue to grow, there are also likely to be two divergent markets:

- Mass-appeal ethnic foods sold through mainstream channels
- "Authentic", locally produced ethnic foods sold through specialty channels[23]

While Italian, Chinese and Mexican foods are now quite common; the ethnic food trend has generally not been as prevalent in the mainstream grocery market as in the foodservice sector. However, growth of ethnic foods in the mainstream market is expected to occur at a steady pace as stores gradually introduce new products to attract customers looking for variety. Contrary to the slow growth in other ethnic food segments, Hispanic foods, particularly Mexican and “Tex Mex” are growing exponentially in the U.S. “Tex Mex” products are non-traditional ethnic foods developed for the tastes of the American mainstream consumer.

Existing firms in the specialty market should continue to see steady, though not dramatic growth driven mainly by immigration trends. However, as second and third-generation immigrants integrate and acquire the eating habits of mainstream North American society, the demand for traditional ethnic foods may plateau.

[23] David Redmond: *An Assessment of Selected Ethnic Food Markets in Canada*. Ekos Research Associates, 1994.

The Canadian Ethnic Retail Food Market

The following points present current market trends and factors in the Canadian food market as a result of growing ethnic populations and ethnic food demand.

In regard to food service offerings and chains, the most common menu themes among Canadian restaurants and fast-food chains are pizza, Italian food, Chinese, Japanese, and Mexican. In Canada, there are few South Asian and Middle Eastern foodservice chains and outlets are located in Ontario and Quebec exclusively.[24]

The specialty or "authentic" retail food market for ethnic food products is approximately $635 million in Canada and can be broken down as follows:

Table 11: Retail Ethnic Food Sales in Selected Canadian Cities (Sales in Canadian $)

City	Chinese/Oriental Foods	South Asian Foods	Middle Eastern/Indian
Toronto	200,000,000	50,000,000	15,000,000
Vancouver	210,000,000	20,000,000	-
Montreal	65,000,000	-	75,000,000

These estimates are for retail food sales. However, there are other players in the industry such as importers, wholesalers and distributors. Many importers, wholesalers and distributors make over half of their sales via other foodservice channels, particularly restaurants and the healthcare industry, so total sales dollars may be significantly higher then what is indicated in Table 12.

When considering individual market segments, the Italian, Mexican, and Chinese product markets constitute the highest sales. However, in terms of percentage growth, Caribbean, Japanese, Cajun, Mexican and Italian are the fastest growing segments. Sales of South Asian and Middle Eastern foods have remained relatively constant over the past five years at approximately $5 million. In regard to retail outlets, there is anywhere from $5-15 million in ethnic food sold through specialty food stores for every $1 in sales through mainstream supermarkets.[25]

There is little secondary research information available on the Hispanic retail food market in Canada. Undoubtedly, this is because the Hispanic population in Canada is small and thus a relatively unimportant and undeveloped market for food processors and retailers. As a result, no dollar value for the Canadian Hispanic food market was found.

The following data, collected through in-store audits and interviews provides examples of trends in the Canadian ethnic foods industry and highlights different retail strategies to accommodate and showcase increased ethnic food products on store shelves.

[24] Ibid.
[25] Ibid.

Interest Box 1: Select Canadian Food Retailers

Capers, West Vancouver
Capers is a specialty store whose customer base includes upper middle-income families, immigrants and a small student population. Middle Eastern and East Indian food products represent approximately 15-20% of all products currently carried. There has been a definite increase in the number of Hispanic, Middle Eastern, and East Indian products over the last 3 years and the promotional activities geared toward these products has also increased. Capers has accommodated the increased demand for ethnic products by buying in bulk and grouping ethnic foods in one area of the store (on shelves and in the freezer). The top three selling products are Tasty Bites products, Asian noodles and frozen Indian entrees by Indian life.

Dominion Food Stores, Toronto
A variety of people shop at Dominion Food, as it is located in downtown Toronto. The percentage of Hispanic food products being carried is between 10 and 15% and the percentage of Middle Eastern food products being carried is approximately 5%. The store manager stated that there has been an increase in demand for a variety of ethnic dips, such as hummus and other prepared products. To accommodate new ethnic products, the store has relocated products and has created new shelf space. In addition, new sections or islands have been set up that have an ethnic theme. The store has also begun carrying Hispanic, Indian and Middle Eastern products that are for traditional holidays in these cultures.

Ekos Research and ACNielsen have estimated that the total Middle Eastern retail food market in Canada had sales of CAN$90 million in 1993. No other recent statistics regarding the Middle Eastern and/or East Indian markets have been located. There has been little development of the mainstream Middle Eastern food market in Canada and specialty stores outsell the major retailers in this category. The majority of Middle Eastern foods are currently imported and there are relatively few Canadian processors. Middle Eastern foods have been found to be popular among the general population, but Middle Eastern consumers still purchase the majority of these products from specialty stores.

The following table shows sales of the various categories of Middle Eastern products. Sauces and meat condiments, dry sauces, gravy mixes and canned soups are the top three types of products sold. However, canned chickpeas and beans and dry packaged soups have fairly high sales as well representing CAN$1,950,000 and CAN$298,000 of sales, respectively. Surprisingly, frozen dough and baked goods are a highly sought after item, while frozen dinners and entrees are not highly demanded in this market.[26]

[26] David Redmond: *An Assessment of Selected Ethnic Food Markets in Canada*. Ekos Research Associates, 1994.

Table 12: Major Categories of Middle Eastern Foods

Product	Sales (CAN$)
Special rice dishes	2,059,000
Canned chickpeas & beans	1,950,000
Regular dry packaged soup	298,000
Dough & frozen baked goods	247,000
Canned Soup	155,000
Dry sauces & gravy mixes	96,000
Sauces/meat condiments	32,000
Dry vegetables	17,000
Sauces	1,000
Frozen dinners and entrees	1,000
Total	$4,855,000

Source: Ekos Research/ACNielsen Marketing Research

Agri-food Canada reports that most imports from the Middle East are in the form of fruits, vegetables, spices, nuts, dates, figs and olives. Other items that are often imported include; grape leaves, hummus, pickled squid and bab ghanouj. Some chickpeas and lentils are also imported from the region. Agri-Food Canada estimates that 28.2 percent of all fresh/chilled beans (including chickpeas and lupini beans, etc.) and 56.5 percent of all dried and shelled chickpeas are imported from the Middle East.[27] Many Middle Eastern foods are imported from other regions of the world as well. The United States, for example, is the single largest source of imported almonds (98.9 percent of all almond imports), dates (38.7 percent) and figs (60.6 percent). Other important non-Middle Eastern sources include France (81.8 percent of couscous imports) and Spain (80.4 of all saffron imports).[28]

The high percentage of imported products may be explained by lower input costs, specifically the lower labor costs in Middle Eastern countries. By having low labour costs, foreign companies are able to sell their products at a more competitive price than North American companies. Additionally, North American companies may have limited access to the spices necessary to duplicate traditional flavors and tastes demanded by the ethnic consumer. Minimal value-added processing of pulses for the Middle Eastern market occurs in Canada. Some small-scale producers prepare products such as rice and beans, bab ghanouj and hummus. However, research indicates that there is an interest by manufacturers to produce more value-added Middle Eastern pulse products in Canada but the ability to be cost-competitiveness remains a concern.[29]

[27] Agri-Food Canada
[28] Statistics Canada
[29] David Redmond: *An Assessment of Selected Ethnic Foods in Canada*. Ekos Research Associates, 1994.

The U.S. Ethnic Retail Food Market

In the U.S., since 1990, the Asian-American population has increased by more than 30 percent, while the Hispanic population has increased by 20 percent. By 2010, Latin Americans will represent the largest U.S. minority, outnumbering African Americans. Ethnic groups are far from homogenous; the growing Latin American population includes people of many different ancestries, including all nations in South America, Central America and the Caribbean. The traditional dietary habits of each segment within this ethnic group vary significantly. For more information regarding the preferences of specific Hispanic populations refer to Appendix B, sections B.9 and B.10.

The specialty foods industry continues to thrive in the U.S. According to a study conducted by PROMAR International, one out of every seven, food dollars will be spent on ethnic foods over the next ten years.[30] There are indications that food manufacturers are already beginning to aggressively compete for market share in this sector. The fastest growing market segments appear to be Thai, Indian, Caribbean and Mediterranean.

The establishment of small ethnic grocery stores has been increasing to service new immigrants, particularly in large cities. This trend is expected to continue as long as high immigration levels are maintained.[31] The major effect of the increase of small grocers has been increased competition in the retail foods industry as a whole.

Large mainstream supermarkets are now including the service of ethnic segments in their overall marketing strategy. Sharp increases in the Hispanic population in recent years have spurred food retailers to adapt their stores to the changing mix. Further presentation of demographic, cultural and product preferences for the Hispanic Market are presented in Appendix B. The following data, collected through in-store audits and interviews provides examples of food retailers adapting their stores/products to meet the demands of their customers.

[30] Agriculture and Agri-Food Canada: *Overview of the Retail Grocery Market in the Mid-Atlantic U.S.*, June 1999.

[31] From the retail audits, however, Canglobal learned that a large percentage of specialty grocery stores, particularly Indian and Middle Eastern, close down within their first year of business. This is due to a number of factors such as mismanagement, low demand or poor location.

Interest Box 2: Select U.S. Food Retailers

Kings Food Markets, New York
Kings Food customers are generally Hispanics of average income level. Hispanic food represents 45% of products, while Middle Eastern and Indian food products represent 10%. In the past three years there has been an increase of Hispanic and Oriental products such as canned pulses and canned pulses with sauces. As a result, Kings Food markets has renamed an aisle from "canned foods" to "Mexican foods" and increased its number of suppliers by approximately 10%. The best selling products include flavored sauces, pre-cooked bowls (ready made meals) and rice mixes (such as beans and rice).

Sedano's Supermarket, Miami
Sedano's customers are of Hispanic origin. Hispanic products make up 45% of products sold, while Middle Eastern and Indian make up 15%. There has been increased demand for all three ethnic product types, particularly Hispanic products such as tamales, beans, spices, guacamole, sausages and rice. New sections have been added to accommodate these products. Highly demanded products include chilies, beans, and pre-cooked meals. Store managers state that the number of suppliers for ethnic products (Hispanic, Middle Easter, and Indian) has increased in the past three years.

President Supermarket, New Jersey
The majority of shoppers at this location are Hispanic. Hispanic produce, customer service and an international aisle filled with hard to find ethnic items sets President apart from the rest. One of the store's most popular services is free home delivery, but they also deliver the shopper as well. President offers catering for special occasions and corporate functions showcasing traditional Hispanic foods.

El Guero Supermarket, Chicago
A very high percentage of customers at El Guero are Hispanic. Hispanic food products represent 30% of total product offering while Indian and Middle Eastern represent 50 to 60%. In the past three years, Hispanic, Middle Eastern and Indian food products have increased in number. The manager explained that the reason for the increase was increased internal migration of Hispanics from California (Hispanics in this region come to work in the countryside on farms). As a result, the shelving space of the store has had to increase, although an "ethnic" food aisle has always existed. Top selling products and highly demanded products include beans, rice, oil, hummus, pitas and guacamole. Suppliers of all three ethnic food types have remained the same in the past three years, but the manager commented that a hierarchical supply chain exists.

Super A Foods, L.A.
Regular customers of Super A Foods are Asians and Hispanics in their late twenties. Total Hispanic products represent approximately 48% while Middle Eastern and East Indian Foods represent 28% of total product offering. To accommodate highly demanded products the store has discontinued carrying a number of products that did not sell well. The store has also opened a new ethnic aisle. Top sellers include rice, beans, salsa, tortillas and vegetables. However, increased demand has been for frozen foods, tortillas, canned foods, pasta, rice and vegetables. The manager of this store commented that the number of Middle Eastern and Indian customers frequenting this store have been increasing over the last two years.

Research findings indicate that there are a greater variety of East Indian food products available in the U.S. versus Middle Eastern products. In addition, value-added products and home meal replacements are more readily available within the East Indian market. East Indian products include frozen meal replacements, instant soups, frozen appetizers, meal kits, snacks, curry pastes and sauces. Middle Eastern products include mainly dips and canned pulses. At best, value-added Middle Eastern products include frozen falafels, dry falafel mix, canned stuffed vine leaves, canned stuffed eggplant, canned stuffed green pepper, canned fried eggplant and canned beans in sauce. For a complete listing of product names, ingredients and manufacturers, refer to Appendix D.

Primary research findings indicate that a high percentage of products, approximately 80 percent, sold in ethnic or specialty stores are imported. However, pulse products and products containing pulses carried by these stores vary from approximately 20 percent to 40 percent. Overall, stores have not increased the amount of their product lines significantly in the past three years. Indian and Middle Eastern specialty stores have indicated that they have added product lines of snacks and dry fruits. Highly demanded products include; oils, spices, meats, snacks, dried fruits, and produce.

The most common pulses used in both Middle Eastern and East Indian foods are chickpeas and lentils. Pulses are used in many ways, in the form of snacks (spicy for East Indian and sweet for Middle Eastern), dips (hummus), dry flour mixes (mostly chickpea), in appetizers, sauces, and main dishes, with rice dishes and in deserts. However, within each cultural segment, flavors, textures and preferences vary. The following table describes how pulses are used in traditional Indian cooking:

Interest Box 3: Commonly Used Pulses in Indian Cooking

Channa Dhal – Made from chickpeas (garbanzo beans). These bright yellow small, thick lentils are used in a variety of appetizers and entrees like masal vadai and Adai. When ground, the flour is called gram flour or besan. Both the dhal and the flour are available in Indian grocery stores.

Mung Dhal - Available whole or split, this legume cooks well in a short time. The whole lentil is green in color and the hulled and split dhal is yellow in color. It is used in a variety of curries and stews. Mung flour is also available in Indian markets.

Toor Dhal- Toor or tuvar dhal is similar in appearance to the channa dhal but flatter. It is the most common lentil used in South India.

Urad Dhal - These small white legumes are available whole or split. They are soaked with rice, ground and fermented to make the popular steamed lentil cakes or Idli. The unhulled black version is also available in Indian stores.

Rajma - The well-known kidney bean or rajma is often used to make curries in North India. Rajma and chole can be interchanged in some recipes.

Chole - Also known as ceci, chickpeas (garbanzo beans). These nutty flavorful beans have always been popular in Indian cooking.

Masoor Dhal - Available in both whole and split form, they do not require soaking and cook to a smooth puree in a short time. This dhal can be used for soups and stews.

New Products and Trends in Ethnic Food Products

The majority of processed and consumer-ready pulse products are targeted to ethnic food consumers in North America. Specifically, these products are targeted at the Hispanic, Middle-Eastern, South Asian and East Indian ethnic groups. For detailed information describing the Hispanic market, see Appendix B. Growth in the ethnic food category is approximately 6-7 percent compared to yearly overall food industry growth of about 5 percent. As of last year, the ethnic food category was 7 percent of the entire U.S. food industry, valued at US$705 billion[32]. In the past decade, various product trends have emerged as a result of the ethnic boom:

- **A Latino boom in the U.S. means that many companies are targeting Hispanics**
  Kraft Foods, Goya Foods and Tasty Baking have been leading the way in making foods with Hispanic appeal. Goya has over 75 authentic Mexican products.
- **Increasing heat levels**
  Since 1980, Americans consumption of chili peppers has doubled to almost 6 pounds per capita. Also, red pepper usage has nearly tripled.
- **Greater authenticity and flavour impact**
  People are not just asking for Mexican flavors, they want flavors and dishes from particular regions, such as Yucatan and Jalisco, etc. North Americans are craving more flavour. They want food that tastes good.
- **Fusion flavors**
  North Americans as enjoying fusion cuisine, which combines the ingredients and cooking techniques of two or more cultures. For example, French-Italian-Turkish combinations or Latino and Nuevo Latino combinations.
- **Seasonings for health**
  Consumers now equate ethnic foods, spices and seasonings with healthy eating.
- **Thai food**
  Thai is the most popular and fastest growing cuisine among consumers. Andre Post Inc. has been importing authentic taste of Thai sauces, frozen foods and rice to satisfy the demand for Thai food.
- **Indian Food**
  Indian foods sales are forecasted to increase in the next decade. [33]

The Organic Retail Food Market in North America

Organic agriculture is growing in importance in the agricultural sector of many countries and has expanded for several reasons:

- **Consumers are more health aware than ever**
- **Increasing doubt regarding the safety of traditionally produced foods**

[32] Laura A. Brandt: *Ethnic Flavors Ride a Heat Wave*. Food Product Development, 1999.
[33] Ibid.

- **Organic products have received a lot of positive press in the past three years**
- **Genetically Modified Foods have been receiving poor press; particularly soybeans**
- **People are more aware of environmental issues**
- **Increasing demand for better tasting and fresher foods**
- **Aggressive retail promotion of organic products to the mainstream market**
- **Supportive government and non-government organization (NGO) policy and regulation**

Organic products are now available in a variety of retail outlets including; large mainstream grocery stores, drug stores, mass merchandisers, health food and natural food markets, as well as on the Internet. In fact, organic products are now available in approximately 75 percent of mainstream grocery stores. In terms of growth, the organic foods market is predicted to grow to US$20 billion in sales by 2005. Current world sales are approximately US$15 billion.[34]

In Canada, the organic foods market is still relatively small compared to the conventional foods market.[35] In Canada, organic food retail sales are from $70-100 million annually and growth of the organic foods market is estimated at 15-25 percent.[36] Conversely, for the year 2000, U.S. sales of organic grocery, dairy and frozen products was over $609 million.[37]

Canadian producers of organic foods are concentrated in the grains and oilseeds industry. Agri-Food Canada has estimated that approximately 0.5 percent of total oilseed and grain production is organic.[38] Most organically grown products are sold through local farmer's markets, small free-range livestock farms and through small grocery and specialty organic/health food stores. Retailers offer a variety of products including bulk grains, pasta, flours, cereals, fruits and vegetables, dairy products, some meat products, dry fruit and nuts, packaged baked goods, and miscellaneous grocery products, including ready-prepared foods. Of organic food imports that come into Canada, roughly 85-90 percent come from the U.S. with the remainder being imported from Europe. U.S. imports consist mainly of pre-packaged foods and a small percentage of fresh produce.

Canadian exports consist of grains such as wheat, barley, oats and buckwheat to both the U.S. and European markets. Canada will be unable to maintain its export markets for organic commodities beyond 2005 unless internationally recognized national organic standards and certification processes are implemented. After December 31, 2005, Canada may not be able to export to the EU unless it is on the EU approved list. The USDA has also established a national accreditation program that is hoped to be operation with in the next two years.

[34] Organic and Natural News: *Facts and Stats The Year in Review*, 2001.
[35] In 1997, the organic industry accounted for only 1 percent of total Canadian food sales.
[36] Agriculture and Food Canada: *Organic*, June 2000.
[37] New Hope Communication. *Organic Market Overview*, June 2000.
[38] Ibid.

There are currently processors in Saskatchewan using organic inputs. Some are exclusively organic while others use only some organic ingredients for specific products, lines or consumers. The products produced in the province range from oilseeds and wheat to processed oats, flour, edible oils, sprouts, bread and cereal. There are few companies in Saskatchewan that process organic pulses exclusively. Currently, Carolliny Sprouts Ltd. and Bioriginal are the only two companies that further process organic peas and lentils into food products or other consumer products. For a list of other North American food processors, please refer to Appendix C.

3.2. Consumer Profile

In North America many consumer segments eat pulses. There are mainstream non-ethnic consumers including; general consumers, Generation X, seniors, vegetarians and organic consumers. Amongst these segments there is a great deal of crossover. There are also three main ethnic groups that have been identified as traditional pulse consumers. These include Hispanics, East Indians and Middle Eastern people. The following section profiles each consumer segment, identifying the characteristics, trends and demands of each.

Mainstream Consumer Groups

Traditionally, in North America, pulses have not been very popular. According to U.S. statistics, per capita pulse consumption consisting of dry peas, dry edible beans and lentils went from 7 lbs. (3.2 kg) in 1972-76 to 8.5lbs (3.9kg) in 1997, a rather marginal increase.[39] The picture in Canada is more promising, Canadian statistics tell us that from 1980 to 2000, apparent per capita pulse consumption went from 4.1 kg/year to 14.9 kg/year.[40] That represents an increase of over 250 percent. There are several reasons for this increase including:

- **Immigration of people from India, the Middle East and Latin America**
  These people not only continue to consume pulses as a dietary staple but also influence food trends in the new country. For example, Chinese, Thai, Mexican and Caribbean cuisine have influenced the use of spices by the mainstream and have introduced many "Third World" ingredients such as pulses, grains, and vegetables.
- **Increase in consumer-ready foods that contain pulses**
- **Ongoing introduction of pulses to the mainstream consumer**
  This has been accomplished through the food service industry via restaurants and cafeterias.
- **Increased health awareness by the general public**
  This has been coupled with the promotion of pulses as being low in cholesterol and saturated fat and high in protein, fiber and lysine.
- **Increased exposure to pulses**
  This has been accomplished through cookbooks, magazines and tear-away recipe cards given out in grocery stores.

[39] USDA Economic Research Service: *Food Consumption, Prices and Expenditures, 1970-1997*.
[40] Statistics Canada: *Food Consumption in Canada Part 1*, 1999.

The following table outlines the current eating habits of the average U.S. family in regards to their ethnic meal choices:

Table 13: Popular Cuisines at the Dinner Table, U.S.A

Type of Cuisine	Percent
Chinese	69
Italian	55
Mexican	53
Japanese	11
Soul Food	9
Cajun/Creole	7
Latin American	7
Mediterranean	6
Greek	6
German	6
Thai	5
Indian	5
Pan Asian	5
Middle Eastern	3
Spanish	2
French	2
Vietnamese	2
Caribbean	1
Scandinavian	1
Korean	0.5
Brazilian/Argentinean	0.5

Source: Strategy Research Corporation

Grocery and retail food journals indicate that there are two types of consumers seeking pulse products. One type is knowledgeable about ethnic foods and wants rich and spicy profiles. Manufacturers simply need to be creative and develop interesting new products using authentic ingredients and recipes. With the popularity of Asian, Middle Eastern and East Indian cuisine this group has been exposed to many pulses.

The second type of consumer is less adventurous but still wants variety and new tastes. These are either traditional mainstream consumers seeking ethnic flair, or assimilated ethnic consumers seeking "Westernized" versions of their traditional foods. For these consumers, it will be important to create flavors that will be acceptable upon initial tasting.

There are opportunities for manufacturers to integrate pulses into more foods at the retail level through new product developments and the innovation of existing products. More frozen prepared foods could contain pulses either in traditional ethnic dishes for the mainstream or in more familiar forms such as lasagna or pasta sauces. Also more "instantized" pulses could be sold in dry casserole, soup and side dish items. Pulses must be introduced in new ways to consumers, other than in tin cans and clear plastic bags.

The following section examines specific segments of the general consumer market for pulses. These segments have been identified as regular consumers of pulses and pulse products and represent potential target markets for new value-added products manufactured by Saskatchewan processors.

Generation X

In recent years, the greatest pulse consumption growth has been seen within the Generation X market (26-35 years). Gen X consumers are generally well educated, relatively affluent and are innovators. They consume pulses for several reasons including:

- **Health**: Pulses are regarded as having perceived health benefits. This group eats less meat then their parents and therefore, a meat substitute is required.
- **Vegetarianism**: Some of this group is vegetarian for health and/or socio-political reasons. Pulses are a protein alternative.
- **Adventure**: This group has grown up in an ethnically diverse society and likes to try new foods. They are innovative and creative when it comes to cooking.
- **Differing Perceptions**: This group does not hold the common negative perceptions of pulses. Rather, pulses are an alternative food they have "discovered" themselves.

As this segment is time stressed, when pulses are used, they are usually canned. Canned pulses can easily be integrated into meals with little pre-preparation. Pulses have become chic and novel in some restaurants, which has influenced this group's eating patterns.

Seniors

Pulses are commonly used by senior citizens; usually in dry bagged form. This group knows how to incorporate pulses in their cooking and has the time to do so. They may be supplementing meat with pulses either because they live on fixed incomes and cannot afford meat on a regular basis or for health reasons.

Vegetarians

Vegetarians are mainly women, aged 15-39 who live in urban areas and work out of the home.[41] However, this group is constantly evolving to encompass many different groups as interest in vegetarianism grows. A recent study suggests that approximately 2.5 percent of the U.S. population is vegetarian (approximately 4.8 million people) although the market for vegetarian foods is much larger since many non-vegetarians also buy vegetarian foods. [42] 1997 statistics on the Canadian market suggest that approximately 2 percent of the Canadian population is vegetarian; constituting approximately 500,000 people.

The Organic Consumer

Certified organic foods are derived from a production and management system that exclude the use of synthetic fertilizers, pesticides, growth regulators and livestock feed additives. In

[41] There are approximately twice as many women vegetarians as there are men.
[42] Vegetarian Journal: *How Many Vegetarians are There?* May/June 2000.

addition, organic production prohibits the use of genetically modified organisms (GMO) in any production or processing system, sewage sludge as a soil enhancer, or ionizing radiation as a food preservation technique. [43]

The cost to produce organic products is higher than traditionally produced foods because of the costly certification requirements needed at each level of the production chain. Additionally, supply can be inconsistent because of climatic, pest, handling and harvest problems. Despite elevated prices, consumers are willing to pay and organic food production has expanded. The continued demand for organic products by consumers has created new opportunities for the agricultural sector.

According to a 1997 study done by New Hope Organic, organic consumers can be loosely categorized into the following classifications:

- **High Level Consumers**
  This group has the highest level of interest in learning about and purchasing organic products. Typically these consumers shop in specialty organic and health food stores where the amount of information and product diversity is greatest. This group represents about 10 percent of the population.

- **Moderate Level Consumers**
  This group is somewhat interested in learning about and buying organic products and buys a few products a year. They may shop in specialty organic and health food stores but are more likely to shop at mainstream grocery stores. This group represents about 22 percent of the population.

- **Low Level Consumers**
  This group is open to the idea of organics and interested in the market. They may have health and environmental concerns but are not necessarily making purchases. Generally this group purchases organic products in mainstream grocery stores and might be making selections based on price. This group represents approximately 28 percent of the population.

Essentially, approximately 60 percent of the population is interested in and/or purchasing organic products to some degree. A remaining 40 percent are not interested in buying organics for one reason or another. They are either legitimately not interested, cannot afford organic products, are misinformed or uninformed.

Organic buyers are generally from all income levels. However, studies have shown that the main consumers of organic products are university-educated women, aged 25-45 years. Please note that this is evolving to include other types of consumers including university students of both sexes and mainstream male consumers. Many women are introduced to organic foods by buying organic products while pregnant. This is due to the perceived benefits of eating healthier foods in the prenatal period. Once their baby is born, they buy organic baby food, which usually

[43] The Canadian Organic Advisory Board

carries over to other organic foods throughout childhood. Others enter the market via wanting to find healthier alternatives for themselves and their children.

The majority of buyers are those that are aware of the differences between organic and conventionally grown foods. Thus, educating consumers is an important part of marketing organic products. Generally speaking, once a consumer is knowledgeable about organic products and how they come to the market they are more willing to try new products.

The Hispanic Consumer

The largest ethnic group in North America is represented by Hispanics, a group that has traditionally been a large consumer of pulses. It is important to note that the main pulse consumed by the Hispanic market is the bean. Beans are found in many types of Hispanic foods from dips and soups to enchiladas, fajitas, bean dips and chimichangas. Also note that Saskatchewan has traditionally been a very small-scale producer of dry beans. Current production includes the Pinto, Black Turtle, Great Northern, Small Red and Faba bean. However, unless significant agronomic strides are made in developing varieties that thrive in Saskatchewan, large-scale bean production may not be a reality.

The following section presents the known demographic and food consumption profiles for the Hispanic market.

Most U.S. Hispanics (64 percent) are of Mexican origin, with 15 percent from Central and South America, 10 percent from Puerto Rico, 5 percent from Cuba and 6 percent "other". Los Angeles, New York City and Miami are home to over one-third of the total Hispanic population.[44] According to the U.S Census Bureau, the current Hispanic population is 33 million people, larger than the population of Canada. Approximately 350,000 Hispanic immigrants come to the U.S. every year. For Canadian and U.S. urban Hispanic population figures see Appendix B, sections B.2 and B.7 respectively.

Table 14: The Top Ten Markets in the United States by Hispanic Population, 2000

State	Population Million	U.S Born (Percent)	Foreign Born (Percent)
Los Angeles, CA	6.9	72	28
New York, NY	3.8	77	23
Miami, FL	1.5	82	18
San Francisco, CA	1.4	78	22
Chicago, IL	1.4	80	20
Houston, TX	1.3	68	32
San Antonio, TX	1.2	38	62
Dallas, TX	0.9	70	30
McAllen, TX	0.9	---	---
San Diego, CA	0.9	62	38

Source: Strategy Research Corporation

[44] The Future of Foods: *Industry Trends*, 2000.

Most marketers are familiar with the three biggest Hispanic-American groups. Since the U.S. census first counted Hispanics in 1970, those who identify Mexico, Puerto Rico and Cuba as their country of origin have comprised about three-fourths of the total U.S. Hispanic population. Hispanics from other Latin-American nations and cultures are not as well identified or defined by origin.

The nationality of American Hispanics is important because there will be differences in culture, food preferences, attitude, etc., between these groups. Specifically, diets and eating habits vary from region to region in the Americas. The following table gives a breakdown of the origin of Hispanics in the U.S. For more information refer to Appendix B, sections B.9 and B.10.

Table 15: Country of Origin U.S. Hispanic population, 2000

Nationality	Number in thousands	Percent of Total
Mexico	21,455.5	63.3
Central & South America	5,016.5	14.8
Puerto Rico	3,559.0	10.5
Cuba	1,525.3	4.5
Other Hispanic	2,338.7	6.9
Total	33,895.0	100

Source: U.S. Bureau of Census

Immigrants from Mexico represent the largest single group of the Hispanic population in the United States. Within this group, there exist two specific segments. One segment includes long-settled; affluent people who can trace their U.S. ancestry back for centuries. The second group is largely comprised of individuals and families who are recent arrivals to the U.S., with limited English language skills. As a result, this segment faces economic and social barriers that typically results in lower earning power.

On average, Hispanic Americans represent lower income levels. However, as a consumer group, they represent a significant market force. Total U.S. Hispanic buying power is $325 billion. The following table indicates the buying power the Hispanic population possesses in several large U.S. markets:

Table 16: Top Ten Markets by Hispanic Buying Power

State	Amount in Billions
Los Angeles, CA	$66.8
New York, NY	$39.1
Miami, FL	$17.6
San Francisco, CA	$14.8
Chicago. IL	$12.7
Houston, TX	$12.2
San Antonio, TX	$11.2
Dallas, TX	$8.7
McAllen, TX	$7.9
San Diego, CA	$7.7

Source: Strategy Research Corporation, 2000.

Approximately 50 percent of the U.S. Hispanic population lives in the states of California and Texas. However, Hispanics are relocating and migrating to "non-traditional" cities due to labor demands of growing service industries. Hispanics have traditionally clustered in major urban markets like New York, Los Angeles, Miami, San Francisco, Chicago and Houston. More recently, Hispanics have been moving into the following states; Arkansas, Nevada, North Carolina, Georgia, Nebraska, Tennessee, Oregon, Iowa and South Carolina. There are also surprising increases in unlikely places like Utah, Idaho, New Hampshire and Minnesota. This indicates that the distribution of specialty or niche ethnic food products could be focused to relatively small markets in the near future.

Hispanics have a dramatic difference in their spending habits for food at home and away from home as well as their categories. Hispanics spend approximately 17.5 percent of their income on food as opposed to 13.7 percent by non-Hispanics. Of this amount, 4.2 percent spend approximately more at home than non-Hispanics. The Bureau of Labor Statistics reported the different categories of food at home spending as follows:

Table 17: Food Category and Spending by Hispanic and Non-Hispanic Consumers

Food Category of Food Spending At Home	Non-Hispanic (Percent)	Hispanic (Percent)
Cereal, bakery products	16.0	13.5
Dairy Products	10.6	10.3
Fruits and Vegetables	16.2	17.6
Meat, Poultry, Fish, Eggs	26.2	32.6
Other food at Home	31.0	26.1

The following points present relevant statistics about the U.S. Hispanic market:

- There are more than 7.6 million Hispanic households in the U.S. averaging 3.6 people per household
- The average Hispanic household spends $30,013 annually
- Hispanics spend, on average, $300 more per year on food and $250 on apparel products and services than the general market[45]
- There are about 1 million Hispanic households in the United States with incomes of $50,000 or more
- Hispanic segments maintain strong ethnic identities[46]
- Hispanics are a young population. The median age of U.S. Hispanics is 26.5 compared to a median age of 32.2 for non-Hispanics

Most grocery purchases are made at large supermarkets, specialty stores and specifically Hispanic grocery stores, which are probably relatively small in comparison. It is interesting to note that Hispanics are still doing their shopping in specialty stores, as their product demands are

[45] The CASS Hispanic Population Network, 2000.
[46] Carole Radice: *Hispanic Consumers: Understanding a Changing Market*. Progressive Grocer, Feb. 1997.

not being fully satisfied by large retailers. The smaller stores handle more imported specialty products from many Latin American Countries that may not be accessible by the larger stores for one reason or another.

Grocers operating in Hispanic neighborhoods typically emphasize fresh produce and meats, with lots of variety and quantity. However, more than 57 percent of Spanish-speaking households by ACNielsen surveys bought frozen vegetables, and more than 52 percent bought frozen prepared foods. One-third of Spanish-speaking households bought frozen juice and frozen mixed vegetables, and more than a quarter bought frozen potatoes, frozen wades and pancakes, and frozen breakfast foods.[47] They spend more than three quarters of their grocery dollars on frozen products – a big segment for them.

The East Indian and Middle Eastern Consumer

Specific information on retail outlets and current product offerings for this market segment has been presented previously in section 3.1 "The Ethnic Retail Food Market in North America". This following section provides demographic and geographical information on this population.

Middle Eastern consumers in North America are not easily identified in statistical abstracts. Both U.S. and Canadian statistics have information based on ethnic origins such as Iranian, Arab, Egyptian and Indian populations. However, one must note that Arabs is considered a "cluster ethnicity", which may encompass many different ethnicities. In addition, the U.S. Census Bureau collaborates all Middle Eastern, East Indian and Asian ethnicities into one population group, although some information such as income status can be found regarding particular ethnic origins. In Canada, the Census Bureau offers limited information on the Middle Eastern and East Indian ethnicities.

In North America the majority of both Middle Easterners and East Indians live in metropolitan cities. In Canada, the largest Middle Eastern population can be found in Montreal whereas the largest East Indian population can be found in Toronto. There are also large Middle Eastern communities in Toronto and Ottawa-Hull. In the U.S., large concentrations of Middle Easterners live in Detroit and New York.

The largest age group of both segments in North America ranges between 25 to 44 years old. Like the Hispanic segment, Middle Easterners and East Indians represent a young population with the Arab population being the most affluent group with the greatest buying power.

The Middle Eastern community is one of the smallest ethnic groups in Canada. Research findings point out that of the Middle Eastern segment, the Lebanese group is the largest, but Iranian, Egyptian and other Arab origins also figure prominently. The total Middle Eastern population in Canada is approximately 292,855 or 0.8 percent.[48]

Table 18 outlines specific population statistics for Middle Easterners in selected Canadian cities.

[47] David Wellman: *Freezing Out Hispanics?* Frozen Food Age, 2000.
[48] Statistics Canada

Table 18: Middle Eastern Origins in Canada in Selected Cities, 1996

Region	Total Population	Arab Population	East Indian Population
Montreal	3,091,115	70,060	25,550
Toronto	3,863,105	39,600	45,540
Vancouver	1,584,115	4,460	14,840
Calgary	-	6,515	1,930

Source: Statistics Canada

In March of 1999, the Middle Eastern population in the United States numbered 10.9 million, constituting 4 percent of the total population. In comparison, non-Hispanic Whites numbered 193.1 million.[49]

The U.S. Census Bureau has no detailed classification information for the East Indian segment. However, research indicates that the total of foreign-born Indians in the United States is 748,000 or 2.9 percent. Actual East Indian citizens of the United States represent 263,000 or 2.9 percent. The table below illustrates characteristics found in particular Middle Eastern ancestry groups. The Arab population is the largest Middle Eastern group in the United States at 716,391, followed by Lebanese at 309,578 and Armenian at 267,975.[50]

Table 19: Population for Selected Ancestry Groups, 1998

Ancestry	# Persons	Foreign Born (%)	Naturalized Citizen (%)	Median Age	Male	Female	Median Household Income (US$)
Albanian	38,361	32.8	53.8	33.1	20,259	18,102	$35,615
Armenian	267,975	44.5	40.5	35.9	134,067	267,975	$36,860
Egyptian	73,097	69.2	56.5	31.7	42,424	30,673	$40,095
Iranian	220,714	77.0	27.1	30.8	127,704	93,010	$36,813
Iraqi	20,657	69.5	52.5	30.3	11,854	8,803	$33,043
Israeli	69,018	56.6	44.8	27.8	38,144	30,874	$40,242
Lebanese	309,578	25.5	50.9	32.3	147,802	161,776	$35,721
Turkish	66,492	53.5	42.0	32.8	36,851	29,641	$37,091
Arab	716,391	40.7	49.0	30.2	395,592	320,799	$39,100

Source: U.S. Census Bureau

Nationally, 96 percent of Middle Eastern and Indian populations live in metropolitan areas. The percentage of Middle Easterners and Indians who live in central cities is double to that of the non-Hispanic whites. . This means that there is good market access in large urban areas.

[49] Based on U.S. Census Bureau Statistical Abstracts
[50] Ibid.

Observations

The identified groups that consume pulses on a regular basis include:

- Generation X
- Seniors
- Vegetarians
- Mainstream consumers desiring ethnic foods
- Organic consumers
- Hispanics
- East Indians and Middle Eastern consumers

The groups that present the greatest potential for the Saskatchewan pulse industry are the Generation X, vegetarian, organic and East Indian segments. Within the Generation X, vegetarian and organic segments there is likely to be a great deal of crossover as their demographic profiles closely correlate. These three segments are largely comprised of relatively well-educated women from the ages of 15-45 although as mentioned previously, these segments are evolving to encompass many different types of people. Targeting Generation X with a marketing and promotional campaign for pulses may be more effective than one aimed at their parent's generation whose attitudes and eating habits are fairly ingrained, but may be influenced strongly by the opinions and preferences of their children.

Although there are gaps in product offering for the Middle East and Indian markets, the target populations is relatively small and geographically spread. Additionally, marketing to ethnic consumer groups may be challenging as cultural and language barriers may exist. Marketing efforts to these segments will have to be very carefully considered and different strategies may have to be developed for recent immigrants versus second and third generation people.

3.3. Product Profile

Consumer-Ready Pulse Products on the Market

There are a multitude of consumer-ready products on the market that contain pulses as an ingredient in some form. Primary research indicates that the majority of pulse products are found in dry and bagged form. To aid in identifying opportunities for secondary processing in Saskatchewan, we have divided pulse-containing products into eight broad categories. Lists of retail products, brands and processing companies are given in Appendices C and D.

The study will further examine the processing industry in each of these categories and the opportunity to develop and process these types of products in Saskatchewan, including value-added potential. For full primary research results of consumer-ready pulse products on the market see Appendix D.

The categories of pulse products identified are:

- **Bagged pulses**
- **Ground pulses**
- **Products made with ground pulses**
- **Whole processed pulses**
- **Products made with processed pulses**
- **Fractionated pulses**
- **Extruded pulses**

Bagged Pulses
Bagged pulses are raw and unprocessed and can be found in most supermarkets and retail outlets. Although no processing, other than cleaning and bagging, are involved, wholesale and retail mark-ups can be considerable, especially when small retail bags are involved. Substantially higher mark-ups are possible in specialty markets such as the organic market.

Examples of bagged pulses include:

- Bagged whole lentils
- Bagged chickpeas
- Bagged beans
- Bagged split peas
- Bagged split lentils

From the retail audit (results listed in Appendix D) the research team identified a total of 63 bagged pulse product lines. The majority of processors of this product segment are located in North America, mainly the U.S, and a small percentage of products are imported from the Middle East and Mediterranean. It is difficult to conclude, however, where the North American companies are sourcing their pulses. Even though their processing facilities may be located in North American, they may be importing pulses from elsewhere. Very few organic bagged pulses were found on store shelves; in total, seven products were listed as organic.

Ground Pulses
Pulses that have been milled into flours are the focus of this category. Some products in this category may also have small amounts of other flours or additives. Pulse flours are generally consumed in the Indian market[51], as well as in the gluten-free market, which is discussed in greater depth in Sections 5-7.

[51] The "Indian" market includes people whose ethnic background is based in India, Bangladesh, Pakistan and Sri Lanka.

Examples of products in the ground pulse category include:

- Pea flour
- Lentil flour
- Bean flour
- Chickpea flour
- Combination flours e.g. garfava flour (garbanzo and fava bean)

The audit results (Appendix D) indicate that there are very few pulse flours available on the market. The types of pulse flours currently being sold include: mung bean, chickpea, black bean and pea.

Products Made with Ground Pulses

The main ingredients in these products are pulse and/or wheat and rice flour, with the addition of small amounts of spices, herbs and other minor ingredients (e.g., oil, salt). Products in this category generally require a greater degree of processing and have more value-added potential than products in the Ground Pulse category. Products within this category include a wide variety of items and include both wet and dry products.

Examples of products in the Ground Pulse Products category include:

- Pre-formed pappadums and rotis
- Specialty dough mixes
- Hummus
- Thickeners

The audit results indicate that the majority of products made from ground pulses are hummus or chickpea dip. The majority of these products are processed in North America.

Whole Processed Pulses

This category includes products that contain whole processed pulses along with a number of other ingredients. Some additives, such as salt, spices and water may also be added. The value-added potential of these products varies widely as do the processing technologies and the end product.

The different types of processing technologies that are used include canning, micronizing, puffing, popping and roasting. Most products in this category are canned, though other options do exist. For example, micronizing entails infrared heat treatment, which reduces cooking times. Products that are micronized are generally sold into the institutional market. Popping and roasting technologies are primarily used in the Indian market for snack products.

The different types of products available in this category include:

- Canned chickpeas, peas, beans and lentils
- Micronized pulses
- Puffed, popped and toasted chickpeas

The audit results (Appendix D) indicate that whole processed pulses in this section include canned broad beans, chickpeas, lupini beans, fava beans, black-eye peas, white kidney beans, cannelloni beans, kidney beans, black beans, navy beans, pinto beans, romano beans, white pea beans, lentils, and refried beans. This is the second largest category of products found on store shelves. A total of 50 product lines were found in a variety of stores with the majority processed in North America. However, imported products represent approximately one third of the total. In addition, approximately one fifth of products are organic. All organic pulses found are processed in the U.S. The most popular organic labels including: Shari Ann's organic beans, Eden organic beans, and Little Bear organic beans.

Products Made with Processed Pulses

One or more of the ingredients in these products consists of a processed pulse but they may not be the dominant ingredients. They generally have a higher level of value-added, though this is not true in all cases. Once again a wide variety of processing technologies can be used that include canning, drying, extrusion and freezing. Products in this category include every segment of the market for pulse products, including organic and ethnic specialty markets.

Types of products in this category include:

- Dried soup mixes
- Canned soups
- Canned stews
- Canned chilies
- Canned refried beans
- Canned curries
- Canned and frozen fillings for burritos or samosas
- Salsas and sauces
- Frozen entrees
- Retort pouch packaged entrees
- Indian snack mixes

The audit results (Appendix D) indicate that the largest product line in this category is canned soup, which accounts for 31 product lines. Dry soup, which account for 13 product lines, is the next largest segment. Finally, dry snack mixes represent 12 product lines. Pulses used in the above products vary significantly. There are no imported processors in this section; therefore the

majority of products are processed in North America. Organic products represent a very insignificant portion, which constitute mainly canned soups.

Frozen entrees listed in the audit include burritos, enchiladas, fajitas, falafels, falafel mix, veggie loaf, curry entrees, beans and pasta, and rice bowls. Hispanic products are the largest category in this segment. Approximately 17 products can be classified as Hispanic, with burritos being the most common entrée. Middle Eastern and Indian products are almost equivalent at 7 and 9 products each. However, Middle Eastern products cited include only falafels (using chickpea flour as the main ingredient). Therefore, it can be concluded that no actual entrees have been developed for the Middle Eastern market. Indian entrees are mostly curry dishes using chickpeas and lentils processed by Tamarind Tree and Indian life. A very small percent of organic products are found in the fresh and frozen category. Organic products were only cited in Hispanic products such as burritos, but this is less than 1 percent of total products.

Fractionated Pulses

Fractionation is the process of breaking the pulse down into its constituent parts. After fractionation, the isolated components can be sold for use in a wide variety of industrial and food applications. The principal components isolable from pulses are starches and proteins. There is also the potential for identification and isolation of nutraceutical components. At present, Parrheim Foods is the only processor in Saskatchewan that is actively working in pulse fractionation. Currently, there are few fractionated pulse products available but many possibilities.

Products that could be made from fractionation include:

- High and low protein pea flour
- Fibers and coatings extracted from the skins of pulses
- Pulse starches
- Pulse proteins
- Amino acids for animal feed
- Chemical compounds extracted for use in nutraceuticals and functional foods
- Special fatty acids

Extruded Pulses

Extrusion is a hydrothermal process that allows whole pulses to be turned into a variety of products of different sizes, shapes and colours. Extrusion is commonly used in food processing to manufacture pastas, breakfast cereals, pet foods and snack food ingredients. As with fractionation, however there are presently few extruded products that utilize pulses. The only pulse product identified in the retail store survey was an extruded pulse pasta product. There is potential, however, for pulses to be extruded into a wide variety of products. Many of these will most likely be for the ingredient market used by other processors, such as meat substitutes and fillers, and consumer products such as pastas and snack foods.

4.0 ANALYSIS OF THE CONSUMER-READY PULSE PRODUCT INDUSTRY

4.1. Supply Chain

The following outline the steps and processes necessary to take pulses from raw to a higher value-added form.

Production

The first stage in the supply chain is the production of the raw seed. The seed produced takes the form of either conventional bulk pulses, certified organic, or variety identity preserved product, depending on end-use requirements. The next step is storage and delivery of the product by the farmer

Cleaning, Grading and Color Sorting

Most Saskatchewan processing plants purchase raw pulses and clean them to grade specifications. They may also color sort - though this is optional. Saskatchewan processing plants generally ship cleaned pulses in 25 kg bags or in bulk containers or hopper cars out of province where processors may use these large bags or bulk shipments directly (e.g., for canning) or repackage them into consumer size packages (e.g. 0.5 kg bags). Consumer size bags may then be sold directly to retailers or to brokers/distributors who sell to smaller retail outlets and/or the HRI trade. It is often common for supermarket chains to directly contract packagers of consumer-ready pulses to produce generic and store branded products (e.g. Safeway brand dried lentils). In some cases distributors or retail chains purchase their own pulse processing plants to manufacture products for their own outlets and may also contract production for other types of buyers and outlets.

After cleaning and grading, the seeds may undergo further processing before being shipped. These processes include dehulling, splitting, micronization and fractionation. Products produced via these methods include dry bagged split pulses and instantized pulses for retail packaging and canning or as inputs for the ingredient market. A further option is to mill the cleaned pulses into flour. Pulse flours that are often produced include whole seed pulse flours, dehulled pulse flours and micronized pulse flours. A relatively new opportunity in pulse processing is specialized wet and dry milling to fractionate pulses. This method generates products that can be sold as ingredients to food processors and other industrial users.

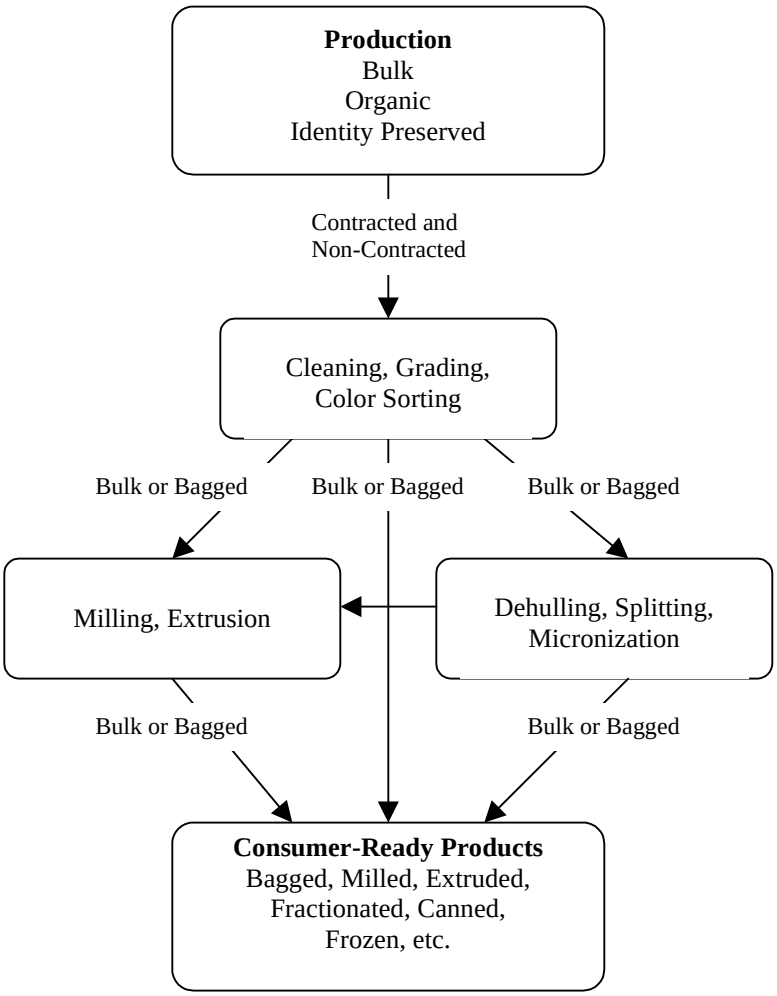
Secondary Processing

After the seed has undergone various stages of primary processing, it can be used in its various forms by food processors in consumer-ready products with greater added value. The consumer-ready products can be as simple as bagging pulses or flour into retail sized packages; or much more complicated with their inclusion into easy to prepare frozen or retort pouch packaged entrees.

From these secondary processors, the consumer-ready product eventually moves its way to store shelves. This is accomplished through the relationships between processors, food brokers, distributors and wholesalers who bring the final product to retailers and final consumers.

Figure 4.1 below illustrates the processing supply chain for pulses on their way into consumer-ready food products. A wide variety of processes can be used to further value-add pulses into consumer-ready food products. These technologies are described in greater depth in Section 4.2.

Figure 4.1: Pulse Processing Supply Chain



4.2. Processing Technologies

There are numerous technologies associated with the processing of consumer-ready pulse products. Value-added processing includes any, and all, activities beyond the growing and harvesting of pulse crops. Basic processing methods include cleaning, color sorting, dehulling, polishing, splitting and milling. Once these processes have taken place, other technologies such as micronization, hydrothermal processing, wet processing, freezing and canning can occur to further add value to the pulses and make them more consumer-ready. The value-added component generally increases as pulses are transformed into secondary products. Currently in Saskatchewan, few processors do more than cleaning and bagging of pulses.

Primary Cleaning and Grading

The basic step in processing pulse products is cleaning the raw product once it has been harvested. In cleaning, the goal is to remove any foreign material, adhering soils, dust, chaff and fungal spores that are attached to or mixed with the seed. Cleaning facilities also usually grade the seed, primarily based on size, color and absence of visible damage or infection.

There are a multitude of facilities in North America that clean pulse seeds, which vary in size and technology. Some producers own and operate small-scale cleaning machines using basic technology such as gravity tables and aspiration. In contrast, there are a number of large, highly sophisticated cleaning operations that can process thousands of tons of seed in a single day.

Color Sorting

Color sorting is another means of adding value to pulse seeds. It also makes them more attractive to consumers. Advanced technology in sorting facilities is used to ensure a uniform supply of top quality seeds in terms of appearance and shape. Color sorting uses ultra-violet light to differentiate seed coat colour as seeds pass through the machine. The technology is relatively expensive (approximately $500,000) and only large processors possess it. Currently only a few Saskatchewan processors have installed this equipment in their production facilities.

After cleaning and/or color sorting, pulses can be sent directly for bagging, canning and feed purposes. They can also be sent for further processing, such as dehulling, splitting, recleaning and milling.

Dehulling

De-hulling facilities separate the hull of the seed (outer shell) from the rest of the seed. The hull reduces quality of the product, especially when milled for flour. Although hulls possess no real nutritive value, they are an important source of insoluble fiber. The hull also serves as a protective cover for the seed and is often required for seeds that are being exported out of Canada. Dehulled lentils and beans can then be sent for milling into flours, while dehulled chickpeas can be sent for processing into whole seed products such as toasted, puffed or sugarcoated snacks.

Splitting

Once the seed has been de-hulled, it is common for pulses to be split. The split pulses are then separated using a sieving method, while the hulls of the seed are aspirated off. In some cases this process must be repeated several times until all of the pulses are de-hulled and split. Split products can be bagged and sold for retail consumer use or they may be used to produce other consumer products. Split pulses are often used by processors in stews and soups because they cook much faster than whole pulses.

Polishing

Pulses that are not packaged for retail consumption may also undergo a process referred to as "polishing." Polishing consists of treating de-hulled pulses with oil and/or water. Products can then be packaged for consumption.

Milling

Through milling, cleaned seed is ground into flour using a hammer, pin, and/or roller mill. Flours can be made from whole seed, dehulled whole seed or dehulled, split seed. Consumers usually prefer dehulled pulse flour as the bitter flavour, typical of pulses, is minimized. The flour is then packaged and sold to either the retail or ingredient supply market. There are many milling facilities in North America, varying in size and level of technology used.

Micronization

Micronization refers to an infrared heat treatment applied to whole tempered grains and pulse seeds. Micronization processing results in cell wall fractures that facilitate water penetration and under certain conditions some starch gelatinization. Both of these characteristics contribute to a shorter cooking time, allowing these products to be more consumer-ready. Micronization technology is relatively expensive and only large facilities are able to employ this technology cost effectively. InfraReady is the only processor in Saskatchewan that currently uses micronization and is able to process all pulse types.

Canning

Canning refers to sealing and sterilizing goods in tin cans and jars. This process allows food products to be conveniently stored and used at a later date. It increases the shelf life of food products exponentially. The canning process involves soaking the pulses for several hours, blanching them, filling the cans, and heating and sealing the can. Different brining solutions and heat conditions can be used with this procedure.

Products such as soups, stews, ready-to-eat foods and the pulse seeds are canned. The majority of canning facilities work contractually and can for themselves as well as for other companies. They often process different products at different times of the year to reduce the unit cost of their canning line. For example, a company may can peas and chickpeas in autumn and can black beans for an overseas buyer in the winter. Canning technology varies among processors and in North America there are both old and new companies that represent both large and small-scale operations. There are currently no canning lines in Saskatchewan as the cost is too high to implement such a facility.

Retort Pouch Packaging

Retort pouch packaging is used to preserve cooked foods for quick preparation. Cooked foods are put into the pouch, which is then sterilized using high heat and pressure. Retort pouch packed products have a shelf life of 18 months, minimize packaging waste and low package weight reduces transportation costs. Retort pouch packing generally serves the value-added easy to prepare foods market and is generally aimed at higher price point market segments. Examples or retort pouch packaged products include noodles and sauce, snack foods and certain cat food.

Freezing

In the last fifty years freezing has become an increasingly popular way to preserve consumer-ready foods. To date, many pulse products have been preserved using freezing.[52] There are at least seven different freezing methods associated with various products. These various methods result in differing operating and fixed costs, raw material requirements and types of end use products. Freezing methods currently being used include:

- Conventional air-blast
- Air-blast and conveyor tunnel
- Fluidized bed
- Liquid immersion (brine)
- Liquid immersion (freon)
- Spray
- Plate freezing

Puffing, Popping and/or Toasting

Puffing, Popping and/or Toasting technologies are often used to produce snack foods. They are based on simple technologies that were (or still are) used in homes and by street vendors in Asia. The chickpea is the most common pulse treated with these methods. Puffed, popped and/or toasted chickpeas are often mixed together with other ingredients to make snack food mixtures.

Drying

Drying describes the various methods used to remove moisture from foods. Additionally, vacuum and/or chemical treatments can be applied to cooked pulse products or the slurry of ground pulses during the aforementioned process. The dried product is then pulverized and made into cooked powder, which can then be marketed. There are many drying technologies employed for this process, which include spray, drum, fluidized bed, and steam jacketed drying. Numerous facilities in North America perform these processes.

[52] Although frozen garden peas and string beans are technically frozen pulse products, we are not including them because they are harvested and frozen at an immature state, unlike the mature pulse seeds referred to in this study.

Extrusion and Hydrothermal Processing

Extrusion of pulses consists of making dough from pulse flour or a dough mixture of pulse flour and cereal flours. The dough is then extruded (pressed) through one or more dies to make assorted shapes (e.g., spaghetti, macaroni). It is possible to build up steam or air pressure inside the extruder and/or to heat the extruder itself so that the dough mix is subjected to high heat and pressure before it is extruded into a cooler and/or lower pressure environment. The rapid change in condition causes the starches to expand, cook and or gelatinize to form light and airy material that takes on the shape of the die. Hydro-thermally extruded products are often used in snack food mixes, breakfast cereals, pet food or are texturized and used in meat substitute products.

Fractionation

Air-classification and wet processing describes a procedure that fractionates pulses into starch and protein-rich fractions. Pin mills or modified pin mills are used in combination with air classification systems. Essentially wet processing is identical to dry, but differs in that the seed is soaked in liquid before it is processed making it easier to use.

4.3. Pulse Processing in North America

There are numerous companies that process pulses in various forms for the North American market. There are very few companies, however, that focus specifically on processing pulses into consumer-ready products, aside from companies that produce canned and dry bagged pulse products.

The majority of companies processing pulses into consumer-ready products are doing so within a diversified product line. Essentially, pulses are not the only product they are processing. For example, companies with canning lines may produce a variety of soups including a lentil soup that is primarily pulse-based, a minestrone soup that uses some pulses, and a variety of other soups that use few, if any, pulses. By doing so, they are able to achieve significant economies of scope, utilizing their processing equipment for numerous products.

The market for large volume products, such as canned pulses and soups, is primarily controlled by large diversified food processors. There are many niche markets, however, where smaller companies dominate. This consists of companies that produce organic canned pulses and ethnic frozen entrees for example. Smaller companies are able to compete in many markets by contracting out their processing to facilities around North America, regardless of where the company is located. In many cases, location is of little importance to small companies as head offices are often located apart from processing facilities.

The majority of the processing companies using pulses are located in the U.S. This is true for both the broader market and processors focusing on specific niche markets, such as the organic, vegetarian and Hispanic markets. Additionally, the U.S. is a large producer of Hispanic, Middle Eastern and Indian foods, largely due to the greater influx of immigrants into the country. Challenges that can be cited to explain limited domestic production of ethnic foods in Canada include:

- Many ethnic consumers prefer imported products because of perceived "authenticity", taste, brand loyalty and familiarity
- Processors with a stronger direct contact to their markets may have a better understanding of consumer desires
- There is a price factor involved: Labour costs and standards are lower in foreign countries, making it cost effective for them to produce their products

In surveying processors, focus was placed on companies that used products grown in Saskatchewan, such as lentils, chickpeas, peas, and great northern beans. Less emphasis was placed on processors that primarily used black, pinto and kidney beans or varieties of pulses not grown in Saskatchewan. An extensive list of processors is available in Appendix C and a list of products found in the North American market is included in Appendix D.

Non-Specialty Processors in North America

Companies that process pulses for the broad, non-niche market in North America are generally large. Most products sold into this market are bagged and canned as whole pulses or made into greater value-added products such as soups. Processors in this market include companies such as Unico, Primo, Heinz, Campbell, and Habitant. Unico and Primo can pulses and use them in soups. Other processors such as Heinz use pulses, specifically beans, in sauce, chili and other products. In addition to these name brand processors, there are also numerous companies, which are essentially custom canneries. These companies produce products for other processors and retailers private labels under contract.

By processing a variety of products, large companies are able to achieve significant economies of size and scope. Additionally, these companies are also located in close proximity to large markets. As significant weight is added in canning, their location is advantageous for them as transportation costs are minimal. For a list of general processors of pulse products refer to Appendix C, section C.1.

Interest Box 4: Unico Foods

Unico was established in 1917 to cater to Toronto's growing Italian community. Today, the company is one of Canada's leading marketers of Italian products. In 1997, Sunbright Canning Ltd. purchased Unico.

Unico packages cello-packed dry chickpeas, beans and peas and cans a variety of beans, chickpeas and lentils. The company also produces minestrone, lentil and pasta n' bean soups for the retail market. Food service sizes of canned product are also available in 2.84 L sizes of chickpeas and red kidney beans.

Processing a variety of products allows Unico to utilize excess capacity on their canning line and achieve economies of scale. Unico currently purchases cleaned and graded lentils, peas and chickpeas from Saskatchewan. Unico prefers the pulses it procures in this form as they have the necessity equipment to further process the raw product.

Although it is difficult to compete with large-scale processors, some small companies sell pulse products into the broad, non-specialty market. These companies often target higher-value-added segments by differentiating themselves and their products from the large volume producers. An example is Bear Creek Foods from Utah. Bear Creek produces soup mixes, which are marketed through both retail and specialty stores. The company differentiates itself by producing high quality homemade tasting products in innovative retort packaging.

Hispanic Processors in North America

There are many processing companies in the Hispanic foods market - primarily in the U.S. Many Hispanic foods have also crossed over to the mainstream and products such as salsa and tortilla chips have become common fare among many non-Hispanics. Major processors in the Hispanic market include Goya Foods, Old El Paso, Don Miguel and Hormel. In Canada, Old El Paso is the most common Hispanic product line found on grocery store shelves.

Interest Box 5: Goya, Ruiz and Don Miguel Foods

Goya
Goya was founded in 1936 by Spanish immigrants Prudencio and Carolina Unanue, who began by importing authentic Spanish products, such as olives, olive oil and sardines, and selling them to New York's growing Hispanic population. More than 60 years later, Goya Foods, Inc., has become America's premiere purveyor of rice, beans, seasonings, nectars and authentic Latin specialties. Goya Foods, Inc., operates more than 13 facilities throughout the U.S., Caribbean and Europe. Goya products are distributed throughout the United States and can be found at the majority of U.S. supermarkets and small bodegas, as well as on Internet ordering sites.

Goya offers a variety of products targeted at the Hispanic market. However, mainstream Americans also purchase their products. Their Hispanic products, for example, can be used by various Hispanic backgrounds (Cuban, Mexican, Central & South American and Caribbean). The company produces over 1,000 different products, including 23 rice products, and 30 different types of beans and peas. They also produce ready-made food items such as soups and frozen entrees.

Ruiz Foods
Ruiz Foods is the largest producer of frozen authentic Mexican food and has been in operation for 37 years. The company is located on 43 acres of the San Joaquin Valley in Dinuba, California. Its warehouse is 203,000 square feet and it manufactures more than 175 products. Ruiz remains a privately held corporation that manufactures and sells convenience and microwaveable frozen Mexican food marketed under the El Monterey, Prima Rosa and Ruiz Family brands.

Product lines feature a complete selection of burritos, taquitos, enchiladas, tamales, and Mexican appetizers. They are sold across the United States though retail grocery stores, convenience stores, warehouse clubs, vending, foodservice and industrial accounts. Their newest product developments include El Monterey Family Classics Flour Taquitos (beef or chicken). These are hand held treats with large filling (snack versus meal item). This new product development follows the trend for convenience food products.

Don Miguel Foods
Don Miguel is located in Anaheim, California and has been in operation since 1908. Products are sold at grocery stores and are found in the freezer, deli, service or meat departments. They can also be found at convenience stores and club stores, such as discount warehouses. Don Miguel's products are convenience and ready-made meals. Product lines include appetizers and snacks, burritos, enchiladas, chimichangas, tamales, corn tortillas and pastas and sauce. There are various flavors for each product (chicken, bean and cheese, beef, etc.). New products include a ready-made rice bowl meals and 98% fat free ready-made meals (Lean Ole line).

The types of pulses used in the Hispanic market are predominantly pinto and black beans, though a variety of other pulses are also used. The product mix carried by most companies varies from canned beans and bean pastes to ready-to-serve entrees. For a list of Hispanic food processors refer to Appendix C, section C.2.

There are several small processors of Hispanic products that use pulses as ingredients. Many of these companies have fewer than ten employees and sell mainly to the local market area. Many of these will stay small and hold a loyal customer following but some may grow into new versions of Goya or Ruiz Foods as market demand increases.

Indian and Middle Eastern Processors in North America

North American processors targeting the Indian and Middle Eastern market are generally small. Large multinational food processors have not yet moved to contest the North American market in a significant way and many of the products available to the North American market are imports

Available products range from bagged pulses and pulse flour to high value-added retort pouch packaged and frozen entrees. The array of products in this market also includes canned curries and dahls, curry pastes and a variety of other products including snack foods that contain roasted or popped pulses such as chickpeas and lentils.

Processors target different segments within the Indian market. First generation Indian consumers are likely to be cost-conscious scratch cookers that use pulse flours and dried pulses. Second and third generation Indian consumers, who often have high incomes and are well educated, can be targeted with greater value-added products (e.g., heat and serve curry or canned dahl). There appear to be a lot of opportunities in this product segment for many products as long as you can find the market and discern their needs. For a list of Indian and Middle Eastern food processors refer to Appendix C, section C.3.

Interest Box 6: Tasty Bite Foods and Preferred Brands

Preferred Brands is a small distributor located in Connecticut. It owns its own processor, Tasty Bite Foods, which processes easy to prepare products for the Indian market. The tasty Bite Foods factory is located in India due to the low labor costs, which outweigh any locational advantage in North America according to its owners. Using HAACP (Hazard Analysis and Critical Control Point) systems, Tasty Bite prepares vegetarian, dehydrated retort pouch packaged products for the North American market. Two years ago, Tasty Bite and Preferred Brands made the leap to producing products that included meat. Because of problems sourcing high quality meat in India, the meat products are contracted out to a plant in Seattle for production.

Because of the lack of easy to prepare foods for the Indian market, Tasty Bite has had supermarket chains come to them asking to sell their products in their stores. The products contain high value-added content as they are sold to high-income, highly educated consumers who may be non-Indian or second or third generation Indian.

Some North American processors and their products include:

- Sadaf Foods and Westpoint Distributors – pulse flour.
- Jyoti and Pataks – canned dahls, curries and curry pastes.
- Indian Life Foods – snacks, Indian food bread, appetizers, roasted pulses and meals.
- Tasty Bite Foods – dehydrated retort pouch packaged ready to serve meals.

Please note that additional processor information is available in Appendix C.

Organic Processors in North America

The organic market is undergoing both growth and change at the present time. Demand for organic products of all kinds, including pulses and pulse products, is growing rapidly. Increased demand is leading new entrants into the processing market. Most processors are still small, but large multi-national food processors are beginning to move in. General Foods recently purchased part of Cascadian Farms, an organic processor. In addition, the Hain Food Group has bought out a number of small organic food companies such as Health Valley, Westbrae Natural, Earth's Best, Little Bear, DeBoles and Arrowhead Mills. The majority of processors, however, are small. They are able to stay competitive, in most cases, by contracting processing to large plants elsewhere in North America. By doing this, they reduce financial risk. For a list of organic food processors see Appendix C, section C.4.

Companies in the organic market process almost every type of pulse or pulse ingredient that non-organic processors do. This includes product specialty areas in the Hispanic and Indian markets such as refried beans and easy to prepare Indian entrees. There are also an increasing number of frozen and easy to prepare organic entrees on the market. Organic processors use pint, black and kidney beans as well as significant amounts of lentils and chickpeas.

Some organic processors and the products they produce include:

- Pro Organics – Bulk dried pulses, smoked lentils.
- American Prairie – Canned lentils.
- Cascadian Farms – Frozen entrees that include pulses.
- Hain Food Group – Casbah lentil pilaf, hummus and falafel mix, Garden of Eatin' black bean tortillas and chapati.
- Eden Organics – Organic canned pulses and frozen entrees.

Interest Box 7: American Prairie

> American Prairie is located in Unionville, New York and supplies a variety of products, including pulses, to the organic market. American Prairie owns a plant in Morehead, Minnesota that cleans and grades pulses. The cleaned pulses are then sold in bulk form both domestically and internationally, and a portion is also canned for sale in supermarkets and health food stores. The canning is contracted out to a plant in Denver, Colorado. Location is not an issue for canning because of the specialized nature of the market and low overall volumes that would make development of a canning plant, solely for this purpose, prohibitive.

According to Pro Organics, prices are falling for both primary and final products, though demand is still robust and there are still few players in the market. Staff of Pro Organics said they buy Saskatchewan pulses from sellers in California. Saskatchewan pulses are also sourced from a distributor in Michigan who doesn't process the product, but acts as a broker selling from a Saskatchewan processor to buyers elsewhere.

Hain Food Group noted that their canned organic pulses were their strongest growing product line that contained pulses. This is due to increasing vegetarianism. Also, prepared products such as their Nile Spice dried soup cups and Casbah pulse and grain mixes were growing slowly. [53]

Interest Box 8: The Hain Food Group and Cascadian Farms

The Hain Food Group
Hain Food Group is one of the largest natural foods processors. The Hain Group incorporates 23 different brands including Hain Pure Foods, Celestial Seasonings, Nile Spice, Casbah, Health Valley, Westbrae Natural, Westsoy, Little Bear Organic Foods, Arrowhead Mills, DeBoles, Garden of Eatin', Terra Chips, Breadshop Natural Foods, Earth's Best Baby Food, Weight Watchers, Estee, Harry's Premium Snacks, Boston's, Kineret, Hollywood, Featherweight, Alba and Farm Foods.

Hain markets, distributes and sells natural, organic, and specialty food products under brand names, which are sold as "better for you" products. The product categories encompass natural and organic foods, medically directed foods, weight-loss, snack, and kosher foods. The products are sold primarily to specialty and natural food distributors, and are marketed nationally to supermarkets and natural food stores.

Cascadian Farms
Cascadian Farms was founded in 1972 and was created based on promoting the sustainable practices of organic farming. From their beginnings as a fresh organic produce supplier to the Seattle market, the company has grown to encompass worldwide sales in eight major food categories. Over 150 products are sold throughout the U.S.
Cascadian Farms products include entrees, veggie bowls, veggie quick starts, organic frozen fruits and organic frozen vegetables.

Interest Box 9: Cedarlane Natural Foods Inc.

Cedarlane is based out of Carson, California and has been producing vegetarian cuisine since 1981. Cedarlane produces a number of low fat vegetarian frozen dinners and entrées. Products include a roasted vegetable and cheese burrito, low fat bean, cheese and rice burrito and three-layer enchilada pie. Cedarlane products are carried by natural food stores and select supermarkets in the U.S., Canada and Europe.

[53] In Saskatoon, Nile Spice fried soup cups sell for $1.99 for a 54 gm. Cup. After water is added the ready to eat product consists of one cup of soup for $1.99 plus hot water. If the demand for this product is growing slowly, it could easily be because the price point is too high and not because it is a bad product idea.

Vegetarian Processors in North America

The vegetarian market must also be considered in tandem with the organic market as they target many of the same consumers. Most vegetarian foods are currently made from soy. Large vegetarian processors include; Nasoya, Vitasoy, Soyco Foods, Spice of Life, Veggieland!, and Cedarlane Natural Foods Inc.

Because of the increase in demand for vegetarian foods, the number of processors is growing. The majority of new products are home meal solutions and ready prepared entrees.

Processing Assistance Available for Saskatchewan Processors

Due to the challenges in creating and market new food products, viable and affordable assistance is available locally through the following resources:

- Saskatchewan Food Industry Development Centre – Saskatoon
- Saskatchewan Abilities Council – Saskatoon

Saskatchewan Food Industry Development Centre

The Food Centre is a non-profit corporation partnering with Saskatchewan Agriculture and Food, The University of Saskatchewan and the Saskatchewan Food Processors Association. Specialists at the Food Centre have expertise in food processing. They offer free initial consultations, which is helpful for clients who are unsure if their idea is potentially profitable or even realistic. They offer newly renovated facilities and the resources an individual needs to develop their product ideas. Some of the services offered include:

- Business Development Services (information on business plans, exportation rules and regulation as well as marketing assistance)
- Interim processing using supplied machinery
- Access to packaging technology
- Technical services, such as:
    - Production formulation and testing
    - Safety and sanitation information including access to the HACCP Systems
    - Improved quality through the Good Manufacturing Processes (GMP's)
    - Information on the International Organization for Standardization systems (ISO)

Once a prototype product appears to be viable, Food Centre specialists can assist in all aspects of plant design from site selection to mechanical specifications that will be beneficial to production as well as compliant with all government regulations. The Food Centre also offers the services of partner businesses including the Saskatchewan Abilities Council, which offers packaging, warehousing and distribution services.

Saskatchewan Abilities Council

The Saskatchewan Abilities Council facilities are currently broken into two divisions:

- The processing area, which is approximately 12,000 square feet in size and made up of four self-contained clean rooms and packing lines
- The co-packing and warehouse area, which is approximately 10,000 square feet is size

Within the processing area, conventional and organic products are packaged into retail, food service and bulk packages. This is accomplished with automated form and fill machines, four automated pouch packagers and various sealing and/or vacuum packaging machines. In this area dry goods in various sizes (10 grams to 25 kg) can be packaged. The co-packing and warehouse facility consists of three shrink-wrap lines and heat tunnels to accommodate the co-packing of finished products and direct distribution throughout North America.

Currently the Saskatchewan Abilities Council Packaging Department has been certified under the American Institute of Bakers Certification and the Organic Crop Improvement Association. The department is currently in the process of acquiring HACCP Accreditation Certification. The packaging department also offers a service of sourcing the packaging required for the client's products, for example bags, boxes, cases, containers, etc. and will also format a Quality Control System for each individual product.

5.0 OPPORTUNITY IDENTIFICATION

The following sections outline the opportunities and challenges related to developing processing of the product categories defined in Section 3.3. The value-added potential, market characteristics, ease of market entry, processing considerations, and advantages and constraints to processing in Saskatchewan are examined for each product category.

5.1. Bagged Pulses

This category includes pulses bagged for sale to retail and wholesale markets, which have been cleaned and generally size and color sorted, in whole or split form. Bags containing 25 kg or more are sold to brokers, dealers, wholesalers and bulk food retailers in North America. Brokers and wholesalers sell their product to the North American or international marketplace. Retail product is usually packaged in 0.5–2.0 kg bags and sold in mainstream supermarkets and health and natural food stores.

Value-Added Potential

Generally, margins per kilo increase when pulses are put into small consumer-ready bags, color sorted and split. The value-added potential per kilo is low but represents the simplest and greatest absolute opportunity to add value because volume is so great. The opportunity to add greater value exists within the specialty market; specifically the organic market.

Market Characteristics

The wholesale market is growing as improved production technologies allow Saskatchewan producers and processors to offer pulses at competitive prices. Currently, brokers, wholesalers, distributors and processors purchase large volumes of pulses from Saskatchewan. At the retail level there is currently no dominant market leader or firm in this segment. Many retail-sized bags are not branded and/or are sold as "in-house" brands.

Ease of Entry

There is little product differentiation in this segment. The apparent differentiation that exists is on the basis of service to customers, i.e. long-term relationships and trust. There is increased competition within Saskatchewan, however, as more cleaning and sorting plants are being built. Because of the proliferation of new plants, business plans, engineering drawings, financing, etc. are quite easy to obtain, build and/or implement. Entry into industry is quite easy providing some access to capital ($100,000 to $5 million).

Processing Considerations

Accessibility

The plant must be easily accessible by road and close to power lines. To lower transportation costs, the plant should be located near rail lines.

Packaging

The product will be transported long distances and will be shifted several times. Therefore packaging must be sturdy and reliable as well as visually attractive for retail consumers. For example, split pulses are usually sold in bags, as opposed to bulk, to reduce damage during handling.

Advantages to Processing in Saskatchewan

- Cleaning and bagging plants in rural areas have access to cheap land and moderately priced labour
- New varieties of pulses are being grown in Saskatchewan. Their increasing availability will enable new and existing plants to increase their production volumes. Some of the newer pulses include Desi chickpeas, black beans and red lentils
- Dry cold weather, characteristic to Saskatchewan, makes the long-term storage of pulses very easy
- Generally no pesticides are needed to control pests in stored pulse seeds
- Pulses in this form are very easy to ship to customers despite long distances because they are hard, dry, pack well together and can be shipped in re-sealable, sturdy packages

Barriers to Processing in Saskatchewan

- Individuals may have difficulty raising sufficient capital to build a plant
- New entrants may find it difficult to penetrate the market unless they have lower cost processing plants and/or connections to end-users who are presently accessing pulses from regions with higher costs or declining productions levels
- For success in the organic market, specific efforts must be made to ensure identity preservation within the supply chain. It is not clear whether Saskatchewan processors are able to guarantee stringent identity preservation at this time

Opportunity Identification

- **Scope exists for additional cleaning and bagging pulse plants**
  Particularly for areas that do not have such facilities within a 30 - 50 mile radius
- **Potential exists for new and cleaners and baggers of organic pulses**
  Providing they can properly preserve the organic identity
- **Contract opportunities**
  They are available with end users that have a very specific end use in mind (e.g., supply maple peas for bird feed) as well as opportunities to contractually process products such as, retail size bags of "house brand" products (e.g., President's Choice bagged lentils)[54]

[54] Ingredient supply potential will grow as industry expands competitively vis-à-vis other pulse growing areas. Potential for Saskatchewan based processors to deal directly with larger overseas processors of pulse-based products.

5.2. Ground Pulses

This product segment includes flours produced from chickpeas, lentils, peas, beans or pulse mixes. These products would either be sold to large users, in bags of 25kg or more, or at the retail level, in bags of 0.5 to 2kg, or from bulk containers.

Value-Added Potential

Ground pulses offer a somewhat higher added value per kilo than whole seeds, however, market volume is only a small fraction of the whole pulse seed market. There is opportunity for greater value-added within some specialty markets, such as the organic market.

Market Characteristics

The largest group of consumers at the retail level appears to be Indians and mainstream consumers demanding Indian products. These consumers combine chickpea or lentil flour with wheat flour to make bread substitutes and desserts. These products are also sold in the gluten-free market. Market demand is currently being met by a variety of small mills.

Ease of Entry

Grinding equipment can be purchased in a variety of sizes. Small tabletop flourmills can be purchased for under $1,000 and allows the entrepreneur to test products before making large capital investments. If the product shows potential, many sizes of mills are available and millions of dollars could be spent if marketed conditions warrant growth. Another option is temporarily contracted equipment or production from existing millers, which keeps initial capital and management for processing costs to a minimum. Ground pulse flour will be difficult to differentiate from existing products, which means it will have to be distinctively marketed, i.e. promoting features such as cleanliness and purity as a Saskatchewan product. Organic products will have the advantage of also attracting the organic consumer market.

Processing Considerations

Dehulling

Consumers prefer flour made from dehulled pulses. As such, the mill must have access to this equipment to ensure the final product meets consumer preferences.

Packaging

In humid locations, pulse flours have a relatively short shelf life compared to whole seed pulses due to increased chance of molding, insect infestations and/or oxidation. If pulse flour is shipped long distances and remains on the shelf for long periods of time, it should be packaged in moisture and leak proof material.

Advantages of Processing in Saskatchewan

- The clean pure image of Saskatchewan pulses and the subsequent flour from them could be promoted to contrast with pulse flours manufactured overseas or in large cities
- Small pulse flour milling operations are simple additions to existing cleaning and bagging operations

Barriers to Processing in Saskatchewan

- Relative to whole pulse seed, pulse flour is somewhat more bulky, messier to both handle and transport and requires more expensive packaging, which may be difficult for Saskatchewan processors to source/produce
- Grinding is a relatively simple operation, which heightens the difficulty of penetrating urban markets in North America because of numerous direct competitors. Saskatchewan processors may have difficulty breaking into this market

Opportunity Identification

- **Local entrepreneurs could experiment with producing pulse flours in pure form**. These products could also be blended with spices or other flavoring agents at relatively low costs and limited financial risk. Products that show viable potential could be innovatively packaged and test marketed

5.3. Products Derived from Ground Pulses

The main ingredients of these products are pulse and/or wheat flours with the addition of small amounts of spices, herbs and/or other minor ingredients such as oil or salt. Some examples of products relevant to this category include: pre-formed pappadums, roti, specialty dough mixes, pea pastas and thickeners.

Value-Added Potential

There currently is relatively high potential price per kilo for the production and marketing of ground pulse products, but volumes will likely be small.

Market Characteristics

The major North American markets for these products are large urban centers with high ethnic concentrations. Most purchasers will be second and third generation immigrants and working women. A smaller, but growing, market is adventuresome baby-boomers and Generation Xer's who seek new taste sensations and alternatives protein sources.

There are a number of smaller processors producing ground pulse products, however to our knowledge, no multi-national food company (e.g., General Foods) is producing these types of products in North America. Current processors sell their products in small ethnic stores or the ethnic aisles of larger supermarkets. Ethnic stores are generally their first choice because of the general absence of shelving fees and low production requirements. Other processors sell direct to ethnic restaurants where their product can be tested and promoted economically.

Ease of Entry

Major capital investment is not always required as there are opportunities to buy low cost or used processing lines which are able to support small scale production. However, large volume machines, such as for pastas, can present significant financial constraints on new or developing

companies. An estimated cost of $100,000 to $5M to startup a production line will be a large obstacle for individual entrepreneurs with limited access to funding. Contracting is often possible to minimize initial costs and processing management.

Processing Considerations

Technology

The technology needed to make these products basically consists of mixing apparatus, forming machines and packaging systems. These machines are available in a considerable range of price and complexity levels. The more complex lines, such as pasta, require high throughput to make them cost effective.

Shelf Life

When processing large quantities of product, shelf life must be considered. Managers and processors of ground pulse products must consider methods of minimizing spoilage and increasing shelf life. Therefore, the management team of such a line must be well-educated in food processing techniques as well as marketing theories.

Advantages of Processing in Saskatchewan

- Building, labor and electricity costs as well as manufacturing and processing corporation tax rates are generally lower than larger North American centers
- Promotional advantages lie in the fact that the product was processed in Saskatchewan, an area with a reputation of being clean and pristine

Barriers to Processing in Saskatchewan

- It will be difficult to organize distribution of product from Saskatchewan as opposed to larger urban cities near final customers
- It may be easier to produce products for the ethnic market in a location closer to the populations. There one could acquire a better understanding of market desires
- High product volumes are necessary to supply large grocery store chains, which may be difficult for Saskatchewan processors

Opportunity Identification

- **Opportunities exist to supply flour as an ingredient to processors in this segment** However, quantities will be small because most processors are small

5.4. Whole Processed Pulses

The main ingredient in these products is whole or split pulses with minor ingredients like water, salt and flavorings. Products include: canned pulses, as well as puffed, popped and/or roasted chickpeas, lentils, peas and beans.

Value-Added Potential

The amount of value-added for canned products is unquestionably more than a raw product. Identity preserved organic canned products add higher value.

Market Characteristics

Canned pulses, which are generally produced by large food processors, are the largest product segment in this market. There is less scope for innovative products and marketing relating to canned goods lines. Unfortunately, current volumes are experiencing low growth rates because they may be viewed as old fashioned compared to frozen products or products sold in retort pouch packaging. Despite this, one processor interviewed reported increased sales of canned pulses due to increasing vegetarianism. The market for canned organic pulses is also growing.

A separate, largely untapped segment is the snack food market. There are numerous sub-markets markets including airline snack foods, sports games snack foods, movie theatre snack foods and cocktail party snack foods. Snack food products are sold through a wide range of distributors, such as supermarkets, fund raising schemes, home parties, etc. Their packaging is as broad as the products themselves. Despite abundant competition, there are continual additions and expansions to the snack food market. Puffed, popped and roasted pulse products in North America are currently reaching a relatively small ethnic oriented market but this could expand rapidly as baby boomers and Generation X search for new taste sensations and healthier snack food alternatives.

Ease of Entry

It may be difficult to compete with large-scale existing canning operations because of high capital investment requirements. Small and/or used lines cost in the range of $100,000 to $1M. Larger lines can cost considerably more. Contracting production is possible; however there are limited resources in Saskatchewan, thus deals may be have to be made either in another province or internationally.

In the snack food market, the biggest challenge is accurately defining the target market and the product characteristics, packaging and price points needed to break in. Once the target market is selected, the mechanical systems needed to produce such products are generally available. It should be feasible to affordably break into a market by promoting the healthiness and taste appeal of some types of popped, puffed and toasted pulses.

Processing Considerations

Consistency

Processing is relatively simple but may require considerable skill by operators to achieve a consistent desirable product. Relatively small and/or used lines can be chased, although initial costs are quite high.

Ingredients

Producers must consider the price and accessibility of the flavoring ingredients (salt, spices, etc.), which will be used in small amount to improve taste and/or shelf life of end product.

Advantages of Processing in Saskatchewan

- There are no strong advantages for canning operations in Saskatchewan
- The mechanical systems needed to produce snack foods in Saskatchewan are generally available
- Building, labor and electricity costs as well as manufacturing and processing corporation tax rates are generally lower than larger North American centers
- Promotional advantages lie in the fact that the product was processed in Saskatchewan, an area with a reputation of being clean and pristine

Barriers to Processing in Saskatchewan

- Most potential consumers are located far from Saskatchewan
- Product development and marketing information can be more of a challenge to acquire based on our location
- No canning lines currently exist in Saskatchewan
- Locating canning facilities in Saskatchewan would pose disadvantages relative to canning operations near large urban areas due to the high costs involved with transporting heavier final product
- There are large economies of size and scope in canning. Existing canneries in other regions often have strong advantage over Saskatchewan in these aspects of processing
- There is limited experience in Saskatchewan for production and marketing of snack foods
- Startup capital must be sufficient enough to cover costs if marketing initiatives progress slower than planned
- Current primary processing within Saskatchewan may not be able to guarantee the proper identity preservation necessary to capture potential value-added

Opportunity Identification

- **Opportunities lie in the creation of new snack foods such as theatre and airplane snacks** to replace traditional peanut snacks. Hiker and canoeist trail mixes could represent another target market as could snack foods for school vending machines and school lunch programs[55]

5.5. Processed Pulses Mixed with Other Ingredients

This category includes products, which integrate processed pulses with other ingredients to develop an end product. Processed pulses represent, one or more of the ingredients in these

[55] Prospective producers of such products will need more extensive and detailed market studies before a complete list of product ideas can be developed

products, however, they may not be the dominant ingredients. Canned products in this category include soups, stews, pork and beans, chili, refried beans and curries, dried soup mixes, some bottled salsas and sauces, canned or frozen fillings for samosas, various types of dried or canned sweets and desserts, and an assortment of frozen and retort pouch packaged ready to serve entrées and appetizers.

Value-Added Potential

There is substantial value-added potential per kilogram for products that combine pulses with other ingredients. If pulses are not the main ingredients, limited volumes will be required for production. If the additional ingredients used are grown or procured in Saskatchewan, the opportunity exists to support other local ventures and initiatives. A processing plant that produces pulse products combined with other ingredients will be able to support large numbers of employees at both the processing and marketing levels.

Market Characteristics

A large percentage of current products are sold through smaller scale retailers including ethnic stores and small supermarkets. Other products are sold directly into the hotel, restaurant and institution trade or over the Internet.

Existing large canned product processors maintain market concentration by canning twenty to forty different product lines. Some of these canning companies will do custom canning for smaller firms whose specializations may be in product development and marketing as opposed to the actual processing. These firms contract the blending, cooking and canning to larger, established processors. Despite the many product lines that are presently being products, there are some gaps in product types, such as frozen stews and curries, and many others that have to be investigated.

The existence of many different sized companies and existing lines of products may make it difficult for a new entrant to gain market share. On the other hand, the existence of many marketing channels and outlet types may ease the entry of new or novel products into the market. Based on the limited competition currently available it would be simpler to develop frozen products such as assorted meatless curries.

Ease of Entry

Contract processing can considerably reduce the initial financial risks involved in entering this market segment. Significant funding, approximately $100,000 - $2 million, may be required to successfully launch a new line at a volume level to justify the commercialization of processing. This is resultant of the substantial marketing and promotional costs involved for both new and established production companies. One release from high costs is that large retailers may waiver listing/shelving fees for new and novel products that are not offered by competitors.

Freezing lines are generally both less expensive and less complicated than canning lines although many variations and possibilities exist for both lines. Simple blending of dry pulses with other dry ingredients to create products such as soup mix or trail mix is quite inexpensive relative to canning or freezing processes.

Processing Considerations

Contracting

There are currently many custom-canning operations that have underutilized lines and could take on additional product lines. Unfortunately, many of these facilities are not located in Western Canada. Developing new blending, cooking and canning lines can quickly become technologically complicated and expensive imposing high utilization rates to make them cost effective. This is why contracting these processing operations is often done with existing processors.

Technology

Other challenges of creating a new line include expensive and technologically challenging operations management and repairs. The required amounts of technological management are highest with canning lines, lower for freezing lines and lowest for dry, blending lines.

Marketing

In many cases managing the marketing of these products would be more challenging than the actual production, especially if contract production is carried out.

Advantages of Processing in Saskatchewan

- Building costs, labor, electricity and heating costs as well as manufacturing and processing, corporation tax rates in Saskatchewan are somewhat lower than in most other locations in North America
- The absence of major food processors in Saskatchewan developing similar pulse mixed with ingredient products, allow potential entrants ease in receiving support and assistance from organizations such as the Food Center at the University of Saskatchewan
- High value-added to weight ratios in some products reduces locational disadvantages. Some processing types, such as retort pouch packaging, reduce both weight and size for transport
- Promotional advantages lie in the fact that the product was processed in Saskatchewan, an area with a reputation of being clean and pristine

Barriers to Processing in Saskatchewan

- Some products, such as canned products, will see an increase in weight due to water absorption while cooking, which will increase transportation costs, a cost area in which Saskatchewan is already challenged
- Developing product lines and marketing channels are somewhat more difficult for Saskatchewan based firms because we are far from the majority of large North American markets
- The cost of packaging is relatively higher in Saskatchewan than in Eastern North America, which affects the usage of higher end and/or unique packaging

- Pulses may only be a small part of the product and other products may have to be imported from long distances
- Few freezing lines exist that could handle this type of product
- No canning lines currently exist in Saskatchewan

Opportunity Identification.

- **Scope exists to supply ingredients in greater value-added form to processors**
- **Opportunities exist in producing frozen stews and curries**. .
  These items are relatively unknown as a product category, but they freeze well
- **Opportunities exist for canned curries.**
  Canned curried products available in North America appear to be "overpriced" considering the size of the container (e.g., 400g tin for $3-5). If the main ingredients are pulses, there appears to be an opportunity to produce a competitive tasting product with a considerably lower price point
- **New and novel ready-to-serve products lines (freeze-dried soups, snack mixes, etc.)** could be marketed on a trial basis through large retail outlets without substantial listing/shelving fees if competing retail chains do not have the product
- **The scope to develop new products for niche markets is quite large, i.e. the organic or vegetarian market.** Large multi-nationals are not currently active in many of these product areas

5.6. Pulse Fractionation

Pulse fractionation involves using various components of a pulse seed for use in the development of new products. High and low protein pea flour, fibers and coatings extracted from the skins of pulses, pulse starches and various proteins, amino acids for animal feed, chemical compounds extracted for use in nutraceuticals and functional foods, special fatty acids are all usable components.

Value-Added Potential

The potential for adding value is very high but likely to utilize only a small percentage of total pulse crops produced in Saskatchewan.

Market Characteristics

As research and development work continues in the areas of bio-based materials, many opportunities are emerging. Fractionated products are generally only one of several ingredients used to produce a secondary product. The majority of fractionated products are sold to industrial clients. Although the cost of the fractionated product is an important consideration, technological data and support from the fractionated pulse producer may be even more important than price when selling the product. Most products sold move from business to business and not through a traditional retail system. The suppliers tend to be large multi-national corporations or small, very specialized, science oriented firms. Fractionated pulse products, which can be

marketed as natural or environmentally friendly, can set higher price points. Today's consumers will pay more for products perceived as natural, for example a consumer will pay more money for an adhesive made from fractionated flours than an adhesive made from a petroleum derivative, based on environmental rationale.

Ease of Entry

A strong technological background and/or substantial funding, $5-10 million, to build even a pilot plant will be needed to competitively enter the current markets. Full-scale fractionation plants can easily cost $30 million or more. In many cases, processors must be able to provide strong, on going technological advice and data to end-users. Relative to the amount of raw material that can be processed per day, capital and management skill requirements are high, however, contract processing can reduce these constraints considerably.

Processing Considerations

Processing Costs

By its very nature, fractionation produces several types of products or 'fractions', all of which must be sold or disposed of. To date many fractionators are plagued with several fractions that are of high value and easy to sell but large quantities of difficult to sell and/or low value fractions. If the low value fractions cannot easily be disposed of it poses financial challenges. They must generate enough profit from the small quantities of high value fractions to pay for all the raw material plus processing costs.

Technology

Fractionation is generally highly technological and uses complicated expensive machines. The machines require skilled operators as well as the finances and skills to keep them in good repair. This could pose a problem for locations far from large urban areas. There are several fractionation facilities, such as the POS Pilot Plant in Saskatoon, that will do contract fractionation of products. Such custom fractionation work allows startup companies to spend most of their financial and human resources on developing products and markets without tying up significant amounts of capital and skilled staff in actual processing operations.

Advantages of Processing in Saskatchewan

- Several fractionation facilities already exist to assist new companies. Companies, like POS, offer a wide range of technical possibilities in their pilot plant
- Building costs, labor costs, electrical and gas costs, manufacturing and processing costs, and corporate tax rates are somewhat less than in many other parts of North America

Barriers to Processing in Saskatchewan

- Most potential users of fractionated products are far from Saskatchewan
- The small size and limited complexity of the processing sector in Saskatchewan limits the potential markets for by-products of fractionation processes

- High value fractionation products may often require technical data and support as part of the marketing package. This may serve as a constraint because most end users are located outside of Saskatchewan
- Pulse fractionated products must compete, in most product lines, with soybean fractionated products which have already developed a strong base of support in market demand, supply, research results and capacity
- At the present time, the lack of extensive research on possible end uses of pulse fractionated products limits their commercial application
- The lack of knowledge on the part of both end users and potential investors limits the commercial size of the market

Opportunity Identification

- **At the present time, many possible market opportunities have not been developed** because the underlying research and development work has not been done. Possibilities in the future include creation of specialized starches for use in paper and textiles industries, mining, oil and gas industries; specialized proteins for use in nutraceuticals and functional foods and/or special fatty acids in adhesives and paints

5.7. Pulse Extrusion

Extrusion is a process, which produces assorted shapes, sizes, and colors of snack food ingredients, pastas, breakfast cereals, meat substitutes and fillers, pet foods and other diverse products. Products produced can be ingredients that are sold to processors for use in secondary products, or secondary products can be directly produced by extrusion.

Value-Added Potential

The potential to add value to a kilo of raw pulse is very high, however, volumes are not likely to be very big. Packaging and marketing are extremely important parts of maximizing the value-added potential for consumer-ready products, though the ingredient market will likely be much larger.

Market Characteristics

The majority of extruded products are likely to be used as ingredients in complex food products. Most of the final products are highly processed food products with major product lines dominated by multi-nationals. Extruded products could also be one of the ingredients in a snack food, breakfast cereal or pet food. In these cases, a marketing plan for direct sales to processors doing the mixing would be required.

Considerable scope exists to expand the range of extruded pulse based products providing money is spent on marketing and product development. Potential markets include consumers looking for meatless products and perceptually health, wholesome products like snack foods and breakfast cereals. Currently, multi-nationals dominate breakfast cereal and pet foods and supply a significant portion of snack foods, however, small firms are still being established particularly

in the snack food category. Packaging and marketing are important at the retail level to build market share for extruded products designed for direct consumption by consumers.

Ease of Entry

Entry will be easiest in locations where initial batches of product can be produced under contract utilizing existing extrusion equipment. Setting up an extrusion plant is quite expensive, costing approximately $5 million, even for small-scale plants. The amount of capital and management skills required is very high in relation to the amount of raw materials that can be processed per day. These constraints can be reduced considerably through by contract processing opportunities, however, marketing skills and expenses will be required even if contract processing is possible.

Processing Considerations

Operations

Skilled operators and maintenance people will be required to smoothly manage a pulse extrusion operation. To compensate for high costs, contract extrusion can be done in the same plants.

Advantages of Processing in Saskatchewan

- Building, labour, electrical and gas, manufacturing and processing costs, as well as corporate tax rates are somewhat lower than in many other parts of North America
- Considering the final product generally has a high value to weight ratio, the final product can bear high transportation costs

Barriers to Processing in Saskatchewan

- There is currently little experience in the province with this technology on a large-scale
- Very few opportunities exist to contract extruded food products in Saskatchewan
- Major demand, both by consumers and food processors, is located outside the province
- Major processors will require large volumes of product to incorporate into their mixed products

Opportunity Identification

- **By using a contracted processing facility Saskatchewan can produce ingredients** made from pulses for snack foods, pastas, breakfast cereals, meat substitutes and fillers, pet foods, and trail mixes

5.8. Opportunity Summary

Based on the availability of facilities and equipment, ease of entry, advantages and barriers and market characteristics, the following are the most viable opportunities for Saskatchewan processors:

- **Additional cleaning and bagging plants – with the capacity to color sort and/or split**
  - Currently in Saskatchewan there is post-harvest pressure on processors indicating a deficiency in capacity
  - Saskatchewan pulse production is expected to continue growing with the addition of new pulse varieties
  - There is increased demand by international buyers for color sorted pulses
  - Distributors and retailers of Indian food products, particularly lentils, are interested in establishing processing facilities in Saskatchewan
  - Trash, splits and damaged seed can be easily marketed for animal feed within Saskatchewan
  - There are also opportunities to process products such as, retail size bags of "house brand" products (e.g., President's Choice bagged lentils)

- **Additional cleaning and bagging plants for organic pulses**
  - Organic products are now available in 75 percent of mainstream grocery stores
  - Canadian retail sales are estimated at $70-100 million, growth at 15-25 percent
  - U.S. organic food sales is over $609 million
  - If Saskatchewan can implement a system of preserving the identity of organic pulses, they can compete in this higher margin market e.g. retail bagging organic split lentils

- **Scope exists to supply ingredients in greater value-added form to large-scale processors**

- **Production of pulse flour in-province**
  - Milling equipment can be relatively inexpensive and small flour milling operations are simple additions to existing cleaning and bagging operations
  - Large multinational food processor have not moved into this market yet
  - Current North American processors are generally small and limited in number
  - There is increasing immigration of Indian and Middle Eastern people to North America
  - Indian food sales are forecast to grow in the next decade

- Mainstream and ethnic consumers are demanding more ethnic foods

- **Ingredient supply of pulse flour milled in Saskatchewan**
  - As supply as an ingredient to Indian food companies
  - As supply as an ingredient to gluten-free processors
  - In organic from to be supplied to organic food processors assuming identity preservation measures are implemented and maintained

- **The creation of new snack foods, i.e. theatre, airplane, from puffed or toasted pulses**
  - Prospective of such products requires more extensive and detailed market studies before a complete list of products can be developed

- **Scope exists to produce many value-added products that contain pulses as ingredients**
  - Opportunities exist in producing frozen stews and curries
  - New and novel ready-to-serve products lines (freeze-dried soups, snack mixes, pulse-derived pasta, thickeners and baking mixes)
  - The scope to develop new products for niche markets is quite large, i.e. the Indian, organic, celiac or vegetarian market, i.e. pappadums, roti, gluten-free baking mixes, gluten-free pasta

- **Ingredient supply of extruded pulse products to food processors for use in snacks, pet foods or multiple ingredient products**
  - Products made from extrusion technology are becoming increasingly popular and are found in a growing number of products. These products could also be sold as ingredients to large processors for use in complex food products

- **At present, many opportunities exist in the market for fractionated pulses**
  - Specific opportunities have not been developed yet because the underlying research and development has not been done. There are opportunities in the creation of specialized starches for use in the paper and textiles, mining, and oil and gas industries, specialized proteins for use in the nutraceuticals and functional foods markets and/or fatty acids in adhesives and paints

For a detailed chart outlining specific product opportunities, potential target markets, advantages to processing in Saskatchewan and major requirements needed before undertaking processing, refer to the Market Opportunity Matrix in Appendix G.

6.0 GLUTEN-FREE MARKET

6.1. Definition of Gluten

Gluten is the component in wheat flour that keeps cookies, breads and cakes together, preventing them from crumbling. Because of gluten, baked goods have a smooth texture by trapping pockets of air. It gives baked goods the lightness desired by consumers. In order to give gluten-free products this lightness, gluten substitutes must be used. Gluten substitutes that are commonly used include xanthum gum, guar gum and pre-gel starch. The challenge of baking gluten-free is finding a combination of flours and binders that best duplicate the functions of gluten.

6.2. Celiac Disease

Celiac sprue, also known as gluten-sensitive enteropathy, nontropical sprue, gluten-sensitive enteropathy and celiac disease requires strict adherence to a gluten-free diet as a component of the primary treatment regime. For the purpose of this project, the term "celiac disease" will be used. The pathogenesis of the disease is damage to the mucosa of the small intestine with ingestion of foods containing gluten. The basis for the toxicity is unknown but recent studies support the involvement of an autoimmune response.

The disease is typically diagnosed in adult patients, primarily at 20 to 30 years of age, but can also appear in infancy with the introduction of cereals into the child's diet. . Symptoms include; general nutrient malabsorption, diarrhea and abdominal pain, failure to thrive in children, weight loss in adults, vitamin and mineral deficiencies and eventual destruction of the intestinal mucosa. If the onset of the disease is in childhood, the individual may have a remission period during adolescence with recurrence in early adulthood. There is a large variation in gluten-sensitivity within the celiac population, however even in the absence of overt symptoms, intestinal damage may still occur.

Celiac disease occurs most commonly in genetically susceptible Caucasians and rarely in black, Asian or other ethnic populations. Celiac disease is the most common genetic disease in Europe. The disease is a lifelong condition with no cure and is more common among people with type one diabetes and thyroid disease. In the U.S., approximately 1 in 200 Americans have been diagnosed. However, the number of people who suffer from this disease could be much higher. In the recent past, the broad range of symptoms, inexperienced physicians and lack of laboratories able to perform the necessary diagnostic testing have meant that many people with the disease have remained undiagnosed.

Estimation of the Celiac Population

In the United States, approximately 1.8 million individuals suffer from celiac disease. In Canada the number is approximately 153,750. Recently, an upward trend has been seen in the rate of diagnosis in older adults. This is possibly the result of increased physician education, public awareness and development of a simple, cost efficient blood testing procedure that is now used to screen asymptomatic but susceptible individuals.

6.3. Requirements of a Gluten-free Diet

The Gluten-free Diet

The only acceptable treatment for celiac disease is strict adherence to a 100 percent gluten-free diet. People with celiac disease who don't maintain a gluten-free diet have a much greater chance of getting one of several forms of cancer, especially intestinal lymphoma. Foods containing wheat, rye, barley, oats and perhaps buckwheat must be carefully eliminated. The first challenge to the patient (or parents of the child patient) is to identify sources of gluten and its derivatives in processed foods (where its presence is not obvious) and eliminate these foods from the diet. The second challenge is to maintain nutritional composition and variety in the diet by sourcing out acceptable gluten-free substitutes.

Unintentional consumption of gluten is the most common cause of symptom reoccurrence; therefore, eminence of purity is an important consideration in the production of gluten-free products. Foods that are not produced in a completely gluten-free environment have the potential to become contaminated. Manufacturing contamination may occur when machinery or equipment is inadequately cleaned after producing gluten-containing foods. For example, wheat flour can remain airborne for many hours after processing has occurred and contaminate work surfaces, utensils and gluten-free foods during the processing stage. For this reason, there are many small-scale plants in operation, processing only gluten-free products to ensure that there is no risk of flour contamination.

The second most common cause of failure in maintaining the required gluten-free diet is due to the limited number of gluten-free products available, especially when the individual is eating outside of the home. The number of convenience foods available is limited and the need for recipe testing and development by the industry has been identified as an unmet need. Product promotion through recipe development and testing may constitute a large portion of the development and marketing budget for companies considering entry into this market. The consumer demand for gluten-free products is predicted to grow, as is the number of companies producing gluten-free foods.

Autism

Recent studies suggest that the gluten-free diet may be of value to those afflicted with autism. It has been found that autistics exhibit a low tolerance for, or allergies to, yeast and gluten products. Some researchers are exploring the possible link between autism and "rogue peptides" produced when people have trouble digesting dairy products and/or gluten. According to the theory, the peptides, which mimic neurotransmitters and hormones, somehow escape from the digestive tract and travel through the bloodstream to the brain, where they interfere with brain development and function.

Autism affects more than 400,000 people in the U.S. and just over 40,000 in Canada. The prevalence of autism has been estimated as high as 20 in 10,000 births. Boys are about four times as likely as girls to be affected and there is no cure. Appropriate education and early intervention may encourage development and reduce undesirable behaviors.

Many parents and development specialists have found that once put on the gluten-free diet; some individuals display improved behavior and noticeably longer attention spans. However, there have be no rigorous scientific studies, as of yet, regarding autism and the gluten-free diet as an effective treatment in reducing or eliminating the symptoms of autism.[56]

Gluten-free Standards

Currently a commission of the World Nutrition Organization and the Food and Agriculture Organization of the United Nations is discussing the development of standards and threshold levels to guarantee an accepted and true "gluten-free" standard to consumers of these products. For those companies interested in developing products for this market, the need to eliminate all possible sources of gluten contamination to ensure purity and compliance with upcoming standards may require a significant capital investment.

6.4. Market Profile for Gluten-free Products

Market Size and Structure

It is estimated, that the gluten free market in North America consists of just over 2 million people, which represents less than 1 percent of the total North American population.[57] From this number, one can deduct that the market for gluten free pasta is quite small and pasta products derived from pulses constitute an even smaller market segment.

The gluten-free industry is well represented by a number of medium-sized firms, as well as many smaller firms that target the niche market. The wholesale and retail structures of the industry are well developed. A variety of vendors such as health food stores, specialty stores, mail order, phone order, and web-based ordering companies exist to meet consumer demand. As well, firms within the industry price competitively for similar products.

Distribution Channels

Gluten-free products are currently sold to end consumers through retailers, mail order, telephone order and the Internet. Nearly all gluten-free manufacturers have web sites that offer Internet and telephone ordering in addition to product information. Regarding retail sales, gluten-free foods can be found in major mainstream grocery stores as well as specialty stores such as organic and health food stores.

Due to the fact that the market for gluten-free foods is not large and is spread out over a large geographical area, Internet retailing is a common way of displaying and selling products. There are many Internet retailers that have established "virtual stores" to sell a variety of gluten-free foods. Gluten-Free Mall is a company that carries over 900 gluten-free products from over 20 vendors. Gluten-Solutions is another that carries over 250 gluten free products from 5 vendors. Both sell gluten-free pasta, but neither sells pulse pastas. Kinnikinnick Foods in Edmonton is a manufacturer and retailer of gluten-free products. The company retails products from many

[56] Autism Society of America: *Introduction to the Effects of Diet.*
[57] Glutino. Corporate Profile. http://www.glutino.com/english/interieur/company/profile.cfm

manufacturers on it's website as well as its own. In addition, Kinnikinnick operates a retail outlet featuring it's own and others' products including Papadini brand lentil pasta.

Competitors

Companies currently manufacturing gluten-free pasta made from **pulses** include Adrienne's Foods, Natural Noodles and Special Foods. Adrienne's makes Papadini brand pasta, which is a lentil- bean pasta line. It is the only **pulse** pasta currently being marketing through traditional retail channels. It is most often sold in health food stores but is occasionally found on major grocery store shelves. Papadini pastas are distributed throughout the U.S. and Canada and are also being sold through Internet retailers.

The other two **pulse** pasta manufacturers are relatively small scale compared to Adrienne's. Natural Noodles of British Columbia is a mail and telephone order company that is making pastas from lentils, peas, mung beans and a lentil-brown rice combination. All peas, lentils and organic rice used are derived from Saskatchewan crops. Special Foods of Virginia currently produces pasta made from lentil flour. The company provides mail and telephone ordering to distribute their products. Neither have plans to traditionally retail their products in the near future.

Pulse pastas are low in calories and sodium, and high in protein. Gluten-free **pulse** pastas are just slightly more expensive than other gluten free pastas. For example, Special Food's charges US$13.50 a pound for lentil pasta, and US$12.40 for a pound of rice pasta.[58] Although similar in price, **pulse** pasta has not yet gained the same degree of popularity as other gluten free pastas. Very limited product selection as well as undesirable product taste and texture have been identified as reasons for the lack of market acceptance.

Interest Box 10: Special Foods

> Special Foods has been producing gluten-free products for 17 years and distributes exclusively to the end-use consumer. They produce muffins, bagels, bread, tortillas, cookies, pasta, flours, jams, soups, lotions and dishwashing detergent.
>
> The company plans to produce more types of gluten-free pasta in the near future, stating that demand for this product segment has doubled in the past two years.

There are currently nineteen processors of gluten-free pasta in North America. A list of these processors is presented in the following table.

[58] Special Foods. Pastas. http://www.specialfoods.com/pastas.html

Table 20: Gluten Free Pasta and Pulse Pasta Processors within North America

Gluten Free Pasta Processor	Pasta Type(s)	Location
Adrienne's (Papadini)	Lentil	Santa Barbara, CA
De Boles Nutritional Foods, Inc.	Corn	Garden City Park, NY
Dietary Specialties Ltd.	Potato, rice, corn	Rochester, NY
El Peto Products (NF, El Peto and Aglutella)	White and brown rice	Kitchener, ON
El Ricco Pasta Inc.	Corn, rice, potato flour combination	Port Coquitlam, BC
Ener-G Foods Inc.	White and brown rice	Seattle, WA
Food Directions, Inc. (Tinkyada)	Organic white and brown rice	Scarborough, ON
Food for Life Baking Company	Brown rice flour	Corona, CA
Gabriele Macaroni Co.	Polenta	La Pulenta, CA
Idaho Supreme Potatoes Inc. (Pastato)	Potato flour	Firth, ID
Little's Market Moon	Rice flour	Portland, OR
Lundberg Family Farms	Organic brown rice	Richvale, CA
Mrs. Leeper's	Organic rice and corn	Poway, CA
Natural Noodles (Also available organic)	Lentil, mung bean, white and brown rice	Penticton, BC
Nelson David of Canada (Celimix)	Brown rice	Winnipeg, MB
Pastariso	Organic rice	Pickerling, BC
Quinoa Corporation (Ancient Harvest)	Corn and quinoa blend	Gardena, CA
Roads End Organics Incorporated	Organic brown rice	Morrisville, VT
Special Foods	Lentil, potato, cassava	Springfield, VA

As illustrated in the above table, there are almost seven times as many gluten-free pasta processors as there are gluten-free **pulse** pasta processors in North America. Pasta made from pulses is relatively new to the market and in many ways is still in the development stage. Six out of nineteen gluten-free pasta processors are in Canada, with Natural Noodles being the only company currently using pulses. Please note that there are several companies using organic ingredients to make their pastas. Of the six that are using organic ingredients, three are Canadian companies.

There are also three very popular imported pastas being sold to the North American market. These pastas are manufactured by Schar in Italy and are sold under the Dr. Schar, Aproten and BiAglut brand names. BiAglut and Aproten pastas are made from a combination of cornstarch, rice starch and potato flour resulting in a more unconventional flavour. The Dr. Schar line is made from rice flour, corn flour and pea protein isolate.

A collection of information on existing products and competitors regarding product lines, plant size and scope of operations is presented in Appendix F. Please note that this is not a comprehensive list as limited information is available on a number of the smaller processors. Internet and telephone resources were used for developing these summaries.

6.5. Product Profile

Gluten-Free Pasta

Canglobal administered a Gluten-Free Pasta Questionnaire to a number of markets in North America. The surveys were administered throughout North America in 19 different states and provinces to celiac associations and major celiac support groups. Sixty-five questionnaires were completed. See Appendix A for further details on the survey instrument and results.

In summary, the majority of respondents, 80 percent, have never tried gluten-free **pulse** pasta products. Some of the perceptions of those who had tried a pasta made from **pulses** were are as follows:

> "I like the texture better – it would probably be really good combined with rice, but I haven't seen any on the market yet"
>
> "Pretty good texture, taste not as liked by kids"
>
> "I found that the sort of weird after-taste ruined the experience for me, even though I am very fond of chick peas and hummus…"
>
> "They seem to mush down after cooking more readily than other pastas – I have also heard this from fellow celiacs at our 'club' meetings"
>
> "Better texture"
>
> "More substantial"
>
> "This particular one is EXCELLENT (Papadini Orzo). I've heard they make a larger version that isn't very good."
>
> "They didn't seem to cook very evenly, so some was chewy and some was done..."

The majority of gluten-free pastas on the market are made from white and brown rice, corn and potato starches, soy protein and quinoa. Other ingredients commonly used to create gluten-free pasta include potato starch and flour, buckwheat, teff, amaranth, yam, hominy, peas, beans, lentils, soya and tapioca. Rice is by far the most commonly used gluten-free substitute for making pasta. It represents a relatively inexpensive input and the cost saving is passed along to the consumer in the form of lower prices compared to other major ingredients. Additionally, the taste and texture of rice pasta is similar to traditional wheat pasta, making it a close substitute for traditional pasta and a favorite among consumers of gluten-free products.

From surveyed respondents it has been found that the most commonly purchased gluten-free pasta is Tinkyada brand pasta, made from white and brown rice. Tinkyada sells a variety of pasta types including spaghetti, elbows, macaroni and lasagna noodles. The two other major sellers are Pastariso (most popular in the U.S.) and Mrs. Leepers, which is popular throughout North America. Please see Appendix F for specific company and product information.

The gluten-free **pulse** pastas identified by surveyed consumers were Adrienne's Papadini brand lentil-bean pasta and Natural Noodles products. Several consumers also stated that they make homemade versions of pulse pasta from bean and garfava flour. Although many respondents were not aware of **pulse** pasta before the survey, many are anxious to try them now. If more gluten-free pulse pastas become available, consumers will be willing to at least try them. In response to the question "Do you eat gluten-free pasta made from **PULSES**?" The following was written:

> " I don't think I have ever tried this! Would like to. I'll check my store!"
>
> "Haven't found it yet."
>
> "I would if I saw it on the shelf."
>
> "Would welcome them. No lentils (pasta) available I know of."

Product Availability

Gluten free pasta can be purchased in many major retail food outlets throughout North America. In larger urban centers, supermarket chains including; IGA, Loblaws, Piggly-Wiggly, Safeway, Superstore, Overwaitea, Fred Meyer's, Dominion's and Wal-Mart all sell gluten-free pasta. Health and natural food stores, mail order franchises, as well as web-based retailers also carry gluten-free pasta products. Generally products are unavailable to consumers living in rural areas because small independent grocers do not carry them. Many of these consumers buy products by mail order or must travel to nearby urban centres to shop.

Interest Box 11: Whole Foods Market

Whole Foods Market is the world's largest retailer of natural/health food products, with 122 stores in 22 states. The stores carry and extensive line of gluten-free products, including pasta. Of total gluten-free sales, approximately 5% are pasta sales.

The manager of a Houston outlet claims that gluten-free rice pasta is their best seller and that pulse pasta is not carried because there has been no demand for it. He stated that current trends are towards increased development and production of gluten-free products especially highly demanded products like pasta, flour and convenience foods. He says that there is endless room for advancement within the product segment.

A major challenge that consumers of gluten-free foods encounter is limited availability of products: even in urban areas. Many questionnaire respondents commented that they do their grocery shopping in two or three stores because the variety of products carried by each store varies significantly. They also stated that often the products they want are unavailable in stores or temporarily unavailable. This is either because the store is unresponsive to the market needs or there are supply problems from the distributor or manufacturer end. Questionnaire respondents indicated that problems with product availability are extremely frustrating to them as consumers willing to purchase these products.

Another challenge faced by consumers of gluten-free products is the unavailability of many pre-made and ready prepared foods. In terms of bread, rolls, cakes and pastries, there is little on the market. In regard to frozen entrees, side dish mixes and soups and stews, there is also little selection. For the most part gluten-free consumers must do their own baking and scratch cooking, which is often time-consuming. The following is a list of foods or food products respondents stated were missing from the market or that they would like to see more of. They present potential opportunities for new entrants into the gluten-free market.

Table 21: Consumer Demand for Gluten-free Products

Product Demanded	Percentage of Requests from Respondents
Baking mixes	10
Bread, bagels, buns or rolls	63
Cereal (breakfast – cold or hot)	21
Cookies, cakes, pastries	17
Crackers	15
Pasta products (stuffed, lasagna, macaroni)	13
Pizza (frozen or pre-made crusts)	8
Pre-prepared meals (frozen, side dishes and entrees)	17
Snack foods (licorice, Popsicles, ice cream cones)	15
Soups, canned (condensed)	21
Stuffing mix	2
Tortillas	4

The greatest areas of opportunity appear to be for pre-made bread, bagels, buns and rolls, hot and cold breakfast cereals and canned soups, one respondent also desperately wants beer. There is also a demand for ready-made frozen dinners and entrees. Thirteen percent said they would like to see more variety in pasta products.

Product Offering in Saskatoon Retail Outlets – The Immediate Market

There are a limited variety of gluten free products available in major Saskatoon grocery stores. The majority of gluten free products are located with unrelated products, in the baking aisle or in the organic/natural foods sections of stores. The majority of gluten-free pasta products being offered in Saskatoon are made from rice or corn. Only one Saskatchewan respondent had ever heard of and tried **pulse** derived pasta and store managers indicate that there have been no recent requests for gluten-free pasta made from pulses. There has, however, been an increased demand for more variety in gluten-free products, specifically baking items such as flour, bread and cake mixes.

Telephone interviews were conducted with the majority of health food retailers in Saskatoon and all carried at least one type of gluten free pasta, but none carried gluten-free pasta made from **pulses**. The immediate market has relatively little experience with gluten-free **pulse** pasta but would be an excellent test market in product development stages. There are approximately 100 members of the Saskatoon Celiac Support Group who would be willing test subjects should the opportunity be presented. For detailed survey results, refer to Appendix A, section A.3.

6.6. Consumer Profile

Consumers of Gluten-free Products

The majority of consumers of gluten-free products will be those who suffer from Celiac disease, however a small percentage of consumers are individuals who have chosen to purchase gluten-free products for their "perceived" health benefits. There has been a general trend towards a more "natural" diet, high in fiber, low in fat and animal protein. Pulse pasta meets all three of these parameters. There is evidence that the gluten-free diet is beneficial to autistics and diabetics and many currently subscribe to the diet. The demand for gluten-free products including pastas is growing. This growth suggests that there is still an unmet need for gluten-free convenience products and baked goods. Pasta is a staple food for many people, and those individuals that adhere to a gluten-free diet will demand pasta products that meet their taste, texture and price requirements. Of the 60 respondents surveyed, 44 percent eat pasta once every two weeks, while 36 percent eat it one to two times a week.

Product Characteristics

The following table outlines the importance of certain gluten-free pasta characteristics to consumers as found through the Gluten-Free Pasta Questionnaire.

Table 22: Gluten-Free Pasta Characteristics Ranked in Order of Importance

Ranking Given by Respondents	Product Characteristic
1	Taste
2	Texture
3	Price
4	Availability
5	Ease of Use
6	Product Support
7	Convenience
8	Ease of Incorporation into Traditional Recipes
9	Packaging
10	Purity

A product with superior taste is most important to consumers of gluten-free pasta. Future **pulse** pasta processors must address the "weird taste/after-taste" complaints expressed by consumers. Popular brands of gluten-free pasta on the market have subtle flavoring, if any at all. In this aspect they are similar to wheat pastas. Texture is also important, but to a lesser degree and was ranked second by respondents. Consumers of gluten-free pasta demand a product that is a close substitute to the texture of traditional wheat pastas and that can be used similarly. Price, availability and ease of use respectfully round out the top five important characteristics. What concerned consumers least regarding gluten-free pasta was packaging and purity. It is assumed that products marketed as gluten-free meet the required standard to make that claim.

Based on our survey of gluten-free consumers in North America, the following has been indicated:

- Consumers of gluten-free products are relatively price insensitive but as there becomes more selection in the market, they expect prices to drop. Currently, a premium price is being paid for most products, even those that do not satisfy consumer demands for taste and texture. Gluten-free products are typically double the price of the traditional products they substitute
- There is unmet demand for gluten-free snacks, crackers, dessert items such as Popsicles, Oreo-like cookies, licorice and pastries
- There is demand for a greater variety of convenience foods. Consumers want a greater choice of single serving items, ready prepared and microwaveable foods
- 71 percent state that in the past two years gluten-free pasta selection has increased
- New pulse products will be well accepted if they meet the taste and texture test
- Many respondents had never tried **pulse** pasta - approximately 80 percent
- The taste of the current pulse noodle is unacceptable to many consumers because of the texture and aftertaste although many like the Papadini Orzo pasta
- There appears to be an upward trend in demand for European gluten-free products. Hard crisp breads and French bread and pasta are being imported from Italy and France. They are widely accepted because of their superior taste

- It was suggested that combining pulse derived flours with other gluten-free flours such as tapioca or sweet rice could improve flavor and textures
- A need was identified for recipe testing and recipe development as part of the total product offering

As the market for gluten-free foods expands, it will be vital for new and existing processors to provide above-average value and quality in terms of taste, texture and pricing. As more products are introduced, they will have to be sold at more reasonable prices and through convenient channels. Nearly 60 percent of consumers surveyed, purchase their products through health/natural food stores with the remainder purchasing from mainstream grocery stores (20 percent) and the Internet (less than 10 percent). Despite the success of E-Commerce in other retail areas, there has been little interest from the gluten-free market. This is in part due to the high shipping costs manufacturers charge for their products and general lack of trust in Internet retailers.

Value-Added Processing of Pulse Pasta

Cleaning

The production of gluten free pasta involves a number of processes including; cleaning, sorting, de-hulling, flour milling and pasta manufacturing. The first of which is cleaning the raw product after it has been harvested. There are hundreds of cleaning facilities within North America, which vary in size from small 10 bushel cleaners owned by individual farmers to mammoth cleaning plants that clean 100,000 bushels a day. Cleaning facilities have various configurations of machinery and equipment, but are essentially the same in that they remove foreign material by the use of aspiration, scouring and gravity tables.

Sorting

Sorting facilities are also required in the production of pasta. These facilities are important as they ensure a uniform supply of quality seed. Sorting by colour is also a means of ensuring a quality product, as it improves the uniformity of appearance in samples of smooth peas, marrowfat peas, beans and lentils. There are numerous sorting facilities across North America that range in size and capacity.

De-hulling

De-hulling facilities are used to separate the seed from the hull it is encased in. Seeds must be de-hulled before they are milled into flour as the hulls take away from the flour's purity and compromise its smooth consistency. De-hulling facilities can be found throughout North America, with varying levels of capacity. Walker Seeds and Belle Pulses of Saskatchewan currently employ this technology.

Flour Milling

Flour milling facilities are used to grind the various seeds into flour. Hammer, pin, and roller mills are all used to process flour. Milling facilities vary in size, and scope. When dealing with gluten-free pasta, the milling facility must ensure product safety and avoid contamination. It is common for mills to cater to all clients and make a variety of flours. Caution must be exercised to ensure that seeds containing gluten or gluten dust do not compromise the purity of gluten free

products. Milling facilities are very common in North America; there are a large number of them of varying capacity. Humboldt Flour Mills, in Saskatchewan, is the only local mill that produces lentil flour, but does so only upon request. Please note that a list of gluten-free flours on the characteristics, including their characteristics, is located in Appendix F, section F.1.

Pasta Manufacturing

Pasta manufacturing facilities are used to convert raw flour into a consumer-ready form, usually of Italian-style pasta products and shapes. Ingredients are mixed together and rolled out to form dough. The noodles are then cut from the rolled dough into various shapes and styles. The ingredients of the dough and the products created are unique to each manufacturer. It is the recipe that makes the company's product line unique from its competitions. Many gluten-free products, including pastas like Adrienne's lentil pasta, have patents associated with their products to ensure the uniqueness is not compromised.

Pasta manufacturing technologies vary but the two most common forms are pressure extrusion and heat extrusion.

Pressure extrusion is the traditional method of pasta making. The dough is placed into a noodle maker and the desired shape is pressed out through slots in the machine. The pasta is then cut and dried, either by air or machine.

Conventional extrusion has been tested in making pasta from pea flour. When this method was used the end product was of poor quality ion terms of texture, flavour and sensory qualities. Also due to the properties of the pea flour, the noodles disintegrated when they were cooked.

Heat extrusion technology takes advantage of high heat and pressure to essentially "puff" the dough and gives it a completely different texture. This technology can be used to make a variety of different products from ready-to-eat snack foods, cereals, texturized vegetable proteins, noodles and pasta. However, it has not been widely used in commercial pasta making to date. There are benefits to making pasta with heat extrusion (particularly pea pasta) which include:

- Due to exposing the raw pulse material at low moisture, high temperature and high pressure, the antinutritional factors in pulses are inactivated[59]
- Increased susceptibility of protein to complete hydrolysis
- Heat extrusion produces a pasta that is essentially instantized; cooking times are three minutes or less. This type of pasta would be ideal for gluten-free meal in a cup solution
- When cooked, the heat-extruded pasta exhibits a shorter cooking time, lower cooked weight, less stickiness and a more desirable texture than commercial wheat pasta[60]

The University of Saskatchewan has developed a process to manufacture pasta in which high temperature is applied to release the volatile components of peas. The University currently holds

[59] Tabil, Sokhansanj and Tyler: *Processing and Utilization of Pulses: A Review*. University of Saskatchewan, 1992.
[60] Wang, N. et al: *Pasta-Like Product from Pea Flour by Twin-Screw Extrusion*. Journal of Food Science, 1999.

U.S. patent #5 989 620 to produce heat extruded gluten-free pulse pasta and the Canadian patent is pending. Prototype products have been recipe and production tested to date.

Packaging, Branding and Retailing

Once the gluten free pasta has been manufactured, it is packaged and shipped to wholesalers and retailers, and/or final consumers. It is important for a company to develop a unique package that will enable preservation of perishable items for product destined to the retail market. After packaging, products are distributed through the retail trade channels. These include nation-wide supermarkets and grocery store chains, specialty and gourmet food stores, health and natural food stores, export markets, Internet and mail order services, specialty food catalogues as well as niche stores.

Internet Retailing

To get exposure for gluten-free products on a web-based retail outlet, the following things must be considered:

- Is the product 100 percent gluten-free with no risk of contamination?
- Will the product sell well?
- Is the product profitable for the retailer to sell?
- Do you have reliable shipping and ample supplies of product?

Some Internet retailers like Glutens Solutions buys products on net 30-day terms. They have the products shipped to their warehouse by UPS or truck depending on the size of the order. As consumers purchase the products, Gluten Solutions ships directly from their own warehouse or storage unit. On the other hand, Gluten Free Mall allows vendors to put their own entire catalogues on-line. Shoppers are able to buy products using the latest and most secure "shopping basket" style software; the orders go from the Gluten Free Mall directly to the vendors. They then fill the orders, process customer credit cards and ship the products from their own warehouses. To advertise products in the Gluten free Mall, the following fees apply:

- Under 10 Products - $39 per month, OR 9 percent of sales, whichever is higher
- 10-20 Products - $49 per month, OR 9 percent of sales, whichever is higher
- More than 20 Products - $59 per month, OR 9 percent of sales, whichever is higher

Retailing through a Health Food Store

Selling products through health foods stores is relatively easier than selling through mainstream grocery stores where the cost of shelf space can be overwhelming. Health food stores make personal decisions to carry particular products based on what they think will sell and because the majority of these stores are owned and operated locally.

Health food and natural food stores require that gluten-free products be 100 percent gluten-free. Because many health and natural food stores are much smaller in scale than traditional supermarkets, the product quantities they demand are relatively low. This is beneficial for a

small-scale processor; however, it may mean sporadic demand for fresh product from the store. In some cases products are transported directly to the retail outlet or warehouse from the processor, in other cases, a distributor is necessary. For reference purposes, Appendix E lists a number of North American distributors of health and natural products.

Retailing through Mainstream Grocery Stores

Although mainstream grocery stores are constantly on the lookout for new products, particularly organic an/or natural products, which are currently in high demand, the competition for shelf space is fierce. Aside from competition, the cost of shelf space can be staggering. Grocers also ask that products be delivered in certain quantities and via certain means of transportation, which might be a challenge for the small Saskatchewan processor.

7.0 OPPORTUNITY IDENTIFICATION

The following sections outline the value-added potential, processing considerations, and opportunities and barriers to processing various value-added gluten-free foods in Saskatchewan. Please note that processing technologies are product specific and processing requirements will vary from variety of pulse to end product.

7.1. Ground Pulses

This category encompasses gluten-free flours made from pulses for use in baking and as thickening agents in cooking. Pulse flours can be derived from peas, lentils, beans, chickpea, or any combination thereof. Resale packaging would consist of small bags from 0.5 to 2.0 kg. Large bulk bags of 25 kg or more could also be packaged as supply to the ingredient market.

Value-Added Potential

There is higher value-added potential per kilo for pulse flours than cleaned and bagged pulse products. Currently, on average, gluten-free pulse flour garners a price of $6.83 per kilo in Saskatoon; six times the cost per kilo of conventional wheat flour. Value-added potential can be further increased if the flour is derived from organic raw material and concurrently marketed to the gluten-free and organic markets. However, specific efforts must be made to ensure identity preservation within the supply chain. It is unclear if current farm gate practices and primary processing in Saskatchewan are able to guarantee the proper identity preservation necessary to capture this enhanced value-added potential. Gluten-free pulse flours sold in bulk to the ingredient market will not garner as high a return as smaller packages for retail sale, but marketing and transportation costs will be less and larger quantities of product will be sold.

Market Characteristics

The market for gluten-free flour is very competitive and the alternatives to traditional wheat flour are numerous. There are a handful of pulse-derived flours currently being retailed to the North American market including; white bean, pea and lentil flour as well as a combination garbanzo and faba bean flour. There are currently numerous small and medium pulse flour millers in North America, with varying output and technology. For a listing of flours and their characteristics refer to Appendix F, section F.1.

A specialized market for pulse-derived flours (particularly chickpea and lentil) is the Indian market as it is commonly used in combination with wheat flour for baking and desserts. However the specialized nature of the product and increased cost may only be marginally acceptable to this segment. Also, much of the product targeting the Indian market is imported. Flours produced in India are of the quality demanded by Indian consumers and the cost of production is much less resulting in lower prices of imported product.

There are currently a number of small and medium-sized processors in North America who process gluten-free chickpea flour or chickpea flour mixes, the largest of these companies being Authentic foods and Bob's Red Mill in the U.S. Manufacturers of pulse flour targeting

specifically the Indian market are located in major cities where large populations of Indians and Middle Easterners live.

Ease of Entry

Grinding equipment comes in a variety of sizes and is relatively inexpensive compared to other processing equipment used to make further value-added products. The potential to purchase used equipment also exist which will keep capital costs down. Grinding can also be contracted through existing millers and packaged with the desired label; however, care must be taken to ensure that there is no gluten contamination from previous production runs.

The advertising involved in marketing to the retail sector will be highly specialized and targeted, stressing inherent product qualities like purity and organic and gluten-free nature.

Processing Considerations

Dehulled and properly split seeds must be used for grinding pulse flour, as this will ensure the best quality final product. In humid conditions, pulse flours have a relatively short shelf life in comparison to whole pulses; particularly chickpeas, which in flour form, have a shelf life of 3-6 months. This is due to the increased risk of mold contamination, insect infestation and/or oxidation and the high oil content of pulses. If flours are shipped long distances and/or remain on the retail shelf for long periods of time, spoilage may occur. Packaging must protect against humidity and consist of a plastic component that is relatively moisture proof, e.g. sturdy retort pouch packaging.

Advantages of Processing in Saskatchewan

- A small flour milling operation is a relatively easy addition to an existing plant with the assurance that purity will not be compromised
- Flour milling does not require extremely technical machinery or skill to operate
- Saskatchewan pulses have a clean, pure image that is easily marketable. Reinforcing this image with organic raw materials will be even more attractive to consumers
- Processors are located in close proximity to raw material and pre-milling technology i.e. cleaning, sorting and dehulling and splitting
- Transport costs for flour will be less than bulkier whole and split product and garner higher prices, especially if packaged in retort pouches

Barriers to Processing in Saskatchewan

- Transportation costs and waste factors relative to pulse mills in urban areas
- Pulse flour, if not properly packaged, is more difficult to contain, handle and transport relatively long distances than whole or split pulses
- Although flour grinding is a fairly simple technology, it may be difficult to penetrate the large urban markets in North America where pulse-milling operations already exist

Opportunity Identification

- **Opportunities exist for local entrepreneurs to experiment with producing gluten-free flours in pure form or blended with other ingredients such as spices**
  This venture would be relatively low cost, could be undertaken within the province at a small scale and pose little financial risk. The immediate celiac segments in surrounding provinces could be initial test markets. According to Parrheim Foods, it is difficult to export pulse flour out of Canada due to competition, but there is a growing domestic market
- **Production of organic gluten-free pulse flours**
  Once identity preservation measures have been implemented. However, quality controls and marketing dollars must be in place in order to penetrate the market successfully
- **Either organic or traditionally harvested pulses can be used to produce gluten-free flours to the ingredient market**
  Specific targets would be Canadian and U.S. companies that are currently producing baked goods, baking mixes and/or pasta (approximately 20-25 processors). Supplying to the ingredient market would garner higher prices than simply selling whole or split cleaned seed and would eliminate dealing with retail packaging considerations and marketing costs

7.2. Products Derived from Ground Pulses

Included in this segment are products that can be derived from gluten-free pulse flours such as pasta, cereals, fresh bread, frozen ready-to-bake bread dough, flatbreads, pretzels, baking mixes and baked goods like pastries, rolls and buns. It also encompasses gluten-free pulse flour mixed with small amount of other ingredients such as spices, herbs or other elements.

Value-Added Potential

Any of the above items are relatively high value-added products, but the potential to produce volumes in keeping with a particular market size will be difficult. Additionally, distribution of products must be carefully considered, as spoilage can be a problem for fresh goods.

Market Characteristics

Particularly for the gluten-free market, much of the products in this segment are convenience items; many of which are currently missing from the market or unsatisfactory in some way. As much as other consumer groups, gluten-free consumers want **convenience**. Currently many of these products are made from scratch. The gluten-free market is very geographically spread with 2.0 million spread over the North American continent in both rural and urban areas. There may be a small growing market of organic consumers who are seeking healthy alternatives in their baked and pasta products.

Products that are currently produced in this segment include dry baking mixes (muffin mix, bread mix, cookie mix, bagel, pretzel and breadstick mix), ready-to-eat baked goods (cinnamon rolls, muffins, scones, bread, cookies), dry breakfast cereals, granola bars, ready-to-eat meals (very few).

Ease of Entry

There are several companies that are producing gluten-free baking mixes and fresh bread. However, no multinationals are producing these products. Currently the availability of gluten-free baking mixes, ready-made bread and baked goods is limited. The challenge with fresh products of this nature is their perishibility. With the market so geographically spread, Internet retailing is used and fresh products are couriered to customers throughout North America in a matter of days. From primary research, though, consumers have stated that they don't like buying products via the Internet or mail order because the shipping costs are so high. In fact, often the shipping costs are higher than product costs. Internet and health/natural food retailing is less expensive than traditional supermarket retailing because of high shelving costs. However, they generally do not meet the cost and convenience needs of consumers.

The technology to make baked and pasta products consists of a mixing apparatus, forming machines, drying/baking/cooking machines and packaging systems. In the case of frozen bread dough, freezing systems will also be necessary. Regarding price and complexity, there is a range of possibilities. The more complex the line is, the more throughputs are necessary to achieve cost efficiency. The cost $100,000 to $5 million, will be a huge obstacle to the individual entrepreneur. Yet, the opportunity to implement low cost lines or buy used equipment for small-scale production means that capital requirements will not be a great entry barrier to new companies. Large volume machines, especially for pasta production, will present significant financial constraints. Contracting is possible for almost all products in this segment and would help minimize initial costs and processing management. The main consideration in contracting production facilities is the possibility of contamination. Experts in the field claim that to ensure non-contamination, a small plant should be contracted that will be more willing to do the necessary machinery cleaning than a large plant which will require more volume of production and be less willing to clean larger machinery.

Processing Considerations

A key consideration for many products in this segment is shelf life. For bread, tortillas and baked goods, shelf life is limited. Processors must be aware of packaging alternatives to ensure maximum life of the product and how to minimize spoilage. Regarding pasta, specifically, packaging must be carefully considered, as the product is dry and brittle. If traveling for long distances in poor, improperly stacked packaging, losses and breakage will occur. In terms of frozen product, refrigerated transportation will be necessary to ensure product integrity and packaging must be strong. Again, ensuring purity of product is important, particularly if processing is contracted to a non-gluten-free processor.

Because the University of Saskatchewan holds the patent for heat extruded pulse pasta, a twin-screw extruder will be necessary to make this product. This technology is very expensive and contract production will be necessary.

Advantages of Processing in Saskatchewan

- Inputs for products in this segment are relatively easy to obtain in Saskatchewan. The main input being flour, with small amounts of other ingredients
- It may be cheaper to manufacture these products in Saskatchewan due to lower building, labor, electricity and manufacturing costs and corporate tax rates
- Saskatchewan products can be marketed via the image of purity and cleanliness, which will be attractive to consumers
- Although Saskatchewan is far from many large markets processors can take advantage of Internet retailing and overnight delivery services
- Saskatchewan processors have access to affordable technical and marketing support from either the Leduc Food Processing Centre, or more locally the Food Centre in Saskatoon
- The mixing apparatus, forming machines, drying/baking/cooking machines, packaging systems and/or freezing systems, can be add-on equipment to current facilities and can be purchased through buying cooperatives rather than the individual entrepreneur

Barriers to Processing in Saskatchewan

- Processing plants in large urban centers near final consumers have an advantage in that they are able to sell more higher value perishable items
- The cost of putting the processing line together will be difficult for the individual entrepreneur who may lack access to funds
- Because costs of capital will be high, a relatively high level of production will be necessary to ensure cost efficiency. This may be difficult depending on the nature of the product and demand for the product
- For the gluten-free market, transportation and logistics must be carefully considered. Due to high perishibility rates, efficient and reliable transportation to the widespread market is necessary. It may be more difficult to organize distribution from Saskatchewan than large centres like Toronto or Chicago

Opportunity Identification

- **Opportunity exists for heat-extruded gluten-free pasta made from peas,** Production can be done through a contracted processor. Consumers are willing to try new pasta products and the technology and product has already been tested at the University of Saskatchewan
- **Frozen ready-to-bake bread dough made with pulse flour is viable**
  Freezing equipment and refrigerated transportation will be necessary, but the frozen product has a longer shelf life, presents a highly value-added opportunity and can be made in advance and warehoused until ordering

- **Perishable items, such as bread, rolls, flatbreads, muffins and pastries will be more difficult to produce**
  Demand in this category is sporadic and products have short shelf lives. These products could be produced solely for the local and surrounding markets
- **Dry cereals, pretzels, cookies and baking mixes present potential opportunities**
  With the aid of recipe specialists at the Food Centre, products could be developed using pulse flours to appeal to consumers in this market. These products have relatively long shelf lives, are demanded products and can be successful if packaged and marketed properly

7.3. Processed Pulses Mixed with Other Ingredients

One or more of the ingredients in this product segment will consist of processed pulses but pulses may or may not be the dominant ingredient. Products in this segment include dry soup and side dish mixes, dry meal-in-a-cup solutions, canned, frozen and freeze-dried soups and stews and frozen ready-to-serve entrees and appetizers.

Value-Added Potential

Value-added potential per kilo in this category is relatively high, however, volumes of finished product will be much lower. These products, which are generally more complicated to produce, will create a larger number of jobs than other types of products at both the processing and marketing levels. Production of highly value-added products also creates added value for locally procured non-pulse products that are used.

Market Characteristics

In the gluten-free market, the majority of processors are relatively small-scale. The existence of many smaller companies with varied product lines makes is somewhat difficult for a new entrant to be noticed, unless new products are very different from existing products. There are very few high value-added products made for the gluten-free market. Currently the only products made are dried soup mixes (Legumes Plus, Ener-G Foods and Glutino) and some instant meals and side dishes (BiAglut brand dry pasta and sauce and Gluten-Free Café meals). These types of products are found in health/natural food stores or are for sale through the Internet and/or directly from the manufacturer. The fact that there are many marketing channels and outlet types make it easier to enter the market with a new or novel product from a new company and location. It may be relatively easy to develop frozen food products, which have little competition at the moment and additional dry soup mixes. (For more detailed information on the companies listed above, please see Appendix C).

Ease of Entry

The Food Centre is able to help entrepreneurs with recipe/product development, including initial cost estimates and packaging considerations. Contract production can reduce the initial financial outlays and risks of entering this market. However, marketing and promotional costs can be substantial to compete with product lines that are already being produced by established

companies. Larger retailers may waive listing or shelving fees for new and novel products that are currently absent from the market.

Blending dry pulses with other dry ingredients for packaged dry soup and stew mixes is quite cheap relative to canning or freezing lines. As well, the management and technology required to run a dry line is less than a freezing or canning line. However, more value and potential may exist for ready-made frozen food products and entrees.

Processing Considerations

Blending, cooking, freezing and packaging lines can be technologically complicated and expensive. They often require high utilization rates to make them cost effective. Additionally, operations management and line repairs are technologically challenging and/or expensive. As a result, contracting the processing operations is often done with existing processors. The impetus will be on ensuring that products from contracted facilities are not contaminated. In many cases, managing the marketing of these products will be more challenging than the actual production, especially if contract production is carried out. Significant funding, $500,000 to $2+ million, may be required to successfully launch a new line at a high enough volume to justify commercialization of processing.

Advantages of Processing in Saskatchewan

- Building, labour, electricity, heating, manufacturing, processing costs and corporation tax rates are generally lower in Saskatchewan than other parts of North America
- The absence of processors in Saskatchewan in these product segments will make it easier for potential new entrants to get help with recipe and product development at the Food Centre. In fact, many potential products have already been developed there but are awaiting companies to market them
- Although Saskatchewan is far from many large markets processors can take advantage of Internet retailing and overnight delivery services
- Dry products like soup mixes and freeze-dried products will mean less weight to transport to the market for high value products

Barriers to Processing in Saskatchewan

- Most frozen products incur an increase in weight due to being cooked with other ingredients and being frozen. This will effectively increase transportation costs - an area where Saskatchewan producers are already challenged
- Developing marketing and distribution channels may be more difficult for Saskatchewan manufacturers because we are far from the majority of consumers in the U.S.
- The cost of packaging in Saskatchewan is higher than in Eastern Canada or the U.S., specifically in terms of higher end and/or more unique packaging. This may not be such a big consideration as over 40 percent of gluten-free survey respondents cited packaging as number 9/10 or 10/10 in the product characteristic ranking question (Question 4). Taste, texture and price were the most important considerations for gluten-free consumers

- There are few freezing lines, even if contracted, that could handle gluten-free products in terms of ensuring no cross-contamination and conserving purity

Opportunity Identification

- **Frozen stews, lasagnas and casserole dishes that incorporate pulses**
  There are relatively few products like this on the market, which is advantageous. However, processing facility and transportation costs may be too large to justify production of frozen products
- **Great opportunities exist for freeze-dried and dehydrated products containing pulses**
  This includes instant meals and side dish options. New and novel ready-to-serve products can be marketed on a trial basis through large retail outlets without large listing/shelving fees and the cost of transporting these types of products is relatively low. Additionally, the scope of new products currently being developed is unknown but large multinationals are not active, or expected to participate in, the gluten-free product segment in the near future.
- **Canned products are not an option as demand for canned products is slowly decreasing and easy to use packaging is becoming the norm**

8.0 CONCLUSIONS & RECOMMENDATIONS

This section details the pertinent findings and conclusions that can be drawn from the research and analysis conducted. The conclusions are also supplemented by recommendations for further support from both Saskatchewan Agriculture and Food and the Saskatchewan Pulse Growers to improve the potential of adding value to the pulse industry in Saskatchewan.

8.1. Findings

Our initial primary research efforts consisted of administering telephone surveys to the following industries in Canada and the U.S.:

- Retailers
- Processors
- Distributors
- Celiac Associations

Unfortunately, there were some challenges obtaining the required data and alternate methods of data collection were devised. For the second round of primary data collection audit and survey instruments were created to identify consumer-ready pulse products available in key North American markets and the companies that process these products. Survey instruments are included in Appendix A.

For the Celiac market, a questionnaire concerning gluten-free pasta was administered to members of North American support groups. Canglobal received responses from across North America, via personal administration, E-mail and courier. From the findings, Canglobal was able to deduct that only 20 percent of celiacs had tried or were familiar with gluten-free pasta made from pulses. Of that 20 percent, perceptions of current products being offered were mixed. Some people felt that texture was better, while others could not get past the unusual taste of pulse pasta to eat it on a regular basis. Canglobal also found that the majority of celiacs surveyed, eat pasta at least once every two weeks, thus making it a relatively highly demanded product. Taste, texture and price were the most important characteristics of gluten-free pasta and the most highly demanded products either not on the market, or in limited supply, were pre-baked goods, soups and cereal.

For the consumer-ready market, in-store audits and interviews were conducted. Separate surveys were designed for mainstream retail grocery stores and ethnic specialty stores. The ethnic specialty stores surveyed included Middle Eastern, Hispanic and East Indian stores. For the retail audit, all products containing pulses were identified and recorded. Once the audit was completed, a short survey was administered to the store manager. From the audit information, Canglobal created a list of processors in the industry who were later called and interviewed. For a detailed contact list please refer to Appendix A.

From the retail surveys, Canglobal has deducted that all of the stores surveyed in Canada and the U.S. sell products containing pulses. There has also been an increase in the number of ethnic

products coming onto the market in the past three years and many stores have made modifications to accommodate the new products. In the ethnic specialty stores, a high percentage of products, approximately 80 percent, are imported. However, pulse products and products containing pulses carried by these stores vary from approximately 20 percent to 40 percent. Indian and Middle Eastern specialty stores have indicated that they have increased product lines of snacks as well as dry fruits. Highly demanded products include oils, spices, meats, snacks, dried fruits and produce. However, it is not possible to state that pulses are the top sellers at the majority of ethnic or specialty stores. For detailed in-store audit results refer to Appendix D.

8.2. Conclusions

The possibilities to produce consumer-ready products are abundant. The technologies are available within our province, although some adaptations may need to be made depending on raw material used.

Critical Decision Factors

The critical decision factors that affect whether secondary processing can be Saskatchewan are as follows:

- **Money**
  Will and are the monetary resources available to Saskatchewan processors wanting to undertake further value-added processing?
- **Market Acceptability**
  Products must be developed that will meet consumer demands and are aligned with consumer trends.
- **Logistical Constraints**
  Saskatchewan is located far from major North American urban centres. Many types of processing add weight and/or size, which can make transportation to these centres very expensive.
- **Vision and Risk Acceptance**
  Do Saskatchewan entrepreneurs possess the vision and drive in developing more value-added consumer-ready pulse products. Are producers willing to start processing on a small scale even if the potential immediate gains will not be large?

The research and analysis conducted indicates that opportunities exist to develop small and medium scale processing in Saskatchewan. In many of the market segments examined, small and medium scale processors account for most of the market. As the success of these smaller processors indicates, neither location nor size is of great importance, or precludes success in many cases.

What is imperative is that products be developed that meet consumer demands. This will require thorough product development and testing and specific market research on the part of the

processor. This research and development will depend on the type of product or product line being considered.

The success of many smaller-scale processors indicates that it is necessary to see the development of value-added food processing in Saskatchewan as being more than a head office attached to a processing plant. Generally, many small-scale processors contract with food processing facilities around North America, which enables them to be competitive with much larger brand-name food processors. Contracting the processing allows them to achieve greater economies of size than they would otherwise achieve, minimizes risk and helps overcome capital constraints to the development of expensive facilities.

Value-Added Processing in the Pulse-Belt

Companies interested in the development of further value-added pulse processing in Saskatchewan can gain some insights by looking at how pulse processing has evolved in eastern Washington and Western Idaho. These areas have been growing large amounts of pulses for more than 40 years and are sometimes referred to as the "Pulse Belt". There are dozens of small-scale pulse processors in this area that include cleaners and baggers of bulk pulses and also companies producing soup mixes, snack foods, organic pulse products, etc.

During the course of this study, many of these companies were contacted. Most companies evolved from either a single pulse farmer, group of farmers, or business minded person living in a neighboring town, who wanted to do something more with pulses. Many of these small firms employ less than ten people, produce five or less product lines and started with small amounts of capital (e.g., less than $10,000). Some have grown into relatively large operations but some remain small in order to avoid the management, labor and/or finance problems that go along with growth.

Several Pulse Belt operators cited the experiences of neighboring processors that grew too big, too fast, or got involved in heavy "wheeling and dealing with the California crowd." As a result, they were stuck with unsold product or big Californian buyers would "sting" them by collapsing and leaving unpaid bills after convincing the small processor to expand by leveraging their financial resources. Such experiences have made many of these family-oriented pulse-processing operations cautious of expansion.

Several small firms have been purchased by larger food processors in other parts of the country. It appears, that in most cases, this was motivated by large processors wanting a plant that could manufacture product lines to compliment their existing lines and/or that could be marketed jointly. For instance, a black bean processor in southern California might purchase a small processor of lentil and pea soup mixes in Idaho in order to offer a more complete line of pulse based products to supermarket chains.

When asked about the possibility of sourcing pulses from Saskatchewan, almost all processors in the Pulse Belt responded that they have all the pulses they need at hand. When asked about moving to Saskatchewan or the possibility of setting up a processing plant in this province, no one could see a reason or an advantage in doing so. However, one of the processors interviewed, said he and his wife were retiring and would be interested in making a franchise arrangement

with anyone, including "you people up in Canada" that wanted to develop and expand the market for the soup mixes they had created.

Several companies interviewed suggested phoning pulse processors in other parts of the U.S. who had bought out small processors and/or franchised or contracted for specific product lines. These non-Pulse Belt processors were somewhat larger and had one or more processing plants (one had six) in different parts of the U.S. Several of these plants said they are or have purchased raw pulses from companies in Saskatchewan. Several said that in the past they sometimes had quality problems with Saskatchewan sourced product although this has become less and less of a problem over time. One Tennessee plant owner claimed that he could source product as cheap or cheaper from Saskatchewan as he could from Idaho so he was buying Saskatchewan pulses. However, for his Colorado plant, he was using only American pulses because it was more convenient.

Attracting Investment into Saskatchewan

In terms of attracting investment to the processing industry of Saskatchewan from established processors in North America, none of the large processors contacted could see any strong reason to set up a processing plant in Saskatchewan for the following reasons:

- They can easily source the required bulk pulses from American or Canadian sources
- They feel that the shipping rate for bulk pulses from Saskatchewan, going to processing plants in the U.S., is cheaper than for "boxed goods" (i.e., processed pulse products) from Saskatchewan going to a multitude of destinations in the USA
- They are happy living where they are and want their processing plants close to where they live
- It is easier to add another processing line to existing plants than to build a new plant "up where you guys are"

While it is unlikely that existing U.S. processors would consider locating in Saskatchewan, there are opportunities for start-up secondary processors to establish themselves in the province just as they have in the Pulse Belt. Fortunately many potential value-added consumer-ready pulse products do not require a large amount of capital to produce small amounts to be trial marketed. If trial products prove successful, a larger plant can be built; if they prove unsuccessful, the idea can be dropped or altered at relatively low cost.

Establishment of Processing Facilities in Saskatchewan

The establishment of specialized processing facilities, at varying levels of value-added activity, and through special interest consumer channels, is a strong possibility for Saskatchewan. For example, market distributors and retailers of East Indian food products, particularly lentils, have been exploring establishing dedicated processing facilities in Saskatchewan to supply their already established market distribution.

One specific example is Ambika Enterprises Ltd., a Vancouver based company that imports ready split lentils from India to the North American market. The company plans on expanding

by setting up operations in Rosetown and splitting red lentils and Kabuli chickpeas. The pulses would then be packaged in one, two and five kg bags. The goal is to process one semi load a day (20 tonnes), five days a week. After splitting and packaging processes are in place, plans are to develop further pulse processing, i.e. flour milling.

Copland Seeds, based in Rosetown, currently cleans and packages whole pulses in 50 lb. bags. Copland Seeds is very interested in a joint venture with Ambika Enterprises because they recognize the potential market for further processed pulses, especially to the splitting stage. This is an indication that primary processors and retailers are recognizing the possibility of adding further value to pulses in Saskatchewan.

Although it is recognized that having full-scale pulse processing in Saskatchewan would be more beneficial than having processing occur outside of the province, contracting production outside of Saskatchewan may, in many cases, be the best initial strategy for most small Saskatchewan-based companies. To insist that greater value-added processing in Saskatchewan must include in-province processing facilities could impair the establishment and development of small firms that could eventually develop processing facilities in Saskatchewan. In addition, although employment generated in processing is important, the employment generated in the marketing of high value-added products may also be significant.

In the case of consumer-ready frozen pulse products, there would appear to be opportunities in the areas of commercial scale production of frozen pulse based curries and soups. In such examples the product would be first cooked and then put in containers or bags for freezing. For a processor contact list refer to Appendix C.

Opportunities in the Gluten-Free Market

Opportunities exist for value-added pulse products, particularly in the gluten-free segment because many products are in the introduction stage of the product life cycle. This is particularly true of pulse flours and pasta, which have only been minimally produced for the past few years. Goals for new entrants will be to educate and gain consumer attention via informative promotions and free samples. The greatest opportunity exists for freeze-dried and dehydrated products containing pulses. This would include instant meals and side dish options. New and novel ready-to-serve products can be marketed on a trial basis through large retail outlets without large listing/shelving fees and the cost of transporting these types of products is relatively low. For a list of competitors in the gluten-free market see Appendix F, section F.2 and for gluten-free company resource information refer to F.3.

The technology that has been developed and patented for making pasta from pea flour should be taken advantage of. Consumers in the gluten-free market are demanding more products and are willing to try new foods. New pulse products will be well accepted if they meet the taste and texture test. However, a strong need was identified for recipe testing and product development as part of the total product offering.

Pea pasta derived from twin-screw heat extrusion possesses the characteristics desired by this market in terms of taste and texture. The main challenge in producing this product is that processing is most viable if it is contracted out. The major consideration in doing so is ensuring

a pure product free of gluten contamination. The entrepreneur will have to contract a small processor willing to take the time to clean the machines before each production run to ensure a high quality, pure product. Gluten-free pulse noodles can be sold alone or can be added into other gluten-free products such as dry ready-to-eat soups and soup mixes.

Partnering with national health associations such as The Heart and Stroke Foundation, Cancer and Diabetes Societies and Dietetics Associations to advocate the consumption of fiber, protein and starch is imperative for successful marketing of pulse products.

Main Conclusions

The main conclusions from the study are as follows:

- **Location is of little importance for small-scale processors**
  Many contract out production to food processing facilities around North America. This allows them to be competitive with larger food processors, minimize risks, direct management skill set requirements and manage capital constraints
- **As products increase in value and level of processing, location, or proximity to the market, becomes less important**
  For example, a high value specialty product produced in Saskatchewan will not be at a significant disadvantage as a result of distance from the consumer. However, many types of processing add weight and/or size, which makes transportation more expensive. Saskatchewan processors must seriously consider this factor before entering into the North American retail food sector
- **Many opportunities exist in lower-value-added, high volume market segments**
  This is true for products such as whole or split bagged pulses
- **Many product opportunities exist in the prepared or easy to prepare foods segments**
  These segments contain a high portion of, value-added and are growing in demand. Product development opportunities are extremely varied and constrained only by the imagination
- **Many opportunities exist for products in the Indian market**
  Most processors in this market are small, and many products are imported. Demand from both consumers and retailers is quickly growing for high value-added canned, frozen and retort pouch packaged products. Opportunities also exist to supply ingredients to processors in this market, though volumes will not be large because most processors are small
- **Opportunities exist to process products for the organic market**
  Most processors in this segment are small, though large diversified food processors are beginning to enter. Demand is strong both for low value-added products such as bagged or canned pulses, as well as greater value-added products that utilize pulses in easy to prepare frozen or retort pouch packaged products. Opportunities also exist to supply ingredients to this market as processors are generally small and many do not have equipment for dehulling, splitting or milling

- **The market for fractionated pulse products shows great potential**
  However, more research and product development must be done. Opportunities in this market are also hampered by specialized expertise needs, high capital requirements and the need for education of potential end-users

- **The market for extruded pulse products shows some potential**
  However, this takes the form of ingredients for further use by other food processors. Contracting may be the most ideal arrangement for processors entering this market at first due to the high capital requirements. Product development and alliances with other processors will also be important

- **Few opportunities exist in the market for high volume pulse products**
  This category includes products such as canned pulses, canned pork and beans, and canned soups. Processing in Saskatchewan is at a disadvantage due to weight add that occurs in the canning process. There is also little interest in relocation of existing facilities to Saskatchewan. The market for canned pulse products is largely dominated by large diversified food processors who are generally located closer to major consumer markets. Processors in these markets generally prefer their pulses supplied whole, cleaned and graded because they have equipment for further processing. Some opportunities, however, exist for small-scale processors in areas such as dried soups where greater opportunity for product differentiation exists. The weight added is also substantially lower in this product segment

- **Few opportunities exist in the Hispanic market**
  Most Hispanic foods use pinto and black beans, which are not grown in large quantities in Saskatchewan. Most Hispanic processors are located near their consumer market, which gives them transportation and marketing advantages. The Hispanic market is also increasingly being targeted by large-scale food processors because of the growing Hispanic population in the United States and the growing mainstream appeal of Hispanic foods

8.3. Recommendations - Capturing the Opportunities

Support from Saskatchewan Agriculture and Food to:

- Continue breeding and agronomic work in pulses, particularly for CDC Gold and other non-tannin varieties
- Develop better methods of identity preservation or integrity of products (e.g., organics)
- Fund support work on food purity testing
- List plants that can do contracting processing
- List facilities that can help develop new products
- List consultants that can develop packaging, labeling, marketing strategies
- Identify and publicize market opportunities and support related research to help capture these opportunities
- Continue collecting and publishing data on pulse production, consumption, prices and trade
- Where appropriate, promote out of province processors to invest and establish facilities in Saskatchewan
- Encourage Saskatchewan entrepreneurs to start small-scale production and sale of consumer-ready pulse products

Support from Saskatchewan Pulse Growers

- Continue breeding and agronomic work in pulses, particularly for CDC Gold and other non-tannin varieties
- Encourage identity preservation, particularly in terms of organic production
- Continue carrying out international trade and market identification missions
- Recognize that there is a domestic market for value-added pulse products and promote products currently on the market through association literature and on the association website
- Identify and publish marketing opportunities and related research in order to capture these opportunities
- Compile a list of all Saskatchewan pulse producers and segment them by traditional and organic production methods
- Compile and periodically update a list of all current Saskatchewan primary and secondary producers including their locations, capacity and products
- Research and publish stories about producers of consumer-ready pulse products in North America and overseas

8.4. Recommendations for Further Research

Finally, as this study was conducted on a comprehensive level identifying production, processing and market trends and demands, further research in the specific identification of niche or specialty product processing is recommended. This research may be done at an individual company level or at a more general economic development level. This is due to the fact that within the North American market, there exist several opportunities for value-added finished or ingredient pulse products, not to mention the immediate opportunities to expand the primary processing capacity of the province.

Appendix A
Survey Instruments

APPENDIX A – SURVEY INSTRUMENTS

A.1 Telephone Surveys

As part of primary research activities, Canglobal created and administered telephone questionnaires to the following six target groups:

- Pulse Product Processors
- Pulse Product Retailers
- Pulse Product Distributors/Brokers
- Gluten-free Product Processors
- Gluten-free Product Retailers
- Celiac Groups and Associations

A.2 In-Store Audit and Interview

Due to the challenges in gathering the proper data via telephone interviews the following survey instruments were created to do personal audits and interviews in the North American retail foods market. Canglobal administered the audits and questionnaires to major grocery stores and ethnic specialty stores in the following markets:

- Toronto
- Vancouver
- Montreal
- Saskatoon
- Miami
- Chicago
- Los Angeles
- New Jersey/New York

A copy of each of the questionnaires and audit form follow. The results of the in-store audits are detailed in Appendix D.

A.3 Gluten-Free Pasta Questionnaire

Due to the challenges in gathering the proper data via telephone interviews the following survey instrument were created to gather the opinions of gluten-free consumers in North America. Canglobal administered the questionnaires via mail, e-mail and in person to celiac association members in the following markets:

- Alberta
- British Columbia
- Manitoba
- Ontario
- Quebec
- Saskatchewan
- California
- Connecticut
- Michigan
- Montana
- New Mexico
- New York
- Oregon
- Texas
- Utah
- Virginia

A copy of the questionnaire and quantitative results follow.

Major Grocery Store Interview Questions

Position of Person Interviewed: .....

Store Name: .....

Address: .....

Date: .....

Interviewer/Auditor Name: .....

If possible, could you characterize the people that shop in your store? (ethnicity, average age, income level, etc.)

In your opinion, what percentage of your total product offering do Hispanic foods represent?

In our opinion, what percentage of your total product offering does Middle Eastern and East Indian foods represent?

Has there been an increase in the amount of Hispanic, Middle Eastern and East Indian products you offer in the last 3 years? Specifically, which products or product types?

If **Yes**, what modifications have you made to your store to accommodate the new products? (Increase shelf space, make new sections, rename aisles, group products, etc.)

What are your 3 top-selling ethnic food products/product types?

What products/product types are you seeing an increased demand for?

In the past 3 years, has the number of suppliers you deal with that supply Hispanic, Middle Eastern and East Indian products increased or decreased?

Other Comments:

Ethnic Specialty Store Interview Questions

Position of Person Interviewed: .....

Store Name: .....

Type of Ethnic Store (Hispanic, East Indian, etc.): .....

Address: .....

Date: .....

Interviewer/Auditor Name: .....

In your opinion, what percentage of your total product offering do imported products represent?

In you opinion, what percentage of your total product offering contains **PULSES** or combinations of **PULSES**? {Beans, peas, chickpeas (garbanzo beans), lentils}?

Have you increased in the amount of products you offer in the last 3 years? Specifically, which products or product types?

What are your 3 top-selling food products/product types?

What products/product types are you seeing an increased demand for?

In the past 3 years, has the number of international suppliers you deal with that supply your ethnic products increased or decreased?

Other Comments:

Gluten-Free Pasta Questionnaire

Association: .....

City: .....

1. What gluten-free pastas do you buy? Please rank in order of the product you buy most often.
(Note: Where Bought refers to grocery store, health food store, Internet, etc.)

Name	Major Ingredient (Rice, potato, quinoa, etc.)	Manufacturer	Where Bought

2. How often do you eat gluten-free pasta?

☐ Once a month

☐ Once every 2 weeks

☐ 1 to 2 times per week

☐ 3 to 5 times per week

☐ Other

3. In your opinion, in the last two (2) years, has the selection of gluten-free pasta products:

☐ Increased

☐ Decreased

☐ Remained the same

For gluten-free pasta, rank the following characteristics in order of importance **1** being the most important:

_____ Convenience

_____ Purity

_____ Packaging

_____ Price

_____ Texture

_____ Ease of use

_____ Taste

_____ Availability

_____ Ease of incorporation into traditional recipes

_____ Product support (labeling information, recipe development, etc.)

5. Do you eat gluten-free pasta made from **PULSES** (lentils, peas, beans, chickpeas/garbanzo beans)?

☐ Yes

☐ No

If **Yes**, what is the product name, manufacturer, major ingredient and where do you buy it?

6. What do you think of gluten-free pasta made from **PULSES** compared to other gluten-free pasta?

7. Considering **ALL** gluten-free products, not just pastas, what products would you like to see (see more of) on the market?

Thank you for your time.

GLUTEN-FREE PASTA QUESTIONNAIRE RESULTS

Canglobal received 65 completed questionnaires from 19 provinces and states in North America including; Alberta, British Colombia, Manitoba, Ontario, Quebec, Saskatchewan, California, Connecticut, Illinois, Maine, Massachusetts, Michigan, Montana, New Mexico, New York, Oregon, Texas, Utah, and Virginia.

1. What gluten-free pastas do you buy? Please rank in order of the product you buy most often.

Name	Major Ingredient	Manufacturer
1. Tinkyada	Rice/Corn Flour	Food Directions, Inc.
2. Pastariso	Organic Rice	Pastariso
3. Mrs. Leeper's	Organic Rice/Corn	Mrs. Leeper's

Point of purchase:

Health Food Stores	67 %
Internet/Mail Order from Suppliers	13 %
Major Grocery Stores	12%
Smaller Retailers/Pharmacies	8%

2. How often do you eat gluten-free pasta?

Once a month	12%
Once every 2 weeks	44%
1 to 2 times per week	36 %
3 to 5 times per week	3 %
Other/Never	3%

3. In your opinion, in the last two (2) years, has the selection of gluten-free pasta products:

Increased	71 %
Decreased	2 %
Remained the same	14%
Unsure or No comment	14%

4. For gluten-free pasta, rank the following characteristics in order of importance **1** being the most important:

__1__	Taste	__6__	Product support
__2__	Texture	__7__	Convenience
__3__	Price	__8__	Ease of incorporation into traditional recipes
__4__	Availability	__9__	Packaging
__5__	Ease of use	__10__	Purity

5. Do you eat gluten-free pasta made from **PULSES** (lentils, peas, beans, chickpeas/garbanzo beans)?

Yes	20%
No	80%

If **Yes**, what is product name, manufacturer, major ingredient and where do you buy it?

Papadini Orzo, Manufactured by Adrienne's using lentils and bought either at a grocery store or a health food store.

6. What do you think of gluten-free pasta made from **PULSES** compared to other gluten-free pasta?

Various comments – please refer to qualitative results.

7. Considering **ALL** gluten-free products, not just pastas, what products would you like to see (see more of) on the market?

Product	Percentage
Baking Mixes	10%
Bread, Bagels, Buns or Rolls	63%
Cereal	21%
Cookies, Cakes, Pastries	17%
Crackers	15%
Pasta Products (stuffed, lasagna, macaroni, etc.)	13%
Pizza (either frozen or pre-made crusts)	8%
Pre-Prepared Meals	17%
Snack Food (licorice, ice cream cones, rice cakes etc.)	15%
Soups	21%
Stuffing	2%
Tortillas	4%

Appendix B
Survey Instruments

APPENDIX B – HISPANIC MARKET

The following section is an in-depth examination of the Hispanic market. It combines secondary research using an array of sources, which include government data, trade journals and ACNielsen reports. The first section examines the U.S. retail Hispanic market. The second section presents a detailed analysis of the demographic break down of Hispanic segments in the United States and Canada by household (where available), origin (ancestry), and urban and rural populations. More specifically, urban centers, mentioned at the outset of this report are discussed. The final section presents food preferences among these segments and provides guidance for pulse food product development. Attached is a list of traditional Hispanic recipes as well as a glossary of Mexican food items.

B.1 Hispanics and the U.S Retail Market

The Hispanic American segment has been following some of the trends occurring within the mainstream consumer segment. Many Hispanic families, for example, now have both parents working, reducing the time women have to make traditional, elaborate, home-cooked meals. Products that were once only made at home can now be purchased ready-to-eat, and both regional market competition and global economies have permitted a decline in prepared foods prices, making them accessible to many.[61] In addition, grocery stores such as Sedano's, Winn Dixie and Publix are tailoring their stores meet the needs of Hispanics through offering in-store deli's and catering services and increasing product lines such as prepared foods such, fresh tortillas, tamales and sofritos[62].

These factors have helped to increase the number of quality, ready-to-eat or heat-and-serve foods purchased by Latin Americans, who have traditionally resisted because of higher costs and inferior taste when compared to homemade products.[63]

Table B.1: Selection of Categories Where Hispanics Spend More On Their Wallets Versus Non-Hispanics

Product	Dollars U.S. Per Buyer
Vegetables-canned hominy	$8.16
Hot sauce	$7.12
Peppers	$9.60
Bouillon	$14.99
Mexican Shells	$12.79
Table Salt	$3.85
Mexican tortillas	$49.24
Unfrozen ice pops	$6.66
Specialty imported cheese	$29.77
Salad & cooking oil	$31.67

Source: AC Nielsen, 2000.

[61] Emma Krause. Prepared Foods Drive New Offerings. *Prepared Foods*, 2000.
[62] Carole Radice. Hispanic Consumers Understanding a Changing market, *Progressive Grocer*, 1997.
[63] Emma Krause. Prepared Foods Drive New Offerings. *Prepared Foods*, 2000.

The above table suggests that many Hispanics purchase traditional foods at the grocery store. Tortillas, for example rank the highest at US$49.24 more than non-Hispanics[64]. The main ingredient used for tortillas, however, is corn flour (a non-pulse base product). The number one canned product within the table listed is corn or hominy. Beans or any other pulse products are not listed in the table. The table below reiterates other research found in this report- Hispanics eat more fresh home cooked meals versus non-Hispanics, indicating a demand for fresh food products (meat, and fruit and vegetables)[65]. Hispanics households keep their kitchens loaded with fresh meats and vegetables.

Table B.2: Indexed Average Annual Spending on Food by Non-Hispanic and Hispanic Households in 1997

	Non-Hispanic Household	Hispanic Household
Average annual spending in 1997	US$35,525	US$29,333
	Index	Index
Food at home	99	117
Cereals & bakery products	100	103
Beef	96	146
Pork	96	143
Poultry	97	130
Fish & seafood	94	162
Eggs	91	176
Fresh milk & cream	98	132
Fruits & vegetables	97	128
Sugars & other sweets	101	90
Fats & oils	99	114
Non-alcoholic beverages	99	107
Food away from home	102	78

*Note: an index of 100 is the average for all U.S. households. An index of 125 indicates spending that is 25 percent above average while an index of 75 indicates spending that is 25 percent below average. Source: Household Spending: Who Spends How Much on What, *New Strategist Publications*, 1999.

B.2 Urban Hispanic Population, United States

Mexicans are the largest group out of the Hispanic population in the United States. However, there exist two of these segments:

One group includes long settled, affluent people who can trace their U.S. ancestry back for centuries.
The other group is consumers whose short U.S. residencies and limited English language skills can pose economic and social barriers[66].

[64] ACNielsen, 2000.
[65] Household Spending: Who Spends How Much on What, *New Strategist Publications*, 1999.
[66] Thora Qaddumi. Impact: Houston Hispanic Market is Ripe for marketing. *Houston Business Journal*. 1999.

B.3 Average Number per Hispanic Household

The average number of persons per Hispanic household is 3.63 in the United States as compared to 2.6 in the average Anglo-American household. Immigrants make up 63 percent of the U.S. Hispanic population, while the remaining 37 percent are of multi-generations. This population can also be broken into sub-ethnic groups: Mexican, Puerto Rican, Cuban, Caribbean, and Central and South American. However, Mexicans are by far the largest Latino subgroup, accounting for approximately 70 percent of the U.S. Hispanic population.[67] The following section will describe each of these segments as well as incorporate a separate analysis of Hispanic immigrants since that a large base of Hispanic Americans make up this segment.

Hispanic Segments

Most marketers are familiar with the three biggest Hispanic-American groups. Since the U.S. census first counted Hispanics in 1970, those who identify Mexico, Puerto Rico and Cuba as their country of origin have comprised about three-fourths of the total U.S. Hispanic population[68]. Hispanics from other Latin-American nations and cultures are less studied, but they constitute one-quarter of an estimated $170 billion dollar consumer market. And because Hispanics of all kinds often live together in small areas, each country of origin can form a visible and desirable target market[69].

Among all Hispanics, the share of Mexicans has fallen from 62 percent of all U.S. Hispanics in 1970 to 61 percent in 1990. The Puerto Rican and Cuban shares have remained at about 12 percent and 5 percent, respectively. Hispanic Americans who do not have origins in these three countries are a small percentage of the nation's total Hispanic population, but they have been growing. Their numbers grew by slightly more than 2 million between 1970 and 1990[70]. Immigrants of the new wave have been seeing civil wars in Nicaragua, El Salvador, Guatemala and Colombia. Others come for jobs or to rejoin family members already in the United States[71].

The 1970 and 1980 censuses identified just four categories of Hispanics: Mexican, Puerto Rican, Cuban and "other." The 1990 census (which is the most recent data), however, provides much more detailed information, identifying 12 nations of Hispanic origin, as well as "other" Central Americans and "other" South Americans[72].

Hispanic Immigrants

One downfall of using the U.S. census data is that many of the smaller Hispanic subgroups never show up on marketers' computer screens. Language barriers and the lack of large ethnic neighborhoods can make it hard to reach them. Also, many Hispanic immigrants do not plan to become U.S. citizens or permanent residents. But rapid growth will inevitably lead more businesses to target Hispanic diversity in the United States. In ten years, America's clustered

[67] Lisa A Yorgey. The Latino Renaissance. *Target Marketing*, 2000.
[68] U.S. Census Bureau, Statistical Abstract of the United States, 1999.
[69] Hispanics in the U.S. as They Enter the New Millennium. *The Latin Quarter News.*1999.
[70]U.S. Census Bureau, Statistical Abstract of the United States, 1999.
[71]Thora Qaddumi. Impact: Houston Hispanic Market is Ripe for marketing. *Houston Business Journal.*1999.
[72]U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Hispanic neighborhoods are forecasted to grow. By the year 2040, for example, the Hispanic population is projected to be 25 percent of the U.S. population[73].

Hispanic immigrants tend to gravitate in one or two major urban areas. New York City and Los Angeles early became a popular destination for Hispanics, but more recently, many have chosen Miami, Washington, D.C and San Francisco. An example of an unusually high concentration of a Hispanic group in one city is the 77 percent concentration of people of Dominican origin in the New York urbanized area. Greater New York also has 60 percent of the nation's Ecuadorians and 44 percent of Puerto Ricans. Los Angeles has 49 percent of the nation's Guatemalans and 47 percent of its Salvadorans. Miami is home to 53 percent of Cuban Americans. Six of the 12 Hispanic subgroups identified in the 1990 census have more than 80 percent of their populations in the nation's 20 largest cities and 3 others have between 70 and 79 percent[74].

Food companies targeting Hispanic immigrants, however, need to consider factors such as ethnic origin of Hispanic immigrants for designing products to specific Hispanic populations. They also need to consider that many Hispanic immigrants have a buying power, which is on average lower than second or third generation Hispanic Americans[75].

B.4 Demographics of Hispanic Ancestry

Mexican Americans

Mexican Americans are the only exception to the urban rule, because many of their ancestors never immigrated. Many Mexicans became U.S. citizens in the 19th century following the acquisition of Mexican territory by the United States. Almost all of this land was and still is rural or small cities. Many Mexicans who immigrated to the U.S. in recent years have settled in these same southwestern states. Here they normally reside in cities both large and small, as well as in rural areas[76].

Several U.S. places have Hispanic populations that rival or even surpass the largest cities in their countries of origin. New York's Puerto Rican population is now more than double that of San Juan. New York also has the second-largest urban population of Dominicans in the world and the third-largest Ecuadorian population. Only those of their respective capitals surpass the Mexican, Salvadoran and Guatemalan populations of urban Los Angeles: Mexico City, San Salvador and Guatemala City[77]. 18 percent of all Hispanic Americans live in Los Angeles and 12 percent live in New York. These two urban areas rank among the top-5 for 11 of the 12 Hispanic groups. Miami is on the top-5 list for 9 Hispanic groups, Washington, D.C., for 6, San Francisco for 5, and Houston and Chicago for 4[78].

The census also reveals many smaller areas with large and growing populations of specific Hispanics. For example, San Antonio and San Diego have the fourth- and fifth-largest Mexican-

[73] Hispanics in the U.S. as They Enter the New Millennium. *The Latin Quarter News.*1999.
[74] U.S. Census
[75] Based on income statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.
[76] Thora Qaddumi. Impact: Houston Hispanic Market is Ripe for marketing. *Houston Business Journal.*1999.
[77] The Cass Hispanic Publication Network. Ethnic Market, 2000.
[78] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

American communities in the nation and Philadelphia has the third-largest Puerto Rican population. Tampa and Fort Lauderdale have the fourth- and fifth-largest concentrations of Cubans and the Massachusetts areas of Boston and Lawrence have the third- and fourth-largest Dominican groups[79].

Laredo, Texas is not big as big as other urban areas, with 99,258 people in 1990. But 94 percent of Laredo residents are Hispanic and the overwhelming majority is of Mexican origin. The census count of Hispanics, also mainly Mexican is 90 percent in Brownsville and 83 percent in McAllen, two other Texas border towns. Several border towns in other states have equally high shares of Mexican Americans[80].
Perhaps the most exotic place where Mexicans congregate in large numbers is in the Bay City-Saginaw metropolitan area in Michigan. Mexicans first came to Bay City-Saginaw to work on the local cucumber farms. The descendants of these farm laborers now hold urban jobs, many in the local foundries[81].

Puerto Ricans

Puerto Ricans began immigrating to the U.S. after World War II, and now they are a significant presence in the industrial cities of New York and southern New England. When older residents of these cities had achieved middle-class status and moved to the suburbs, they left behind entry-level jobs in manufacturing and service and low-cost housing. The Puerto Ricans who took those jobs established the barrios of New York City[82].

While less affluent Puerto Ricans came to the U.S. for jobs, many middle-class Cubans fled their native country for political reasons. Cubans soon became closely identified with southeastern Florida but now they are found in several other Florida towns. In the university towns of Gainesville and Tallahassee for example, many second-generation Cuban Americans live as students[83].

Dominicans

Dominicans are a major Hispanic force in New York City and several New England industrial towns. They are only 2 percent of the nation's 1990 Hispanic population, but they are 15 percent of Hispanics in New York, 22 percent in Providence and 35 percent in Lawrence, Massachusetts. Dominicans are flocking to the Northeast for the same reason Puerto Ricans did several decades ago: jobs. Hondurans and Nicaraguans, who have also immigrated largely for economic reasons, are settling in more bilingual areas on the Gulf of Mexico[84].

Hondurans

Hondurans are most numerous in New York, Los Angeles and Miami. Nicaraguans are most common in Miami, Los Angeles and San Francisco. But the enormous numbers of other

[79] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.
[80] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.
[81] American Demographics, 1999.
[82] Alan Waldman. Eight Trends to Watch. Multichannel News, October 30, 2000
[83] Alan Waldman. Eight Trends to Watch Multichannel News, October 30, 2000
[84] Alan Waldman. Eight Trends to Watch Multichannel News, October 30, 2000

Hispanics in these large urban areas, therefore, their largest concentrations emerge in unexpected places dwarfs both groups. Although Hondurans are less than 1 percent of the United States Hispanic population, they are 20 percent of Hispanics in New Orleans. Nicaraguans are also well represented among New Orleans Hispanics and they are visible in nearby Baton Rouge and Port Arthur. Salvadorians are just percent of the nation's Hispanic population, but 25 percent of Hispanics in Washington, DC[85].

Panamanians

Panamanians are perhaps the most geographically diverse of any Hispanic group. They are disproportionately represented in the local Hispanic population in towns near large military installations such as Fayetteville, North Carolina (Fort Bragg); Columbus, Georgia (Fort Benning); Clarksville, Tennessee (Fort Campbell); Killeen, Texas (Fort Hood); Seaside, California (Fort Ord); and naval installations in Norfolk, Virginia and Tacoma, Washington. Many who identified their ethnic origin as Panamanian were military personnel once stationed in the former Panama Canal Zone.

People of South-American origin began moving in large numbers from New York City or came directly from their homelands to coastal Connecticut towns during the 1980s, attracted to a growing number of service jobs that were not being filled by the local population. Housing was also more affordable than in New York City[86].

The Connecticut town of Stamford is particularly attractive to South Americans and is a high-income area. Its Hispanic population includes large proportions of Colombians, Ecuadorians and Peruvians. In nearby Norwalk, Colombians are 20 percent of the city's Hispanic population[87].

Other Hispanics

So far, few U.S. corporations have paid attention to the special needs of "other" Hispanics. Another problem is that Hispanic immigrants are less likely than previous generations of immigrants to live in ethnic-specific neighborhoods. In Miami, for example, newly arrived Cubans are often neighbors to Nicaraguans and Nicaraguans may live next to Venezuelans. The city's "Little Havana" neighborhood is defined by its Cuban-owned businesses but census data does not show an extreme over representation of Cubans living in the area adjacent to those businesses. Another problem is that many Hispanic immigrants are not interested in owning a home, buying a new car, or otherwise participating as full-fledged American consumers[88].

Non-Urban Hispanic Population

For many years Hispanics have clustered in major urban markets like New York, Los Angeles, Miami, San Francisco, Chicago and Houston. However, a big trend is the explosion of Hispanic growth into non-traditional states like Wisconsin, Nebraska and Oklahoma. A report released by the U.S. Census Bureau on August 30, 2000, quantifying Hispanic population shifts from April 1, 1990 to July 1, 1999, shows exactly where the major migrations are heading. Percentage wise,

[85] Alan Waldman. Eight Trends to Watch Multichannel News, October 30, 2000
[86] Ibid.
[87] Ibid.
[88] U.S. Census Bureau, 1990.

Arkansas has been the major destination (up to 170 percent), followed by Nevada (145 percent), North Carolina (129 percent), Georgia (120 percent), Nebraska (108 percent), Tennessee (105 percent), Oregon (890 percent), Iowa (89 percent) and South Carolina (78 percent). The report also shows surprising increases in really unlikely places like Utah (780 percent), Idaho (76 percent), and New Hampshire (73 percent) and Minnesota (72 percent). The main reason for this shift is due to corporate farms that are hiring Hispanic new arrivals. This means the distribution of ethnic food product can be focused to a relative small market.

Although 50 percent more than the population of the U.S. Hispanic population lives in two states- California and Texas, Hispanics are relocating and migrating to "non-traditional" cities due to labor demands of growing service industries and industrial area. Dramatic Hispanic growth is being seen in such communities as:

- Las Vegas
- Fort Smith
- Ark
- Bend
- Oregon
- Atlanta
- Wilmington, N.C.
- Omaha
- Knoxville
- Tennessee
- Jonesboro
- Little Rock-Pine Bluff
- Minneapolis-St. Paul

B.5 Hispanic Demographic Trends per City/State

California

Hispanics represent 30 percent of the population in California today and by 2020 are projected to outnumber non-Hispanic whites there. Many Latinos migrated to California back when it was still a part of Mexico. But more than 80 percent of Southern California's Hispanics came after 1970. There is a high percentage of Hispanics in South Florida who have held onto their language. About 50 to 55 percent are of Cuban decent, 15 to 20 percent Colombian, 10 percent Nicaraguan and 20 percent Brazilian and Venezuelan.[89]. In California more than 30 percent of the customer base is Hispanic and Hispanic Buying power is $112 billion[90].

Immigrant Mexicans. Newcomers to Los Angeles traditionally settle in enclaves like East L.A., but in the past decade they have also poured into low-income black areas like South Central and Compton as well as Huntington Park, a formerly Anglo neighborhood that had become a ghost town. The area now has businesses such as Spanish-named car dealerships, shoe stores, bridal shops, and supermarkets stretching for blocks[91].

Middle-class Mexicans. Many Mexican-Americans in California have moved up the socioeconomic ladder, sometimes in a single generation. Overall, two thirds of Latinos in the United States live above the poverty line; half of Southern California's native Latino families, and one third of those from abroad, are middle class. New arrivals often hold two jobs, leveraging themselves or their children into such middle-income occupations as police officer, manager, and executive secretary. They have migrated from traditional ports of entry to more-prosperous neighborhoods and suburbs like San Gabriel and Montebello. There, Mexican-Americans buy three- and four-bedroom tract houses next door to Asians. Farther east, in Hacienda Heights, Mexican-American families' yards are bigger and the driveways parked with BMWs and Jeep Cherokees[92].

Barrio dwellers. Many Mexicans move up and out, but a growing number of second- and third-generation kids are getting trapped in ghettos. Boyle Heights' housing projects are the largest west of the Mississippi; 60 gangs with 10,000 members run rampant over 16 square miles of urban wasteland.

Central Americans of Pico Union. As tough as life may be in the Mexican barrios, it is difficult in Pico Union, a gang-ridden section of L.A. just east of MacArthur Park that serves as the principal U.S. port of entry for Central Americans, the fastest-growing segment of L.A.'s population. Nearby Koreatown is also now predominantly Central American. Greater L.A. is home to half of all the Salvadorans and Guatemalans who live in the United States.

Even though 97 percent of U.S. Central Americans are working, incomes in Pico Union commonly range from $5,000 to $10,000. Everyone works, kids and parents. Most parents have less than a sixth-grade education; their children who work full time risk remaining at society's

[89] Debbie Garbato Stankevich. Marketing to Hispanics: Beyond the Obvious. . *Discount Merchandiser*. 1998
[90] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report*, 1998.
[91] Ibid.
[92] Ibid.

lower rungs. Two thirds of the families manage to stay above the poverty line, running little markets and shops along Eighth Street.

Los Angeles Population

In Los Angeles, The Hispanic Latino population was 46.1 percent, while 31.6 percent were white non-Hispanics.[93] The tables below underline that Mexicans make up the largest segment of Hispanics at 92,5141.The second largest segment is a mix of Guatemalans (86078) and South and Central Americans. The largest Hispanic segment per age group is between 22 and 34 years old[94].

Table B.3: Hispanic Origin Los Angeles City

Origin	Population
Not of Hispanic origin	2114922
Hispanic Origin	
Mexican	925141
Puerto Rican	13535
Cuban	15602
Other Hispanic	
Dominican	839
Central American	
Guatemalan	86078
Honduran	14407
Nicaraguan	17032
Panamanian	2654
Salvadoran	184513
Other Central American	5515
South American	
Colombian	7779
Ecuadorian	8628
Peruvian	9842
Other South American	15262
Other Hispanic	63649

Source: U.S. Census Bureau 1990.

[93] 1998 L.A. City Wide Housing population Estimate
[94] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report*, 1998.

Table B.4: Sex by Age, Los Angeles City

Age	Males	Females
Under 1 year	15022	14133
1 and 2 years	33122	32726
3 and 4 years	30271	28699
5 years	14176	14188
6 years	12609	12413
7 to 9 years	38628	36941
10 and 11 years	23590	22824
12 and 13 years	23584	22309
14 years	11493	10903
15 years	11844	10973
16 years	11966	10494
17 years	13660	11842
18 years	15694	12464
19 years	17226	12553
20 years	19703	14305
21 years	19490	14219
22 to 24 years	60096	43638
25 to 29 years	93119	74948
30 to 34 years	75659	65630
35 to 39 years	54051	49897
40 to 44 years	36709	36678
45 to 49 years	24900	25974
50 to 54 years	16871	20343
55 to 59 years	12842	15808
60 and 61 years	4336	5658
62 o 64 years	5795	8062
65 to 69 years	7333	10264
70 to 79 years	4068	7244
75 to 79 years	3087	5164
80 to 84 years	1702	2811
85 years and over	1347	2378

Source: U.S. Census Bureau, 1990.

Since that L.A. is one of the largest Hispanic markets in the United States, it is valuable to take a closer look at this segment's shopping habits. Please note that this is a brief section of secondary information of the report. Further in depth research has been conducted by in store informal interviews.

Food Retail Market, L.A.

A new panel study from ACNielsen on grocery purchasing habits of Hispanic consumers in the Los Angeles area shows a definite preference for smaller mom-and-pop stores among Spanish-speaking-only or Spanish-speaking preferred households. Conversely, Hispanic families that are bilingual or prefer to speak English patronize the larger stores that offer better prices. A lot of Hispanic households in L.A. especially as they become more acculturated, start to frequent the

large supermarkets more often, but they are forced to go to the smaller stores to get food from their country[95].

Besides a difference in preference for shopping outlets, specific differences in product purchasing behavior exist between Hispanic households that speak English and those that speak Spanish. Hispanics, particularly those of Spanish speaking households, are more apt to turn to neighborhood grocery stores like bodegas for the variety of ethnic foods offered, such as fresh food produce items like agave cactus and special cuts of meat. Compared with 97 percent of L.A. consumers who patronize large, $2 million plus stores, the survey from ACNielsen showed only 88 percent of Hispanics in that market shop at those types of food outlets. The differences are even more pronounced between Spanish-speaking-only and English Speaking Hispanics: 74 percent of the Spanish only group shopped at large stores vs. 96 percent of English-speaking households. The reasons for this may because:

- Hispanics feel more comfortable with a small neighborhood grocery store that offers ethnic food products they are familiar with. But as they become more acculturated, Hispanics' preferences shift toward the big stores that feature better prices and more services.
- Spanish-speaking only households may not have the transportation to get to the larger stores. One retailer in L.A. for example provides free bus rides to his store.
- According to an ACNielsen report, while 100 percent of English only preferred households shop in large $2 million plus grocery stores, only 89 percent of Spanish only preferred and 96 percent of bilingual households do. In addition, viewed UPC only purchasing for the full year ending in 2000, 56 percent of Spanish only preferred "all other" grocery stores compared to 46 percent of bilinguals and 38 percent of English/only preferred. All other classified as small, independent grocers[96].
- Mexican tortillas are the most sought after food item, while a proportion of food dollars spent on tortilla chips.
- The top 5 choices of ethnic products for Hispanics: Mexican specialty items, fruit juices, Mexican tortillas, canned hominy (corn) and chilies.[97]
- L.A. Hispanics have a low usage of prepared foods such as rice mixes, instant rice and soup as compared to "prepared from scratch" food categories such as bulk rice, dry soup, bouillon and salad oil. Frozen foods also have a low incidence among this group
- Cooking from scratch is a way of life for most non-or less acculturated Hispanic housewives. Presently, usage of packaged or frozen food would reflect poorly on the mother. This is primarily due to cultural values, lack of familiarity with prepared foods and cost.[98]

[95] ACNielsen. Why You Should Know these Important Consumers. 2000.
[96] Ibid.
[97] Debbie Howell. Spanish-Speaking Hispanics prefer neighborhood shops. *Discount Store News*. 1999
[98] ACNielsen. Acculturation Counts, A Look at the Hispanic Consumer.2000.

Table B.5: Where Hispanics Shop for Various Products. (Percent of Money Spent on UPC-coded Products.)

Food	Non-Hispanic	Hispanic	Spanish only preferred	Bilingual	English Only preferred
$2MM+ Grocery	38	34	32	34	36
All other grocery	1	3	4	2	1
All other food	1	5	9	3	1
Non-food					
Drug	4	3	3	3	3
Mass Merchandise	12	12	11	13	14
Wholesale Club	11	11	9	13	12

Source: ACNielsen, 2000.

Texas

Texas Mexicans and California Mexicans are very different. Texas Mexicans, for example have lived in the United States longer than Mexicans in California. Texan Mexicans have a mix of culture that is equal parts Texas and Mexico.

South Texans. The highest concentration of Mexicans is the lower Rio Grande Valley. In Laredo and Brownsville, Mexicans form 80 to 95 percent of the population. They began immigrating to this area in the early 1700s; therefore they have a strong sense of belonging. Hidalgo County, one of the United States low-income areas hosts a large Mexican population[99].

Houston Mexicans. In Houston, Latinos are still a minority. Anglos make up 41 percent of the population and hold most positions of political and economic power. However, Hispanics-mostly Mexicans, but also a growing number of Central Americans, have grown from 18 to 28 percent since 1980. (The remaining 31 percent of Houston is mostly African-American and Asian.) Houston's Mexican-Americans are mostly working-class residents of ethnic enclaves even though 56 percent of them are U.S.-born[100].

Texas Guatemalans. Houston's urban population has recently increased with Mayan Indians of Guatemala, who grew up in the rural highlands speaking their native Indian language. Because they have little chance of upward mobility in their own highly race- and class-conscious country, the Mayas migrated to Houston's Central American working class. This population tends to keep living in the southwest Houston enclave[101]. Dallas City and Houston City are largely comprised of Mexicans 18,3430 and 35,7508, respectively. The next two largest segments, although much

[99] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report*, 1998.
[100] Ibid.
[101] Ibid.

smaller in number, consist of Puerto Ricans and of Cubans. The largest Male and female Hispanic segments are between the ages of 25 and 34[102]. See the following tables for further details.

Table B.6: Hispanic Origin Dallas City

Origin	Population
Not of Hispanic origin	802119
Hispanic Origin	
Mexican	183430
Puerto Rican	1525
Cuban	1525
Other Hispanic	
Dominican	124
Central American	
Guatemalan	1124
Honduran	777
Nicaraguan	541
Panamanian	204
Salvadoran	480
Other Central American	
South American	
Colombian	842
Ecuadorian	322
Peruvian	836
Other South American	618
Other Hispanic	7631

Source: U.S. Census Bureau 1990.

[102] U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Table B.7: Hispanics, Sex by Age, Dallas City

Age	Males	Females
Under 1 year	4769	4564
1 and 2 years	11447	10802
3 and 4 years	10323	9768
5 years	5054	4512
6 years	4736	5154
7 to 9 years	13944	14103
10 and 11 years	8179	7562
12 and 13 years	7923	7397
14 years	3955	3453
15 years	3864	3538
16 years	3823	3778
17 years	4659	3430
18 years	4470	3771
19 years	4505	3634
20 years	4835	4054
21 years	4755	4323
22 to 24 years	16555	13242
25 to 29 years	30225	24045
30 to 34 years	25166	21180
35 to 39 years	18039	15602
40 to 44 years	11713	11225
45 to 49 years	9234	8210
50 to 54 years	6031	6189
55 to 59 years	4338	5194
60 and 61 years	1744	1777
62 o 64 years	2297	2516
65 to 69 years	2474	3151
70 to 79 years	1371	1858
75 to 79 years	975	1302
80 to 84 years	415	896
85 years and over	335	560

Source: U.S. Census Bureau, 1990.

Table B.8: Hispanic Origin Houston City

Origin	Population
Not of Hispanic origin	1187729
Hispanic Origin	
Mexican	357508
Puerto Rican	4644
Cuban	4710
Other Hispanic	
Dominican	679
Central American	
Guatemalan	4394
Honduran	4392
Nicaraguan	2163
Panamanian	697
Salvadoran	32747
Other Central American	808
South American	
Colombian	5947
Ecuadorian	1157
Peruvian	1799
Other South American	4165
Other Hispanic	17133

Source: U.S. Census Bureau 1990.

Chicago

Latinos followed Irish, Polish, and other European immigrants to Chicago. Only Los Angeles and New York have larger Hispanic populations than Chicago, which is currently approximately 27 percent Hispanic. Chicago's mix of Hispanic subgroups is more diverse than that of L.A. or New York. Among U.S. cities, Chicago ranks second in the number of Puerto Ricans, fourth in the number of Mexicans, and third in the number of Ecuadorians. Guatemalans and Cubans are also high in number. As a whole, Chicago has the fourth-largest Hispanic population of any urban area, at 4 percent of the national total[103].

Chicago Mexicans.

Chicago's first Mexican immigrants (nearly 600,000) came to work on the railroad just after the turn of the 19th century. Another wave of immigrants came to work in steel mills during World War II. Chicago's main attraction for Hispanics is employment opportunities. 60 percent of Hispanics in Chicago are native-born and 66 percent of Hispanics lack high school diplomas. However, 24 percent of the Hispanic population belongs to low-income families (The national rate is 31 percent). The Mexican commercial Hispanic area of Chicago is 26th Street. This area generates more tax revenue than any other retail strip in the city excluding Tony Michigan

[103] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Avenue. It is lined with hundreds of stores like La Villita Dry Cleaner, a piñata shop, Nuevo León restaurant--but has just one Walgreen's[104].

Chicago Puerto Ricans

Paseo Boricua is an area of Chicago, which consists of 80 Puerto Rican-owned small food shops. However, due to inner city development, a large number of Puerto Ricans are moving out of the urban areas into suburban ghettos. Puerto Ricans are the lowest income group from other Hispanic groups. They have the highest rates of poverty (38 percent, unemployment (11.2 percent), and households headed by single females (41 percent)[105].

The tables below indicate that overall Chicago is home to the largest Mexican (34,8040) and Puerto Rican (12,109) segments. The largest Hispanic age groups are between 22 and 39 years old[106].

Table B.9: Hispanic Origin Chicago City

Origin	Population
Not of Hispanic origin	2248411
Hispanic Origin	
Mexican	348040
Puerto Rican	12109
Cuban	10478
Other Hispanic	
Dominican	1166
Central American	12895
Guatemalan	2138
Honduran	848
Nicaraguan	785
Panamanian	3877
Salvadoran	809
Other Central American	
South American	
Colombian	5491
Ecuadorian	6606
Peruvian	2592
Other South American	2884
Other Hispanic	15497

Source: U.S. Census Bureau 1990.

[104] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report,* 1998.
[105] Ibid.
[106] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Table B.10: Hispanics and Sex by Age, Chicago City

Age	Males	Females
Under 1 year	5489	4938
1 and 2 years	13252	12431
3 and 4 years	12482	11482
5 years	6143	5794
6 years	5541	5392
7 to 9 years	16910	15983
10 and 11 years	10626	10912
12 and 13 years	10506	10406
14 years	5695	4837
15 years	5136	4639
16 years	5076	4738
17 years	5766	4742
18 years	5795	4606
19 years	5777	4640
20 years	6266	5280
21 years	6282	4926
22 to 24 years	18662	14506
25 to 29 years	31393	26027
30 to 34 years	27190	23825
35 to 39 years	21007	19994
40 to 44 years	15465	14729
45 to 49 years	11642	10609
50 to 54 years	8639	8682
55 to 59 years	6854	6894
60 and 61 years	2301	2459
62 o 64 years	3141	3250
65 to 69 years	3567	3609
70 to 79 years	1632	2194
75 to 79 years	945	1453
80 to 84 years	445	911
85 years and over	289	513

Source: U.S. Census Bureau, 1990.

Miami

Miami is the one major city in the United States where Hispanics dominate numerically, politically, and economically. They make up about 60 percent of the population, a small increase of only 5 percent since 1960. Miami is seen as a Cuban city, but other immigrants who have come since 1980 now make up 40 percent of the population[107].

[107] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Cubans

Cubans are one of the wealthiest Hispanic groups in the United States. Of the 80 Latinos in the United States worth US$25 million or more, 32 are of Cuban origin. The first wave of Cuban immigrants to Miami began in the 1960s. Alone among Hispanic subgroups, Cubans were warmly welcomed by the U.S. government throughout the cold war. They received financial assistance and, until 1995, automatic legal residency. As of 1990, 55 percent of Cubans had graduated from high school, and 20 percent held white-collar jobs. However 33 percent of Cubans in Miami do not speak English well or at all. Of this group many older Cubans with little incentive to learn the language in a Spanish-speaking city[108].

Nicaraguans.

During the 1980s, young Nicaraguans came to Miami to evade the military drafts. After the Communists finally lost power in 1990, some 75,000 Nicaraguans remained in the United States (many of who are awaiting citizenship). Nicaraguans settled in Cuban areas like Hialeah and East Little Havana and found work in Cuban-owned businesses. Nicaraguan immigrants are mostly poor, and have come from rural areas. Nicaraguans average 26 years of age and have nine years of schooling. More than half do not speak English well or at all, and their median income of $9,000 in 1990 was the second lowest of all ethnic groups in Miami. (The lowest-ranked group was the 20,000 Hondurans who moved to Miami when the Nicaraguan war unsettled their country.)[109]

South Americans.

Miami's Hispanic upper crust is not just Cuban; it also includes Colombians, Peruvians, and other South Americans. These wealthy immigrants began coming to Miami when their countries' economies plunged into crisis in the 1980s. Business and professional people fled with their money, buying houses in Kendall, a Miami suburb, and condos in waterfront high-rises. They number well over 100,000[110].

The table below suggests that Cubans (13,8359) represent the largest Hispanic population for the Miami area, followed by Nicaraguans (28,202) and other South Americans (Colombians, Ecuadorians, Peruvians)[111].

[108] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report,* 1998.
[109] Ibid.
[110] Ibid.
[111] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Table B.11: Hispanic Origin Miami City

Origin	Population
Not of Hispanic origin	135110
Hispanic Origin	
Mexican	1981
Puerto Rican	11173
Cuban	138359
Other Hispanic	
Dominican	5786
Central American	
Guatemalan	2660
Honduran	7715
Nicaraguan	28202
Panamanian	898
Salvadoran	2446
Other Central American	982
South American	
Colombian	5218
Ecuadorian	1175
Peruvian	2070
Other South American	3920
Other Hispanic	10853

Source: U.S. Census Bureau 1990.

New York

Puerto Ricans currently represent 50 percent New York's Hispanics. Immigrants from the Dominican Republic, Colombia, and Cuba represent 3.6 million.

Puerto Ricans

Puerto Ricans began immigrating to the United States in the 1950s. One million immigrated to New York after World War II, forming the backbone of the city's manufacturing work force. By the 1960s, Puerto Ricans also owned some 4,000 businesses. Many were in Spanish Harlem, which was dotted with restaurants serving chicken *asopao* and *pasteles*, (the Puerto Rican version of tamales made with green bananas)[112].

Dominicans

Washington Heights is the expatriate capital of Dominicans, who now represent almost 10 percent of all Latinos in the New York area. They settled in the upper Manhattan area. A large amount of the population has opened neighborhood stores called bodegas all over the city. Dominicans' high median income is approximately between $10,000 and $15,000, their unemployment rate is 53 percent; 14 percent are on welfare; and 42 percent do not speak English well. New York's Dominicans have fared nearly as badly as Puerto Ricans, in part because they are overwhelmingly first-generation immigrants without high school degrees[113].

[112] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report*, 1998.
[113] Ibid.

Colombians

Most Colombians are in businesspeople and successful professionals. New York is their principal U.S. destination, followed by Miami. Only 40 percent are U.S. citizens, although the number is increasing because Colombia now allows dual citizenship. Two thirds of Colombians have jobs, and their median income is close to that of non-Hispanic whites. One fifth of Colombian families earn $50,000 or more, in keeping with their reputation as South America's best entrepreneurs[114].

The table below indicates that Puerto Ricans (86,1122) make up the largest Hispanic segments in New York, followed by Colombians (84, 454) and Dominicans (33,2713).
Male and female Hispanics are approximately evenly distributed with the majority of them being between the ages of 25 to 34 years of age[115].

Table B.12: Hispanic Origin New York City

Origin	Population
Not of Hispanic origin	5584637
Hispanic Origin	
Mexican	55698
Puerto Rican	861122
Cuban	57019
Other Hispanic	
Dominican	332713
Central American	
Guatemalan	15873
Honduran	22167
Nicaraguan	9372
Panamanian	22707
Salvadoran	23926
Other Central American	7177
South American	
Colombian	84454
Ecuadorian	78444
Peruvian	23257
Other South American	33354
Other Hispanic	110644

Source: U.S. Census Bureau 1990.

[114] Ibid.
[115] Based on statistics from: U.S. Census Bureau, Statistical Abstract of the United States, 1999.

Table B.13: Sex by Age, Hispanics, New York City

Age	Males	Females
Under 1 year	14727	13267
1 and 2 years	35853	34811
3 and 4 years	30588	31101
5 years	16322	15321
6 years	13865	13986
7 to 9 years	45115	41917
10 and 11 years	30368	28565
12 and 13 years	30186	28298
14 years	14106	14038
15 years	13861	13378
16 years	13531	1311118
17 years	13922	12995
18 years	14081	13982
19 years	15127	14377
20 years	15589	14755
21 years	14770	14421
22 to 24 years	47676	48489
25 to 29 years	84712	88674
30 to 34 years	75868	88262
35 to 39 years	63794	74188
40 to 44 years	53841	64769
45 to 49 years	43367	53591
50 to 54 years	35334	45629
55 to 59 years	28950	38138
60 and 61 years	9998	12337
62 o 64 years	13314	18064
65 to 69 years	14813	23869
70 to 79 years	9180	16106
75 to 79 years	6019	12111
80 to 84 years	3114	6634
85 years and over	2260	4485

Source: U.S. Census Bureau 1990.

Other U.S. Hispanic Populations

New Mexico

Northern New Mexico is home to the nation's most unusual and least-known group of Hispanics. They are descendants of the original Spanish conquistadors and as such belong to the oldest European culture within U.S. borders. In the valleys of Rio Arriba they farm ribbon like plots bequeathed to their ancestors by the Spanish crown; live in ancient adobe homes; and cook pork in red *chili* sauce in outdoor ovens. The Spanish they speak is a dialect from the time of Coronado, and the holidays they celebrate are Spanish ones commemorating events like the 1692

reconquest of New Mexico and the conquest of the Moors. Unemployment hovers around 20 percent and welfare dependence is high[116].

Migrant workers.
For decades, the demand for temporary farmhands has sent Hispanics all over the United States. The migrant farmhands still travel from crop to crop, living in camps. But farm mechanization has reduced their numbers to about 70,000 for the Midwest harvest. Meanwhile, a second stream of Mexicans is being drawn to work in chicken- and beef-packing plants in places like Dodge City, Kan., where 4,000 Hispanics have arrived since 1990. In Maine, hundreds of Mexicans work on egg farms in Turner (pop. 5,000), which now has a bilingual school program. Siler City, N.C., had 200 Hispanics in 1990. Today, half its 6,000 residents are Hispanic, and the town has three churches offering services in Spanish and four Latin American grocery stores[117].

B.6 Hispanic Population, Canada

Canada
There are 273,820 Hispanics in Canada. 212,890. There are 212,890 people in Canada whose mother tongue is Spanish. Only 118,640 of Hispanics declare Central and South America as their origin. There are 176,975 visible minorities of Latin American decent in Canada[118].

B.7 Urban Hispanic Population, Canada

Vancouver

- The Latin American community is growing, but slowly.
- The Chinese population has more than doubled in less than ten years.
- There are 23,890 Hispanics in the B.C.
- There are 17,200 Hispanics in Vancouver
- In Vancouver, there is a breakdown of: 3,540 El Salvadorians, 2060 Chileans, and 2015 Mexicans
- In Vancouver there is 16, 720, whose mother tongue is Spanish
- In Vancouver there are 6,830 who speak Spanish (mother tongue)
- In Surrey there are 2,245 who speak Spanish (mother tongue)
- Burnaby there are 2,210 who speak Spanish (mother tongue)
- In Vancouver 9,775 Hispanics speak Spanish in their homes
- In Vancouver 8,475 of Hispanics declare Central and South America as their origin
- There are 13,830 visible minorities as Latin American

[116] Linda Robinson. Hispanics' Don't Exist. *U.S. News Special Report*, 1998.
[117] U.S. News. Special Report: Hispanic's Don't Exist.1999.
[118] Por Mario Lee. La Poblacion LatinoAmericana en La Region Metropolitana de Vancouver. *Vancouver Municipality*, 1998.

- In 1997 the number of Hispanic immigrants from Latin America was 1129[119]

Toronto

- 54.9 percent of the population is Spanish[120]

B.8 Review of Population and Demographic Section

The above research indicates that Hispanics comprise a variety of ancestries. Marketers must understand that the three largest Hispanic groups (in the United States) consist of Mexicans, Puerto Ricans and the Cubans, who comprise three-fourths of the total U.S. Hispanic population. They must also distinguish between Hispanic immigrants and third and fourth generation Hispanics since their buying preferences and buying power may differ. Immigrants may also settle in different areas of cities, usually in areas of lower income, versus Hispanic Americans.

However, marketers also have to be aware of the other Hispanic cultures who constitute one-fourth of the estimated $170 billion consumer market.[121] These other groups such as Nicaraguans, Salvadorians, Peruvians and Colombians have been growing since 1970. Presently in New York, Hispanics constitute for the largest population group in Los Angeles (surpassing even the non-Hispanic whites) and constitute as the largest ethnic group in New York City. In addition, Hispanics have a greater number per household versus non-Hispanics and the majority of Hispanics live in large urban centers. Other Hispanics, which are mostly of low-income families, have begun to settle in non-urban areas to work on farms.

The population of Hispanics in Canada is less than in the United States. A Canadian city with one of the largest Hispanic populations is Toronto at 54 percent. Because Canada has a less developed and a less numerous Hispanic population than the United States, information is limited.

However, developing food products for the Hispanic market in both Canada and the United States requires awareness of the Hispanic segments. Food companies and manufacturers interested in serving the Hispanic population must be sensitive to the fact that while some foods and flavors have mass appeal through the Hispanic market, each country of origin can form a visible and desirable target market. The following section describes food preferences per Hispanic region (based on origin) and presents some suggestions for food product development for these segments.

B.9 Food Development and the Hispanic Market per Region

Product Development for Mainstream Consumers and Ethnic Food

Mainstream consumers are becoming knowledgeable about various Hispanic foods. For example, they are learning that Tex-Mex foods differ from authentic Mexican foods. They now realize that Mexico offers distinct flavors that vary among the country's geographical regions,

[119] Vancouver Municipality, 2000.
[120] Toronto Municipality, 2000.
[121] Susheela Uhl Designing for the Hispanic Market, *Food Product Design*, March 1996.

influenced by different cultures, ingredients and climate. In northern Mexico, flavors are milder with plenty of cheese, pinto beans and beef. The Pacific coast offers poblanos, ceviches and pozoles. Oaxacans, because of an indigenous Indian influence, enjoy black beans and spicier sauces. Yucatan cuisine uses hot habaneros, achiotes and chilmoles. Dishes from the Veracruz region, with its strong Spanish influence, contain more seafood and fruits.

Food preparation and presentation techniques also differ among cultures, and provide important ways of creating flavors for ethnic products, particularly when designing refrigerated home-meal replacements. In Mexico, the way masa is prepared and cooked varies with the finished product - whether tortilla, chalupa, taco or tamale. These products also are presented differently in the Yucatan, Oaxaca or the northern regions - with fillings or toppings, baked or fried, steamed in corn husk, banana leaf, or maguey leaf.

In Miami, fusion cooking reflects the large Cuban, Central American, Haitian and African American populations. Ingredients such as yucca, black beans, habaneros and mango are combined with key lime, lima beans and potatoes to create a new Floribbean cuisine.[122]

U.S. Hispanic Immigrants and Food Preferences

As discussed earlier, the Hispanic immigrant population in the United States has been increasing. It is important to note that this segment has different tastes and preferences versus Hispanic Americans. Eating patterns for immigrants differ by age, region of the country of origin (i.e. urban or rural, coastal or central), length of time in the United States and acculturation.

White rice and beans are major dietary staples. However, recent Hispanic immigrants eat a lot of meat because they have the understanding that meats cost less and are of better quality in the United States versus their country of origin. Meats include organ meats and sausages consumed on a regular basis. The majority of Americans would not eat these same meats because they consist of foreign tastes such as tripe or cow tongue[123].

Research has indicated that Hispanic immigrants have a higher intake of fat snacks and sweets due to product availability and low price. The majority of Hispanic immigrants, for instance, come from low-income families; therefore they may be purchasing these types of foods based on disposable income. Although many cook traditional Hispanic food, a great number have begun to eat American foods, especially convenience and fast foods. However, Puerto Ricans are most likely to eat American and convenience foods versus other Hispanic origin (Mexican, Cuban, etc.)[124].

Children of Hispanic immigrants eat mainly American foods. When Hispanic immigrants cook traditional food, frying is the most common food preparation method. Hispanics add fat, such as vegetable oil or lard to most foods, including rice during preparation.

[122] Susheela Uhl. Flavor trends: Ethnic and Fusion Cuisines. *Food Product Design*. 2000.
[123] Carol M. Devine, Wendy S Wolfe, Edward A Frongillo and Carole A Bisogni. Life-course Events and Experiences: Association with Fruit and Vegetable Consumption in 3 Ethnic Groups.*American Dietetic Association*.1999.
[124] Ibid.

In contrast some traditional foods such as soups, stews and some vegetables, and corn tortillas are prepared in a low-fat manner[125].

They eat a variety of fresh fruits and vegetables and regularly eat simple salads with meals (usually with vinegar and oil). Puerto Ricans are most likely to buy commercial salad dressings or canned fruits and vegetables. Color is a very important characteristic in the preparation of an appealing and appetizing meal. Food is usually browned and/or includes a tomato sauce for color (Puerto Ricans and Dominicans often use Sazon which they add to soups and stews).

Food products are mostly chosen based on visual appearance, such as differentiating beans by color. Hispanic immigrants are unlikely to read food labels due to language barriers. This may explain why some food companies such as Embassa Food Company is beginning to label their products in Spanish and English.

Immigrants rarely use recipes. They find that more healthful foods are more expensive. Therefore, traditional meals are harder to make because the Hispanic markets are too expensive and the ingredients are more difficult to find in the large supermarkets. The majority of immigrants cook traditional food on weekends and this is usually done by the extended family such as grandmothers. Many families have both parents working, often shift work - there is less time for cooking. Subsequently, The use of convenience food and inexpensive restaurants is common.

Sharing food with extended family and shopping for and preparing food with extended family is common[126]. Cooking and serving extra portions is a familiar practice and eating until full to prevent hunger before the next meal is a habit as well[127]. In general the Hispanic immigrant population is younger, poorer, less educated, and in larger households than the non-Hispanic population[128]. As mentioned in the population section, a great number of Hispanics are between the ages of 22 and 34 years old[129].

The above trends indicate that food manufacturers need to consider that many U.S Hispanic immigrants have little buying power, that they cook with more fat, and that they use larger portions versus Hispanic Americans. They should also take note that due to their inability to purchase traditional foods, convenient and lower priced products are popular within this segment.

Product Development for the Hispanic Market

The Hispanic segment includes the Spanish-speaking people from Spain, Mexico, Caribbean Islands, and Central and South America. The three largest Hispanic groups are the Mexicans,

[125] Ibid.

[126] Ibid.

[127] Kim M. Gains, Joan Lovell, Raul Fortunet, Catherine McMahon, Susan Carton-Loez, and Thomas M. Lasater. Implications of Qualitative Research for Nutrition Education Geared to Selected Hispanic Audiences. Society for Nutrition Education, 1999.

[128] Lorna Aldrich and Variyam N Jayachandran. Acculturation Erodes the Diet of U.S. Hispanics. *Food Review*, 2000.

[129] Based on statistics from the U.S. Census Bureau.

Puerto Ricans and the Cubans, who comprise three-fourths of the total U.S. Hispanic population. Products vary significantly for the Spanish-speaking groups from different regions, and tastes vary within Hispanic cultures. One must know the consumers and their specific needs in order to successfully develop products for the Hispanic market[130]. The foundation for creating such products containing pulses is to understand the differences in their traditional Hispanic foods in terms of flavors, colors and textures. To achieve this, food manufacturers must study the Hispanic population along with their countries of origin, influences of other cultures, the ingredients or spices used in their recipes, and their preparation styles. All of these factors will play an important role when designing a value added product containing pulses.

However, as the U.S. becomes more exposed to Hispanic cultures and foods, Americans are not only witnessing an increased demand for "authentic" Hispanic foods but also for "fusion"-type foods. These are foods that combine Hispanic flavors or ingredients with traditional American cooking or flavors for the "newer" generation Hispanics who have adjusted to a newer culture[131]. The development of these products, therefore, may be innovative and non-traditional (to the Hispanic market) and would apply to the mainstream consumer segment. Consequently, since that Hispanics make up such a large portion of the American population, it is necessary to research the origin of their traditional food tastes.

Mexico, Central and South America, and the Caribbean

The types of food products of Mexico, Central and South America and the Caribbean differ depending on:

- Geographical diversity
- Economic differences
- Cultural influences on cooking
- Ingredients grown, mainly rice, chilies, corn and potatoes

[130] Susheela Uhl. Ethnic Entrees. *Food product Design*. 1998.
[131] Susheela Uhl. Flavor Trends: Ethnic and Fusion Cuisines. *Food Product Design*.2000.

Latin America

Culinary staples including corn, rice quinoa, wheat or potatoes, depends on the growing terrain. Generally, corn or Hominy is the staple food throughout Latin America, with wheat, quinoa and potatoes popular in South America, and rice in the Caribbean and coastal regions. Almost all Latin American cuisine emerged from Mestizo-style cooking, with influences from indigenous Indians, Europeans, Arabs, Africans and Chinese. Mexico's northern regions, influenced more by Mennonites and the United States than Spanish or Indians, have milder food, with shredded beef, poblanos, wheat-based tortillas, caldillos (stews) and pico de gallo. Along with the north Pacific coast, unique seviches, seafood dishes and pozales (pork hominy stews) prevail. Down south towards Oaxaca and the Yucatán, spicier and hotter foods predominate, influenced by indigenous Mayan and Caribbean populations[132].

Mexico

The culturally diverse Oaxacan region of Mexico has the most varied cuisine of Mexico, with unique moles, chilapitas, salsas and tamales flavored with chiptoles, epazote, hierba santa and tomatillas. The southern Yucatan, influenced by Mayan, Caribbean, Floridian and other cuisines, uses local flavors in combination with foreign flavors. Popular dishes include cochinita pibil (pork roasted in a pit), papadzules (tortillas with pumpkin seed filling) and chimoles (black seasoning) that contain recados pastes and habaneros[133].

Veracruz, influenced by the Spanish and North American Creoles, has tomato and garlic based sauces, sweet spices, olives and coconut. The Bajio region of Queretaro and San Miguel has Spanish and indigenous Indian influences and uses cheeses, avocados and anchos for enchiladas, gorditas and unique stews. Central Mexico, with Spanish, Iberian, Muslim and indigenous groups, contributes mixiotes (cooked in maguey leaves), pipian verde (green pumpkin sauce), rice dishes and nopales. East coast inhabitants of Central America enjoy Caribbean influenced cooking, with coconut rice and beans, babanas, cassava and curries. Typical inland dishes include tortillas, stews, parillas (grilled meats), asados (roasted meats), bistecs, refritos, seviches, plaintains, chuletas (pork) and condiments[134].

Puerto Rico and Dominican Republic

Indigenous Indians, Spanish and Africans have influenced Latin Caribbean cooking or Criollo cooking, certain regions in Cuba. Puerto Rico and the Dominican Republic flavor their foods with milder seasonings- oregano, tomato, garlic, black pepper and mild chiles. Rice is staple here with abundant seafood, fruits and root vegetables, such as cassava, sweet potatoes and taro (tuberous plant). Picadillos (ground meat), rice and beans, mofongos (mashed plantain with pork crackling), tamales, escabeches, seviches, frijoles, and paella are commonly eaten, flavored with adobos, achiotes, mojos, coconut milk, cilantro, culantro and parsley[135].

[132] Susheela Uhl. Latin American Foods: Livin' la Comida Loca. *Food Product Design*, 2000.
[133] Ibid.
[134] Ibid.
[135] Ibid.

Colombia and Venezuela

Colombian and Venezuelan foods are mild, with arepas black beans and creamy sauces. Argentinian and Uruguayan dishes offer roasts and grilled steaks and chimichurris, while Paraguay serves soups, cheese and varied beef dishes. Bolivia is known for its fiery rocotos, saltenas and egg dishes. Chileans enjoy spicy fish stews, pebre (spicy salsa) and empanadas. Peruvians favor a variety of picante potato and corn dishes with cheese, eggs, chiles and olives. Ecuador is known for its hot, sour and slightly bitter seviches and potato soups. Brazil, with the most varied cultural influences (indigenous Indian, African, Portuguese and other European, Arab, Chinese and Japanese), has fejoda completa (black beans and meat), codfish specialties, vatapa (peanut stew) and farofa (toasted manioc flour)[136].

Review of Traditional Hispanic Consumer Preferences

Even though each Latino group has certain ingredient preferences and cooking styles, there are many ingredients that cross over. For example, corn, rice, beans, chiles, root vegetables and fruits, like guabana, pineapple and mango are enjoyed by all, but chiptoles, quinoa, black beans, guarana, cactus and hearts of palms appeal to specific groups. Spices vary per origin. The majority of pulse types used in Hispanic dishes are beans such as black beans and pinto beans, but are mainly served with rice or in a stew.

B.10 Typical Hispanic Meals

Typical Mexican/Hispanic Meals consist of the following:

- Early light breakfast
- Late hearty breakfast (almuerza)
- A heavy lunch (comida)
- A light evening meal
- Late Supper[137]

Appetizers

Mild appetizers are served with meals (known as botanas, bocaditos, boquillas, or picadas, depending on their origin). These include seafood fritters, seviches, corn tamales, salbutes, empanadas, saltenas, egg or avocado salads, sandwiches, acaraje (black eyed pea fritters), plantain or yucca chips, pies, anticuchos (skewed beef hearts) and skewered meats[138].

[136] Ibid.
[137] Ibid.
[138] Ibid.

Soups and Stews

Soups and stews (caldillos, calderos, chupes, sopas, cocidas or guisados) come as appetizers or as meals, served with tortillas, fruits, vegetables, salads, breads or seafood, and spicy condiments or salsas. Some popular Latin American soups and stews are:

- Argentina- vegetable-fruit beef based stew, green corn soup
- Bolivia- peanut dumpling soup
- Brazil-fish stew, smoked meats, black beans and malaguetas, winter squash soup
- Colombia-coconut soup, creamed potato chicken
- Ecuador- tangy spicy beef-vegetable stew, potato-fish-cheese stew, potato-cheese soup
- Guatemala- spicy pork stew
- Mexico- avocado soup, tripe soup, squash blossom soup, tortilla soup, sopa de chayote
- Peru- Shrimp chowder, lime and rocoto soup, sopa de choclo
- Puerto Rico- tripe stew, Galician soup, sopa de camarones[139]

Variations of stew include hearty stews, such as Bahia, pozoles or pucheros from Mexico, sancocho or asapao fro Puerto Rico and locros or ajiaco from South America. Soups and stews generally contain seafood, garlic, beef, mutton, chicken, tortillas, chiles, yatia, potatoes, corn (hominy), black beans, cheese, avocados and plantains. Latinos use salsas made of roasted tomatoes, tomatillas or rehydrated dried chiles as bases or a multipurpose seasoning to zest up a meal. They are poured over eggs, fajitas, seafood stews, boiled potatoes, grilled beef and roast chicken, as dips for tortillas, tacos and breads, or as toppings for quesadillas, echiladas or snacks. Traditional salsas do not contain pulses. Tex Mex products developed in the United States, however, include pulses, mainly black beans in some salsas.

Salsas

Salsas are served cooked or fresh. Hot & spicy, sweet or tangy salsa is made with corn, habaneros, ajis, jalapenos, chiptole, annatto, salt, cod, manioc, cumin or fruit. Variations of salsa include:

- Fresh salsa-made with tomatillos, avocados, fresh green chiles, spices, and lime juice.
- Cooked salsa-made with roasted tomatoes, pices and dried chiles.
- Green salsa-tart & hot. Appears on tables like salt and pepper.
- Red salsa-sweet & smoky.
- Guacamole-avocados, tomatoes, chiles, onions, and cilantro
- Hot vinegar parsley (Argentina)

[139] Ibid.

- Peanuts, cheese, ajis (Ecuador)
- Ajis, nuts, shrimp, eggs (Peru)
- Avocado & habanera (Venezuela)
- Olive oil, haberno & spices (Chile)
- Criollo (Puerto Rico)

Breads and Flour

Flat breads, are made from corn and yucca and are the mainstay for Latin diets- including tortillas, arepas, tacos, served with meals or snacks. They are made into many Hispanic dishes such as chalupas or casabes. Baked, fried or tasted tortillas of corn or wheat contain varied fillings and toppings burritos, enchiladas, sopapillas, chilaquiles or tlayudas for meals.

A variety of shapes and sizes of tortillas (sopes, totopos, tostados, chalupas, gorditas, tlacoyos) with different fillings (shreeded chicken, pok, picadillo, chorizo, sardines, cheese) and toppings (salsas, cheese, garniches or refried beans) are used to make snacks antojitos) [140].

Snacking

Snacking is very common in Latin America. Throughout the day, street vendors and restaurants sell antojitos or botanos, called "little cravings". These snacks have numerous variations and are made from corn dough. They include tortas, tacos with barbecued meat or bean fillings, fresh roasted corn with lime juice and chili powder, gorditas (tortilla deep fried in lard with black beans, guacamole and salsa), fried masa with cheese, cone shaped tortilla with toppings, fresh cut fruits and tostones. Snacks such as empanadas, pastels, pastelillos or saltenas, seviches, rice and beans or tortillas are commonly eaten in all of Latin America. However, they vary in flavor and filling[141].

Deserts

Typical deserts include fresh-cut fruits and sweet tamales (made with corn flour) stuffed with strawberries or chocolate.

Staples

Grains, such as rice, corn, beans and root vegetables, are staples in Latino cuisines. While corn is the staple grain throughout Latin America, frequently consumed items in different regions include:

- Corn (Hominy)
- Rice
- Quinoa (mother grain of Peru)

[140] Ibid.
[141] Ibid.

- Millet
- Amaranth
- Barley
- Beans

Corn
Corn that is dried and ground into flour makes tortillas, tacos, tamales, flautas, salbutes (fried puffed tortillas) or arepas. Corn is eaten fresh off the cob, ground and baked, boiled, stewed, or wrapped with banana leaves and steamed tamales. Corn is added to soups, salads and sauces or made into corn on the cob roasted, rubbed with limejuice and eaten as a snack, and as choclo (corn kernels as garnishes for stews and soups). Peruvians toast corn and use it as a topping for seviches[142].

Quinoa
Quinoa, eaten by the Incas for more than 5,000 years, is still an important diet of the Andeds regions. This nutritious grain is added to salads, toppings, cereals, stews or snacks, or used as a thickener[143].

Rice
Rice was introduced to Latin America by the Spanish and is commonly grown along coastal regions. It is the staple of the Caribbean, Brazil and Costa Rica. Rice often serves as a main dish with beans, as sopa seca (dry soup) for midday meal in Mexico, or as a stew with chicken or seafood (Puerto Rican asapo). Brazilians eat rice with beans or rice molded into puddings, which are generally cooked with sautéed onions, garlic, coconut milk, achiote oil and seasonings.

Beans
Beans, essential ingredients in Latino kitchens, date back to Peru in 3800 B.C. known by different names frijoles, habichuelas or feijaos- they provided protein to most Hispanics. Traditionally, Hispanics use beans as:

- Snacks
- Dips
- Sauces
- Tortilla spreads
- They are cooked with rice, added to stews, refried (mashed and recooked in lard) or pickled.

Beans come in a variety of forms, flavors and colors. They have been used traditionally in Mediterranean, Latin American and Asian diets as an inexpensive source of protein. White

[142] Ibid.
[143] Ibid.

beans (great northern, lima, navy, white kidney, cannnellini), pintos, black, red, pink, red kidney beans, black-eyed peas are commonly consumed in the United States on cultural and regional preferences[144]. In addition, consumption of pulses varies within Hispanic cultures as well. For example:

- Black beans are typically eaten by Cubans, Southern Mexicans, Central Americans and Venezuelans
- Red rice and beans as much a Creole favorite as Latino has many applications in Latino cuisine. This dish can be vegetarian as well as seasoned with meat such as seasoned with meat such as smoked pork or beef
- Pinto and red beans are poplar with Northern Mexicans, Dominicans and Puerto Ricans
- Navy and fava beans are enjoyed throughout South America, while cranberry and lima beans are specific to Chileans and Peruvians
- Caribbean countries consider black-eyed peas and kidney beans staples
- Chickpeas, or garbanzo beans are popular in Venezuelan and Brazilian cooking
- Lentils are not as popular as beans and are generally eaten where there is Arab influence
- Ecuadorian sals de aji prepared with lupini, ajis and tomatoes
- Chilean porotos granados with cranberry beans, corn and squash
- Venezuelan arepas with black beans
- Cumin and pimentos are typical dishes in South America
- Feijoada completa (a rice, smoked meat, and black bean combination) and abares or steamed fritters (made with black-eyed peas, dried with shrimps and chilies are popular Brazilian dishes
- Typically Cubans eat black or red beans in soups and rices
- Puerto Ricans use black-eyed peas, navy beans pigon peas, red beans or chickpeas in their congris, asapoos or pitipuas.
- Mexicans start the day with refried beans for breakfast. Cooked beans are served as part of a main meal after the meat course and before the desert, or separately as thick soupy stews in small bowls, accompanied by tortillas.
- Torta de platano with red kidney beans, banana and Parmesan and pork with black beans, epazote and chiles are popular dishes of the Oaxacan and Yucatan regions of Mexico.
- The Creoles in the Caribbean love red, pink or kidney beans in their rices, salads and stews. These beans are used with pimientos, chives and thyme in pods and rice with conch and lamb with onions and bay leaves in rice and peas. They are also used in fillings for rotis or pureed pastries[145].

[144] Susheela Uhl. Spilling the Beans on Legumes. *Food Product Design*. June 1996.
[145] Susheela Uhl. Creatively Caribbean. *Food Product Design*. June 1996.

- Pigeon peas also called gungo peas, gandules or ahar dal, depending on the island- are staple West Indian diets (Caribbean). They are used in rice dishes flavored with coconut milk, spices or bacon[146].
- Pepper pot, a popular soup in the Caribbean contains pigeon peas, harbaneros and spices[147].

Summary for Hispanic Market Food Products

The majority of pulses used in Hispanic meals are used as a side dish (rice and beans), or as an ingredient in main dishes such as soups, and stews or in appetizers. Pulses, mainly beans are used for fillings in meals such as enchiladas or burritos. In addition, the types of pulses used by Hispanics vary as well. Pulses are not used to make breads, or tortillas, as the main ingredient for these products is corn flour. Spices and food preparation are major considerations for designing food products made from pulses.

B.11 Considerations for Developing Pulse Food Products to the Hispanic Market

Product Seasonings

One of the most significant prerequisites for developing successful value-added pulse products for sale to the Hispanic market is a proper understanding of ingredient and food preparation techniques of the various regions and cultures, and the socio-cultural factors that influence them. For instance, how meals are prepared, served or garnished varies per Hisapnic segment[148].

Seasonings such as achiote, sazon and sofrito add traditional flavor and color to foods from many Hispanic regions. Basic flavorings that are enjoyed by all segments of the Hispanic group have variations based on heat, spiciness, pungency, sourness, sweetness, color or texture. Sofritos, which are used to flavor beans, rice, fish and stews, vary in flavor depending upon which region they come from. The Spanish sofrito is sweet with tomatoes, the Puerto Rican is pungent with culantro, the Yucatan is peppery with habañero peppers, and the Cuban one is mild with parsley. Goya Foods markets a basic sofrito of chopped onions, garlic, tomato and green bell peppers, and customers in each Hispanic segment can add any ingredient they prefer[149].

Product Flavoring

Hispanic food is milder where there has been European influence, and spicier and hotter where it has been influenced by the indigenous population. The flavors preferred by Central and South Americans differ depending on the altitudes at which they live, what cultures have influenced their cooking, and what ingredients are grown there - potatoes, rice, corn, beans or chili peppers. Central Americans who live along the East Coast use a more Caribbean-style cooking, which is very different from the cooking of those who live inland. The Criollo cooking influenced by the

[146] Susheela Uhl. Spilling the Beans on Legumes. *Food Product Design*. June 1996.
[147] Susheela Uhl. Latin American Foods: Livin' la Comida Loca. *Food Product Design*, 2000.

[148] Susheela Uhl. New Ethnic Entrees. *Food Product Design*.1998.
[149] Susheela Uhl. Ethnic Side Dishes. *Food Product Design*. 1997.

various cultures in the Caribbean uses a lot of fruits and vegetables. Hot chili peppers are used extensively in Peru, Yucatan and the Andes areas. Value-added pulse products, therefore, need to be flavored properly and targeted at a specific Hispanic origin[150].

B.12 Glossary of Mexican Food Products

Achiote: Yucatan-style paste made from ground annatto seeds, spices and limejuice or vinegar.

Adobo: A smoky, chile-based sauce with tomatoes, onions, garlic and spices.

Albóndiga: Meatball.

Al carbón: Meat (any type) cooked over charcoal or wood coals.

Al pastor: Meat (any type) cooked over a spit Middle Eastern style.

Anaheim: Long, thin green chile used in the USA to make chile rellenos. In New Mexico, when they ripen and turn bright red they're dried in ristras, or strands and used in sauces.

Ancho: Dried poblano chile.

Annatto Seeds: Small seeds ground up and used in Yucatan's Achiote Paste.

Asada: Broiled (as in Carne Asada is meat broiled over hot coals).

Agave: Native Mexican plant with broad, flat leaves that come to a point on the end and grow a single tall flower at maturity. The heart of the blue agave plant (piña) is used to make high quality tequila.

Barbacoa: Meat cooked in an underground pit, usually wrapped in banana or agave leaves.

Birria: Jalisco's barbacoa specialty. Usually made from lamb or goat, or a combination of both.

Bolillo: Coarse, crispy white roll in the shape of a bobbin.

Borracho: Literally, drunk. When used in a culinary sense, it denotes foods and sauces where a type of alcoholic beverage is an ingredient.

Burrito: Pretty much anything rolled up in a big flour tortilla.

Cajeta: A specialty of Guanajuato. Confection of goat's milk simmered with sugar.

Carne: Meat.

Carne asada: Broiled meat, usually skirt or flank steak cooked fast over hot coals.

Carnitas: A specialty of Michoacán. Pork simmered in fruit juices and used in tacos and burritos.

Ceviche: Raw fish marinated in Mexican limejuice and mixed with tomatoes, onions, chiles and spices. Served as an appetizer.

Cerveza: Beer.

Chayote: A type of squash.

[150] Flavor Trends: Ethnic and Fusion Cuisines. *Food Product Design*. 2000.

Chicharrones: Deep-fried pork rinds.

Chilaques: Fried tortilla pieces topped with mild red sauce and cheese. Served as an appetizer or for breakfast.

Chile Rellenos: Ancho or Anaheim chiles, with skins removed, dipped in batter, stuffed with cheese or meat and covered with lightly spiced red sauce.

Chilorio: A meat filling from northern Mexico made with boiled, shredded pork that's fried with ground chiles and spices.

Chimichanga: Deep-fried, meat-filled burrito.

Chipotle: Dried, smoked jalapeño chile.

Chorizo: Fresh, highly seasoned sausage flavored with chiles and spices.

Cilantro: Corriander. An herb used all over Mexico for seasoning.

Comida: Meal.

Conejo: Rabbit.

Cordero: Lamb.

Costillas: Ribs.

Cotija: An aged, crumbly white cheese.

Crema: Cream

Dulce: Sweet or candy.

Elote: Fresh corn.

Empañada: Pastry turnover filled with spicy meat or fruit and sweets.

Enchilada: Lightly fried corn tortilla dipped in red sauce and stuffed with cheese or shredded chicken or beef.

Epazote: A wild herb that grows all over North America. Used to flavor Mexican soups and stews.

Escabeche: Mixture of oil, vinegar, herbs and seasonings used to pickle jalapeños and other foods.

Flauta: Long corn or flour tortilla filled with beef or chicken and deep-fried.

Frijoles: Beans (usually kidney or black).

Guacamole: Dip served with tortilla chips of mashed avocado with onions, chiles, tomatoes, limejuice and spices.

Guajillo: Medium hot dried chile.

Gusanos de Maguey: Worms living in agave plants that are considered a delicacy when fried. Also found in bottles of mescal to denote the particular type of agave plant.

Habanero: Hottest chile pepper out there.

Harina: Flour.

Helado: Ice cream.

Horchata: Soft drink made by blending ground rice with water or juice and melon seeds.

Huchinango Red snapper.

Hueso: Bone.

Huevo: Egg.

Jalapeño: Medium hot chile pepper.

Jícama: A crunchy, delicious white root, served sliced and sprinkled with lime and chile powder.

Langosta: Lobster.

Leche: Milk.

Leche quemada: Burnt milk. Also known as cajeta.

Lechuga: Lettuce.

Legumbre: Vegetable.

Licor: Liquor.

Maguey: Agave.

Mariscos: Seafood.

Masa: Dough of ground corn meal, lime and water used to make corn tortillas.

Menudo: Robust, medium spicy soup with tripe, hominy, onions and spices.

Mescal: Distilled liquor made from juice of several types of agaves.

Mojo de ajo: Cooked in garlic sauce.

Molcajete: Stone mortar used mostly to grind chiles for salsas.

Mole: Complex dark sauce with chiles, nuts, spices, fruits, vegetables, chocolate and seasonings.

Nogada: Sauce made from ground walnuts.

Nopalitos: Nopal (prickly pear) cactus leaves chopped into pieces.

Papadzules: Dish from Yucatan of soft, rolled corn tortillas filled with varying ingredients and topped with pepitas (pumpkin seeds) and tomato sauce.

Pasilla: Long, thin, almost black chile.

Pato: Duck.

Pavo: Turkey.

Pepitas: Pumkin seeds, unhulled.

Piñones: Pine nuts.

Pipían Sauce: Similar to a mole, made from ground pepitas and other nuts.

Poblano: Dark green, rounded fresh chile used for chile rellenos.

Pozole: Robust, medium spicy soup with pork or chicken, hominy, onions and spices.

Postre: Dessert.

Pulque: Fermented beverage using agave invented by the Mayans for medicinal purposes.

Rompope: Sweet, thick alcoholic beverage with vanilla and egg.

Salchicha: Sausage.

Salsa: Sauce.

Sangría: Spanish beverage made with brandy, wine, Controy (or Triple Sec), fruit juice and fresh fruits.

Sangrita: A favorite accompaniment to tequila made from orange juice, grenadine, chile powder and frequently, ften tomato juice.

Serrano: One of northern Mexico's favorite chiles. Small, green and very hot.

Sopa: Soup. Also called caldo.

Taco: Usually a fried corn tortilla folded in half and filled with meat, cheese, tomatoes, lettuce and salsa. Can also be served soft and filled with a variety of ingredients.

Tamale: Corn tortilla dough filled with meat, vegetables or fruit, wrapped up in a cornhusk and steamed.

Taquito: Little taco made of corn tortilla filled with meat, rolled up and fried. A small version of the flauta.

Tequila: World-renowned liquor distilled from the juice of the blue agave, which only grows within 100 miles of Guadalajara.

Tiburón: Shark.

Tomatillo: Relative of the gooseberry family. Resembles a small green tomato. Very flavorful and used in many sauces.

Torta: Mexican-style sandwich on a bolillo.

Tortilla: Flat, thin, circular unleavened bread made of masa for corn tortillas or harina for flour tortillas. Most important item in Mexican cooking.

Tostada: Fried corn tortilla often topped with beans, meat, tomatoes, lettuce and salsa.

Appendix C
Pulse Processor Contact List

APPENDIX C: PROCESSOR CONTACT LIST

C.1 General Processors

The Hain Food Group

Uniondale, NY 11553
Tel: 516.237.6200
Fax: 516.237.6240
Website: www.thehainfoodgroup.com
E-mail: news@thehainfoodgroup.com
Products: Hain Pure Foods (natural foods), Health Valley (natural foods), Hollywood (principally healthy cooking oils), Westbrae Natural and Westsoy (natural foods), Terra Chips (natural vegetable chips), Estee (sugar-free, medically directed foods and snacks), Earth's Best (natural baby foods), Arrowhead Mills (natural foods), Casbah (natural foods), DeBoles Nutritional Foods (natural pasta products), Garden of Eatin' (natural snack products), Breadshop's (natural foods), Kineret Foods (frozen and dry kosher foods), Weight Watchers (dry and refrigerated products), and Boston Popcorn (snacks).

Unico

Concord, Ontario
L4K 2A4
Tel: 1-800-268-1915
Fax: 905-669-3585
Website: www.unico.ca
Products: Cooking oils, beans & peas (kidney beans, chickpeas, lentils, lupini beans, romano beans, white kidney beans, broad beans, black beans, faba beans, beans medley, bean salad, lima beans) dry & canned, rice & beans, tomatoes & sauce, beans & peas, fish, marinades, pasta, olives, specialty products, food service products.

Primo

Etobicoke, Ontario M8V 1A3
Tel: 1-800-461-0094 In Toronto: 416-503-6001
Fax: 416-503-6201
Website: www.primofoods.com
Products: Pasta, sauce, beans.

H.J Heinz Company of Canada

North York, ON
M2M 4K6
Tel: 1-416-226-5757 or 1-800-268-6641
Website: www.heinz.com
Product: Beans dry (consumer food service market)

Bag O Beans

Reno, NV 89502-5166
Tel: 1-800-782-3267
Fax: 1-775-829-2246
Website: http://www.go-reno.com/bagobeans/
E-mail: bagobeans@world.att.net
Products: Lentils & peas, soups, one-dish meals.

U.S. Foods L.L.C

Lincoln, NE 68524
Tel: 1-402-470-2021
Fax: 1-402-470-339
Products: Quick-cook/dehydrated beans, bean flakes & granules, bean/instant powders, roasted flours, pastas dips & sauces, main dishes, side dishes, soups, mixes, breads & crackers, hot cereals.

Hanover Foods Corporation

Hanover, PA 17331-0334
Tel: 717-632-6000
Fax: 717-632-3501
Website: http://hanoverfoods.com/
Products: Beans. Subsidiaries: Consumers Packing Co. Alimentos, Congelados, Monte Myers Foods Div. Spring Glen Fresh Foods, Inc. L.K. Bowman Co. Bickel's Potato Chip Co.

Mezza Inc.

Waukegan, IL 60085
Tel: 1-847-360-8700
Fax: 1-847-360-8712
Website: www.emezza.com
E-mail: sales@emezza.com
Products: Lentils -- Over 400 gourmet & ethnic food ingredients; foodservice, industrial, retail & private label (Packaging: Consumer, Foodservice Market, Private Label).

Indian Harvest

Colusa, CA 95932
Tel: 530-458-8512, 1-800-294-2433
Fax: 530-458-8344
Website: www.indianharvest.com
Products: Soups & chili, rice & grains, legumes, pasta, herbs & seasoning.

Westfield Foods

Greenville, RI 02828-3024
Tel: 1-401-949-3558
Fax: 1-401-949-3738
Products: Dehydrated pulses-dry soup mixes: barley, 5-bean Mexicali, Italian garden, lentil, minestrone, pasta & peas, etc.

Willpack Foods/Taste Adventure

Harbor City, CA 907 10-1307
Tel: 1-310-325-3504 / 1-800-874-0883
Fax: 1-310-325-7038
Website: www.tasteadventure.com
E-mail: taste_adv@earthlink.net
Products: Organic-dehydrated soups, beans & mixes: chili & rice, quick side dishes

Emerling International Foods

Attica, NY 14011-9519
Tel: 716-591-3224
Fax: 716-591-3035
E-mail: emerfood@eznet.net
Products: Green & yellow split peas

Star of the West Milling Company

Frankenmuth, MI 48734-0146
Tel: 517-652-9971
Fax: 517-652-6358
Website: www.staroftheWest.com
E-mail: mfassezke@staroftheWest.com
Products: Beans

American Fine Foods

Payette, ID 83661-0460
Tel: 208-642-9061
Fax: 208-642-2044
Website: www.primenet.com
E-mail: sales@amfinefoods.com

Kelley Bean Co.

2407 Circle Drive
Scottsbluff Nebraska 69361
Tel: 308-634-6439
Fax: 308-635-7345
Website: www.kelleybean.com
Products: beans

C.2 Hispanic Food Processors

Goya Foods Inc.

Syracuse, NY
Tel: 201-348-4900
Website: www.goya.com

Hormel Foods Corporation

Austin, MN 559 12-3680 USA
Tel: 1-507-437-5611
Fax: 1-507437-5489
Website: www.hormel.com
E-mail: webmaster@hormel.com
Products: Tamales

Ruiz Food Products

Dinuba, CA 93618-2100
Tel: 1-559-591-5510 or 1-800-4776474
Fax: 559-591-1968
Website: http://www.elmonterey.com/
E-mail: contactus@ruizfoods.com
Products: Ready made meals- burritos, chimichangas, tamales, and taquitos.

Don Miguel Mexican Foods

Anaheim California
Website: www.donmiguel.com
Products: Appetizers & snacks, burritos, chimichangas, entrees, chilies, tamales, tortillas, pasta & sauce.

Senor Felix Mexican Foods

Baldwin Park, CA 91706
Tel: 1-626-960-2800
Fax: 1-626-6315
Website: www.senorfelixs.com
E-mail: sf.main@senorfelixs.com
Products: Hispanic/Middle Eastern: burritos, enchiladas, casseroles, tabouli, salsa, hummus, eggplant dip, salads, & appetizers.

Ramona's Mexican Food Products

Gardena, CA 90249-2503
Tel: 1-323-321-6041
Fax: 1-310-323-4210
Products: Burritos

CopperWood Foods

Highlands Ranch, CO 80126
Tel: 1-303-683-1234
Fax: 1- 303-683-0933
Website: www.copperwoodfoods.com/
Products: Canned, frozen meals, enchiladas.

Wilson Foods Company

Salt Lake City, UT 84104-3841
Tel: 801-972-5633
Fax: 801-975-0915
Website: www.lynnwilson.com
E-mail: info@lynnwilson.com
Products: Tamales, Salads & puddings, enchiladas-canned & frozen, burritos, taquitos, quesadillas.

La Malinche Tortilla & Tamale Factory

Corpus Christi TX 78405-2244
Tel: 1-361-884-7883
Fax: 1-361-884-9821

Mr. J. Tamales & Chili Inc.

Lynwood, CA 90262-1725
Tel: 310-537-3932
Fax: 310-537-3938
Products: Chili & tamales.

Ebro Foods

Chicago, IL 60608-2215
Tel: 312-666-5876
Fax: 312-666-6256
Products: Tamales-Cuban & Mexican

Iltaco Food Products

Chicago, IL 60622
Tel: 312-421-3000
Fax: 312-421-0774
Website: www.iltaco.com
Products: Tamales, frozen meals

La Preferida, Inc.

P.O. Box 32260
Chicago, IL 60632
Tel: 1-800-621-5422
Website: www.lapreferida.com/
E-mail: info@lapref.com
Products: jalapeno peppers, chilies & spices, salsas & sauces, refried beans, canned & dry beans, tortillas, nacho chips & snacks, rice & pastas, prepared frozen & convenience foods.

C.3 Indian/Middle Eastern Food Processors

Tasty Bite Foods
Old Greenwich, CT 06870
Tel: 1-888-827-8900
Website: www.tastybite.com
E-mail: info@tastybite.com
Products: Indian food-vegetarian entrees, meat entrees, curry sauces & curry pastes.

Indian Life Food Corporation

Burnaby, BC
V5C 3W7 Canada
Tel: 604-205-9176
Fax: 604-205-9172
Website: www.Indianlife.com
E-mail: info@indianlife.com
Products: Indian food-breads, snacks, appetizers, meals.

Pataks

Canada Branch
National Importers
Tel: 1- 604- 520- 1555
Fax: 1- 604- 520- 0827
Website: www.pataks.com
Products: Indian: raita & chutneys, pickles & relishes, cooking sauce in jars & cans, pastes, curry bases, stir fry sauce, marinades, papdums, naan breads, chappatis, dhals & vegetable curries, curry breaks, soups, frozen wraps, frozen ready meals, frozen snack pots.

Ziyad Brothers Importing

Div. of Syrian Bakery & Grocery, Inc.
5400 W. 35th Street
Cicero, IL 60804
Tel: 708·222·8330
Fax: 708·222·1442

Website: www.ziyad.com
E-Mail: info@ziyad.com
Products: Middle Eastern: Puck Danish cheese products, Regal Picon and Kiri French cheeses, Al Ghazal Vegetable ghees from Jordan, Vimto Cordials and sparkling drinks from England, Carries a full line of Halal meat products (bologna, salamis, franks, etc.), Imports a full line of New Zealand Halal frozen lambs, Imports Australian frozen goats, Sultan Vegetarian foods- fried egg plant, stuffed grape leaves, stuffed green peppers, stuffed cabbage, stuffed eggplant, Jerusalem foods- frozen falafels (original, spicy, sesame), Ziyad brand - tahini (jarred), canned olives, pickled cucumbers, pickled hot peppers, pickled eggplants, canned chickpeas, hummus, jarred olives and cauliflower, halal meat products, liquid jameed, andeggplant dip, Dana dairy products - yogurts, drinks, cream cheese, labna. Vimto- soft drinks, chew bars Ghandoor- tahini (sesame paste-extra tubs), ghanddor halva, MD imported dairy products.

Sadaf Foods

Soofer Company
Los Angeles, CA. 90
Tel: 1-800-852-4050
Fax: 1-323-234-2447
Website: http://sadaf.com/
E-mail: info@sadaf.com
Products: Middle Eastern & Indian: rice & rice dishes, beans & grains, dry kashk, flours & powder, herbs & spices, honey, jams & reserves, pickles, nuts, seeds, sweets, soups, syrups & pastes, & teas.

Cortas

Website: www.dm.net.lb/cortas/
Products: Middle Eastern: dips, oils/waters, beans & peas, jams, syrups & pickles, fresh vegetables.

Jyoti Cuisine

Berwyn, PA 19312-0516
Tel: 610-296-4620 or 1-800-442-2340
Fax: 610-8891492
Website: www.jyotifoods.com
E-mail: jyoti@jyotifoods.com
Products: Indian: soups/entrees - chole, sambar, karhi, dal, basmati rice-dry bagged, cooking oils, pickles, chutneys, darjeeling tea, seeds, spices, and curry pastes.

Surati Farsan Mart

Artesia, CA 90701
Tel: 562-860-2310
Fax: 562-809-3085
E-mail: info@suratifarsan.com
Website: http://www.suratifarsan.com/
Products: Indian: sweets, snacks & drinks, frozen fast foods.

Classic Foods Ltd.

Calgary AB T2B 3N9
E-mail: info@classicfoodsltd.com
Website: www.classicfoodsltd.com
Products: Middle Eastern: Phoenicia Brand - Bean mix, black eye beans, chickpeas, fava/chickpea mix (canned items). Cedars Brand- Black beans, chickpeas (both canned), falafel (canned and dry), lima beans, red kidney beans, small fava beans (canned). ChefSel Brand- Adzuki beans, black beans, black eye beans, chick peas, green lentils, green split peas, pinto beans, small white beans, red kidney beans, red split lentils, urid beans, yellow split peas (canned & dry). Aladdin roasted chickpeas (middle eastern snack).

International Golden Foods Ltd.

Elkgrove IL 6007
Tel: 847-860-0900, 1-800-343 rice or 1-800-424-pita
Fax: 847-860-0902
Website: www.goldenfood.com
E-mail: intgol@msn.com
Products: Middle Eastern: various brands such as Cortas (mentioned above)
Alkanater - tahini, pistachios, sweet wafers and sesame crunch. Cedar brand - canned pulses such as mixed salad beans, lima beans, foulse and chickpeas mix, broad beans, fava beans, lupine beans, romano beans, chickpeas, hummus, dry falafel mix and made falafel patties. Tamek - Turkish brand of ready meals such as stuffed vine leaves, stuffed cabbage, stuffed eggplant, fried eggplant, stuffed green pepper, mixed vegetables, white bean in oil, and red beans in oil, and stewed pulses (chickpeas, white beans and red beans). Golden crop brand - canned pulses: chickpeas, fouldamas, black beans, kidney beans, lupine beans, fava beans, lupine beans, broad beans, green lentils, chickpeas, hummus, dry falafel mix. Bulk dry pulses- Turkish red lentils, green lentils, yellow split lentils, Chana Dal, and chickpeas. Bakery line - pitas, baklava, olive bread, date cookies, anise cookies, vegetable and meat pies, sesame bread sticks, etc. New product lines include dried fruit products such as apricots.

House of Spices

Flushing, NY 11368-1506
Tel: 1-718-507-4900
Fax: 1-718-507-4683
Website: www.hosindia.com
E-mail: hosindia@aol.com
Products: Indian: beans, pastes, sauces, spices, rice, oils, pickles, condiments, vegetable & frozen foods.

C.4 Organic Food Companies

Eden Foods, Inc.

Clinton, Michigan
U.S.A. 49236
Tel: 1-888-441-3336
Website: www.edenfoods.com
E-mail: info@edenfoods.com
Products: Organic products - canned beans (black beans, chickpeas, black soybeans, kidney beans, navy beans, adzuki beans, baked beans with sorghum & mustard, black beans with ginger & lemon, chili beans with jalapeno & red pepper, lentils with sweet onion & bay leaf, spicy pinto beans), concentrates, supplements, crackers, soy products, fruit products, Japanese food & teas, oils & vinegars, pasta, quinoa, sweeteners, tomato & sauerkraut.

Cascadian Farms

Sister Company: Muir Glen Organic
Rockport WA 98283 USA
Tel: 1-800-624-4123
Website: www.cfarm.com
Products: Organic - frozen vegetables, convenient meals & entrees, frozen fruit, juice concentrates, fruit spreads, frozen deserts, pickles & sauerkraut.

Pro Organics Marketing Inc.

Burnaby BC V5C 5W1
Tel: 604-253-6549 or 1-800-461-1122
Fax: 604-253-0439
Website: www.proorganics.com
E-mail: prosales@proorganics.com
Products: Organic - Produce, Grains/Flours, Beans/Pulses, Meat, Packaged foods, Coffee/Tea, Oils, Dairy, Eggs.

Westpoint Distributors Ltd.

Vancouver, BC, V5Y 1M7
Tel: 604-708-8668 or toll free: 1-800-838-8768
Fax: 604-708-3328 or toll free: 1-888-318-3322
Website: www.westpointonline.com
E-mail: wstpoint@westpointonline.com
Products: Organic-nuts, pastas, rice, salt, seeds, mixed fruit & nuts, legumes, seeds, rice, spices, supplements, teas, jam, baking, cereal, dried fruit, dried vegetables, cooking blends & mixes, and grains.

Sunridge Farms

Santa Cruz, CA 95062-3033 USA
Tel: 800-655-3252
Fax: 831-462-9431
Website: www.sunridgefarms.com
E-mail: sunridge@cruzio.com
Products: Beans: Dry -- Organic & natural grain/bean blends (Packaging: Consumer, Foodservice Market, Bulk)

Westbrae Vestro Natural Foods Ltd.

Compton, CA 90220-5209 USA
Tel: 310-886-8200
Fax: 310-886-8219
Products: Beans: Dry - Natural & organic (Packaging: Consumer, Private Label)
Subsidiaries: Westbrae Natural Foods, Inc. Little Bear Organic Foods, Inc.

Garden Spot Distributors

New Holland, PA 17557-9778 USA
Tel: 717-354-4936 or 1-800-829-5100
Fax: 717-354-4934
Website: www.gardenspotdist.com
E-mail:info@gardenspotdist.com
Products: Organic-flour, grain, legumes, beans.

Natural Value Products

Sacramento, CA 95831-2347 USA
Tel: 916-427-7242
Fax: 916-3784
www.naturalvalue.com
E-mail: naturalval@aol.com
Products: Organic-canned beans (black beans, pinto beans, red beans, refried black & pinto beans), syrups, pasta, olives, hot sauce, tomatoes, salsa, popcorn, jams, spices,

Caudill Seed Company

Louisville, KY 40203-1328
Tel: 502-583-4402 or 1-800-626-5357
Fax: 502-583-4405
Website: www.caudillseed.com
E-mail: www.caudillseed.com
Products: Organic- beans dry.

Legumes Plus

Tomball, TX 77377
Tel: 281-516-3535 or 1- 800-233-3668
Website: www.legumesplus.com
Products: Lentils, soups, gourmet foods.

Lundberg Family Farms

Richvale, CA 95974-0369
Tel: 1-530- 882-4551
Fax: 1-530- 882-4500
Website: www.lundberg.com
Products: Organic rice, puddings, cakes, cereal, lentils entrees, pastas.

Shari Ann's Organics, Inc.

Dexter, MI 48130
Tel: 734-426-0989
Website: www.shariannsorganic.com
Products: Organic soups, beans, refried beans.

Amy's Kitchen

Pefaluna, CA 94953
Website: www.amyskitchen.com
E-mail: amy@amyskitchen.net
Products: pasta sauce, ready-made meals (lasagna, pizza, etc.)

American Prairie

Hutchinson, MN 55350-5683
Tel: 320-234-6580
Products: Primary processor of organic pulses

Appendix D
Retail Audit Results

APPENDIX D RETAIL AUDIT RESULTS

The following tables are based on primary research findings from in store audits collected from Vancouver, Toronto, Saskatoon, New York, Chicago, Miami and Los Angeles. Stores assessed include both large grocery stores and ethnic specialty stores. For ease of understanding, pulse products are divided into several categories: bagged pulses, ground pulses, products made with ground pulses, whole processed pulses, and pulses processed with other ingredients including chili and beans, veggie burgers, and fresh and frozen entrees.

All pertinent product information is listed including: company name and location, pulses used in the product, product size, price, and the city in which the product was identified. Please note that where a company has several product types, products are grouped together. For example, Western Family Foods processes five different types of pulses (green lentils, split lentils, red lentils, white beans, and small white beans) in bagged form and they are cited together under the heading "pulses used". The varying prices of these products and their sizes are also grouped together under the heading "price/size", indicating a price range (C$1.09-C$2.59). In addition, product prices from the United States are quoted in US$, whereas products quoted from Canada are in C$. Finally, where products have been documented several times in a city they are marked under the" location" heading as either (2) or (3), meaning that the product has been documented either 2 or 3 times.

D.1 Bagged Pulses

Product	Company	Pulses Used	Price/Size	Location
Bagged beans & lentils	Golden Boy Foods, Burnaby BC	Red split lentils, whole red lentils, green lentils, yellow split peas, light red kidney beans, chickpeas, black eyed beans, mung beans, green peas	C$2.99/1.8Kg	Vancouver
Bagged beans & lentils (private label)	Western Family Foods Vancouver BC	Green lentils, red split lentils, red kidney beans, white beans, small white beans	C$1.09-C$2.59/450g bag	Vancouver
Tasty Bite beans and lentils	Tasty Bite Eatables Incorporated	Madras lentils, Bengal lentils, jodhpur lentils, Kidney beans	C$4.39 300g box	Vancouver

Product	Company	Pulses Used	Price/Size	Location
Organic beans & lentils	Westpoint Distributors Ltd	Appaloosa beans, calypso beans, Azuki beans, ground garbanzo beans, great northern, kidney beans, navy beans, red lentils, green lentils, French lentils, yellow split peas split peas, 9 bean mix (black, black-eye, red kidney, mung, navy, green pea, pinto, green & yellow split peas)	C$3.49-3.99/100g	Vancouver
Organic split green pea	Bulk Horizon	Green peas, red kidney beans, garbanzo beans,	C$0.29/100g	Vancouver
Organic beans & lentils	Bulk, Pro Organics	Split yellow peas, red lentils, green lentils, organic black beans, mung beans, garbanzo beans, smoked red chili beans	C$0.29/100g	Vancouver
Organic beans & peas	Bulk,Pro Organics	Pinto beans, black-eyed peas, smoked lentils, smoked brown lentils	C$0.29-0.59/100g	Vancouver
Lundberg one step basil	Lundberg family farms, CA	Red & brown lentils	C$3.79/252 g	Vancouver
UNICO lentils & beans	UNICO Inc. Concord ON	Lentils, chickpeas, romano beans, red kidney beans, lima beans, white kidney beans, lupini beans, black beans	C$2.59/750g or C$0.99/540ml	Vancouver (2)

Product	Company	Pulses Used	Price/Size	Location
Provista	Great Canadian Food Brokers	Black beans & spices, 16 bean	C$3.29/335 g	Vancouver
Safeway brand beans & lentils	Safeway Canada, Calgary AB	Baby lima beans, kidney beans, small red kidney beans, pinto beans, small white beans, great northern beans, split lentils, red split lentils	C$1.99-3.00/500g bag	Vancouver
Safeway baby lima beans	Safeway Canada, Calgary AB	Lima beans Frozen	C$1.79/350 g	Vancouver
Palirria beans	Ready Food Industries, Politika, Greece	Giant beans, baked beans	C$2.99/280g or C$12.99/2000g can	Vancouver
Turmamek	Product of Turkey, Phoenicia products	White beans	C$3.49/420g	Vancouver
Phars label beans & lentils	Oriental Food Company, Bangkok	Bulk packed on store site: chickpeas, mixed beans, black eye peas, red kidney beans, yellow lentils, mung beans, brown lentils, yellow lentils, orange lentils	No set distributors, prices vary (sold according to weight) C$0.99-1.79/400g	Vancouver
Hanif's Peas	Hanif's International Food Ltd. North Delta, BC Canada	Pigeon peas	$2.59/800g	Vancouver

Product	Company	Pulses Used	Price/Size	Location
Bulk in store	Distributors vary	Chickpeas, red kidney beans, yellow lentils, brown lentils, green lentils	Price varies on weight	Vancouver
Cedar beans & peas	Suidan, Montreal QB	Large fava beans, black-eye peas, green fava beans	Bulk (C$4.99/2lbs)	Vancouver
Mr Goudas split peas	Goudas Food products ON	Split peas	bagged	Toronto
Jack Rabbit Lentils & beans	Arrow Industries/Klein Berger TX	Lentils, black-eye peas, navy beans, garbanzo beans, great northern beans, pinto beans, red kidney beans	C$0.89/16 oz	New York
Baby red massor lentils	Imported baby red lentils	Tree of Life Inc. St. Augustine Florida	US$2.99/14oz	New York
Chickpeas	Arrowhead mills Inc.	Chickpeas	US$3.19/16oz	New York
Goya: lentils & beans	Goya Foods Inc.	lentils, pinto beans, great northern beans, pink beans, navy beans, small red beans, chickpeas with kidney beans , black-eye peas, red kidney beans, 16 bean soup mix	US$0.69-1.29	New York (2)
Small red Salvadorian beans	Dona Lisa Products, Izalco Food Inc. NY	Red beans	US$3.29/24oz	New York
Crema de Fridol negro	Maggi Glendale, CA	Black beans	US$0.89/2.5oz	New York

Product	Company	Pulses Used	Price/Size	Location
Goya beans & lentils	Goya Foods Inc.	Black beans, pink beans, pinto beans, lentils, pigeon peas, red lentils, yellow split peas, romano beans	US$0.50/16oz	New York
Cargamanto beans	CI Vega & Vega, Colorado	Red cargamanto beans		New York
Fridoles beans	CPC Specialty markets IN	Red beans, canary beans, pinto beans, small red beans	US$0.50/150z	New York
Fridol Canary	LA FE	Canary beans	US$1.99/17.5oz	New York
16 bean soup mix	Goya Foods Inc.	NA	US$1.09/16oz	New York
Canary beans	Productos LA JUGOSA Corp. NY	Canary beans	US$2.49/15oz	New York
Canary beans	Phoebe, Imported by Raymond-Hadley Corp. NY	Canary beans	US$1.79/14oz	New York
Lupini beans	La Cholita Ecuadorian tropical products Inc.	Lupini beans	US$1.99/14oz	New York
Red kidney beans	Jack Rabbit Arrow Industries, Dallas TX	Red kidney beans	US$089/16oz	New York
Bean Soup Mix	Jack Rabbit Arrow Industries, Dallas TX	Pinto, small white beans, kidney beans, small red beans, yellow split peas	US$1.19/16oz	New York
Roasted split chick peas	Gayatri Masal Exported India	Chickpeas	US$1.99/14oz	New York
Kabuli Chana Dry, Black Ghana dry, light rajma, Chana Dal	Subzi-Mandi NY	Chickpeas, Black chickpeas, red beans, Dal	US$4.99/0.5lb & US$2.99/0.33lb & US$4.29/0.62 lb & US$3.99/0.50lb	New York

Product	Company	Pulses Used	Price/Size	Location
Peas & beans	Apna Bazaar, Bulk	Black chickpeas, yellow peas, green chickpeas, chickpes, white beans, small red beans, kidney beans, lentils, dal, yellow split peas, red lentils, small black beans	US$1.99-3.99, price varies on weight	New York
Direct Duport	NA	Black beans Pinto beans	US$1.65-2.25/5lb	Chicago
Goya beans	Goya Foods, Inc.	Pinto beans, black beans	US$0.73-1.07/16 oz or US$6.89/10lb-3.79/5lb	Chicago (3)
Jack Rabbits beans & peas	Arrow Industries	Lima beans, black-eye peas, pinto beans, garbanzo beans, yellow peas, green split peas, black-eye peas, great northern	US$0.59-1.09/16oz bag	Chicago (2)
Verde Valley beans	Productos Verde Valle	Pinto beans, black beans, Peruvian mayo cobia beans	US$1.03-1.53/16oz-2lb	Chicago
El Mexicano beans	Marquez Brothers International, San Jose CA	Pinto beans, canary beans	US$0.79-1.69/16oz	Chicago (3)

Product	Company	Pulses Used	Price/Size	Location
Adzuki beans	Whole Foods market	Bulk: small red beans, black beans, cannelloni beans, chickpeas, red kidney beans, green/redlentils, great northern beans, pinto beans, red beans, black-eye peas, green /yellow split peas, peas.	US$0.99-1.99/lb	Chicago
Peas	Just Veggies Box 867 Westley CA	Peas	US$3.99/3.5oz	Chicago
Organic beans	Whole Foods market	Black beans, kidney beans red beans	US$1.99-3.29/160z	Chicago
10 bean soup mix	Whole Foods market	Navy beans, ansazzi beans, black beans, great northern beans, yellow/red split lentils		
Organic beans & peas	Arrowhead Mills Inc. Hereford TX	Pinto beans, split green peas, green/red lentils, black turtle beans, chickpeas.	US$1.49-1.79/16oz	Chicago
Beans	No Name	Fava	US$4.38/1Kg	Chicago
Chickpeas, chile & lime, spicy fava beans	Silva, Inc. IL	Chickpeas, fava beans	US$1.49/4oz	Chicago
Brown's best beans	Kelley Bean Co. Morrill, NE	Pinto beans, chickpeas	US$0.79/16oz or US$4.86/10lb	Chicago (2)
Parade Pinto Beans	Federated Group	Pinto beans, kidney beans	US$0.79-0.89/16oz	Chicago
Peas	Grace Kennedy, ON	Pigeon peas	C$0.89/540ml	Saskatoon

Product	Company	Pulses Used	Price/Size	Location
Suraj Green peas & beans	West Fair Foods, Calgary	Green split peas, black-eye beans, kidney beans, chickpeas, chana brown dal, red beans, black beans	C$0.99 or 2@1.29/750g or C$2.49-4.89/2kg	Saskatoon
Mexican style pasta beans	Sunfresh Foods	Mixed beans	C$1.99/198g	Saskatoon
Bulk peas & beans	NA	Split green/yellow peas, green peas, chickpeas, full of beans soup mix, small white beans, pinto beans, kidney beans, black-eye beans, black beans, green/red lentils	C$0.13-0.18/100g	Saskatoon
CO-Op Pulses	Interprovincial cooperative	Kidney beans, green split peas, white beans, green peas, yellow split peas	C$0.89/450g	Saskatoon
Safeway Pulses	Canada Safeway Ltd.	Yellow split peas, pinto beans, small red beans, split lentils, northern beans, kidney beans	C$0.99-1.79/500g	Saskatoon

D.2 Ground Pulses

Product	Company	Pulses Used	Price/Size	Location
Ground flours	Golden Boy Foods, Burnaby BC	Mung beans	C$4.59/1.8 Kg bag	Vancouver
Chickpea flour	Westpoint Distributors Ltd.	Garbanzo beans	C$2.19/400g	Vancouver
Garden of Eat'n black Bean Tortilla Flour	Garden of Eat'n, the Hain Food Group Company	Black beans	C$2.99/284g	Vancouver
Suraj Pea Flour	Westfair Foods Lmt. Calgary	Peas	C$2.39/2kg	Saskatoon

D.3 Products Made with Ground Pulses

Product	Company	Pulses Used	Price/Size	Location
Chickpea Dip	Corta's, Beirut Lebanon	Chickpeas	C$1.29/380g can	Vancouver (2)
Hummus-original & pepper	Western Family Foods, Vancouver BC	Chickpeas	C$2.99/227g bag	Vancouver
Hummus mix	Elaine Arrow Smith, Horizon, BC	Cooked chickpeas, Dry Bulk	$1.59/100g	Vancouver
Capers Hummus	Capers Food Company, made in house kitchen in Kitsulano	Chickpea hummus, tomato hummus, red pepper hummus	C$1.59/100g	Vancouver
Sadaf hummus with tahini	Sadaf foods LA, CA	Chickpeas	C$4.29/256g	Vancouver
Hummus	Wendy & Barb'd summer fresh salads Inc.	Chickpeas	C$3.49/227g	Toronto
Golden Valley Black bean dip	Golden Valley Foods, Abbotsford, BC	Black beans	C$3.99/500ml	Vancouver
Casbah Falafel Mix	Sahara Natural Food Inc., CA	Chickpeas	C$3.19/128 g	Vancouver (2)
Casbah hummus	Sahara Natural Foods CA	Chickpeas	C$2.69/170g	Toronto
Cedar Chickpea dip	Suidan	Chickpeas	C$1.39/380g	Vancouver (2)

Product	Company	Pulses Used	Price/Size	Location
Vegetarian Organic bean dip, black bean dip	Little Bear Organic Foods	Pinto beans, black beans	US$1.89/9oz container	Chicago
Salpica Bean dip	Frontera Foods Inc. Chicago Il	Red bean, black bean	US$3.49/16oz	Chicago
Fantastic Original Hummus, Pesto Hummus Instant Black beans	Fantastic Foods, Inc. CA	Dehydrated chickpeas	US$1.89-1.99/60z	Chicago
Hummus & tehina	Israel-OSEM	Dehydrated chickpeas		

D.4 Whole Processed Pulses

Product	Company	Pulses Used	Price/Size	Location
Beans	Ferma Import & Export, Toronto ON	Broad, romano, lupini, & navy beans, chickpeas, lentils	C$1.28-C$2.29/540 ml	Vancouver
Chickpeas	Hanif's International Foods, North Delta, BC	Chickpeas	C$0.99/540ml can	Vancouv`er
Chickpeas & beans	Phoenicia, Montreal QB	Fava beans & chickpeas		Vancouver (2)
Cedar beans	Phoenicia, Montreal QB	Green broad beans	C$1.99/540ml	Vancouver
Foul Mudammas beans	Suidan, Montreal QB	Fava beans	C$1.99/540g	Vancouver
Canned Beans	Western Family Foods, Vancouver BC	Lima, garbanzo, romano, faba, white, kidney, lentils	C$1.09-C$1.39 398 ml can	Vancouver
Cortina beans	Cortina foods, Vancouver BC	Black-eye peas, mixed bean salad, lentils, pinto beans, romano beans, black beans, white kidney beans, lupini beans, fava beans	C$0.99-1.69/540ml	Vancouver

Product	Company	Pulses Used	Price/Size	Location
Sardo beans	Sardo Brampton ON	Black beans and white kidney beans	C$0.99/540ml	Vancouver
Shari Ann's Organic Beans	Shari Ann's Organics Inc.	Organic Pinto beans, black beans, white beans, cannelloni beans, garbanzo beans, kidney beans, black eye peas	C$1.99/425g	Vancouver
Canned Beans	Eden Organics	Pinto, black, garbanzo, navy & kidney beans, lentils	C$2.99/398 ml can	Vancouver
Black beans & pinto beans	La Costena Vilore Foods Co. Inc. Mexico	Black beans & pinto beans	US$1.39/19.75 oz	New York
Refried beans, refried beans with chilies	Bruce Foods, El Paso TX	Pinto beans	C$2.59/398 ml can C$3.99/796 ml can	Vancouver
Guiltless Gourmet mild black bean dip	Guiltless Gourmet, Austin TX	Black beans	C$4.79/470 ml	Vancouver
Old El Paso Refried beans	Old El Paso Foods/Pillsbury Canada, Markham ON	Pinto beans	C$2.79/398 ml can C$4.19/796 ml can	Vancouver (2)
Old El Paso Refried beans	Old El Paso Foods/Pillsbury Canada, Markham ON	Black beans	C$2.93/398ml can	Toronto
Old El Paso Refried beans	Old El Paso Foods/Pillsbury Minneapolis, MN	Pinto beans	US$1.69/16oz	New York
Taco Bell- Home Originals refried beans	Taco Bell Corp. Distributed by Kraft Foods	Pinto & pink beans	US$0.99/16oz	New York
No fat refried beans	Bruce Foods Corporation El Paso TX	NA	US$1.39/16oz	New York

Product	Company	Pulses Used	Price/Size	Location
Southwestern refried black beans with lime juice	Kunner-Empson Company Division of Faribault Foods Inc. CO	Black beans	US$1.19/15.5 oz	New York
Ortega refried beans	Product of Mexico, Ortego	Pinto beans	US$0.99/16oz	New York
Refried Pinto beans & refired black beans	La Costena, Volore Foods Co. Inc.	Pinto/black beans	US$1.29/20.5oz	New York
Refried black beans				
La Costena Canned & refried beans	La costena Foods, Tulpehac, Mexico	Black & Pinto beans	C$2.99/540 ml can	Vancouver
Shari Ann's Organic Refried beans	Shari Ann's Organics, Dexter MI	Black beans, pinto beans	C$2.49/425 g can	Vancouver
Little Bear Organic Refried beans	Little Bear Organic Foods, Carson, CA	Pinto & black beans	C$2.79/398 ml can	Vancouver
La Sierra Refried Beans	Sabor Mexico D.F., Mexico	Beans	C$1.99/440 g can	Vancouver
Refried black beans & Refried pinto beans	Goya Foods Inc.	Black beans	US$1.39/160z	New York (2)
Refried beans	Knorr CPC Specialty markets IN	Red & black beans	US$1.19/15oz	Vancouver
Refried beans	Ducal Alimentos Guatemala	Red & black beans	US$1.39/16oz	Vancouver
Refried black/pinto beans	Ducal Alimentos Kern de Guatemala	Black beans & Pinto beans	US$1.49/16oz	New York
Cooked beans (save on Foods private label)	Western Family Foods, Vancouver BC	Beans	C$1.89/398 ml	Vancouver
Eden Organic Beans	Eden Food Inc. MI	Organic navy beans, small red beans, white kidney beans, black soy beans, pinto beans, garbanzo, Aduki	C$2.19/398 ml	Vancouver (2)

Product	Company	Pulses Used	Price/Size	Location
Organic red kidney beans	Biotaha, Italy	Organic red kidney beans	C$1.99/398 ml	Vancouver
Cortina beans	Cortina Foods, Vancouver	Romano beans, white kidney beans, black beans, lentils, red kidney beans, chick peas, broad beans	C$1.39-1.99/540ml	Vancouver (2 lentils, black eye peas, green broad beans)
Cedar black eye peas	Suidan Montreal QB	Black-eye peas	C$1.29/540ml	Vancouver
Broad Fava Beans	Import, product of Portugal	Fava Beans	NA	Vancouver
Vinga chick peas	Correia TO	Chickpeas	C$0.79/540ml	Toronto
Thompsons white pea beans	W.G. Thompson & Sons, Blenheim ON	White pea beans	C$4.39/1.81 kg	Toronto
Quick Kook Brand	Marque Quick Cook Brand	Green lentils	C$1.29/450g	Toronto
Primo Black beans	Primo Foods Lmt	Black beans	C$1.09/540ml	Toronto
Homestyle Clark marinated Beans	Marcan Food Lmt .ON	White beans	C$0.79/398ml	Toronto
Shari Ann's Organic Refried beans	Shari Ann's Organics	Black beans	$C2.59/425 g	Vancouver
Casa de Norte Refried beans spicy	Sunrise Soya Foods, Vancouver BC	Red Organic beans	$C2.59/398 ml	Vancouver
Green's Farms Refried Beans with green chilies & spices	Greene's Farm, Denver Colorado	Soaked Organic Pinto beans	$C2.99/348 ml	Vancouver
Refried Beans & black refried beans	Greene's Farm, Denver Colorado	Soaked Organic Pinto beans	$C2.54-2.59/348ml	Vancouver

Product	Company	Pulses Used	Price/Size	Location
Little Bear Organic Foods refried beans	Little Bear Organic Foods, CA	Organic pinto beans	$C2.29/454 g	Vancouver
Taste Adventure Jalapeno refried beans	Will-pack foods Inc, CA	Pinto beans	$C4.19/205g	Vancouver
Casa Fiesta refried beans, refried beans with chilies	Bruce Foods El Paso TX	Cooked pinto beans	$C2.29/398 ml	Vancouver
Safeway Brand refried beans	Safeway Canada	Cooked beans	$C1.99/398 ml	Vancouver
Primo beans & lentils	Primo Foods, Etobicoke ON	lentils, black beans, romano beans, white kidney beans, mixed beans chickpeas, kidney beans romano beans, black-eyed peas	$C1.49/540ml	Vancouver
Mr. Goudas Garlic flavored chickpeas, Pigeon peas	Goudas Foods, Concord ON	Chickpeas	C$0.89-1.24/540ml	Toronto
Peas & Beans	Keyfood Stores, Brooklyn New York	Chickpeas, dark red kidney beans, black beans	US$0.41/50z	New York
Goya beans	Goya Foods Inc.	Pinto beans, chickpeas, balck beans, Dominican red beans, pink beans, white hominy	US$0.33-1.50	New York (3)
Goya Beans	Goya Foods Inc	White beans	US$0.79/16oz	Miami (2)
Black-eye peas	Associated Food Stores Inc. NY	Black-eye peas	US$1.79/bag	New York
Chickpeas	Progresso Quality Foods Co. NJ	Chickpeas	US$1.19/19oz	New York

Product	Company	Pulses Used	Price/Size	Location
La Preferida		Refried beans/refried kidney beans	US$0.95-1.81/30oz	Chicago (4)
Del Monte	Del Monte Foods	Lima beans	US$0.89-1.29/8.5oz-15.2oz	Chicago
Mixed Vegetables	Dean Foods Vegetable Co.	Lima beans	US$0.99/15oz	Chicago
Mixed Vegetables	Goya Foods Inc.	Lima beans	US$0.59/14.9oz	Chicago
Jack Rabbit's Lentils	Arrow Industries/Klein Berger	Whole lentils	US$0.55/16ozbag	Chicago
Cajun Mixed Vegetables/original mixed	Dean Foods Vegetable Co.	Pink beans	US$0.99/15oz	Chicago
Taco bell refried beans	Taco Bell-Kraft Foods	Pinto & pink beans	US$1.09/16oz	Chicago
Adelita Pintos	Adelita Inc. Dist. LA	Pintos, black beans	US$0.51-2.83/15oz-2.83KG	Chicago
Adelita refried beans	Adelita Inc. Dist. LA	Black beans/red beans	US$0.79-1.79/15oz-30oz	Chicago
Rosarita traditional refried beans	Hunt-Wesson Inc. CA	NA	US$1.09/16oz	
Verde Valle refried beans	Productos Verde Valle-Mexico	Pinto beans/black beans/Peruvian mayo	US$0.79/16oz	Chicago
La Costena beans	Vilore Foods Co. Inc.	Pinto beans, black beans, refried beans – black	US$0.88-99/20.5oz	Chicago (2)
El Mexicano	Marquez Brothers International	Pinto beans, chickpeas	US$0..67-0.71-15oz	Chicago

Product	Company	Pulses Used	Price/Size	Location
Goya chickpeas & beans	Goya Foods, Inc.	Chickpeas, kidney beans, romano beans, white beans, pink beans, black beans, pinto beans, small white beans.	US$0.65-1.19/15.5oz-29oz	Chicago (4)
Docal Refried beans	Alimentos Kern de Guatemala	Kidney beans/black beans	US$1.53-2.3516oz-29oz	Chicago (2)
Instant Refried Beans	Will-pack Foods, Inc.	Dehydrated pinto beans, black beans	US$2.59/8.75oz	Chicago
Organic Bearitos low fat Spicy refried beans, traditional, no salt, black beans, fat free chili	Little Bear Organic Foods	Pinto beans, Black beans	US$1.59/16oz	Chicago
Greene's Farm Organic refried beans	Greene's Farm	Black beans	US$1.69/16oz	Chicago
Shari Ann's Beans	ShariAnn's Organics, Inc. MI	Whole, Black beans, mashed black beans, pinto beans, kidney beans	US$1.49-1.69/15oz	Chicago (2)
Eden Organic Beans	Eden Foods, Inc. MI	Navy, white beans, lentils	US$1.49/15oz	Chicago

Product	Company	Pulses Used	Price/Size	Location
Westbrae Organic beans	The Hain Food Group	Organic salad beans-kidney, chickpeas, pinto beans, soup beans-great northern, kidney beans, lentils, chili beans, organic red beans, organic chickpeas	US$0.99/15oz	Chicago

D.5 Pulses Processed with Other Ingredients

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Stockmeyer soups- hearty lentil & classic bean	Evco Fine Foods, Richmond Hill ON	Lentils, beans	Canned Soup	C$3.68/796ml can	Vancouver
Bear Creek soup mixes	Bear Creek Country Kitchens, Heber City UT	Navy beans	Dry Soup	C$3.29/128g packet	Vancouver
Cedar soups: black bean soup, lentil soup,	Phoenicia Montreal QB	Black beans & lentils	Canned	C$1.49/398 ml	Vancouver
Soupworks Minestrone	Lipton	Pinto beans	Dry Soup	C$3.29/160g packet	Vancouver
Soup mix (Save On Foods private label)	Western Family Foods, Vancouver BC	Pinto Beans	Dry Soup	C$2.69/160g packet	Vancouver
Fiesta Vegetable Ready to Serve Soup	Campbell's Soup Company, TO	Pea, black bean	Canned Soup	C$1.99/540 ml can	Vancouver
Habitant Minestrone Soup	Habitant Soup Company, Montreal QB	Pea, Kidney bean	Canned Soup	C$2.29/796ml can	Vancouver

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Shari Ann's Organic Soups	Shari Ann's Organic, Dexter MI	Black bean, navy bean, green lentils, French green lentils, split pea	Canned	C$2.99-3.99/425 ml can	Vancouver
Shari Ann's Organic Chili	Shari Ann's Organics, Dexter MI	Pinto bean	Canned	C$2.49/425g	Vancouver
Stagg Chili	Stagg Foods Lmt.	Kidney beans	Canned	C$2.69/425g	Toronto
Chili	Chi-Chi's	NA	Canned	US$0.80/can	Miami
Curry Lentil Soup Mix	NA	Precooked lentils	Bulk dry	C$1.59/100g	Vancouver
Black Bean Soup Mix	NA	Precooked white navy beans	Bulk dry	C$1.59/100g	Vancouver
Sardo soups: black bean, chickpea, romano bean soup	Sardo Foods, Brampton ON	Black beans, chickpeas, romano beans, great northern beans	Canned	C$1.89/540ml	Vancouver
Split pea soup	Horizon BC, Elaine Arrow Smith	Split pea	Bulk dry	C$1.59/100g	Vancouver
Health Valley Organic lentil soup & black bean soup	Health Valley, CA	Lentils, black beans	Canned	C$3.99/425 g	Vancouver
Amy's ready to serve Organic black bean soup, vegetable soup, low fat minestrone soup, & black bean vegetable soup	Amy's Kitchen, CA	Organic black beans, organic kidney beans, organic peas,	Canned	C$2.59/349ml	Vancouver

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Greene's Farm Organically grown black beans soup	Greene's Farm, Denver Colorado	Black beans	Canned	C$1.99/348 ml	Vancouver
Taste Adventure: Navy Bean Soup Mix, minestrone soup, black bean soup	Will-Pack Foods Inc. CA	Pre-cooked navy white beans, precooked black beans, pinto beans, white beans, red beans, lentils, peas	Canned	C$3.49/120g	Vancouver
Health Valley Soup	Health Valley Company CA	Peas, white beans, black beans	Canned	C$2.79/398ml	Toronto
Habitant Soup: Bean & Ham	LA Compagnie de Soups, Montreal QB	Peas & beans	Canned	C$0.99/796 ml	Toronto
Stockmeyer soup classic bean	Elco Fine Foods Inc.	Broad beans	Canned	C$2.89/746 ml	Toronto
Uncle Bens Rice & red beans	Effem Inc. ON	Red beans	Dry boxed	C$3.79/252g	Vancouver
Casbah Lentil Pilaf	Sahara Natural Food Inc. Hain Food Group	Lentils	Dry boxed	C$3.19/128g	Vancouver (2)
Black bean & corn salsa	Santa Cruz Foods, San Jose CA	Black beans	Other Jarred	C$5.69/340g jar	Vancouver
Muir Glen Organic black bean & corn salsa	Muir Glen	Organic black beans	Other Jarred	C$4.99/454 ml	Vancouver
Golden Valley 3 bean salsa jar	Golden Valley Foods, Abbotsford, BC	Kidney beans, black beans, pinto beans	Other Jarred	C$3.99/500ml	Vancouver

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Southwest Salsa- Safeway select: hot, medium, mild	Safeway Canada Lmt.	Black bean	Other Jarred	C$3.40/1050ml	Vancouver
Fiesta Salsa	Chi-Chi's	NA	NA	US$2.89/24oz	Miami (2)
Unico Minestrone soup	Unico Inc. ON	Red kidney beans, white kidney beans, chickpeas, lima beans	Canned	C$1.79/540ml	Vancouver
Lentil Soup, Minestrone Soup	Progresso Quality Foods Co. NJ	Lentils, great noethern beans, light red kidney beans, lima beans	Canned	US$0.99/10.5 oz	New York
Beans & pasta soup	Hursts	NA	Canned	US2.23/20oz	New York
Naturally Farm Fresh Peach & Black Bean salsa	Appleberry Farms Ltd.	Black beans	Other Jarred	C$6.19/375 ml Jar	Vancouver
Heinz: BBQ style beans, beans in tomato sauce, Deep browned pork & molasses, Original pork & molasses, Pork & tomato sauce,	H.J Heinz Food Company of Canada	Pinto beans, dark red kidney beans, red			
Safeway brand: beans in tomato sauce, Boston style beans, beans & pork	Safeway Canada	White beans	Canned	C$0.98/398ml	Vancouver

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Brown sugar & bacon with baked beans	Keyfood stores Brooklyn NY	White beans	Canned	US$0.69/16oz can	New York
Red beans & rice	Keyfood stores Brooklyn NY	Red beans	Canned	US$0.79/15oz	New York
Lentil Pilaf mix	Near East Food Products	Lentils	Dry	US$1.59/6.74oz	New York
Black beans & rice	Zatarains's	Black beans	Dry	US$1.69/7oz	New York
Success Rice	Riviana kitchens, Houston TX	Red beans	Dry	US$1.19/4.5oz	New York
Rice & beans	Goya Foods Inc.	Black, pinto & red beans	Dry	US$1.49/8oz	New York (2)
Rice & beans	Vigo Importing Co. Tampa FL	Red beans, black beans, pinto beans	Dry	US$1.59/8oz	New York
Hickory flavor baked beans	Keyfood stores Brooklyn NY	White beans	Canned	US$0.69	New York
Chunky with beans can	Hormell foods company	Red beans	Canned	US$1.99/15oz	New York
Baked beans	Bush Brothers & co. TN	White beans	Canned	US$1.49/28 oz	New York
Original baked beans	Burnham & Morril Portland Maine	Small pea beans	Canned	US$2.19/28oz	New York
Pork & beans in tomato sauce	Parade packed for federated foods Inc. IL	White beans	Canned	US$1.49/40oz	New York
Pork & beans	El Ebro	NA	Canned	US$1.58/15oz	Miami
Baked beans	Publix	NA	Canned	US$0.59/1lb	Miami
Pork & beans	Bush's	NA	Canned	US$1.39/28oz	Miami
Baked beans	Goya Food Inc.	NA	Canned	US$0.59/1lb	Miami

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Campbell's pork & beans	Campbell's	Pea beans	Canned	US$0.61-1.23/8oz-28oz	Chicago (3)
Bush's baked beans	Bush Brothers & Co.	Whole white beans	Canned	US$0.99/16oz	Chicago (2)
Vegetarian beans	H.J Heinz Co. PA	White beans	Canned	US$0.79/16oz	New York
Teska Romano beans in tomato sauce	Import for Persimex Inc. ON	Romano beans	Canned	C$1.59/284ml	Vancouver
Primo Hearty soups: Vegetable & rotini & minestrone	Primo Foods, ON	Red kidney beans, green beans, great northern beans, lima beans, chickpeas	Canned	C$1.99/540ml	Vancouver
Habitant soup: minestrone, bean with ham, pea soup with smoked ham	The Habitant Soup Company, Montreal QB	Kidney beans, pea beans, green beans, pea beans, yellow peas	Canned	C$2.29/764ml	Vancouver
Campbells chunky soup: Fiesta vegtable, Italian minestrone, bean with bacon, minestrone	Cambell's Soup Company, TO	Black beans, pea beans, kidney beans	Canned	C$1.79-1.99	Vancouver
Safeway Select Enlighten: Just add water cup of soup: tex mex bean, couscous & lentil, black bean	Canada Safeway, Calgary	Red beans, pinto beans, lentils, black beans	Dry cup	C$1.49	Vancouver

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Nile Spice Soups- cup of soup: minestrone, black bean	Nile Spice Foods- Division of the Hain Food Group	Red/white bean lentil, black bean	Cup of soup, dry	C$1.99	Vancouver
Lentil soup mix	The B. Manishewitz Co. IL	lentils	Dry	US$1.09/6oz	New York
Sardo Mediterranean bean salad	Sardo Foods, Brampton ON	Red kidney beans, romano beans, chick peas	Canned	C$1.99/540g	Vancouver
Master Choice Marinated bean salad	Great Atlantic & Pacific Lmt.	Romnano beans, chickpeas, red kidney beans	Canned	C$1.29/540ml	Vancouver
Woodstock Organics lentil soup with carrots	Woodstock Organics Inc. NY	Lentils	Frozen	US$3.19	New York
Black beans & rice	Riviana Foods Inc.	Black beans	Dry	US$1.79/8oz	New York
Barley lima beans soup mix	Aron Street Inc. NY	Lima beans	Dry	US$1.19/6oz	New York
Cannellini white kidney beans	Progresso Quality Foods Company	Kidney beans	Dry	US$0.45/19oz	New York
Minestrone soup	Fantastic foods	Red beans	Dry	US$1.29/1.5oz	New York
Taste Breaks soup	Knorr CPC Specialty markets IN	Black beans, lentils, navy beans	Dry	US$0.99/2oz	New York
Spanish bean soup & Black bean Soup	VIGO	Black beans	Canned	US$1.69/6oz	Miami
Chili soup	Goya Foods Inc.		Canned	$3.99/11oz	Miami
Couscous with lentils soup Dry	Fantastic foods Inc. CA	Lentils	Dry	US$0.99/2oz	New York

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Santafe beans & rice	VIGO Importing Co.	Pinto beans	Dry	US$0.99/8oz	New York
Cream of beans with coconut	Goya Foods Inc.	Red beans	Canned	US$1.29/15.5oz	New York
Beef tripe stew	Goya Foods Inc.	Chickpeas	Canned	US$1.99/16oz	New York
Premium vegetarian beans in tomato sauce	H.J Heinz PA	Prepared beans	Canned	US$0.89/16oz	New York
Boondi Chick pea puffs	Surati Sweet mart Ltd. TO	Chickpeas	Flour/Dry snack	US$2.49/12oz	New York
Hot n' Spicy Channa	Joy Foods, NY	Chickpeas	Dry Snack	US$1.90/14oz	New York
Fancy Massor	Subzi-Mandi	Lentils	Dry Snack	US$2.99/0.67lb	New York
Chevdo Mix	Deep Foods Inc. NJ	Moong beans & split chickpeas	Dry Snack	US$1.99/14.1oz	New York
Indian Masoor	Subzi-Mandi	Lentils	Dry Snack	US$2.99/0.74oz	New York
Bombay Mix Dry	Kahmir Crown Bakeries England	Green Lentils	Dry Snack	US$1.99/14oz	New York
Bundi Dry Snack Food	Maya Rajhog Foods Inc.	Chickpeas	Dry Snack	US$1.50/6oz	New York
Snacks	Syntrac Lmt.	Chickpeas	Dry Snack	US$1.50/200 g	New York
Khala Chana Jumbo	Apna Bazaar	Black chickpeas	Dry Snack	US$3.49/4lb	New York
Chana Dal, Haldiram snack	Pratik Food Products, India	Mix	Dry Snack	US$1.99/200g	New York
Sugar coated chick peas	Roastery Le Roi, Lebanon	Snacks	Dry Snack	C$2.29/400g	Saskatoon
Channa Fried Chickpeas, Chevdo	Surati Sweet mart, TO	Snacks-mix of chickpeas, lentils	Dry Snack	C$2.79/400g	Saskatoon

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Campbell's: Chunky Hearty Bean n' Ham, select vegetable, split pea, vegetable chunky	Campbell's	Soup	Whole white beans	US$1.99-2.45/19oz	Chicago (3)
Progresso Soups: lentil, bean soup, minestrone soup	Progresso Quality Foods Company	Soup	Whole lentils, black beans, great northern beans, chickpeas	US$1.99-2.19/19oz can	Chicago (3)
Louisiana Lentil Soup	Whole Foods Market	Soup	Lentils	US$2.59/16oz bag	Chicago
HealthValley Split pea soup, black bean soup, black bean & vegetable, 5 bean soup, organic lentil soup	Health Valley Company. CA	Soup	Split peas, black beans whole, organic lentils	US$1.89/15oz	Chicago
Hain soups: split pea, vegetarian split pea, & black bean.	The Hain Food Group	Soup	Split peas, whole black beans.	US$1.59-1.89/15oz	Chicago
ShariAnn's Soups: Indian black bean & rice, green lentil soup, Italian white bean, & split pea.	Shari Ann's Organics Inc.	Soup	Black beans, green lentils, white beans, split peas	US$1.89-1.00/15oz	Chicago

Product	Company	Pulses Used	Pulse consistency	Price/Size	Location
Frontier soups: yellow split pea, black bean, black-eye bean, pioneer soup, hearthland	Frontier Soups, Lake Bluff IL	Soup	Dry yellow split peas, black beans, black-eye beans, lima beans, kidney beans, white beans, yellow/green/orange lentils	US$5.49-6.69/16oz bag	Chicago
Unico Bean salad, chickpeas, lentils, romano beans, kidney beans	Unico, Concord ON	Canned	Mixed beans	C$1.49-2.39/540ml	Chicago
President's choice Mex beans & corn salad	Sunfresh Foods	Jar	Mixed beans	C$3.49/750ml	Saskatoon
President's choice soups: black bean & lentil	Sunfresh Foods	Canned	Black bean & lentil	C$1.59/540ml	Saskatoon
Taste Adventure Soups: black bean, curry lentil, split pea	Taste Adventure-Will pack Foods CA	Canned	Black beans, lentils, split peas	C$3.49/110g	Saskatoon
Teapot soups: black bean	Sahara natural	Canned	Black beans	C$2.99.110g	Saskatoon
Unico Bean salad, chickpeas, lentils, romano beans, kidney beans	Unico, Concord ON	Canned	Mixed beans, chickpeas, lentils, romano beans, kidney beans	C$2.39/750g	Saskatoon

Chili & Beans

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Chili Con Carne (Save on Foods private label)	Western Family Foods, Vancouver BC	Beans	Canned	C$1.89/425g	Vancouver
Chili	Stagg Foods, Stockton CA	Kidney, black, pink and white beans	Canned	C$2.59/425g can	Vancouver
Beans in sauce-Original, Deep Browned, Deep Browned Pork & Molasses	H.J Heinz Company of Canada, North York, ON	White beans	Canned	C$1.39/3989 ml can	Vancouver
Yves Veggie Chili	Yves BC	Red kidney bean	Dry package	C$3.39/300g	Vancouver
Veggie Chili & Spicy veggie chili	ShariAnn's Organics, Dexter MI	Organic Pinto beans	Canned	C$3.39/2425g	Vancouver
Spicy Vegetarian chili with black beans, Mild vegetarian chili with three beans	Health Valley Company Inc.	Black beans Pinto beans	Canned	C$3.99/398 ml	Vancouver
Stagg Garden Veggie Chili, Classic Chili, dynamite chili, Silverado chili & beef chili	Stagg Foods, CA	Red beans	Canned	C$4.98/2X425g	Vancouver

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
3 Bean chili	Lean Cuisine, Solon OH	Black beans, dark red kidney beans, pinto beans	Frozen	C$2.49/10 oz	New York
Cha Cha chili	Fantastic foods Inc.	Pinto beans	Dry	US$1.29/2.40 z	New York
Spicy black bean chili	Health valley company Inc.	Black, & pinto beans	Canned	US$2.69/15oz	New York
Chili with beans	Broadcast	Pink beans	Canned	US$1.89/15oz	New York
Chili Starter, chili beans & sauce	Bush Brothers & Co. TN	Pinto beans	Canned	US$1.19/15.5 oz	New York
Curried chick peas in richly spiced hot sauce & curried black beans in sauce curried red kidney beans in sauce	Ashoka ADF Foods Ltd. Bombay	Chickpeas, black beans, red kidney beans	Canned	US$1.49/1lb	New York
Kidney beans in sauce, pink pinto beans in sauce, chickpeas in sauce	Goya Foods Inc.	Kidney beans, pink pinto, chickpeas	Canned	US$0.89/15oz	New York
Chili	Publix	NA	Canned	US$0.80/12.5 oz	Miami
Chili concarne	Health Valley	NA	Canned	US$2.49/15oz	Miami
Shari Ann’s Organic Spicy Veggie Chili.	Shari Ann’s Organics, Inc.	Pinto beans		US$1.89/15oz	Chicago

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Amy's Organic medium hot chili, spicy chili, chili & veggies	Amy's Kitchen Inc.	Red beans	Canned	US$1.89/14.7 oz	Chicago
Health Valley Chili Vegetarian, mild, spicy, enchilada flavor	The Hain Food Group	Lentils, pinto beans, small white beans	Canned	US$1.79/15oz	Chicago
Shelton's Chicken Chili, spicy	Shelton's CA	Black beans	Canned	US$2.59/15oz	Chicago
Bearito's low fat original, spicy, black bean chilies	Little Bear Organic Foods	Pinto beans, black beans	Canned	US$1.59/15oz	Chicago
Frontier Michigan Ski Country chili	Frontier soups	Kidney beans	Bagged	US$5.49/16oz bag	Chicago
Chili Man	The Milnot Company, St. Louis MO	Beans	Canned	US$1.79/15oz can	Chicago
Bush's Chili Magic	Bush Brothers & Co.	Kidney beans	Canned	US$0.99/16 oz	Chicago
Brook's chili beans	Agrilink Foods, Inc. NY	Beans	Canned	US$0.99/15.5 oz	Chicago
Hormel Chili & beans	Hormel Foods Corporation	Kidney beans	Canned	US$1.09-1.59/15oz	Chicago (2)
Parade Chili	Federated Group Inc.	Whole red beans	Canned	US$1.09/15oz	Chicago
Chili con carne	Hunt-Wesson Inc.		Canned	US$1/15.5oz	L.A.

Veggie Burgers

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Second Nature Spicy Bean Burger	Cow Approved Foods, TO	Black beans	Patty	C$4.59/364g	Vancouver
Zogolo's Multigrain vegetable patties	Imported Zoglos Sogbuck LTD. Israel	Green beans Haricot beans	Frozen Patty	C$6.69/300g box	Vancouver
Second Nature Spicy Bean Burger Patties	Second Nature- Cow Approved Foods Inc.	Black bean	Frozen	C$4.59 3.64g box	Vancouver
Mountain veggie burger	Big Mountain foods, Vancouver BC	Lentils	Refrigerate	C$2.50/360 g	Vancouver
Yves Garden Veggie Patties	Yves, Delta BC	Green peas	Refrigerate	2 burgers C$2.29/170g	Vancouver
Yves Black bean & Mushroom burger	Yves, Delta BC	Black beans	Refrigerate	C$2.29/170g	Vancouver
Nature's Chef Burgers	Seenergy Foods Lmt. ON	Pinto Beans	Frozen	C$5.89/400g	Toronto

Fresh & Frozen Entrees

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Aztec & Moroccan Frozen Vegetarian Meals	Cascadian Farms, Rockport WA	Black beans, garbanzos, lentils	Frozen	C$4.39/454g bag	Vancouver
Bombay Frozen garbanzo Bean Curry Entrée	Roti Industries	Garbanzos, chickpea flour	Frozen	C$5.39/400g	Vancouver
Bean burritos-fresh for take out	Que Pasa Mexican Foods, Vancouver BC		Fresh		Vancouver
Equality Bean Burrito	Great Atlantic & Pacific Company, TO	Kidney beans	Frozen	C$0.99/142g	Toronto
Bombay Garbanzo Bean Curry Entree	Indian Life	Garbanzo beans	Frozen	C$4.59/342g	Vancouver
Pokora Spinach HorD'oeuvres	Indian Life	Chickpea flour	Frozen	C$5.39/400g	Vancouver
Zoglo Falafels	Imported Zoglos Sogbuck LTD. Israel	Chickpea, broad bean	Frozen	C$4.79 300g	Vancouver
Casbah Falafel	Sahara Natural Food Inc. A hain Food Group Company	Grabanzo bean flour	Dry box	C$3.29/284g	Vancouver
Falafel pate	Givrex, Egypt	Chickpeas	Frozen	NA	Vancouver
Cedar falafel mix	Suidan, Montreal QB	Chickpea	Dry	397g box	Vancouver

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Hannah's Hearth's Foods	Hanna's Hearth's Foods Inc. ON & BC	Chickpeas	Dry	C$2.99/300g box	Vancouver
Tasty Bite Bombay potatoes	Tasty Bite Eatables Limited	Chickpeas	Dry	C$4.39/300g box	Vancouver
Amy's Organic Veggie loaf	Amy's Kitchen Inc, CA	Organic lentils	Frozen	C$4.99/284 g	Vancouver
Amy's black bean Enchilada dinner	Amy's Kitchen Inc, CA	Organic pinto beans & black beans	Frozen		Vancouver
Amy's beans & rice Burrito	Amys Kitchen Inc, CA	Pinto beans	Frozen	C$2.69/170g	Vancouver
Amy's Organic beans & rice non-dairy Burrito	Amy's Kitchen Inc, CA	Organic Pinto beans	Frozen	C$2.69/170g	Vancouver
Cascadian Farms Organic veggie bowl with Szechwan rice	Cascadian Farms Inc.	Green beans & black beans	Frozen	C$3.99/255g	Vancouver
Cheemo Tribites burrito	Heritage frozen foods, Edmonton AB	Pinto beans	Frozen	C$3.69/350g box	Vancouver
Cascadian Farms Organic veggie bowl with Szechwan rice	Cascadian Farms Inc.	Black beans	Frozen	US$3.99/16oz	New York
Smart Ones Chicken & Vegetable Caribbean	Heinz Frozen Food Company, Allentown PA	Black beans	Frozen	US$3.99/11oz	New York
Organic 3 layer Enchilada pie	Cedarlane Foods, LA,CA	Organic Black beans		US$3.99/11oz	New York

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Garden vegetable enchiladas	Cedarlane foods, Inc, LA, CA	Pinto beans	Frozen	US$3.89/9oz	New York
Dal Makhani vegetarian delight, Indian Gourmet	Deep Foods Inc. NJ	Black urad, black gram beans, kidney beans	Frozen	US$3.29/10oz	New York
Dal Masala Curry Vegetarian delight, Indian Gourmet	Deep Foods Inc. NJ	Lentils (channa for dals)	Frozen	US$3.29/10oz	New York
Burrito (low fat)	Cedarlane Foods Inc. LA, CA	Organic Pinto Beans		US$2.19/6oz	New York
Enchilada dinner: cheese & Spanish rice with beans	Amy's Kitchen Inc. CA	Black beans	Frozen	US$4.49/9oz	New York
New Orleans Style Black beans with rice	Zatarain's	Black beans	Dry	US$1.79/7oz	New York
Channa Dal Masala golden lentils with vegetables served with rice	Taramind Tree MA	Yellow lentils	Dry	US$3.99/9.25 oz	New York
Alu Chole curried garbanzos and potatoes	Taramind Tree MA	Garbanzo beans	Dry	US$3.99/9.25 oz	New York
Burritos	Cedarlane Foods Inc.	Pinto beans	Frozen	US$1.99/60z	New York
Beans & Pasta Food dinner	Hurst's	NA	NA	US2.25/20oz	Miami
Beef empanadas	Goya Foods Inc.	NA	NA	US$3.29/9.5oz	Miami
Tamales en cassava	Goya Foods Inc	NA	NA	US$1.58/15oz	Miami
Plantano Maduro	Goya Foods Inc	NA	NA	US$1.39/11oz	Miami

Product	Company	Pulses Used	Pulse Consistency	Price/Size	Location
Fajitas, Enhiladas,	Lawry's	NA	NA	US$0.99/box	Miami (2)
Falafel Mix Suidan	SUIDAN, Montreal QB	Fava beans & chickpeas	Dry boxed	C$1.99	Saskatoon
Burrito	La Reina Inc.	Pinto beans		US$0.35/5oz	L.A.
Enchiladas	Ramirez & Fernand Chil Co. LA	NA		US$1.25/8oz	L.A.
Fajitas	NA	NA		US$2.35/8oz	L.A.
Taco & Burritos	Ramirez & Feraud LA	NA		US$1/5oz	L.A.

Appendix E

Health and Natural Foods Distributors in the U.S. and Canada

APPENDIX E: HEALTH AND NATURAL FOODS DISTRIBUTORS IN THE U.S. AND CANADA

Company Name	Location	Telephone Number
U.S. Distributors		
A&T Specialty	Spokane, WA	509-926-3535
Associated Buyers	Barrington, NH	603-664-5656
Azure	Dufur, OR	806-467-2230
Blooming Prairie Natural Foods	Minneapolis, MN	612-378-9774
Blooming Prairie Wholesale	Iowa City, IA	319-337-6448
C.B. Foods	Kennewick, WA	509-783-9774
Choice Distributors	Lubbock, TX	806-886-9746
Cornucopia Natural Foods	Dayville, CT	203-779-2800
Country Life Natural Foods	Pullman, MI	616-236-5012
Food for Health	Phoenix, AZ	602-269-2371
Frankferd Farms	Valencia, PA	412-898-2242
Macrobiotic Company of America	Asheville, NC	704-252-1221
Mountain Peoples Warehouse	Auburn, CA	800-679-6733
Natures Best	Brea, CA	714-441-2378
Neshaminy Valley	Ivyland, PA	215-443-5545
Northeast Co-op	Brattleboro, VT	802-257-5856
NutraSource	Seattle, WA	206-467-7190
Rainbow Distributing	Chicago, IL	312-929-7629
Ranier Natural Foods	Auburn, WA	206-833-4369
Rays Food Service	Clackamas, OR	503-655-1177
Stow Mills	Chesterfield, NH	603-256-3000
Tree of Life – Northeast	North Bergan, NJ	201-662-7200
Canadian Distributors		
Downsview Health Food	Richmond Hill, ON	905-881-8018
Harvester Natural Products	Toronto, ON	416-398-3710
Marathon Distributors	Penticton, BC	604-493-7887

Appendix F

Additional Gluten-Free Market Information

APPENDIX F – ADDITIONAL GLUTEN-FREE MARKET INFORMATION

F.1 Gluten-Free Flours on the Market

The following table highlights the characteristics of flours used as the main ingredient in gluten-free pasta and gluten-free baked goods.

Flour Type	Characteristics
Potato Starch Flour	Can be used as a thickening agent because of its high concentration of starches. It can be used in soups, stews and gravies. The amount to be used is approximately half of the amount of traditional wheat flour
Tapioca Flour	Is a very light and smooth flour that is made from the cassava root. Due to its properties, it gives foods a chewy texture.
Soy Flour	Is more nutty tasting, high protein and high fat flour because it is made from a bean. Generally it is best when used with a combination of other flours or for baking items that have a strong taste, or contain fruits and nuts to mask the nuttiness.
Corn Flour	Has a sweeter corn flavor and can be combined with cornmeal to make breads and muffins. It can also be used alone to make waffles and pancakes
White Rice Flour	Is the most commonly used basic flour for gluten-free baking. It is made using polished white rice and has a bland flavor which many people like.
Brown Rice Flour	Is made from unpolished brown rice and thus contains more bran. It is used in many traditional recipes for bread and muffins. Because of the inherent oils in the flour shelf life of brown rice flour is lower and taste becomes stronger with age.
Quinoa Flour	Is derived from a plant related to spinach and beet. It is the preferred flour for pastries and delicate baking. It contains the nutrients, flavor, consistency and results of whole grain flour.
Amaranth Flour	Is derived from the seed of a plant related to pigweed. It is used in making cookies and other baked goods and pasta
Lentil Flour	Has very good mixing and blending characteristics. It can be used in baking, making pasta, soups, sauces and crackers.
Bean Flour	Has a strong, nutty and sometimes bitter taste. It is used in breads and cakes and us generally not used alone.
Chickpea Flour	Has a strong and nutty taste. It is perfect for savory goods because of its heartier, but mild, flavor and can be used in baking. It is usually combined with other flours in making bread and chocolate cake.

F.2 Competitors in the Gluten-Free Market

Due to the relative size of the market, and the small number of processors within the gluten-free pasta market, each company will be discussed on an individual level. In a means of providing a concise and accurate depiction of the current manufacturers of gluten free pasta, it should be noted that limited information was available on a few of the smaller processors. Internet and telephone resources were used for developing these summaries.

Adrienne's Gourmet Foods is a specialty foods exporter, importer and manufacturer. The company carries the gluten free line of pastas called "Papadini", which is made from lentils and bean flour. Papadini pasta can be found in all most all of the large supermarket chains across North America. Adrienne's was established in 1989 and is located at 849 Ward Drive Santa Barbara, CA. 93111-2920 USA. They can be reached at 1-800-937-7010, faxed at 805-964-8698 emailed to info@adriennes.com, or found on the Internet at www.adriennes.com.

Authentic Foods is a manufacturer of wheat-free and gluten-free flours, bakery mixes, pastas, and natural flavors. Their gluten free pasta product line is derived from rice, tapioca, potato, and sorghum flours. Established in 1995, Authentic Foods is owned and operated by Steven Rice. Authentic Foods is located at 1850 West 169 Street., Suite B, Gardenia, California 90247. They can be reached by phone at 310-366-7612, faxed at 310-366-7612, or found on the internet at www.authenticfoods.com.

For over 30 years, **Dietary Specialties** have provided special foods for people on medically restricted diets. Today, Dietary Specialties offers a complete line of gluten-free, wheat-free, and low protein foods. Dietary Specialties Ltd. specializes in gluten free pizzas, crackers, entrees, muffins, pastas, breads, and desserts. Their pasta's include an assortment of both potato and rice dry noodles. Dietary Specialties Inc. can be written to at P.O. Box 227 Rochester NY, 14601-0227 or reached by phone at 1-800-544-0099, they can also be faxed at 716-263-2787 or found on the Internet at www.dietspec.com.

El Peto Products Ltd. is a manufacturing and exporting company based solely on the manufacturing of savory gluten free food. It prides itself on its pastas, breads, buns, pizza dough, muffins, pies, and desserts. El Peto Products carries a wide variety of pasta products derived from white and brown rice. The company was founded in 1982 and employs 14 employees. The facility is 3 000 square feet, and annual sales are estimated between $500 000 to 1 million dollars. El Peto Products Ltd. is located at 41 Shoemaker Street, Kitchener, ON N2E 3G9. They can be reached at 1-800-387-4064, faxed at 519-748-5279, emailed to at elpeto@golden.net, or found on the Internet at www.elpeto.com.

El Ricco Pasta Inc. provides high quality fresh, frozen and dry pasta products to hotels, restaurants, institutions, and food distributors throughout North America. The company, located at #61-1833 Coast Meridian Rd. in Port Coquitlam, BC Canada, was founded in 1994 and specializes in Italian style fresh, frozen, dry and stuffed pastas. Their gluten free pasta's are derived from a mixture of three flower types; corn, rice and potato. This mixture provides for pasta, which is high in carbohydrates, potassium, and iron while still remaining relatively low in

sodium content. The company can be reached by telephone at 604-945-3854, faxed at 604-945-3857, or found on the Internet at www.elriccopasta.com.

Ener-G Foods Inc. is an exporter, manufacturer, and importer of gluten free products. It produces health and dietetic foods, specializing in wheat and gluten free breads, cereals, cookies, and pasta. The company's gluten-free pastas are derived from white and brown rice. Ener-G Foods was established in 1963 and currently employs 35 people. The facility is 20 000 square feet and has annual sales estimated at $5- $10 million. Ener-G Food Inc. can be reached at P.O. Box 84487 Seattle, WA 98124-5787 USA. They can be contacted by telephone at 1-800-331-5222, faxed at 206-764-3398, emailed at **samiii@ener-g.com**, or found on the Internet at **www.ener-g.com**.

Food Directions Inc. manufacturers Tinkyada brand brown and white rice pastas. Their products are wheat-free, gluten-free, cholesterol-free, fat-free, kosher certified, as well as OCIA organically certified. Their pastas are very unrefined, as they use only rice and water as ingredients. The pasta comes in various shapes and flavors, in organic and non-organic variety, as well as retail packs and bulk form. Tinkyada is located at 120 Melford Drive, Unit 8, Scarborough, Ontario, Canada, M1B 2X5. They can be reached by phone at 416-609-0016, fax #416-609-1316, emailed to at allen@tinkyada.com, or found on the Internet at www.tinkyada.com.

Gluten-Free Café is a new company that makes ready-to serve meals. Their most unique products are their "self heating" meals. All the entrées are fully prepared and sealed in their own disposable dish. These meals come complete with utensil, napkin, salt and pepper. The sealed tray of food is enclosed in a special, patented bag along with a water/saline bladder and magnesium wafer that is non-toxic. A string is attached to the bladder, which when pulled, releases the saline onto the magnesium wafer. The wafer heats as it reacts to the saline, which creates steam. This, in turn heats the meal in approximately 15 minutes. These meals have a shelf life of 18-20 months, without refrigeration, and are prepared by pulling a string making them very convenient. Products Gluten-Free Café makes include; 5-bean casserole, chili con carne, chili, rice and beans, dehydrated beans and lentils. Meals retail for US$7.00-8.00 per 12 oz portion. The website address is www.gluten-freecafe.com

Glutino produces and sells gluten-free, wheat-free breads, bagels, pizzas, pastas and desserts throughout North America. The company also imports top European gluten-free/wheat-free pasta, biscuits, and crackers. Glutino's pasta lines are derived from corn and rice flours. The company was founded in 1983, but it was purchased in 1999 when it changed its name to Glutino. Glutino's is located at 1118 Berlier Quebec, Canada, H7L 3R9. They can be reached by telephone at 1-800-363-3438, faxed to 450-629-7689, emailed to at steven@glutino.com, or found on the Internet at www.glutino.com.

Idaho Supreme Potatoes, Inc. is located in Firth Idaho and was established in 1966. **Idaho Supreme** has also developed a line of packaged pasta dinners (Lasagna, Stroganoff, and Cheeseburger Macaroni) sold under the Mom's Choice label and Pastato brand gluten-free pasta. Idaho Supreme can be contacted at 208-346-6841 or www.idahosupreme.com.

Kinnikinnick Foods Inc.'s primary focus is on the production of gluten-free foods. The majority of the foods they manufacture are bakery items such as muffins, cookies, cakes and baking products. Kinnikinnick's also specializes in pizza doughs, pastas, breads, buns, crackers and cereals. All of the company's products can be purchased either fresh or frozen, as this is seen as a means for ensuring a quality product. The company's gluten free pasta's are derived from rice flour. Kinnikinnick's was established in 1991, and has recently expanded to a facility which is 10 500 square feet. Kinnikinnick Foods Inc. is located at 10306-112 Street Edmonton, Alberta, Canada, T5K 1N1. They can be reached by telephone at 403-424-2900, faxed at 403-421-0456, emailed to at infor@kinnikinnick.com, or visited on the Internet at www.kinnikinnick.com.

Legumes Plus is located in Tomball Texas and has been producing products with pulses since 1989. A farm wife in Eastern Washington started the business as a hobby, more than a business. She began supplying the local market and gradually formal packaging, a licensed facility and a national marketing strategy was developed. All products are prepared by adding water and/or tomatoes or tomato sauce. Because of the special process of washing and drying the lentils, they cook in less than 30 minutes. Legumes Plus products can be bought through the Gluten Free Mall, Gluten Free Pantry and through mail order. Contact information is as follows: P.O. Box 1969, Tomball TX, 77377. Telephone 1-800-233-3668 and the website is **www**.**legumesplus**.**com**.

Little's Market Moon makes rice based products that are wheat, gluten, and egg free. Many of the products they offer are also dairy-free. The company specializes in the creation of wheat and gluten free pizza, pasta, and baked goods. Their lines of pastas are derived from rice flour. Little's Market Moon is located at 715 SE 46th Avenue Portland, OR USA. 97215. They can be reached by telephone at 503-232-8980.

Lundberg Family Farms is a family-owned and operated company in Richvale, California that has been in operation for over 50 years. The company currently processes organic rice-based foods including gluten-free brown rice pasta. They also make rice and pulse entrees such as Chili, Old World Pilaf, One-Stop Curry and a Garlic Basil meal which contains brown, red and green lentils, black eyed peas and yellow split peas. Lundberg can be contacted at 530-883-4551 or **www.lundberg.com**.

Mrs. Leeper's Inc. is an exporter and manufacturer of gluten free products. Mrs. Leepers specializes in organic dried pasta, made from wheat-free and gluten-free products; derived from rice and/or corn. The company runs three pasta product lines under the Mrs. Leeper's brand name. They are Gaston Dupre, Michelle's Natural Pasta, and Eddie's Pasta. Each product line is unique, and is targeted towards diverse consumers. Mrs. Leeper's Inc. was established in 1927, and now employs 40 people that work in a facility which is 50 000 square feet. The company is located at 12455 Kerran Street, Poway, CA 92064-6855 USA. They can by telephone at 858-486-1101, faxed at 858-486-7115, email to at mlpinc@pacbell.net, or visited on the Internet at www.mrsleeperspasta.com.

Natural Noodles is a Canadian company specializing in gluten free pasta noodles. The company carries a wide range of noodles derived from pulse crops. For example, their product lines include pea, lentil, and mung bean noodles. They also carry wild rice and organic brown rice varieties of pasta. Natural Noodles can be written to at Box 24006 Penticton, B.C. Canada, V2A 8L9. They can be reached by telephone or fax 24 hours a day at 1-800-556-3339, emailed to at natural@bc.sympatico.ca, or visited at their website at www.3telus.net.

Nelson David of Canada has been making Celimix brand gluten free products since 1964. The company's products are all gluten free, and their product line includes breads, pastries, pizza crust, cookie mixes, pastas, crackers, biscuits, as well as a wide range of flours. The company offers a vast array of pasta products, which are derived from rice flours. Nelson David of Canada is located at 66 Higgins Ave. Winnipeg, Manitoba, R3B 0A5. They can be reached by telephone at 204-989-0379, faxed to at 204-989-0384, emailed to care of crennie244@aol.com, or visited at their website at http://www.glutenfreemall.com/cgi-bin/2/webc.cgi/~sadams/st_main.html?catid=38.

Pastariso's (also referred to as Rice Innovations Inc.) is a manufacturer of organic and gluten free rice and potato pastas. The company is relatively small and prides itself on its packaged private label. Its products are 100 percent organic, wheat free, gluten free, kosher certified, as well as vegan. Pastariso's rice pasta is derived from stone ground organic rice, and then mixed with organic rice bran to develop a delicious pasta which is quick to make. Several retailers distribute the pasta throughout North America, it can also be obtained by mail order as well as web based companies. Pastariso is located at 1773 Bayly Street, Pickerling, Ontario, Canada, L1W 2Y7. They can be reached by telephone at 905-451-7423, or faxed at 905-455-8137.

Special Foods is a company dedicated to providing "special foods" for people with food allergies. Special Foods has developed hundreds of foods, and all of them are without wheat or other grains, eggs, milk, yeast, or sugar. The company also makes a number of other hard to find items such as Neolife cleaning products, cellophane, and hypoallergenic lip balms. The company makes a wide array of pastas including water chestnut, milo, yam, cassava, arrowroot, potatoes and lentils. All of Special Foods pastas are 100 percent pure, individual flours are not combined with others as the company feels this is the best way to help individuals isolate their allergies. Special Foods was established in 1981, it is located at 9207 Shotgun Court, Springfield, VA 22153 USA. The company can be reached by telephone at 703-644-0991, faxed to at 703-644-1006, emailed to at kslimak@ix.netcom.com, or located on the Internet at www.specialfoods.com.

Appendix G
Market Opportunity Matrix

G.1 Summary of Opportunities to Process Value-Added Pulse Products in Saskatchewan that Provide the Greatest Value to the Pulse Industry

Market/Product Opportunity	Target Markets	Value-Added Potential	Advantages	Requirements
Bagged and Bulk Pulses for the Consumer /Wholesale Market -More cleaning/bagging plants -Organic cleaning/bagging plants -Ingredient supply in higher value-added form to processors	**General** **Specialty** Organic	Low but represents volume Higher value in organic market	Affordable land & labour in rural Areas Increasing production volumes Easy long-term storage	Capital investment Market penetration strategy Identity preservation measures
Ground Pulse Flour -Producing and packaging pulse flour for retail sale -Producing pulse flour as an ingredient for processors in target segments	**Specialty** Indian Vegetarian Celiac Baby Boomers Gen X Organic	Higher than whole seeds but volume much smaller Higher value in organic market	Saskatchewan's clean, pure image is attractive Small milling operations are easy additions to existing plants	Capital investment Defined marketing strategy Specialty packaging Identity preservation measures
Whole Processed Pulses -*Canned pulses -Puffed/toasted pulse snack foods	**General Specialty** Indian Middle East Organic	High, particularly for canned products Higher value in organic market	Mechanical systems to produce snack foods are available Reasonable land, building, labour and electricity costs Saskatchewan's clean, pure image is attractive	Capital investment In snack food market, accurate assessment of needs of distant target markets Defined marketing strategy Access to additional ingredients Identity preservation measures
Products Made from Ground Pulses -Producing papdums, roti thickeners and dough mix -Gluten-free pasta -Gluten-free baking mixes	**Specialty** Indian Vegetarian Celiac Organic	Medium Higher value in organic market	Major capital investment not necessarily required Reasonable land, building, labour and electricity costs Saskatchewan's clean, pure image is attractive	Accurate assessment of needs of distant target markets Selection and organization of optimal distribution channels Access to additional ingredients Identity preservation measures

Market/Product Opportunity	Target Markets	Value-Added Potential	Advantages	Requirements
Processed Pulses Mixed with Other Ingredients -Dried products (e.g. soup, easy-to-prepare side dishes, snacks) -Frozen products (e.g. stews, curry, gluten-free dough mix)	**General** **Specialty** Indian Vegetarian Organic Middle East Celiac	High	If local ingredients used, local ventures will be supported Reasonable land, building, labour and electricity costs No major food processors in Saskatchewan making similar Products Saskatchewan's clean, pure image is attractive	Accurate assessment of needs of distant target markets Defined marketing plan Selection and Organization of optimal distribution channels Access to additional ingredients Development of a freezing line that can handle such products Identity preservation measures
Extruded Pulse Products -Snack foods, gluten-free pasta, cereals, meat substitutes, pet food -Ingredients in complex food Products	**General** Large Processors **Specialty** Celiac Vegetarian	Very high, limited volume Large volume in ingredient market	Reasonable land, building, labour and electricity costs Low weight product can bear high transportation costs Access to research and development at the Food Centre	More experience in-province with this technology Generation of opportunities to contract extruded products in-province Accurate assessment of needs of distant markets High product volumes to supply large processors
Fractionated Pulses -Opportunities exist but have not been developed at this time	**Industrial** **Pharmaceutical**	Very high	Currently a plant in-province uses this technology Reasonable land, building, labour and electricity costs	More product and market development Relationship building with end-users

* At this time, setting up a canning line is not feasible within Saskatchewan, as it will require high capital investments. Economies of size and scope do not exist in the province to justify these costs.

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Agriculture and Agri Food Canada	www.agr.ca
Amy's Kitchen	www.amyskitchen.com
Authentic Foods	www.authenticfoods.com
Canada's Organic Community	www.inforganics.com
Canadian Celiac Association Website	www.celiac.ca
Canadian Grocer Magazine	www.cdngorcer.com
Canadian Organic Advisory Board Inc.	www.coab.ca
Canadian Organic Growers Website	www.cog.ca
Cascadian Farm	www.cfarm.com
Cass Hispanic Publication Network	www.casscom.com
Celiac Disease and Gluten-Free Support Page	www.celiac.com
Don Miguel Foods	www.donmiguel.com
Eden Foods	www.edenfoods.com
El Monterey Foods	http://www.elmonterey.com/
El Peto Products Ltd.	www.elpeto.com
Ener-G Foods	www.ener-g.com
Exporting Canada Online	www.exportingcanadaonline.com
Food Directions Inc.	www.tinkyada.com
Food in Canada	www.foodincanada.com
Food Marketing Institute	www.fmi.org
Food Net	http://foodnet.fic.ca
Gluten Free Pantry	www.glutenfreepantry.com
Gluten Solutions	www.glutensolutions.com
Gluten-Free Café	www.gluten-freecafe.com
Gluten-Free Casein-Free Diet Website	www.gfcfdiet.com
Gluten-Free Mall	www.glutenfreemall.com
Glutino/Deroma	www.glutino.com
Goya Foods	www.goya.com
H.J. Heinz Company	www.heinz.com
Hormel Foods	www.hormel.com
Idaho Supreme Potatoes Inc.	www.idahosupreme.com
Indian Harvest	www.indianharvest.com
Kinnikinnick Foods	www.kinnikinnick.com
Legumes Plus	www.legumesplus.com
Lundberg Family Farms	www.lundberg.com
Mrs. Leepers Pasta Inc.	www.mrsleeperspasta.com
Natural Noodles	www.bc.sympatico.ca/noodles
Pataks	www.pataks.com
Preferred Brands International	www.tastybite.com
Primo Foods Company	www.primofoods.com
Pro Organics	www.proorganics.com

Company/Source	Website Address
Saskatchewan Agriculture and Food	www.agr.gov.sask.ca
Special Foods	www.specialfoods.com
The Hain Food Group	www.thehainfoodgroup.com
Unico Foods	www.unico.ca
Whole Foods Market	www.wholefoodsmarket.com

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Personal Interviews

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